How well prepared are Australian communities for natural disasters and fire emergencies?

Nicolopoulos and Hansen examine ABS statistics and published research to determine the level of preparedness for household emergencies.

Abstract

Results from the Australian Bureau of Statistics surveys on household and community preparedness for natural disasters and fire emergencies are presented within the context of published research into factors that influence preparedness. The results provide a better understanding of the characteristics of householders who prepare for natural disasters and fire emergencies, and how prepared householders are in the event of an emergency.

Introduction

Natural disasters such as bushfires, floods, storms and tropical cyclones occur regularly across the Australian continent. They cause more than $1.14 billion damage each year to homes, businesses and the nation's infrastructure, along with serious disruption to communities (Department of Transport and Regional Services, 2002). The Commonwealth Scientific and Industrial Research Organisation (CSIRO) submission to the Review of Natural Disaster Relief and Mitigation Arrangements points out that that more extreme weather events, and large-scale single events with severe cyclones, storms and floods, are expected in the future (Department of Transport and Regional Services, 2002). The CSIRO also points out the influence of the greenhouse effect on climatic conditions is expected to increase the severity and/or frequency of cyclones, storms, bushfires and floods in certain regions of the country. As well, CSIRO highlights the prospect of shifting hazard zones, including movement of the cyclone belt further south and flooding of rivers and coastal zones previously immune to flooding (Department of Transport and Regional Services, 2002). These changes could have dramatic effects, as the traditional strategies for dealing with severe events may not be able to cope with the new patterns of impact (Department of Transport and Regional Services, 2002).

In communities susceptible to experiencing adverse impacts from natural disasters and fire emergencies, the active pursuit of strategies to manage the associated risk is essential.

A primary aim of governments is to dramatically reduce death and injury, and the social, economic and environmental impacts of natural disasters and fire emergencies. In some cases a well established response system can limit the consequential damage and reduce the number of casualties from natural disasters and fire emergencies such as structure fires and bushfire. However, in the case of floods, coastal inundation, cyclones and storms, response measures are not sufficient to assist the economic and social recovery of communities. There is consensus within the emergency management community, governments and those in policy-making areas for an increased focus on proactive, effective and value for money emergency management measures. The aim of these emergency management measures is to increase community safety and reduce costs and impacts of natural disasters and emergencies. An increased focus on proactive emergency management measures would ensure better management of demand for the relevant services, to the greatest extent possible given the many variables that lead to emergencies. More recently the focus of disaster management has shifted towards disaster risk assessments, community preparedness, disaster mitigation measures and, in some jurisdictions, recovery management.

Being prepared reduces the risk of injury and damage within a household, and facilitates a capability for coping with the temporary disruption associated with hazard activity.

About the ABS surveys

The Australian Bureau of Statistics (ABS) survey on *Household Preparedness for Emergencies, October 2007* was conducted throughout New South Wales (NSW), Victoria (Vic), Queensland (Qld) and the Australian Capital Territory (ACT). The ABS survey on *Community Preparedness for Emergencies, October 2007* was run

throughout Western Australia (WA). Both surveys were conducted during the two weeks commencing Monday 8 October 2007. As with the *Household Preparedness for Emergencies, October 2007* survey, the *Community Preparedness for Emergencies, October 2007* survey was conducted as a supplement to the ABS Monthly Population Survey (MPS).

The *Household Preparedness for Emergencies, October 2007* survey examined the steps households had taken in preparing for emergencies. These steps included safety precautions such as installing smoke alarms, ensuring emergency phone numbers were accessible and having an emergency plan. Where households had experienced an emergency in the last two years, the survey investigated how they responded during the emergency and whether any changes were made to ensure better preparedness in the future.

The *Community Preparedness for Emergencies, October 2007* survey included topics on: emergency action plans such as pre-arranged exit plans from residences and alternative accommodation arrangements in event of an emergency; transportation needs during evacuation; householders who have caring responsibilities for non-household members; members of households who do not understand English; and the availability of stored drinking water and emergency food stores.

For both surveys, information was collected by either face-to-face or telephone interview from one responsible adult per household. The respondent answered questions on behalf of the household.

Key survey findings

Some selected highlights of the *Household Preparedness for Emergencies, October 2007* survey (Tables 1, 2 and 4) are:

- In the two years prior to the survey, the ACT had the highest percentage of households (18%) who had experienced an emergency followed by NSW (12%), Qld (10%) and Vic. (8%).
- Around one in five households who experienced an emergency contacted emergency services (Vic. 24%, NSW 21%, ACT 17% and Qld 15%).
- Approximately half of Qld, NSW and Vic. households and over a third of ACT households who experienced an emergency implemented changes for better emergency preparedness.
- Smoke alarms were the most common safety precaution. Over 90% of homes had a smoke alarm installed (Vic. 97%, NSW 94%, Qld 94% and the ACT 90%).
- A written or rehearsed emergency plan was the least common safety precaution implemented by households in Vic. (15%), ACT (15%) and NSW (13%). In Qld the two least implemented precautions in homes were fire blankets (19%) and a written or rehearsed emergency plan (20%).
- One in three households did not keep emergency phone numbers in a location for ease of use (Qld 39%, ACT 38%, NSW 36% and Vic. 30%).
- Nearly one-fifth of all households in NSW, Vic., Qld and the ACT had at least one household member who would have difficulties evacuating the home without help in an emergency.

Table 1. Presence of selected safety precautions.

		NSW			VIC			QLD			ACT		
		Capital city	Balance of state	Total	Capital city	Balance of state	Total	Capital city	Balance of state	Total	Capital city	Balance of state	Total
Smoke alarms/ detectors	%	93.3	95.4	94.1	97.1	97.3	97.2	93.6	93.9	93.8	na	na	89.7
Tested smoke alarms/detectors	%	73.2	79.7	75.7	80.6	86.1	82.2	77.7	79.7	78.8	na	na	69.6
Fire blankets	%	17.1	20.5	18.4	21.1	23.5	21.8	17.3	19.6	18.5	na	na	19.4
Fire extinguishers	%	24.5	31.8	27.4	29.8	32.3	30.5	31.5	33.0	32.3	na	na	30.3
Electrical safety switches or circuit breakers	%	75.7	76.2	75.9	75.6	73.3	75.0	88.0	90.8	89.5	na	na	78.5
Written or rehearsed emergency plan	%	11.2	16.6	13.3	14.0	17.9	15.1	16.8	22.2	19.7	na	na	14.7
Portable first aid kit	%	53.6	62.7	57.1	53.9	60.4	55.8	61.5	64.0	62.8	na	na	59.0
First aid qualification	%	28.5	34.2	30.7	28.1	32.6	29.4	35.2	34.8	35.0	na	na	31.0
Total households	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	na	na	100.0

Table 2. Type of most recent emergency by whether changes made as a result.

		NSW		VIC		QLD		ACT	
		Changes made as a result of an emergency		Changes made as a result of an emergency		Changes made as a result of an emergency		Changes made as a result of an emergency	
		Yes	No	Yes	No	Yes	No	Yes	No
House fire	%	49.9	50.1	55.7	44.3	56.1	43.9	44.5	55.5
Bushfire	%	55.9	44.1	50.6	49.4	50.7	49.3	np	np
Storm, wind or hail	%	40.8	59.2	36.6	63.4	49.0	51.0	32.8	67.2
Flood	%	56.9	43.1	62.8	37.2	67.3	32.7	43.7	56.3
Other emergency	%	57.2	42.8	42.5	57.5	63.7	36.3	np	np
Total households that had an emergency	%	45.6	54.4	46.4	53.6	52.5	47.5	37.1	62.9

Table 4. Emergency plan by whether household has a perceived risk and difficulty evacuating in an emergency.

		Perceived risk of bushfire	Perceived risk of flooding	At least one household member would need help	No household member(s) would need help
NSW					
Has emergency plan, written or rehearsed	%	23.3	19.4	18.0	12.3
Has emergency plan, but not written or rehearsed	%	17.2	17.3	10.7	14.0
Has no emergency plan	%	59.5	63.3	71.3	73.7
Total households	%	100.0	100.0	100.0	100.0
VIC					
Has emergency plan, written or rehearsed	%	33.7	18.2	19.7	14.2
Has emergency plan, but not written or rehearsed	%	19.9	11.6	10.4	14.7
Has no emergency plan	%	46.4	70.2	69.9	71.2
Total households	%	100.0	100.0	100.0	100.0
QLD					
Has emergency plan, written or rehearsed	%	23.8	24.3	23.7	18.8
Has emergency plan, but not written or rehearsed	%	17.0	17.4	13.5	19.1
Has no emergency plan	%	59.2	58.3	62.7	62.1
Total households	%	100.0	100.0	100.0	100.0
ACT					
Has emergency plan, written or rehearsed	%	18.0	14.5	18.8	13.9
Has emergency plan, but not written or rehearsed	%	17.2	14.8	11.3	16.1
Has no emergency plan	%	64.8	70.8	69.9	70.1
Total households	%	100.0	100.0	100.0	100.0

Some selected findings from the *Community Preparedness for Emergencies, October 2007* survey (Table 3) include:

- almost 8% of WA households have experienced a major emergency; one third of these said they would prefer to remain with their home in the event of another emergency. Of the WA households that had never experienced an emergency, this proportion declined to one in ten;
- one in ten WA households have an agreed place to meet in the event of becoming separated during a major emergency;
- in households in areas outside of Perth 16% had someone with a role either in the emergency services, medical profession or defence force - that may be called on to assist in an emergency - compared to 7% of Perth households;
- half of WA households had someone with a first aid qualification; and
- nearly a third (30%) of all WA households lacked stored drinking water.
- seven days' worth of food (not needing refrigeration or cooking) was available in 30% of Perth households and in 42% of households in areas outside of Perth;
- the majority of WA households had access to a phone: 90% had at least one mobile and 89% had a landline;
- almost one third (32%) of WA households did not have internet access; this was highest among people living alone (58%);
- nearly a quarter of WA households reported that they would need transportation assistance if they were required to evacuate; and
- in a major emergency (such as a bushfire, flood or cyclone) one in five WA households would need some form of assistance to evacuate their homes. The most common reason for this was that the household included people with limited mobility - such as young children or the elderly,

Table 3. Community preparedness for emergencies, Western Australia.

		Perth	Balance of state	Total
Exit plan from dwelling	%	44.9	51.5	46.5
Agreed meeting place	%	10.2	11.3	10.5
No stored drinking water	%	33.0	21.2	30.1
No food that does not need cooking or refrigeration	%	8.3	3.8	7.2
No portable radio with working batteries	%	47.5	48.4	47.7
No mobile phones	%	9.2	12.3	10.0
No landline telephone connection	%	9.8	13.4	10.7
No internet access	%	30.6	37.6	32.3
First aid qualification	%	50.3	54.7	51.4
Keeps medication together	%	39.4	43.8	40.5
Keep important documents together	%	81.1	83.7	81.8
No torch for ready use	%	12.5	6.5	11.0

Discussion

The results suggest that legislation, regulations and building codes significantly influence the level of household preparedness. Smoke alarms and electrical safety switches or circuit breakers were reported as the most common safety precaution measures implemented by households. Non mandatory precautions such as written and rehearsed emergency plan and fire blankets were the least common safety precaution implemented by households. The *Household Preparedness for Emergencies, October 2007* survey results showed that:

- the most common safety precaution that households had taken was to have smoke alarms or detectors installed in their homes. In each jurisdiction, 90% or more of homes had a smoke alarm installed (Vic. 97%, NSW 94%, Qld 94% and the ACT 90%);
- electrical safety switches or circuit breakers were the second most common safety precaution. These were present in over three quarters of homes in the ACT (79%), NSW (76%) and Vic. (75%) and in 90% of homes in Qld; and
- a written or rehearsed emergency plan was the least common safety precaution implemented by households in Vic. (15%), ACT (15%) and NSW

(13%). In Qld the two least implemented precautions were fire blankets (19%) and a written or rehearsed emergency plan (20%).

Numerous studies have identified socio-economic and demographic factors associated with levels of household preparedness for emergencies and adaptive action, and systematic differences among population segments with respect to the likelihood of adopting preparedness measures and precautions (Dooley et al., 1992; Russell et al., 1995; Tierney et al., 2001; Paton & Burgett, 2005). Correlations of socio-economic and demographic variables with levels of preparedness and adoption of measures provide useful information. This is because they allow emergency managers to target populations segments that are least predisposed to adopt preparedness measures. The ABS results indicate that levels of preparedness are associated with age, home ownership, household type, and the ability to understand English.

Age was associated with the implementation of safety precautions and preparedness measures. In WA households with at least one person aged 60 years and over, 57% had an exit plan compared to 42% of households with at least one person under 15 years age. However, 64% of households with at least one person under 15 years had a first aid qualification, compared to 29% households with at least one person aged 60 years and over.

Home ownership was a factor associated with a household having the safety precautions to extinguish house fires, compared to homes that were rented. In particular, NSW, Vic., Qld and ACT households who owned or were paying off their home were approximately twice as likely to have fire blankets and fire extinguishers. This is when compared to NSW, Vic., Qld and ACT households who rented. In WA home ownership also increased the likelihood of a household being better prepared for an emergency, compared to homes that were rented. A greater proportion of WA households living in dwellings that were fully owned or being purchased had an exit plan, an agreed meeting place, first aid qualification, kept medication and important documents together so they could be easily taken in an event of an emergency and had stored drinking water of 20 litres or more compared with WA households who rented. They also had higher levels of access to communication.

Household type was associated with the implementation of safety precautions and preparedness measures. The results from the *Household Preparedness for Emergencies Survey, October 2007* survey suggest that couples with children were more likely than other household types to implement safety precautions and preparedness. Households consisting of a person living alone were generally less likely than other household types to implement safety precautions and preparedness measures. In Qld, NSW and Vic. households consisting of a couple with children were more likely than other household types to have a household member with a first aid qualification (Qld 53%, NSW 45%, Vic. 43%). These households were around 3 times more likely than lone person households to have a first aid qualification (16% in Qld, 15% in both NSW and Vic.). In Qld and Vic. portable first aid kits were most commonly found in couple with children households (74% and 66% respectively). In NSW couple with children households (66%) and couple households (64%) were the household types most likely to have portable first aid kits.

However, the WA results suggest that levels of preparedness for emergencies were not necessarily associated with a particular household type. Although the WA survey also showed that two-thirds (68%) of the couple with children households had someone with a first aid qualification compared to 49% of lone parent with children households having a first aid qualification, having an exit plan was highest among person living alone households (62%). Of the remaining WA household types, the proportion with an exit plan ranged from 39% for couple with children households to 43% for couple only households.

Fluency in the English language was associated with the implementation of safety precautions and preparedness measures in WA. In WA households where all members understood English, 47% had an exit plan, 93% had at least one day's supply of emergency food, 52% had a first aid qualification and 41% kept medications together. In contrast, among WA households where at least one member did not understand English, the proportions were 36% had an exit plan, 77% had at least one day's supply of emergency food, 28% had a first aid qualification and 38% kept medicines together.

However a review of research by Lindell & Perry (2000) has concluded that the correlations of demographic variables with the adoption of preparedness measures and precautions are very small. Moreover, a number of researchers argue that information on demographic variables is not very useful to those interested in trying to increase household preparedness, because demographic attributes are difficult or impossible to alter (Lindell & Perry, 2000; Paton, 2006). Furthermore, Paton argues that focus on these factors may conceal the dynamic processes that underpin how people, irrespective of their specific demographic make-up, make decisions about whether to prepare or not. Russell et al. (1995) acknowledged socio-economic and demographic factors associated with levels of preparedness, but argue that a different set of factors influence preparedness in the pre and post hazard environments. A close examination of socio-economic, psychological, and situational variables that influence the propensity to prepare for disasters revealed a tendency for socio-economic factors to be significant

in the pre-impact period, and for socio-economic, psychological and situational variables to influence post impact preparedness.

The results for both surveys show that the majority of safety precautions and preparedness measures were taken by households outside capital cities. In NSW and Vic. the biggest difference was in the proportion of homes with a portable first aid kit. While in both Melbourne and Sydney 54% of homes had a portable first aid kit, areas outside the capital cities for both jurisdictions reported higher proportions of homes with a portable first aid kit for NSW (63%) and Vic. (60%). In WA, 52% of households outside Perth had a plan on how to get out of their dwelling if there was an evacuation, and 11% had an agreed meeting place compared to the 45% and 10% respectively for Perth. The WA survey results also indicate that the areas outside Perth have a higher proportion of households with a first aid qualification, and a higher proportion of households that keep medication and important documents together so they can be easily taken in an event of an emergency.

There could be a number of reasons for the differences in the levels of safety precautions and preparedness measures between capital cities and areas outside of capital cities. Larson & Dearmont (2002) argue that strong social cohesion and participation in community activities are features of agricultural communities and long term residents, and that these characteristics may influence preparedness. McGee & Russell (2003) support this argument. Their research showed residents involved in agriculture and with long standing association with the area appeared better prepared than those on small properties and newcomers. They argue that social networks, previous experiences with wildfires and grassfires, and involvement with the local fire brigade influence preparedness of long term residents of areas outside of capital cities.

Another explanation for the geographic differences in the uptake of safety precautions and preparedness levels could relate to households' experience of emergencies. A number of studies point to a positive relationship between experience with actual events and preparedness (Lindell & Prater, 2000; Russell et al., 1995). The results from *Household Preparedness for Emergencies Survey, October 2007* suggest households in areas outside capital cities experienced a higher proportion of emergencies compared to households in capital cities.

The survey results indicate that households who had experienced an emergency had higher levels of preparedness, and implemented safety precautions and changes for better preparedness. Approximately half of Qld, NSW and Vic. households who experienced emergencies implemented changes for improved safety and better preparedness. Over a third of ACT households who experienced an emergency (37%) made changes. Changes implemented include installing and regularly testing smoke alarms, implementing an emergency plan and putting emergency phone numbers in an easily accessible place. Among households in WA that had experienced a major emergency, when asked about a future emergency, 59% had an exit plan, 33% were unwilling to evacuate their home, 23% had a household member who may be called upon to assist in an emergency and 18% had an agreed place to meet. In contrast, among households that had not experienced a major emergency, the proportions were 45%, 10%, 8% and 10% respectively.

A number of studies confirm the trend that levels of preparedness peak immediately or shortly after a hazard event (Russell et al., 1995; Paton & Cittrell, Lindell & Whitney, 2000). Russell et al.'s (1995) study on preparedness and hazard mitigation actions before and after two earthquakes also revealed residents in the earthquake affected areas increased their level of preparedness. Survival activities such as storing water and food, having a torch, radio and first aid kit and acquiring first aid training improved, but progress in home hazard mitigation and family earthquake planning was generally constant and low.

Importantly, however, the ABS survey results suggest that a household's experience of an emergency is more of an influencing factor in increasing the likelihood of residents to install safety precautions and prepare for emergencies than a household's perception of risk of an emergency occurring. Of the households with a perceived risk of bushfire, a majority of the surveyed jurisdictions, except Vic., did not have an emergency plan. In Vic., 54% of households who perceived themselves at risk of bushfire had an emergency plan (compared to 41% in both NSW and Qld and 35% in the ACT). Of the households with a perceived risk of flooding, a majority of the surveyed jurisdictions did not have an emergency plan. In Qld, 42% of households who perceived themselves at risk of flooding had an emergency plan (compared to 37% in NSW, Vic. 30% and 29% in the ACT). A number of studies indicate that many residents living in hazard prone areas fail to personalise the risk and therefore have low levels of preparedness. These researchers have found that people who live in hazard prone areas are likely to take action, but only if they see the event as controllable, and tend to deny and minimise the seriousness of the risk when they believe that little can be done to reduce the danger (Turner et al. 1986; Duval & Mulilis, 1999; Lehman & Taylor, 1988; Heller et al., 2005). Other studies (e.g., Paton et al., 2001; Whitehead et al., 2001) found the opposite, with direct experience predicting reduced preparedness. One explanation for this has been framed in terms of the "gambler's fallacy", in that if people experience one event they believe they are less likely to experience a future event. They are, consequently, less inclined to prepare.

Conclusion

The results of ABS surveys have implications for emergency management practitioners, and reinforce that a one-size fits all approach to developing and delivering preparedness programs is not appropriate. The what, how, when, where and why pre hazard preparedness predictors may be different from post preparedness predictors. There is a need to tailor preparedness programs to targeted communities. The data suggests a window of opportunity post hazard in which focused initiatives are likely to be effective.

Bibliography

Australian Bureau of Statistics:

- *Community Preparedness for Emergencies, October 2007* (cat. no. 4818.5).
- *Household Preparedness for Emergencies: NSW, Vic., Qld and ACT, October 2007* (cat no: 4818.0.55.001).

COAG. (2004) National Inquiry on Bushfire Mitigation and Management. Canberra, ACT., Australia.

Department of Transport and Regional Services. (2002) Natural Disasters in Australia: Reforming Mitigation, Relief and Recovery Arrangements. Canberra, ACT., Australia.

Dooley, D., Catalano, R., Mishra, S., & Serxner, S. (1992). Earthquake preparedness: Predictors in a community survey. *Journal of Applied Social Psychology*, 22, 451- 470.

Duval, T.S. and Mulilis, J.P. (1999) A person-relative-to-event (PrE) approach to negative threat appeals and earthquake preparation: A field study. *Journal of Applied Social Psychology*, 29, 495-516.

Heller, K., Alexander, D.B., Gatz, M., Knight, B.G. and Rose, T. (2005) Social and Personal Factors as Predictors of Earthquake Preparation: the Role of Support Provision, Network Discussion, Negative Affect, Age and Education. *Journal of Applied Social Psychology* 25, 32, 2, 399-422.

Lehman, D.R. and Taylor, S.E. (1987) Date with an earthquake: Coping with a probable, unpredictable disaster. *Personality and Social Psychology Bulletin*, 13, 546-555.

Lindell, M.K. and Perry, R.W. (2000) Household adjustment to earthquake hazard: A review of research. *Environment and Behavior* 32 (4), 461-501.

Lindell, M.K. and Prater, C.S. (2000) Household adoption of seismic hazard adjustments: A comparison of residents in two states. International Journal of Mass *Emergencies and Disasters* 18 (2), 317-338.

Lindell, M.K. and Whitnesy, D.J. (2000) Correlates of Household Seismic Hazard Adjustment Adoption. *Risk Analysis* 20 (1), 13-25.

Lileti, D.S. (1999) *Disaster by Design: A Reassessment of National Hazards in the United States*. Joseph Henry Press, Washington.

McGee, T.K. and Russell, S. (2003) It's just a natural way of Life. An Investigation of Wildfire Preparedness in Rural Australia. *Environmental Hazards* 5, 1-12.

McLeod, R. (2003) *Inquiry into the operational response to the January 2003 Canberra Bushfires in the ACT. Canberra, ACT.*, Australia: Department of Urban Services.

Paton, D. (2003) Disaster Preparedness: A social-cognitive perspective. *Disaster Prevention and Management*, 12, 210-216.

Paton, D. (2006) *Promoting Household and Community Preparedness for Bushfires*: A review of issues that inform the development and delivery of risk communication strategies. Bushfire Cooperative Research Centre.

Paton & Burgett, (2005,October) Living with bushfire risk: Residents accounts of their bushfire preparedness behaviour. AFAC/ Bushfire CRC Conference, Auckland, New Zealand.

Russell, L.A., Goltz, J.D., and Bourque, L.B. (1995) Preparedness and hazard mitigation actions before and after two earthquakes. *Environment and Behavior* 27(6), 744-770.

Tierney, K.J., Lindell, M.K., & Perry, R.W. (2001) Facing the unexpected: Disaster preparedness in the United States. Joseph Henry Press: Washington.

Turner, R.H., Nigg, J.M. and Paz, D. (1986) *Waiting for disasters: Earthquake watch in California*. Berkley: University of California Press.

Weinstein, N.D. (1989) Effects of personal experience on self-protective behaviour. *Psychological Bulletin* 105, 31-50.

Whitehead, J.C., Edwards, B., Van Willigen, M., Maiolo, J.R., and Wilson, K., and Smith, K.T. (2000) Heading for higher ground: Factors affecting real and hypothetical hurricane evacuation behaviour. *Environmental Hazards* 2, 133-142.

About the authors

Nick Nicolopoulos, is Manager Strategic Information Services, NSW Fire Brigades (NSWFB). Strategic Information Services, NSWFB is responsible for ensuring the NSWFB has strategic and performance information to facilitate strategy, planning and policy development, and to support informed decision making for improved service delivery and organisational performance. Email: nick.nicolopoulos@fire.nsw.gov.au

Emily Hansen, works in the Statistical Co-ordination Branch, ABS NSW. The Statistical Coordination Branch, NSW Office of the Australian Bureau of Statistics is responsible for providing a range of statistical services to meet mostly NSW Government's statistical needs as well as promoting better statistical information management practices in the emergency management sector. Email: e.hansen@abs.gov.au