

Too Hot to Handle: Assessing the Social Impacts of Extreme Heat

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Abstract

In this paper I outline the growing social impact of extreme heat in Australia and argue that improved assessment of such impacts has the potential to not only reduce vulnerability to this environmental stress but also contribute to improved social well-being. The social impacts of extreme heat tend to reflect deep rooted inequalities concerning social isolation, socio-economic disadvantage, access to decent and affordable housing and transport, community service delivery, and the challenges associated with an ageing society. To date there has been a neglect of the social impacts of extreme heat within planning and impact assessment; extreme heat, like climate change more generally, appears to be too hot to handle as a policy and impact assessment issue. Three opportunities exist for SIA practitioners and researchers to better assess the social impacts of extreme heat: 1) conduct purposeful SIA on extreme heat; 2) mainstream consideration of the social impacts of environmental extremes into SIA; and 3) incorporate consideration of the social impacts of extreme heat into local government planning. Attention on key methodological and process issues the SIA community confronts in other contexts, such as the integration of qualitative and quantitative social and spatial data and sensitive and inclusive community engagement, is likely to ensure a good handle on the social impacts of extreme heat is achieved in ways that also build social well-being.

1. Introduction - Hot and getting hotter

Heat is a familiar feature of the Australian climate, and as such, there is a degree of complacency around the seriousness of its affect on our cities, regions, environment and selves. Extreme heat is responsible for more deaths than any other natural hazard in Australia (Bureau of Meteorology 2005) leading it to be labelled the 'silent killer' and a 'slow motion disaster'.

The incidence of extreme heat events¹ is rising. A recent report from the Climate Council states that heatwaves have become more frequent, are lasting longer and have become hotter in Australia over the last 35 years (from 1971-2008) (Steffen et al. 2014). According to the CSIRO and Bureau of Meteorology (CSIRO/BoM 2012) the number of record hot days has doubled in Australia since the 1960s, with a significant increase in the number of extremely hot days (>35°C) occurring over a similar period. The incidence of heatwaves in the last decade has already surpassed levels previously predicted for 2030 (Steffen et al. 2014).

Without significant investment in adaptation we are likely to see the environmental, health and social impacts of extreme heat worsen with climate change. The Intergovernmental Panel on Climate Change (IPCC) predicts that the incidence of heatwaves will increase with climate change (IPCC 2012,

¹ The term extreme heat refers to officially declared heatwaves as well as extended periods of very hot weather.

2007). Average temperatures in Australia are projected to rise by 0.6 to 1.5 °C by 2030 and by 1 to 5°C by 2070 compared with the climate of 1980 to 1999 (2012). However, it is the increase in extreme temperatures, rather than the increase in average temperatures, that is of greatest concern here, with the number of days with temperatures above 35 degrees expected to rise in our capital cities. For instance in Melbourne the number of extremely hot days would rise from 9 to 12 days per year by 2030, 21 by 2070 and 27 by 2100 (Garnaut 2008). Assuming no planned adaptation, these changes are likely to result in an increase in heat related deaths – from a total of 1115 per year in Adelaide, Melbourne, Perth, Sydney and Brisbane to up till 6300 per year by 2050 (McMichael et al. in IPCC 2007).

2. Social impacts of extreme heat

Heat, as detailed in Miller and Bolitho (Miller and Bolitho forthcoming) brings about multi-stress vulnerability, affecting people's health and well-being, financial situation, mobility, social relations and access to basic services. The health impacts of extreme heat are increasingly well documented. What is apparent from this literature is that elevated mortality and morbidity occurs with a rise in temperature, particularly affecting those over 65 years, the very young and those with pre-existing health conditions (Chief Health Officer of Victoria 2009); (Bi 2011; Davis et al. 2003; Guest 1999; Hansen et al. 2008; Johnson et al. 2009; Khalaj 2010; Kinney P L and J 2008; Loughnan et al. 2012; Schaffer 2012; Thomas and Soliman 2002; Vescovi et al. 2005). The most common health problems associated with extreme heat include dehydration, heat stress, heat stroke, respiratory problems and dementia. Deaths usually occur in people with pre-existing cardiovascular diseases (heart attack and stroke) or chronic respiratory diseases (McMichael et al 2006: 861).

In addition to research on the health effects of extreme heat there is a growing body of work on the social impacts. The pioneering work of sociologist Eric Klinenberg on the Chicago heatwave of 1995 identified how factors such as urbanization, social isolation, poverty and institutional breakdown contributed to the disproportionate impact of that event on the elderly, African Americans and men (Klinenberg 1999, 2002).

Social isolation is a growing public policy issue in Australia with a significant proportion of Australians, particularly the elderly, now living alone.² Extreme heat exacerbates social isolation (Klinenberg 1999, 2002; Wolf et al. 2010), with vulnerable people tending to remain indoors and avoid outings when the weather gets too hot. During times of extreme heat visits by friends, neighbours and family, the delivery of social services, such as home and community care (HACC), and the organisation of social outings for the elderly, frail and disabled may be reduced or cancelled, further exacerbating the experience of isolation. Whilst social isolation is often identified as a factor contributing to heat-vulnerability, a study on social networks and heat-vulnerability in the UK cautions against the assumption that strong social relations necessarily result in lower vulnerability to heat stress (Wolf et al. 2010).

² Recent ABS data state that 24% of Australian households are comprised of people living alone (ABS, 2012).

Poor quality housing³ and weak tenure for tenants can further exacerbate the experience of extreme heat particularly in some of the more densely populated parts of cities. The interaction between extreme heat and energy poverty is another issue of concern considering the growing cost of electricity. Inequality and poor access to affordable cooling options in Australia exacerbate heat-vulnerability, as people are unable (or unwilling) to use their air-conditioners (Farbotko and Waitt 2011). Research on social practices during times of heat, has also highlighted this issue of affordability and people's diverse capacity to cope (Strengers and Maller 2011b, 2011a). Impacts on critical energy and transport infrastructure are also apparent during heatwaves (NCCARF 2010; McEvoy et al. 2012), and can have a disproportionate impact on those with mobility constraints, a disability and ill health.

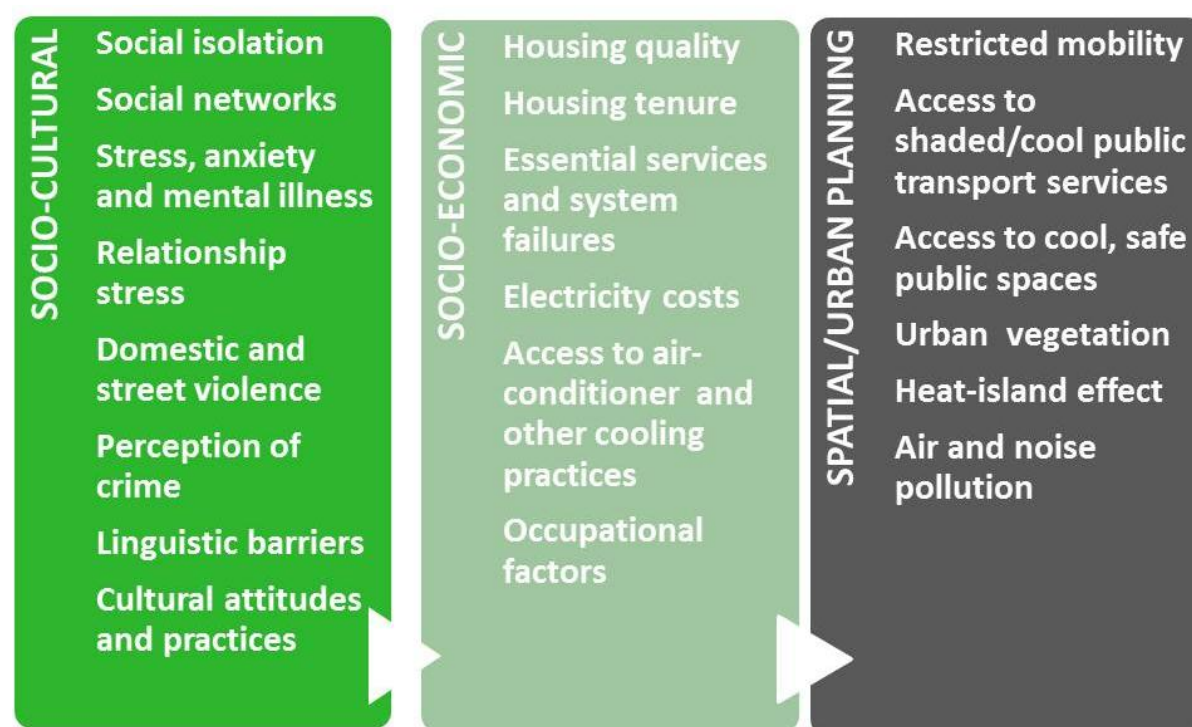


Figure 1 – Social dimensions of extreme heat

The social impacts of extreme heat, as captured in Figure 1, are the result of a complex interaction between social relations, housing and living circumstances, socio-economic issues, health and urban planning (Miller and Bolitho forthcoming). In the practice of impact assessment we need to be attentive to how interventions that are within the traditional scope of regulatory SIA, such as proposed housing, transport, urban development, and energy projects, may potentially exacerbate or ameliorate the above issues. This means going beyond the (important but insufficient) consideration of how physical design features may be modified to reduce thermal discomfort within the community to a more systematic consideration of how social connectivity, well-being, mobility, and the affordability and sustainability of infrastructure, housing and services may be improved.

³ Construction, building material and design features, as well as the presence of insulation, ventilation, blinds, curtains, fans, air-conditioners, and vegetation all act to influence the thermal properties of buildings.

3. Neglect of the underlying causes of heat vulnerability

Extreme heat has tended to be neglected in impact assessment and planning as it is often part of a mix of stresses that shape socio-environmental change. Institutional complacency towards hot weather and a lack of substantive action on climate change have also contributed to this lack of attention. Whilst the health impacts of heat are starting to appear in some aspects of planning and in health impact assessments this has not as yet translated into sufficient attention on social impacts and deeper structural causes of heat vulnerability.

The traditional focus of SIA on anticipating the direct impacts resulting from particular projects or programs of intervention may fail to capture the interaction between such interventions and changing patterns of heat vulnerability. Whether the reality of climate change is acknowledged or not, the increased incidence of extreme heat events in Southeastern Australia is undeniable. Considering this, there is an urgent need for greater attention on this issue within the impact assessment community.

So, how can we better assess the social impacts of extreme heat? And, what opportunities exist for SIA to address heat-related vulnerability?

4. New approaches: opportunities for the social impacts of heat to be assessed

There are three clear opportunities for the SIA practitioner and research community to raise the profile of the social impacts of extreme heat:

i) Conduct Purposeful SIAs of extreme heat

There is scope for purposeful SIAs (ie., framed around a particular environmental stress rather than a project, program or other intervention) to be undertaken on extreme heat for clients including: local government; social service organisations; urban, social and transport planning authorities; and emergency management agencies. Such SIAs should aim to identify the nature of current impacts, anticipate future impacts, identify the people most vulnerable to these impacts and factors contributing to this vulnerability, document current coping mechanisms, and identify potential responses to address heat vulnerability.

To avoid a reliance on broad, static categories of 'vulnerable people' based on age and location, there is a need for more engaged methods to be employed in such SIAs to identify the situational factors that contribute to vulnerability (such as risk perception, cooling practices, living circumstances, access to support services, social networks etc.). So whilst mapping key vulnerability indicators is valuable, more contextual and engaged methods are necessary.

ii) Mainstream the consideration of the social impacts of environmental extremes into SIA

There have been calls for the impact assessment community to better address climate change in practice (Burdge 2008; Cottrell and King 2011; Sok et al. 2011), although the focus has been more on opportunities for mitigation rather than vulnerability and adaptation. Mainstreaming climate change considerations into SIA practice is a daunting task considering the complexity of understanding, documenting and predicting social change. However, for certain kinds of developments it is clear that there is greater potential for the impacts of environmental extremes, such as heat, to be

exacerbated (or ameliorated) than others. These developments include urban infrastructure and developments, housing, transport, social service delivery, and energy. SIAs associated with these particular developments should seek to mainstream a consideration of the social impacts of heat at all stages of an SIA but especially in regards to the profiling, documenting alternatives and predicting effects stages.

Some of the kinds of issues that could be considered within an SIA in order to better anticipate and address the social impacts of extreme heat, include:

- Baseline understanding of current heat impacts, presence of vulnerable populations and social networks
- Planning for green spaces, urban vegetation, and green walls/roofs in order to reduce the heat island effect, provide refuges for people and animals during times of heat, and to create spaces for social interaction.
- Availability and access to cool public spaces for extremely hot days (e.g., community halls, public libraries, public pools, shopping centres, cinemas)
- Consideration of the thermal properties of buildings and urban infrastructure
- Accessibility and comfort of public transport, e.g. shaded and/or cooled bus and tram stops and train stations; air conditioning on buses/trams/trains; shading of disabled parking spaces
- Consideration of opportunities for social interaction in terms of urban and building design (place making) as well as investment in public facilities for social gatherings e.g., community centres
- Capacity of current social services, especially home and community care services, child and maternal health services, early childhood services, aged services, and migrant and refugee services.

Identifying opportunities to mainstream the consideration of these issues within SIAs would likely help reduce future vulnerability to extreme heat as well as build social well-being.

iii) Incorporate consideration of the social impacts of extreme heat into local government planning

Heatwave planning is becoming increasingly commonplace within local government in emergency management, health and well-being planning and climate change adaptation planning (Bolitho and Miller forthcoming). Victoria, through the efforts of the Department of Health, has provided guidance and some initial funding to councils since 2008 to undertake annual heatwave planning with a focus on coordinating emergency responses within council, engaging with relevant stakeholders, identifying vulnerable people and communicating public health messages on how to avoid heat stress (Bolitho and Miller, forthcoming). The overwhelming focus of such heatwave planning is on the emergency aspects of heatwaves, rather than the chronic impacts of extreme heat. The focus of heatwave impacts tends to be in terms of health impacts with little consideration as yet on social impacts. There is thus a great opportunity here for SIA practitioners and researchers to work with local governments to better document the social context of extreme heat focusing particularly on who is considered vulnerable and why, coping capacity and adaptation strategies. Local government's responsibilities in terms of the delivery of HACC and social services, urban planning, emergency management and adaptation provide clear opportunities for investment in activities that build social well-being whilst reducing heat vulnerability.

Through a thoughtful consideration of ways to integrate spatial data with key indicators of vulnerability a better understanding of the likely impacts of extreme heat can be gained and assist with monitoring overtime. However, it is vitally important that engagement with potentially vulnerable people and their networks of family, friends, neighbours, carers and service providers occurs so that an appreciation of the underlying causes of heat vulnerability, capacity to cope and options to address heat vulnerability can be achieved.

6. Conclusion : *Getting a handle on extreme heat*

In this paper I have outlined the severity of the issue of extreme heat and the hitherto neglect of the social impacts of this stress. I have identified three clear and promising opportunities whereby the assessment of the social impacts of extreme heat can occur. Attention on key methodological and process issues the SIA community confronts in other contexts, such as the integration of qualitative and quantitative social and spatial data and sensitive and inclusive community engagement, is likely to ensure a better handle on the social impacts of extreme heat occurs.

As the social impacts of extreme heat tend to reflect deep rooted social inequalities it is not surprising that these impacts have been as yet quite poorly addressed in urban planning, emergency management and assessment processes. Taking up some of the opportunities identified in this paper to assess the social impacts of extreme heat is likely to not only raise the profile of this critical issue but also work towards efforts to improve social well-being

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