Wärtsilä
Repowering market study

Pre-interview assignment
Junior Data Scientist

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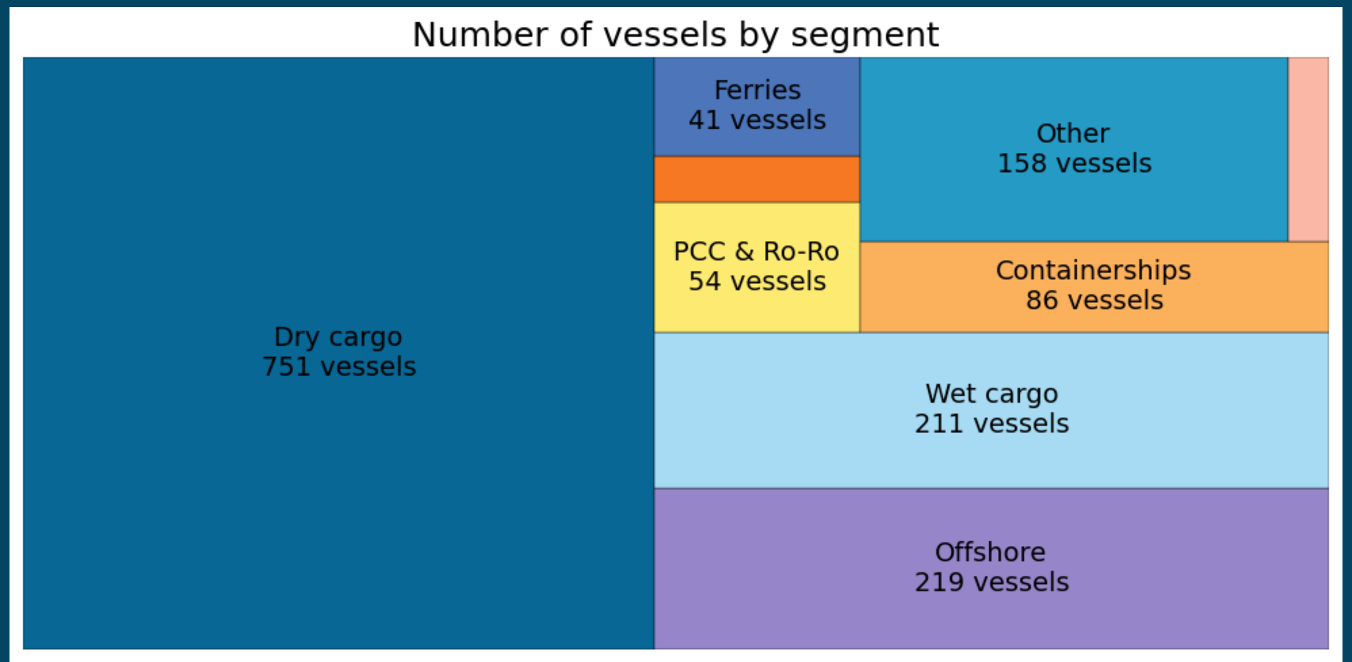
Introduction

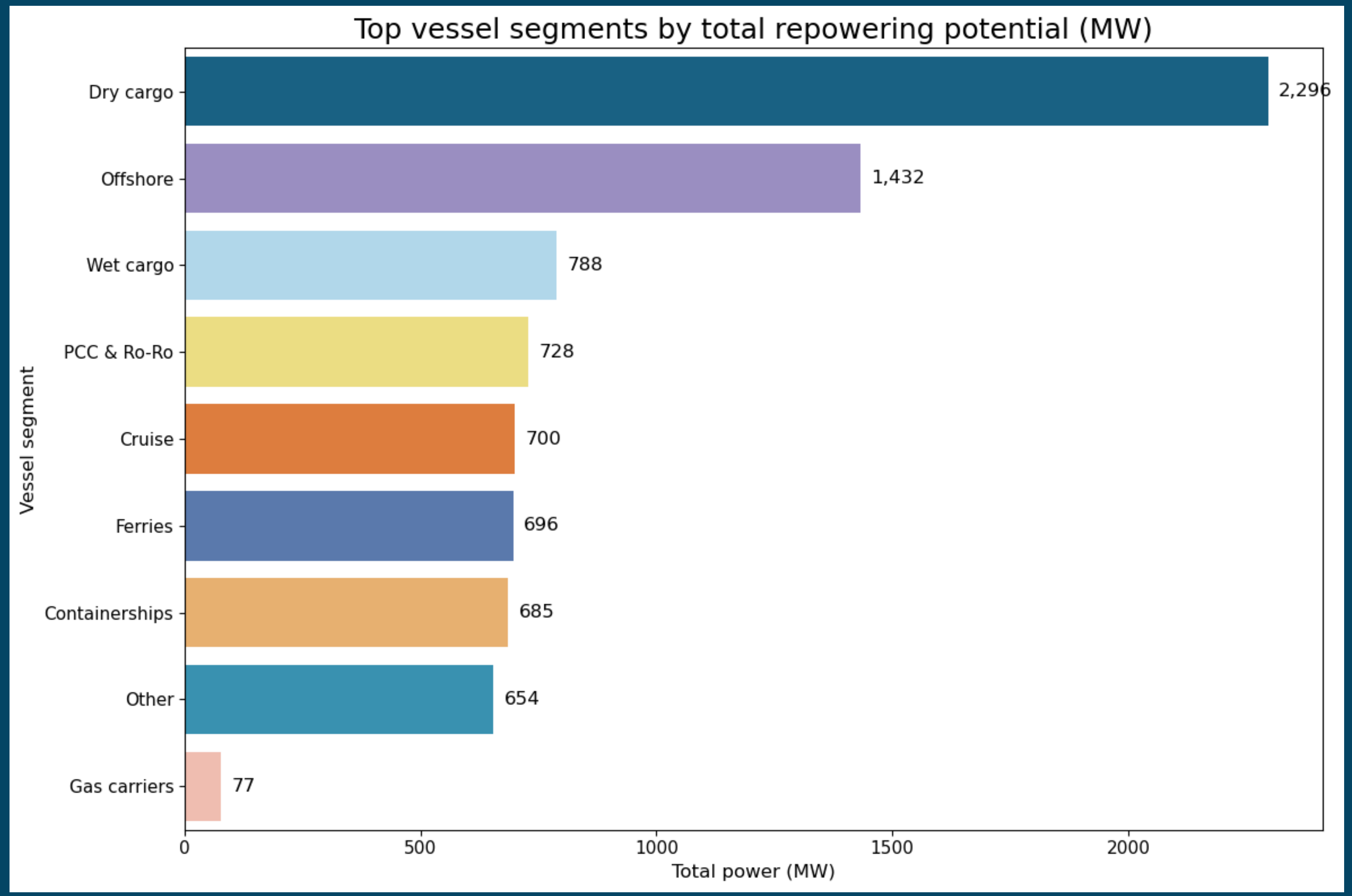
Identify which vessels, currently powered by a competitor, may represent a repowering opportunity for Wärtsilä

Details:

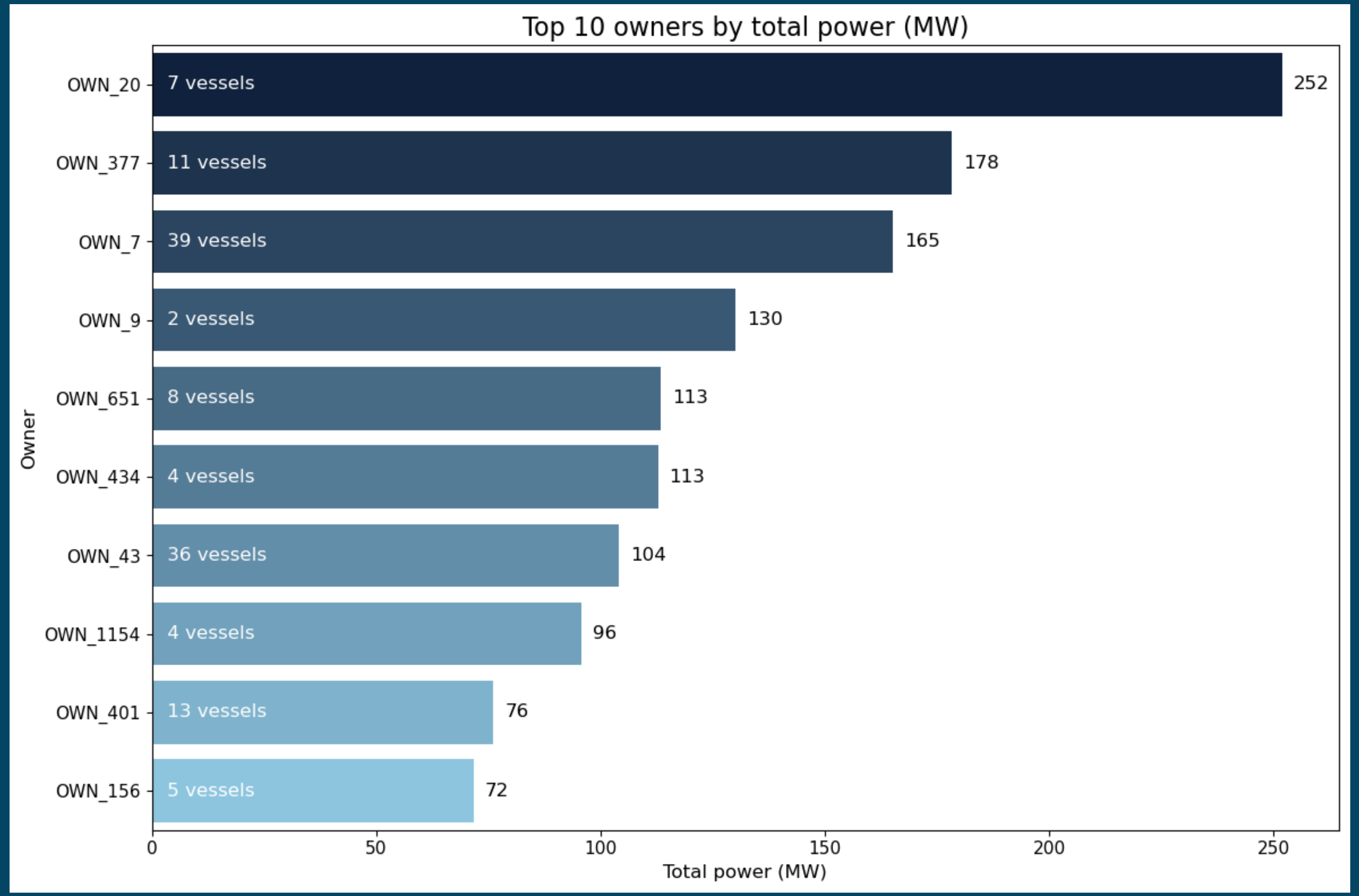
- Main propulsion engines only
- Only engines with a suitable Wärtsilä equivalent type
- Vessels ≥ 10 years old and ≥ 7 years of remaining useful life

Market potential





- **Dry cargo**: the largest market by vessel volume and total power
- **Offshore:** high-value, concentrated opportunity with powerful vessels
- **PCC, Ro-Ro** & **Cruise**: high-value projects due to powerful engines
- **OWN_20** and **OWN_377**: top potential MW targets
- **OWN_7**: strategic fleet-wide opportunity

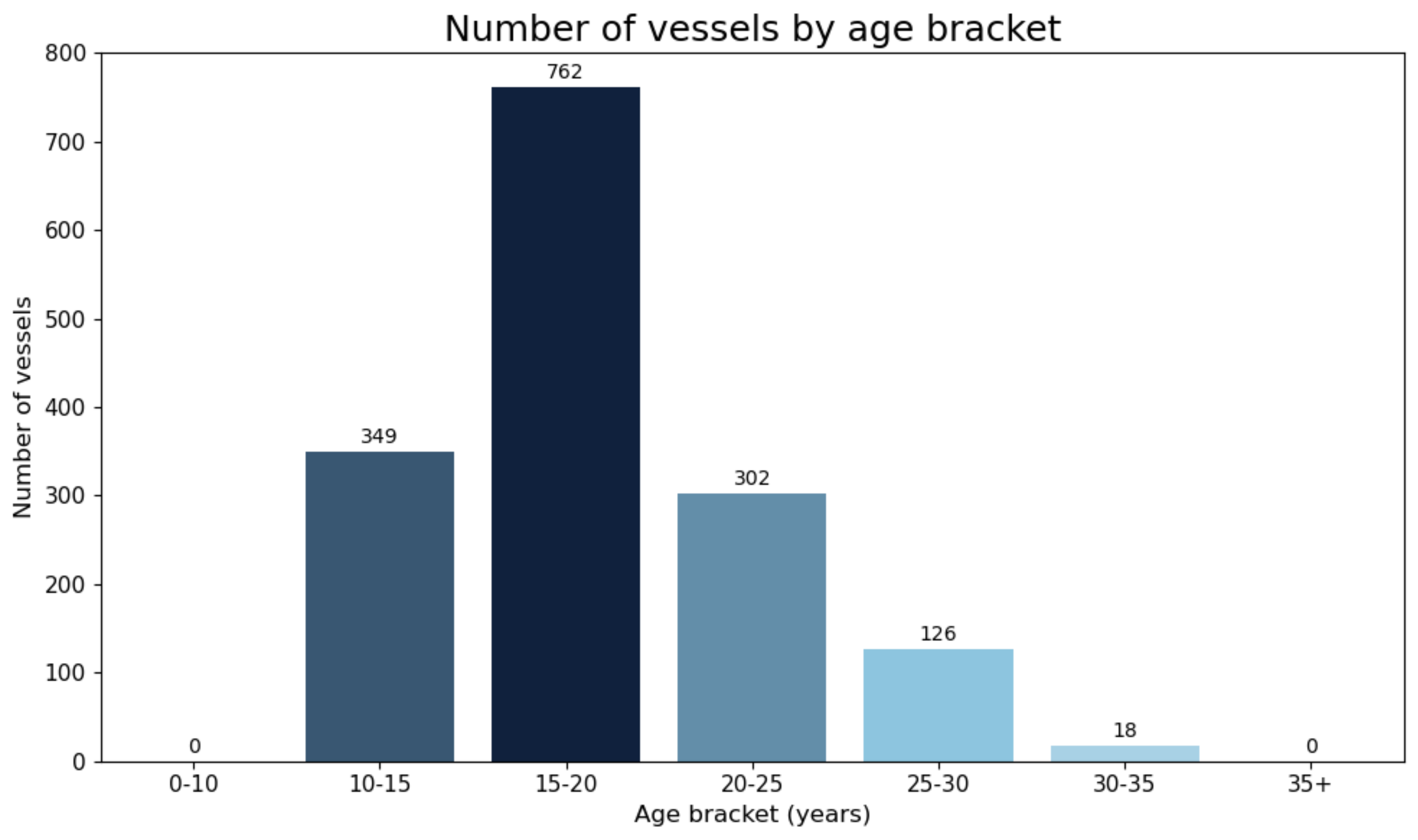


OWN_20: Cruises

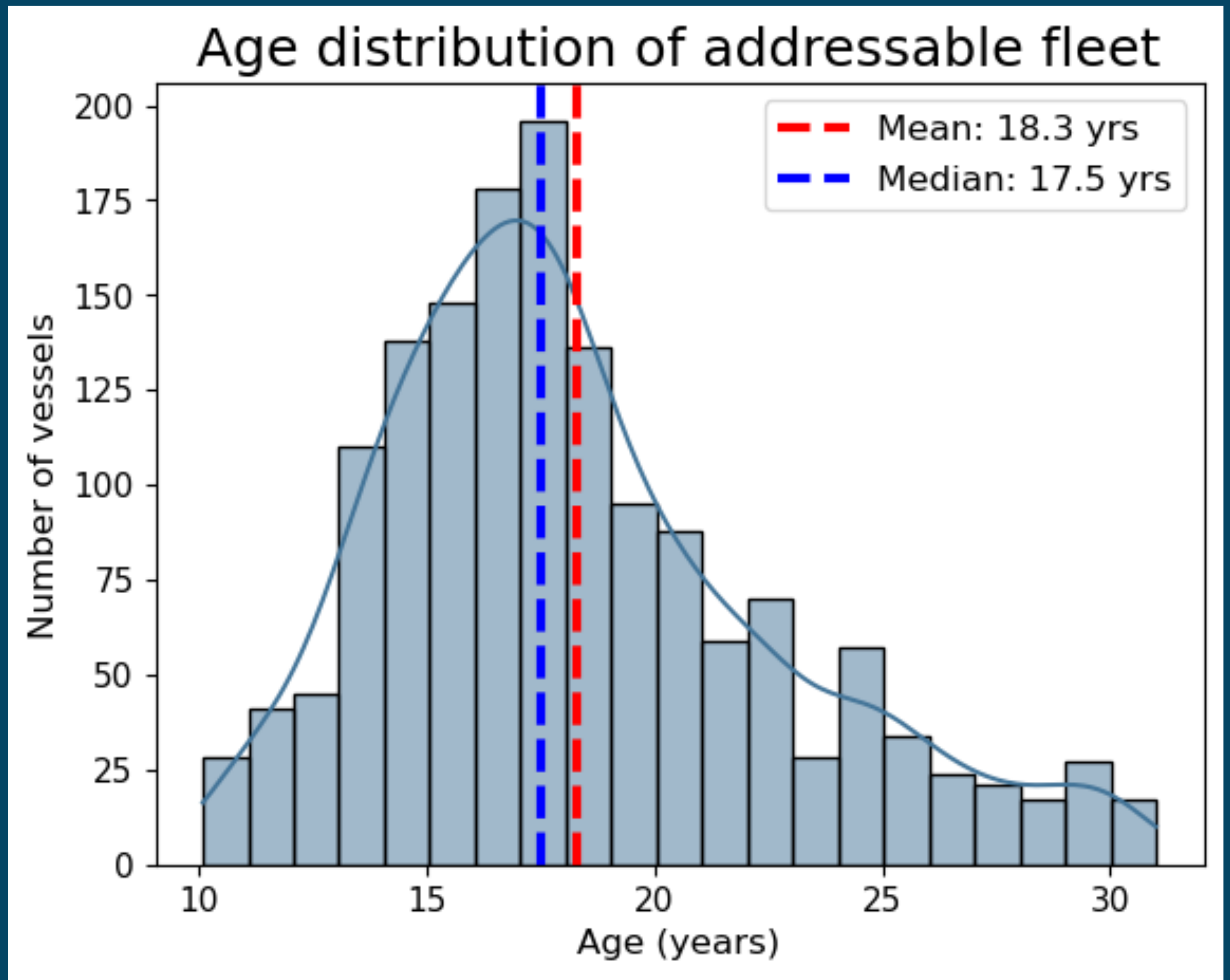
OWN_377: PCC & RoRo

OWN_7: Dry Cargo

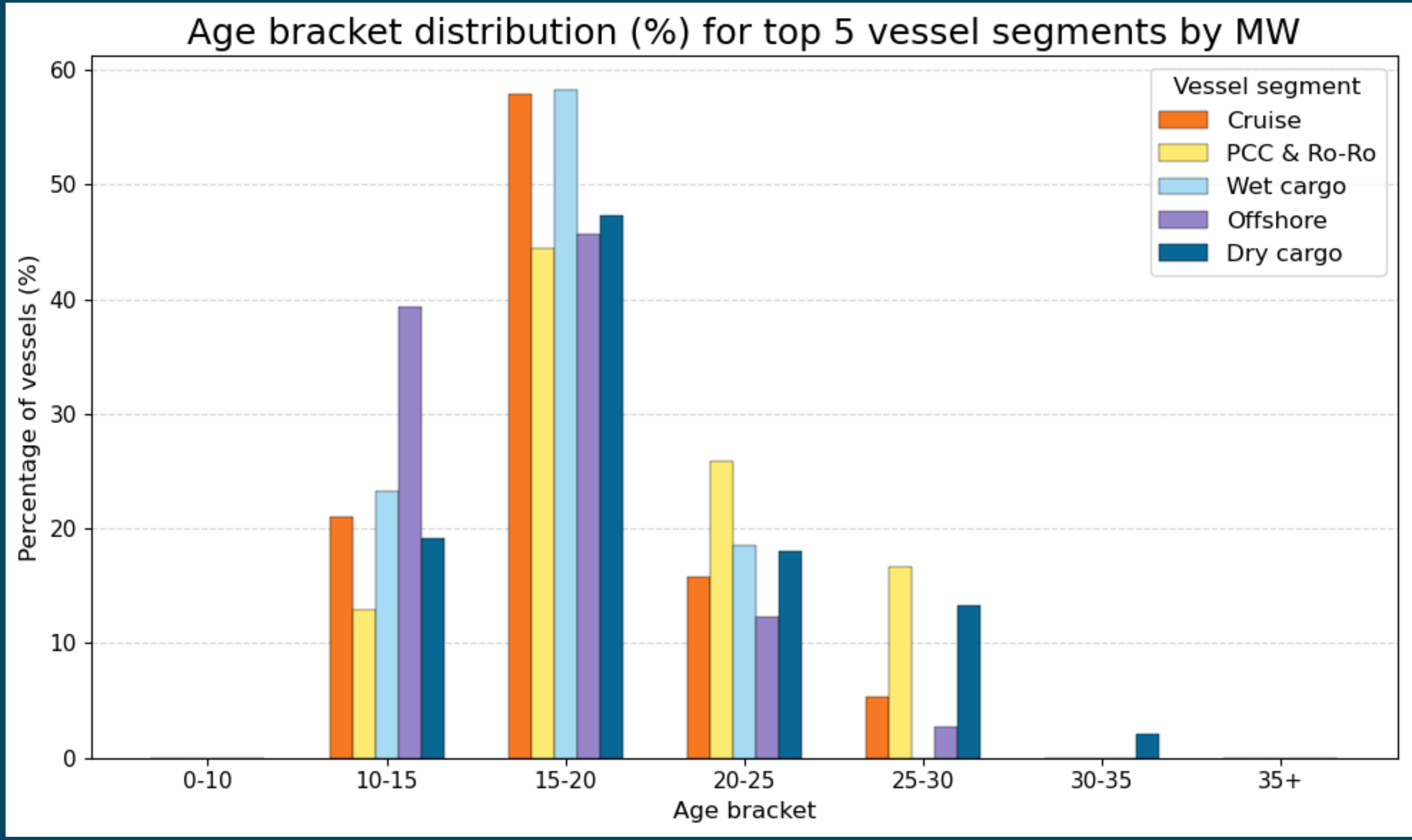
Fleet age and lifecycle



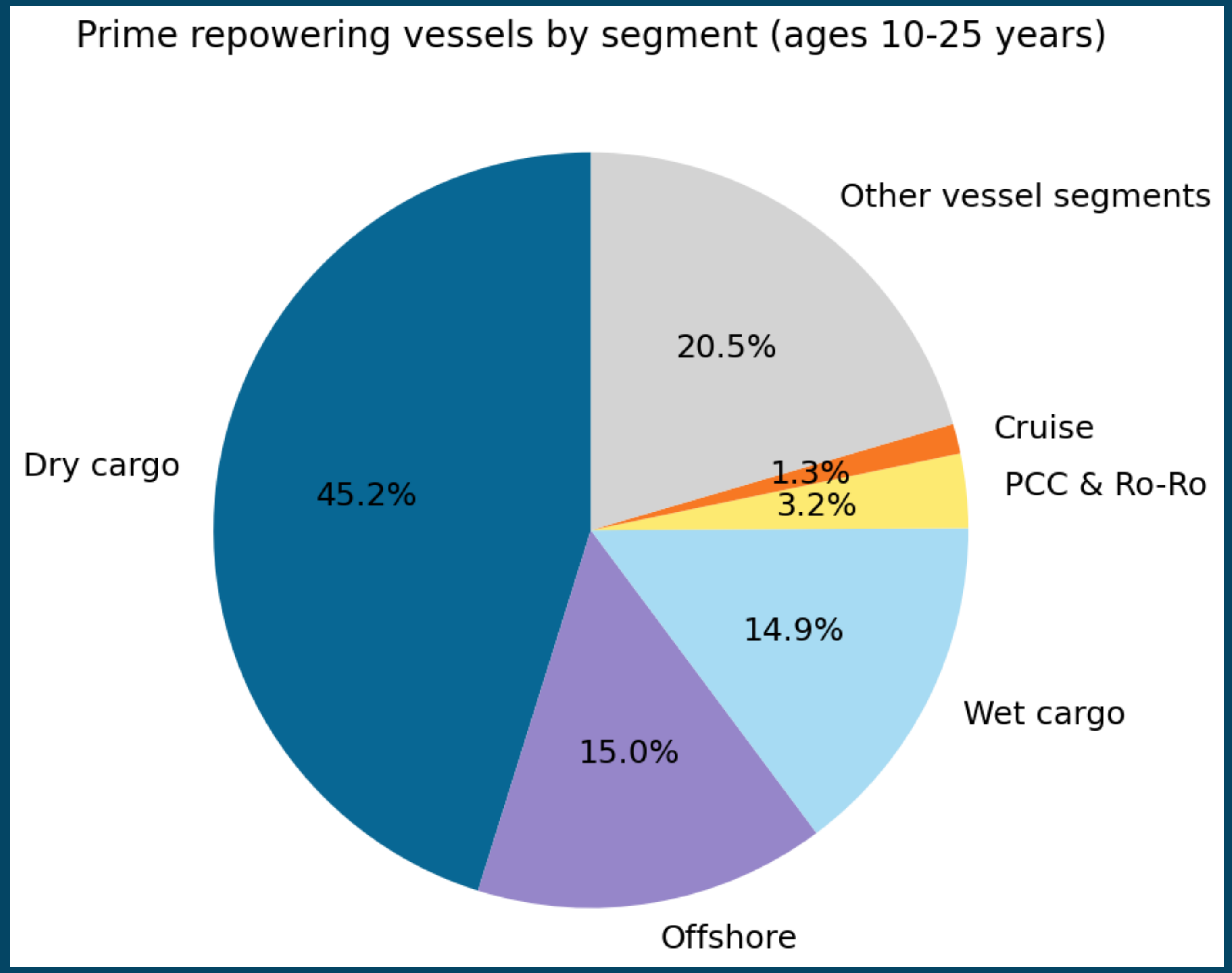
91% of addressable fleet in prime 10-25 year age window



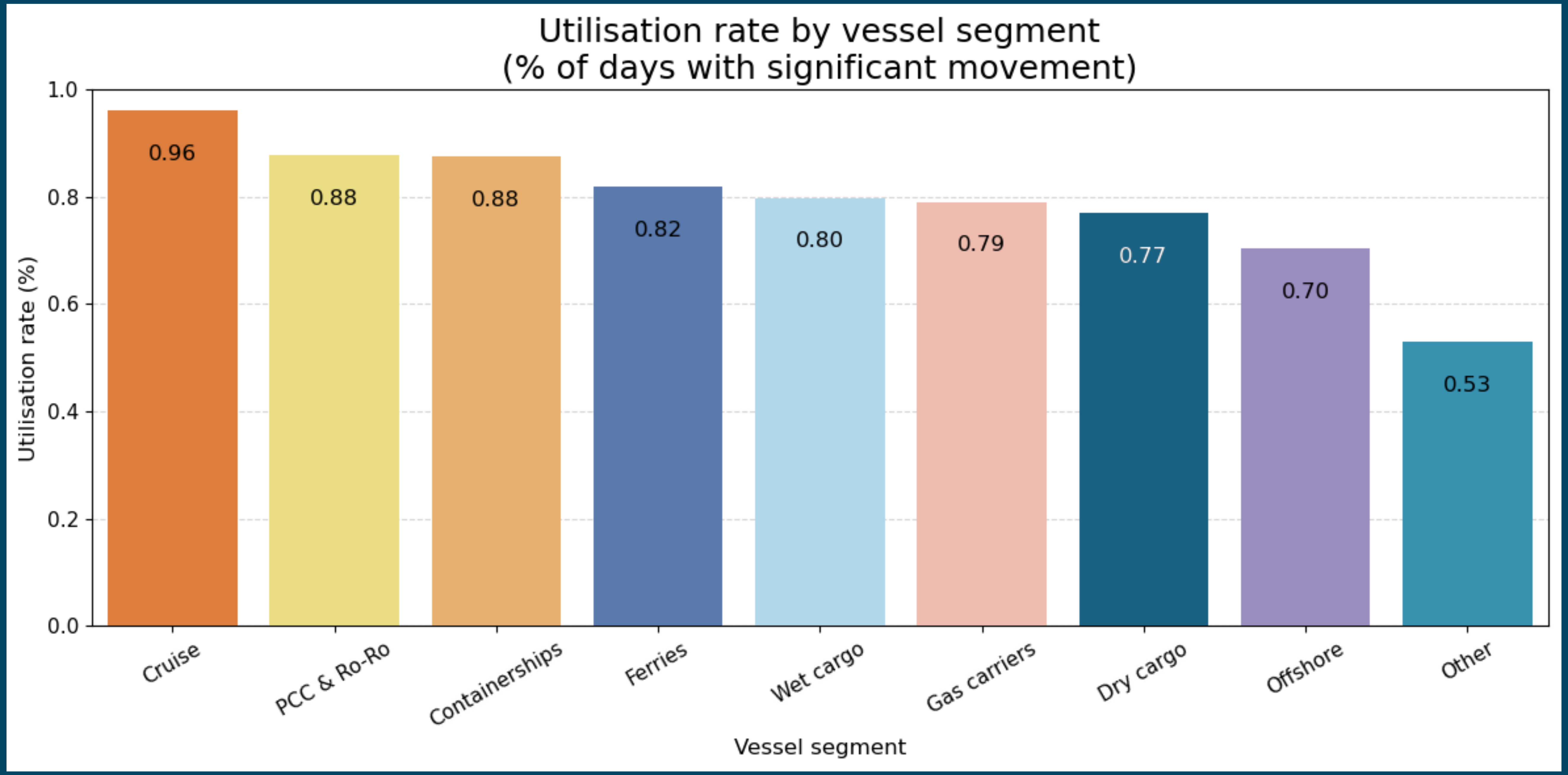
Fleet age and lifecycle



45% prime repowering vessels are **Dry Cargo**



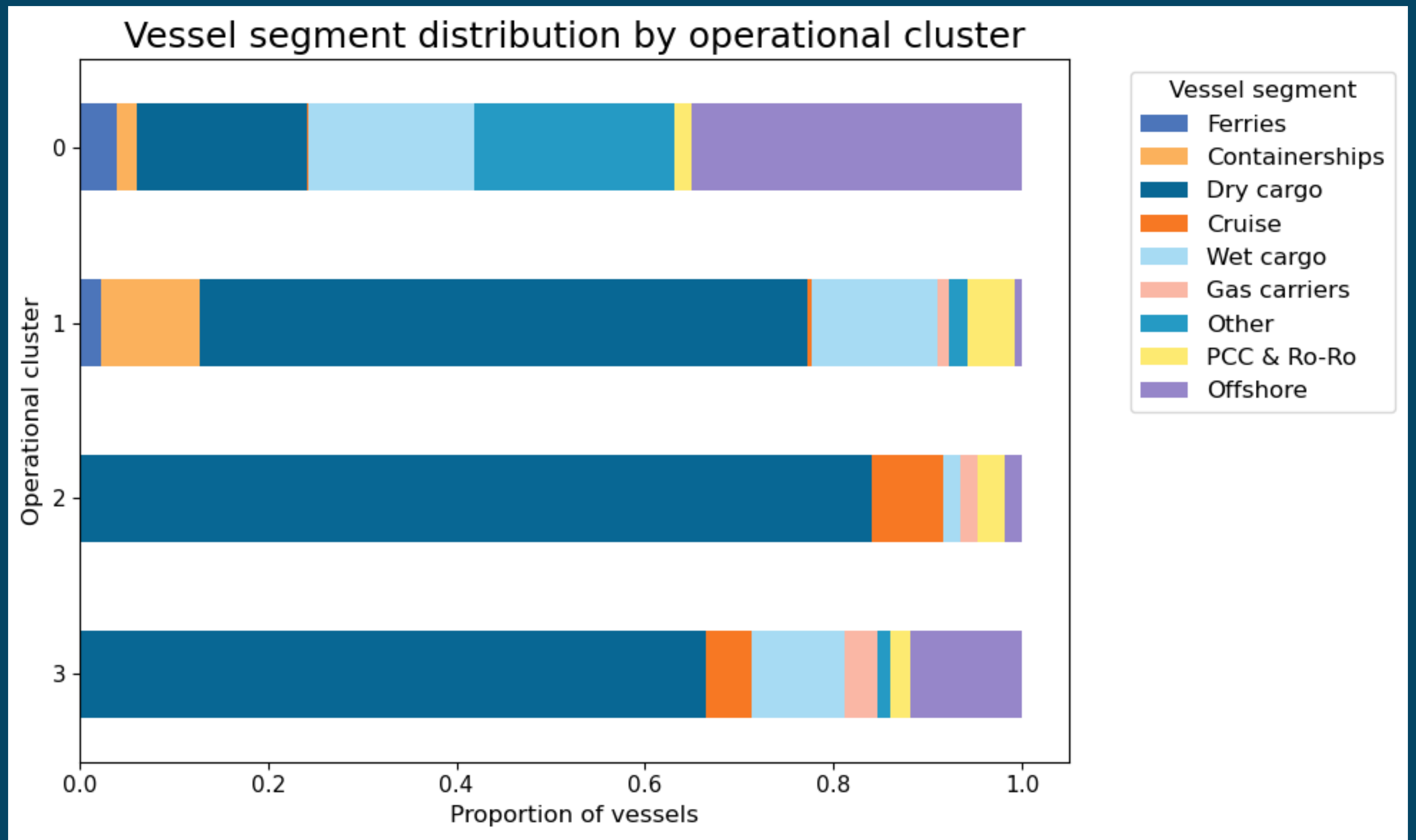
Operational patterns

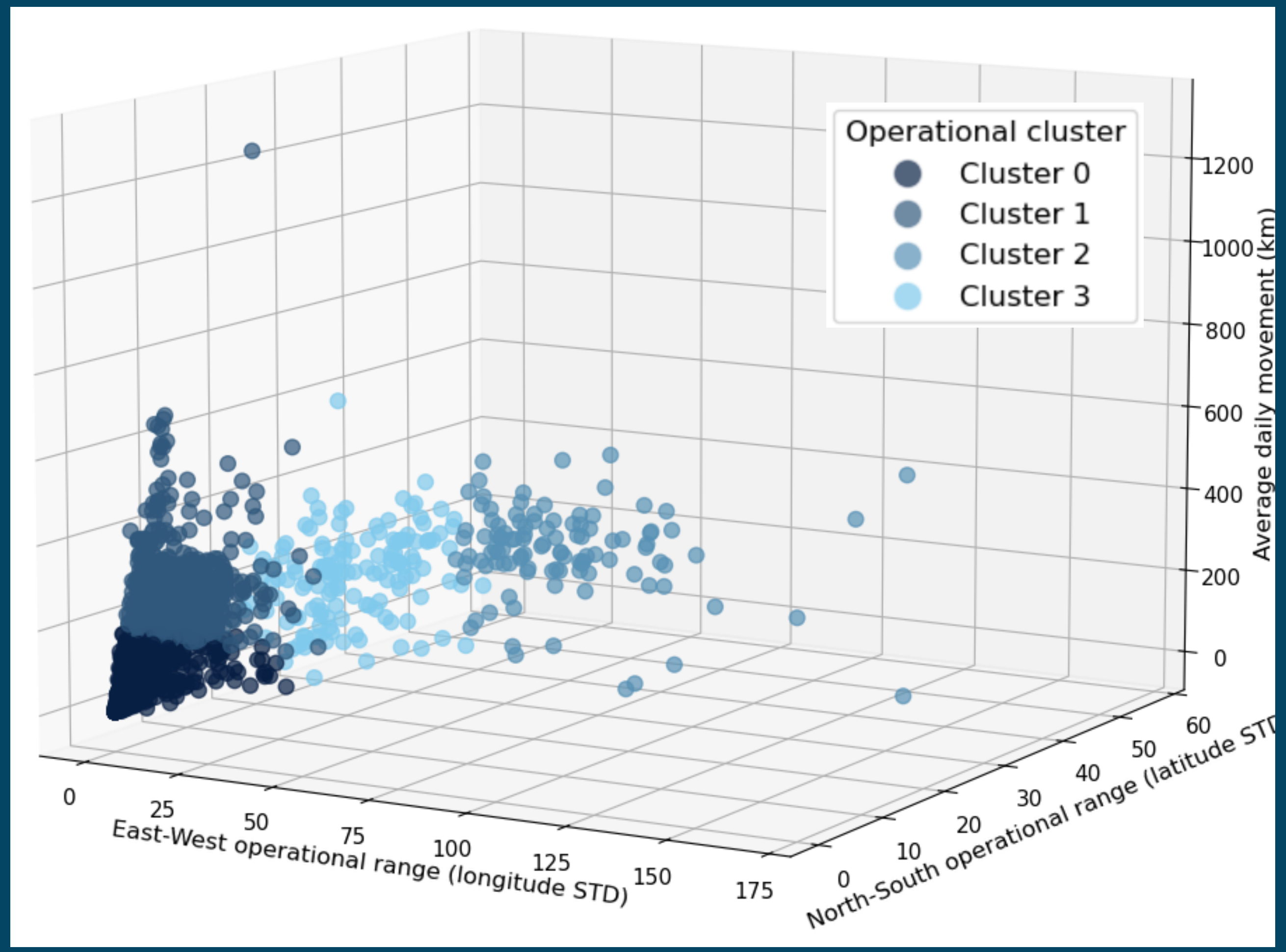


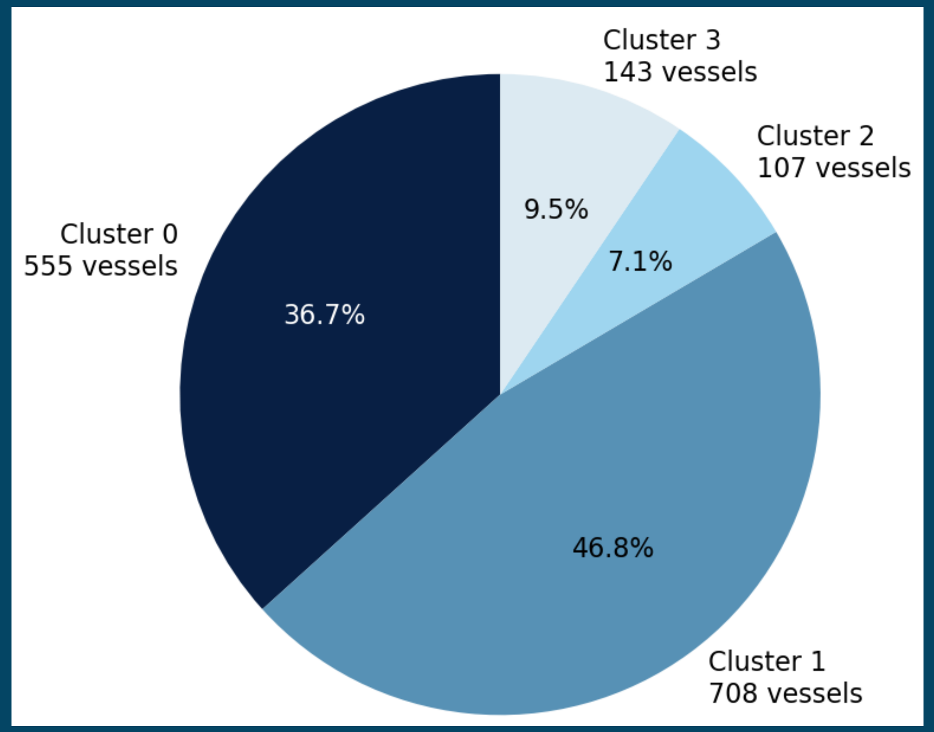
Cruise, PCC & Ro-Ro & **Containerships**: intensive use enables fast ROI

Operational patterns - clusters

- **Cluster 2 (Highest Priority):**
  Global traders with maximum activity and largest geographical range
- **Cluster 1 (Volume Priority):**
  Core fleet with high utilisation - largest cluster (708 vessels)
- **Cluster 3 (Secondary Focus):**
  Regional operators with consistent activity
- **Cluster 0 (Selective Approach):**
  Localised short-sea specialists with confined operations

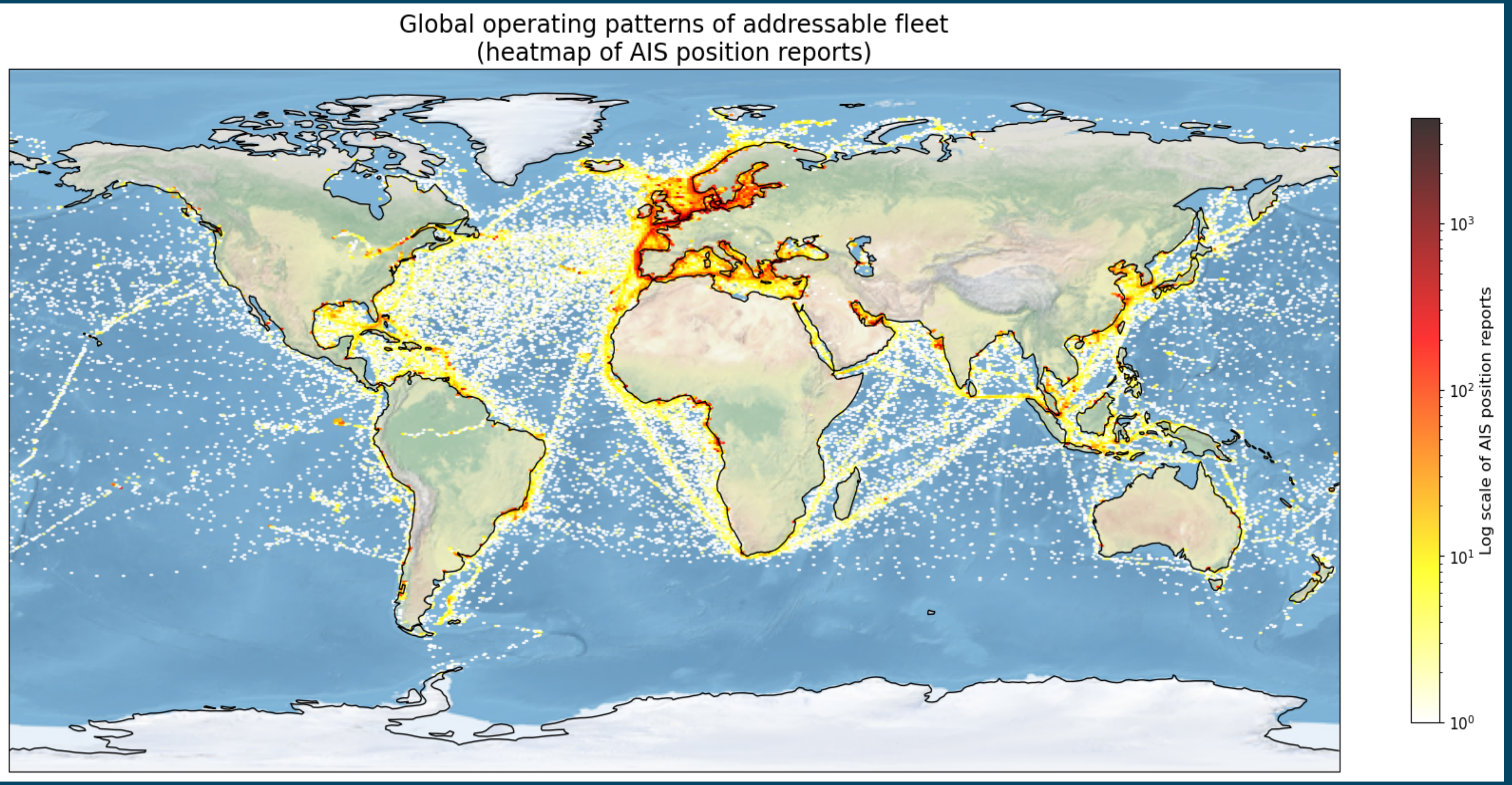


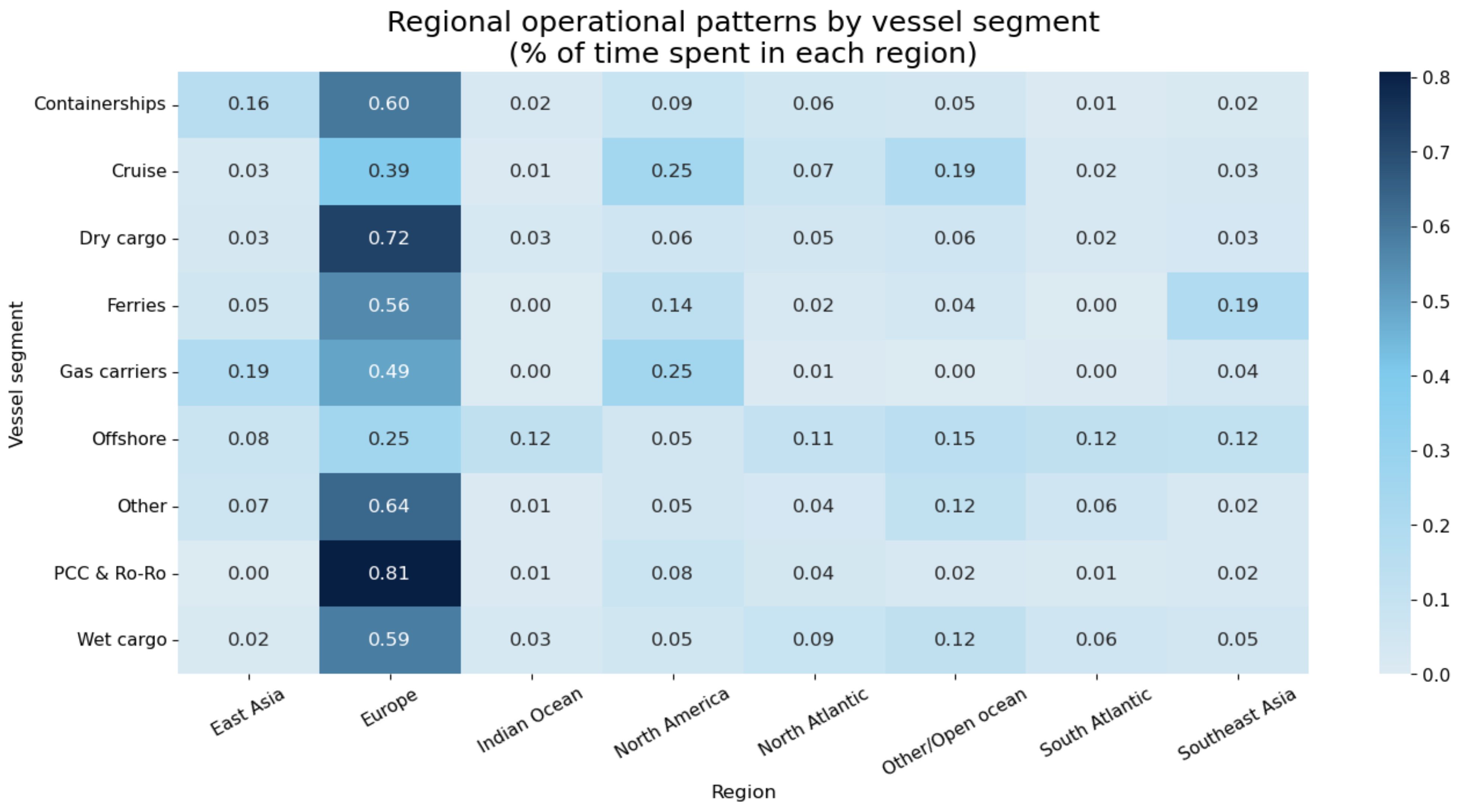




Operational patterns - geolocalisation

- **European** dominance: efficient use of existing service hubs
- **Dry and Wet Cargo, PCC/Ro-Ro** and **Ferries** operate heavily in Europe
- **Containerships** and **gas carriers** more dispersed across regions
- Short-sea operators focus on fuel savings, deep-sea operators prioritise global service support





Vessel segment	East Asia	Europe	Indian Ocean	North America	North Atlantic	Other/Open ocean	South Atlantic	Southeast Asia
Containerships	0.16	0.60	0.02	0.09	0.06	0.05	0.01	0.02
Cruise	0.03	0.39	0.01	0.25	0.07	0.19	0.02	0.03
Dry cargo	0.03	0.72	0.03	0.06	0.05	0.06	0.02	0.03
Ferries	0.05	0.56	0.00	0.14	0.02	0.04	0.00	0.19
Gas carriers	0.19	0.49	0.00	0.25	0.01	0.00	0.00	0.04
Offshore	0.08	0.25	0.12	0.05	0.11	0.15	0.12	0.12
Other	0.07	0.64	0.01	0.05	0.04	0.12	0.06	0.02
PCC & Ro-Ro	0.00	0.81	0.01	0.08	0.04	0.02	0.01	0.02
Wet cargo	0.02	0.59	0.03	0.05	0.09	0.12	0.06	0.05

Conclusions

Substantial near-term opportunity identified with
1,400+ vessels in prime repowering age window

Three-tiered approach recommended:

- Immediate focus on **Dry Cargo**, **Offshore**, and **Wet Cargo**
- High-value targeting of **Cruise**, **PCC/Ro-Ro** for maximum ROI
- Volume campaign for moderate-utilisation vessels

Different value propositions required:

- Fuel savings argument for high-utilisation vessels
- Reliability focus for powerful but idle assets (e.g., Offshore)
- Regulatory compliance driver for EU-concentrated segments

Operational patterns - extra