Shaping Future Catastrophic Disasters

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INTRODUCTION

It is important to consider how future catastrophic disasters might be shaped by choices we make as a society to various political, economic and environmental alternatives along with technological advances. We have explored these influences through a series of short interviews with emergency management leaders and a review of relevant literature. The research seeks to provide some strategic foresight that may assist in the development of strategic plans to minimize the consequences of future risks.

VIEWS OF EMERGENCY MANAGEMENT LEADERS

Interviews with 32 emergency management leaders were undertaken to identify factors that may influence the severity of future catastrophic disasters.

When asked how they would define a catastrophic disaster, the most common response was that catastrophic disasters are those that overwhelm capability and capacity to respond and recover (n=21). Nine suggested that this meant exhausting of a state's capability and capacity, two leaders put this in the context of exhausting national capability and capacity and a further two leaders suggesting community capability and capacity. Impacts were described as widespread across political, economic, social, technological, legal and environmental (n=9); extreme (6); and prolonged (4). Four leaders suggested catastrophic events were beyond experience or what might normally occur, with one leader suggesting that they were beyond imagination.

Interviewees were then presented with a series of factors identified from the literature and asked to score each factor on a Likert scale of 1 to 5, where 1 is not influential and 5 very influential. Participants were asked to score the influence of factors on possible catastrophic disasters for both the current day and at year 2030.

The factors scored included economic and geo-political elements; domestic politics; growth in urban density; increasing urban growth in at-risk areas; rising population; community expectations; community preparedness; social cohesion; ageing population; increasing ethnic diversity; system interconnectedness; ageing infrastructure; terrorism; climate change; technology; cyber security; and artificial intelligence.
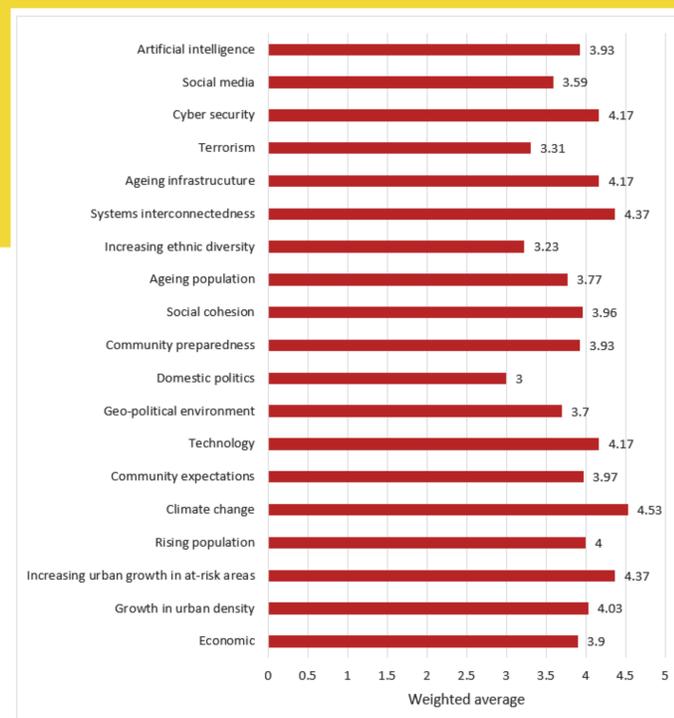
Survey results identified that emergency management leaders viewed climate change, systems interconnectedness, community preparedness and increasing growth in at-risk areas as the most influential factors shaping possible current day catastrophic disasters.

The most influential factors for 2030 were similar but included some additional factors. Overall the most influential factors by 2030 were seen to be climate change, rising urban density, increasing urban growth in at-risk areas, ageing infrastructure and technology (including cyber-security). The weighted-average scores for each factor is presented in Figure 1.

Factors that experienced the most significant change in their perceived influence between the current day and 2030 included artificial intelligence, geo-political environment, technology and ageing infrastructure. Factors viewed as most likely to remain similar in their influence were social media, community preparedness, domestic politics and community expectations.

DISCUSSION AND CONCLUSION

There is considerable uncertainty regarding future conditions that may shape future catastrophic disaster risks. This uncertainty arises, amongst other things, from the extreme difficulty of modelling changes in economic, societal and geopolitical conditions, the uncertain trajectory of climate change and its impact on extreme weather events, and the impact of advances in technology.

Notwithstanding these uncertainties, our study has identified some factors that may act to change the risk profile posed by natural perils in an Australian context.

When considering a future National Mitigation Framework there are significant opportunities to influence future risk profiles through the adoption of improved building codes and land-use planning; urban renewal to enhance resilience of existing development; climate change adaptation; incorporating risk-resilience considerations into infrastructure design; and research and adoption of technological advances to understand and manage risk.

The role and skills of emergency managers should also be considered as future changes emerge. More frequent natural hazard events may necessitate a greater focus on community-based capabilities to supplement those provided by traditional emergency management service delivery models. Emergency managers will need to be more collaborative and gain experience in engaging with communities and the business sector. Technological advances may necessitate greater skills in data analytics and cyber security to leverage new capabilities in particular regarding AI and autonomous systems.