



Unveiling Resilience: A comparative study of risk perception and preparedness in New Zealand and the global context

Minh Kieu

Intelligent and Future Transport Systems Lead

Transport Research Centre

University of Auckland

These slides: <https://leminhkieu.github.io/p/Paper-Resilience.html>

What's in this research?

We introduce four new indices – Risk Perception, Experience, Impact, and Resilience – to provide a visual global comparison of individuals' concerns, exposures, and preparedness towards major personal harms and disasters across the globe

[Where is New Zealand?](#)

Perception index

How worry a respondent is to the major risks:

Crime

Water

Food

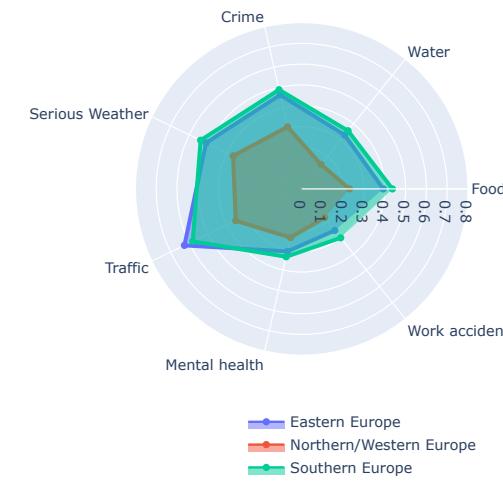
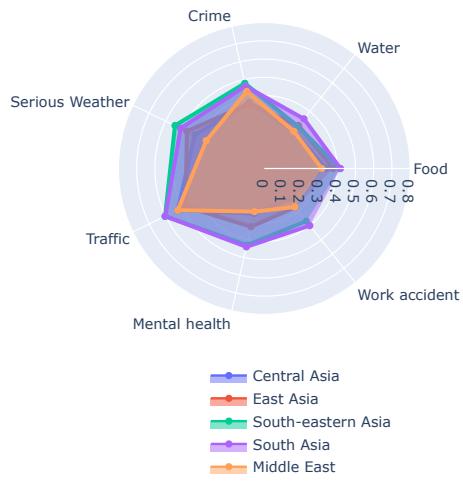
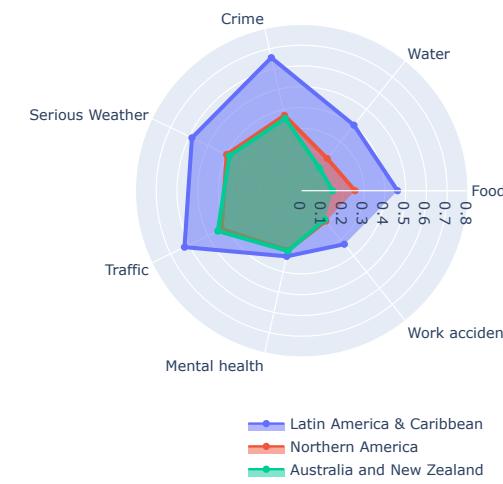
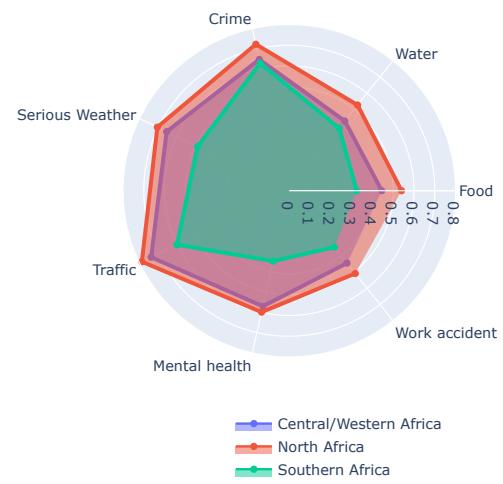
Work accident

Mental health

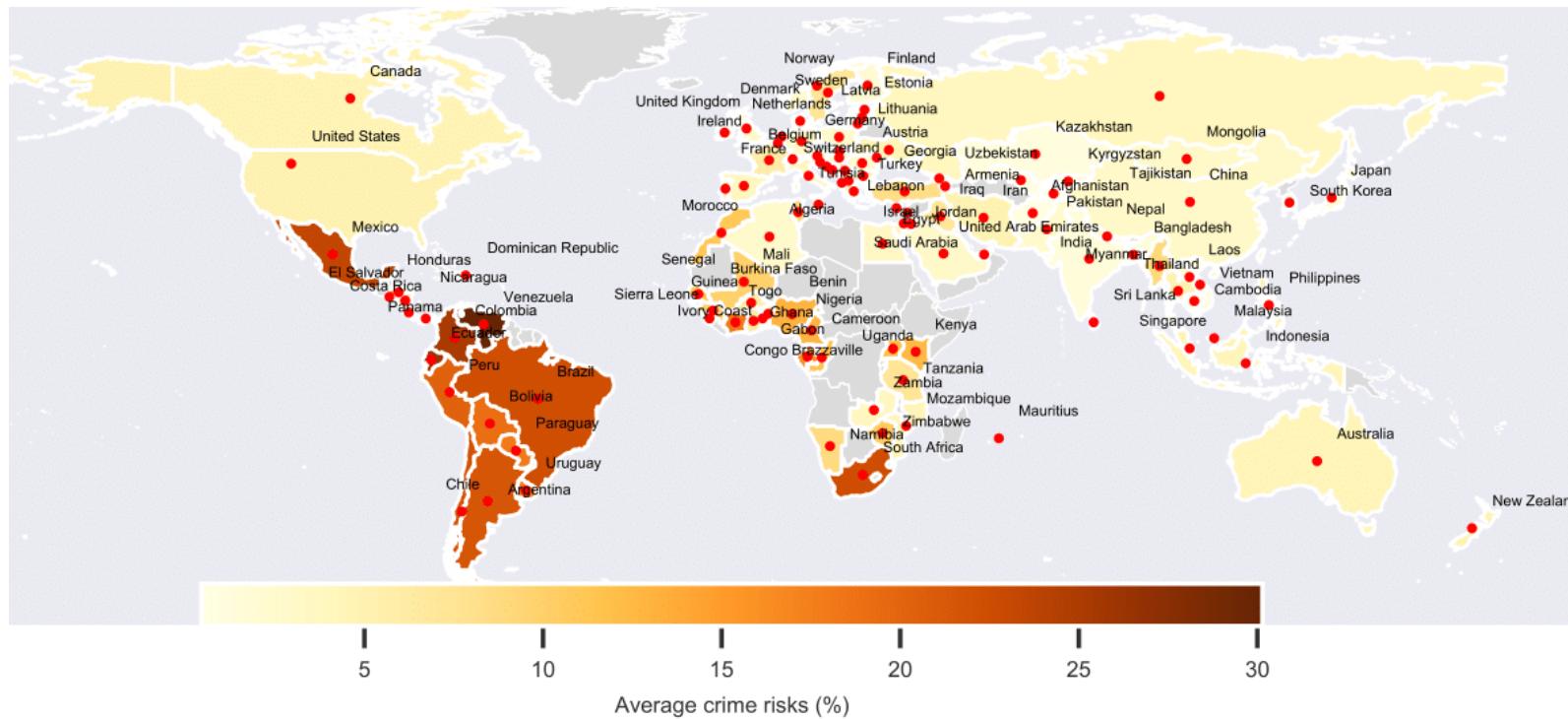
Traffic crashes

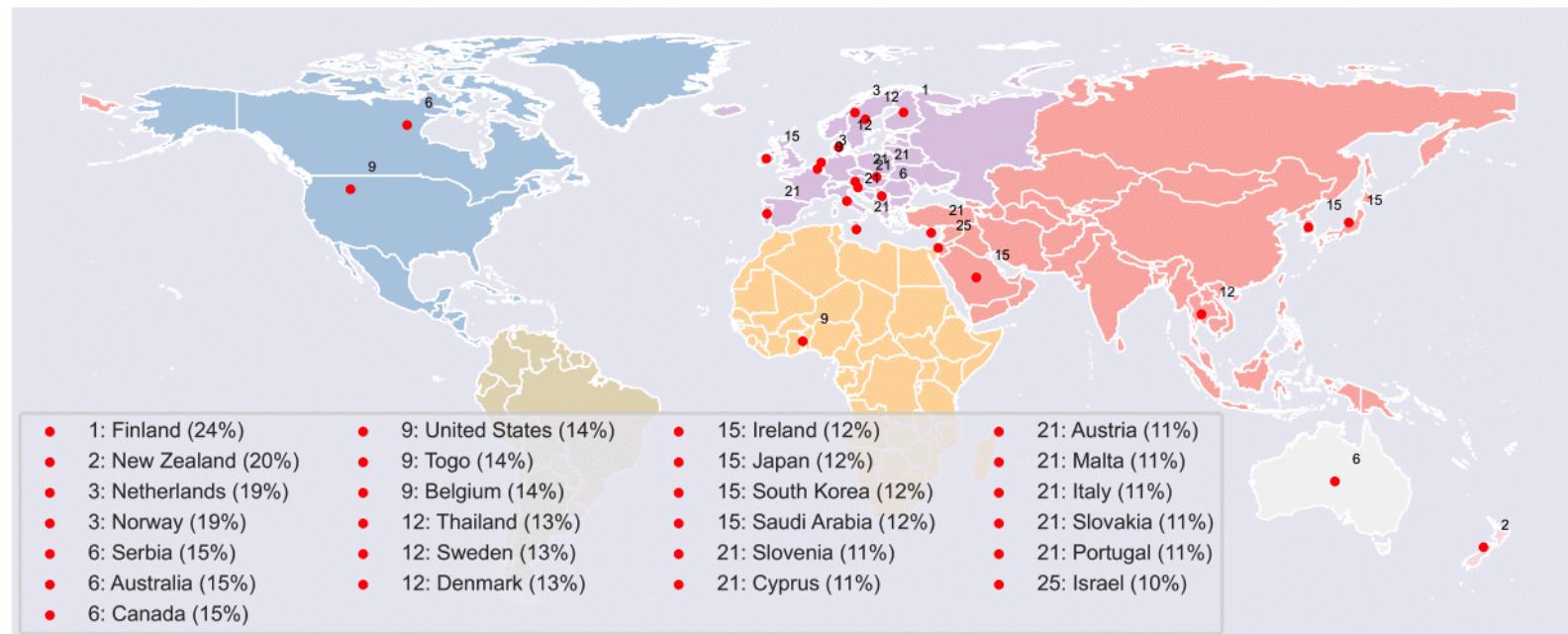
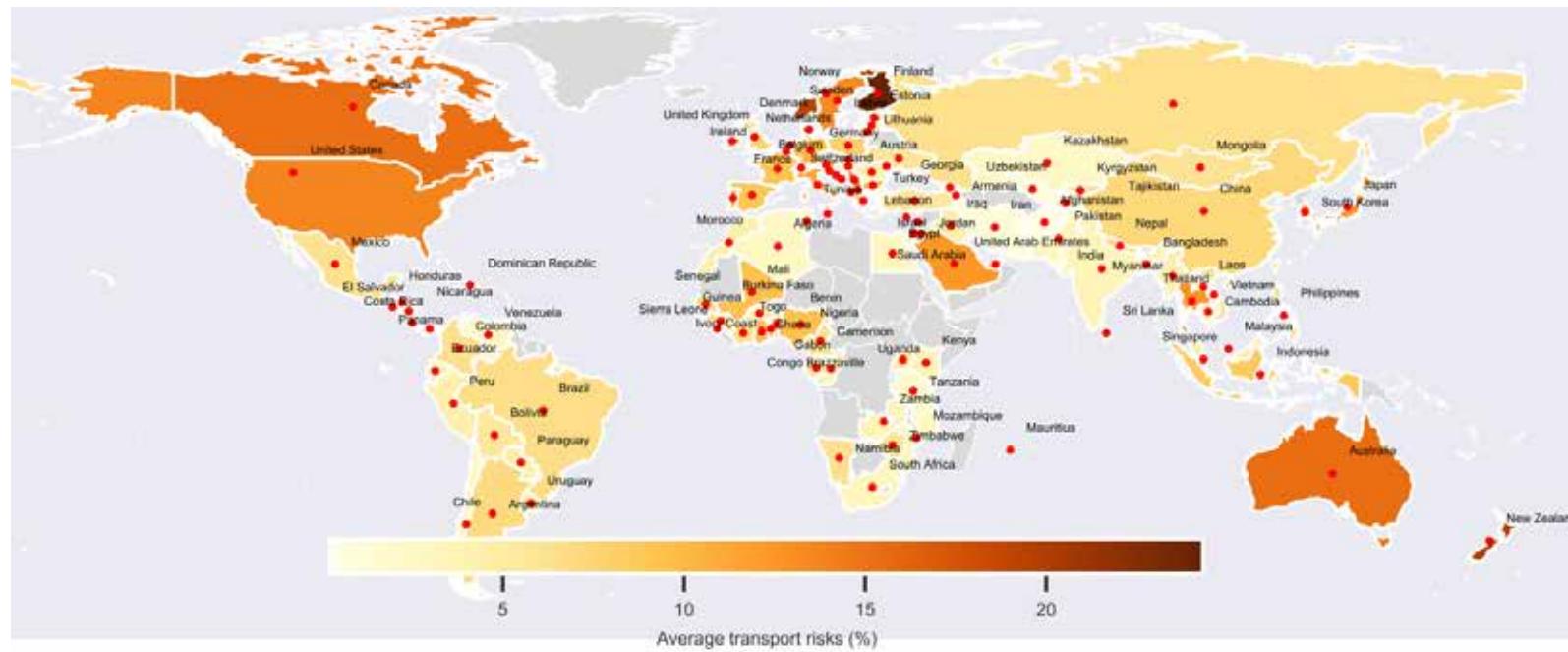
Serious weather

For each risk, we give a value of 1 if the respondent is “very worried”, 0.5 if they are “somewhat worried” and 0 if they are “not worried” towards the risk.



How people around the world worry about crimes?







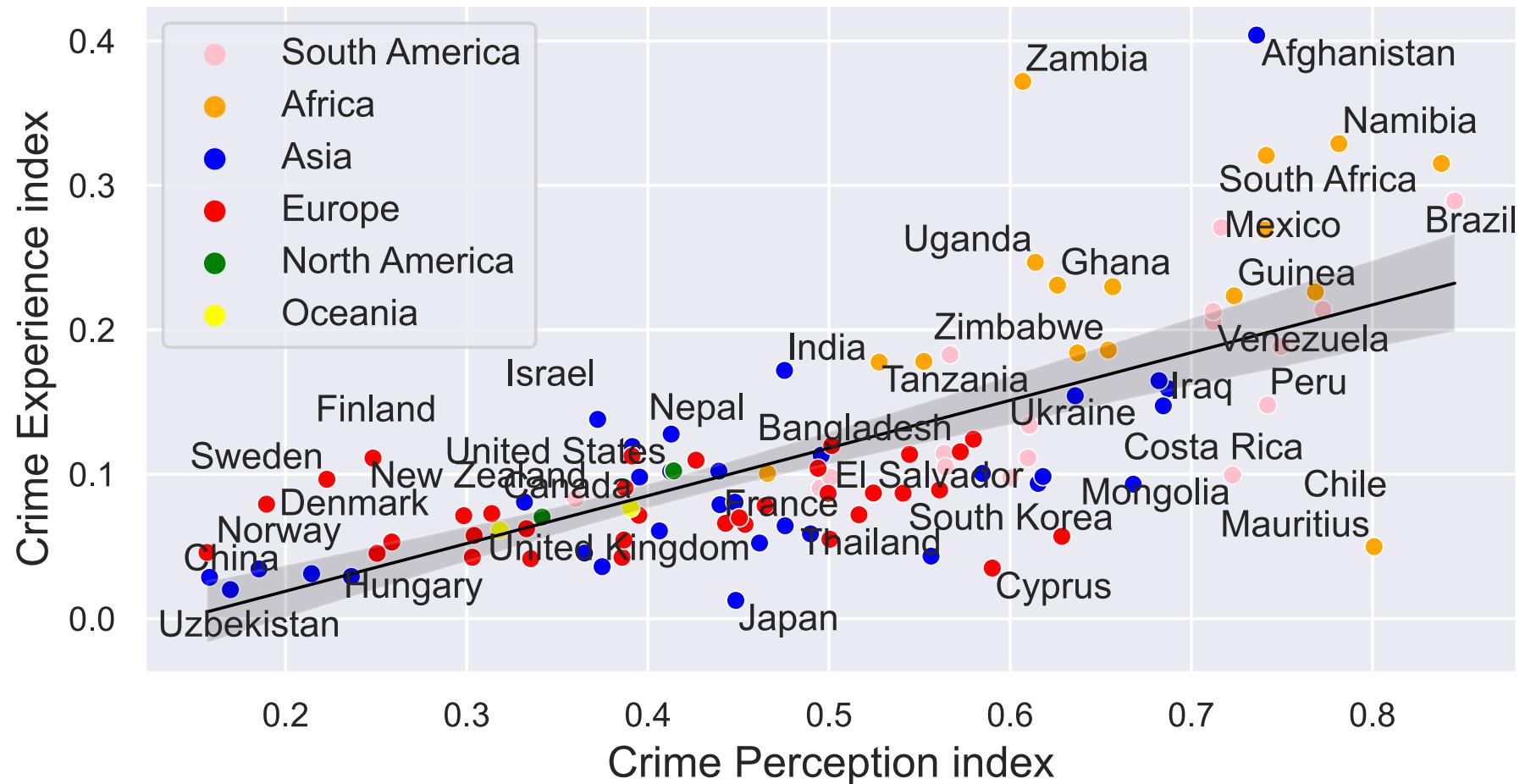
Experience index

But how do we actually experience those risks?

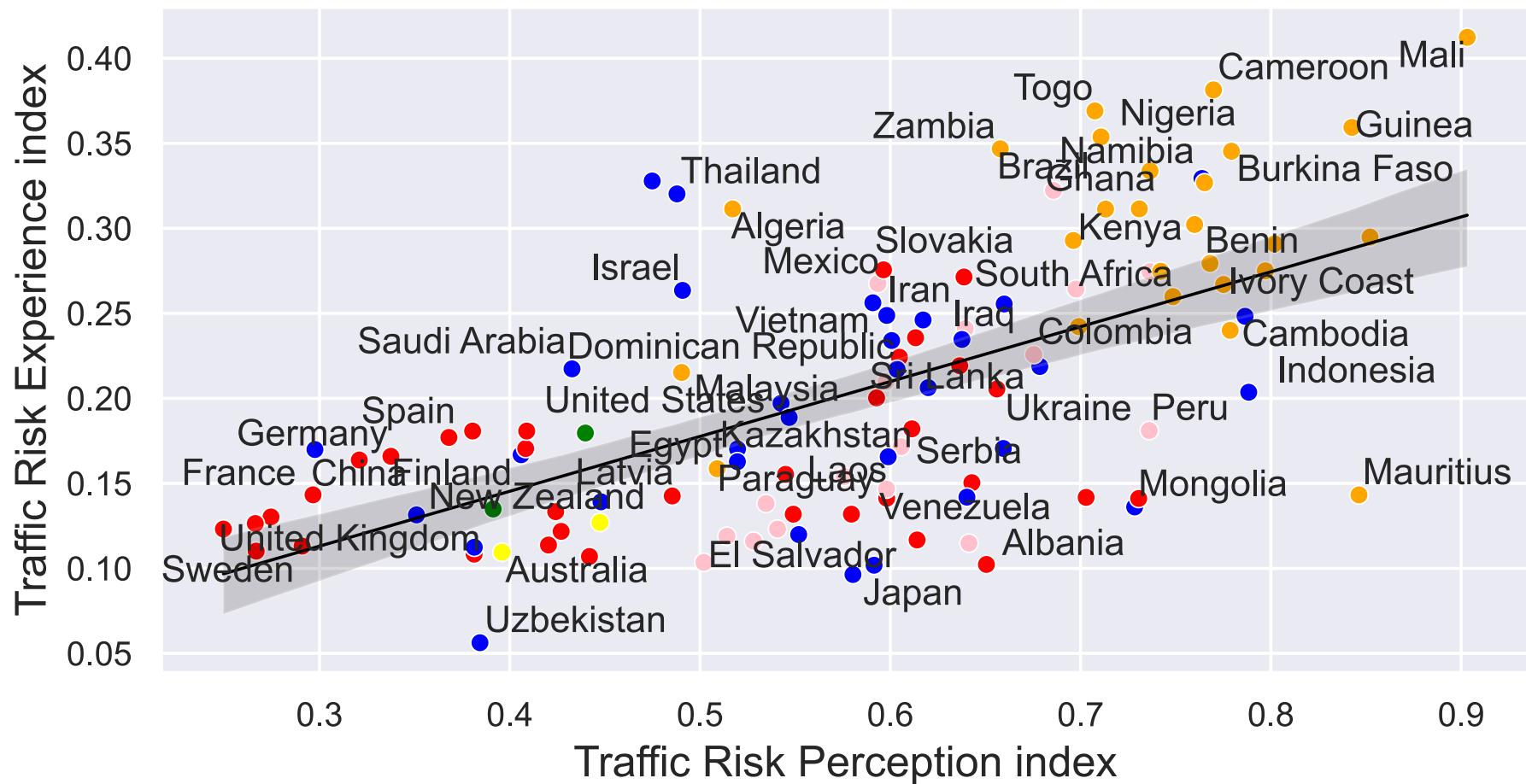
Value is either 0 (no harm), 0.25 (know someone who experienced harm), 0.5 (experienced harm) or 1 (both).



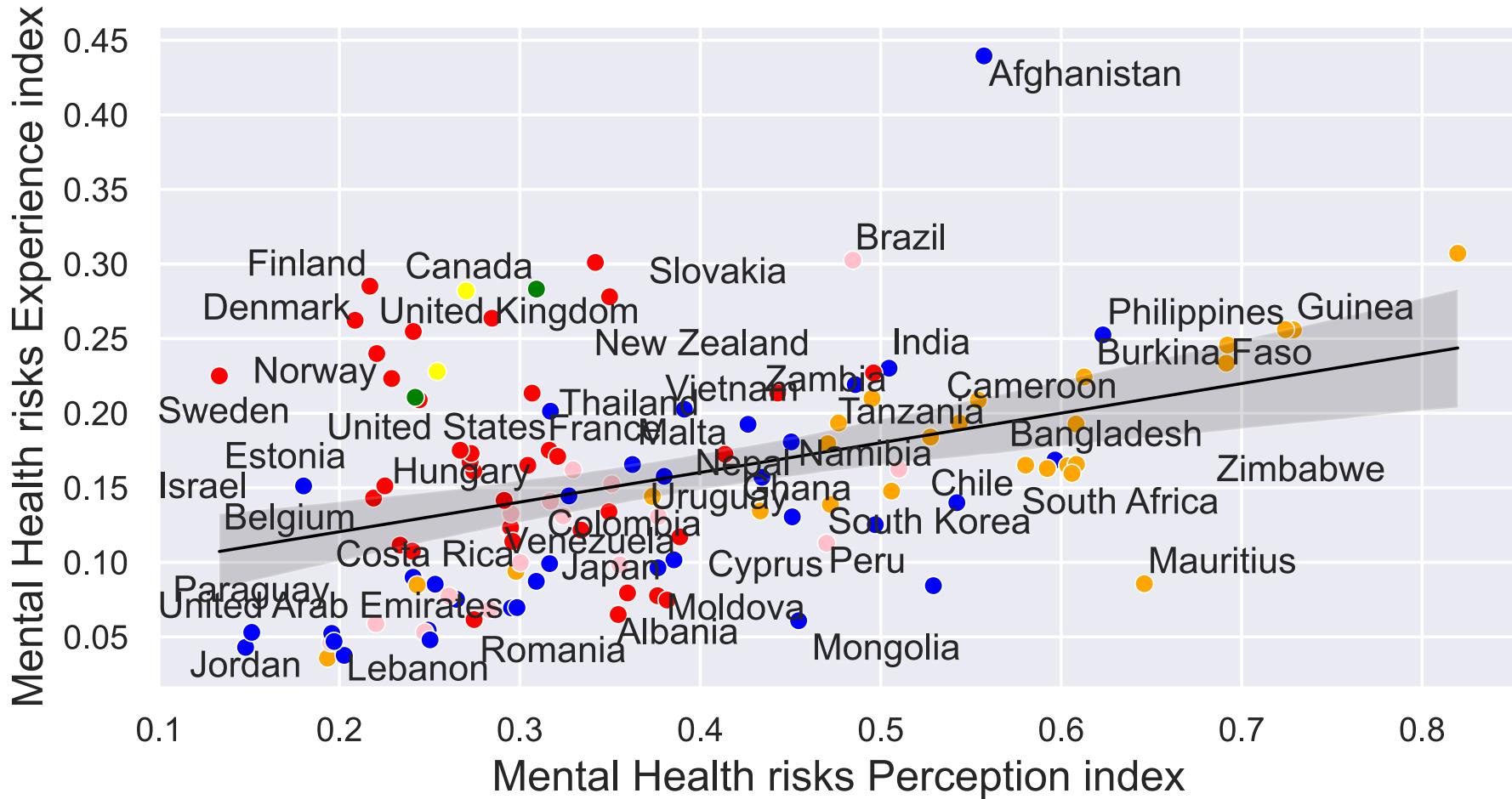
Experience vs Perception of risks: Crime



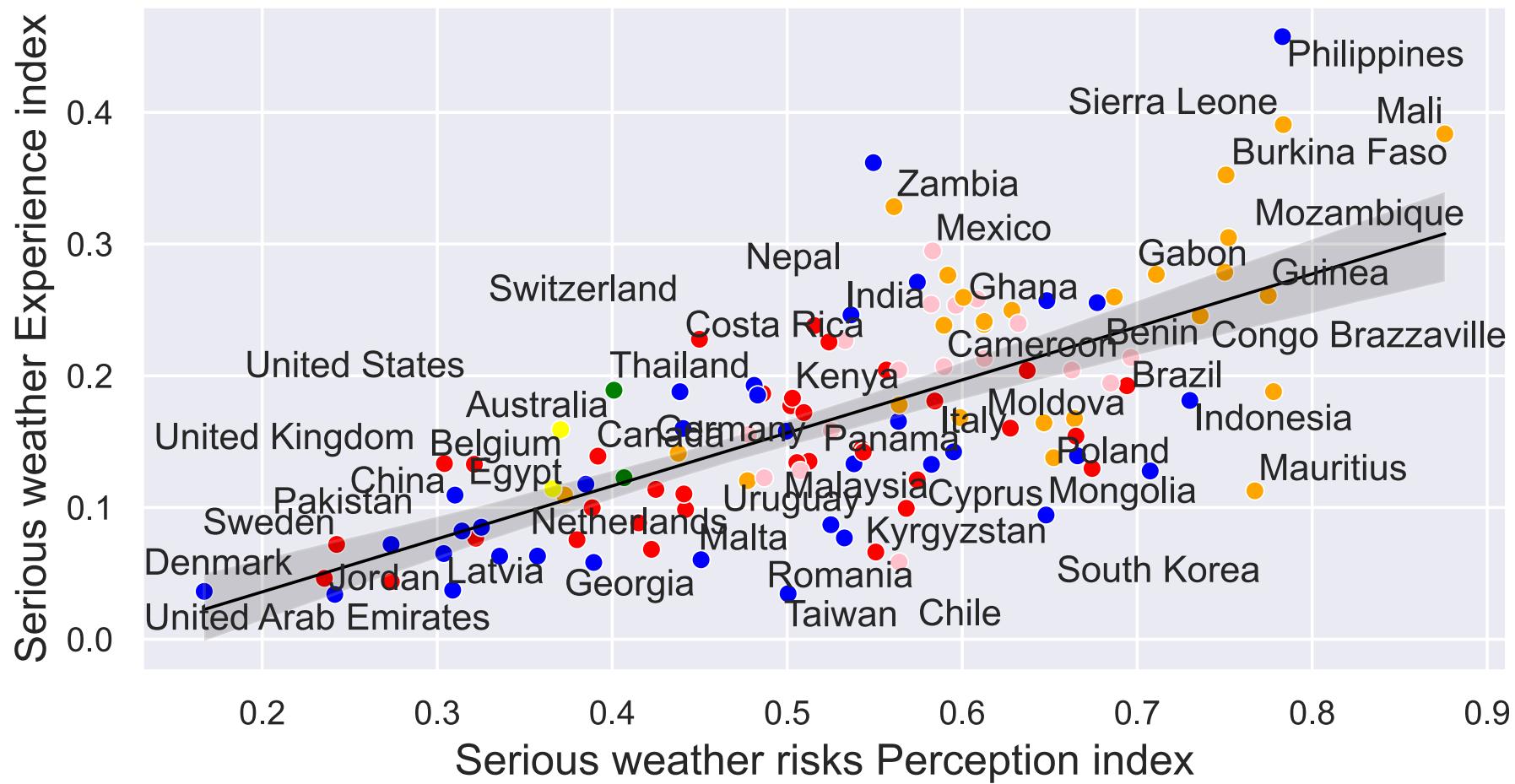
Experience vs Perception of risks: Traffic



Experience vs Perception of risks: Mental health



Experience vs Perception of risks: Serious weather events

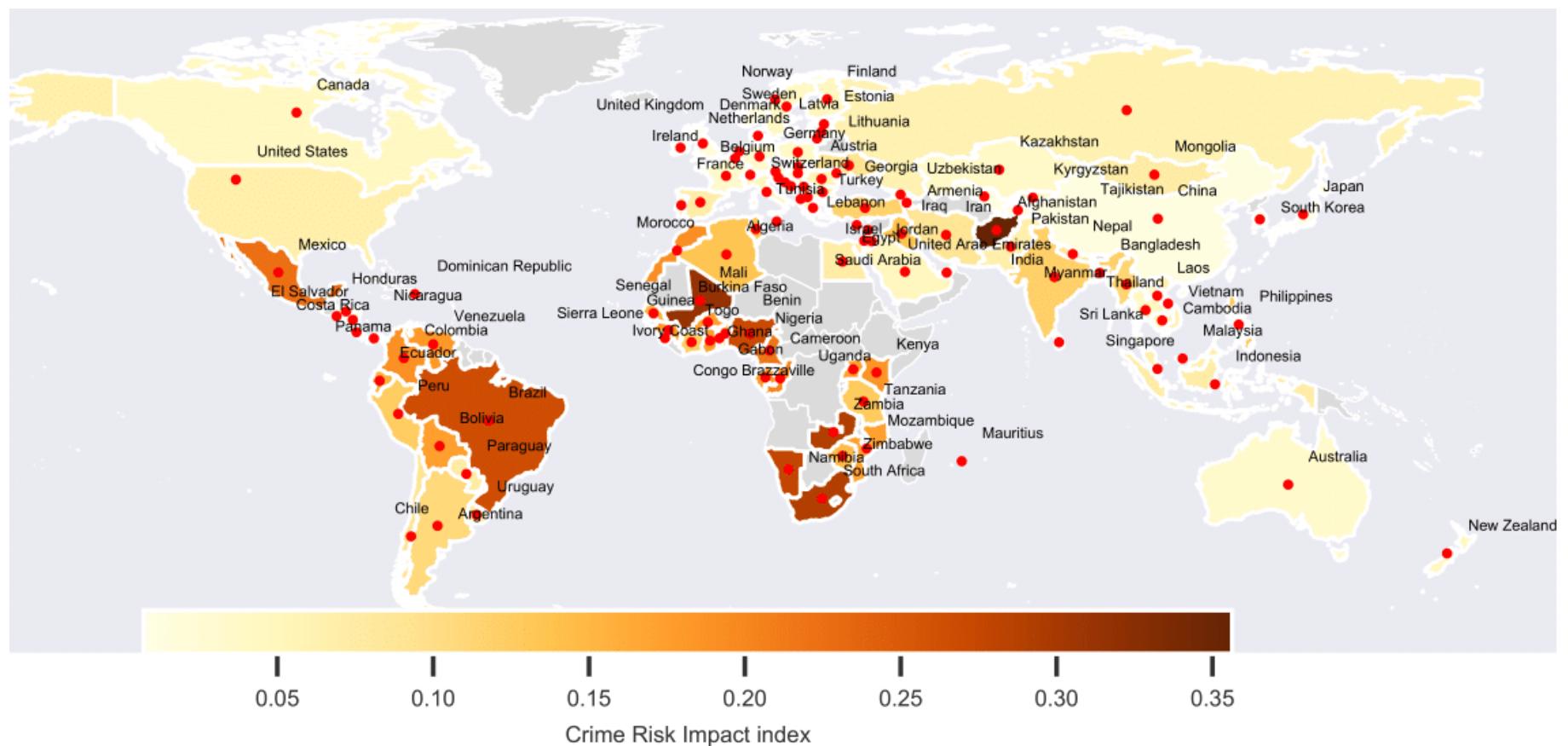




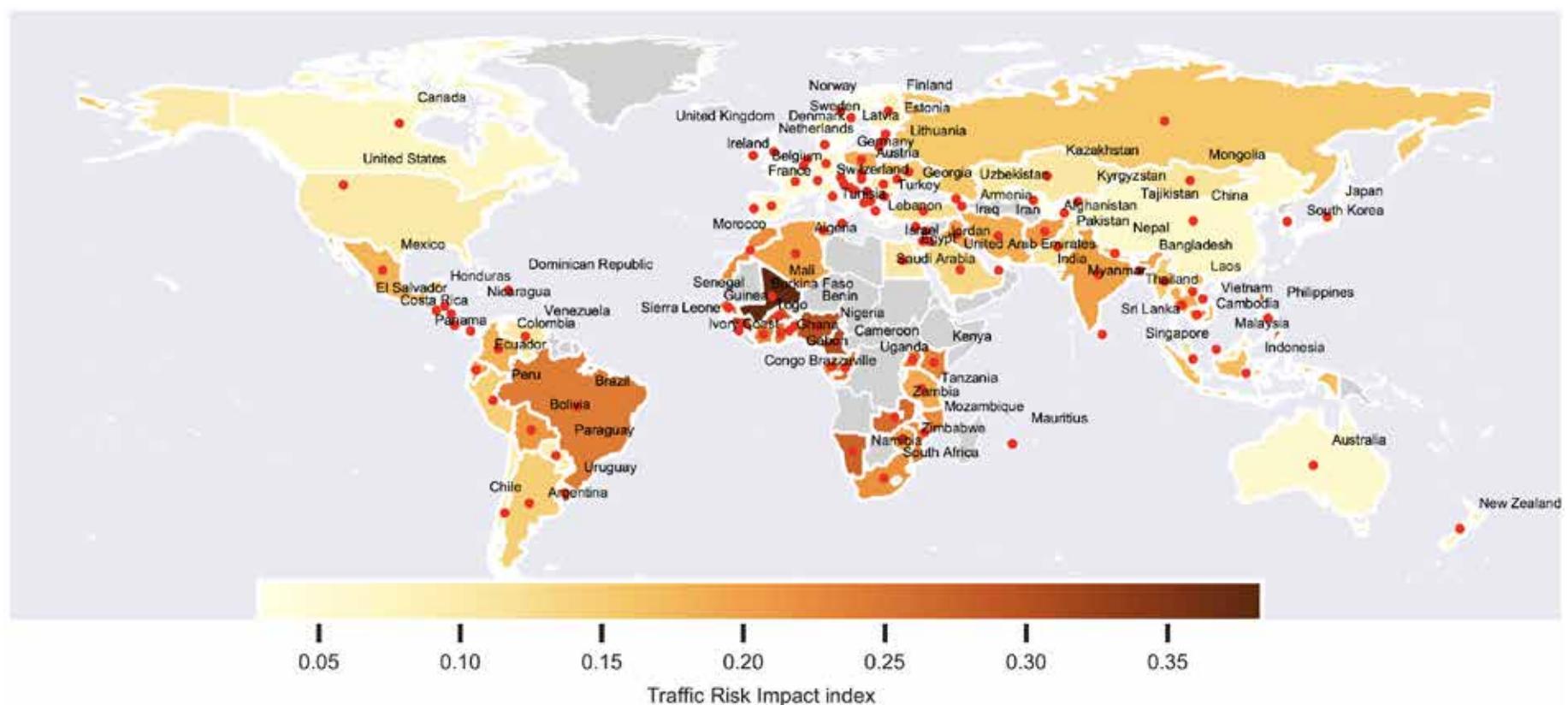
Risk Impact index as the product of Perception and Experience indices.

$$\text{Risk Impact} = \text{Perception index} \times \text{Experience index}$$

Risk Impact index: Crime



Risk Impact index: Traffic

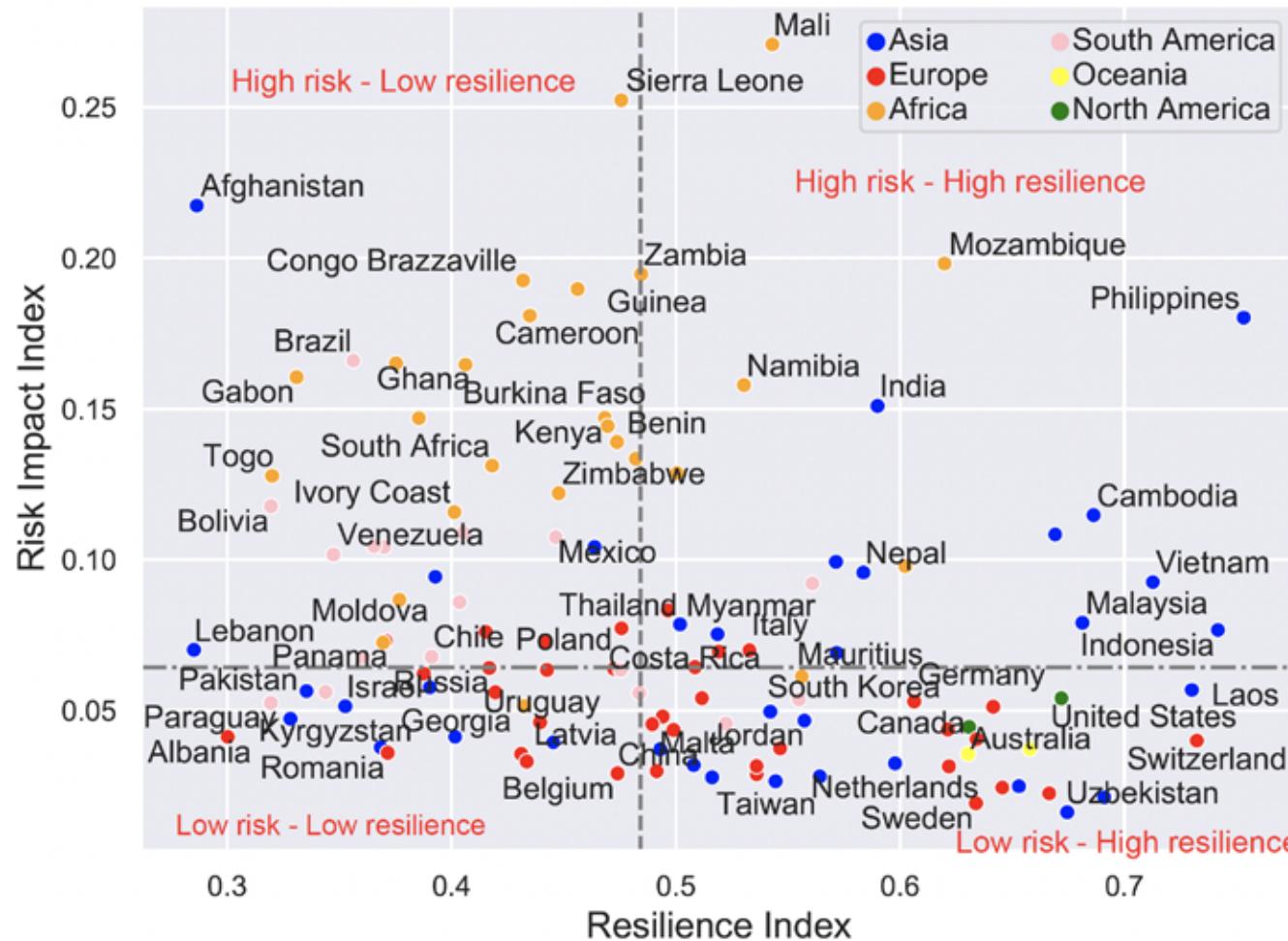


The Work Risk Poll survey dataset has several questions related to personal resilience:

- Suppose you lost all of your household income, how long would you be able to cover your basic needs?
- Are your neighbours care about you and your well-being?
- Is your national government well prepared to deal with a disaster?
- Are your hospitals well prepared to deal with a disaster?
- Are you and your family well prepared to deal with a disaster?
- Is your local government well prepared to deal with a disaster?
- Could you protect yourself and your family in a future disasters?
- Does the plan for future disaster known by all household member in your family?

We encode the answers for these questions with a value between 0 to 1. We assign 1 to the most resilient answer (e.g. "Yes, well prepared"), 0 to the least (e.g. "No, not well prepared") and 0.5 to the middle/unsure answer (e.g. "It depends").

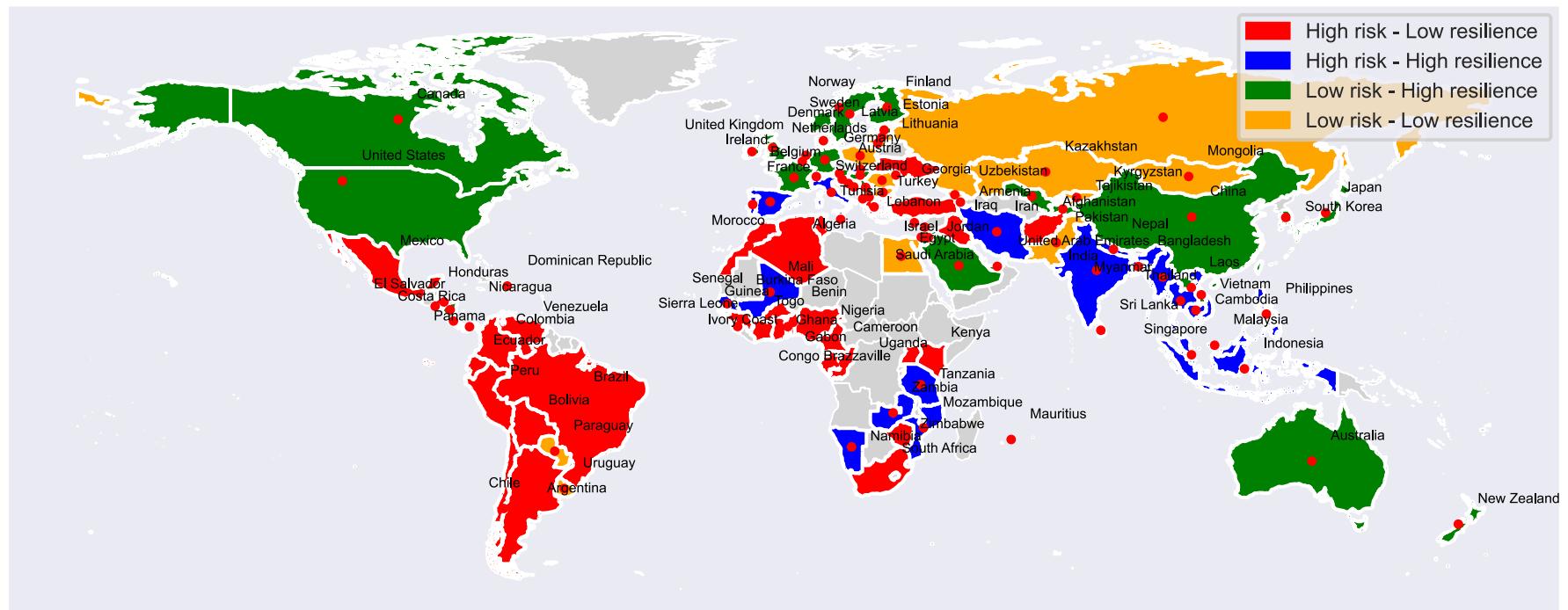
Resilience vs Risk Impact

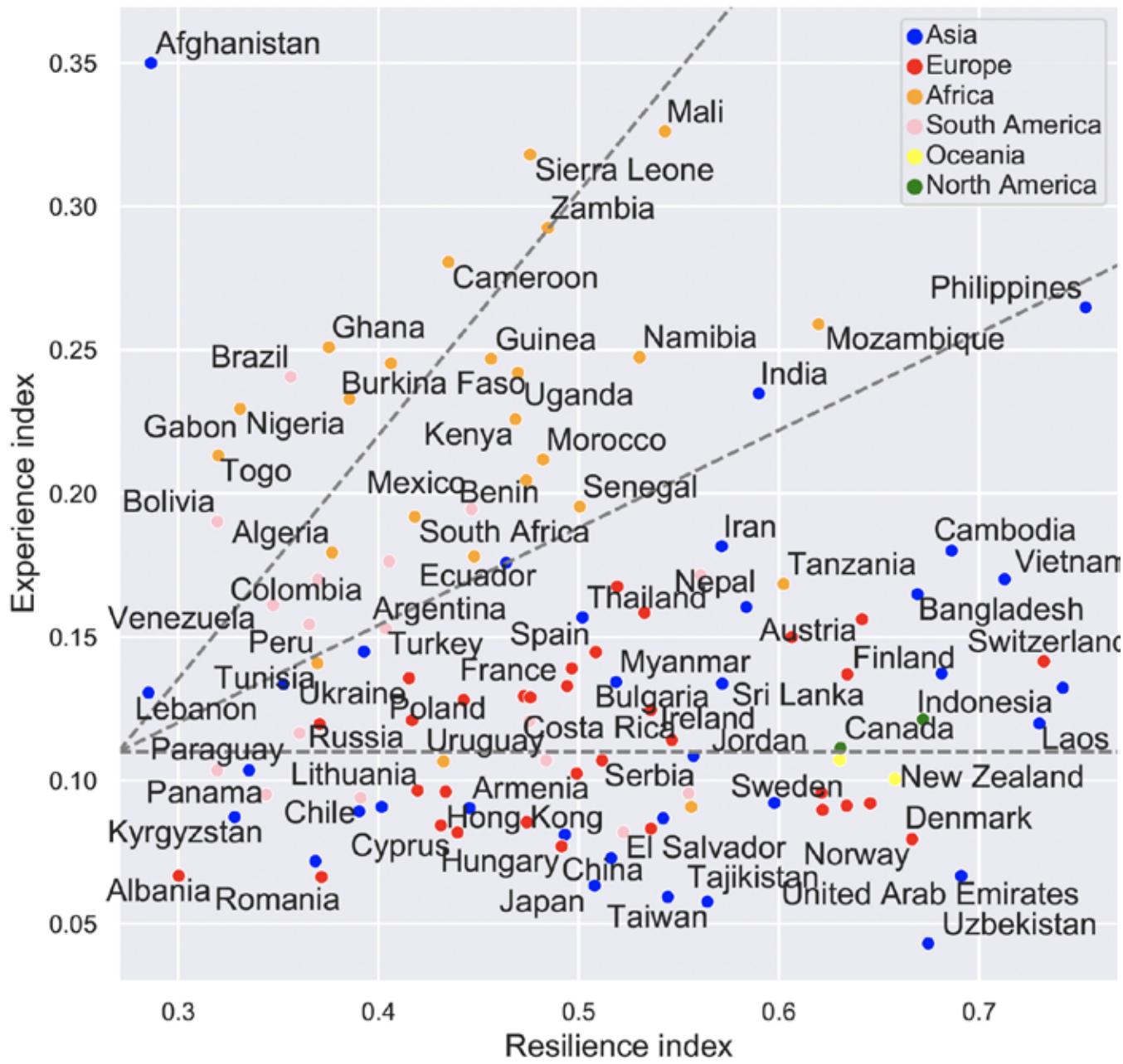


Risk Impact = Experience x Perception

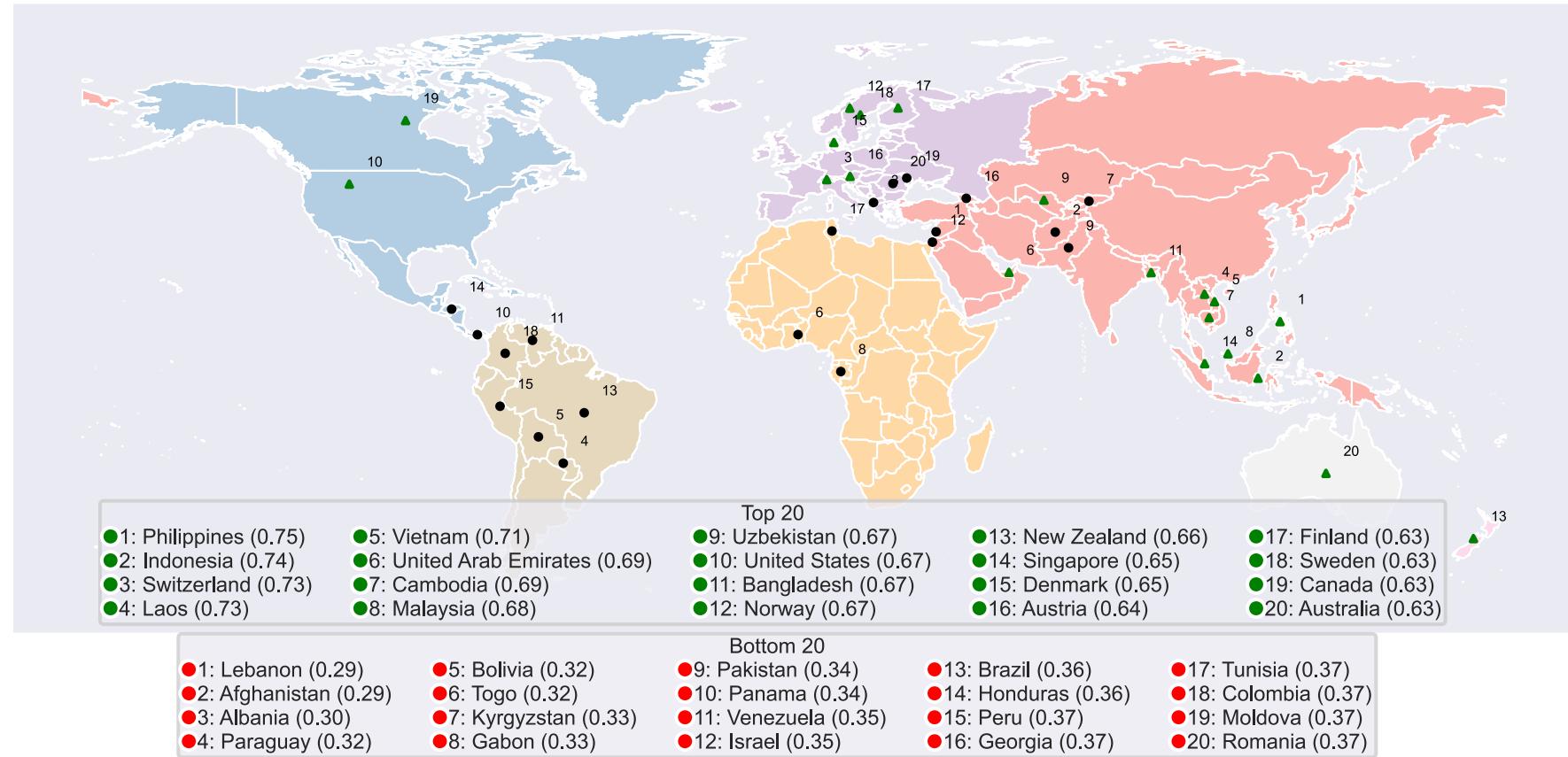
Resilience = How an individual can bounce-back and bounce-forward against disasters

Resilience vs Risk Impact on the map





Global ranking of resilience



We are 13th in the world!

Conclusion

People in developed countries experience a lot less harms compared to people in developing countries, so as a result they also perceive risks as a lot less severe.

In Aotearoa we worry too much about traffic, but we actually should worry more about Mental health issues

A new resilience index enables us to classify countries into 4 main quarters.

We are 13th in the world in Resilience



THE UNIVERSITY OF
AUCKLAND
Te Whare Wananga o Tāmaki Makaurau
NEW ZEALAND

Thank you!

Questions?
