

From Hormuz to the High North: Maritime Chokepoint Crises and Arctic Shipping Futures

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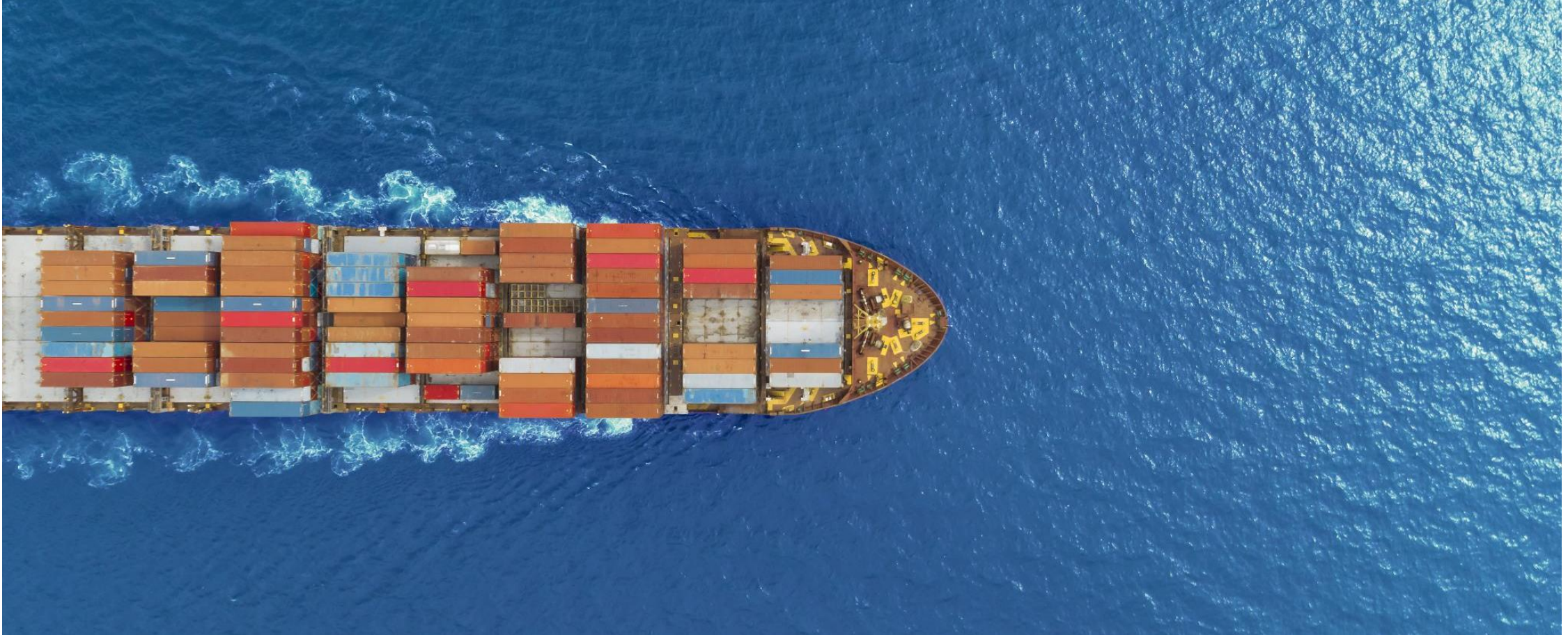
Tables of content

Arctic Shipping
Scenario
Development

Current
Developments
in Arctic
Shipping Based
on News
Analysis

Potential
Effects of Strait
of Hormuz
Disruption on
Arctic and U.S.
Shipping

Arctic Shipping Scenario Development



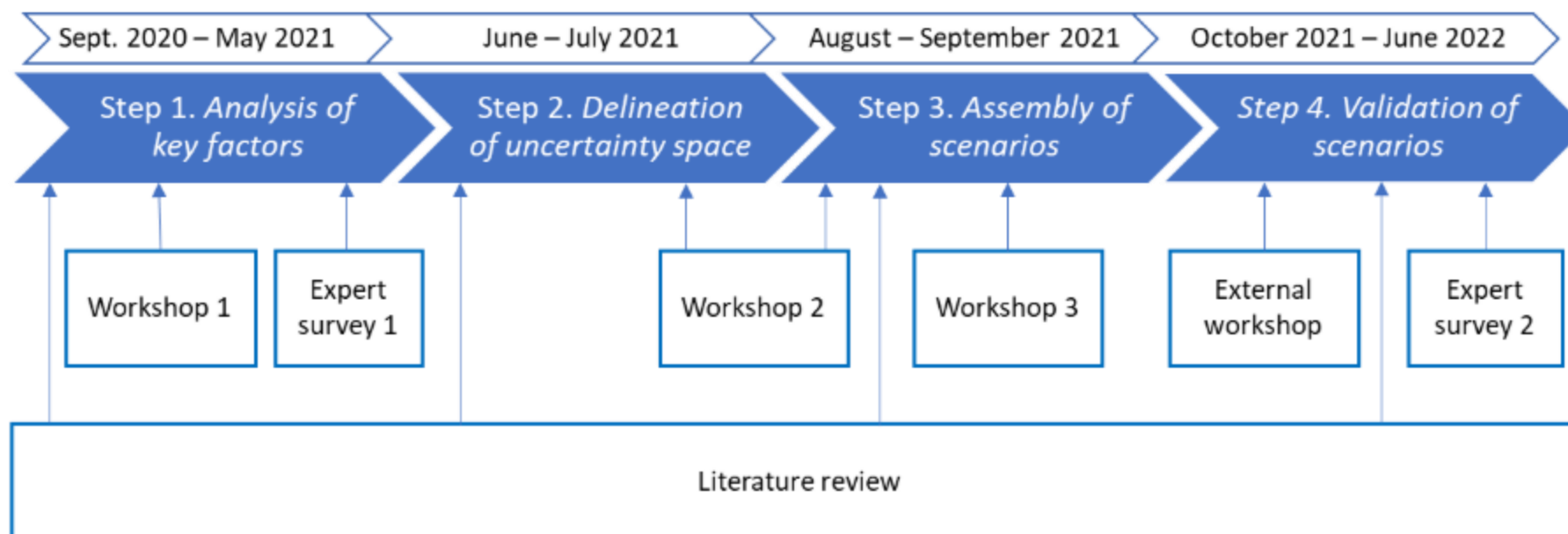


Future scenarios of commercial freight shipping in the Euro-Asian Arctic

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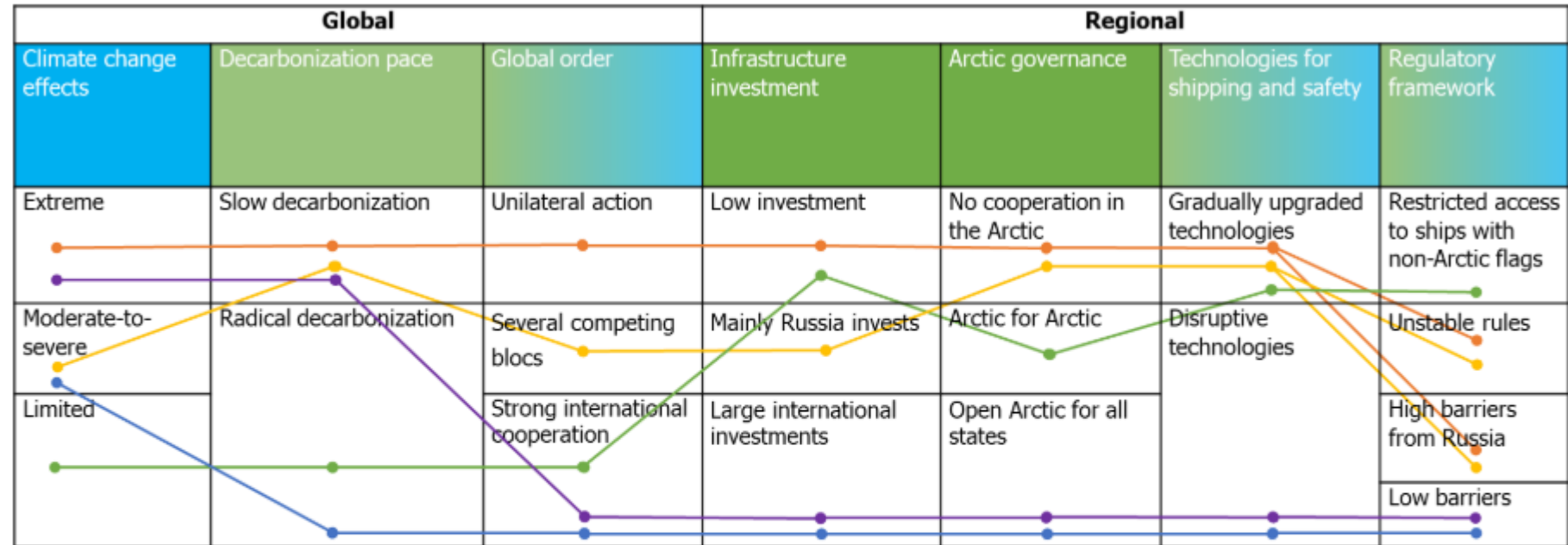
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Original factor names	Final factor names	Destination		Transit	
		2020 2030	2030 2050	2020 2030	2030 2050
Global factors					
Navigation conditions (sea ice, weather, etc.)	Climate change effects	3.67	3.83	4.5	4.67
Non-fossil fuel-based energy	Decarbonisation	3.33	4.17	2.33	2.67
Demand for Arctic transit of cargo	Demand for Arctic transit of cargo	2.67	3.17	3.6	3.4
Economic growth & consumption	Economic growth & consumption	3.17	3.5	3	3.67
Global governance, cooperation & ease of international trade	Global order	3.33	4.17	3.5	4
Regional factors					
Infrastructure development in the Arctic	Infrastructure investment	4.33	4.5	3.67	3.83
Governance of the Arctic	Governance of the Arctic	4	4	3.5	3.83
Advanced technologies for shipping and safety	Technology for shipping and safety	3.33	4	3.33	4
Regulatory and financial barriers to use Arctic Sea routes	Regulatory framework	3.33	4	3.83	4.5
Disruptive technologies	Disruptive technologies	2.5	3.17	2.6	3.83
Extraction of renewable and non-renewable Arctic resources	Arctic resource extraction	3.33	3.83	2.83	2.67
Commitment to untouched nature and indigenous cultures	Commitment to untouched nature and indigenous cultures	2.5	2.83	2.33	2.67

Resulting scenarios



Legend

Factors



Relevant for destination shipping



Relevant for transit shipping



Relevant for both shipping types

Scenarios



Global Resource Base



Global Route



Abandoned Land



Sanctuary



Transpolar Shortcut

Scenario plausibility



Other related work



Multi-scale scenario building for community development:
Exploring transport infrastructure futures in the
Circumpolar North

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**Accounting for disruptive
developments in strategic
planning of shipping in the Arctic**

Key outcomes

- **Reduced sea ice** improves **physical accessibility**, but it does **not automatically** create **commercially viable** Arctic shipping.
- **Infrastructure investment** is one of the **strongest enabling factors** for both destination shipping and transit shipping.
- **Governance, regulation, and geopolitical stability** strongly affect whether Arctic routes become **reliable trade corridors**.
- Transit shipping is more sensitive to uncertainty than destination shipping because it requires **predictable schedules, safety, insurance, and international acceptance**.
- **Technology for navigation, ice monitoring, vessel safety, and emergency response** can reduce operational risk, but cannot remove seasonality.
- **Decarbonization** may reduce fossil-fuel-related Arctic activity, while **demand for minerals, LNG, and regional supply chains** can still support destination traffic.
- **Environmental protection and Indigenous/community concerns** remain key constraints on rapid shipping expansion.
- The scenarios therefore represent different development pathways, not a single forecast.

Strategic implication: The Arctic is best understood as a conditional opportunity. Its shipping role grows only when climate access is matched by infrastructure, governance, market demand, and social/environmental legitimacy.

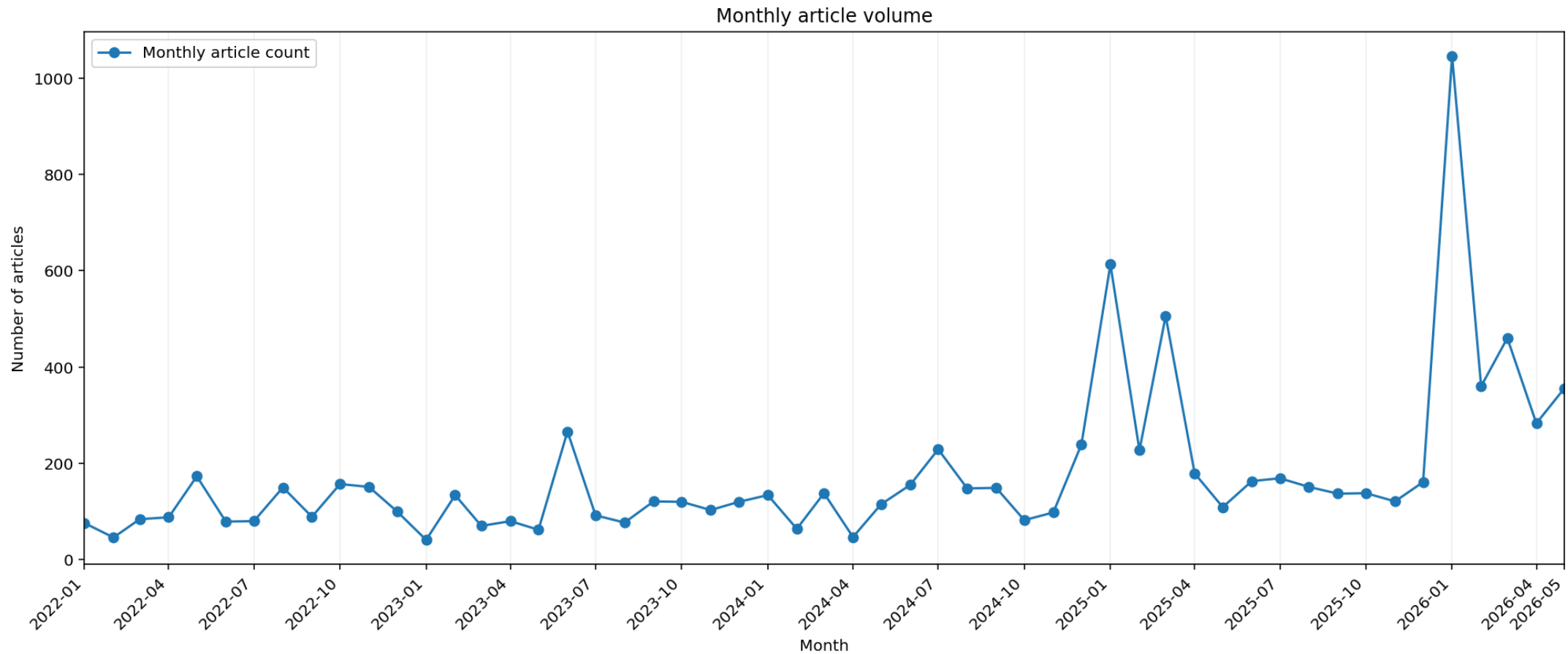
Current Developments in Arctic Shipping Based on News Analysis



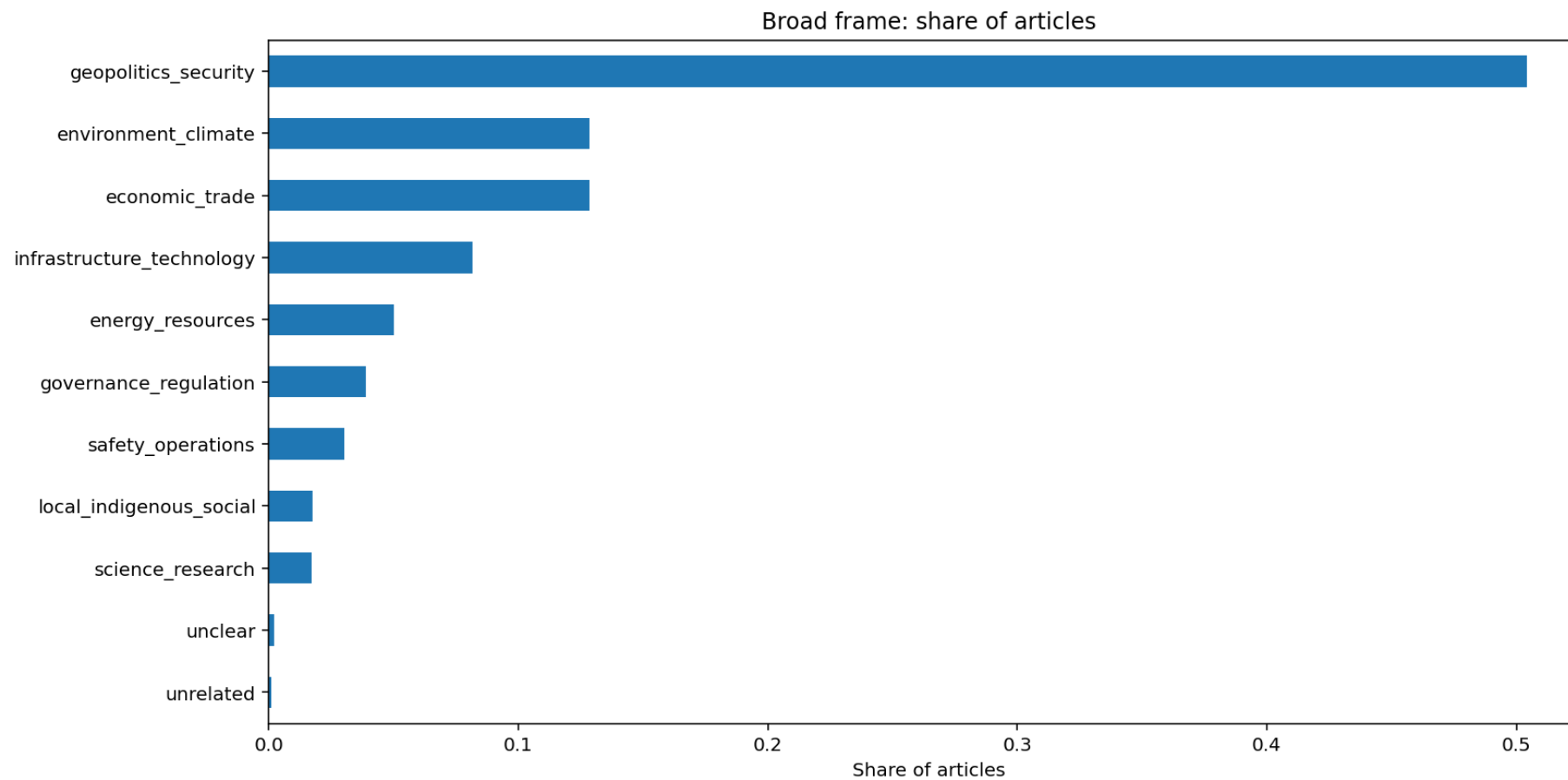
Methodology

- Media Cloud news corpus on Arctic shipping from Jan. 1, 2022–May 2026
- 9336 articles
- Full article text prioritized before summaries or metadata
- AI-assisted article coding using a structured schema and controlled category lists (gpt-5.4-mini)

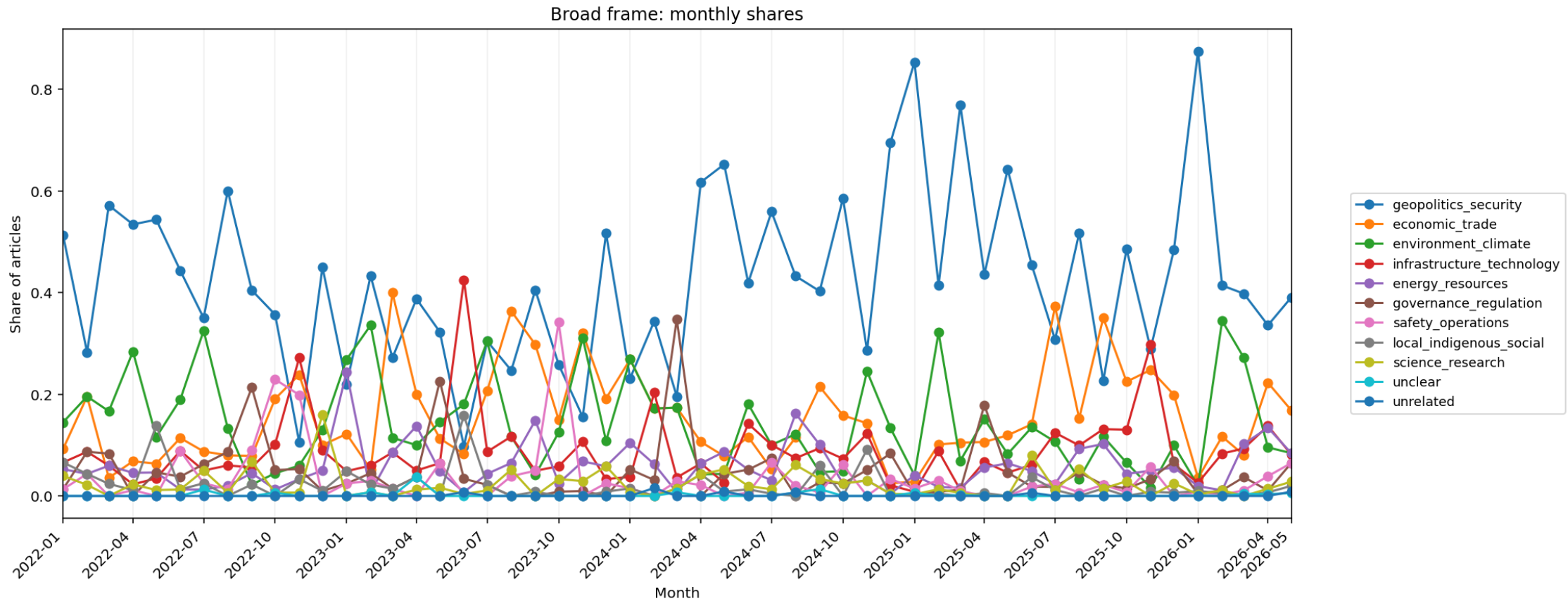
Number of articles over time



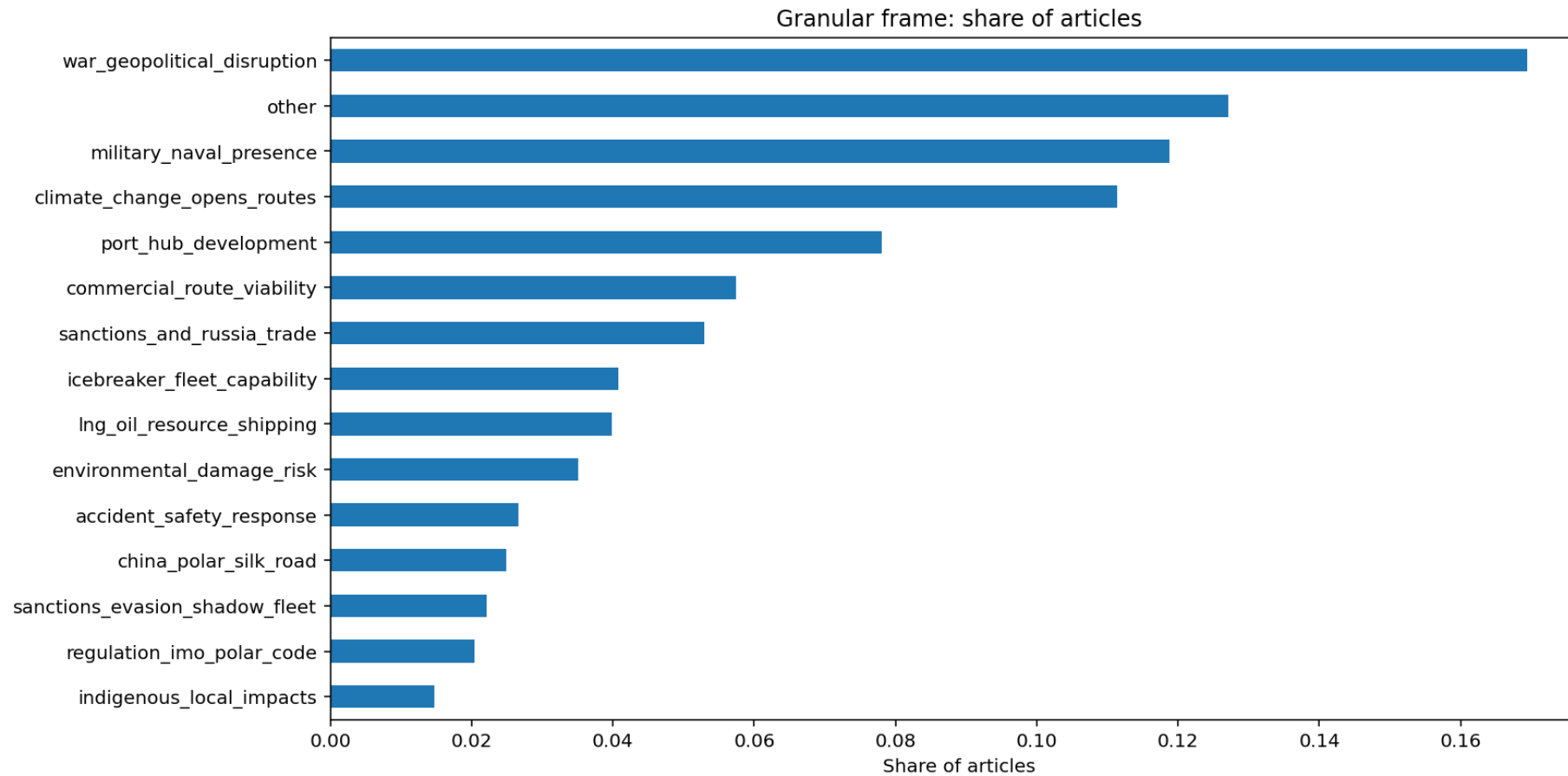
Topics



Topics over time

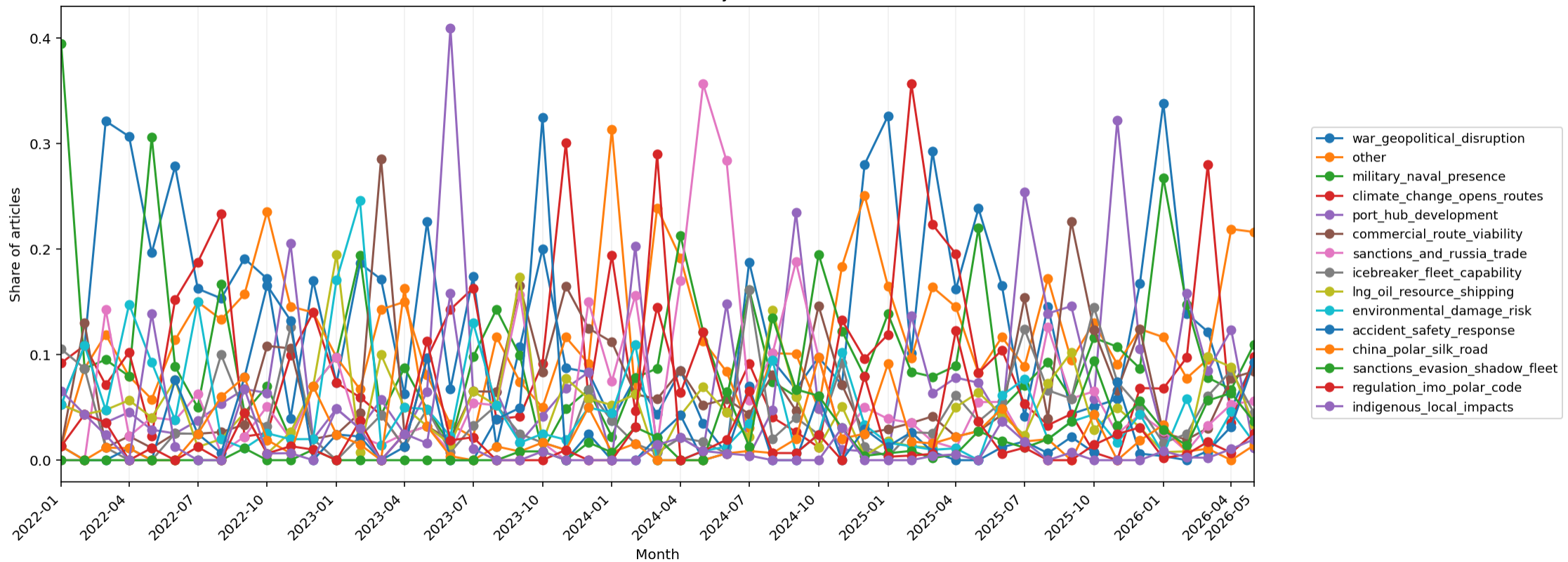


Granular topics

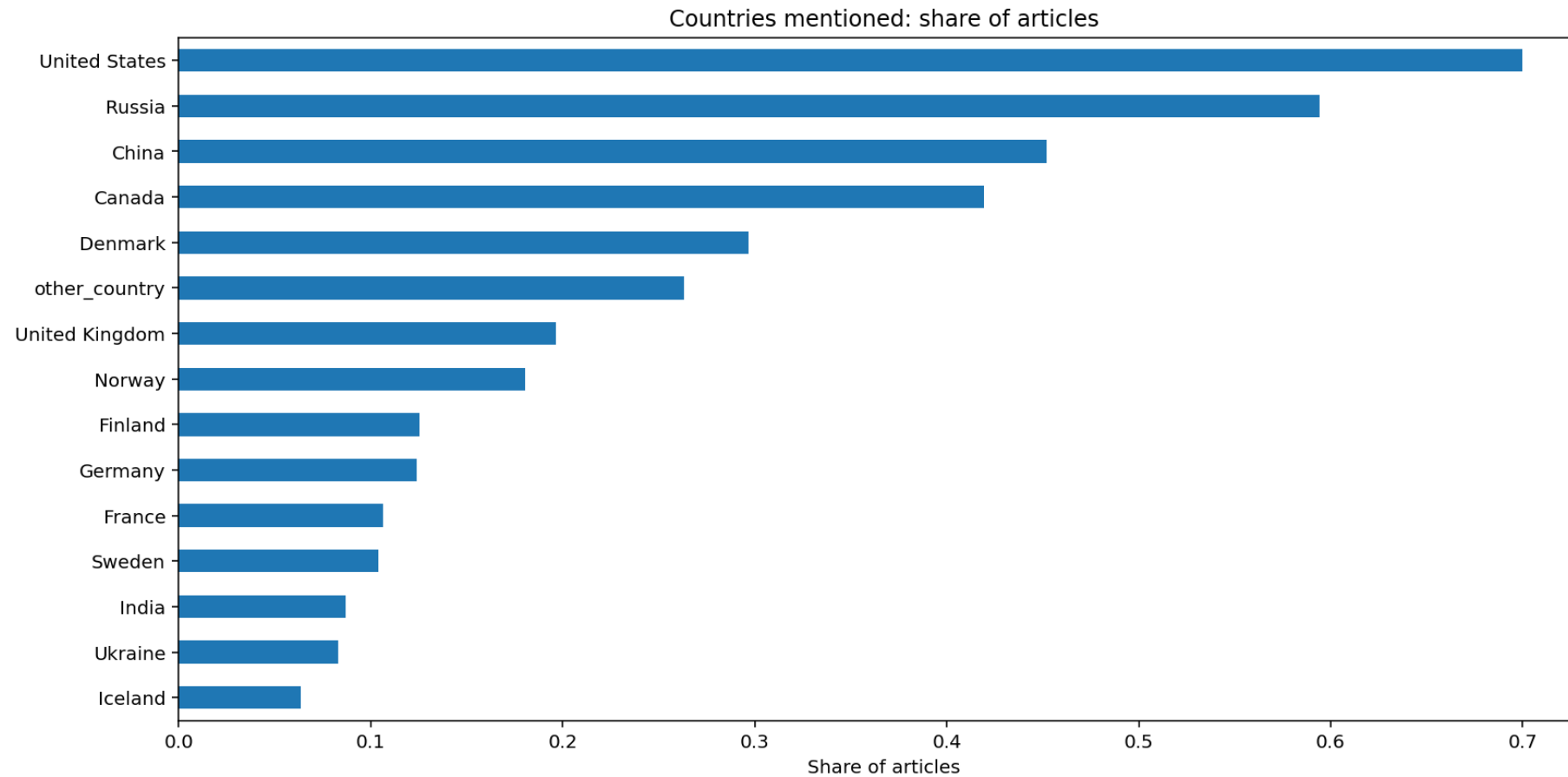


Granular topics over time

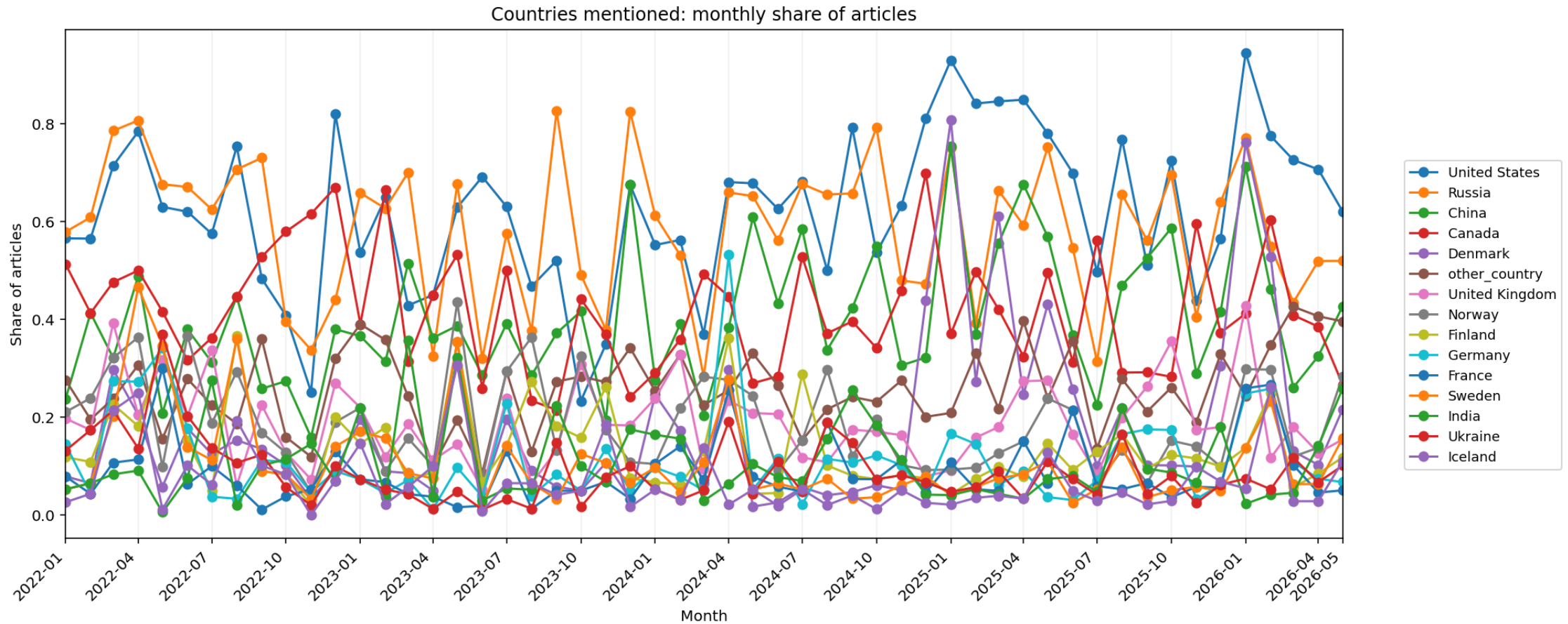
Granular frame: monthly shares



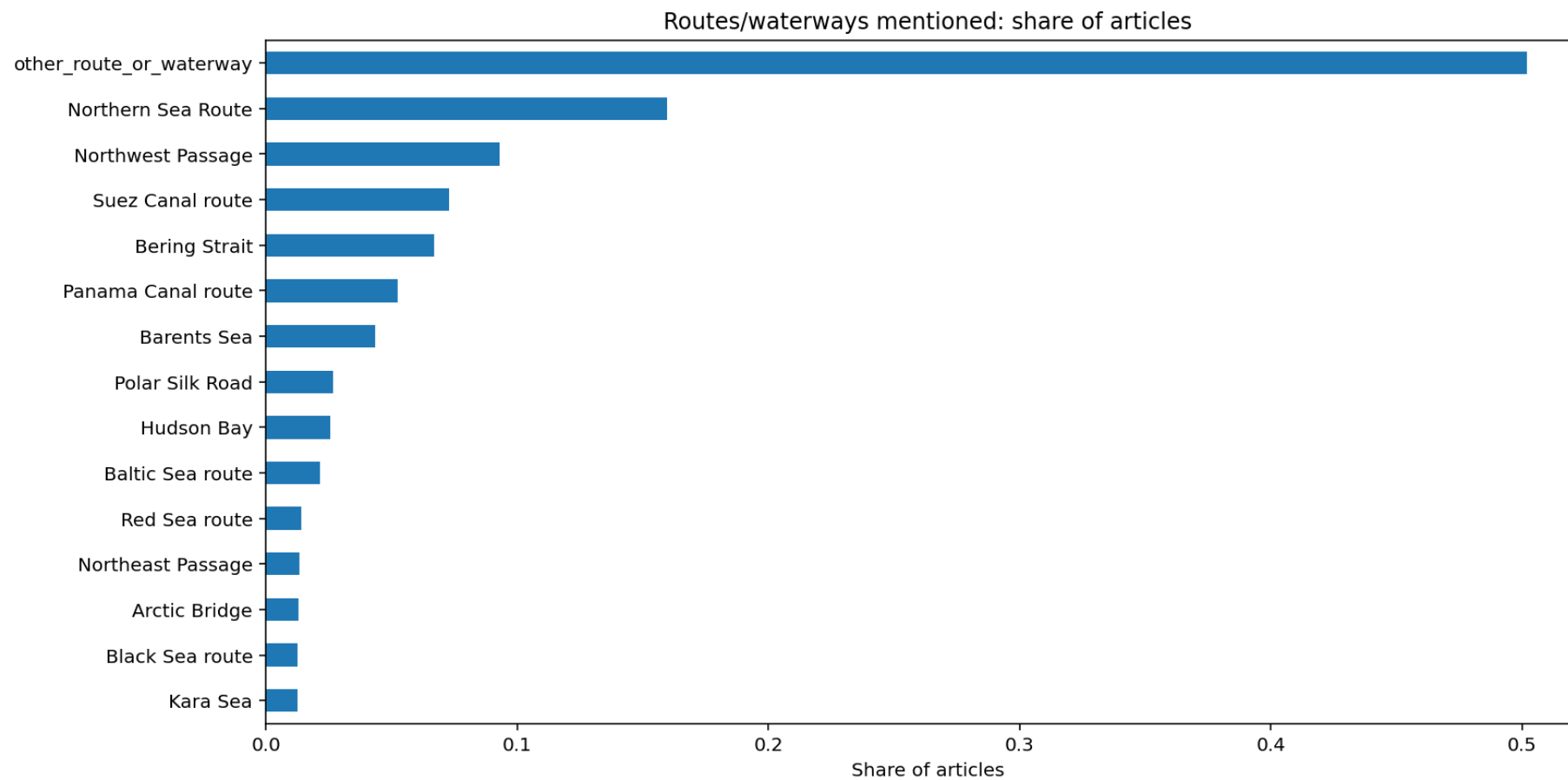
Countries mentioned



Countries mentioned over time

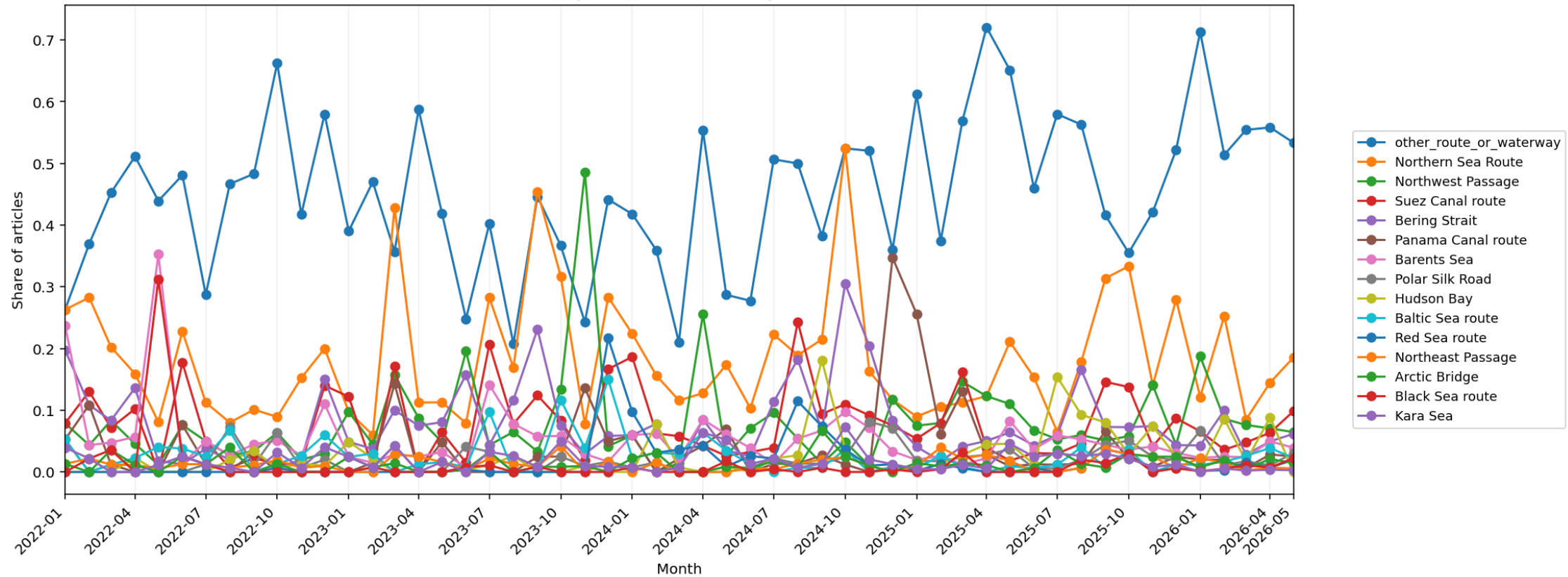


Routes

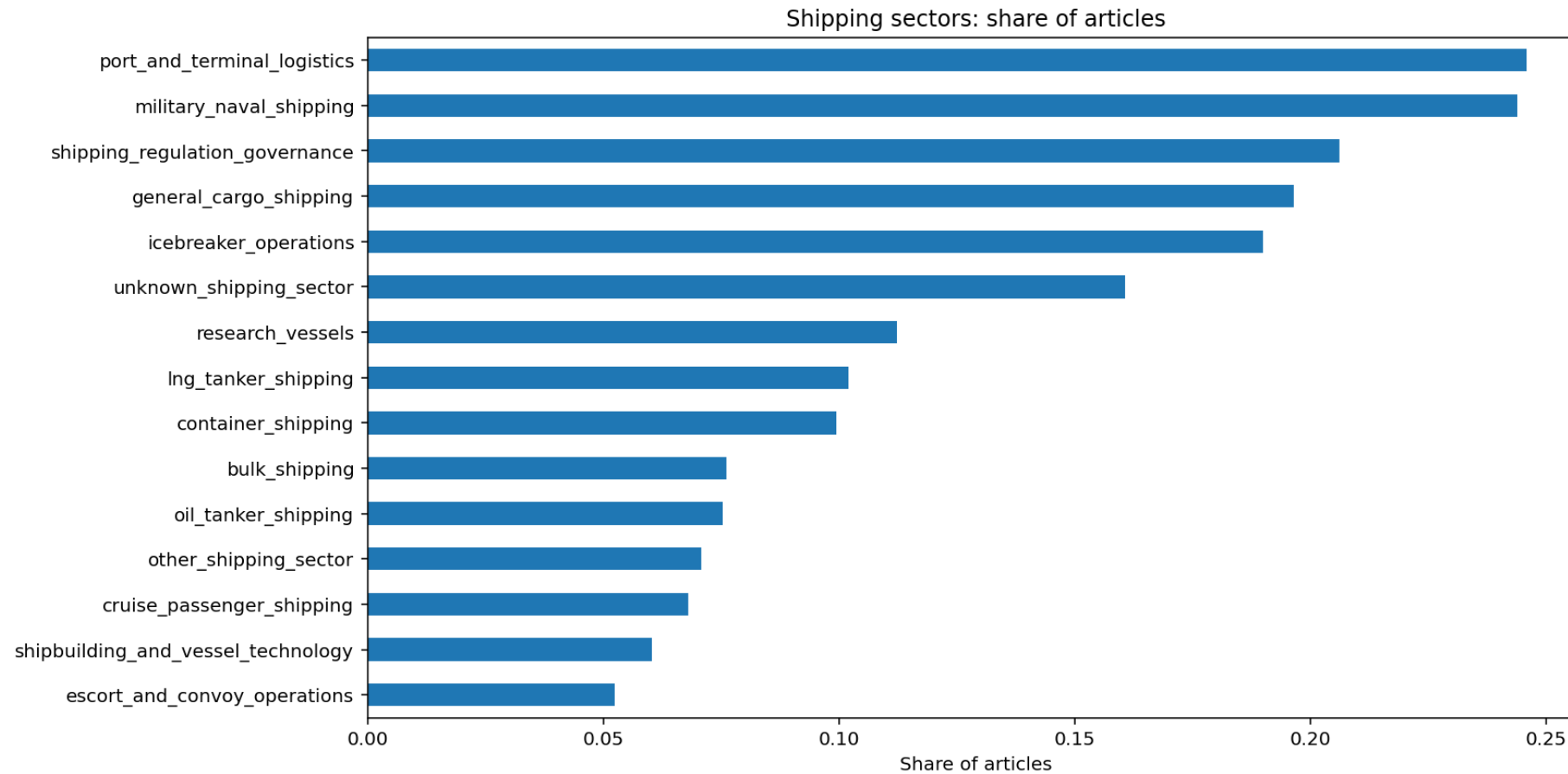


Routes mentioned over time

Routes/waterways mentioned: monthly share of articles

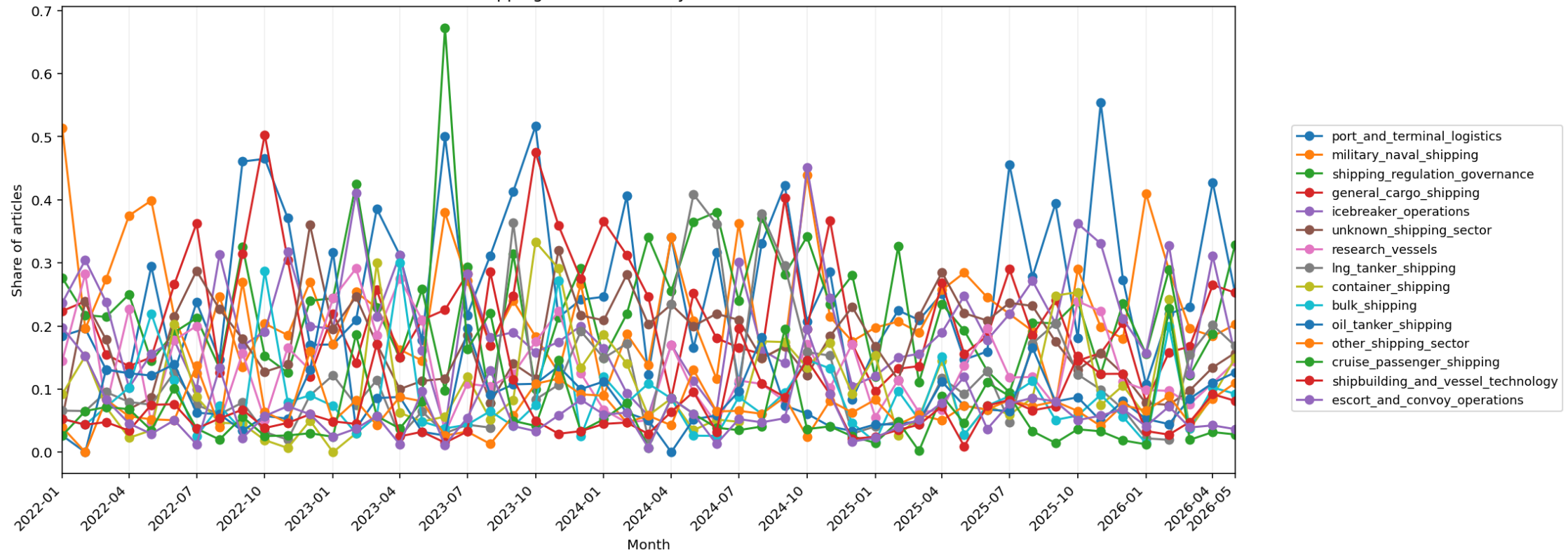


Shipping sectors

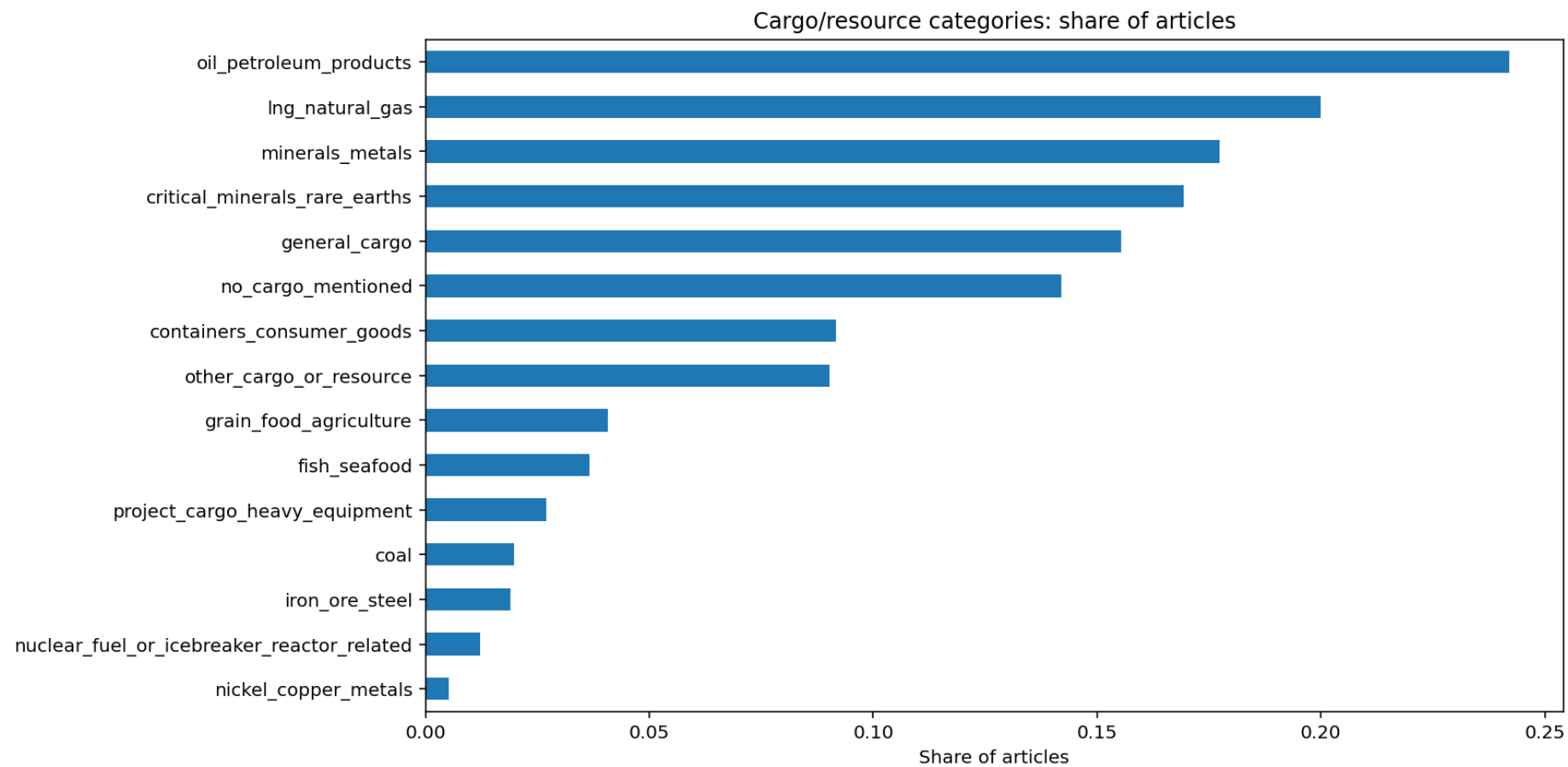


Shipping sectors over time

Shipping sectors: monthly share of articles

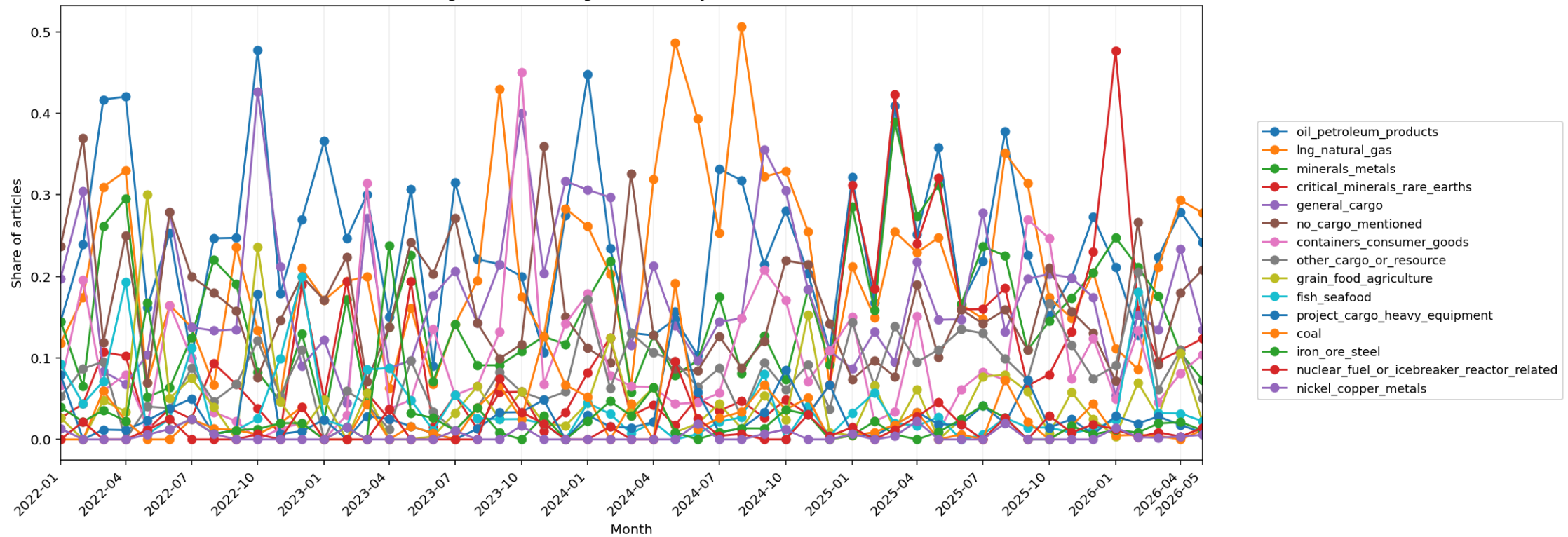


Cargo

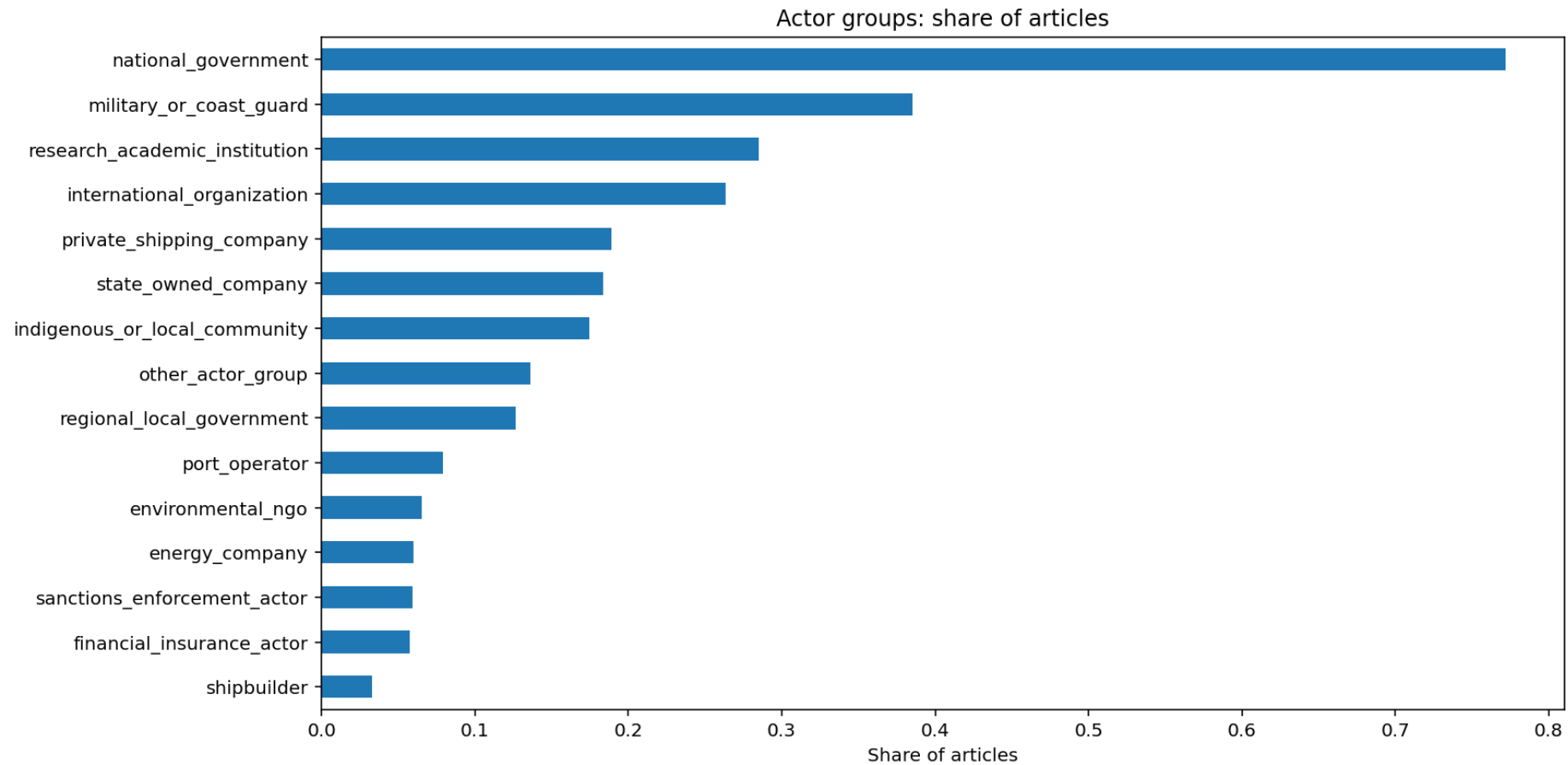


Cargo over time

Cargo/resource categories: monthly share of articles

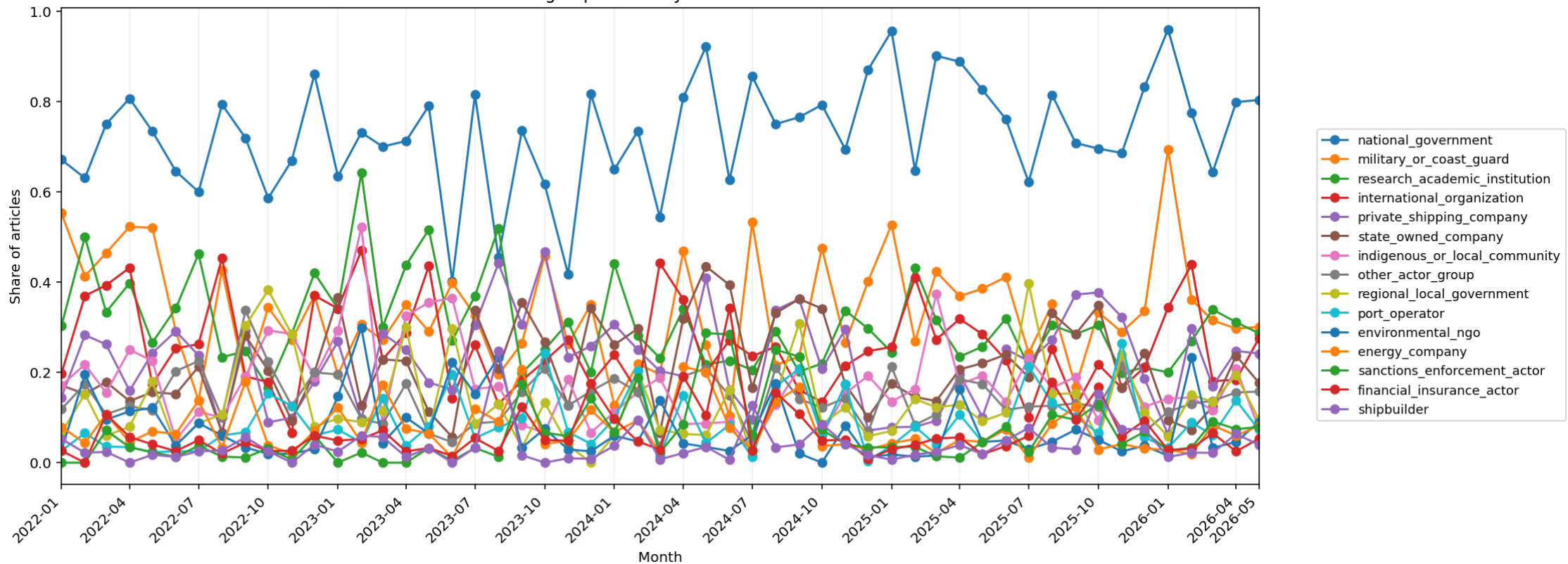


Actor groups

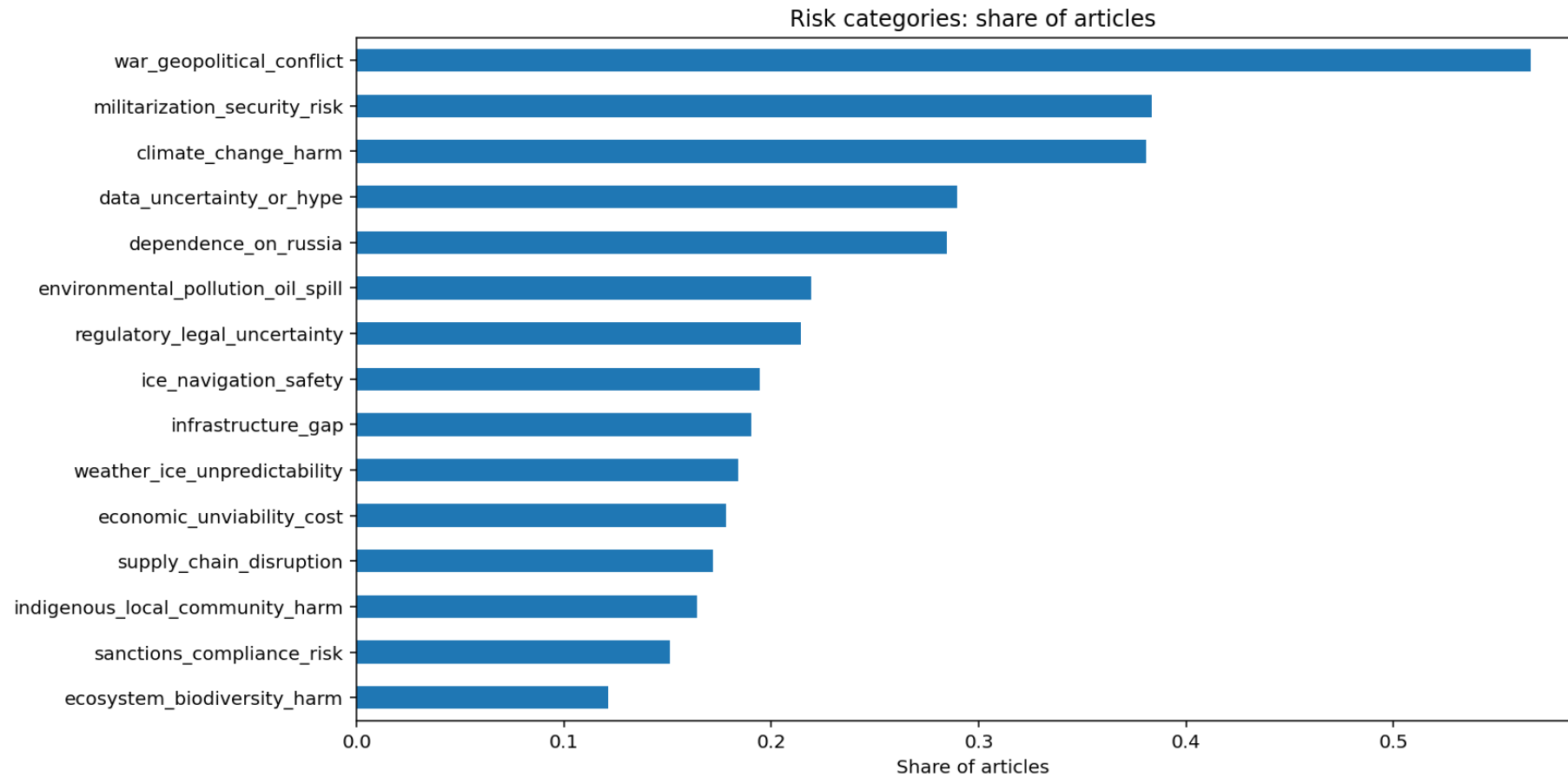


Actor groups over time

Actor groups: monthly share of articles

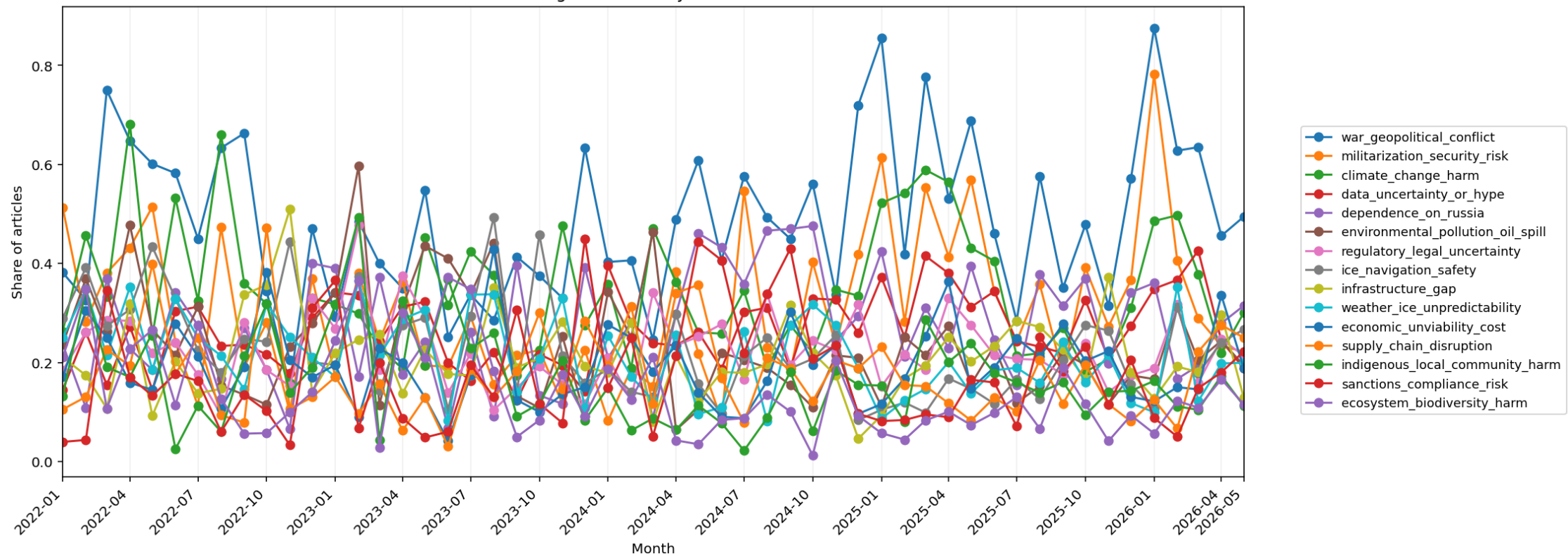


Risk categories

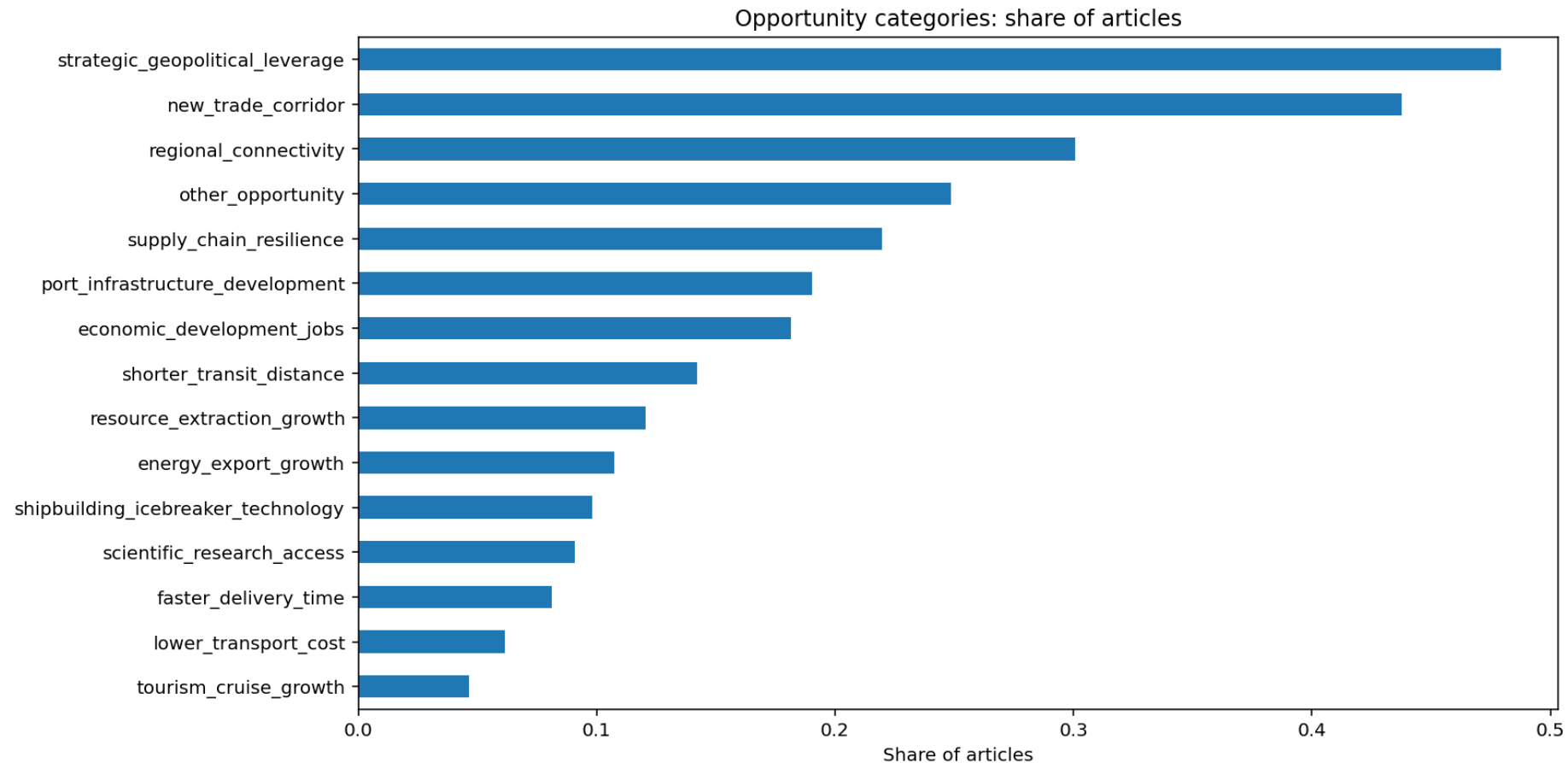


Risk categories over time

Risk categories: monthly share of articles

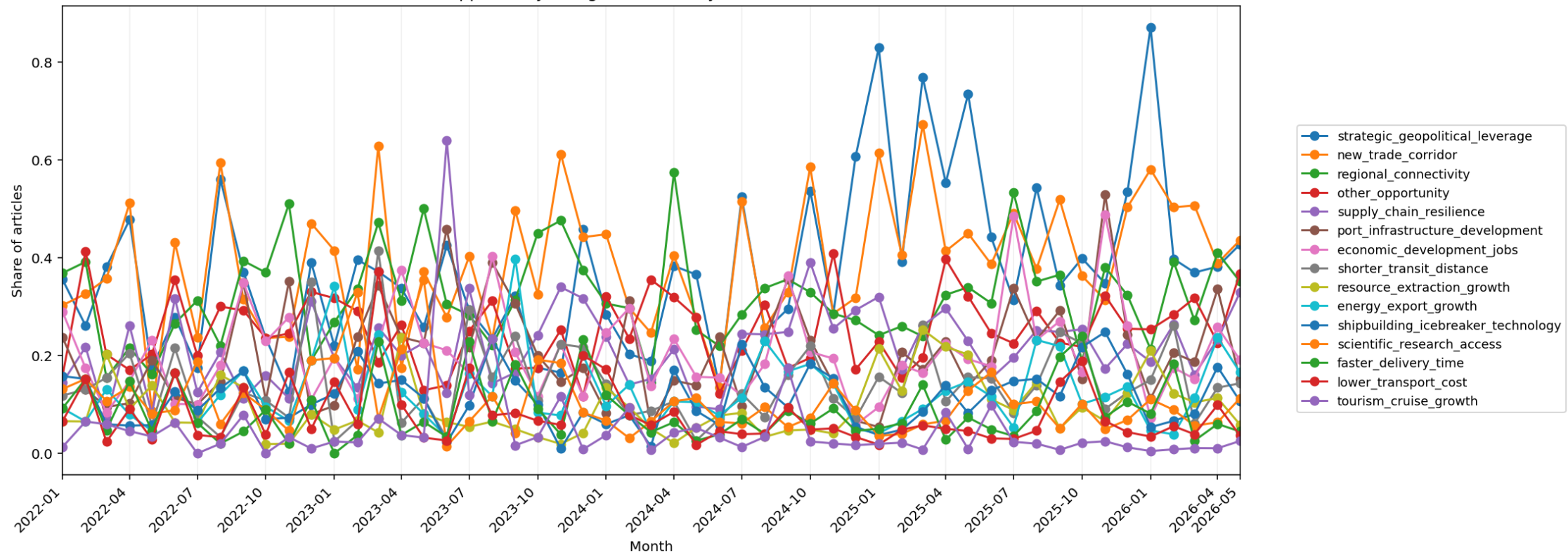


Opportunity categories



Opportunity categories over time

Opportunity categories: monthly share of articles



Key outcomes

- **News coverage of Arctic shipping increased** strongly after late 2024, with major spikes in 2025–2026.
- **Geopolitics and security dominate** the media framing, while climate, trade, infrastructure, and energy remain secondary but important themes.
- The discussion is centered on major state actors, especially the **United States, Russia, China, Canada, and Nordic/European countries**.
- Arctic routes are discussed **mainly** through the **Northern Sea Route and Northwest Passage**, while other corridors remain less prominent.
- Coverage links Arctic shipping to **ports, logistics, military/naval activity, regulation, general cargo, and icebreaker operations**.
- Energy and resource flows remain central, especially **oil, LNG, minerals, critical minerals, and general cargo**.
- **Risk** narratives emphasize **geopolitical conflict, militarization, climate impacts, dependence on Russia, regulatory uncertainty, environmental harm, and navigation safety**.
- **Opportunity** narratives emphasize **geopolitical leverage, new trade corridors, regional connectivity, supply-chain resilience, port development, and shorter transit distance**.

Strategic implication: Current Arctic shipping debates are driven less by shipping efficiency alone and more by the interaction of geopolitics, resources, infrastructure, security, and climate-driven accessibility.

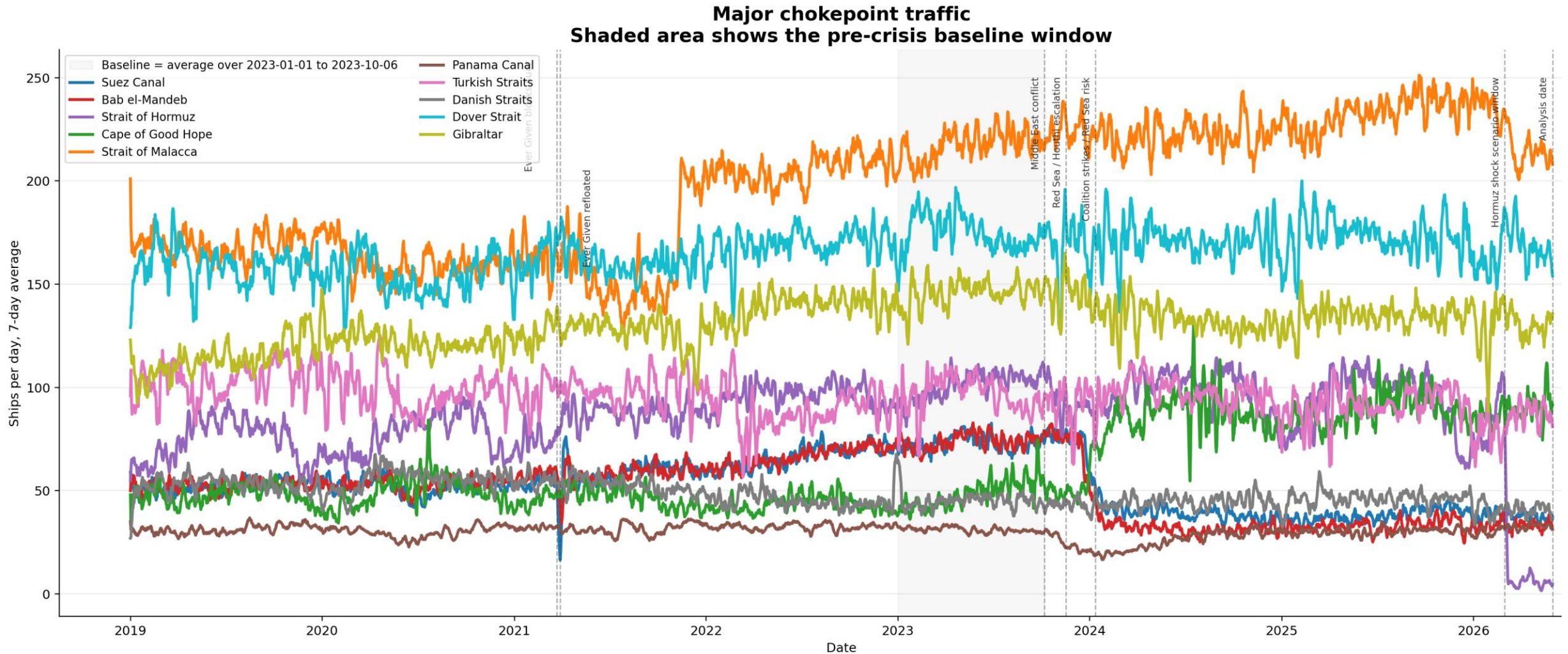
Potential Effects of Strait of Hormuz Disruption on Arctic and U.S. Shipping



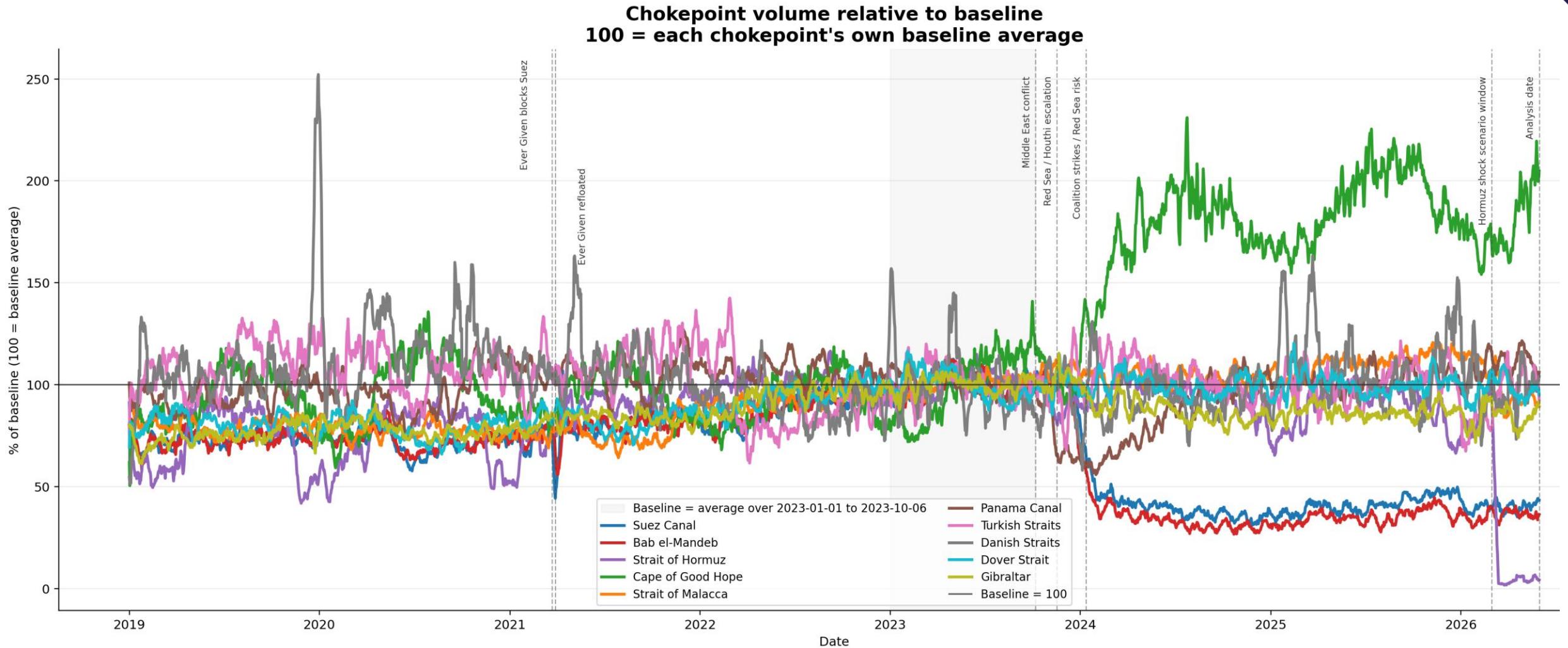
Methodology

- Daily PortWatch chokepoint traffic data for major maritime chokepoints
- AIS-derived vessel records across routes and vessel categories
- **Baseline** as each chokepoint's average daily traffic from **Jan. 1–Oct. 6, 2023**
- Captures recent pre-crisis “normal” traffic before the **Oct. 7, 2023** Middle East conflict shock and subsequent Red Sea disruption
- Benchmark later traffic against this baseline to identify stress, diversion, and rerouting
- Compare baseline, disrupted, non-Arctic, and Arctic route scenarios
- Assess spillover effects on energy flows, commodities, and supplier substitution

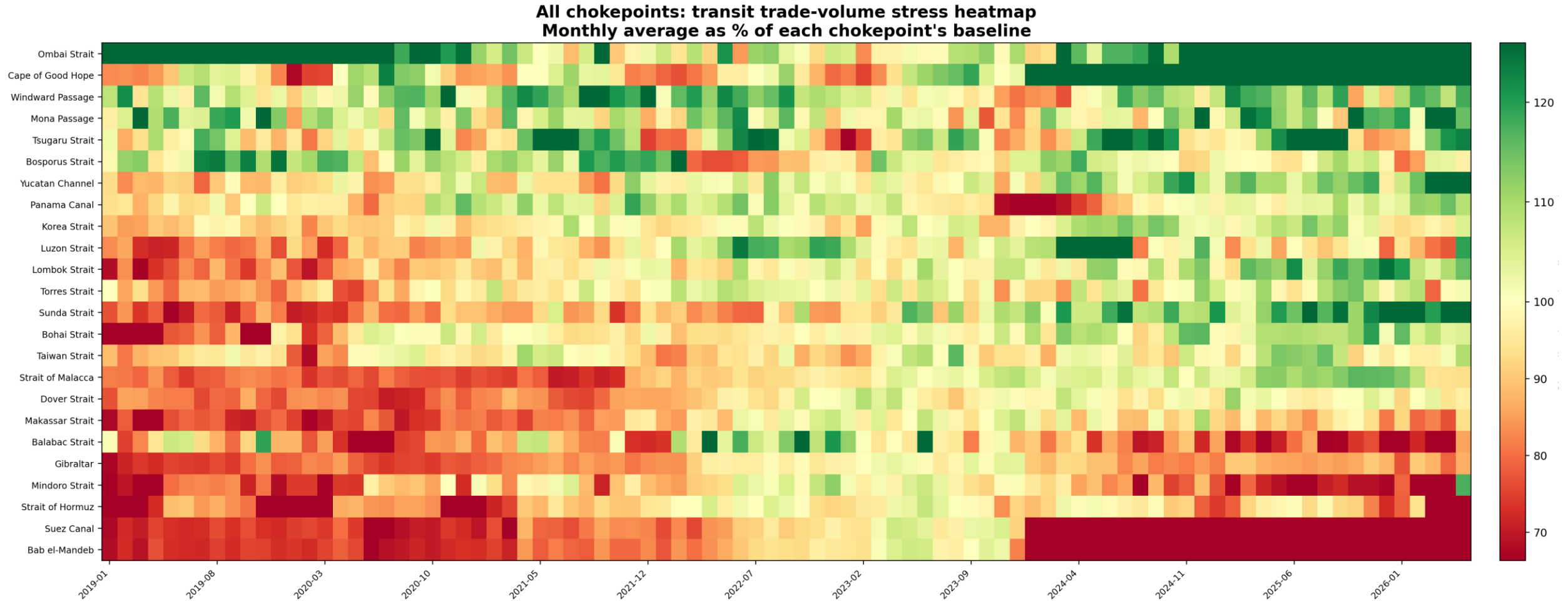
Major chokepoint traffic



Major chokepoint volume

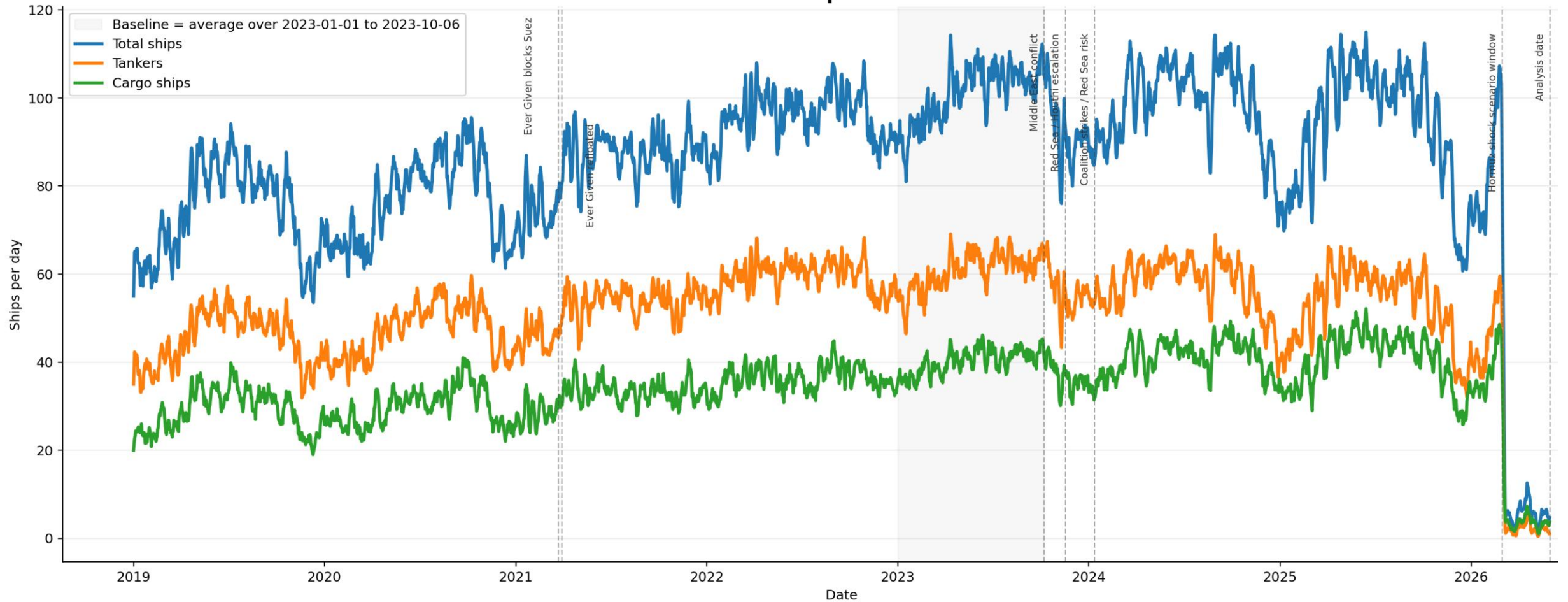


Major chokepoint transit trade volume



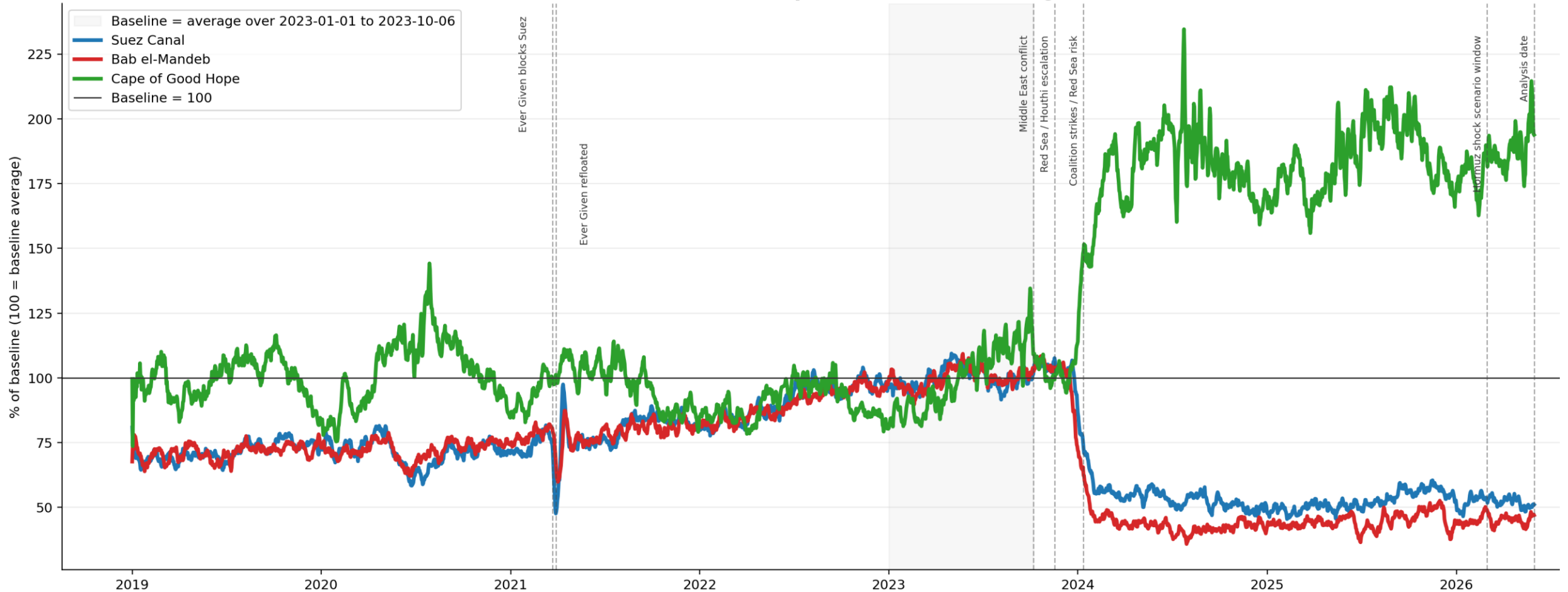
Strait of Hormuz transit

Strait of Hormuz transit activity
Shaded area shows the pre-crisis baseline window

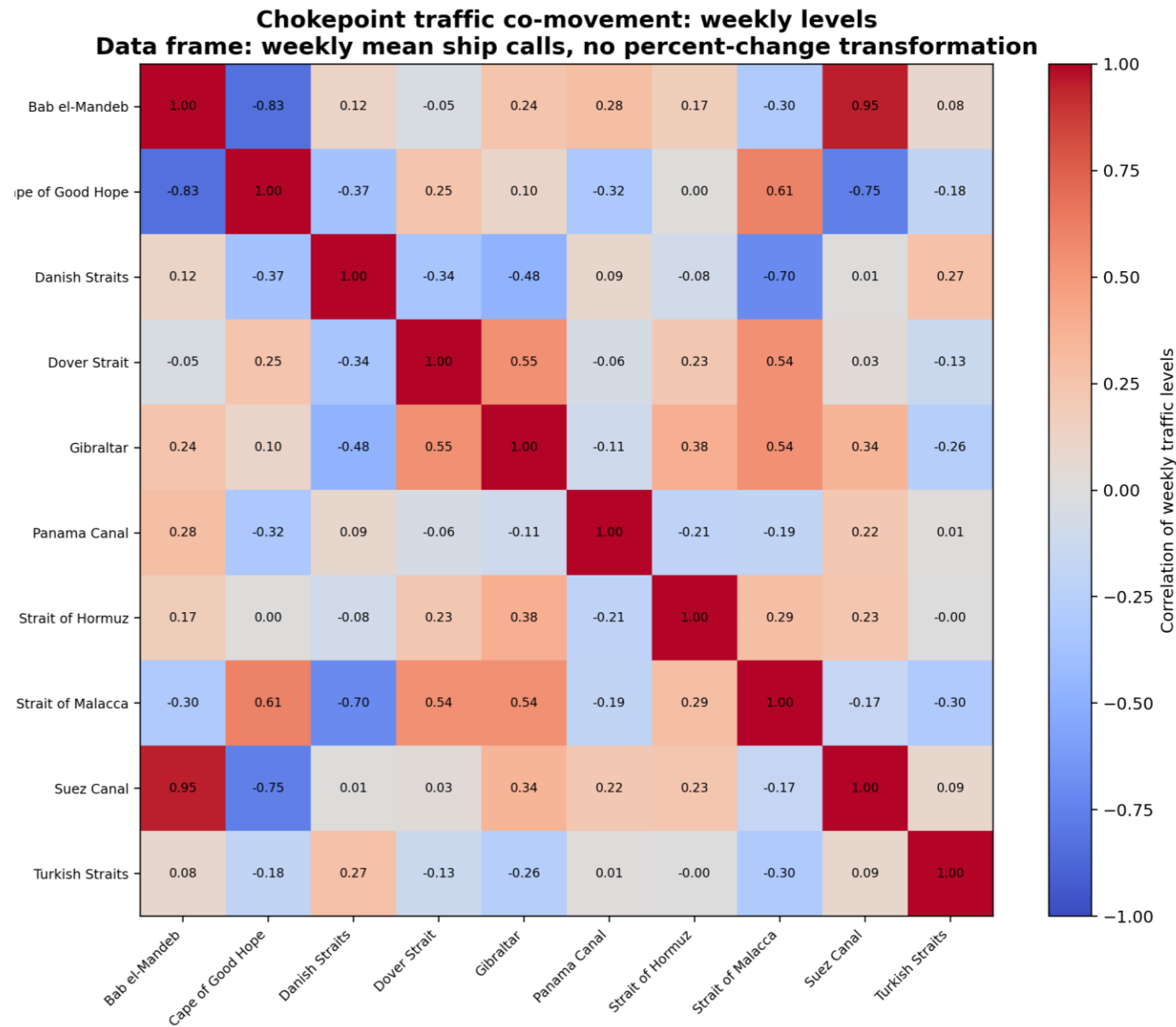


Red Sea transit

Red Sea rerouting via the Cape of Good Hope
100 = each chokepoint's baseline average



Chokepoint traffic co-movement

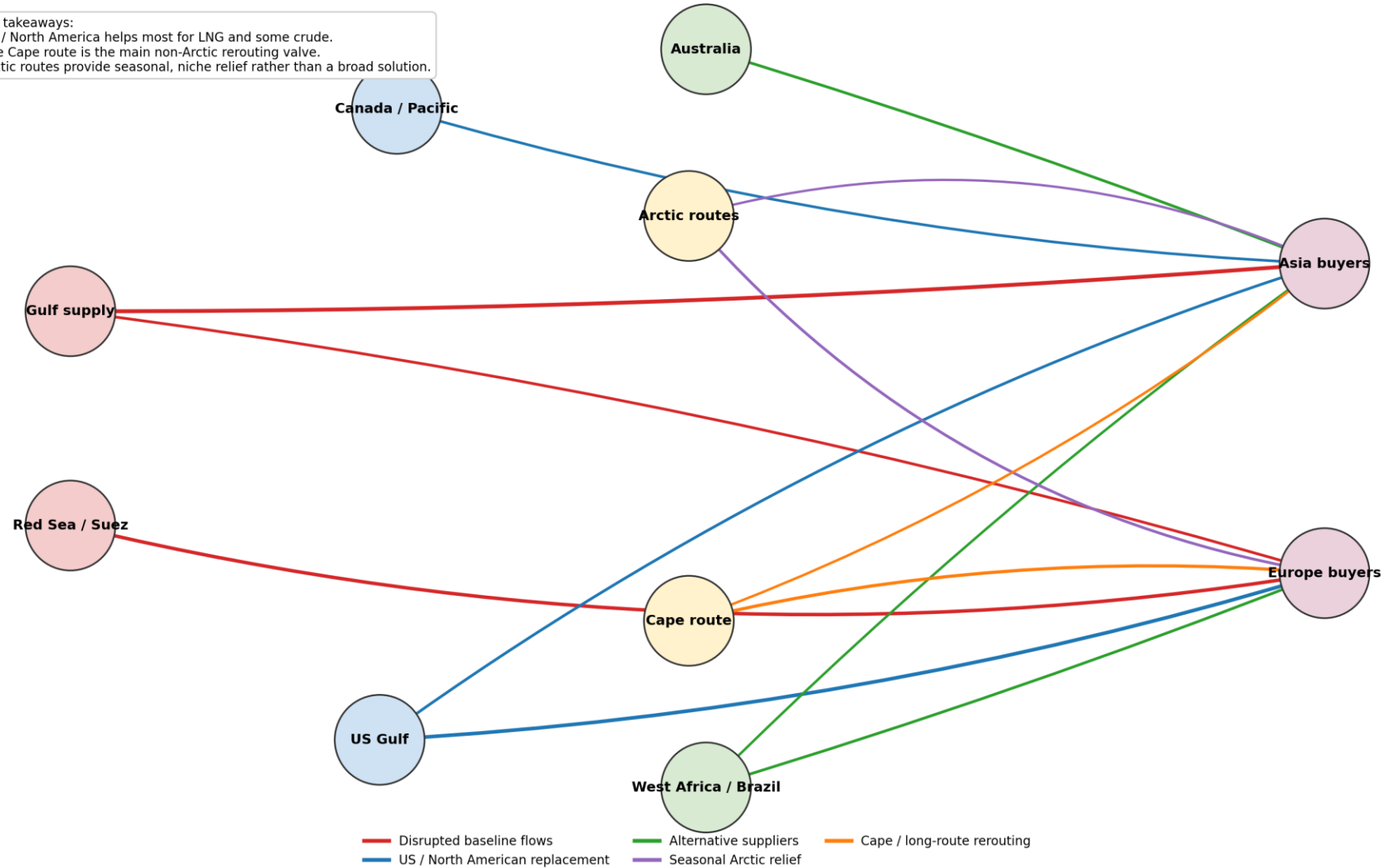


Market reconfiguration

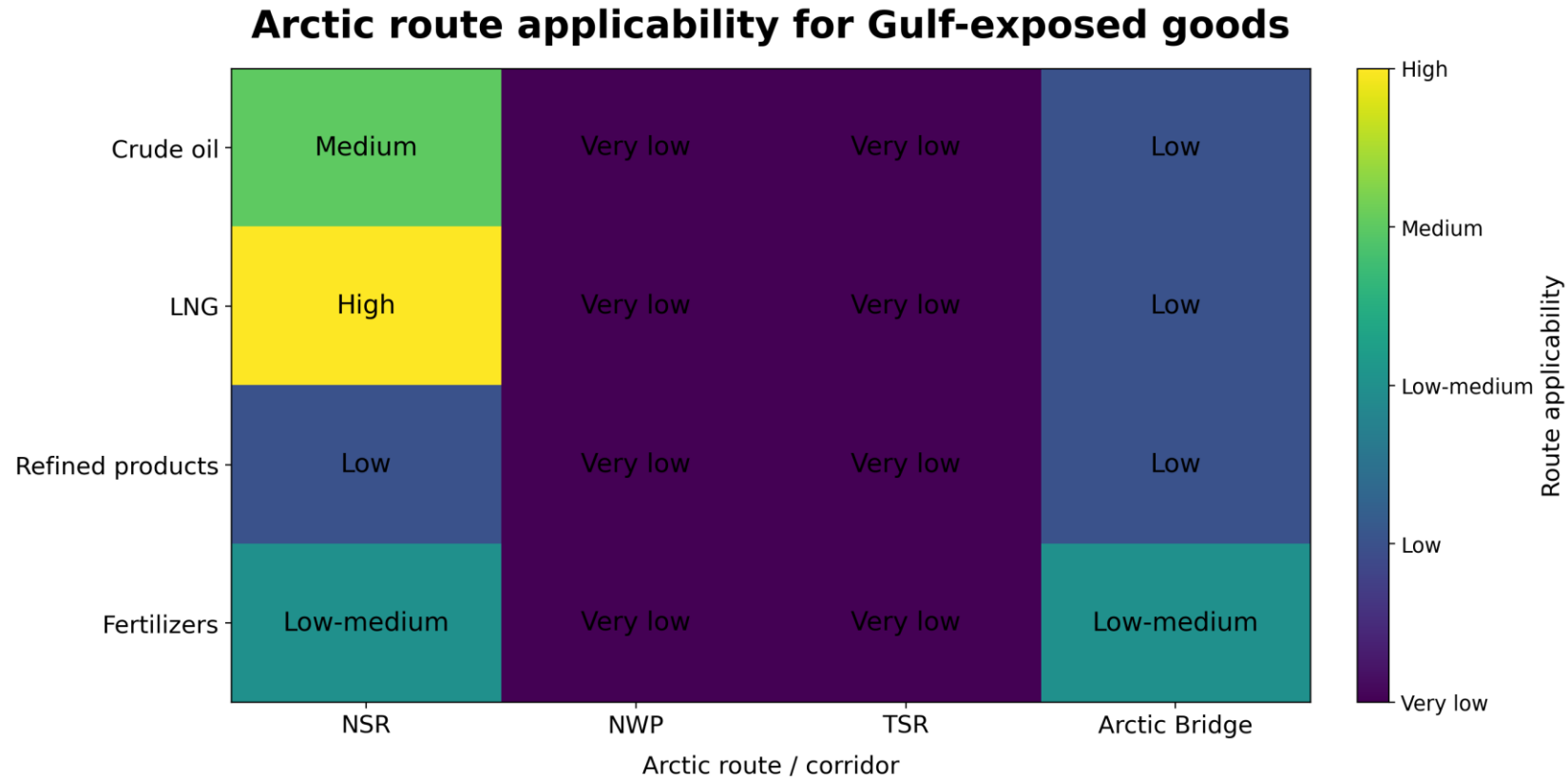
How markets can reconfigure after Hormuz / Red Sea disruptions

Main takeaways:

- US / North America helps most for LNG and some crude.
- The Cape route is the main non-Arctic rerouting valve.
- Arctic routes provide seasonal, niche relief rather than a broad solution.



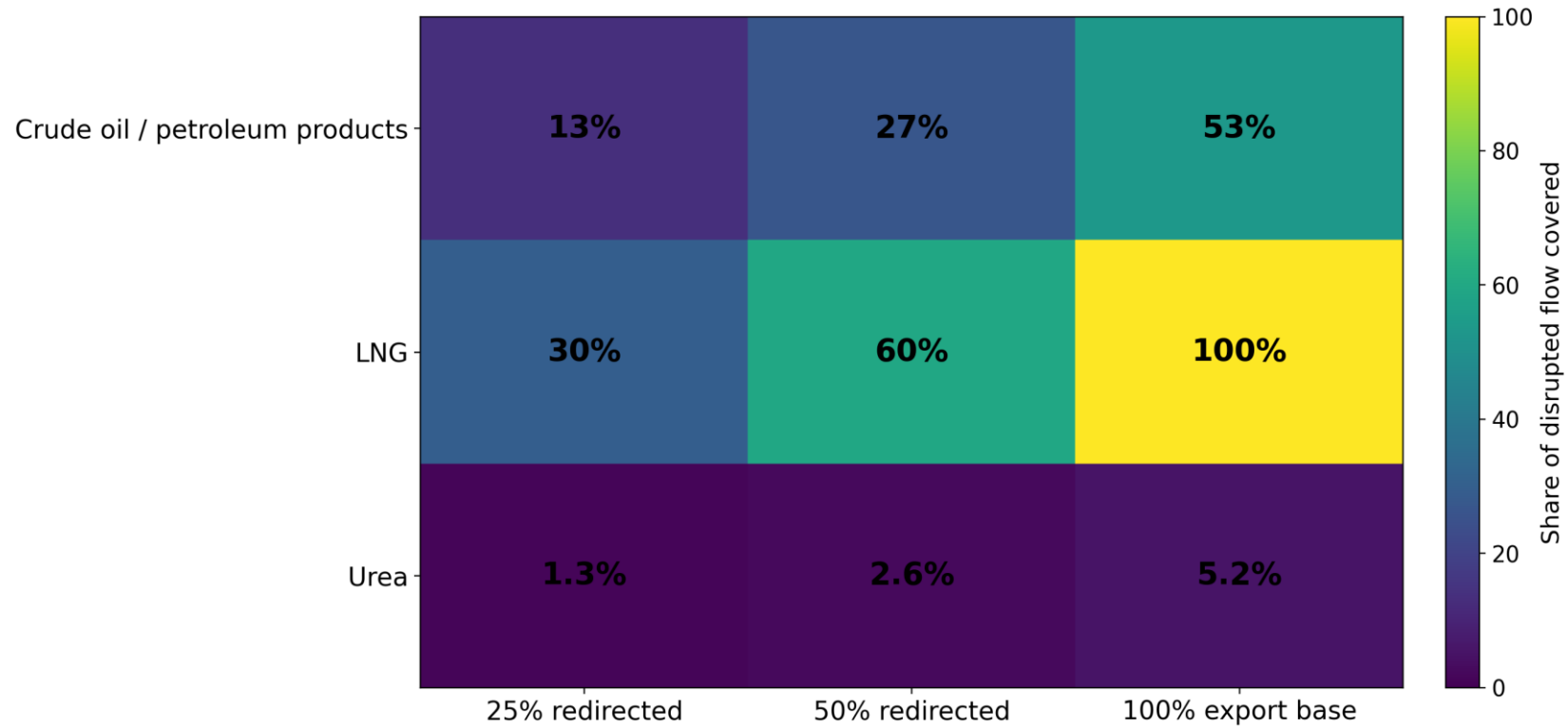
Arctic route applicability



Reframing: Arctic routes do not reroute Gulf-origin cargoes at scale; they offer niche/seasonal alternative origin-destination channels. NSR is the only route with material current cargo flow, dominated by LNG and crude; NWP, TSR, and Arctic Bridge remain limited or niche.

Replacement coverage by USA

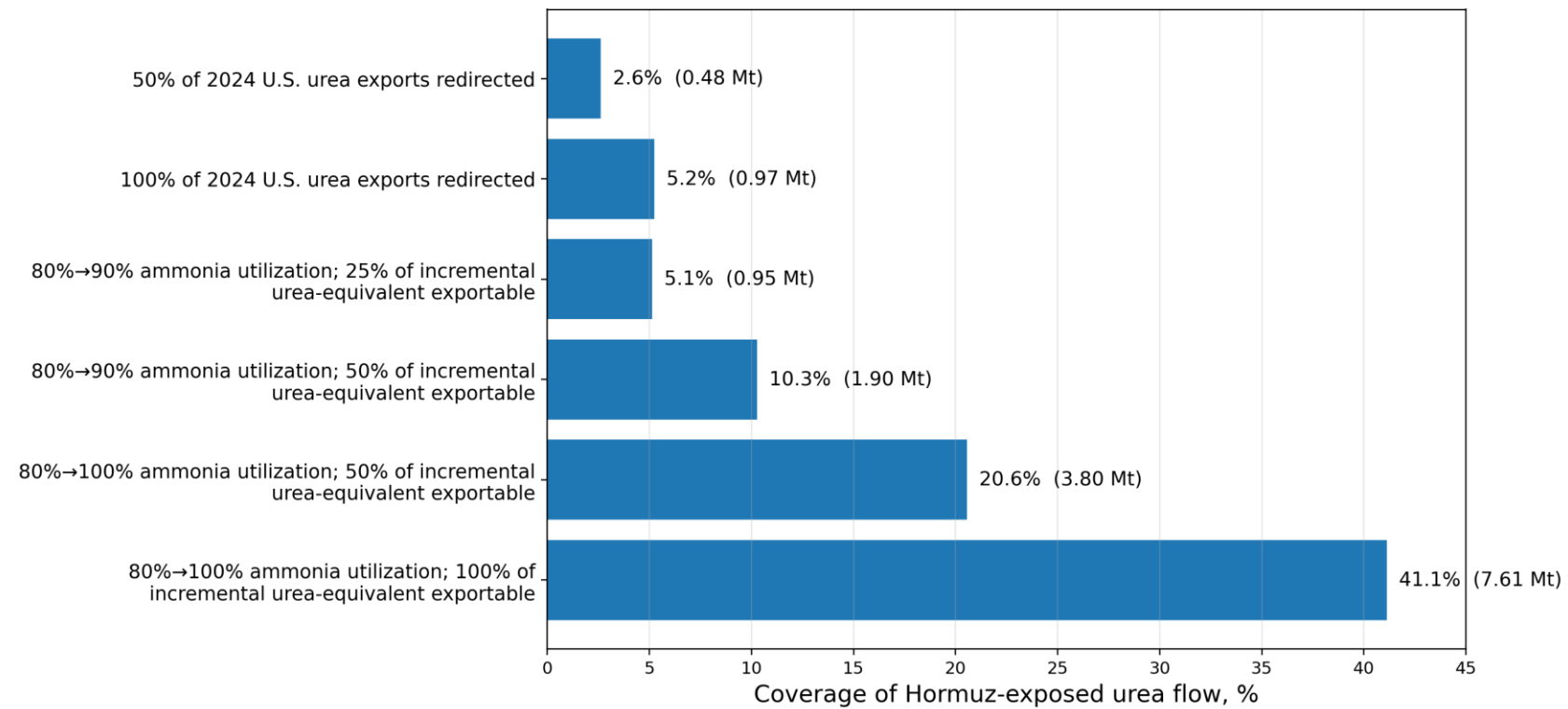
Replacement coverage from current U.S. export base



Basis: oil/products = U.S. crude exports >4.1 mb/d + petroleum product exports 6.6 mb/d vs 2024 Hormuz oil flows 20.0 mb/d; LNG = U.S. LNG exports 11.9 Bcf/d vs Qatar+UAE Hormuz LNG 10.0 Bcf/d; urea = U.S. HS 310210 exports 0.967 Mt vs IFA Hormuz-exposed urea 18.5 Mt.

USA fertilizer production opportunity

U.S. nitrogen fertilizer production opportunity



Coverage denominator = 18.5 Mt of urea exported via Hormuz in 2024. Current export rows use 2024 U.S. urea exports of 0.967 Mt. Utilization rows assume 2025 U.S. ammonia production of 14.0 Mt N at ~80% utilization, converted to urea product at 46% N; treat as upper-bound exportable supply.

Key outcomes

- Red Sea disruption is visible through a **substitution pattern**: lower Suez/Bab el-Mandeb activity and higher Cape of Good Hope activity.
- **Hormuz exposure** is especially important for **tankers, LNG, crude oil, petroleum products**, and related commodity flows.
- **Chokepoint co-movement** shows that disruptions are not isolated. Stress in one corridor can affect routing decisions elsewhere.
- **Market reconfiguration** is likely to involve multiple responses: Cape rerouting, alternative suppliers, U.S./North American replacement, and selected Arctic relief.
- Arctic corridors have different roles. NSR has the strongest near-term relevance, NWP and Arctic Bridge are niche/regional, and TSR remains mostly a future option.
- For Gulf-exposed goods, Arctic routes are more **applicable to selected cargo-route combinations** than to broad global substitution.
- U.S./North American replacement coverage is strongest **where existing export capacity and logistics can be redirected** quickly. **Fertilizer and energy security** impacts may create **opportunities for U.S.** production, substitution, and strategic supply-chain resilience.

Strategic implication: The main resilience response is a portfolio strategy: reroute where possible, substitute suppliers where feasible, expand North American coverage, and use Arctic routes as a selective strategic option.

Conclusion

- Arctic shipping is becoming **more strategically relevant**, but **not automatically more commercially viable**.
- Arctic routes depend on a **combination of climate access, infrastructure, governance, market demand, safety, and legitimacy**.
- News analysis shows that **Arctic shipping is increasingly framed through geopolitics, security, resources, and state competition**.
- Chokepoint disruptions show that **Arctic corridors may support resilience, but only for selected cargoes, routes, and geopolitical conditions**.
- The Northern Sea Route has the strongest near-term relevance, while other Arctic corridors remain more niche or future-oriented.
- U.S and North American substitution can complement rerouting strategies, especially for energy, fertilizers, and selected strategic commodities.
- The Arctic should therefore be treated as **part of a broader maritime resilience portfolio**.

Strategic conclusion: The future of Arctic shipping will be shaped less by ice retreat alone and more by the interaction of climate change, geopolitical risk, infrastructure capacity, market reconfiguration, and supply-chain resilience.

Thank you

