Wärtsilä Repowering market study

Pre-interview assignment
Junior Data Scientist

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September 2025

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

Number of vessels by segment
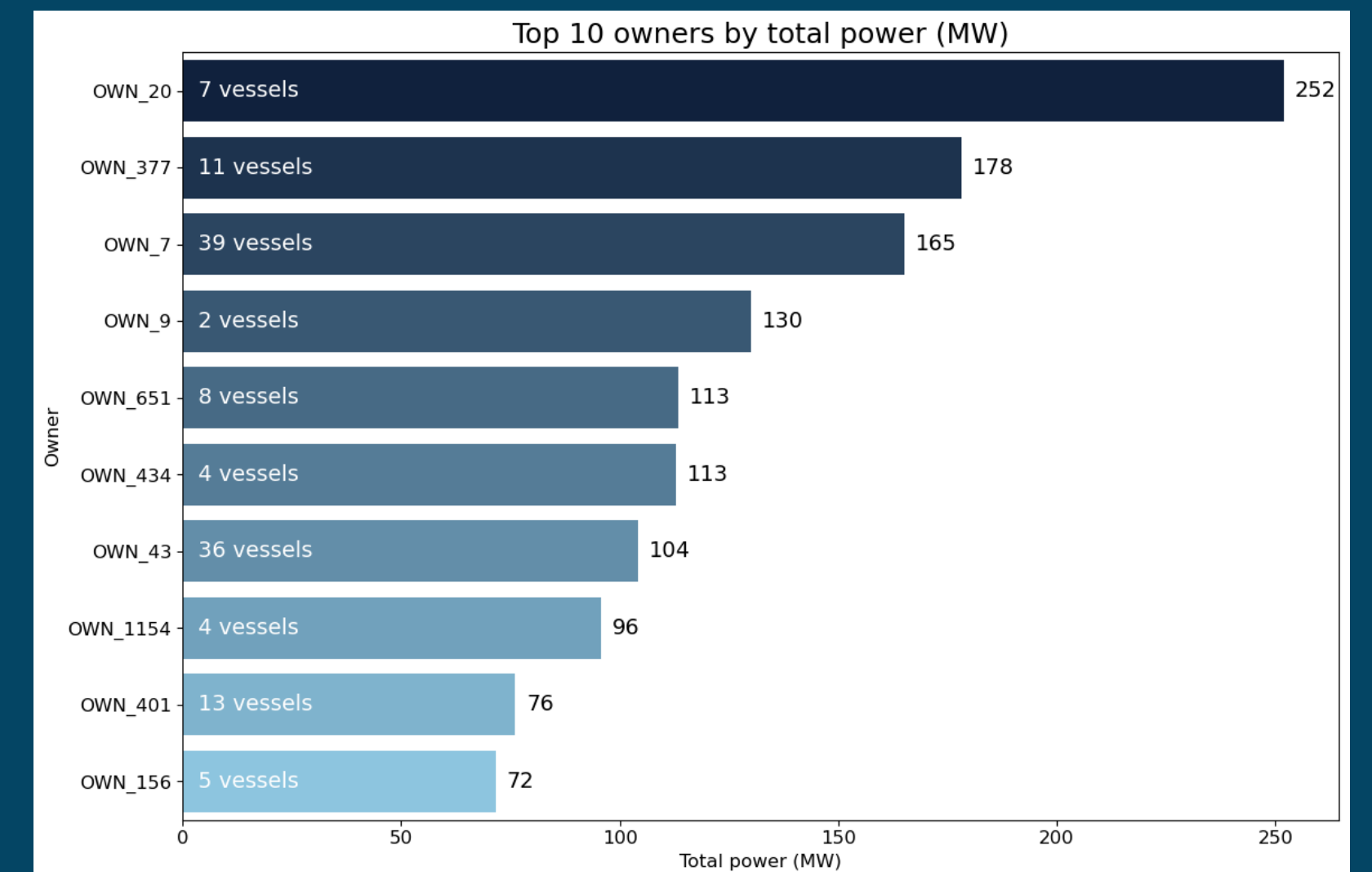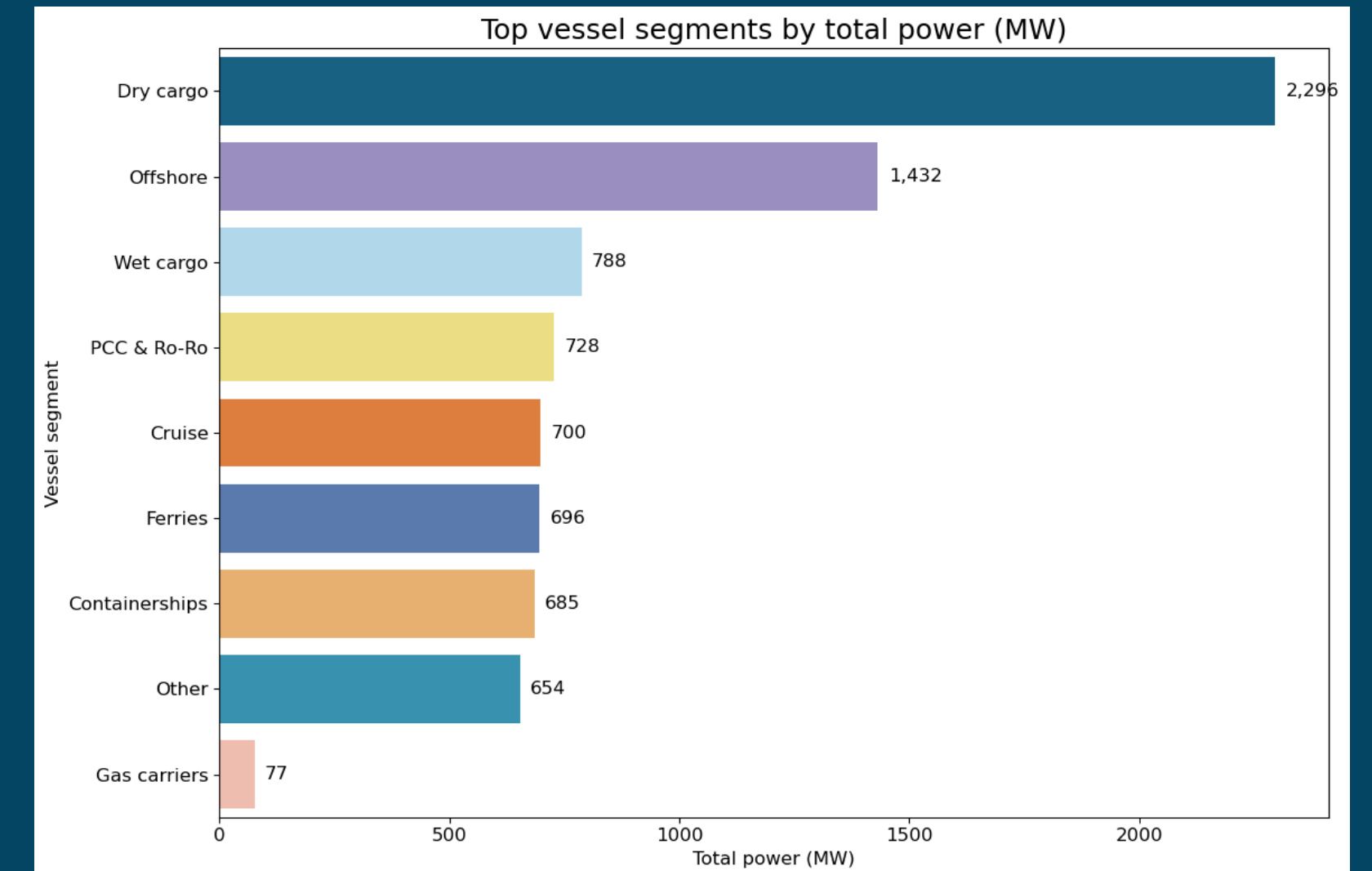

Top vessel segments by total power (MW)
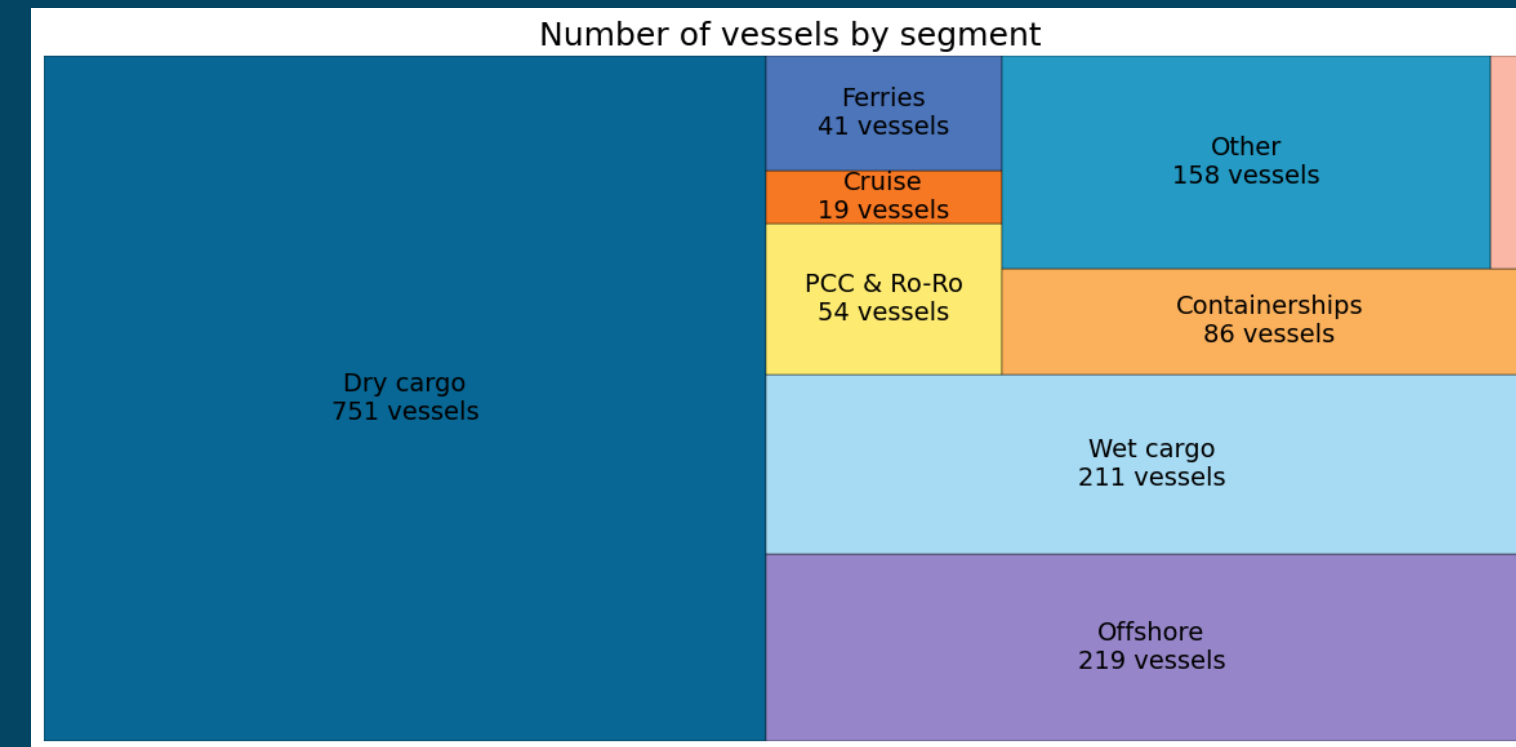
- **Dry cargo**: the largest market by vessel volume and total power

- **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

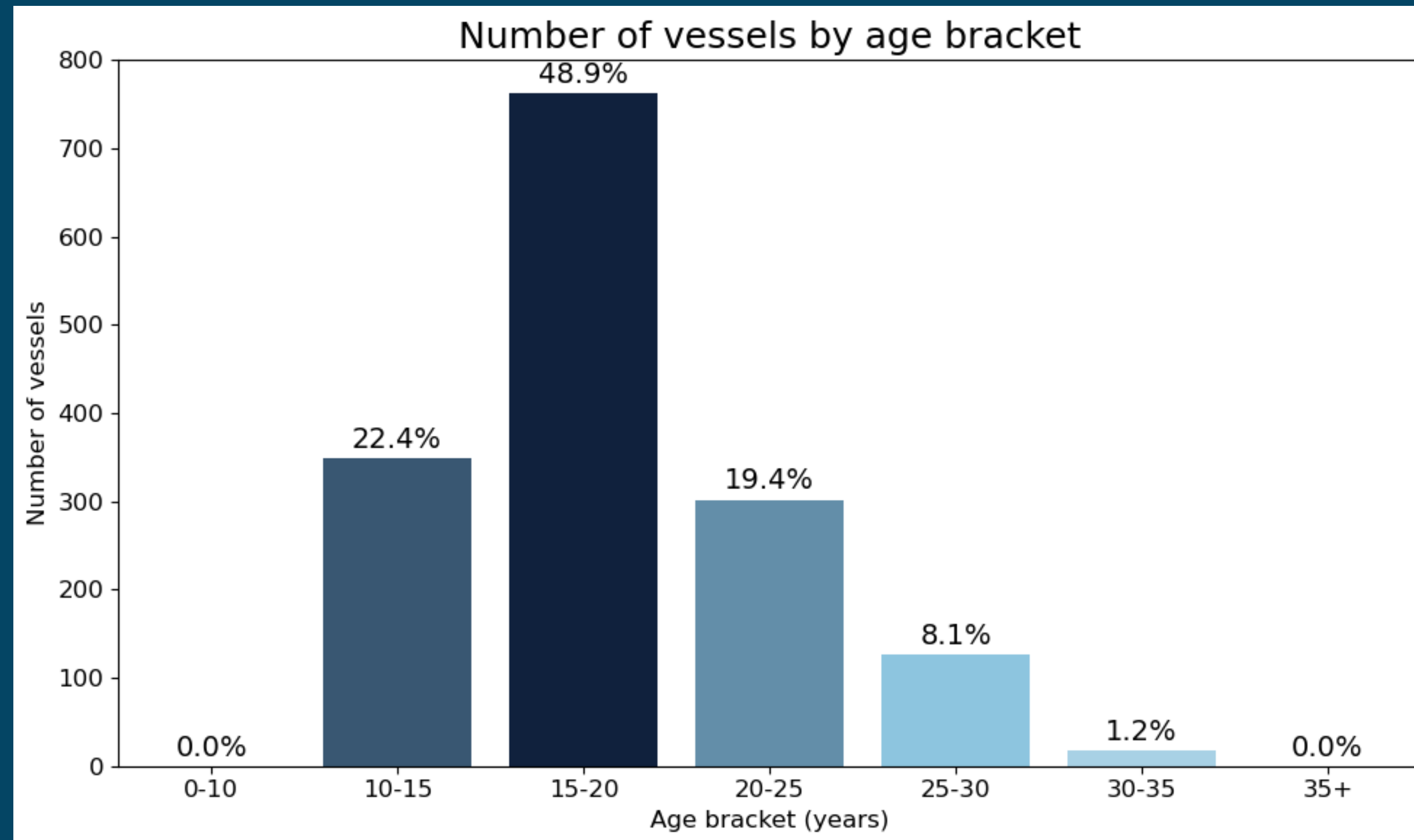- **OWN_7**: strategic fleet-wide opportunity

OWN_20: Cruises
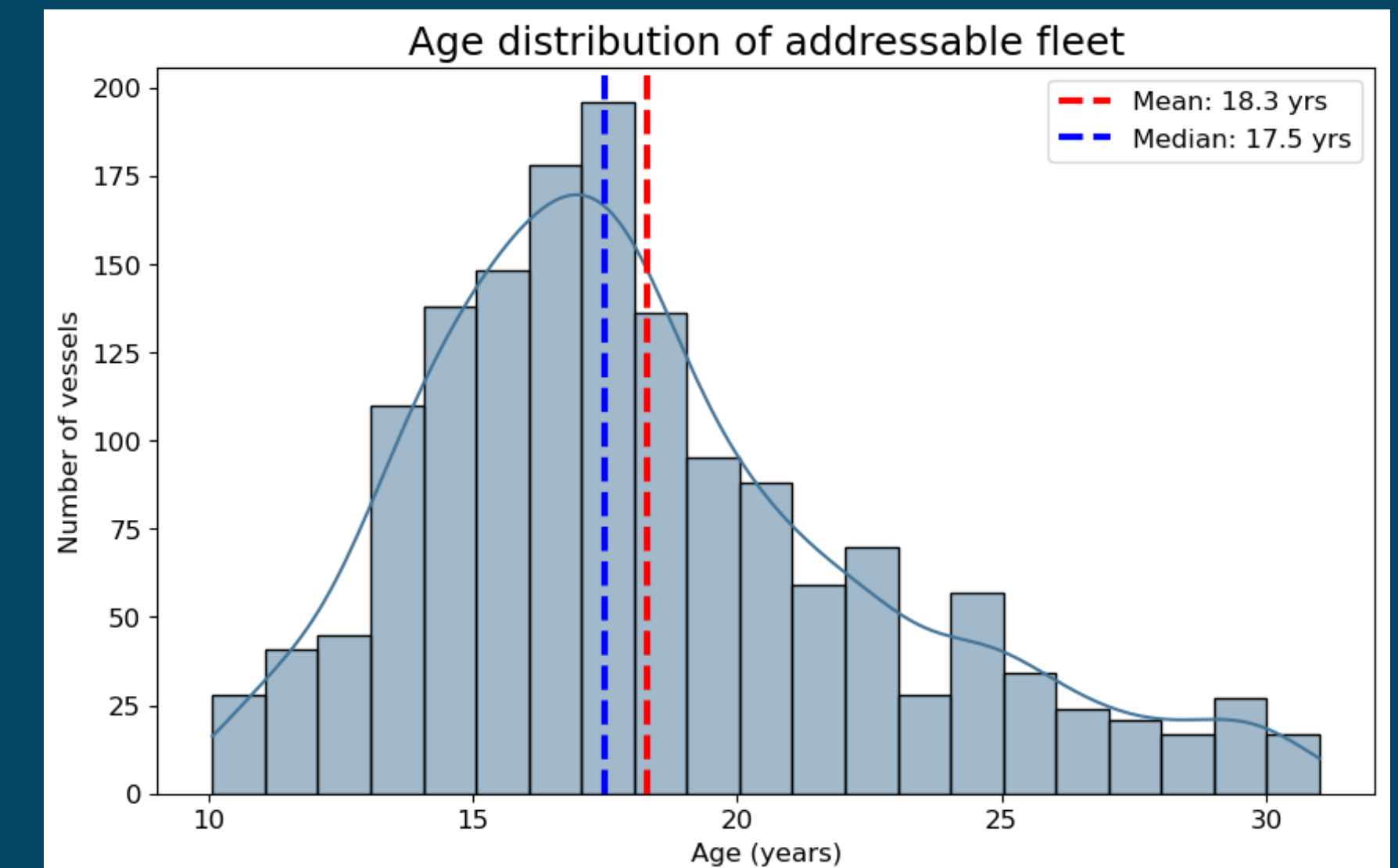OWN_377: PCC & Ro-Ro
OWN_7: Dry Cargo

Top 10 owners by total power (MW)

Fleet age and lifecycle

Number of vessels by age bracket

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

Age distribution of addressable fleet

Fleet age and lifecycle

Age bracket distribution (%) for top 5 vessel segments by MW
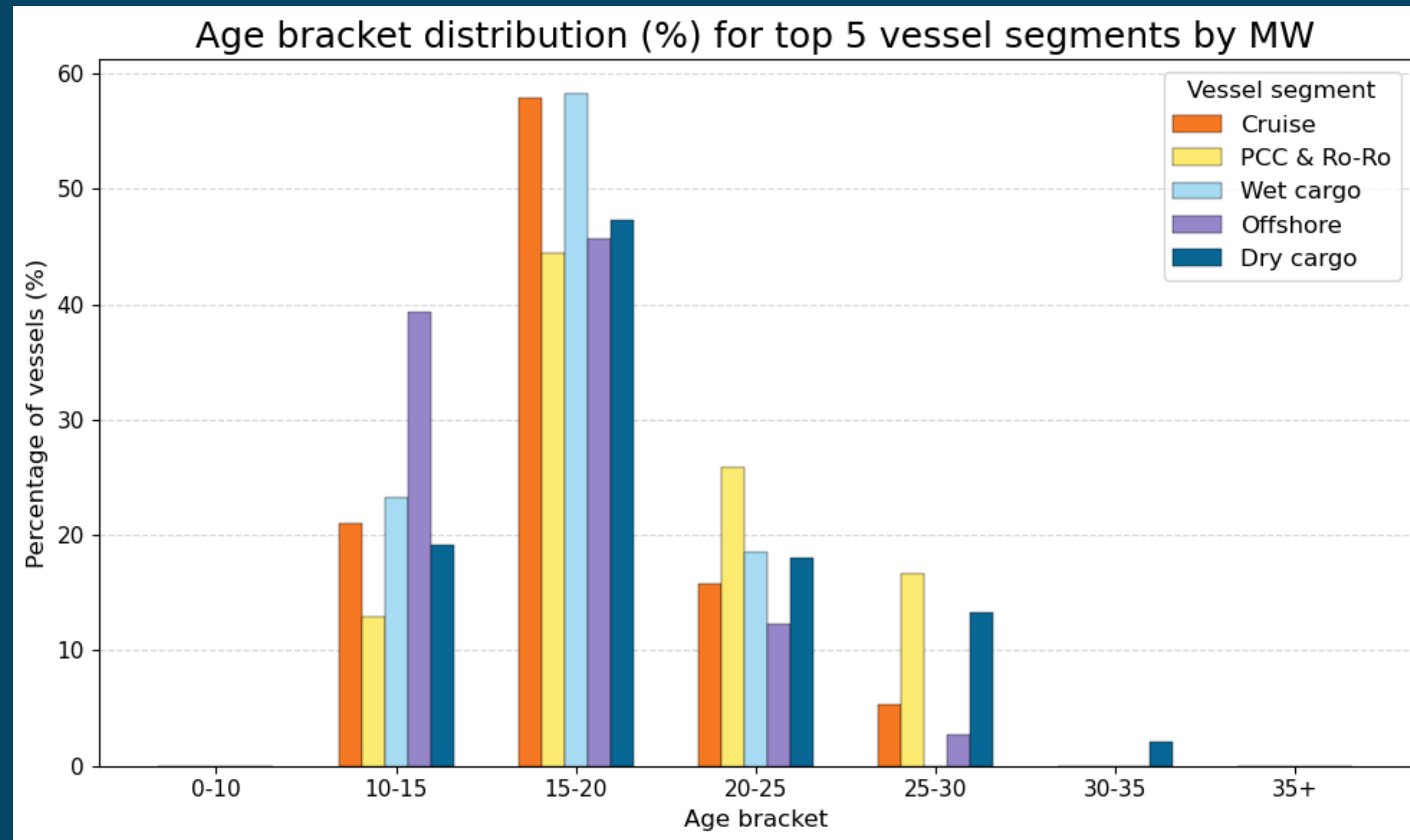
45% of prime repowering vessels are **Dry Cargo**

Prime repowering vessels by segment (ages 10-25 years)

Operational patterns

Utilisation rate by vessel segment
(% of days with significant movement)
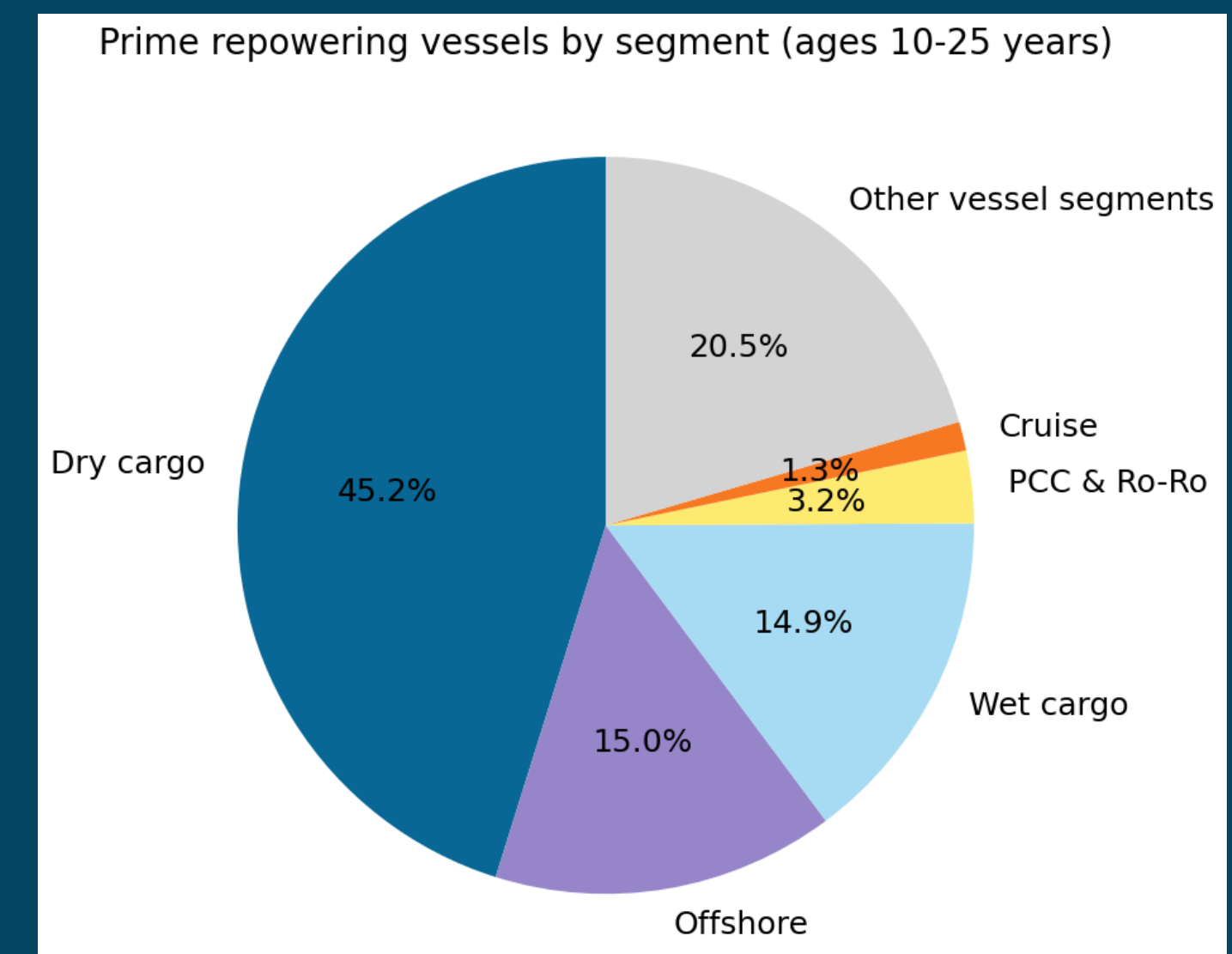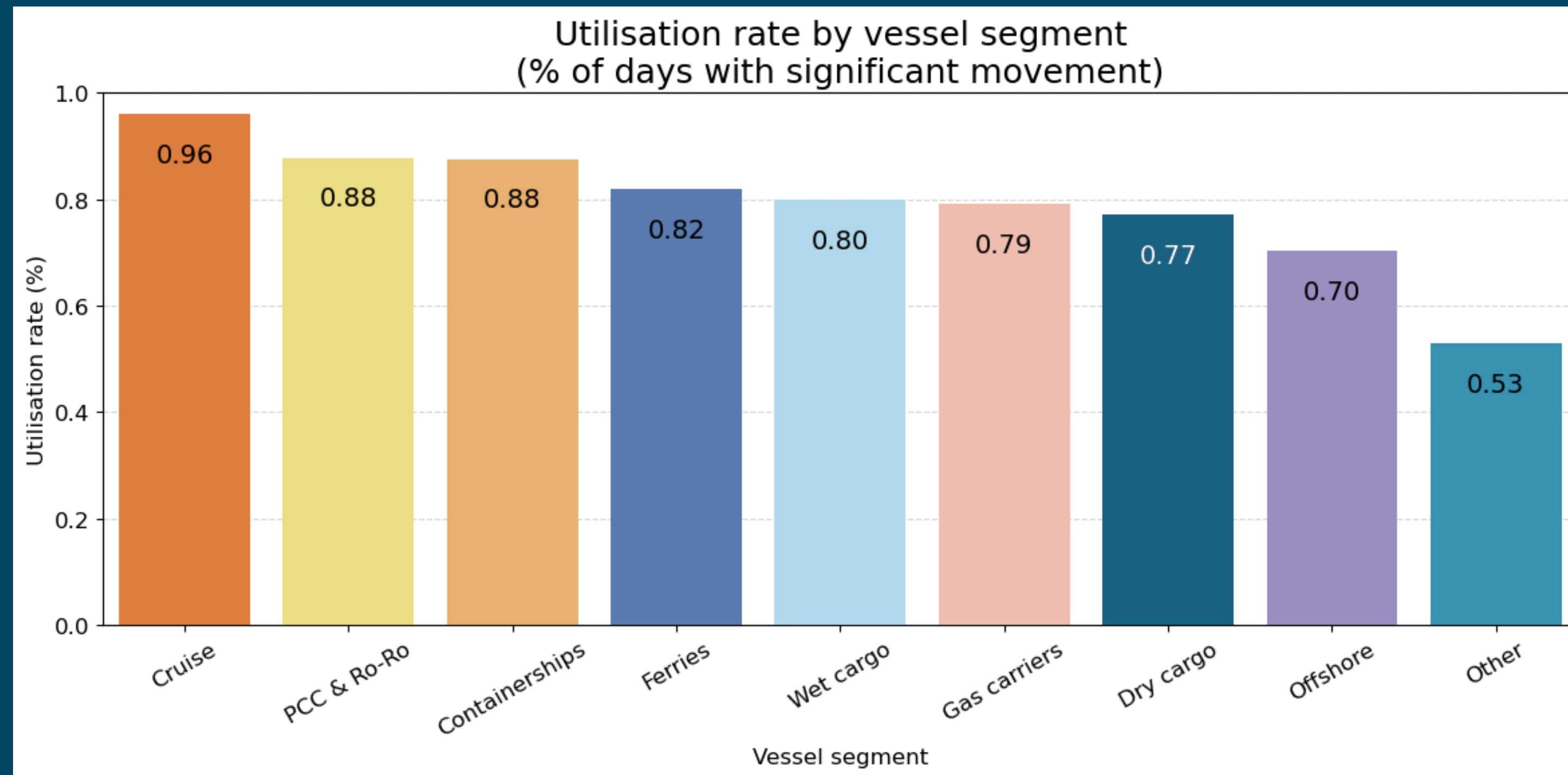
Cruise, PCC & Ro-Ro & Containerships: intensive use enables fast ROI

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

Vessel segment distribution by operational cluster
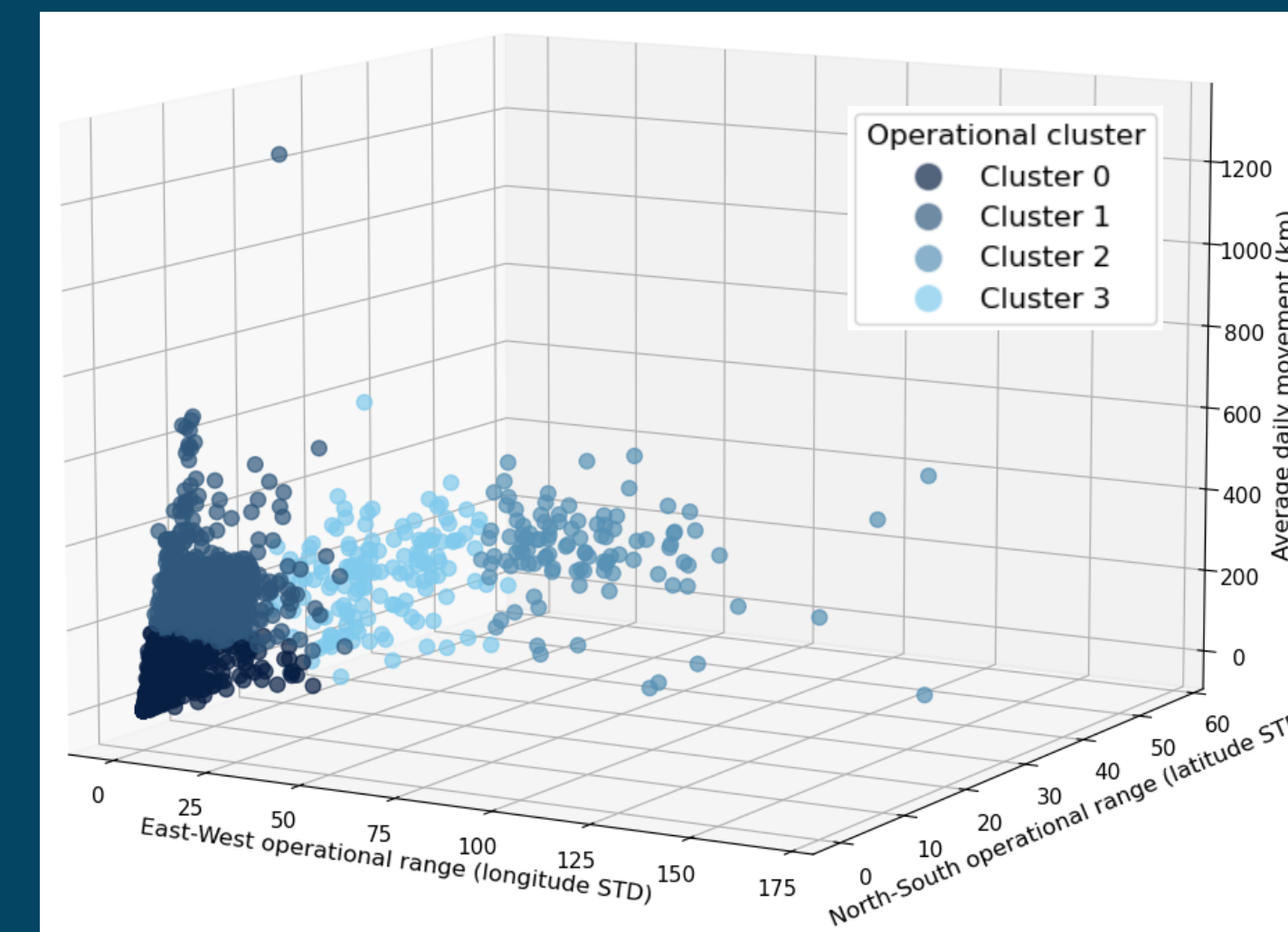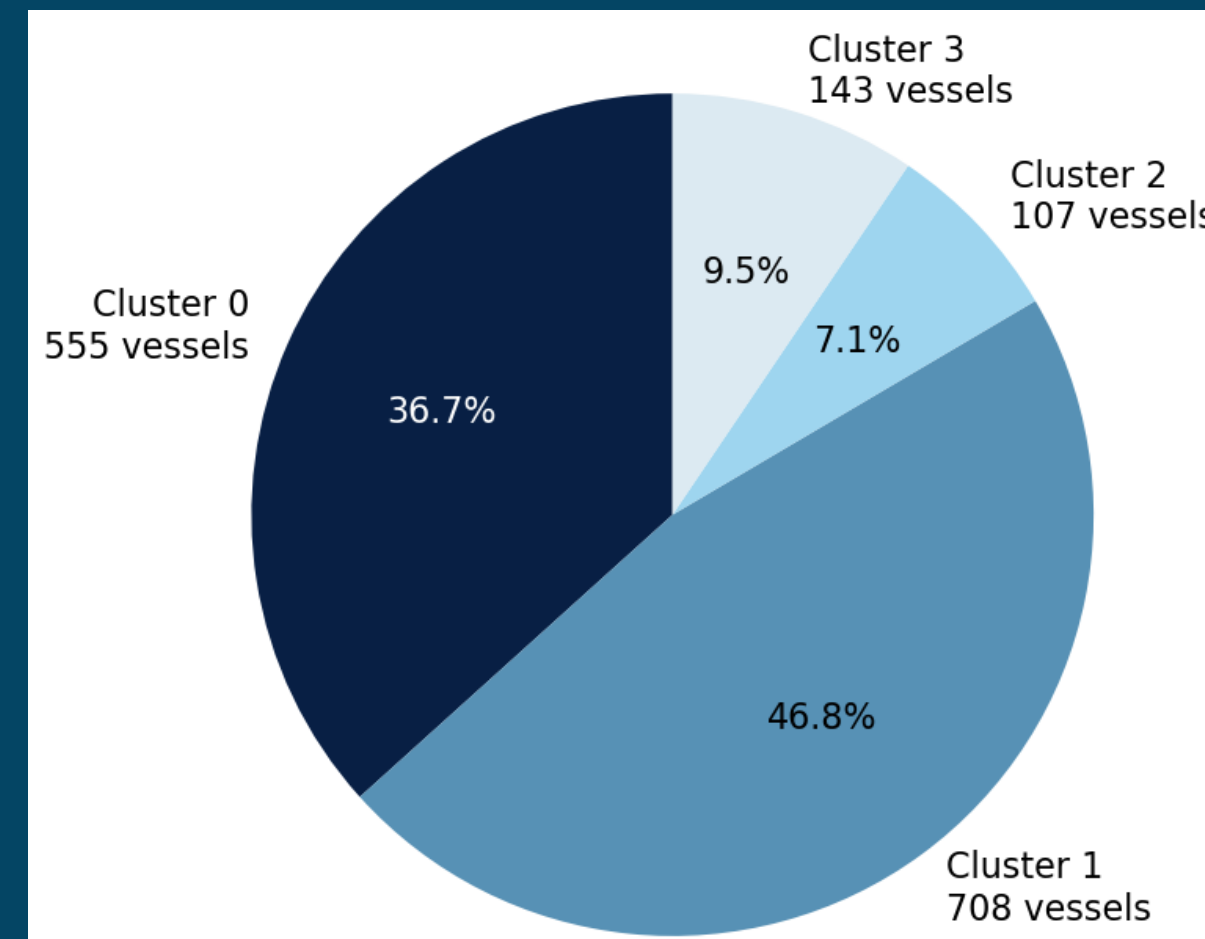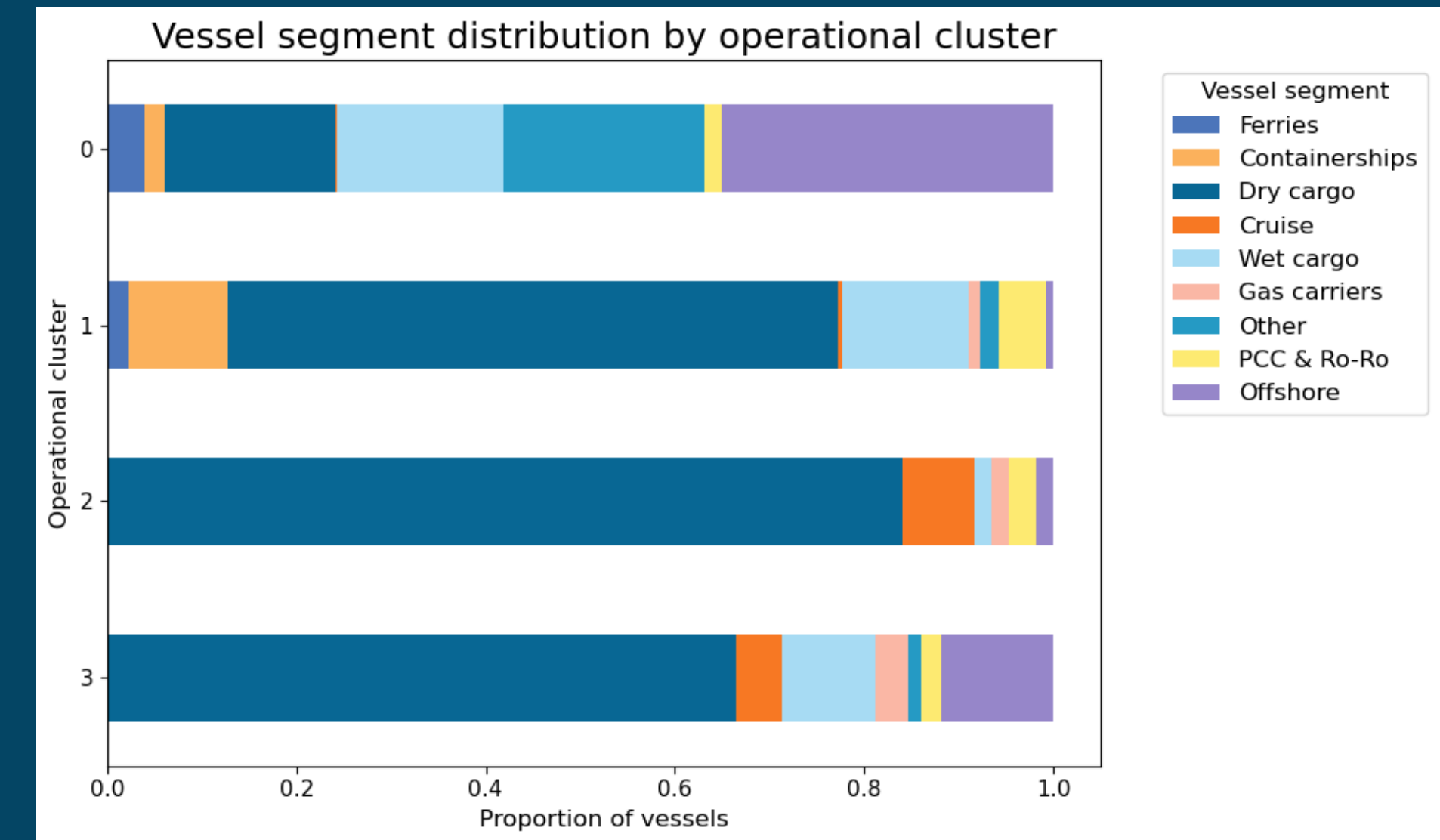
Operational patterns - geolocalisation

- **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

- Regulatory pressure from IMO and EU's Emission Trading System

Global operating patterns of addressable fleet
(heatmap of AIS position reports)

Regional operational patterns by vessel segment
(% of time spent in each region)

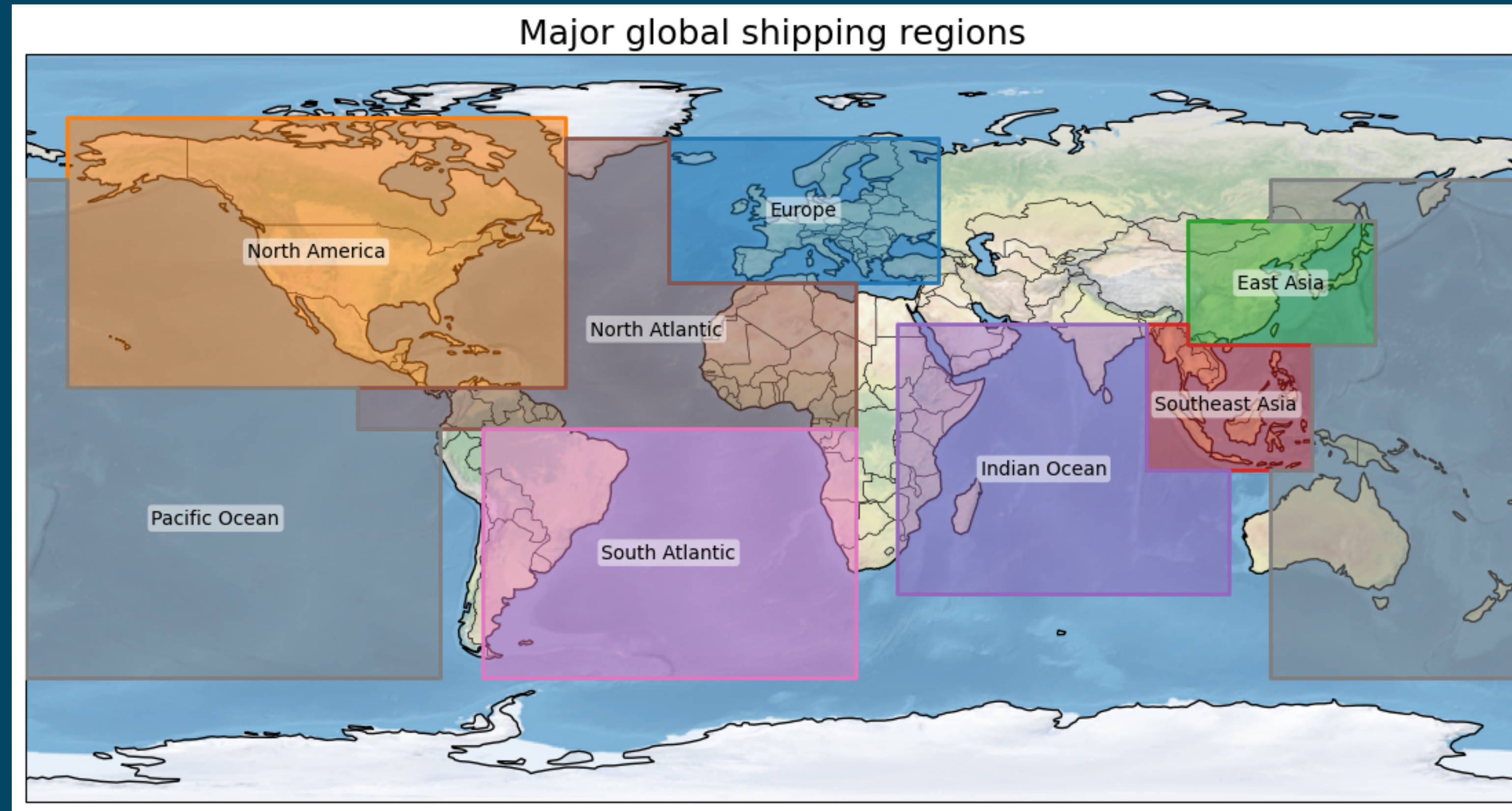|	East Asia	Europe	Indian Ocean	North America	North Atlantic	Other/Open ocean	South Atlantic	Southeast Asia
Containerships	0.16	0.60	0.02	0.09	0.06	0.05	0.01	0.02
Cruise	0.03	0.39	0.01	0.25	0.07	0.19	0.02	0.03
Dry cargo	0.03	0.72	0.03	0.06	0.05	0.06	0.02	0.03
Ferries	0.05	0.56	0.00	0.14	0.02	0.04	0.00	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

Dual-strategy approach recommended:

- **Volume capture**: broad engagement with Dry and Wet Cargo segments

- **High-impact targeting**: Offshore, PCC/Ro-Ro & Cruise segments for maximum value

- **Operational patterns validate priorities**: short-sea and long-haul traders offer strongest ROI cases

- **Geographic focus**: European core market with secondary transatlantic/Asian opportunities

- **Multiple decision drivers**:
  age, utilisation intensity, operational base, and regulatory pressure create compelling business case

Thank you!

Operational patterns - extra

Major global shipping regions

source: www.marineregions.org