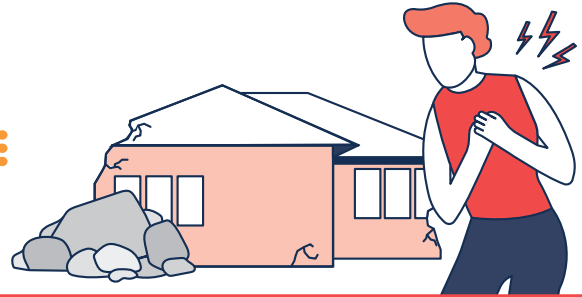


## Research Findings Brief

HEALTHIER  
LIVES

He Oranga Hauora

National  
**SCIENCE**  
Challenges



# Risk of cardiovascular disease associated with living in areas of greater earthquake housing damage

## Key points

- This study combined and analysed data from different sources to examine the impact of earthquake housing damage on cardiovascular disease (CVD)-related hospital admissions and deaths in the five years following the Canterbury earthquakes of 2010 and 2011.
- There are significant links between the level of earthquake damage to property in an area and the number of CVD-related hospitalisations and deaths among residents in that area.
- This highlights the need to consider CVD prevention in planning and policy around natural disaster preparedness, resilience and recovery.

## LEAD RESEARCHERS

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## PROJECT TIMELINE

February 2016 – June 2017

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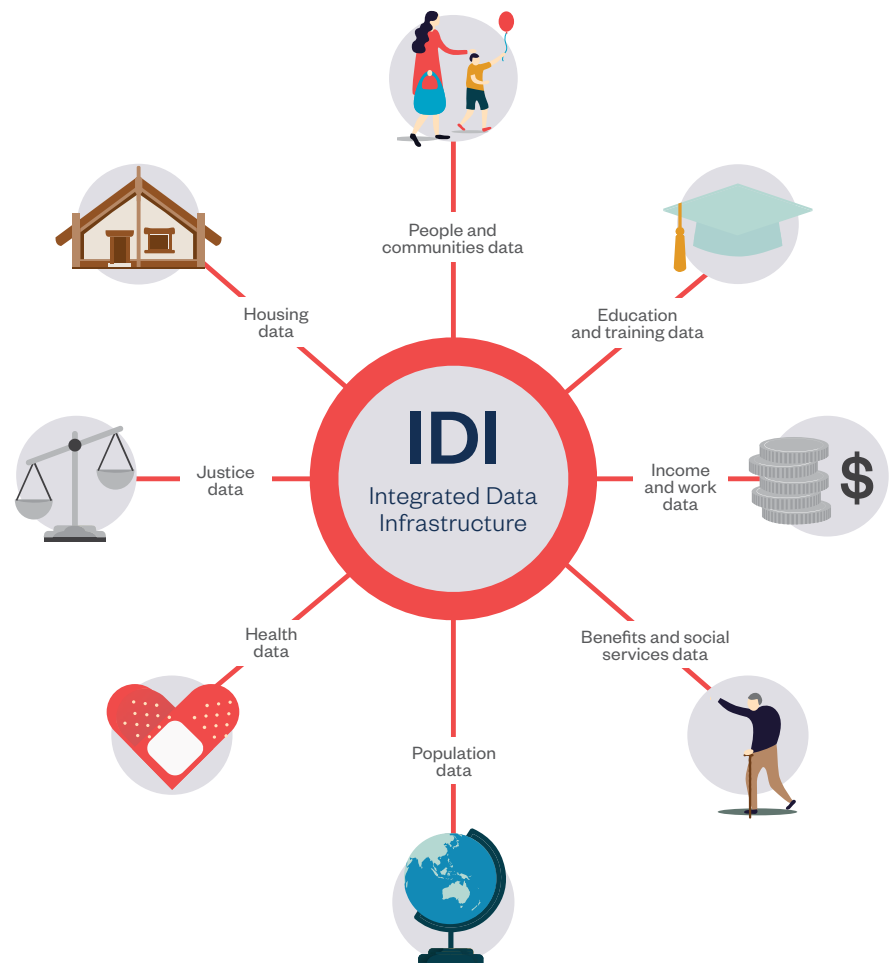


## Why is this issue important?

CVD rates are known to increase immediately after a severe earthquake. But less is known about the magnitude of this increase over time in relation to the amount of housing damage.

## What did we do?

- We assessed the effect of area housing damage from a major earthquake sequence in Christchurch in 2010 and 2011, on CVD-related hospital admissions and deaths.
- We did this by linking datasets: Earthquake Commission residential building claims data, and administrative datasets from the Statistics New Zealand Integrated Data Infrastructure.
- We calculated the rates of CVD-related hospital admissions (including myocardial infarction) and CVD-related mortality and rate ratios (adjusted for age, sex, ethnicity, small-area deprivation index, and personal income) by level of housing damage in the first year, and the 4 subsequent years after the earthquake.



## What did we find?

- In the first year post-earthquake, people living in the most-damaged areas in Christchurch had around 10 per cent more cardiovascular hospitalisations compared to those living in the least damaged areas.
- Residents of the most-damaged areas were 22 per cent more likely to be admitted to hospitals for heart attacks than those in the least-damaged areas.
- Middle-aged and older residents of the most-damaged areas suffered 25 per cent more cardiovascular-related deaths than those with the least damage.
- There was no evidence that these increased CVD rates persisted in the second to fifth years post-earthquake.

## What did we produce?

- Earthquake Commission residential building claims data was linked to residential information at the time of the 4 September 2010 earthquake, and we produced tables and code tracking CVD events after the Christchurch earthquake, which is available within the Statistics NZ Integrated Data Infrastructure.

## Publication

- **Living in areas with different levels of earthquake damage and risk of cardiovascular disease: a cohort-linkage study**  
*The Lancet Planetary Health* 2017; 1:6 e242–e253. doi: 10.1016/S2542-5196(17)30101-8

## Why does it matter?

- The cardiovascular impact of the Canterbury earthquakes is a reminder of the broader health impact of a natural disaster.
- These findings highlight the importance of considering cardiovascular prevention in natural disaster preparedness, resilience and recovery.
- This paper is one of the first examples of an international publication demonstrating the value of Statistics New Zealand's Integrated Data Infrastructure and its linked administrative and survey data for health research.
- The findings reveal the need for policy responses that might include wider measures, including early wellbeing interventions within the first year to address post-earthquake stress.

## Next steps

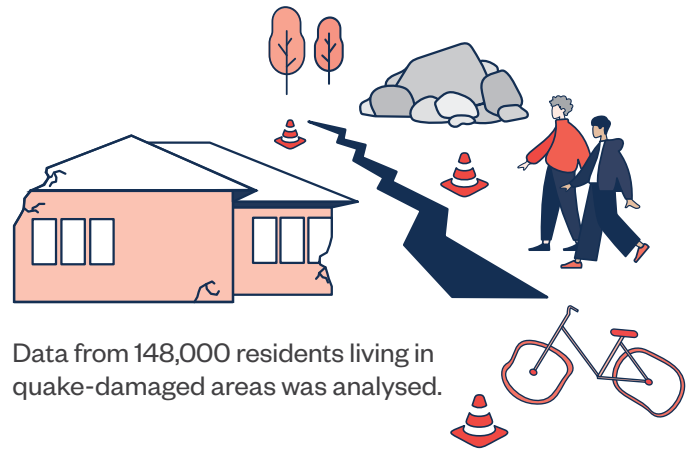
Planning for recovery after natural disasters that result in significant housing damage should address increased risk of cardiovascular events through:

- measures to minimise residential building damage before a disaster occurs;
- early interventions to reduce stress, and enhanced provision of cardiac prevention and treatment services in the first year after the disaster.



## Using big data

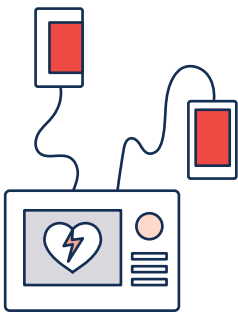
'Big data' was used in this study to investigate the effect of housing damage from the Christchurch earthquakes on CVD-related hospital admissions and deaths.



The study linked Earthquake Commission residential building claims data and administrative datasets from the Statistics New Zealand Integrated Data Infrastructure.

Data from 148,000 residents living in quake-damaged areas was analysed.

## In the first year post-earthquake, people living in the most-damaged areas in Christchurch experienced:



# 22%

greater likelihood of being admitted to hospital for heart attacks than those in the least damaged areas.

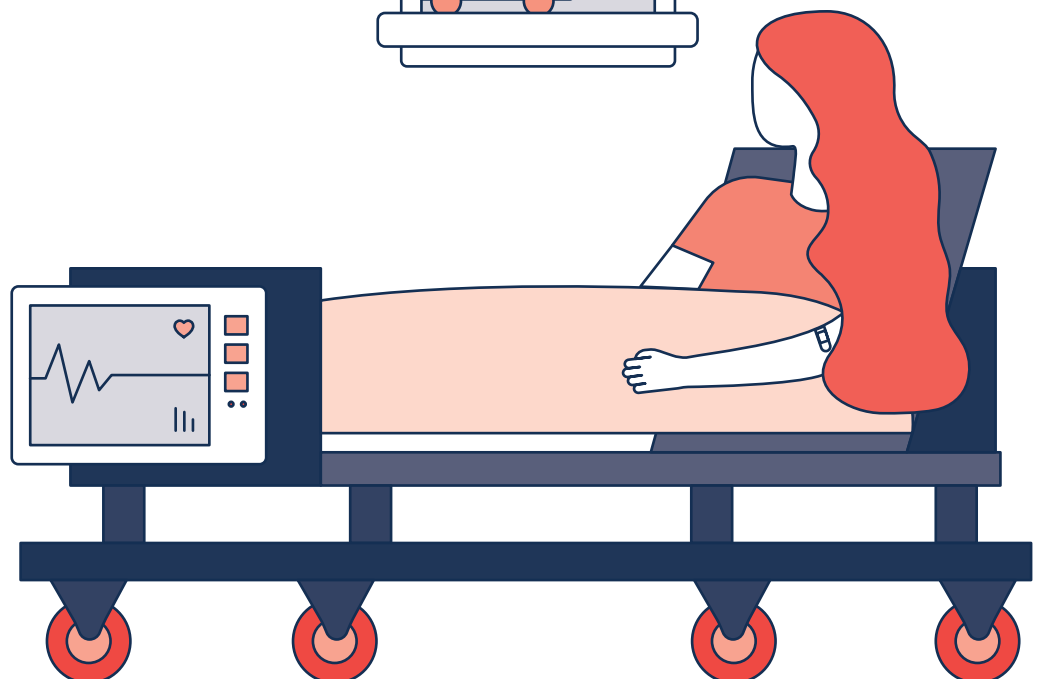
# 10%

more cardiovascular hospitalisations than those in the least damaged areas.



# 25%

more cardiovascular related deaths than those in the least damaged areas.



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## Acknowledgements

We thank the Earthquake Commission for sharing property damage information and assisting with its interpretation; Chris Bowie (Opus, Lower Hutt, New Zealand) for advice on the management and interpretation of Earthquake Commission data; Statistics NZ, Sheree Gibbs, June Atkinson, and the Virtual Health Information Network for assistance with the use of the New Zealand Integrated Data Infrastructure; and Ichiro Kawachi (Harvard T.H. Chan School of Public Health) for helpful discussion in preparing the results of this study for publication.

## Disclaimer

The results of this study are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI), managed by Statistics New Zealand (NZ). The opinions, findings, recommendations, and conclusions expressed are those of the researchers, not Statistics NZ or MBIE.

Access to the anonymised data used in this study was provided by Statistics NZ under the security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business, or organisation, and the results of this study have been confidentialised to protect these groups from identification and to keep their data safe. Careful consideration has been given to the privacy, security, and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the IDI available from [www.stats.govt.nz](http://www.stats.govt.nz)

## About Healthier Lives

National  
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Challenges

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He Oranga  
Hauora

**Our vision** is of Aotearoa New Zealand with equitable health outcomes and a substantially reduced burden of non-communicable diseases.

**Tō mātou kitenga** kia noho a Aotearoa New Zealand hei whenua he ōrite ngā putanga hua hauora mō te tangata, kia iti iho hoki ngā pūkauranga o ngā māuiui kāore e taea te tuku ki te tangata kē.

The **Healthier Lives – He Oranga Hauora National Science Challenge** is a national collaborative research programme, investigating innovative approaches to the prevention and treatment of four major non-communicable diseases (NCDs) – cancer, cardiovascular disease, diabetes and obesity.

### CONTACT US

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### Please use the following citation:

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