Where Infrastructure Fits in the New Zealand Resilience Index

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National **SCIENCE** Challenges

RESILIENCE TO NATURE'S CHALLENGES

Kia manawaroa – Ngā Ākina o Te Ao Tūroa

New Zealand Resilience Index

- Composite indicator
- Based on a multi-capital holistic understanding of societal resilience

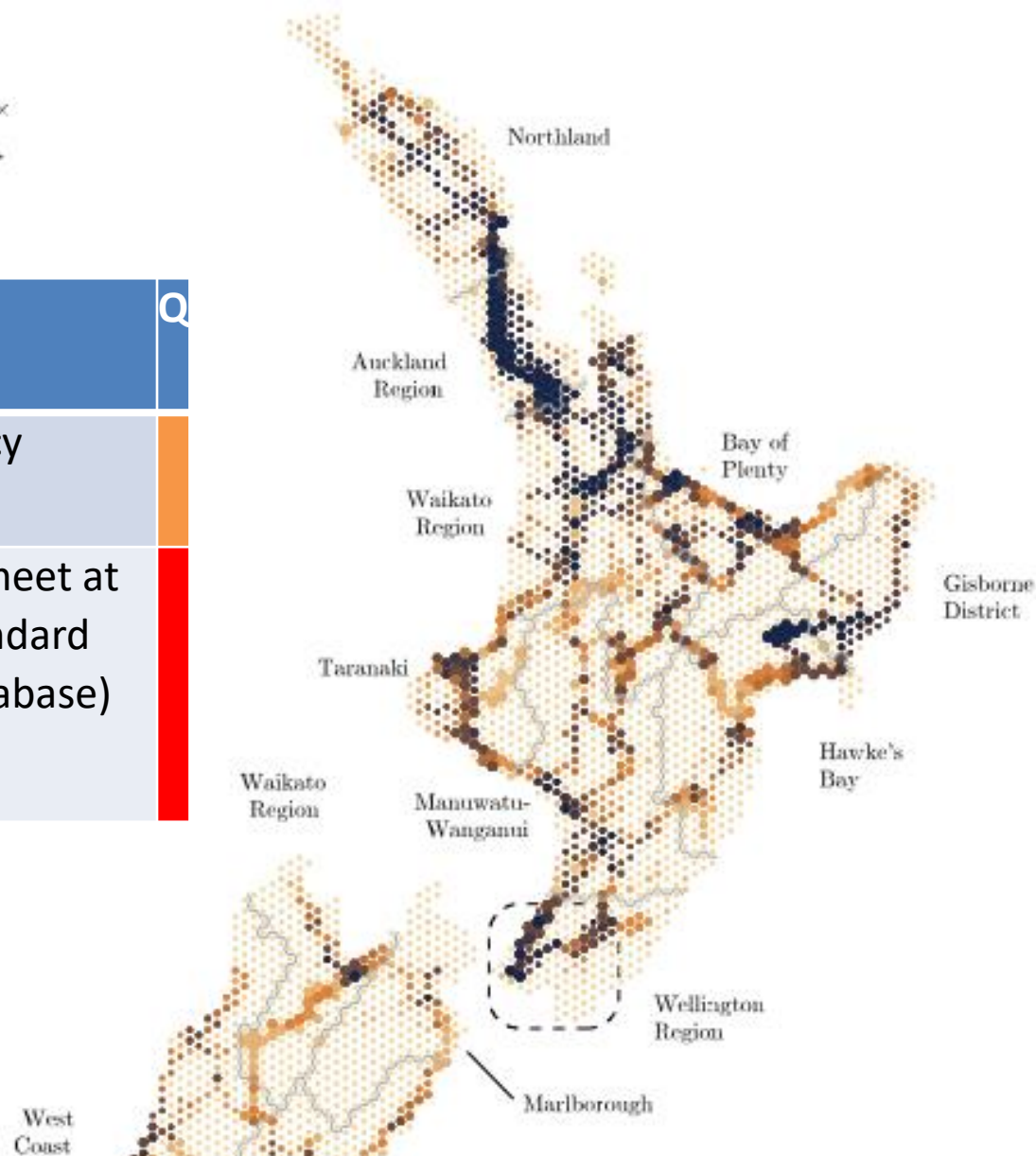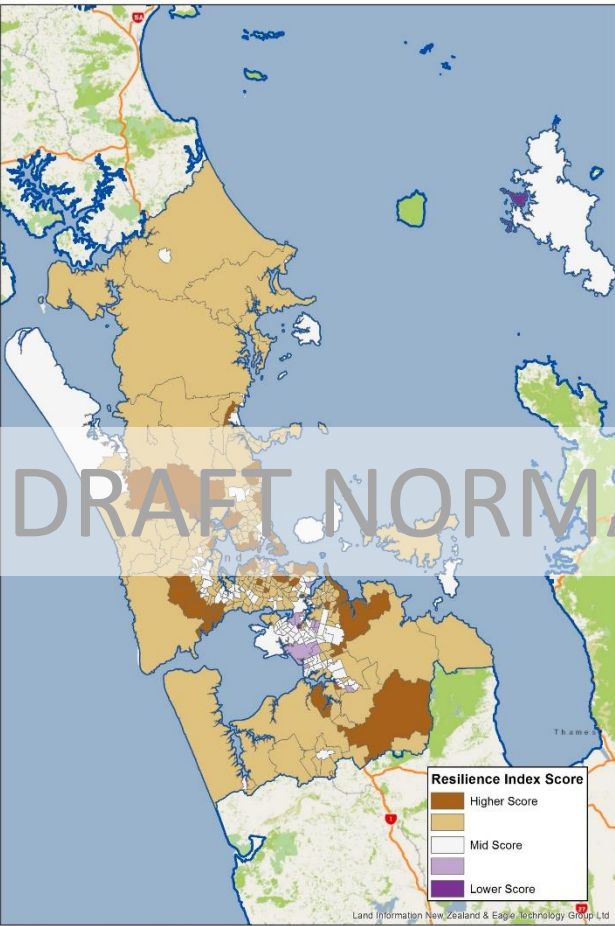**Social Resilience**

Social capital
Health
Education
Justice/protection

Economic Resilience

Economy
Businesses
Financial mgt
Insurance

Resilience of the Built Environment

Infrastructure
Buildings/housing
Urban growth/design
Engineering

Resilience of the Natural Environment

Resource management
Land-use planning
Climate change adaptation

Cultural Capital

Cultural values
Traditional knowledge/practice
Identity
Culture/heritage

Governance of Risk and Resilience

Leadership
Policy
Strategy
Safety/security

Resilient Homes

Resilient Organisations & Businesses

Resilient Communities

Resilient Cities, Districts, & Regions

Enabling and Supportive Government & Society

Underpinning research, data, and assessment

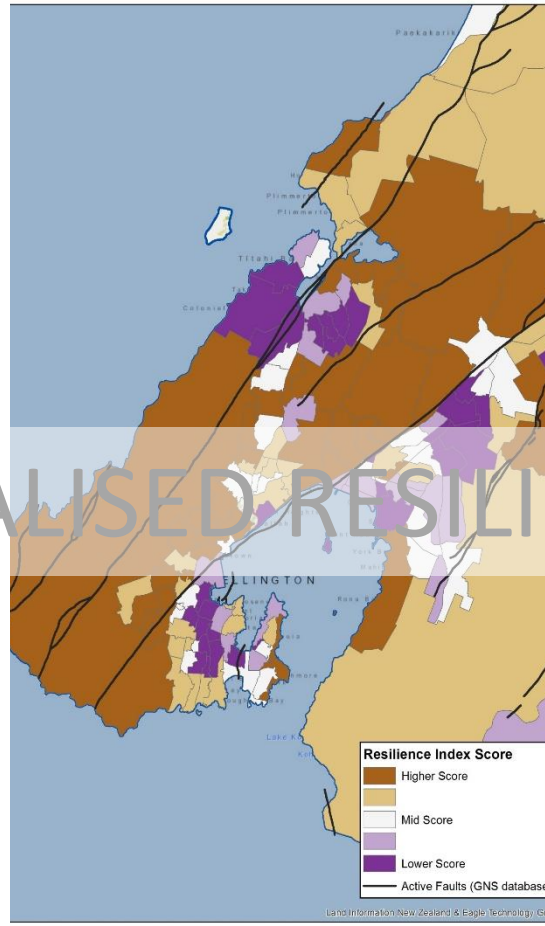| Capital	Indicator	Q
Built	Infrastructure interdependency systemic resilience metric	🟧
Built	% commercial buildings that meet at least 34% of new building standard (NBS) (EQ Prone buildings database)	🟥
Cultural	Inverse of the percentage of registered historical sites lost between 2000 and 2017 using 2000 as the baseline year.	🟧
DRR Capacity	Average distance to designated Civil Defence or Welfare Centre (or similar).	🟥
DRR Capacity	% of households with emergency water for three days	🟧
Economic (Household)	People living in an equivalised households with income below and income threshold	🟧
	People aged 18-64 unemployed	🟩
	People aged 18-64 without any qualifications	🟩
Economic (Community)	Total number of unique ANZIC codes represented in CAU	🟩
	Percentage of working age usually resident population who are not employed in the primary sector.	🟩
Environmental	Percentage change in land use to urban form by TA.	🟧
Institutional (Planning)	Percent completeness of hazard planning of district plan using 2015 comprehensive planning review data	🟧
Institutional (Response capacity)	Number of hospital beds per 1,000 people by TA. Relative capacity of the health sector to accommodate people following a disaster event.	🟧
Social (Social capital)	Percentage of usually resident population in an area who identify as having engaged in 'voluntary work through any organisation, group or marae.'	🟩
Social (Place attachment)	Percentage of residents who have lived in their current area for five or more years. Residents with long-term attachment to their area are more likely to have connections with other residents, so improving social capital of the area.	🟩
Social (Community health)	Hospital admissions per 1,000 people by District Health Board. Indicator of existing health outcomes among the population, and the pressure placed upon health services during business as usual periods.	🟧

Infrastructure Indicators

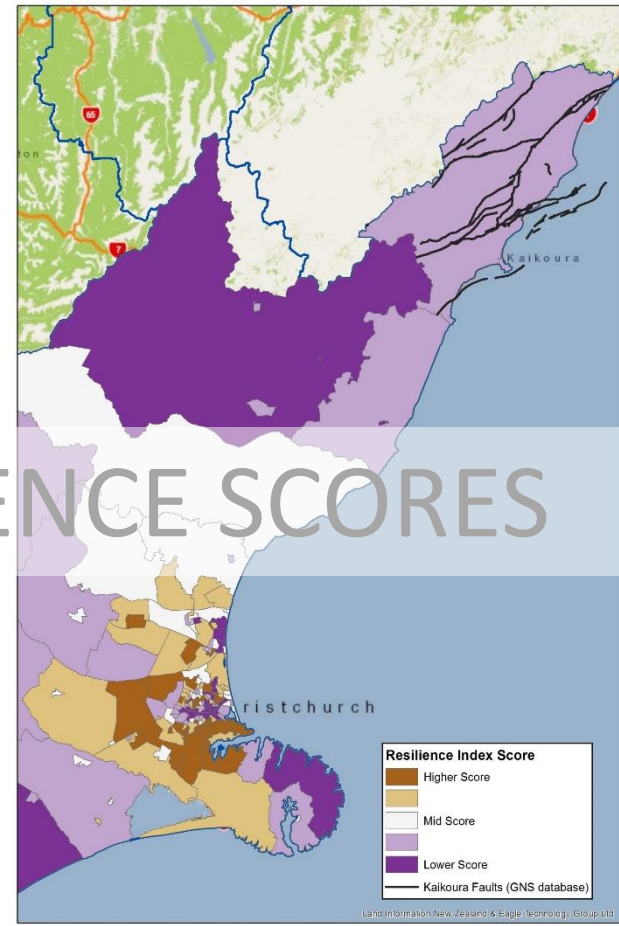| Capital	Indicator	Q
Built	Infrastructure interdependency systemic resilience metric	
Built	% commercial buildings that meet at least 34% of new building standard (NBS) (EQ Prone buildings database)	

DRAFT NORMALISED RESILIENCE SCORES

Northland

Wellington

Canterbury

Resilience Index Score (Northland)
- Higher Score
- Higher Score
- Mid Score
- Lower Score

Resilience Index Score (Wellington)
- Higher Score
- Mid Score
- Lower Score
- Lower Score
- Active Faults (GNS database)

Resilience Index Score (Canterbury)
- Higher Score
- Mid Score
- Lower Score
- Lower Score
- Kaikoura Faults (GNS database)

Expert Weight Process

These 2 boxes represent 2 places, as described ... In your opinion, which place would be more resilient to natural hazards and disasters?

(all else being equal)

Box 1

Availability of natural buffers (e.g. green space, undeveloped flood plains)

Low

Personal resilience capacities of community members (e.g. education, physical and mental wellbeing)

High

this one

this combination is impossible

Box 2

Availability of natural buffers (e.g. green space, undeveloped flood plains)

High

Personal resilience capacities of community members (e.g. education, physical and mental wellbeing)

Low

this one

this combination is impossible

OR

they are equal

skip this question for now »

DRAFT Preliminary Weights

Preference value vs Level
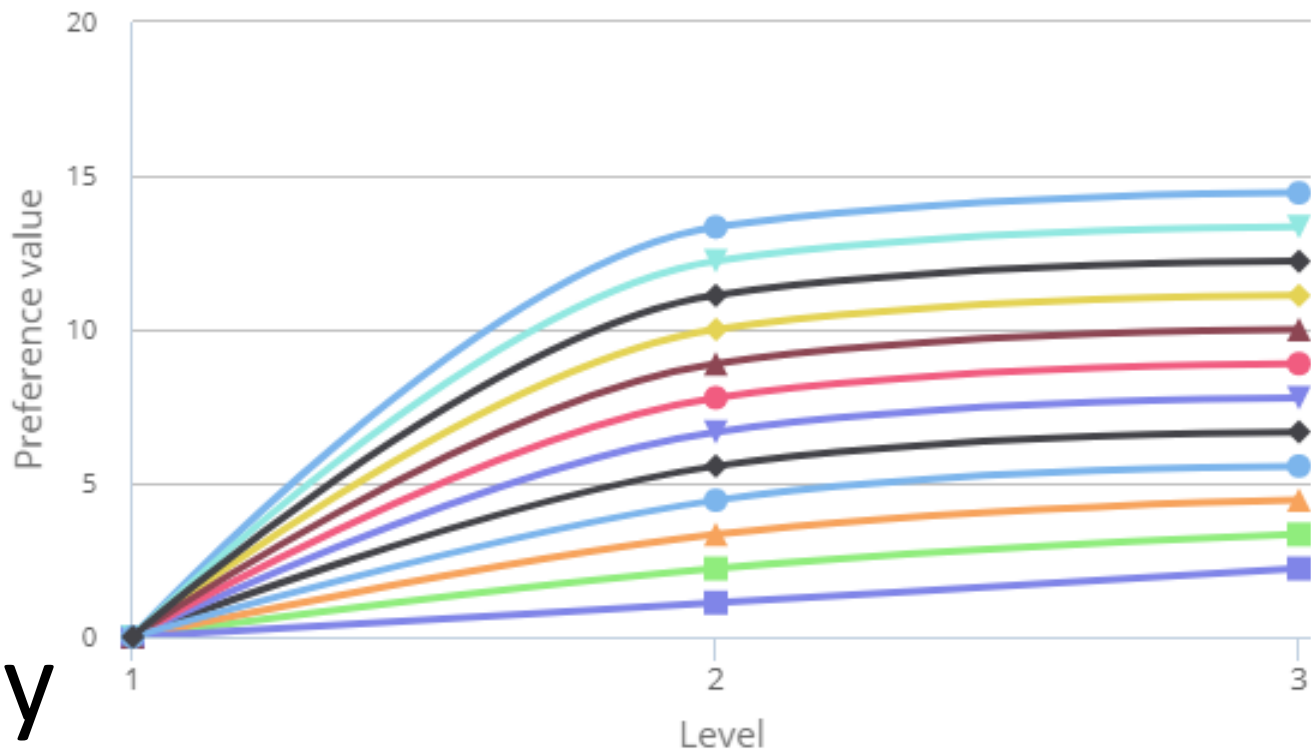
Legend:
- Lifeline infrastructure network resilience.
- Commercial and public building safety and post-event functionality.
- Preservation of heritage and culture.   Organisational planning and preparedness.
- Community access to information and engagement in planning.
- Household capacity to cope with employment and financial disruption.
- Diversity of the economic sector, and its capacity to cope with impacts.
- Capacity of natural environment to reduce exposure to natural hazards.
- People's capacity (skills, education, physical health and mental wellbeing) to be resilient to natural disasters.
- Presence and quality of legislation and plans that reduce risk and increase resilience for all.
- Provision of post-disaster shelters and essential resources.
- Degree of community embeddedness, and relationships between people in the community.

We need better national infrastructure (+lifelines) datasets

- Residential, commercial, and public buildings
- Networks infrastructure metric regularly collected and shared
- Infrastructure organisation resilience
- Infrastructure governance evaluation (capacity, accountability, adaptability, funding, maintenance)
- Nationally consistent hazard exposure maps