# Can We Apply the Psychology of Risk Perception to Increase Earthquake Preparation?

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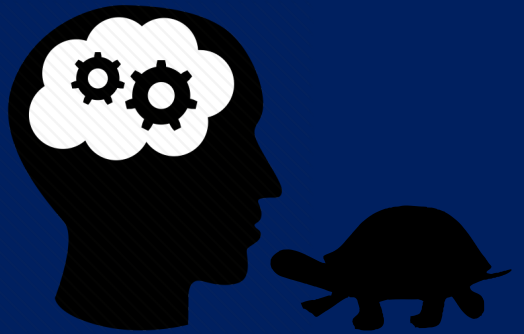
How can we harness what we know about human psychology to motivate people to take action?

# PSYCHOLOGY OF RISK PERCEPTION

SLOVIC ET AL. (2014)

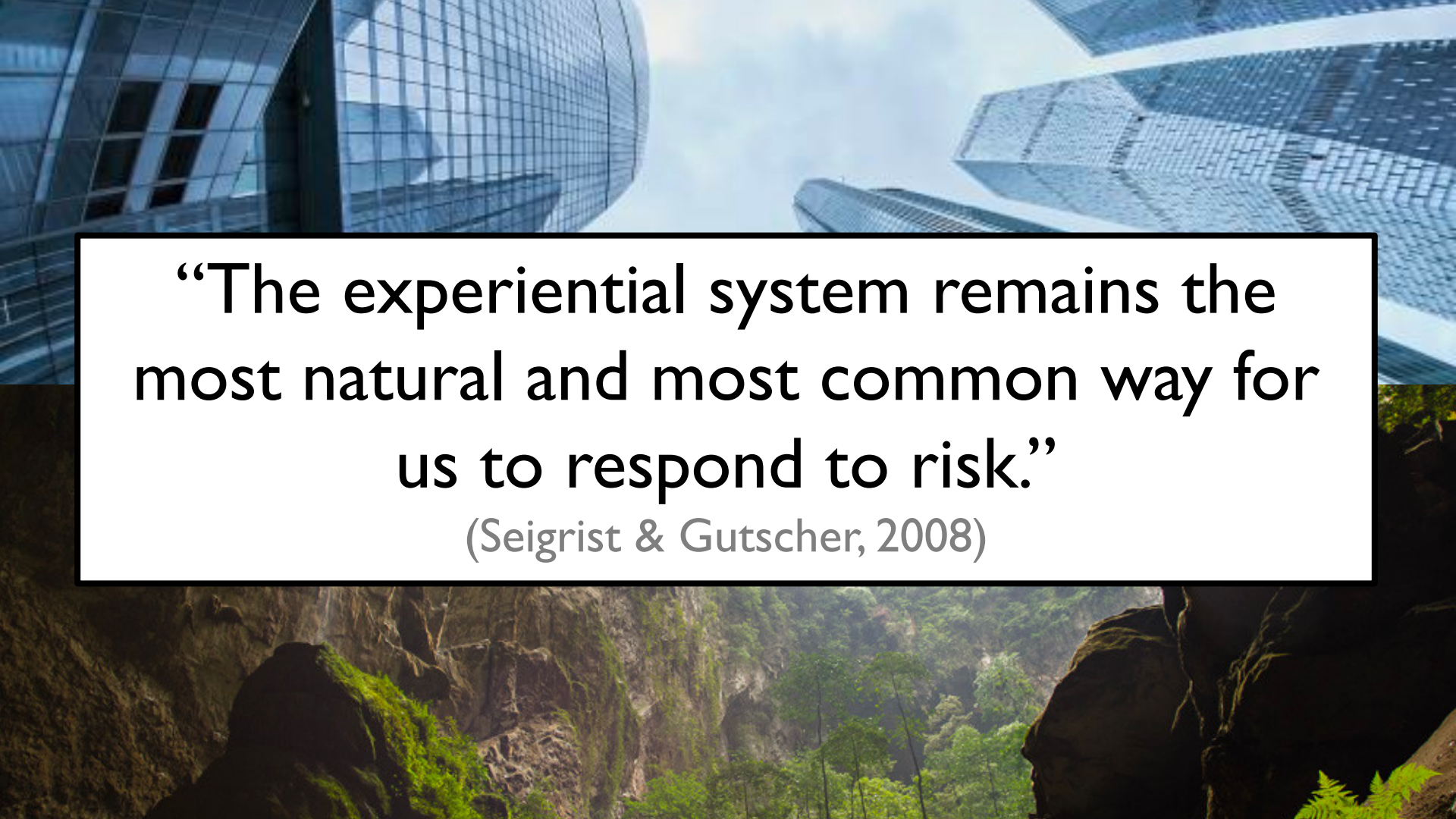


**EXPERIENTIAL**

- Vivid Imagery
- Past Experiences
- Emotion

**ANALYTIC**

- Abstract
- Quantitative Info
- Logic/Reason



"The experiential system remains the most natural and most common way for us to respond to risk."

(Seigrist & Gutscher, 2008)

## Risk Ratings

Engineers calculate seismic risk ratings based on the risk of damage from earthquake to a building. This calculation is the foundation for making decisions about how to mitigate risk and making specific locations safer.

Here's an overview of the risk ratings used for B.C. schools:

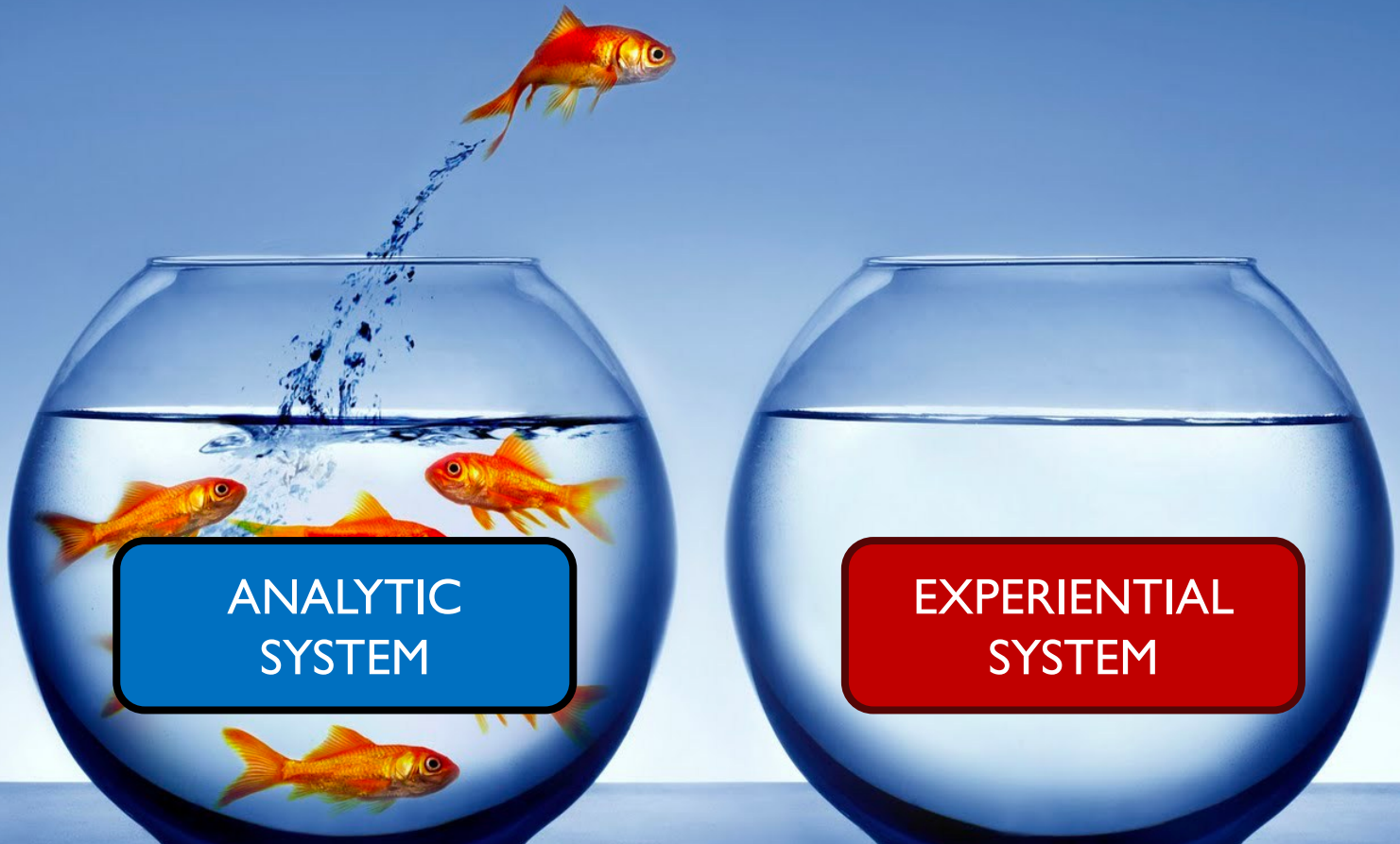
| Rating | Definition |
|---|---|
| High 1 (H1) | Most vulnerable structure; at highest risk of widespread damage or structural failure; not reparable after event. Structural and non-structural seismic upgrades required. |
| High 2 (H2) | Vulnerable structure; at high risk of widespread damage or structural failure; likely not reparable after event. Structural and non-structural seismic upgrades required. |
| High 3 (H3) | Isolated failure to building elements such as walls are expected; building likely not reparable after event. Structural and non-structural seismic upgrades required. |

Source: BC Government Website, 2017

"The challenge of risk communication lies not so much in providing rational information but in adequately addressing the experiential system."

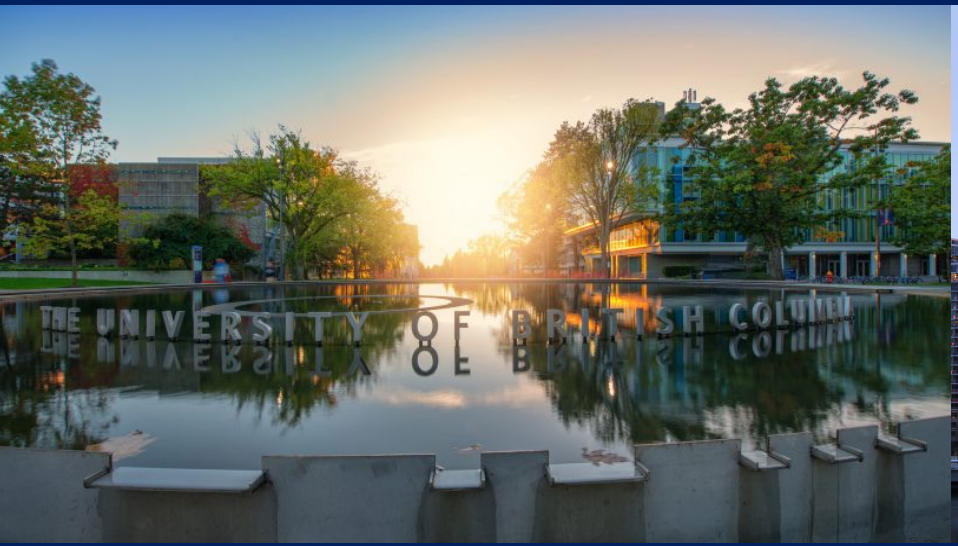
(Siegrist & Gutscher, 2008)

# Psychology + Engineering + Visual Design



# PRE-REGISTERED EXPERIMENT

411 participants in total




203 undergraduate students

208 community members

## Business as Usual (Control Group)

| Rating | Definition | Number of schools in Vancouver in each category: |
|---|---|---|
| High 1 (H1) | Most vulnerable structure; at highest risk of widespread damage or structural failure; not reparable after event. Structural and non-structural seismic upgrades required. | 20 |
| High 2 (H2) | Vulnerable structure; at high risk of widespread damage or structural failure; likely not reparable after event. Structural and non-structural seismic upgrades required. | 2 |
| High 3 (H3) | Isolated failure to building elements such as walls are expected; building likely not reparable after event. Structural and non-structural seismic upgrades required. | 16 |

Note: This information is based on the most recent publicly available information from the B.C. government website.

## Images (Treatment Group)

# KEY OUTCOMES

| | |
|---|---|
| Personal Intentions to Prepare | 3-item measure<br>e.g., Interest in information about earthquake preparedness |
| Support for City Action | 3-item measure<br>e.g., Better public earthquake information programs |

Petition

Would you like to add your name to an existing petition for fast-tracking seismic upgrades for high risk schools in BC?

change.org Start a petition My petitions Browse Membership Log in

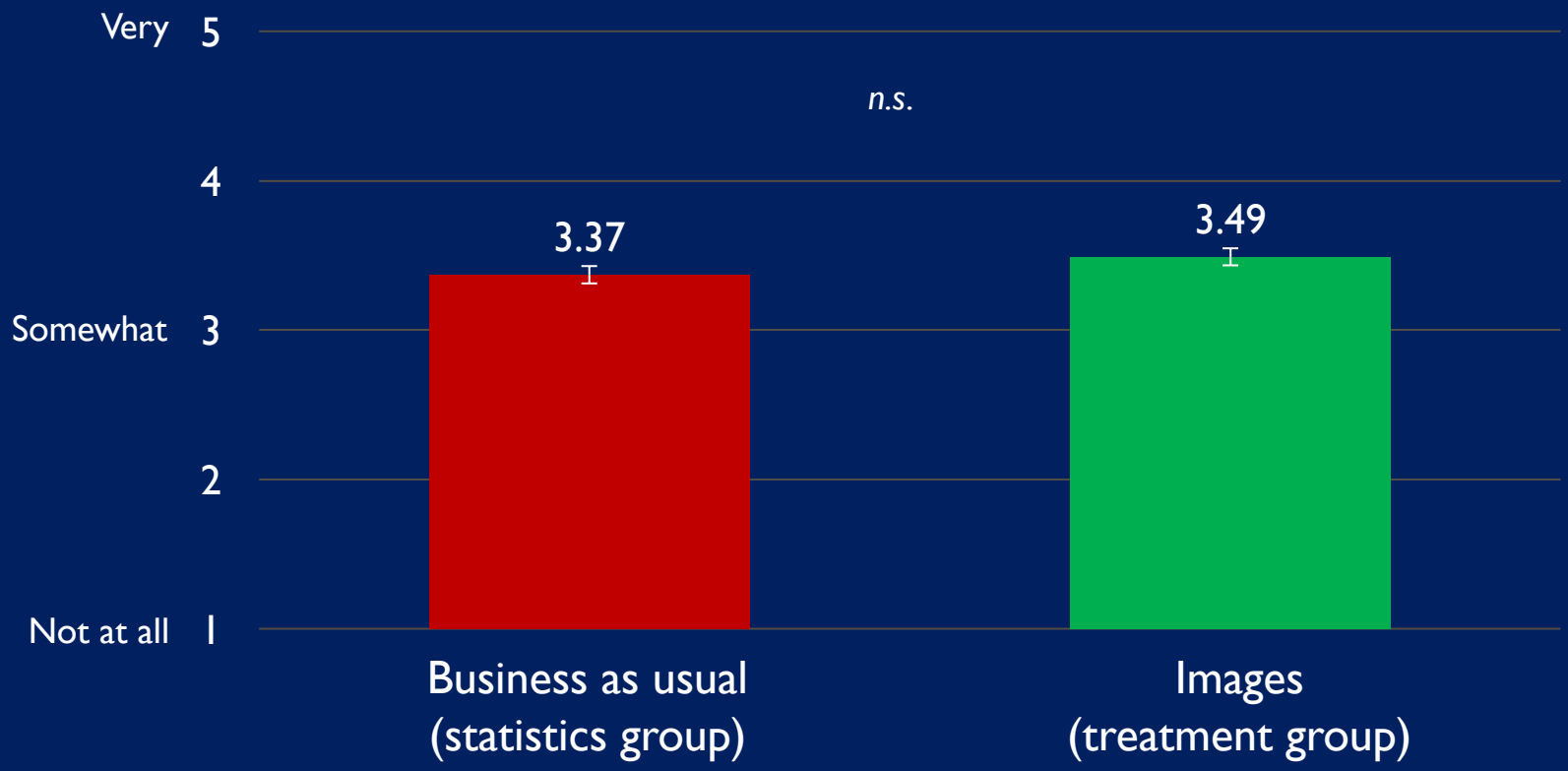
Petitioning The Honourable Rob Fleming, BC Minister of Education and 1 other

# Accelerate Seismic Upgrades for High Risk BC Schools

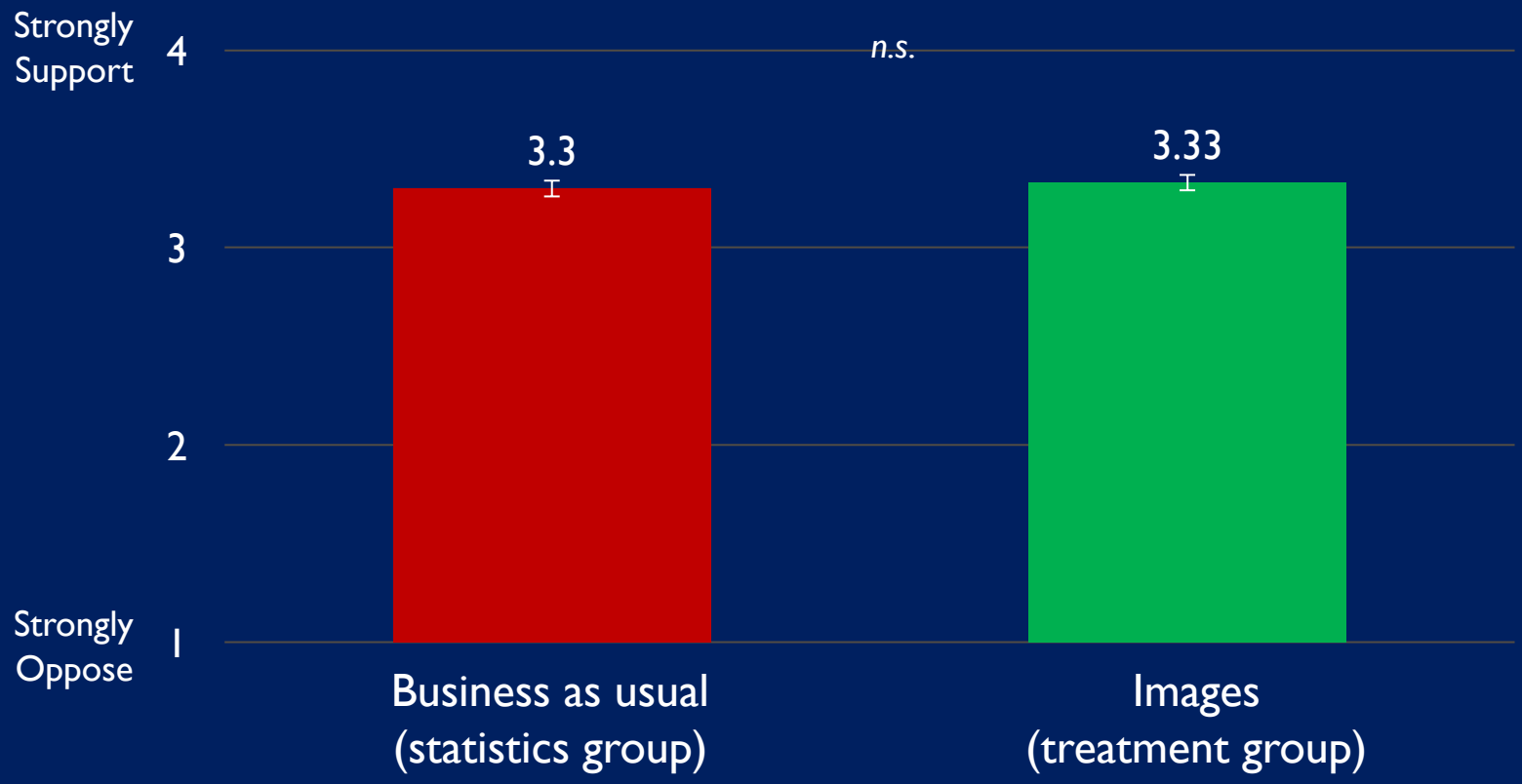
MacDougall Vancouver, Canada


Parents have been advocating for years, but the recent earthquake in Mexico City makes the devastating consequences of inaction real for friends and relatives of children and staff in 165 schools across BC considered at highest risk of collapse during an earthquake.

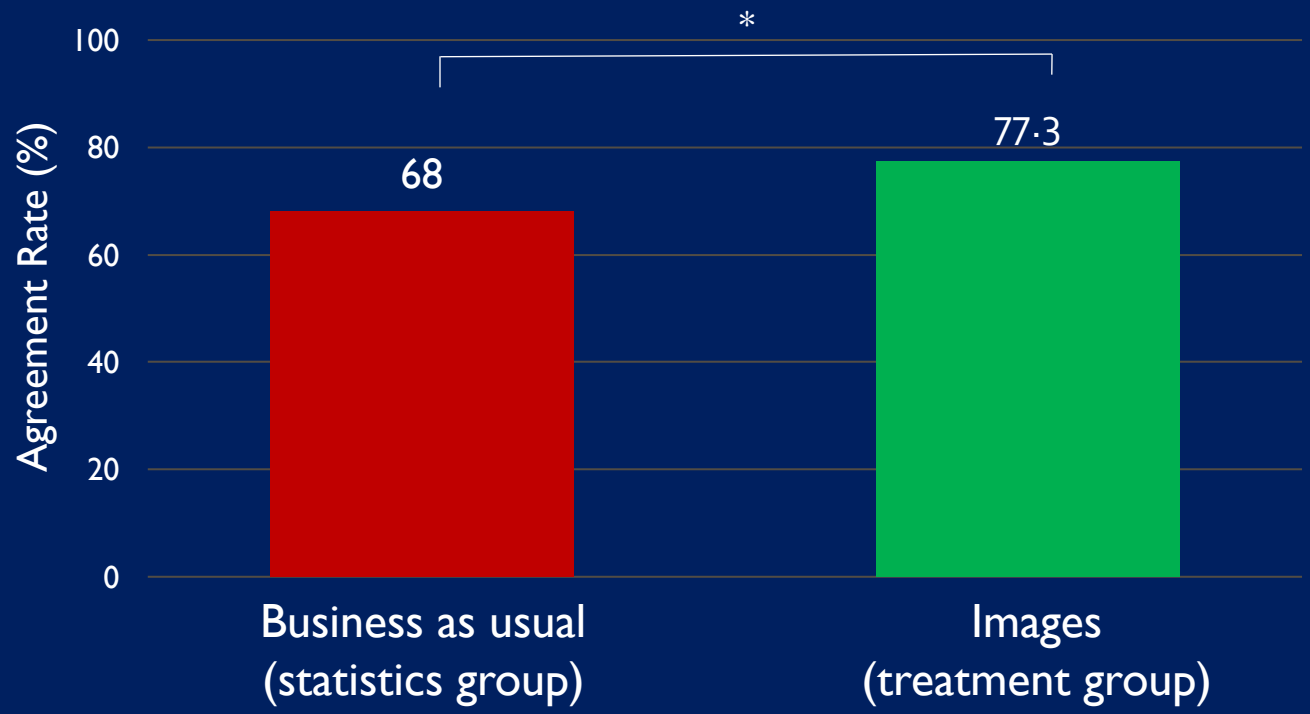
# Personal Intentions to Prepare



# Support for City Action



# Petition




$\chi 2(1,N=410) = 4.48$, $p = .03$, $\phi = .11$.

# What does this mean?

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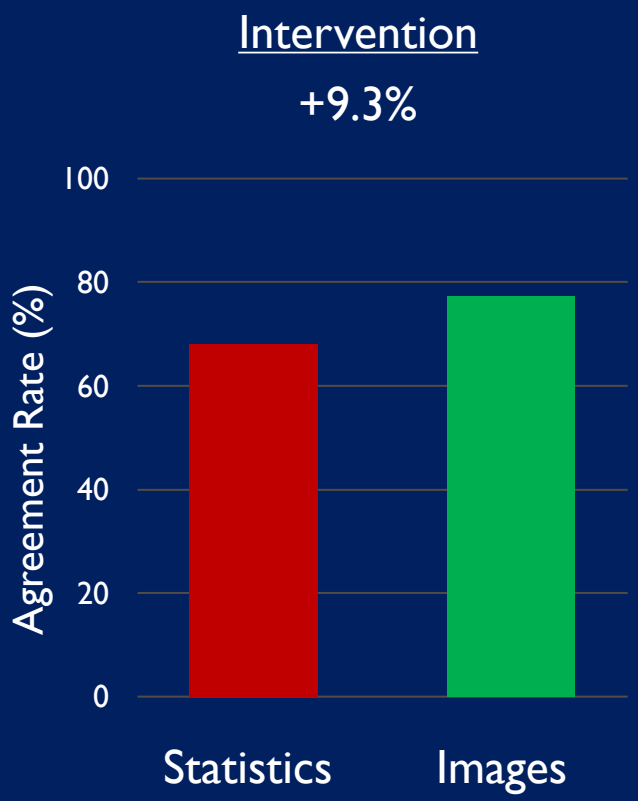

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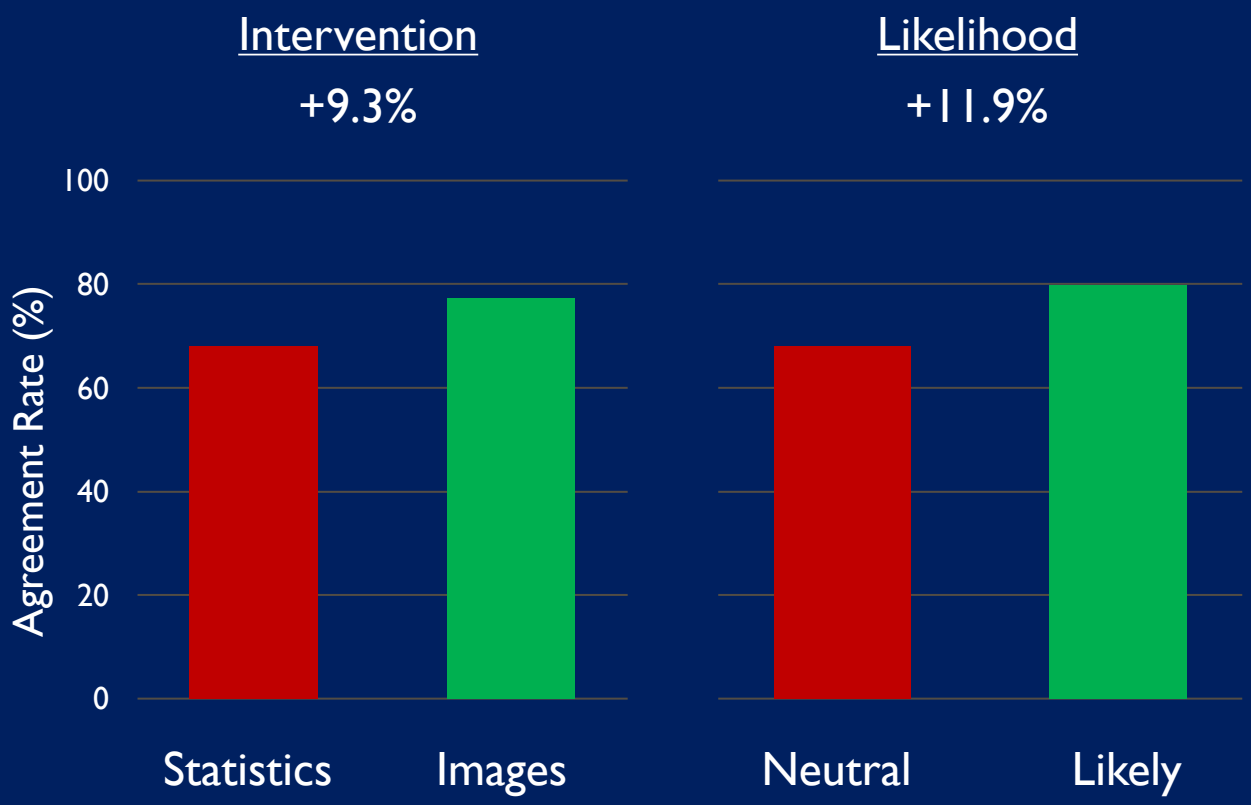

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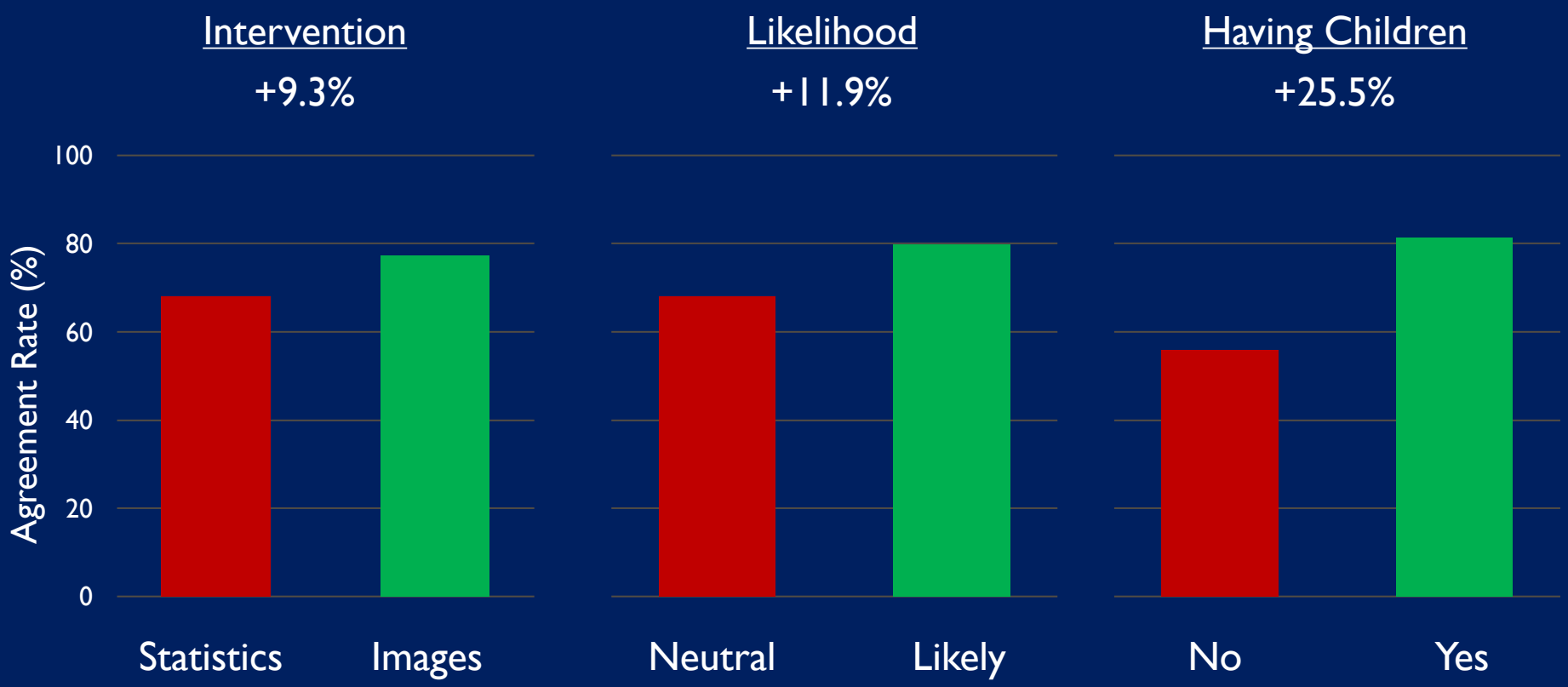


# Takeaways

# Earthquake Risk: Concentration of Damage to Buildings

## Modelled Scenario: Magnitude 7.3 Earthquake in the Strait of Georgia

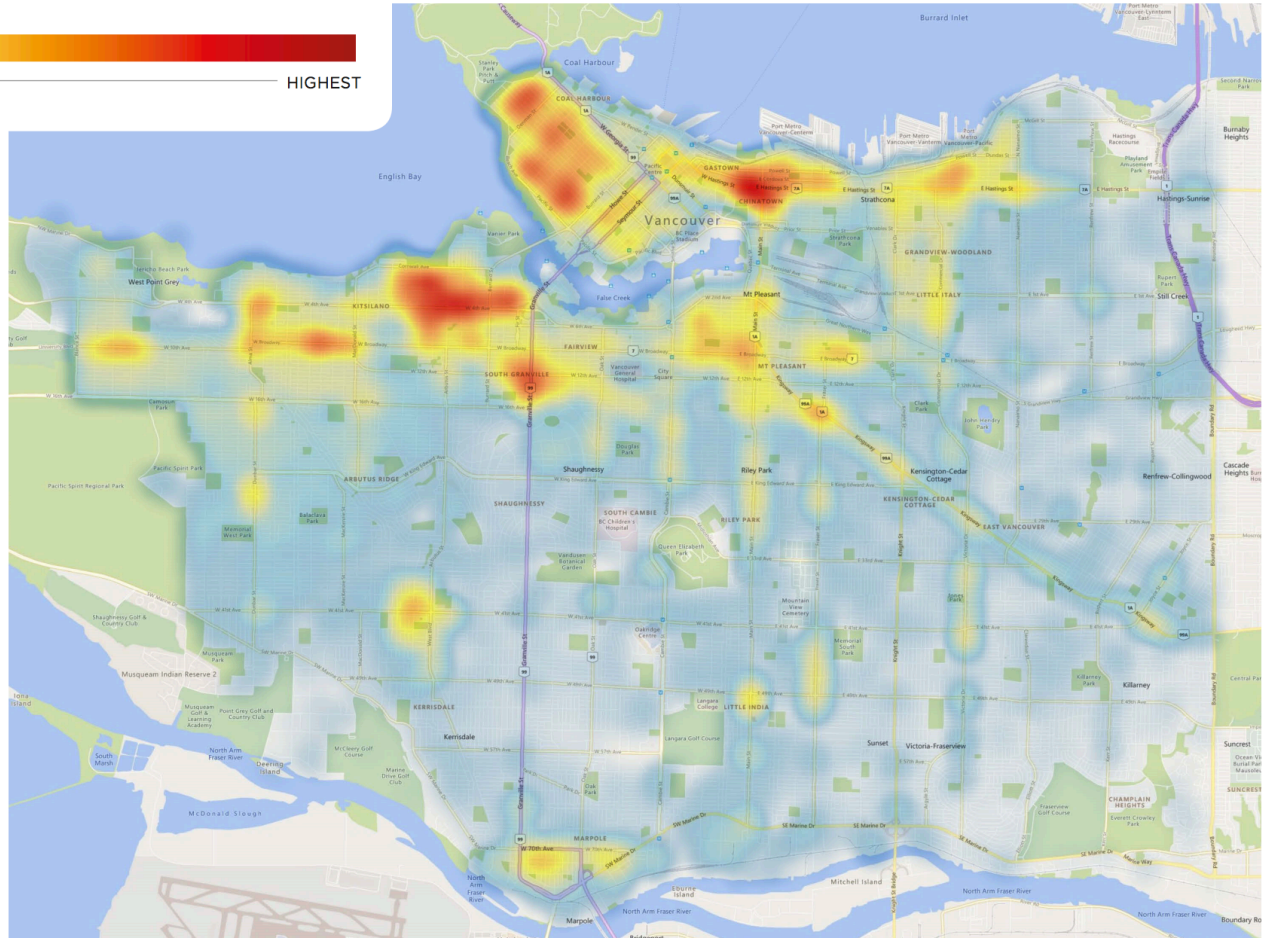
LOWEST — HIGHEST

This map is based on a simulated magnitude 7.3 earthquake, located about 30 km west of Vancouver at a depth of 5-10 km. The map shows the potential concentration and severity of damage to buildings as a result of this earthquake scenario.

This map does not include damage to other types of infrastructure that may impact homes and buildings. Damage is possible across Vancouver and residents everywhere should take steps to prepare their homes and workplaces for earthquakes.

Earthquake preparedness is everyone's responsibility.

**Learn more and get prepared at: vancouver.ca/earthquake**




- **Deadlines:** Put an end to procrastination
- **Timely prompts:** Provide information just in time for use
- **If-then plans:** Include strategies for overcoming likely obstacles
- **Present vs. future:** People want benefits now & costs later

# Thank you!

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Our article can be found online at: https://www.collabra.org/articles/10.1525/collabra.238/