# Strengthening National Internet Resilience: A Focus on Openness and Security

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# Background

What is trust?

- A country allows a different country to run their internet services → Trust.

Critical functions in society

- All depend on Internet and email.

National Self-sufficiency

- We talk about this but what is the status?

Openness

- Is the internet becoming less open?

# Research topics

- National self reliance
- Internet Resilience Index
- Internet trust relationships

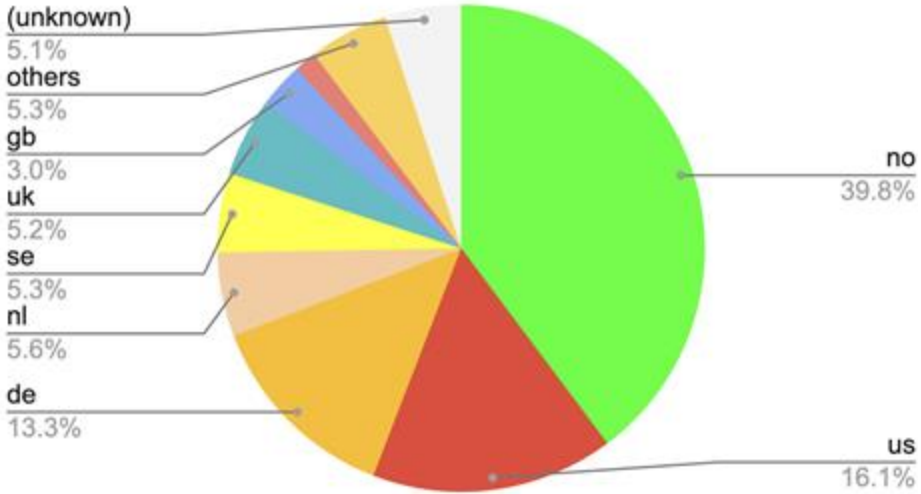
# Methodology

- Publicly available data
  - TRANCO 1m list of internet domains
  - DNS lookup (A, MX, NS)
  - GeoIP (Maxmind)
  - HTTPS Certificates
- “Social network” of countries
  - Bi-directional trust as observed from the data
  - What is Trust? Critical functions in society dependencies => Implied trust.
  - Bi-directional matrix of trust relationships. Louvain algorithm to identify clusters.

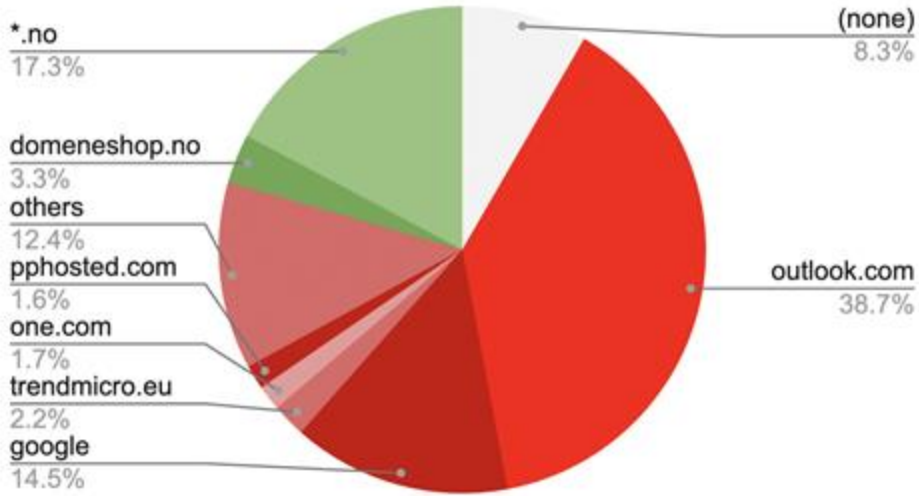
# Results


- Evang, J.M., Bryhni, H. (2025). National ICT Resilience: An Analysis of Norway’s Cyber Infrastructure Preparedness. In: Neri, F., Du, KL., San-Blas, AA., Jiang, Z. (eds) Computer and Communication Engineering. CCCE 2024. Communications in Computer and Information Science, vol 2192. Springer, Cham. https://doi.org/10.1007/978-3-031-71079-7_8
- Evang, J. M., Gomola, A. (2025) Global Trust and Network Security: The Geopolitics of Offshoring Digital Services

## Hosting for .no domains

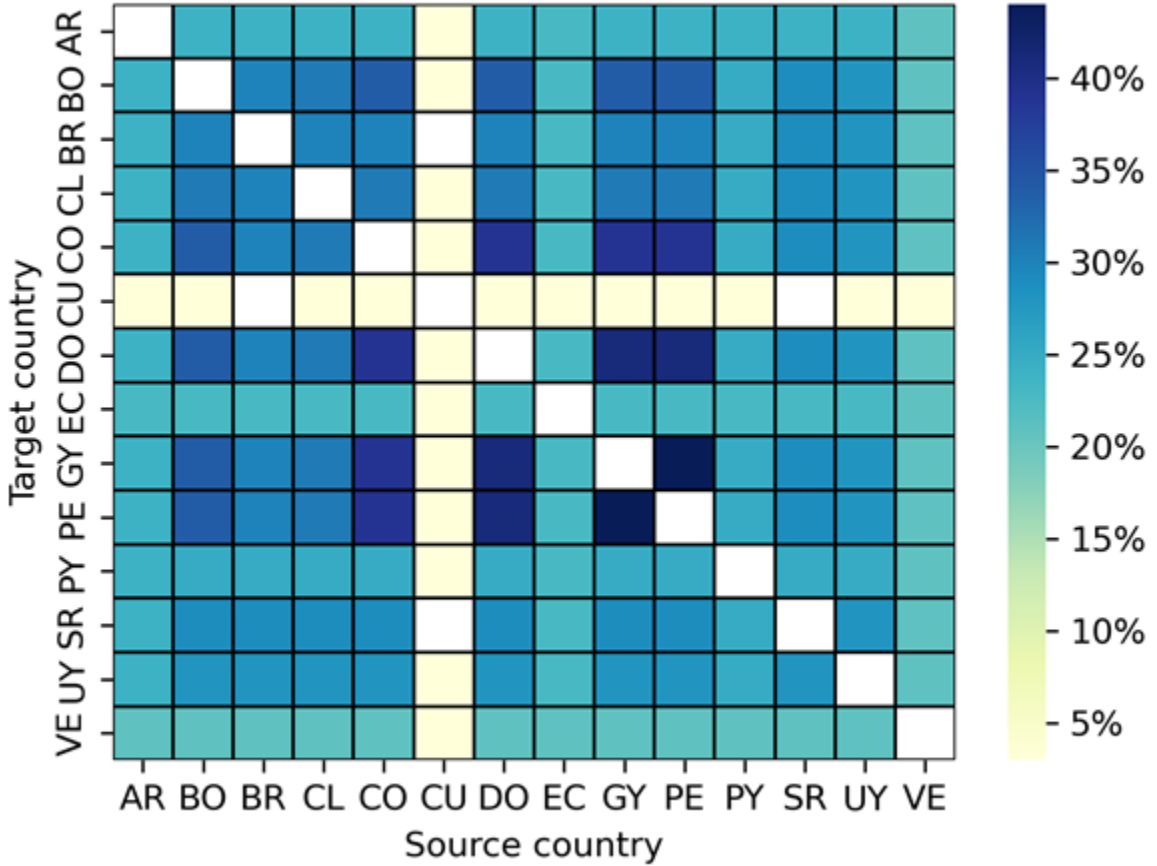



## MX for .no domains



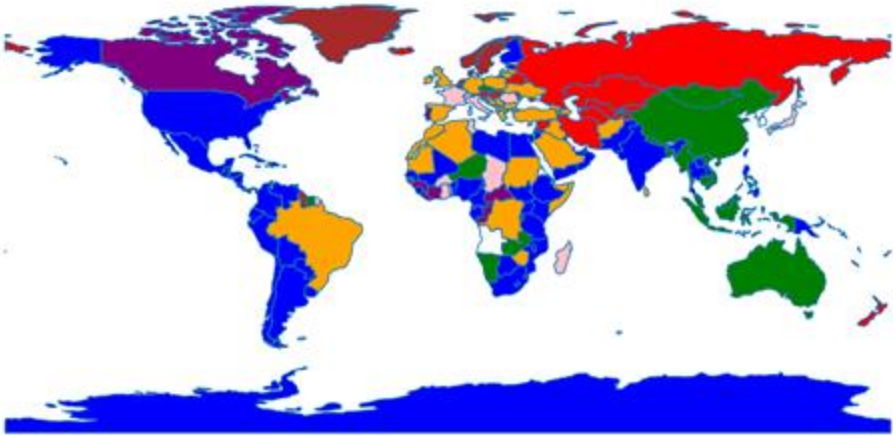
# Latin American trust (used as an example)

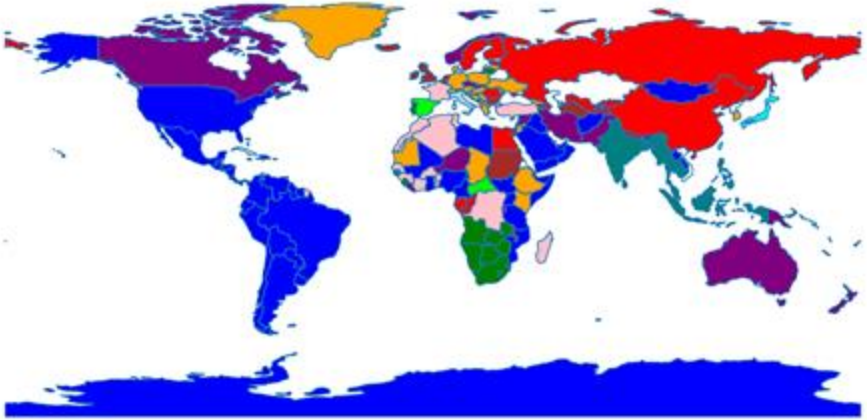
- **Cuba** is an outsider – As expected
- The method gives the same results as one would expect → Strengthens the methodology



2023 trust clusters

2024 trust





- More regional clustering in 2024 (ex: South America, South Africa, SE Asia)
- More independence in 2024 (ex: Kazhakstan, Spain, Italy, Japan)

# Conclusion

- All countries depend on other countries (as expected)
- Our methodology shows that Internet trust, to a large extent, follows expected patterns and country relationships.
- The trust landscape is evolving towards less globalization.

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