



EXPLORING SYSTEMIC SAFETY IN A PORT COMMUNITY

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INTRODUCTION

Maritime transport and safe, continuous operation of ports are vital for global economy and supply chains.

Port safety is shaped by the interplay of people, infrastructure, technology and changing weather conditions.

A **systemic safety** perspective highlights how disruptions and accidents often emerge from interactions between multiple systems rather than single causes. This approach emphasizes resilience and a holistic understanding of interdependencies.

OBJECTIVE

This study explores how systemic safety manifests in a port community, identifying key interconnections between environmental, social, and technological spheres. The aim is to find **leverage points** for improving safety management.

METHODS

- 14 expert **interviews** (different organizations, same port)
- Transcripts condensed into **statements**
- Each statement:
 - Assigned 1–4 **themes**
 - Classified as **positive** / **negative** / neutral
 - Co-occurring themes linked

Example statement:

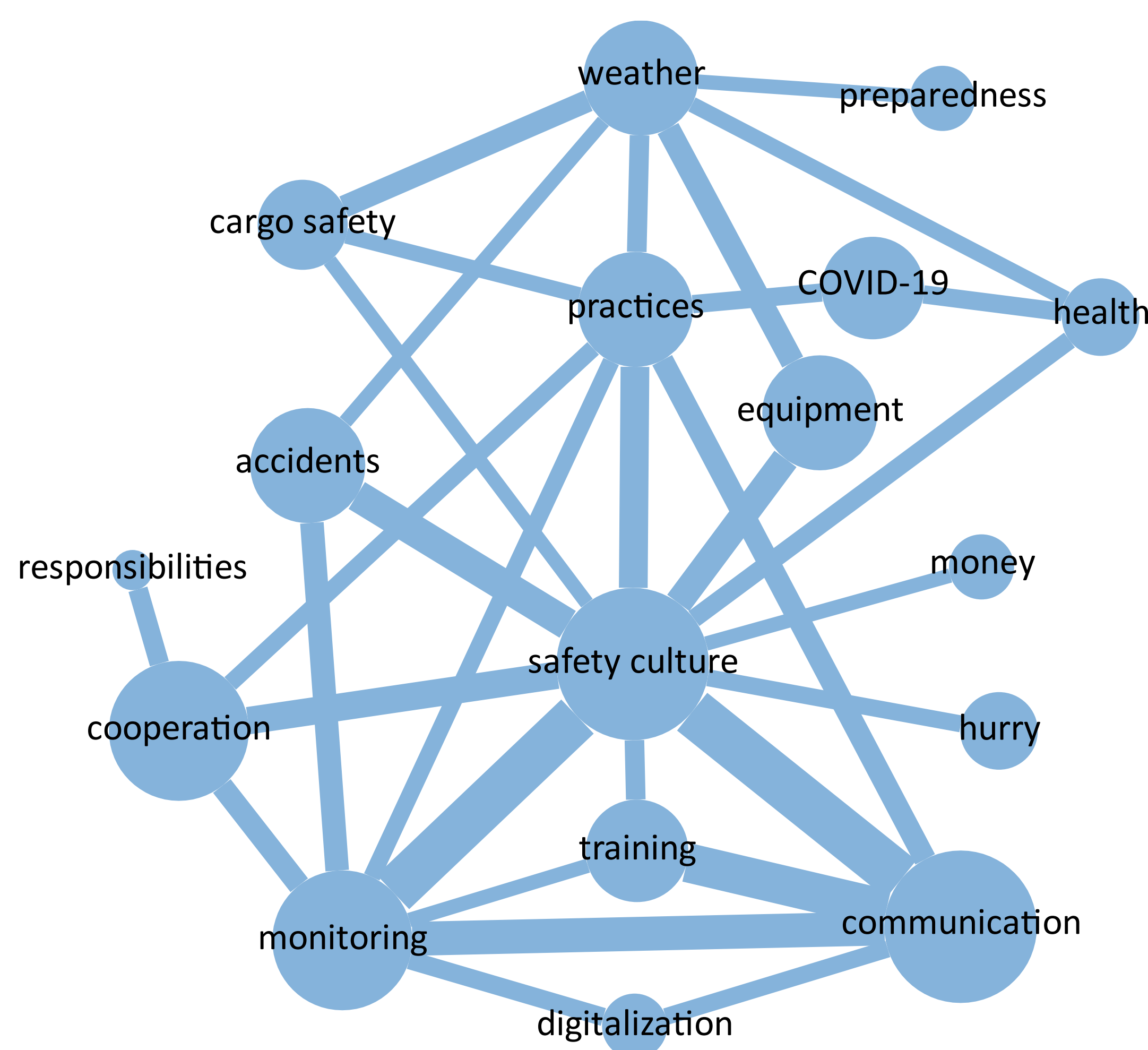
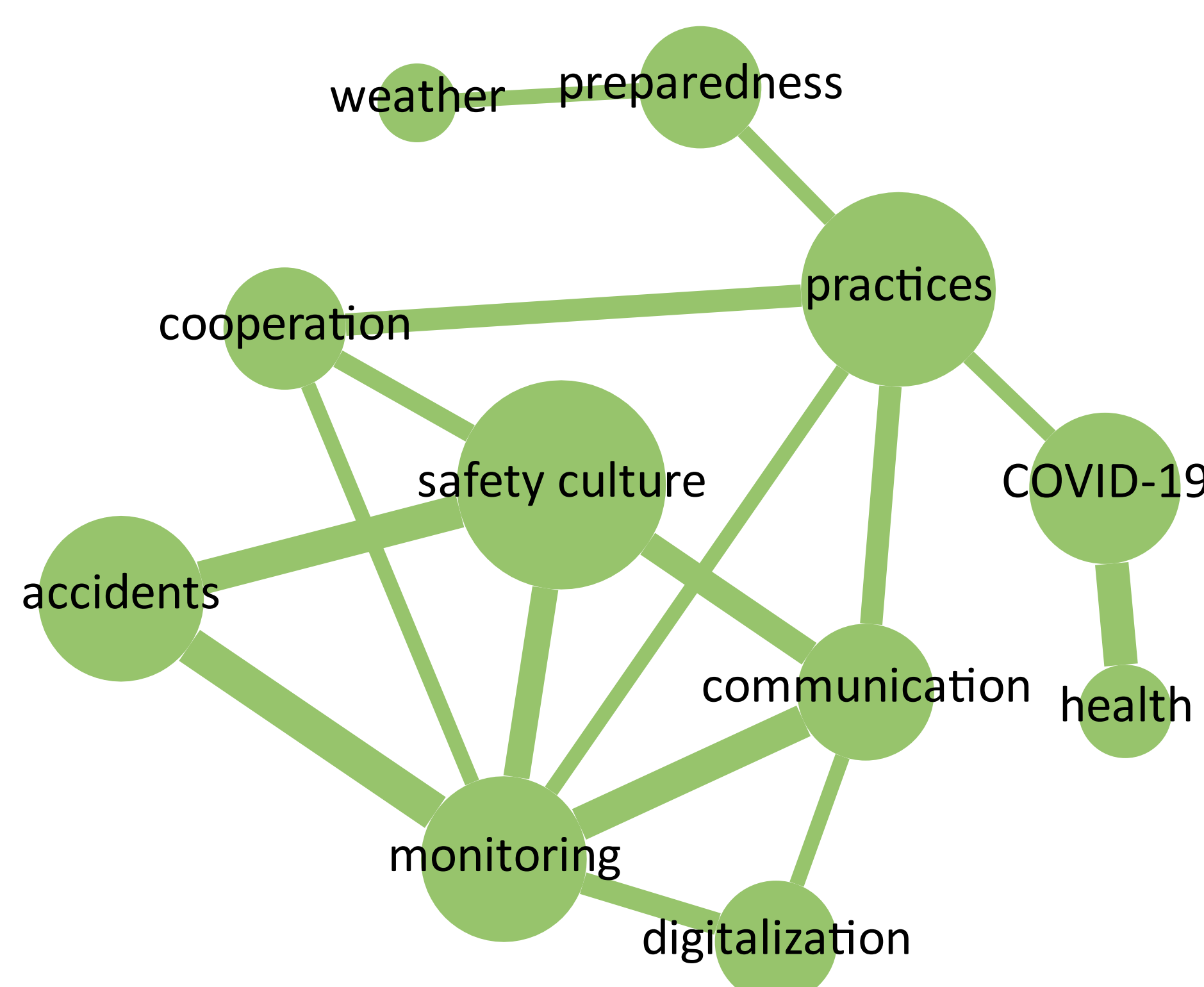
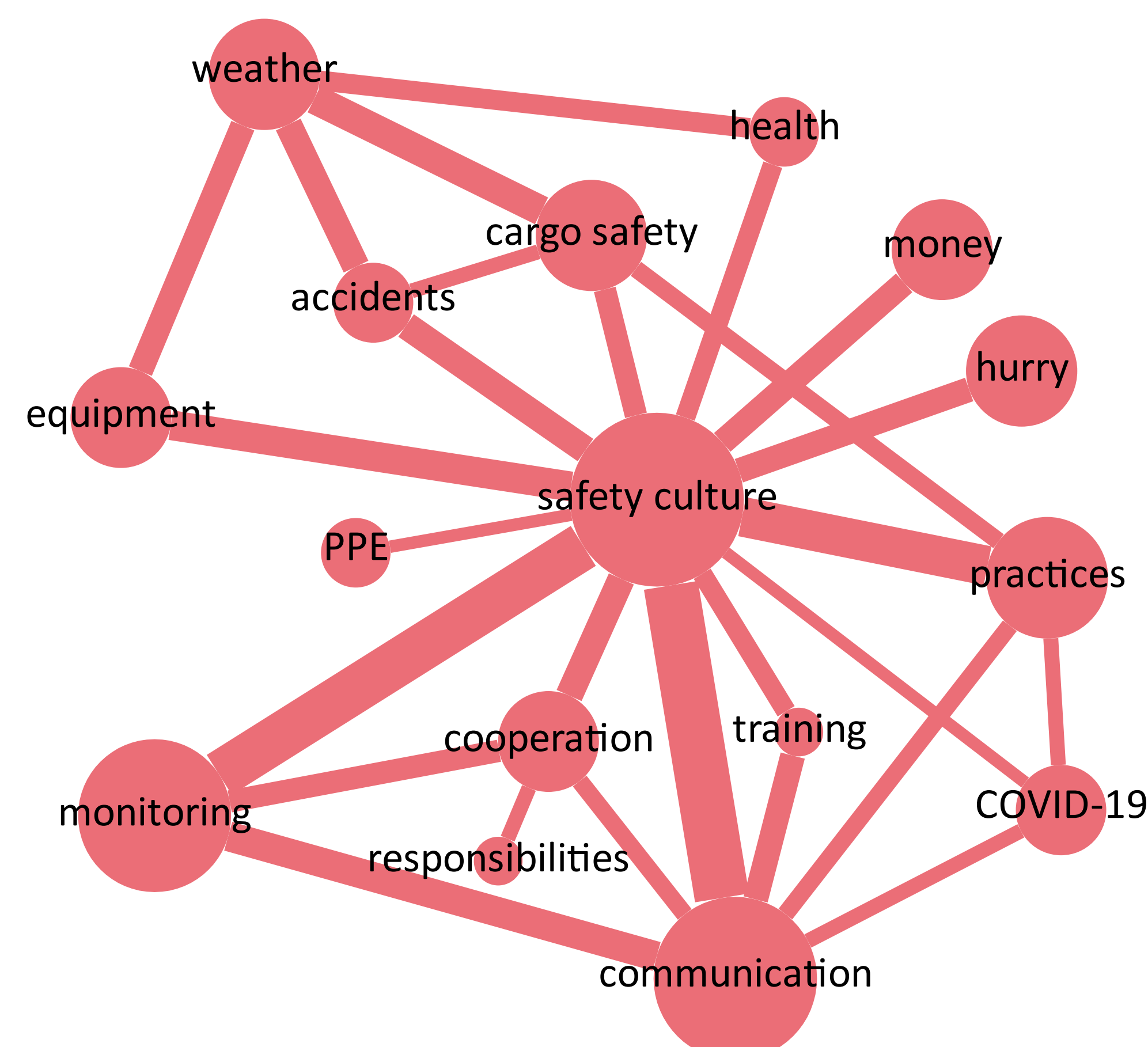
"Because of COVID-19, we now have a contingency plan for pandemics."

→ Themes: Covid-19, preparedness, practices

→ Tone: **positive**

→ **Links:** Covid-19 + preparedness; Covid-19 + practices; preparedness + practices

Thematic networks were then visualized using the network analysis tool *Gephi*.

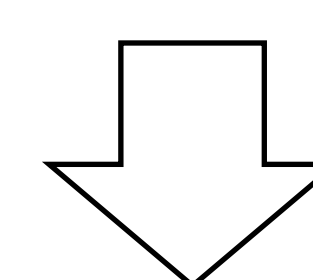


Figures: Networks constructed from positive, negative, and all statements combined

RESULTS

- Safety is often discussed in terms of problems and challenges, with **negative** statements being the most common.
- **Safety culture** is central and it connects other themes: implementing safety-oriented attitudes in practice is challenging.
- **Weather** conditions (wind, ice) challenge cargo safety.
- Time and resource pressures can create tension between efficiency and safety.

- On the **positive** side, **accidents** have been successfully reduced through monitoring, reporting, and an improved safety culture.
- **Inclusion** of all actors in safety discussions was highly valued; open dialogue supports implementation of safety attitudes.
- **COVID-19** was often mentioned positively: it tested systemic safety and revealed resilience.



Overall pattern: a recurring triangle links safety culture, communication, and monitoring.

This **triad** also connects other themes such as practices, inter-organizational cooperation, and training, forming the core of systemic safety in a port community.



WHAT IS MISSING?

- Interviews focused on occupational safety & accident prevention, plus some pandemic/weather preparedness.
- Major disruptions or security threats were rarely mentioned – interviews were completed in early 2022.

CONCLUSION

- **Communication, safety culture, and monitoring** form the core of systemic safety in a port community.
- Everyday safety practices and communication provide a foundation for broader resilience.