

Public perception of geothermal power plant in South Korea

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Research Context

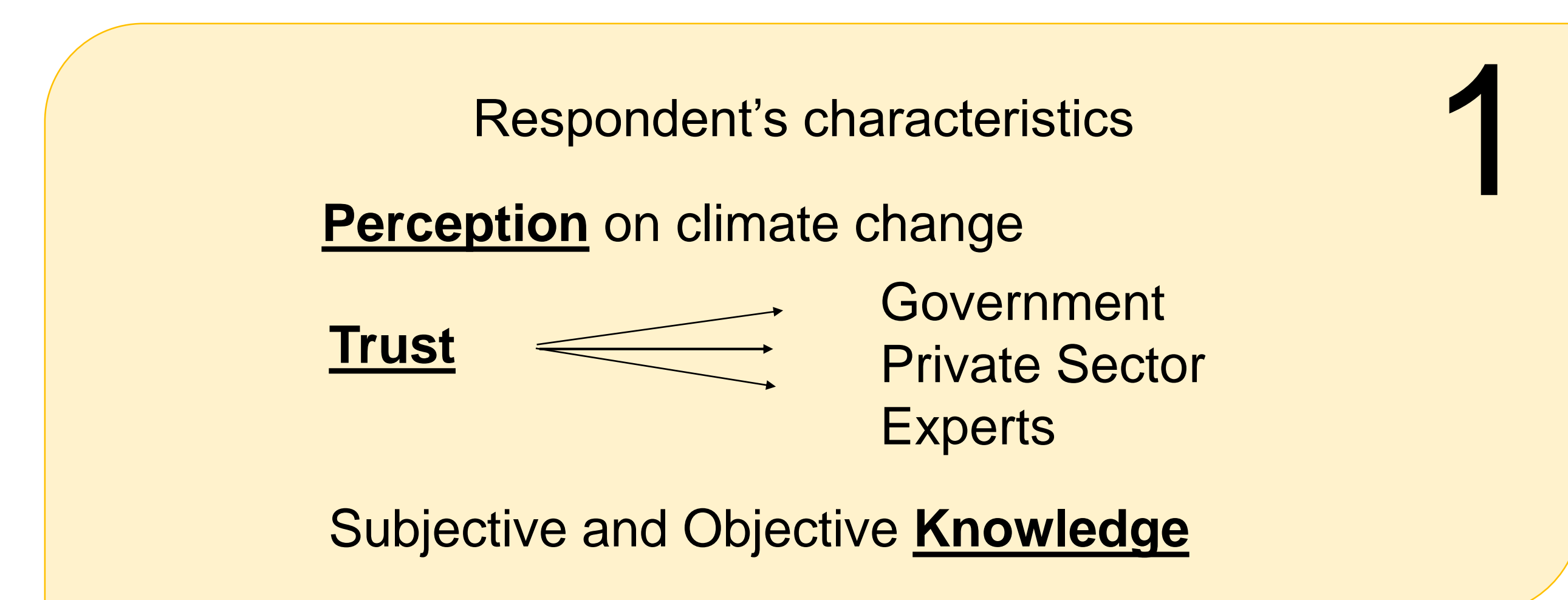
Following the 2017 Pohang earthquake in South Korea, this research studied public perception of geothermal power plants in South Korea and the effects of the earthquake on the perception.

Research Questions

1. How and to what extent do varying magnitudes of induced seismicity risks affect the support for geothermal power plant?
2. Would varying respondent's characteristics (i.e. trust on involved parties, knowledge, and climate change perception) influence the effect of induced seismicity risks on the support for geothermal power plant?
3. Does the awareness of the cause of the Pohang earthquake influence the perception of geothermal power plants?

Research Design

The study is based on a conjoint survey conducted with a representative sample (n=998) of the South Korean population. Conjoint analysis examines how people make choices in real life by presenting scenarios composed of various attributes or factors and factor levels

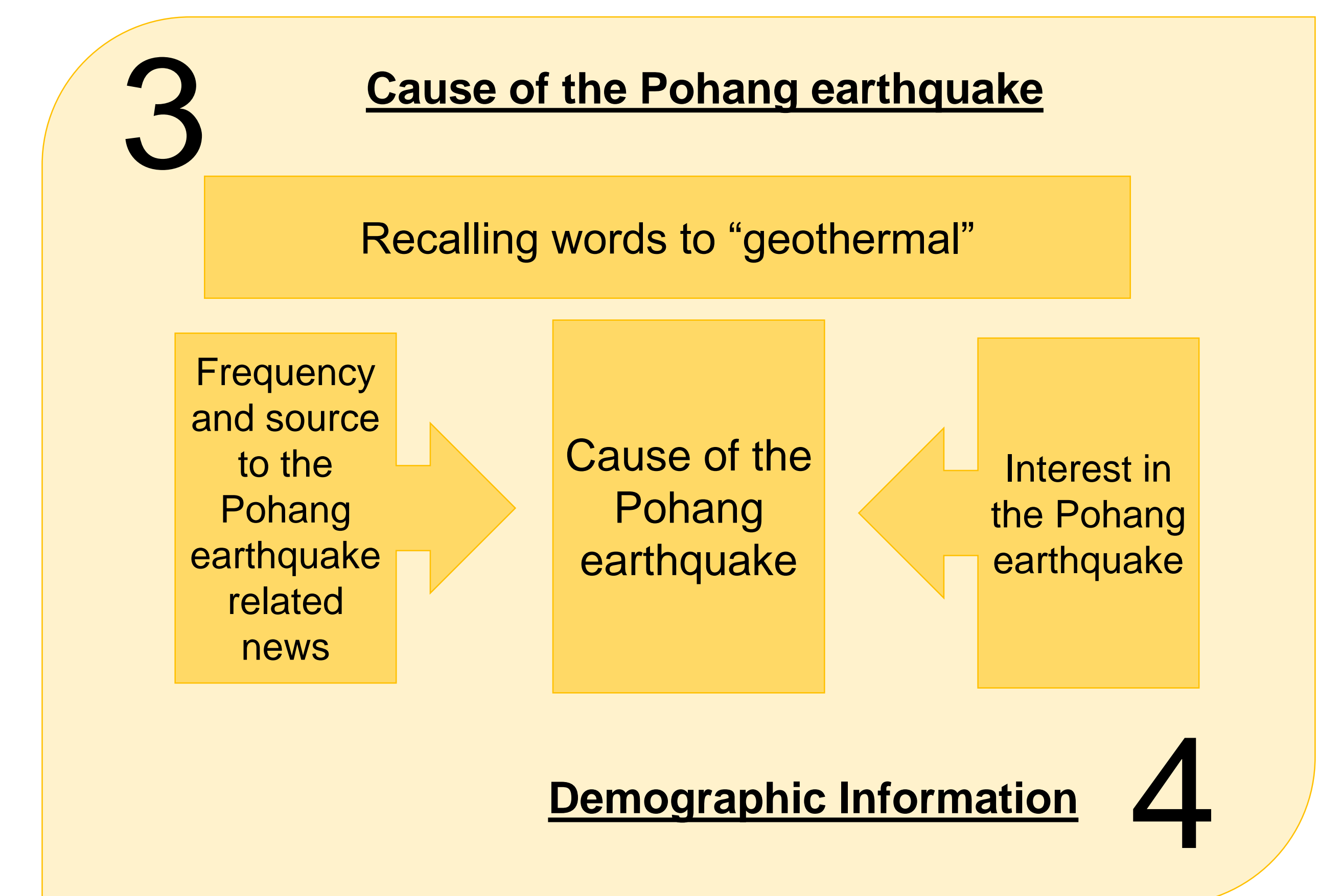


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Conjoint Survey

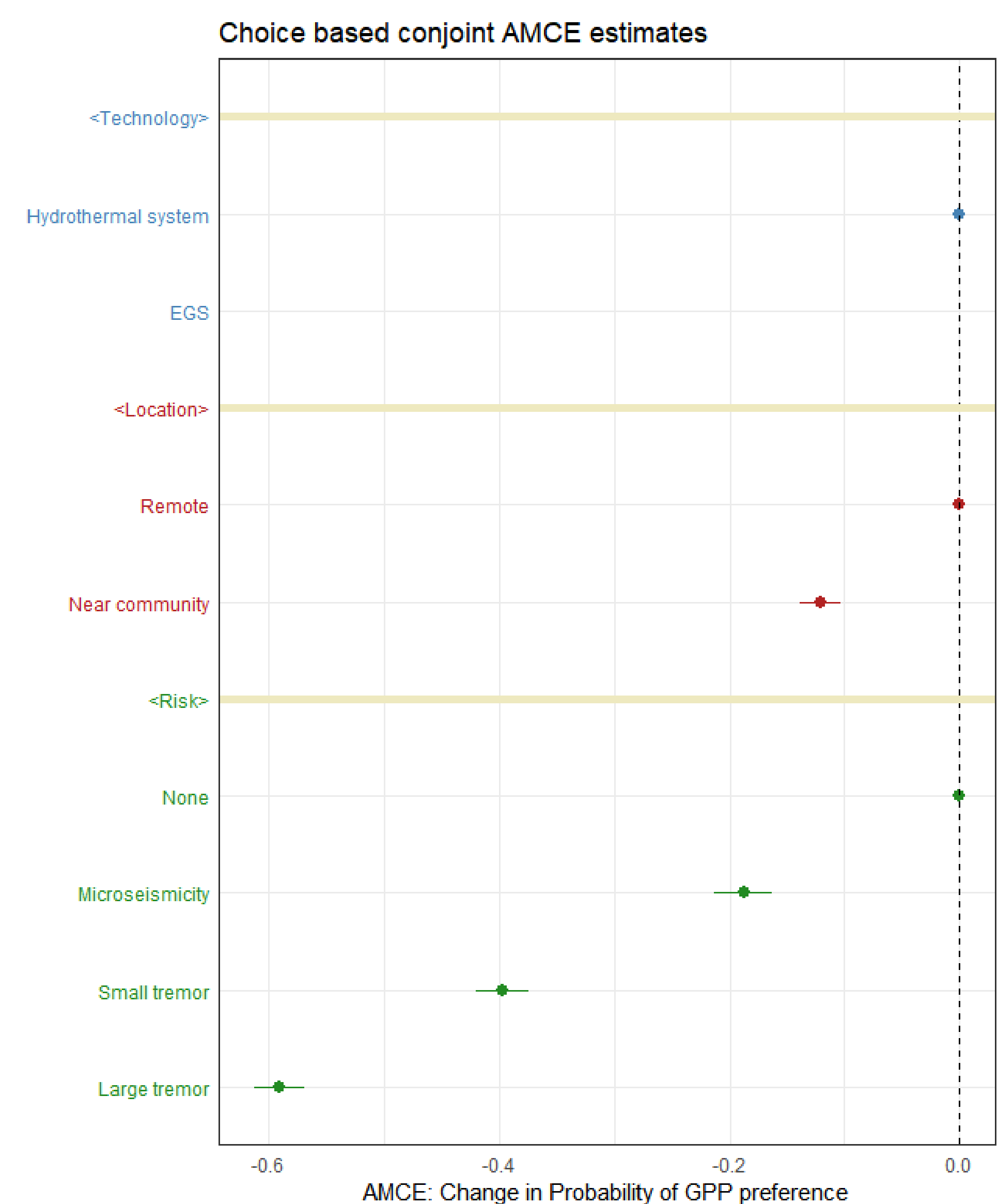
Project characteristics

Attributes	Levels
Technology (2)	Hydrothermal System Enhanced Geothermal System (EGS)
Location (2)	Remote and Near Community
Risk (4)	None, M _L 2, M _L 3, M _L 5



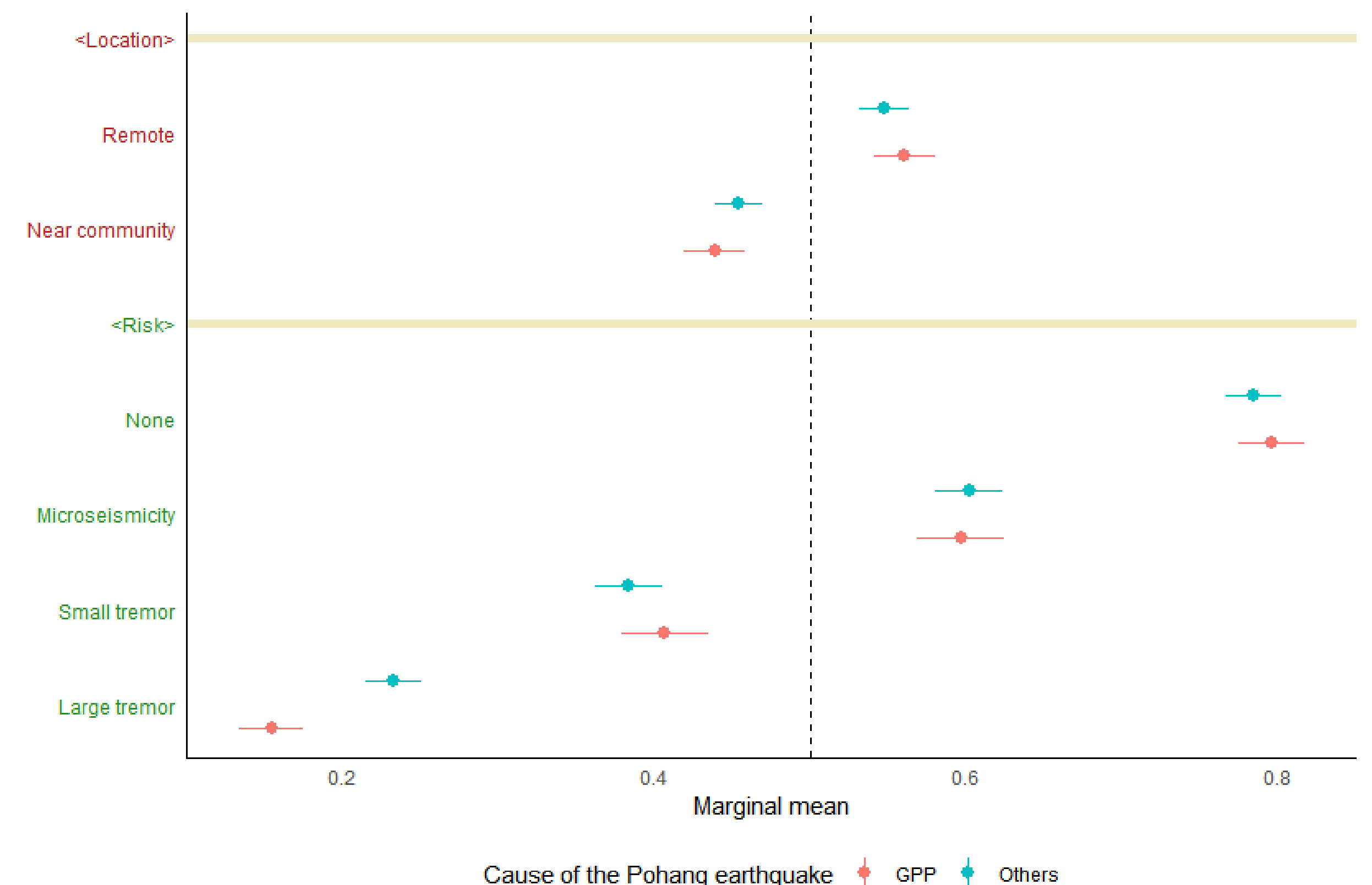
Main Results

1 Effect of project characteristics on public perception



The respondents express lower preference to a project (i) that is near a community compared to that of in rural; and (ii) with induced seismicity risks compared to that of without risk. As expected, the respondent's preference decreases with higher induced seismicity risk. The influence of induced seismicity is strongest among the three attributes, thereby, masking the technology's effect.

2 Effect of the Pohang earthquake



Overall, identifying the geothermal project as the cause of the Pohang earthquake (GPP) does not significantly influence the preference for any type of geothermal power plant, except when they face a scenario where there is a risk of a larger earthquake (M_L5)

1. Induced seismicity risk is a significant factor to the perception of geothermal power plant.
2. Respondent's characteristics do not significantly influence their evaluation of seismic risks on the perception of geothermal power plant.
3. In general, awareness of the cause of the Pohang earthquake did not significantly influence the perception of geothermal power plants. But when a geothermal power plant has a risk of a large earthquake (M_L 5), the project significantly loses the support from people who identify the geothermal project as the cause of the Pohang earthquake.

→ A limitation of the study is that respondents might have been unaware of the exploration risk associated to hydrothermal when expressing their preferences
→ It is the presence/absence of induced seismicity risk that strongly affects the acceptance of geothermal power plant project (need to balance out the risk).