Fighting fire with science: Estimating the devastating impact of fire on Australians

Background: Residential fire deaths are a significant public health issue for Australia, and other countries, despite ongoing mitigation efforts. Fire-related injuries and fatalities can have life-changing impacts on victims, their families, and friends [1]. Fires and fire-fighting operations too can significantly damage the properties, leading to the loss of possessions. However, the quantification of the total costs of fires is challenging. A crude estimation reveals that fire-related household insurance claims lodged in Australia between 2003 and 2017 amounted to $5.16 billion [2]. However, this amount excludes costs for victims without insurance cover and other immediate and long-term costs, including rehabilitation and loss of productivity. It is also noteworthy that the economic and social costs disproportionately impact some of the most vulnerable population groups. For example, in research that examined preventable deaths in Australia from 2003 to 2017, the population cohorts that are most at risk of fire deaths are old adults (aged 65+) and young children (0–4 years old) [3]. The literature identifies a range of factors, including cognitive impairments, sensory deficiencies, and mobility limitations, which increase the egress time that groups require to evacuate, and, ultimately, their risks of dying in fires.

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Expected outcome: This research focuses on assessing the different economic approaches to evaluate fire injury and fatality costs. We are especially interested in methodologies that can adequately reflect the actual costs to which the most vulnerable groups are subjected. The work will be published in a conference or an international journal if done well. Our group has a track record guiding our mentees toward publishing their thesis work. You can be the next!

Research environment: You will join a team with 1 Research Assistant, 4 HDR candidates and a VIP team working on combustion and fire-related topics. The environment is friendly, and

there is a wealth of experience to be drawn from the team. If interested, please arrange for a meeting to discuss with me (qing.chan@unsw.edu.au) before applying.

References

1. Cleary TG, Full-scale residential smoke alarm performance, 14th International Conference on Automatic Fire Detection (2009).
2. Australian Government Productivity Commission, Report on government services 2020 (2020).
3. Coates L et al., Preventable residential fire fatalities in Australia July 2003 to June 2017 (2019).