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Cardiovascular risk among different sectors of the seafaring population: a retrospective observational study

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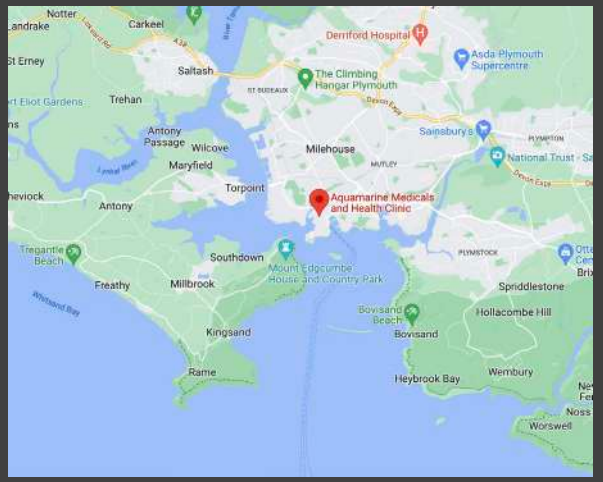
Introduction

- Plymouth – Britain's Ocean City
- Royal Navy Dockyard since 1690
- Wide variety maritime activity
- Cardiovascular disease common cause of morbidity and mortality
- Medical often only time seafarers see healthcare professionals



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Aim of study

To identify if cardiovascular risk differs between groups of seafarers and those who may benefit from health promotion.

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Study design

Retrospective cross-sectional analysis of seafarers attending Aquamarine Medicals in 2022 for Seafaring ENG1 medical (the UK's MLC 2010 compliant medical).

Data collected:

- Occupational history
  - Type of vessel, Job role, Time away at sea
- Medical history - to inform cardiovascular (CV) risk analysis

Analysis of different seafaring groups by occupational history and cardiovascular risk data (significance level $p<0.05$ utilised).

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Study population

Total seafarers seen n=1321

Exclusions: < 25 years (n=200), existing ischaemic heart disease (n=24)

Study population n=1097

Note subset of fishermen not part of study population

Fishermen at sea <72 hours, operating nearer inshore, on vessels <24m, are not required to have a seafaring medical in UK until 30.11.23.

Most will have ML5 medical, which runs in parallel with ENG1 system.

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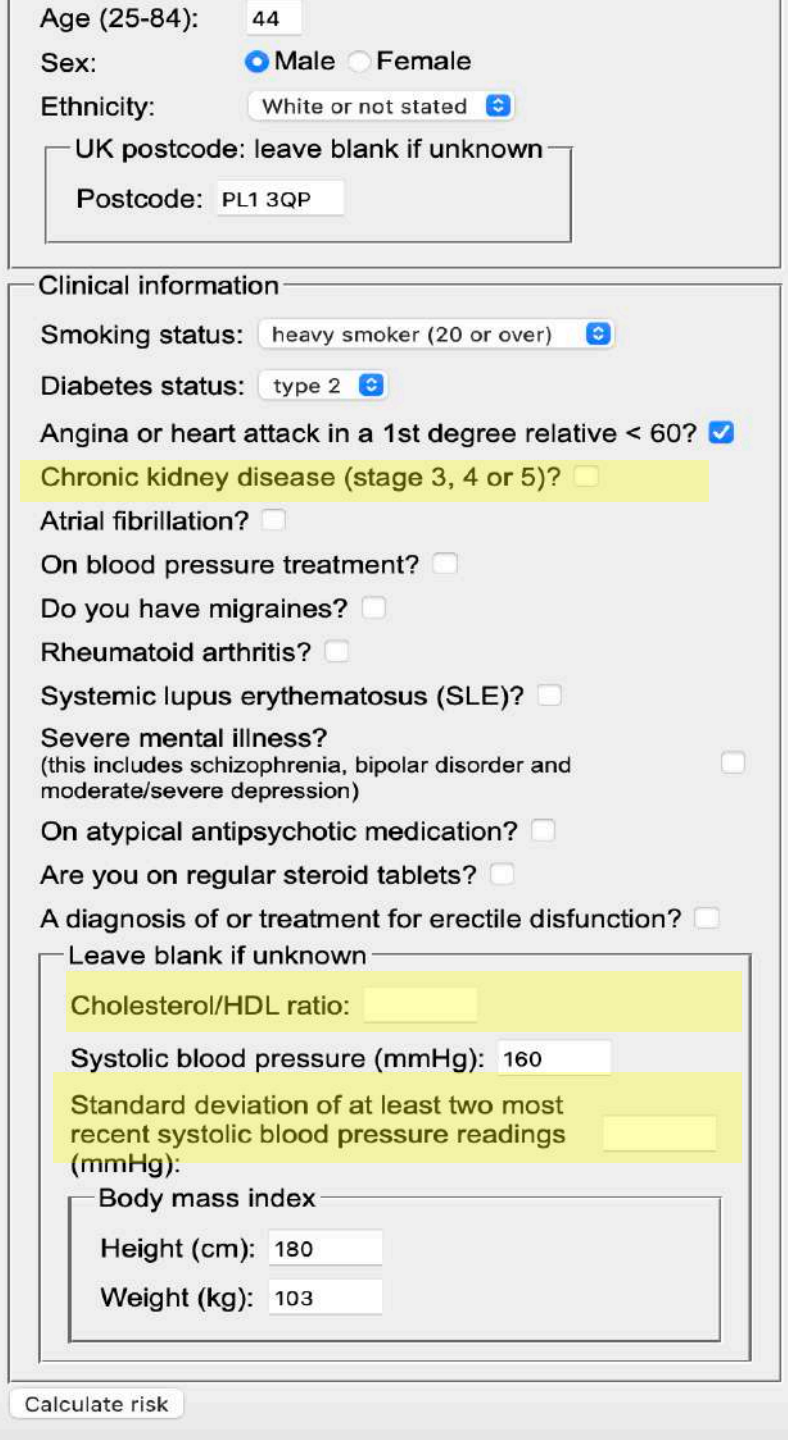
QRISK®3-2018

https://www.qrisk.org

- 10-year CV risk calculator for 25-84 years without ischaemic heart disease or stroke/TIA
- Can be calculated from data gathered in ENG1 medical
- For missing data eg lipids, model uses imputation from population data

QRISK3 >10% risk - UK guidelines recommend need further assessment

Development and validation of QRISK3 risk prediction algorithms to estimate future risk of cardiovascular disease: prospective cohort study, BMJ 2017;357:j2099



QRISK®3-2018 outputs

- QRISK®3-2018 score
- Relative Risk (RR)
  - seafarer score divided by healthy person risk
- QRISK®3-2018 Healthy Heart Age
- Age Differential =

Actual Age minus *Healthy Heart Age*

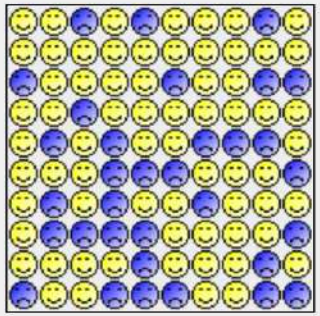
eg a 50 yr old may have Heart Age of 65 so Age Differential +15

Your results

Your risk of having a heart attack or stroke within the next 10 years is:

32.8%

In other words, in a crowd of 100 people with the same risk factors as you, 33 are likely to have a heart attack or stroke within the next 10 years.



Risk of a heart attack or stroke

Your score has been calculated using estimated data, as some information was left blank.

Your body mass index was calculated as 31.79 kg/m^2.

How does your 10-year score compare?

Your score

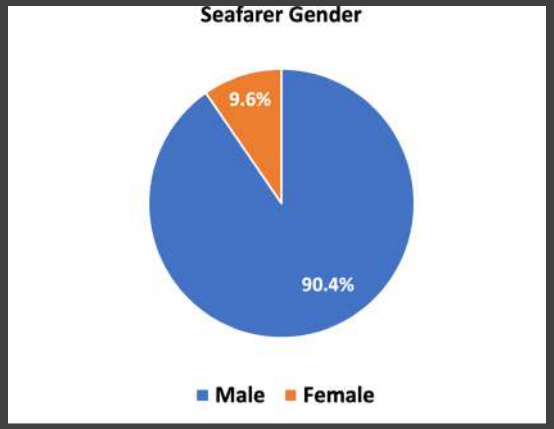
Your 10-year QRISK®3 score	32.8%
The score of a healthy person with the same age, sex, and ethnicity*	2.1%
Relative risk**	15.4
Your QRISK®3 Healthy Heart Age***	81

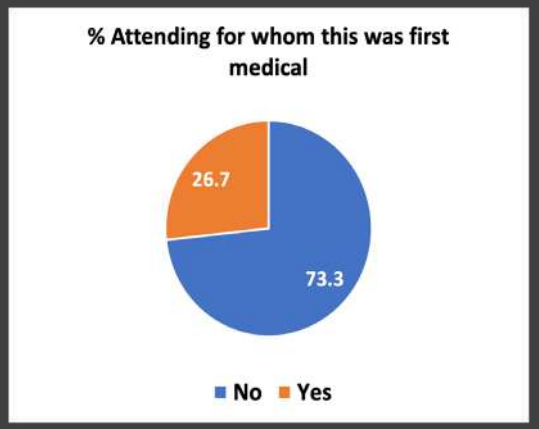
* This is the score of a healthy person of your age, sex and ethnic group, i.e. with no adverse clinical indicators and a cholesterol ratio of 4.0, a stable systolic blood pressure of 125, and BMI of 25.

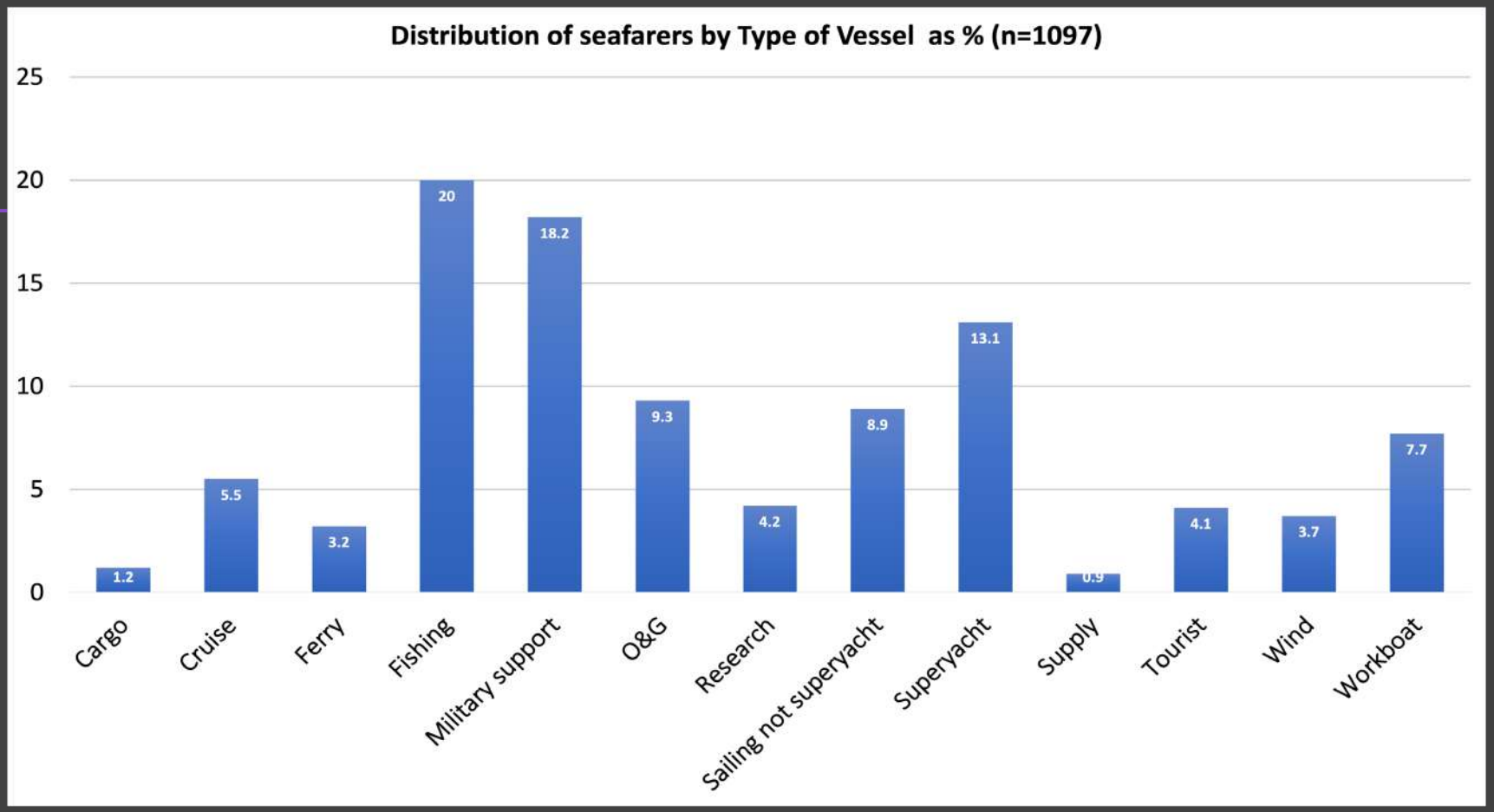
** Your relative risk is your risk divided by the healthy person's risk.

*** Your QRISK®3 Healthy Heart Age is the age at which a healthy person of your sex and ethnicity has your 10-year QRISK®3 score.

Seafarer characteristics



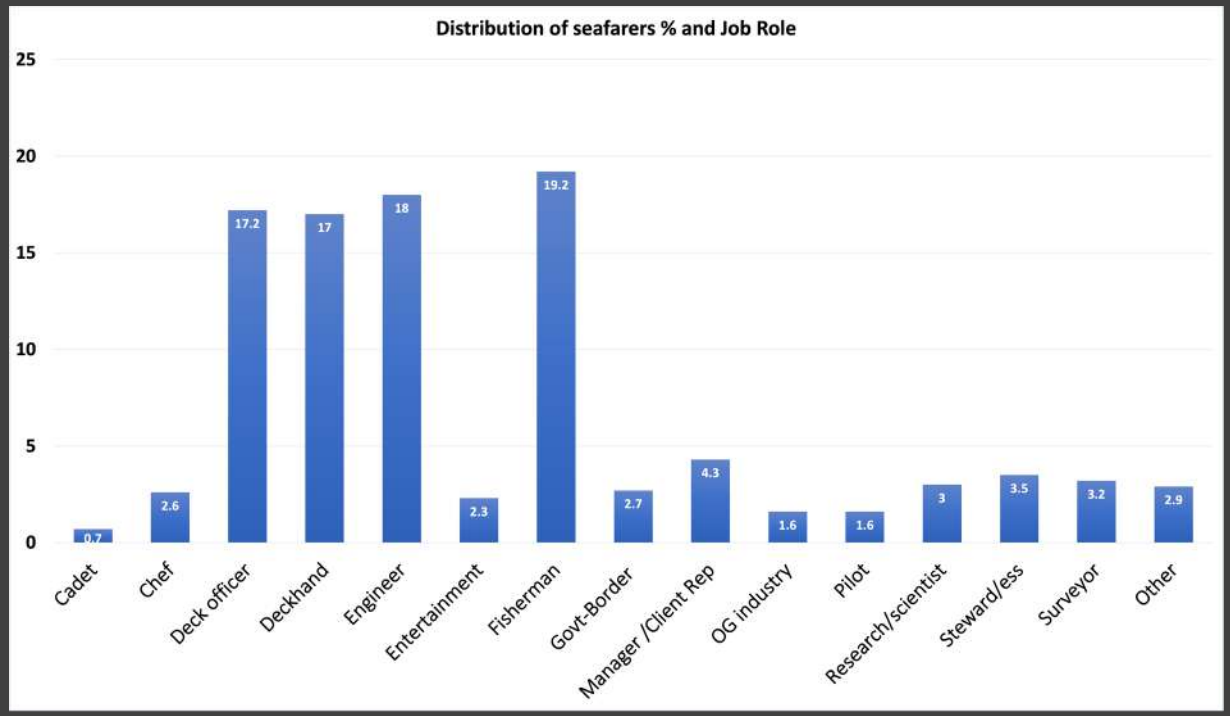


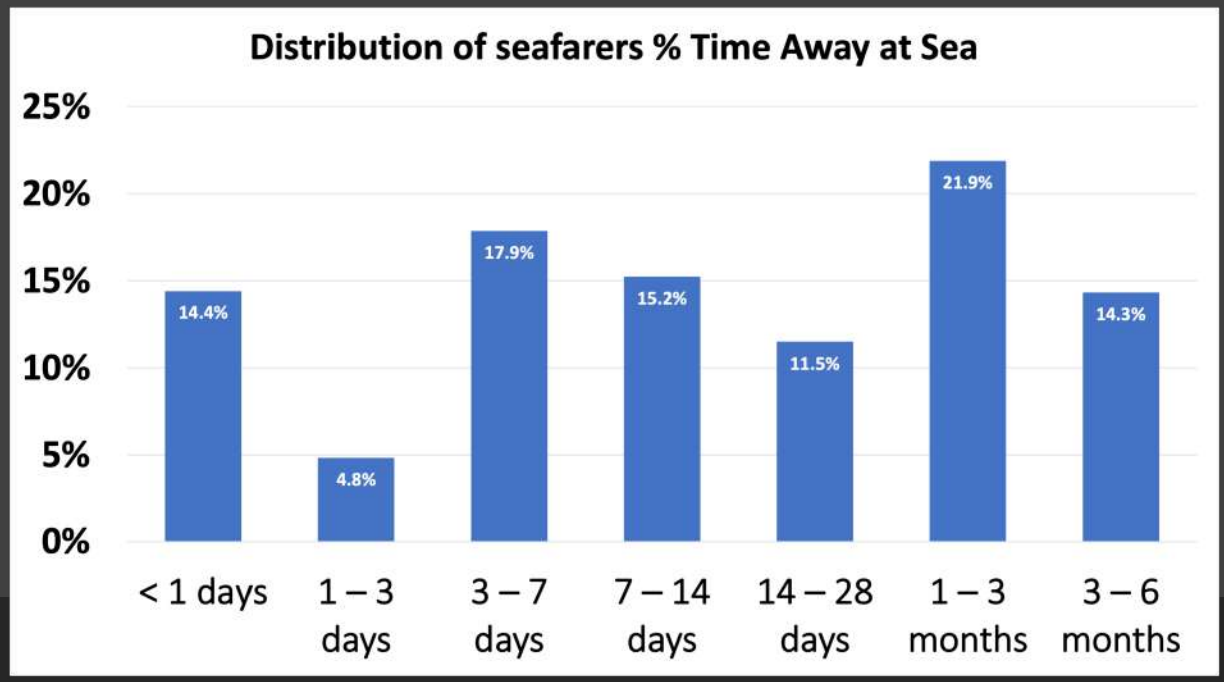


Distribution % of Seafarers by

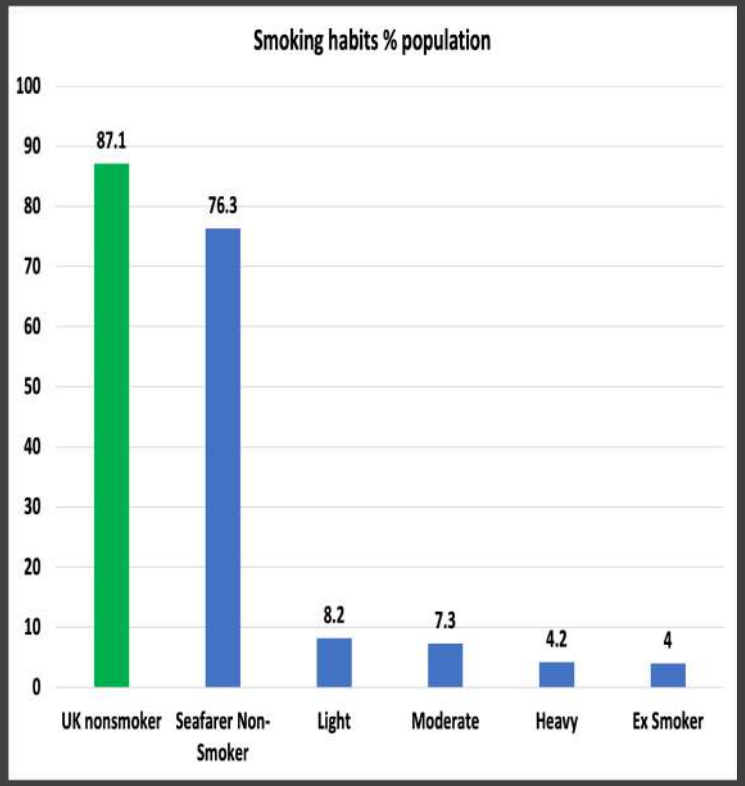
Job Role

Time away at sea

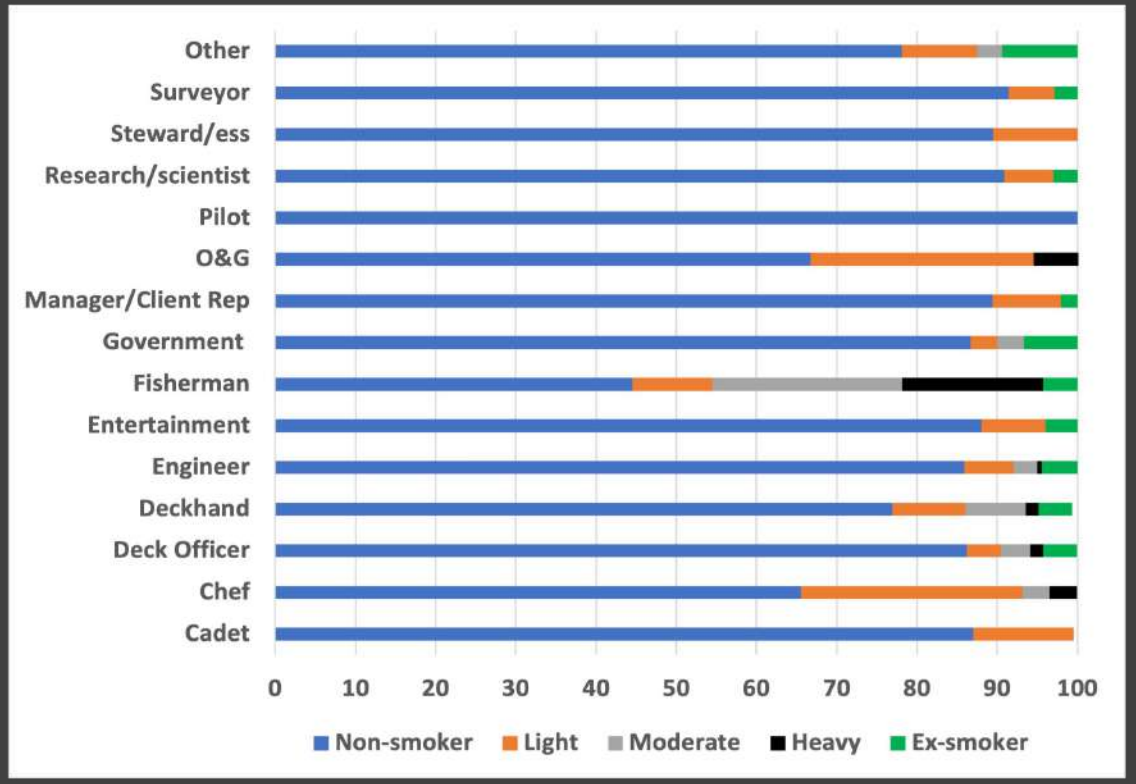




Seafarer characteristics - smoking



Smoking habit by Job Role



Note re E-cigarettes

- Raise CV risk and increasing use in UK
- QRISK®3-2018 does not account for e-cigarettes
- Counted as non-smokers

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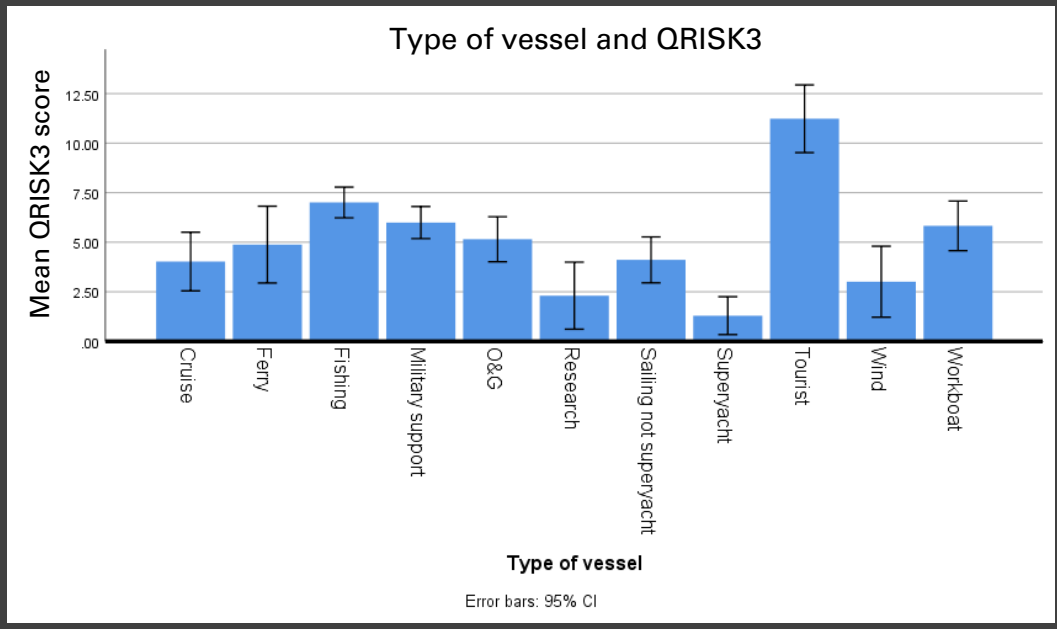
Results – Type of Vessel

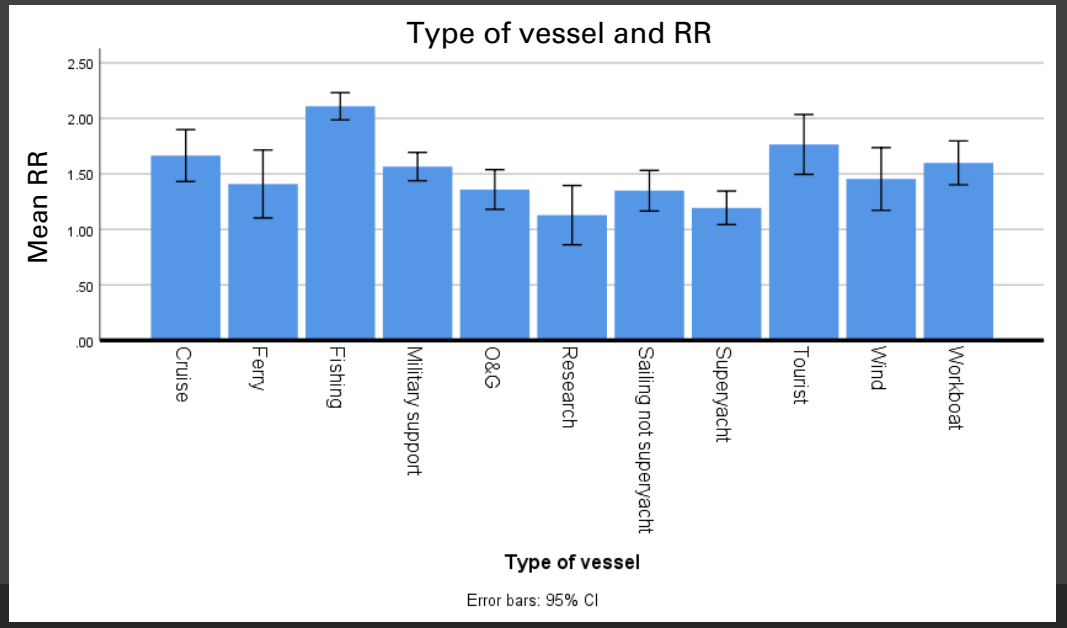
Mean QRISK®3 scores (p<0.05)
Highest
Tourist (*M*=11.23, *SD*=10.46)
Fishing vessels (*M*=7.01, *SD*=7.27)

Lowest
Research vessels (*M*=2.3, *SD*=3.05)
Superyachts (*M*=1.29, *SD*=2.01)



Mean Relative Risk (p<0.05)
Highest
Fishing vessels (*M*=2.11,*SD*=1.41)

Lowest
Research (*M*=1.13,*SD*=0.39)
Superyachts (*M*= 1.19, *SD* = 0.53)

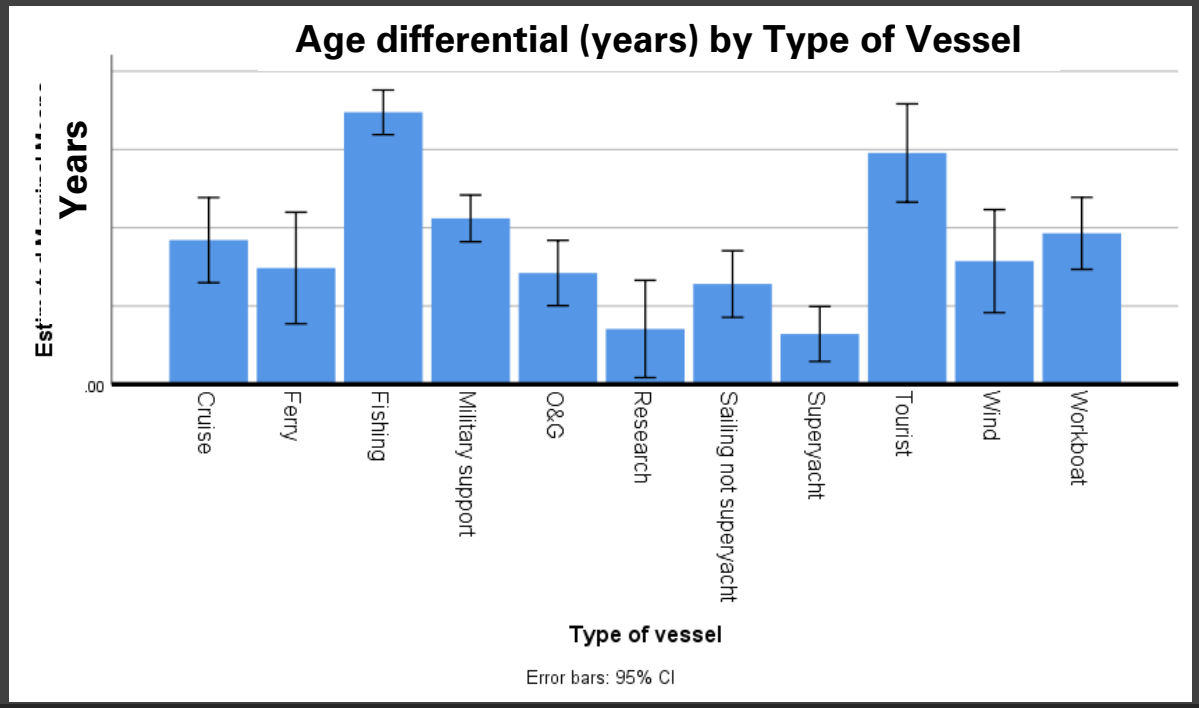


Mean Age Differential by Vessel

Reminder - Age Differential is ACTUAL AGE minus HEALTHY HEART AGE

Positive value means seafarer's heart is 'older' than healthy person same age, gender and ethnicity

Highest Fishing (M=6.95,SD=5.75) differ from other vessels ($p < .05$), except for the Tourist vessels.



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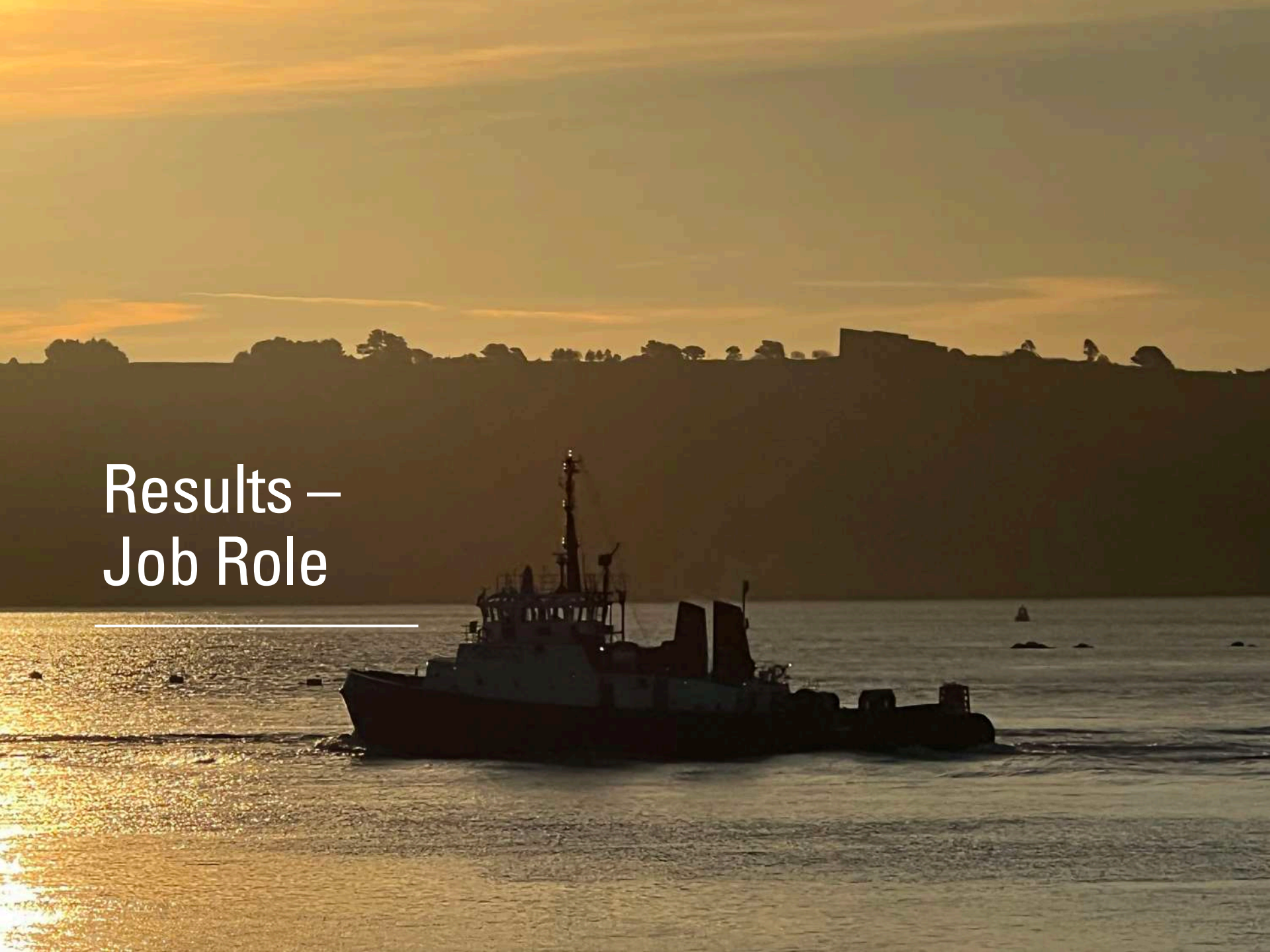


Results – Job Role

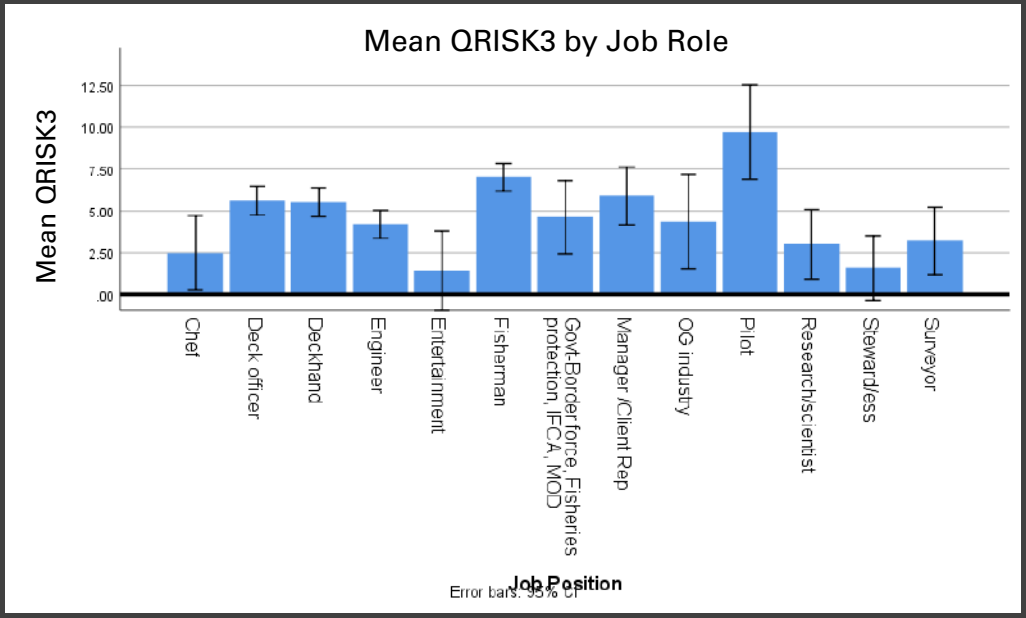
Mean QRISK®3 scores

Pilots (*M*=9.72, *SD*=6.62)

Fishermen (*M*=7.03, *SD*=7.2)

different to lowest mean (p<0.05)

Entertainment (*M*=1.42, *SD*=3.74)
Steward/ess (*M* = 1.59, *SD* = 4.38)



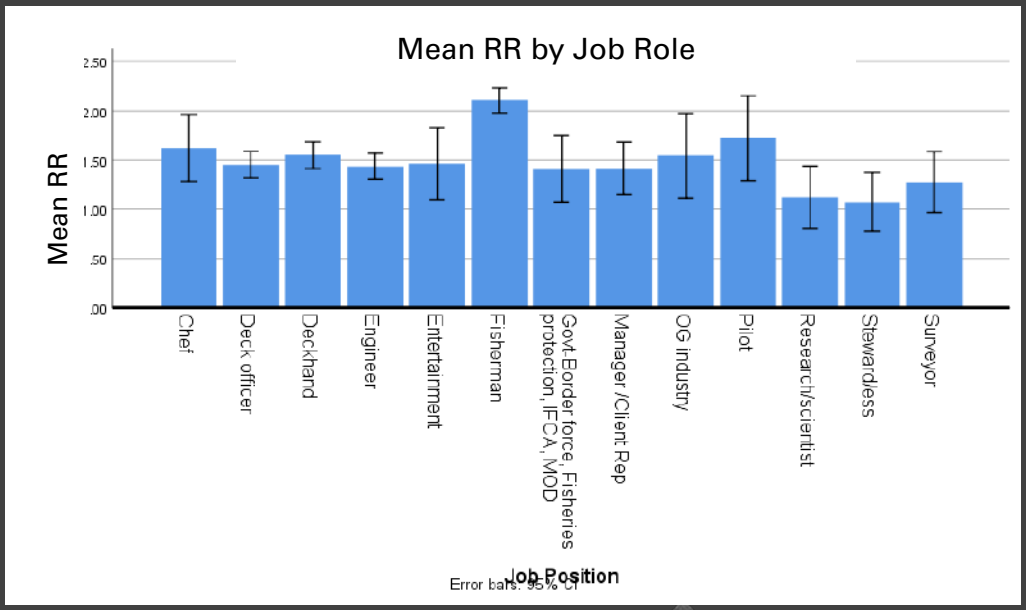
Mean Relative Risk

Fishermen (*M* = 2.11, *SD* = 1.43), differed (p<0.05) except Chef, O&G, Pilot.

Steward/ess (*M* = 1.07, *SD* = 0.72)

Research/scientist (*M* = 1.12, *SD* = 0.42)

Both statistically different from the Fisherman (*p* < o.05)



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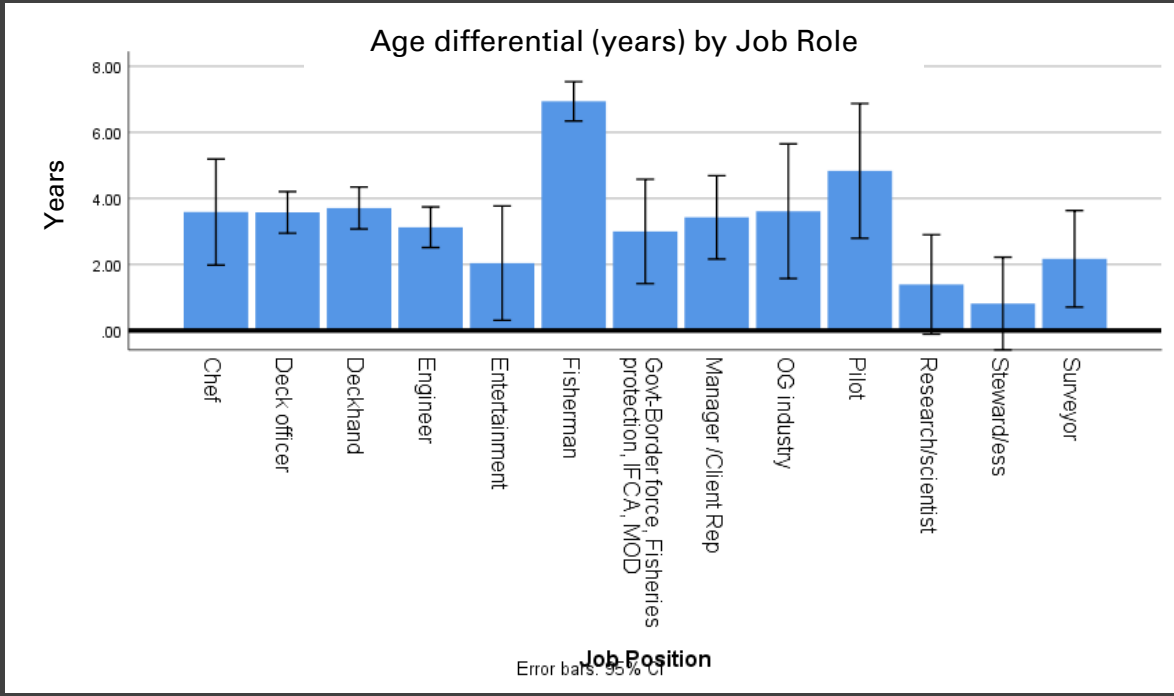
Mean Age Differential by Job Role

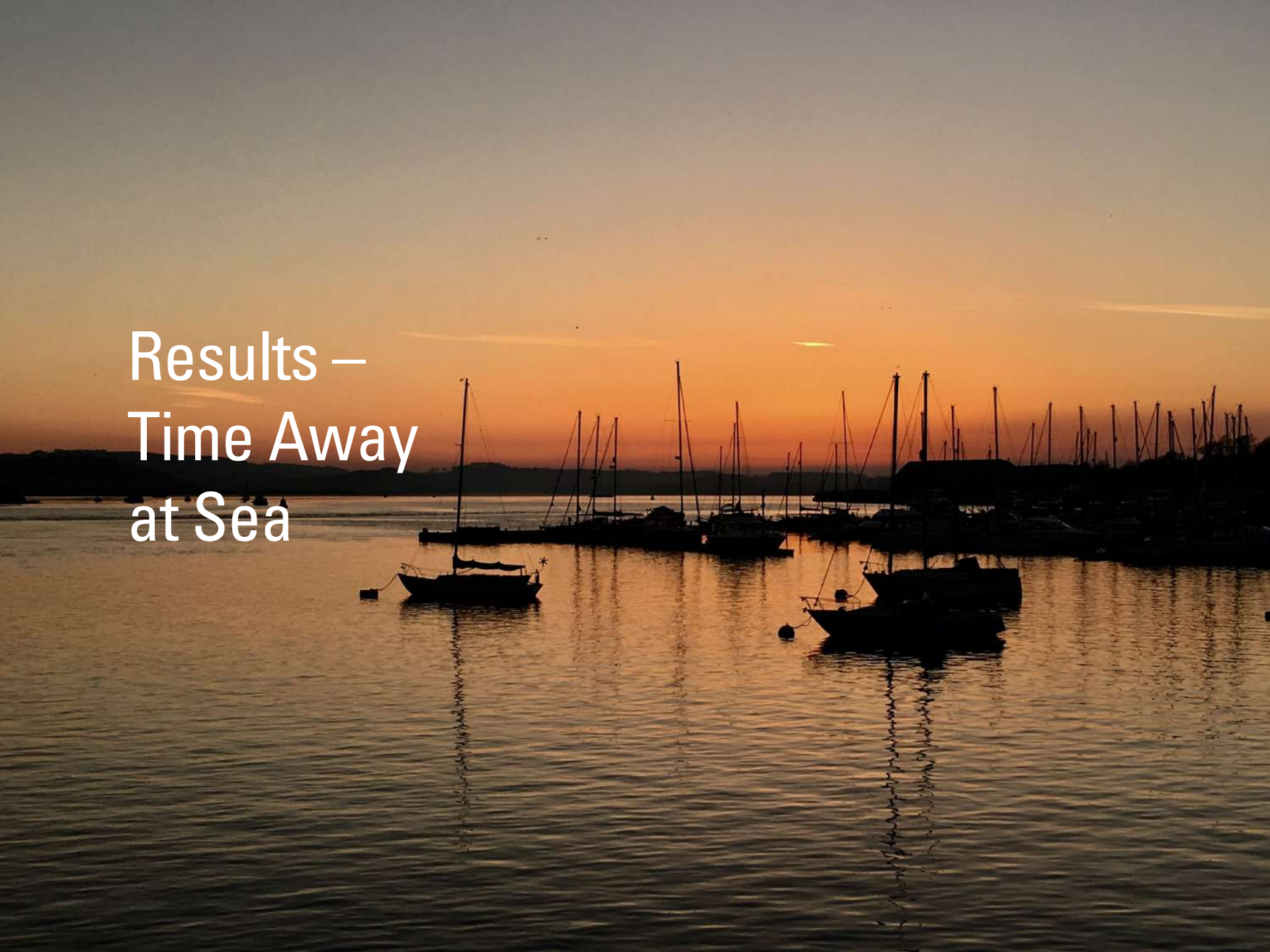
Highest - Fishermen (*M*=6.94, *SD*=5.66)

Pilots (*M*=4.83, *SD*=5.19) differs from other roles ($p < .05$)

Lowest

Steward/ess (*M*=0.82,*SD*=4.30) differs from other roles($p < .05$), except Engineer and Surveyor.





Results – Time Away at Sea

Duration of Time Away at Sea	Age (years)	QRISK3 Score	Relative Risk	Δ Age Difference
< 1 days	48.65 (13.64)	8.24 (8.6) ★	1.63 (0.83)	4.85 (4.87) ★
1 – 3 days	43.15 (12.1)	4.59 (5.06)	1.79 (1.18)	4.45 (4.62)
3 – 7 days	45.68 (11.49)	6.85 (7.24) ★	1.98 (1.4) ★	6.21 (5.66) ★
7 – 14 days	43.68 (11.85)	4.78 (5.33)	1.54 (0.9)	3.82 (4.46)
14 – 28 days	45.03 (12.33)	4.81 (5.11)	1.37 (0.53)	2.9 (3.38)
1 – 3 months	40.15 (11.4)	3.03 (3.94) ☆	1.3 (0.6) ☆	2.19 (3.34) ☆
3 – 6 months	39.13 (12.26)	3.63 (5.11)	1.56 (0.99)	3.41 (4.56)

★ Significantly highest

☆ Significantly lowest

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How many have QRISK®3-2018 over 10%?

17.8% of study population (n=195) had QRISK®3-2018 >10%

3.3% study population were on a statin

Conclusions

- This study may underestimate CV risk as depends on self-declaration

In this population:

- Longer time away at sea not related to increased CV risk
- Research and Superyacht groups healthiest
- Fishermen highest CV risk. Other groups - Pilots, Chef, O&G had some features increased risk
- Fishermen highest proportion smokers, notably heavy smokers
- Significant number of seafarers with **QRISK®3-2018** over 10%

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Future considerations

- Under 25s
- Outcome of medicals and cardiovascular risk
- Inshore fishermen needing medicals by 30.11.24

- ?Help inform some of national strategies going on eg SEAFIT
- ?Cardiovascular risk assessment a tool that could be used during an ENG1 medical

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Thankyou

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