Resilient housing: Observations, challenges and opportunities
Why talk about housing?

$16 billion of the $40 billion total losses from the Canterbury earthquakes were in the residential sector, as reported by the Reserve Bank (2016).

Half of the US$25 billion losses in the 1994 Northridge earthquake were also due to damage to the residential sector.

Mental health issues: The Canterbury Wellbeing Survey found that in the years from 2013-2018 dealing with insurance issues in relation to personal property was more distressing than the ongoing aftershocks.
Housing Resilience

Lessons From Recovery
Lessons Going Forward
2005 Hurricane Katrina, New Orleans
14 years later

2005: 50% Housing uninhabitable

2012: Population 80% pre-event
13,000 fewer units in city
25% Vacancy rate

2019: Little changed
Recovery is about individuals and households in addition to property.
2010 Haiti Earthquake:
300,000 Homes Collapsed
1.3 mil Homeless
Canaan: Informal Settlement
Outside Port au Prince

2 Months After EQ ➔
5 yrs on 400,000 pop.
9 yrs on—no change
2007 Pisco, Peru EQ: 12 year after
Lessons From Recovery

• Housing is 80%+ of the Building Stock
• Urban disasters are housing disasters
• 10-20%+ of housing is uninhabitable leads to “tipping out” of population
• Lower income has harder time with repairs and with personal/financial stability
• Multi-family housing is never fully restored
• Successful recovery as in Chile is the exception not the rule.
Lessons For Resilience

• Need Inventories: Physical and Demographic

• Need Research & Planning on Recovery:
  – Better insurance options
  – Streamline Processes (insurance, permits, construction
  – Support People in Processes
  – Targeted programs for Vulnerable Populations

• Need Regulatory Change in Land Use, Disclosure

• Need Low-damage Construction Technologies

• Need National Planning, adaptable locally