Disaster reporting may encourage people to live in riskier places

October 9 2015, by Ben Newell

The hot weather over the October long weekend brings a reminder that Australia's "disaster season" is fast approaching.

The summer brings bushfires, cyclones and floods to the forefront of our minds – never more so than in an El Niño year with temperatures predicted to soar.

The increase in the frequency and the impacts of natural disasters over recent years has been well documented and is at least partly attributable to changes in our climate.

Climate change is not going away, so it is highly likely that this rising tide of natural disasters will continue .

Communicating risk

This increasing prevalence presents a challenge for risk communication. How should the public be informed about the potential risk of disasters?

A common response is to assume that more information is better, and that providing summaries of risk levels will lead people to reduce their exposure to relevant risks.

Data from field studies on non-climate-related disasters, however, point to the opposite effect.

Media-released information summaries concerning catastrophic events can have the paradoxical effect of decreasing people's overall estimates of risk.

For example, following the Loma Prieta earthquake in northern California, an analysis of house sales suggested that new buyers reduced their assessment of risk as information concerning the location and rate of earthquakes was publicised.

A similar pattern was found following the Tohoku tsunami of 2011, with unaffected residents exhibiting lowered risk perception about the heights of waves warranting evacuation.

Testing risky choices in the lab

In a paper published in *Nature Climate Change* today, my colleagues and I attempt to shed light on this paradoxical effect of summaries of risk.

We created a microworld with three villages, each associated with different levels of disaster risk.

On each trial of the 400-trial experiment, people (mostly university students) had to choose where to live. They earned points on each trial, but lost lots of points when a disaster struck.

One village was safe – a disaster never occurred – but people didn't get many points for choosing to live there. A second village offered more points if no disaster occurred but rare catastrophes occurred (10 in 100 rounds), which affected a small proportion of the dwellings in the village.

A third village had even rarer catastrophes (one in 100) but the damage was more widespread, thus making the overall risk of a disaster equal to

the second village.

These risks were all known to participants before they made their choices. What differed was how participants learned about a disaster occurring.

One group only found out if their own dwelling was hit, a second group found out if any of the dwellings in their village was hit, and a third group found out if any dwellings in either risky village were affected.

These three groups were designed to mimic information people could get in real life from personal experience, local sources, or from afar via media or authorities.

The key result was that the third group - people given the most information about recently experienced or avoided disasters – took more risks and were more likely to choose regions prone to disasters.

Getting full information about all the villages, as is possible in real life through media and authorities, appeared to reinforce for people that "most of the time nothing bad happens in the risky areas".

The increased tolerance for risk is akin to a person who is willing to trade daily access to the ocean with the rare risk of flooding from an abnormally high tide.

Implications for risk communication

Our results suggest that supplementing personal experience with information about the rare occurrence of disasters (storms, floods) in different regions may paradoxically reduce people's perception of risk and increase the appeal of disaster-prone regions.

This result implies that disaster risk communication needs to emphasise the increasing prevalence of disasters.

Statements often seen in the media such as a "one-in-50 or one-in-100-year" event could lead people to assume, incorrectly, that there won't be another event for 49 or 99 years. This perception is compounded by their typical daily experience of nothing bad happening.

Risk messages need instead to focus on the accumulation of events and the increase in their associated risks across time. For example, people should be reminded how many major floods or severe fire days occurred between specific points in time – such as "four events between 1900 and 1949", or "ten events between 1950 and 2000".

Of course, this conclusion is based on the specific conditions in our modelled microworld, so we need to be cautious in generalising too far. Nonetheless, the research points towards ways to understand the sometimes paradoxical reaction to disaster risk.

More information: Ben R. Newell et al. "Rare disaster information can increase risk-taking," *Nature Climate Change* (2015). DOI: 10.1038/nclimate2822

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