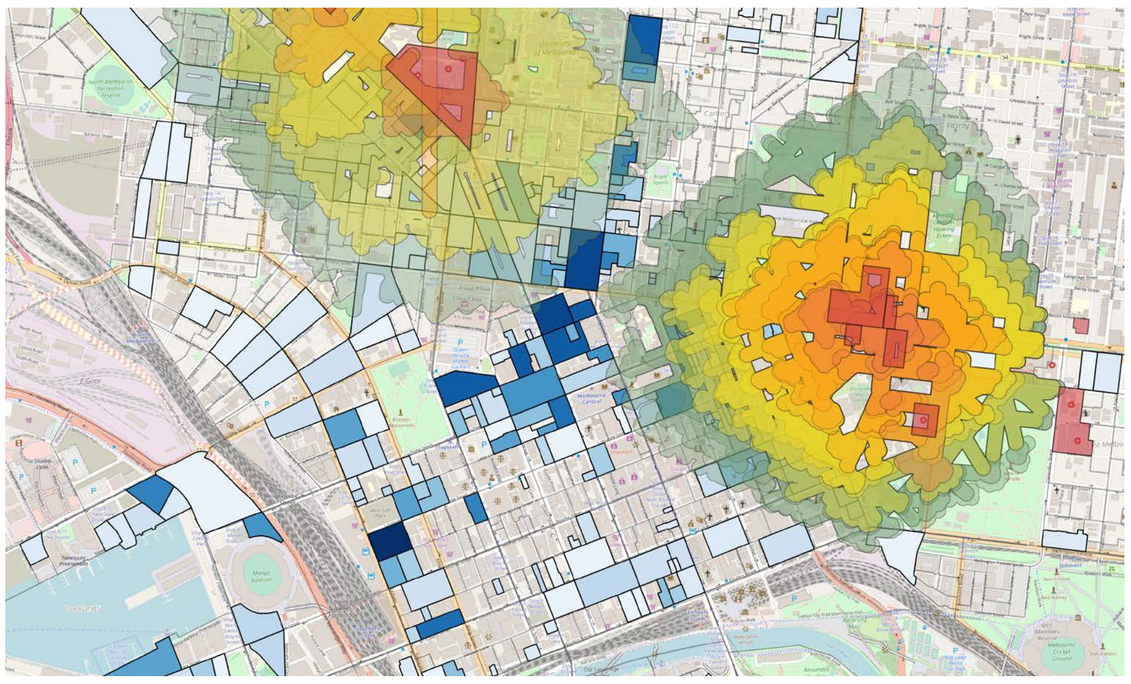
Vulnerability of International Students in High-Rise

International student numbers in Australia have rapidly grown over the last two decades, impacting on the demand for accommodation in proximity to campuses. In particular, Melbourne's CBD has a significant concentration of international students. The supply and quality of this accommodation is not always adequate. Confronted by hazards like fires, floods, heatwaves, terror and technological disruptions that affect the city and high-rise buildings, international students stand out as a potentially vulnerable group.

Hazards, vulnerability and exposure

Risk, or the chance of a negative outcome occurring, can be described as the dynamic outcome of interactions between exposure to hazard and the specific vulnerability of an area within a specific context, combined with the level and type of exposure (EMA, 2015).

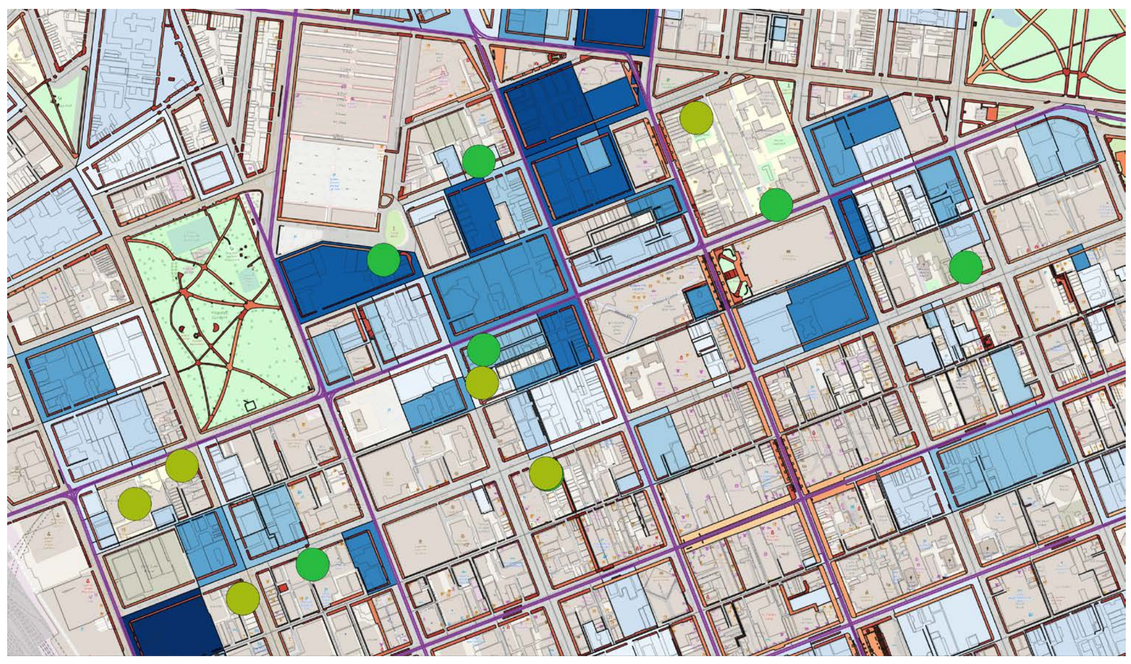
- Newly arrived international students concentrated in Melbourne's high-rise are exposed to hazards particular to Melbourne CBD's built environment
- Natural and man-made hazards exist, such as residential fires, pandemic diseases, heatwaves, storms, power outages, pandemic diseases.
- Hazards are often interlinked and trigger cascading effects i.e. bushfires and smoke combine with heatwaves, often followed by a rapid drop in temperature, heavy rain, powerful storms, lightning and flash floods. Both heatwaves and storms can lead to communication blackouts and power outages which can affect population including international students, as well as traffic, emergency services, etc.
- International students belong to culturally and language diverse communities. Language and cultural barriers, lack of a support network from family and friends, economic vulnerability, as well as not being familiar with the environment and emergency procedures are potential factors of vulnerability when exposed to hazards.



International student population density in high-rise and walkability analysis to health facilities: 250m, 500m, 700m and 1000m (10 minute walk for a healthy person under normal conditions).

Methodology

- Maps and spatial analysis: international student population density in high-rise, concentration of tertiary education institutions and walkability to health facilities
- Stakeholder interviews
- International student online surveys



International student population density in high-rise, tertiary education point data (TAFEs and universities), footpath width (pedestrian flow capacity)

ISSUES:

- Built form and density of the CBD play an important role in exposure to hazards and emergency response
- Lack of open space means less emergency meeting points for large number of residents
- High cost of housing leads to long-term overcrowding, which can affect fire safety and evacuation during an event
- Apartment typologies with little shared or communal space can contribute to social isolation. Knowing your neighbours and good communication are important factors for emergency response and evacuation
- Private residential buildings don't follow the same safety and emergency preparedness procedures as university managed Purpose Built Student Accommodation
- Cultural and language barriers
- Limited pedestrian flow capacity outside high-density high-rise buildings

Data attribution: Analysis was undertaken using data derived from ABS Population Census, CLUE, CoM Footpaths, Hospital Locations. National Education Facilities and OSM Streetnetwork datasets obtained via the Australian Urban Research Infrastructure Network (AURIN) Portal (Sinnott et al., 2014). The walkability analysis was undertaken using the Neighbourhood Generator tool, implemented in the Australian Urban Research Infrastructure Network (AURIN) Portal (Sinnott, et al., 2014)

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