

# Review of: "How Social Infrastructure Saves Lives: A Quantitative Analysis of Japan's 3/11 Disasters"

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**Potential competing interests:** No potential competing interests to declare.

## Comments on How Social Infrastructure Saves Lives by Daniel Aldritch

Overall, I commend the author for devoting time and effort to the study of social infrastructures during disasters. This is an underappreciated and understudied topic despite its importance to improved resilience and reduced adverse impacts on people.

Having said this, I am somewhat disappointed that investments in civil (or gray) infrastructure or social infrastructures (as defined by the author) are treated more as a binary decision problem rather than seeking a balance between the two that will both reduce physical damage from the event and protect people during and following the event.

## Specific Comments

The first sentence in the Introduction is presented as fact but is not substantiated by data or citation. What constitutes over- and underinvestment?

Later in this first paragraph, *kōminkan* is introduced but not defined. First use is the time to do this. Also, how *dokominkan* differ from community centers? I looked up the meaning of *kominkan* but couldn't really see a real difference.

The second paragraph is a bit too pat in describing how physical infrastructure is used to reduce risks from natural hazards, terrorism, and crime. Hard infrastructure does play a role but is not the only component of risk management. All of these issues are best addressed through a mix of infrastructure, governance, and people.

In paragraph 3, I think especially vulnerable populations should include the poor and medically compromised in addition to the elderly. Often, people fall into all three categories.

In the 3<sup>rd</sup> paragraph under "Defining Infrastructure," it is stated that "Social infrastructure provides the foundation on which civic engagement, trust, information sharing, and social ties grow. This is true, and if people know that certain buildings and places such as community centers, libraries, and religious shrines are so located that they can provide refuge from a tsunami or other extreme event, this is useful and potentially life-saving information. However, it is not sufficient that a library or community center exists, it also must be so located as to be safe during the event and people must be aware of this. In Klinenberg's study of the Chicago heat wave, he noted that cooling centers did exist but that many of the deceased did not know this and were so disconnected from society that no one looked in on them to make sure they were

safe. There is a lot going on here that is not fully addressed by social infrastructure alone.

This leads to a broader question which I cannot answer but perhaps the data exists to address it. That is, the author found a good correlation between the presence and density of social infrastructure and reduced mortality among the elderly (the vulnerable population). However, if social infrastructure is a consequence of greater community wealth, or a more knowledgeable and involved citizenry, or other factors, perhaps it is the underlying resilience of the people that actually contributed to the reduced mortality. Some discussion around this issue would be helpful.

On page 7, the final paragraph really needs to be rethought. The relationship between seawall height and mortality is not linear but arguably a step function. If increasing the height of the seawall by one meter does not meaningfully interdict a tsunami, it has little apparent value (does it really matter if the seawall is overtopped by 4 meters vs. 5 meters?). There were seawalls in place in 2011 but they were too low. Had they been designed to address what actually occurred, how would the additional cost have affected mortality and could these deaths been prevented by a similar (or lower) level of investment in social infrastructure?

Under Conclusions on page 9, in the third paragraph, second line, the author calls out “mosque-based reconciliation” as a counter terrorism strategy. Whether or not this would be helpful, is Islamic terrorism the only threat? It seems that much of the US experience of late does not reflect this.

The final sentence in this paragraph suggests again that there is much to tease out from an extensive data collection effort. I would encourage the author to dig a bit deeper and perhaps formulate some additional questions which, if answered, could provide additional illumination on a complex issue.

Two final thoughts.

First, does the author have any thoughts on the degree to which the homogeneity of the Japanese population could have impacted the results? Are social bonds tighter or looser than in more diverse societies? Kiyoshi Kurokawa, chairman of the Commission investigating Fukushima Daiichi, said the crisis was “Made in Japan” resulting from the “ingrained conventions of Japanese culture.” The nature of Japanese society and its reluctance to question authority has probably enabled the nuclear industry both to perpetuate a myth of absolute safety concerning nuclear power and stifle public scrutiny and discussion of safety and risk from earthquakes and tsunamis.

Second, I’m not sure that this paper is the optimal vehicle for making a broader case for the value of social infrastructure as a deterrent to crime and terrorism. Although I’m in basic agreement with these points, their inclusion in this paper seems to detract from its main points.