Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

5 NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19·1 million participants. *Lancet* 2017; **389:** 37–55.

6 Gonzalez-Quiroz M, Pearce N, Caplin B, Nitsch D. What do epidemiological studies tell us about chronic kidney disease of undetermined cause in Meso-America? A systematic review and meta-analysis. *Clin Kidney J* 2018; **11:** 496–506.

7 GBD 2017 Causes of Death Collaborators. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018; **392:** 1736–88.

8 Kim LG, Cleary F, Wheeler DC, et al. How do primary care doctors in England and Wales code and manage people with chronic kidney disease? Results from the National Chronic Kidney Disease Audit. *Nephrol Dial Transplant* 2018; **33:** 1373–79.

9 Hallan SI, Matsushita K, Sang Y, et al. Age and association of kidney measures with mortality and end-stage renal disease. *JAMA* 2012; **308:** 2349–60.

10 Chen TK, Knicely DH, Grams ME. Chronic kidney disease diagnosis and management: a review. *JAMA* 2019; **322:** 1294–304.

11 Di Cesare M, Khang Y-H, Asaria P, et al. Inequalities in non-communicable diseases and effective responses. *Lancet* 2013; **381:** 585–97.

12 Levin A, Tonelli M, Bonventre J, et al. Global kidney health 2017 and beyond: a roadmap for closing gaps in care, research, and policy. *Lancet* 2017; **390:** 1888–917.

Do not violate the International Health Regulations during the COVID-19 outbreak

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The International Health Regulations (2005) (IHR)[1] govern how 196 countries and WHO collectively address the global spread of disease and avoid unnecessary interference with international traffic and trade. Article 43 of this legally binding instrument restricts the measures countries can implement when addressing public health risks to those measures that are supported by science, commensurate with the risks involved, and anchored in human rights.[1] The intention of the IHR is that countries should not take needless measures that harm people or that disincentivise countries from reporting new risks to international public health authorities.[2]

In imposing travel restrictions against China during the current outbreak of 2019 novel coronavirus disease (COVID-19), many countries are violating the IHR. We—16 global health law scholars—came to this conclusion after applying the interpretive framework of the Vienna Convention on the Law of Treaties[3] and reaching a jurisprudential consensus on the legal meaning of IHR Article 43 (panel).

We explain our conclusion here. First, under Article 43.2, countries cannot implement additional health measures exclusively as a precaution but must rather ground their decision making in "scientific principles", "scientific evidence", and "advice from WHO".[1] Many of the travel restrictions being implemented during the COVID-19 outbreak are not supported by science or WHO. Travel restrictions for these kinds of viruses have been challenged by public health researchers,[4–6] and WHO has advised against travel restrictions, arguing they cause more harm than good.[7,8]

Second, under Article 43.1 any additional health measures implemented by countries "shall not be more restrictive of international traffic and not more invasive or intrusive to persons than reasonably available alternatives".[1] In this case, even if travel restrictions did work, there are so many other more effective measures that countries can take to protect their citizens. WHO has issued COVID-19 technical guidance on several such measures, including risk communication, surveillance, patient management, and screening at ports of entry and exit.[9]

Third, and most importantly, Article 3.1 strictly requires all additional health measures to be implemented "with full respect for the dignity, human rights and fundamental freedoms of persons",[1] which in turn must reflect the international law principles of necessity, legitimacy, and proportionality that govern limitations to and derogations from rights and freedoms.[10] Under no circumstances should public health or foreign policy decisions be based on the racism and xenophobia that are now being directed at Chinese people and those of Asian descent.[11]

Many of the travel restrictions implemented by dozens of countries during the COVID-19 outbreak are therefore violations of the IHR.[12] Yet, perhaps even more troubling, is that at least two-thirds of these countries have not reported their additional health measures to WHO,[12] which is a further violation of IHR Articles 43.3 and 43.5. Flagrant disregard for the legal requirement to promptly report any additional health measures frustrates WHO's ability to coordinate the world's

Panel: **International Health Regulations (2005) Article 43.1 to 43.5 on Additional Health Measures**

1 These Regulations shall not preclude States Parties from implementing health measures, in accordance with their relevant national law and obligations under international law, in response to specific public health risks or public health emergencies of international concern, which:
   (a) achieve the same or greater level of health protection than WHO recommendations; or
   (b) are otherwise prohibited under Article 25, Article 26, paragraphs 1 and 2 of Article 28, Article 30, paragraph 1(c) of Article 31 and Article 33, provided such measures are otherwise consistent with these Regulations.
   Such measures shall not be more restrictive of international traffic and not more invasive or intrusive to persons than reasonably available alternatives that would achieve the appropriate level of health protection.

2 In determining whether to implement the health measures referred to in paragraph 1 of this Article or additional health measures under paragraph 2 of Article 23, paragraph 1 of Article 27, paragraph 2 of Article 28 and paragraph 2(c) of Article 31, States Parties shall base their determinations upon:
   (a) scientific principles;
   (b) available scientific evidence of a risk to human health, or where such evidence is insufficient, the available information including from WHO and other relevant intergovernmental organizations and international bodies; and
   (c) any available specific guidance or advice from WHO.

3 A State Party implementing additional health measures referred to in paragraph 1 of this Article which significantly interfere with international traffic shall provide to WHO the public health rationale and relevant scientific information for it. WHO shall share this information with other States Parties and shall share information regarding the health measures implemented. For the purpose of this Article, significant interference generally means refusal of entry or departure of international travellers, baggage, cargo, containers, conveyances, goods, and the like, or their delay, for more than 24 hours.

4 After assessing information provided pursuant to paragraph 3 and 5 of this Article and other relevant information, WHO may request that the State Party concerned reconsider the application of the measures.

5 A State Party implementing additional health measures referred to in paragraphs 1 and 2 of this Article that significantly interfere with international traffic shall inform WHO, within 48 hours of implementation, of such measures and their health rationale unless these are covered by a temporary or standing recommendation.

Text is taken from International Health Regulations (2005).[1]

response to public health emergencies and prevents countries from holding each other accountable for their obligations under the IHR.

Some countries argue that they would rather be safe than sorry. But evidence belies the claim that illegal travel restrictions make countries safer.[4-6] In the short term, travel restrictions prevent supplies from getting into affected areas, slow down the international public health response, stigmatise entire populations, and disproportionately harm the most vulnerable among us. In the longer term, countries selecting which international laws to follow encourages other countries to do the same, which in turn undermines the broader rules-based world order. Effective global governance is not possible when countries cannot depend on each other to comply with international agreements.[13]

Of course, the IHR is far from perfect. For example, the IHR only governs countries, not corporations and other non-governmental actors. Thus, some countries are finding themselves with de-facto travel restrictions when airlines stop flying to places affected by COVID-19. Additionally, the IHR does not have robust accountability mechanisms for compliance, enforcement, oversight, and transparency.[14]

But the IHR is the legally binding system for protecting people worldwide from the global spread of disease. With more than 2·5 billion people travelling between about 4000 airports every year,[15] future outbreaks are inevitable. Responses that are anchored in fear, misinformation, racism, and xenophobia will not save us from outbreaks like COVID-19. Upholding the rule of international law is needed now more than ever. Countries can start by rolling back illegal travel restrictions that have already been implemented and by supporting WHO and each other in implementing the IHR.

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opinions in this consensus statement Comment represent those of the authors writing in their personal and independent academic roles, without any direction from their governments or institutions.

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1 WHO. International Health Regulations, WHA 58.3, 2nd edn. Geneva: World Health Organization, 2005.
2 Tejpar A, Hoffman SJ. Canada's violation of international law during the 2014–2016 Ebola outbreak. *Can Yearb Int Law* 2017; **54:** 366–83.
3 Vienna Convention on the Law of Treaties, May 23 1969, 1155 UNTS 331 (entered into force January 27, 1980).
4 Brownstein JS, Wolfe CJ, Mandl KD. Empirical evidence for the effect of airline travel on inter-regional influenza spread in the United States. *PLoS Med* 2006; **3:** e401.
5 Mateus ALP, Otete HE, Beck CR, Dolan GP, Nguyen-Van-Tam JS. Effectiveness of travel restrictions in the rapid containment of human influenza: a systematic review. *Bull World Health Organ* 2014; **92:** 868–80D.
6 Poletto C, Gomes MF, Pastore y Piontti A, et al. Assessing the impact of travel restrictions on international spread of the 2014 West African Ebola epidemic. *Euro Surveill* 2014; **19:** 20936.
7 WHO. Updated WHO advice for international traffic in relation to the outbreak of the novel coronavirus 2019-nCoV. Jan 27, 2020. http://www.who.int/ith/2019-nCoV_advice_for_international_traffic/en/ (accessed Feb 11, 2020).
8 WHO. WHO Director-General's statement on IHR Emergency Committee on Novel Coronavirus (2019-nCoV). Jan 30, 2020. https://www.who.int/dg/speeches/detail/who-director-general-s-statement-on-ihr-emergency-committee-on-novel-coronavirus-(2019-nCoV) (accessed Feb 11, 2020).
9 WHO. Novel coronavirus (2019-nCoV) technical guidance. 2020. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance (accessed Feb 11, 2020).
10 Takahashi Y. Proportionality. In: Shelton D, ed. Oxford Handbook of International Human Rights Law. Oxford: Oxford University Press, 2013: 449.
11 Yeung J. As the coronavirus spreads, fear is fueling racism and xenophobia. CNN, Jan 31, 2020. https://edition.cnn.com/2020/01/31/asia/wuhan-coronavirus-racism-fear-intl-hnk/index.html (accessed Feb 11, 2020).
12 WHO. Novel coronavirus (2019-nCoV) situation report—18. Feb 7, 2020. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200207-sitrep-18-ncov.pdf?sfvrsn=fa644293_2 (accessed Feb 11, 2020).
13 Hoffman SJ. The evolution, etiology and eventualities of the global health security regime. *Health Policy Plan* 2010; **25:** 510–22.
14 Ottersen T, Hoffman SJ, Groux G. Ebola again shows the International Health Regulations are broken: what can be done differently to prepare for the next pandemic? *Am J Law Med* 2016; **42:** 356–92.
15 Khan K, Eckhardt R, Brownstein JS, et al. Entry and exit screening of airline travellers during the A(H1N1) 2009 pandemic: a retrospective evaluation. *Bull World Health Organ* 2013; **91:** 368–76.

Climate change and the people's health: the need to exit the consumptagenic system

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The world has warmed to dangerous levels and the attendant disruption to the Earth system is profound.[1] The climate change-induced bushfires in Australia have resulted in almost 30 deaths, tens of thousands displaced from their homes, up to 1·25 billion animals dead, and pristine landscapes destroyed.[2] Globally, there are more frequent and severe extreme weather events.[1] While Australia burned,[3] the worst monsoon rains in decades caused landslides and floods in Indonesia, killing at least 70 people.[4] In 2019, typhoons and heatwaves killed and injured thousands of people across Africa, Japan, India, China, Europe, and the USA.

No one will be untouched by climate change, but it is not experienced equally.[5] Affluent people can afford to live in insulated buildings with air conditioning and air purifiers. The poor, older people, people with disabilities, and those with pre-existing health conditions are the least able to adapt to the changing climate, unable to escape the fires and heat, and live in dwellings and environments that amplify its effects. Having lost homes or livelihoods, and fearful for the future, some people might leave their communities and perhaps their country. This will exacerbate inequities, with those who have more financial and social capital having more options.

All of this will add to existing disease burdens and premature mortality, which are unequally distributed. Now, the heart attacks, strokes, and respiratory failure resulting from the exposure of thousands of Australians to extreme heat, fires, and smoke, and the mental health aftermath are likely to overwhelm an unprepared health system.[6]

The Australian Government has committed AUS$2 billion to establish a National Bushfire Recovery Agency.[2] This essential response is too little, too late. Policy is needed in Australia, as elsewhere, that helps both with adaptation to the damage already done and mitigates making climate change worse.

Good social and planning policy is good climate adaptation policy. We know that long-term investment in