

The Costs and Consequences of Sudden-Onset Disasters: What We Do Know and What We Don't

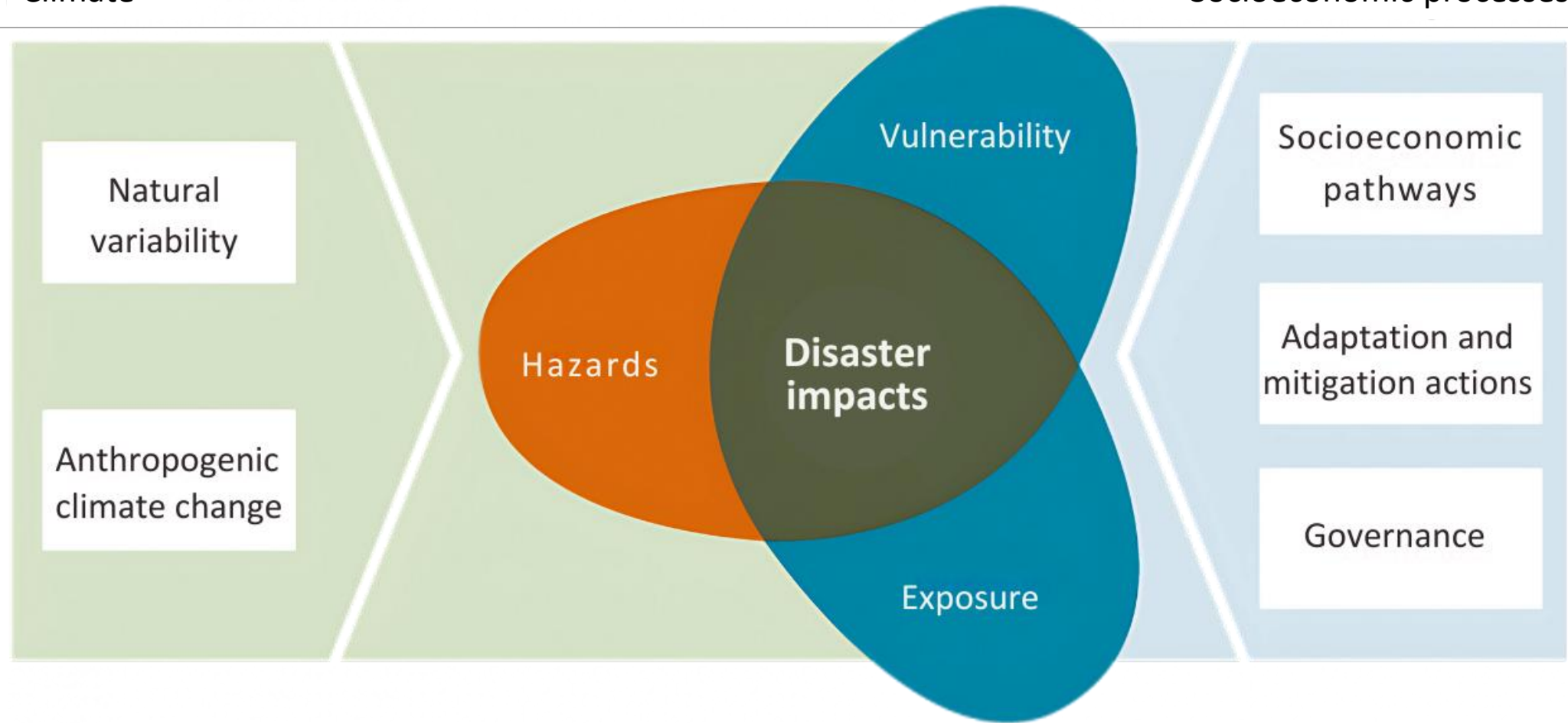
Ilan Noy

Te Āwhionukurangi Chair In The Economics Of Disasters And Climate Change

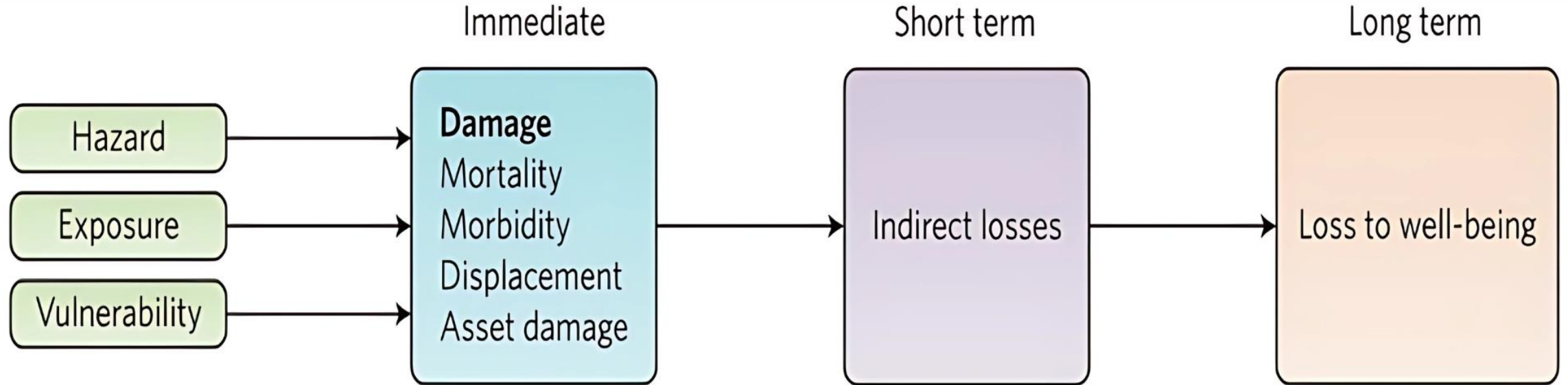
Victoria University Of Wellington - Te Herenga Waka

Climate

Socioeconomic processes

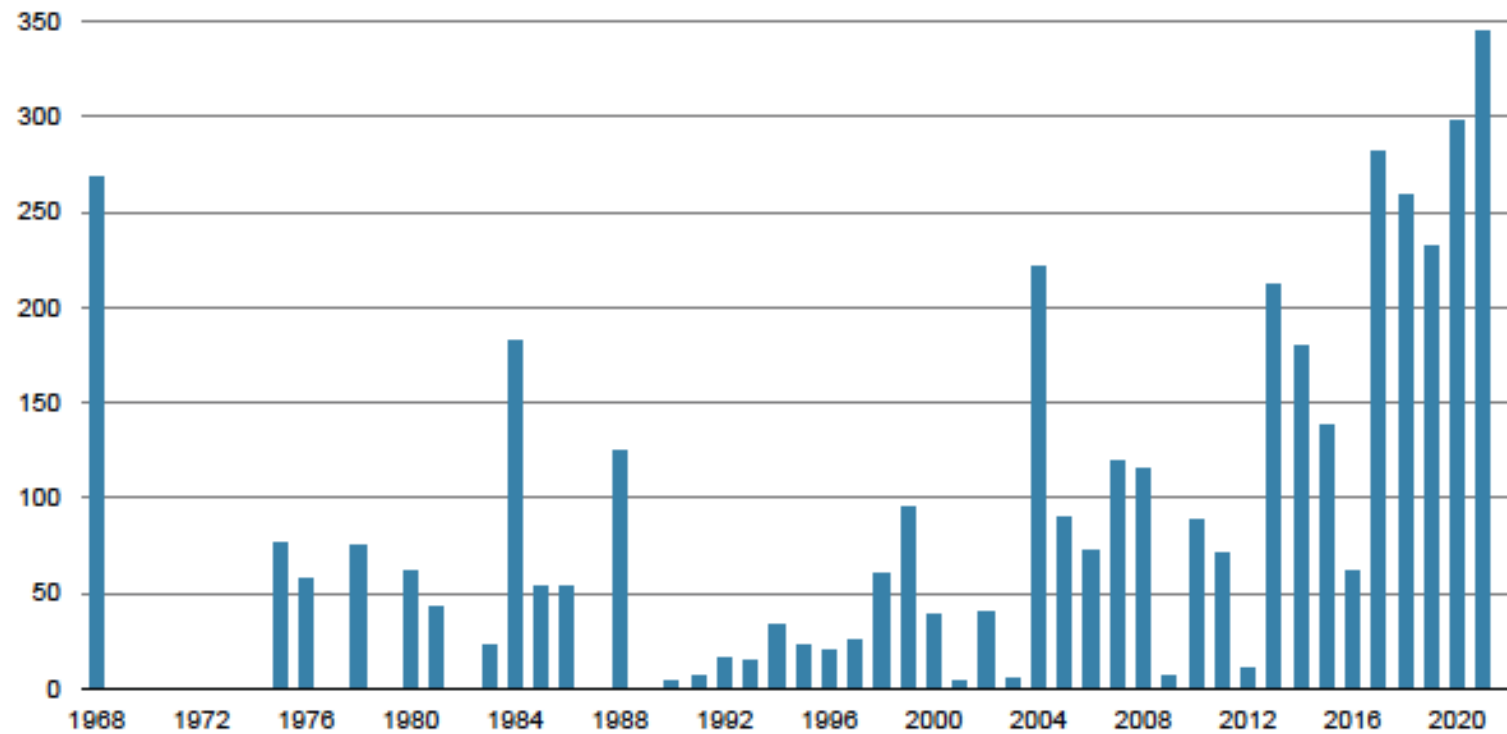


What happens when a disaster strikes?



Let's start with the data....

Figure 4.1: Insured weather-related losses from 1968 to 2021 (in 2022 dollars)³⁸



[NEW ZEALAND \(/NEWS/NATIONAL\)](#) / ...

New Zealand has no dedicated database to track losses from weather disasters – without it, we're planning in the dark

6:36 am on 19 March 2025

Cost Estimates for the 2023 Auckland floods and Cyclone Gabrielle

In billion 2024 NZ\$

	Insurance Council NZ	EM-DAT	NZ Treasury	AON Insurance	PERILS*
Direct damages					
Flood				\$5.7b	
Cyclone				\$6.6b	
Combined			\$9.5-15.3b	\$11.9b	
Insured costs					
Flood	\$2.109b	\$2.3b		\$2.2b	\$2.36b
Cyclone	\$1.952b	\$3.3b		\$1.7b	\$2.30b
Combined	\$4.061b	\$5.5b		\$3.9b	\$4.65b
Total costs					
Flood		\$3.3b			
Cyclone		\$4.9b			
Combined		\$8.1b			

* Estimate excludes damages insured through public insurance
 Table: The Conversation • Source: Author supplied • Created with Datawrapper

Cost Estimates for the 2023 Auckland floods and Cyclone Gabrielle

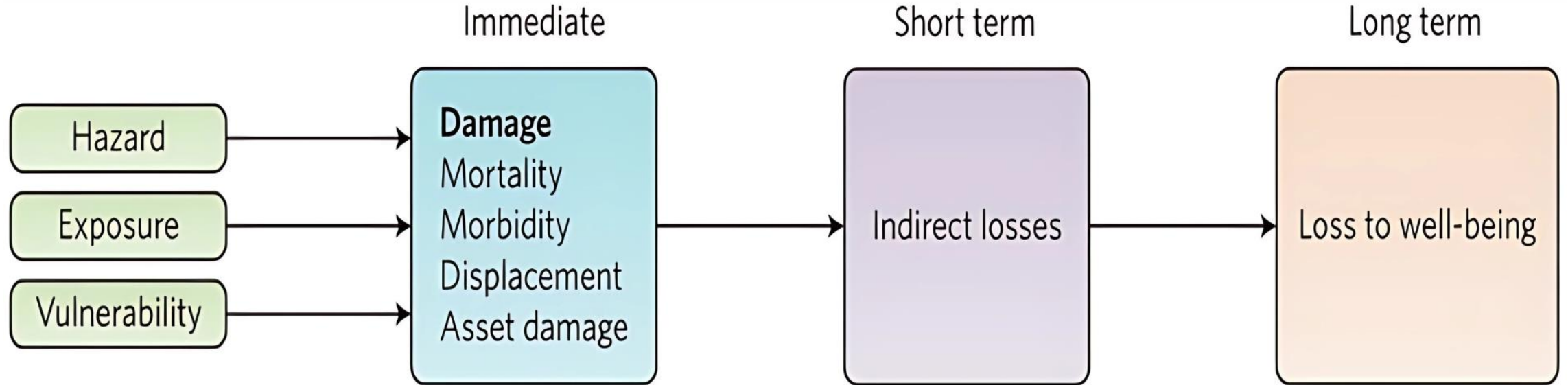
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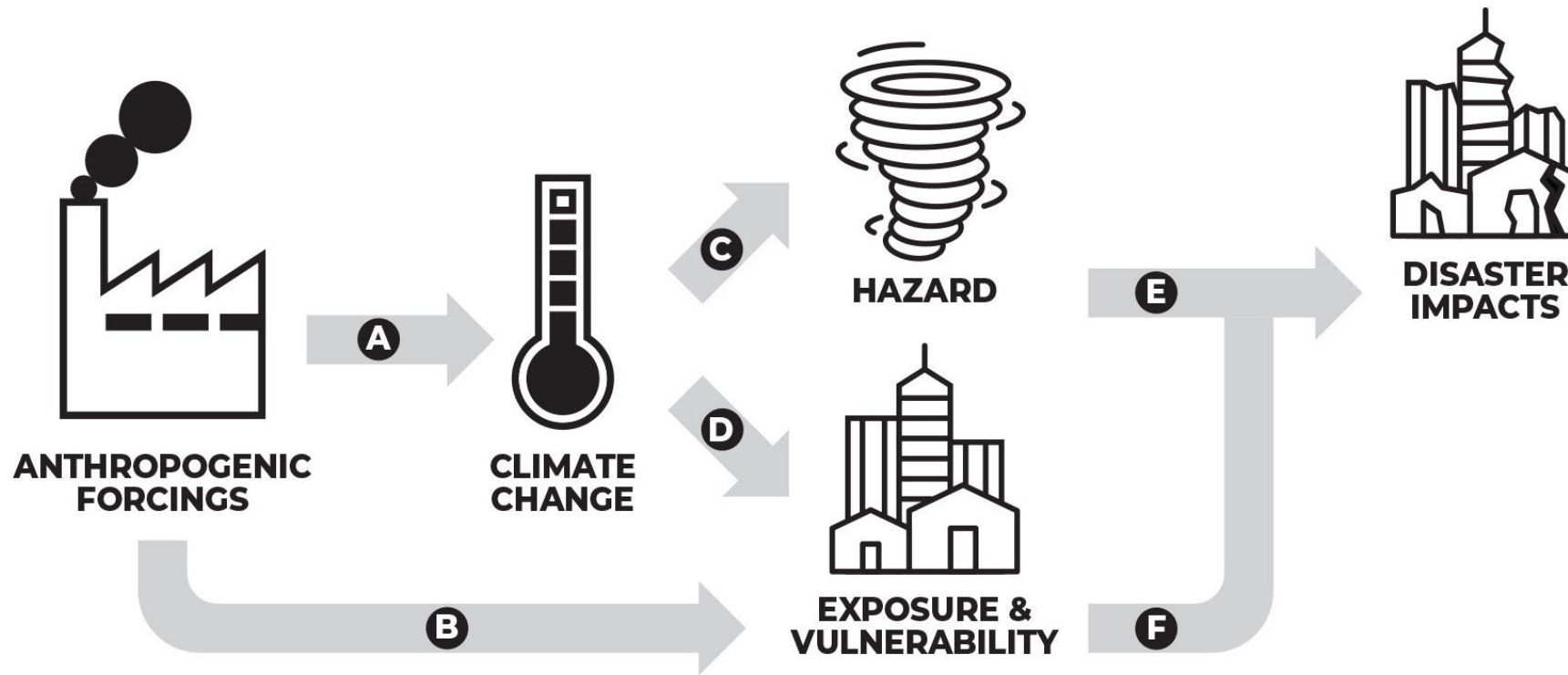
Table: The Conversation • Source: Author supplied • Created with Datawrapper

What happens when a disaster strikes?



Climate change is part of the problem...

we can quantify this part with extreme event impact attribution



Even if we did have a Disaster Loss Database, we would still not get a full picture:

Consumption vs. production losses

- (Bastiat's Broken Window Fallacy)

Longer-term impact on well-being

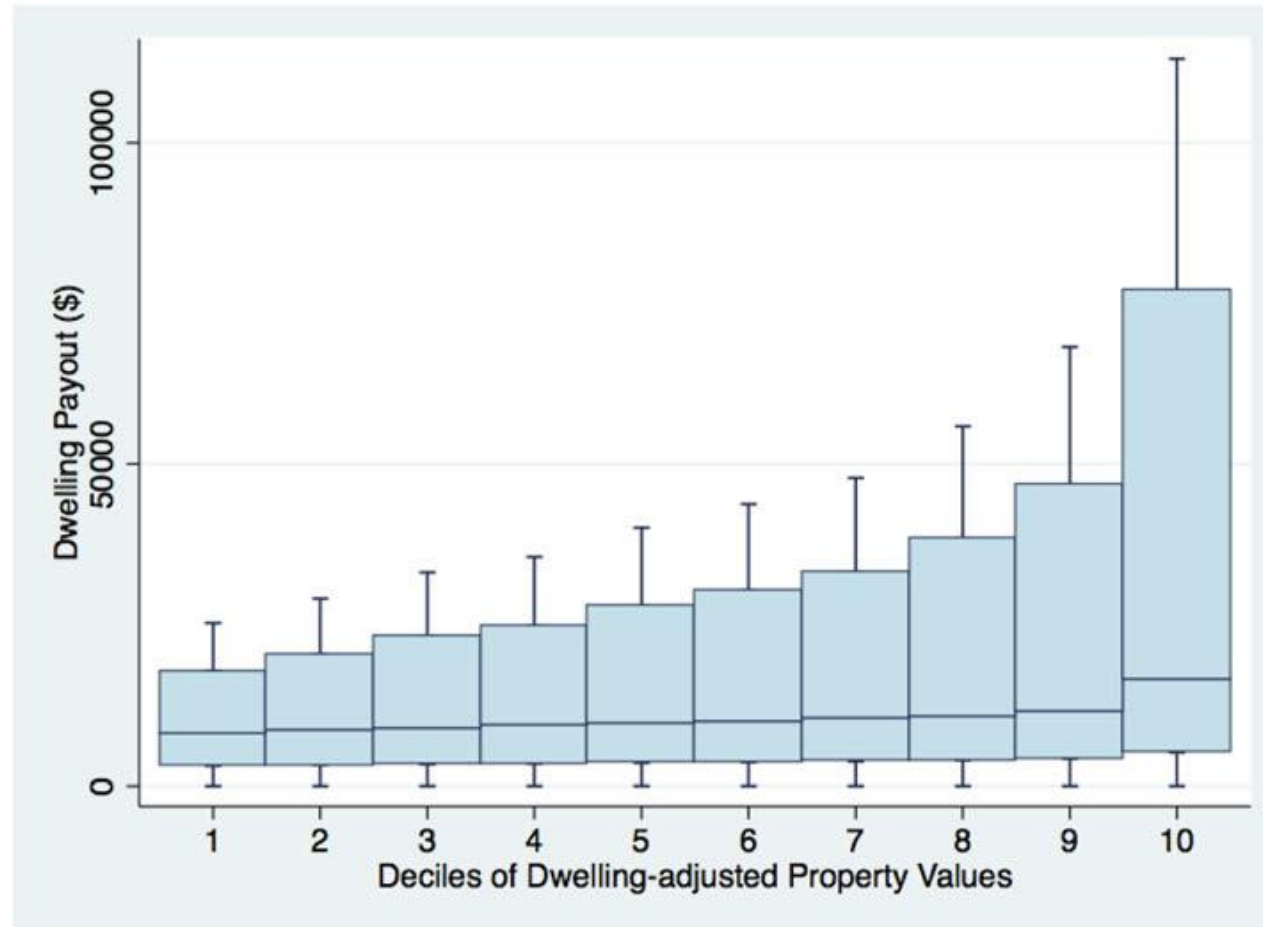
- Noy and duPont (2018)

Distributional consequences

- Smiley et al. (2022)

Mental health

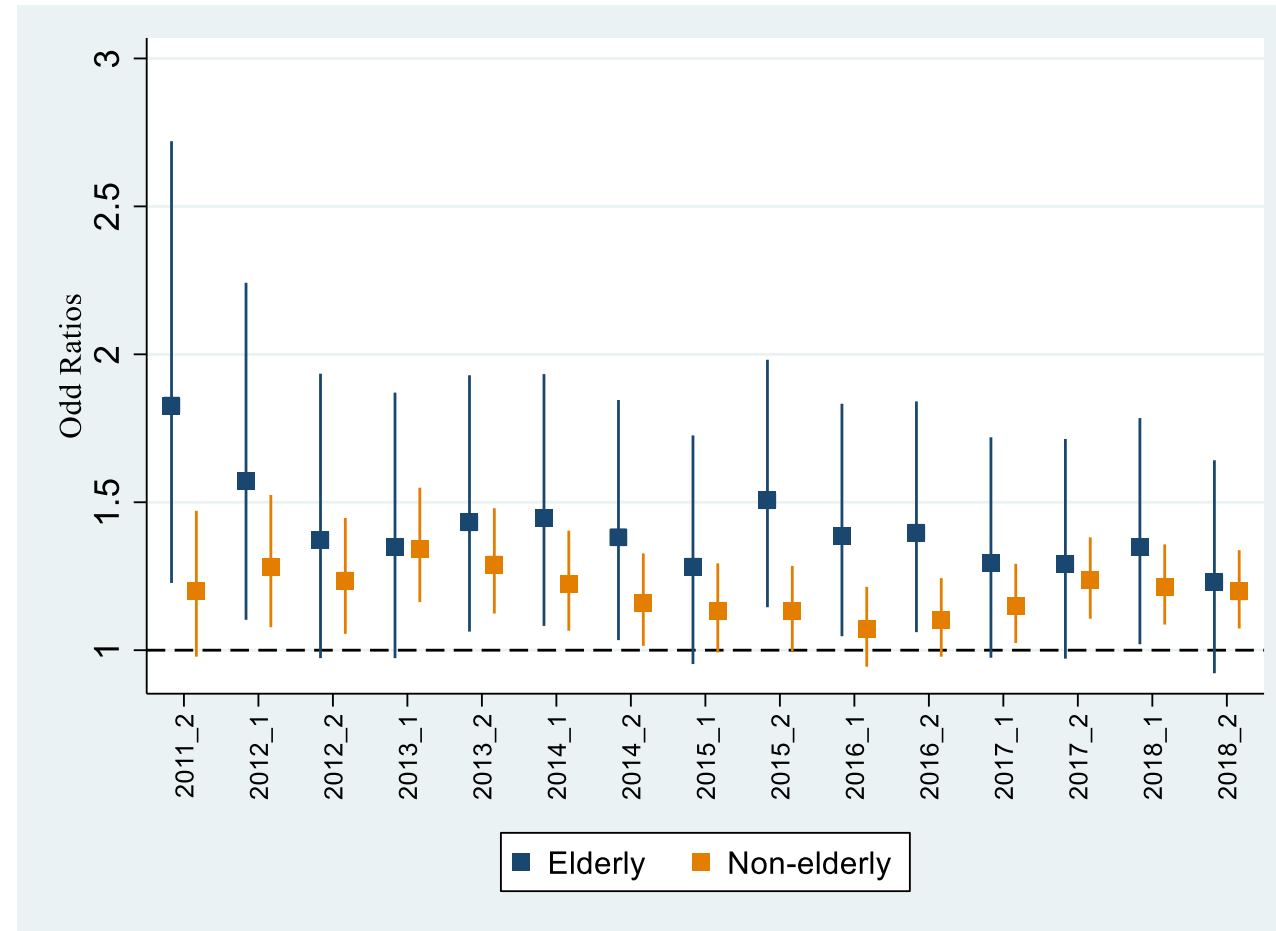
Distributional consequence



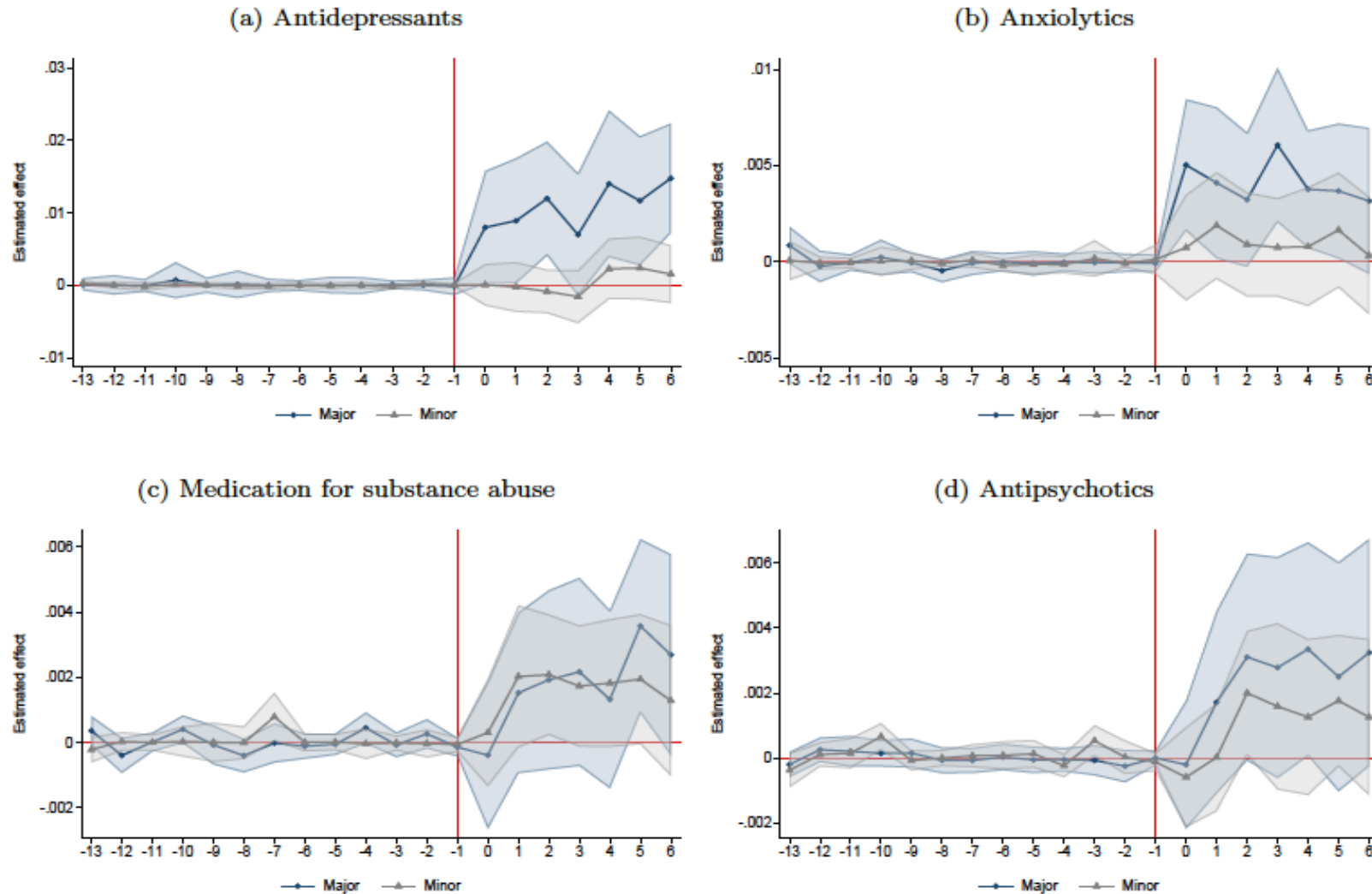
Owen and Noy (2019). Regressivity in Public Natural Hazard Insurance: A Quantitative Analysis of the New Zealand Case. *Economics of Disasters and Climate Change*.

Mental health after the Christchurch EQ

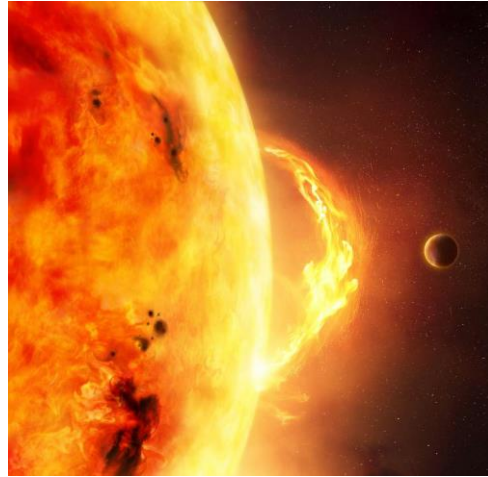
MH pharma
usage for
people with
no history of
MH



Mental Health after Cyclone Gabrielle



Which hazards are overlooked?

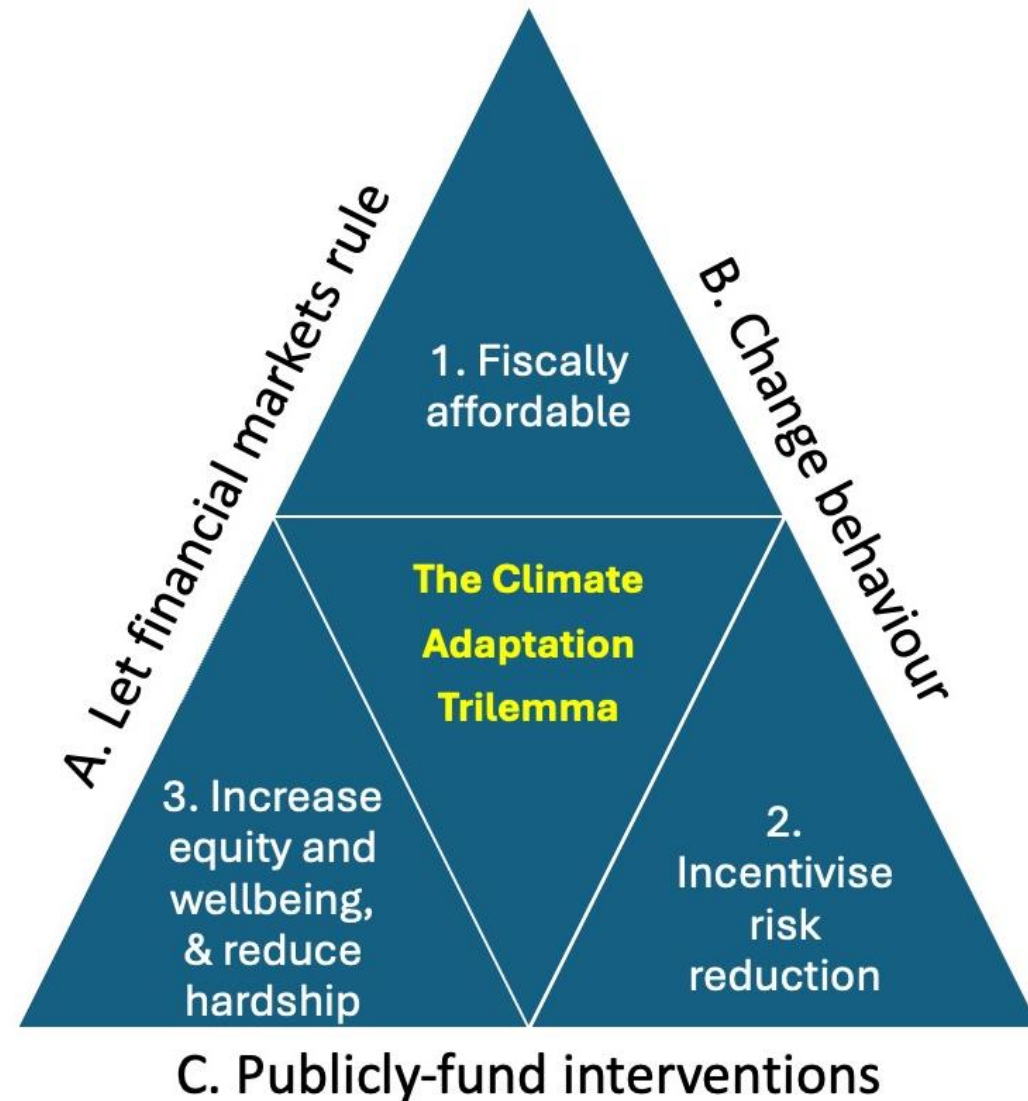


Climate Adaptation – The Three Retreats

Adaptation is “the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities.”

Adaptation options are “the array of strategies and measures that are available and appropriate for addressing adaptation.”

The Climate Adaptation Trilemma



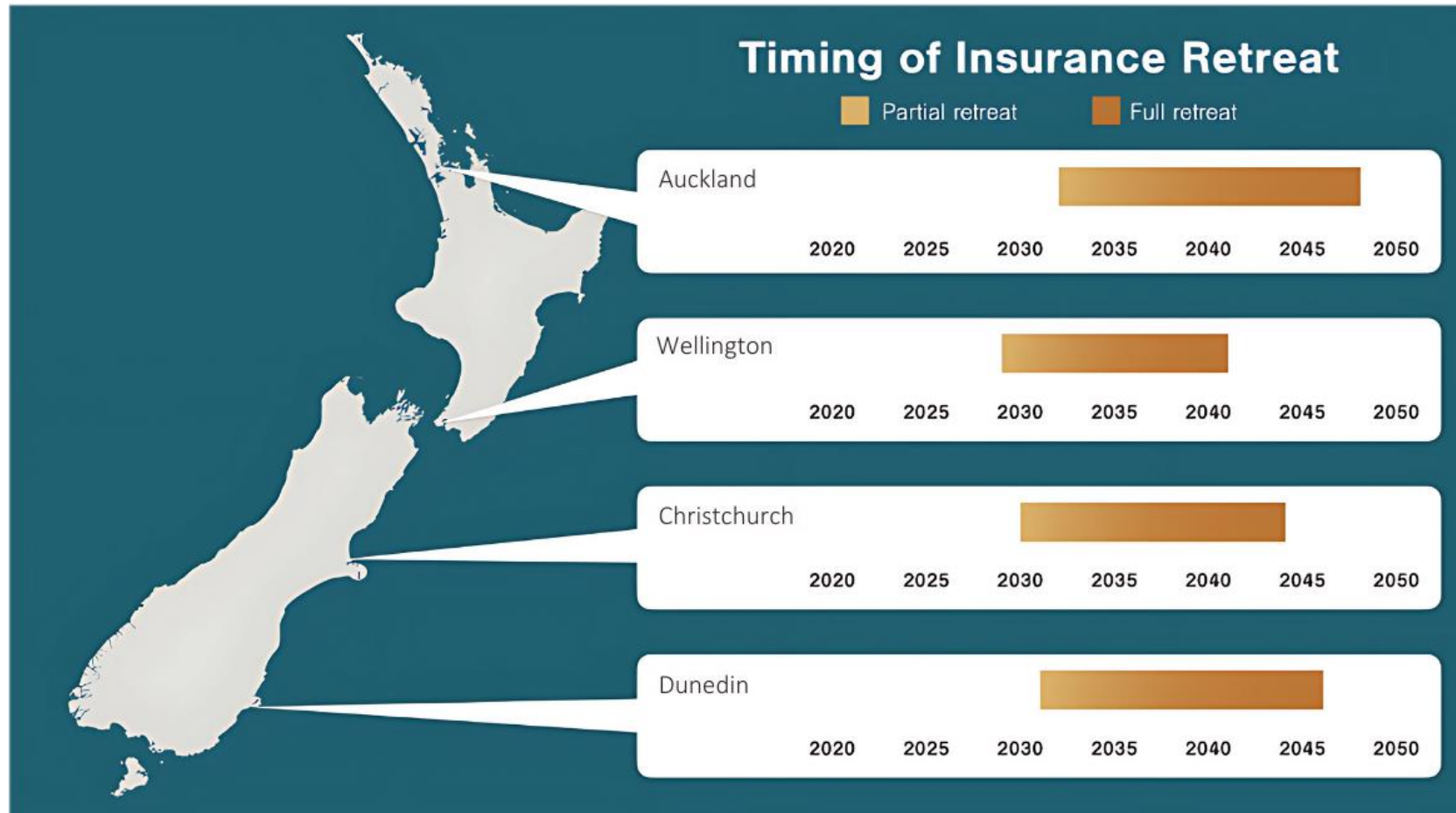
Noy and Uher (2025). The Climate Adaptation Trilemma. *EconPol Forum* 26(2).

Insurance & Banking



"OK, but if we work *together*... Whammo!
Depth perception!"

Insurance retreat



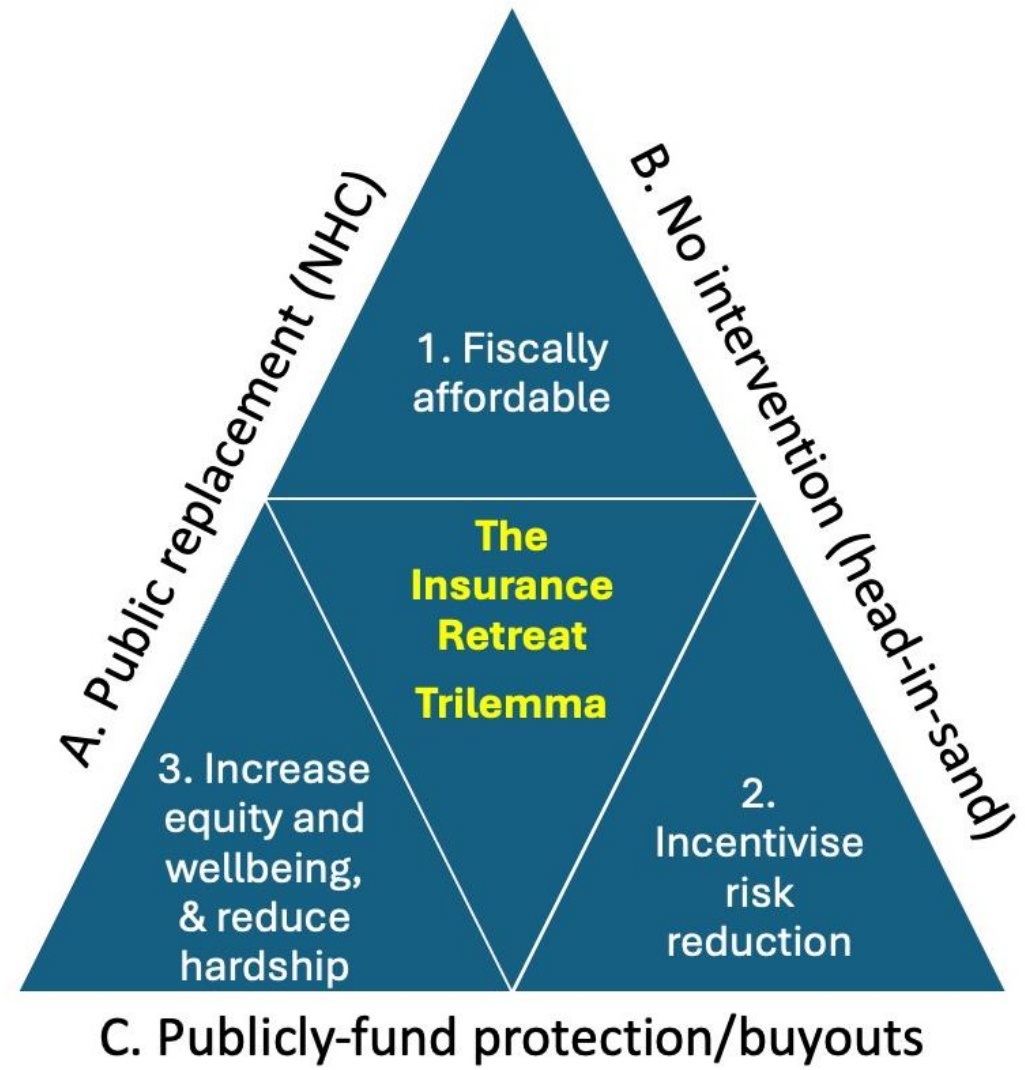
The Treasury: Insurance Update Information Release

October 2024

“Given...your feedback on our Emerging Insurance issues paper (T2023/1934), we have ceased work on contingency planning and policy development to address the risk of any near-term widespread shift to greater risk-based pricing in residential flood insurance and will focus on the role of insurance in climate change adaptation.”



The Insurance Retreat Adaptation Trilemma



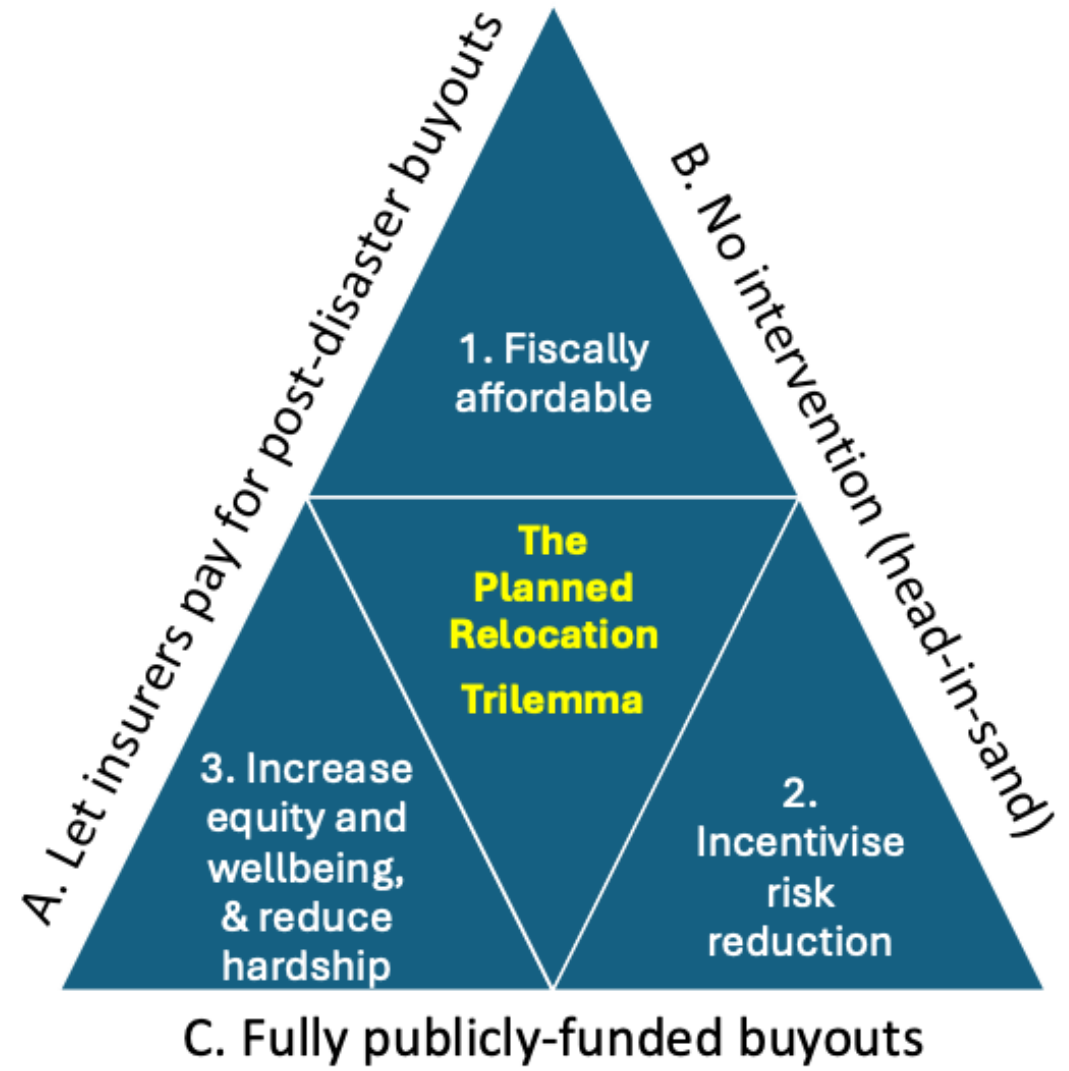
Managed retreat (buyouts) definition

“the strategic relocation of structures or abandonment of land to manage natural hazard risk.”

(Hino et al., 2017)

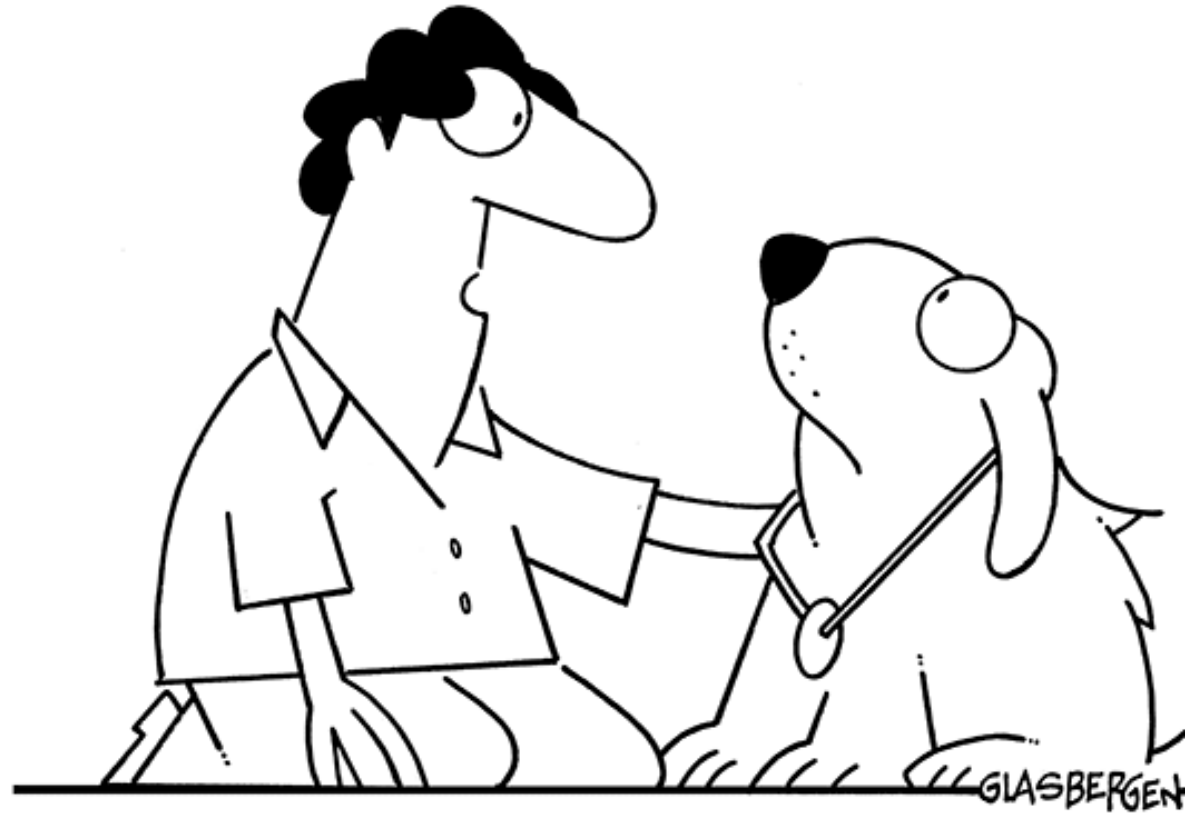


The Managed Retreat Adaptation Trilemma



The Credit Retreat Adaptation Trilemma

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**“Can you help me get a bank loan?
You’re better at begging than I am!”**

Summary

- 1) Data availability
- 2) The costs that are not measured
- 3) Distributional concerns
- 4) Mental health
- 5) Overlooked risks: pandemics, space weather, volcanoes, AI
- 6) The Adaptation Trilemma
- 7) The Trilemmas for the three retreats
 - a) insurance retreat
 - b) managed retreat
 - c) credit retreat



In Houston's Hurricane Harvey, Climate Change was responsible for....

