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Inequalities in Cancer

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Aim

Identify inequalities in cancer incidence rates in Wales by socio-demographic factors at the individual level.

Method

Anonymous linkage of the **WCISU population-based cancer registry data** to individual level **ONS Census 2011 data** within the SAIL Databank.



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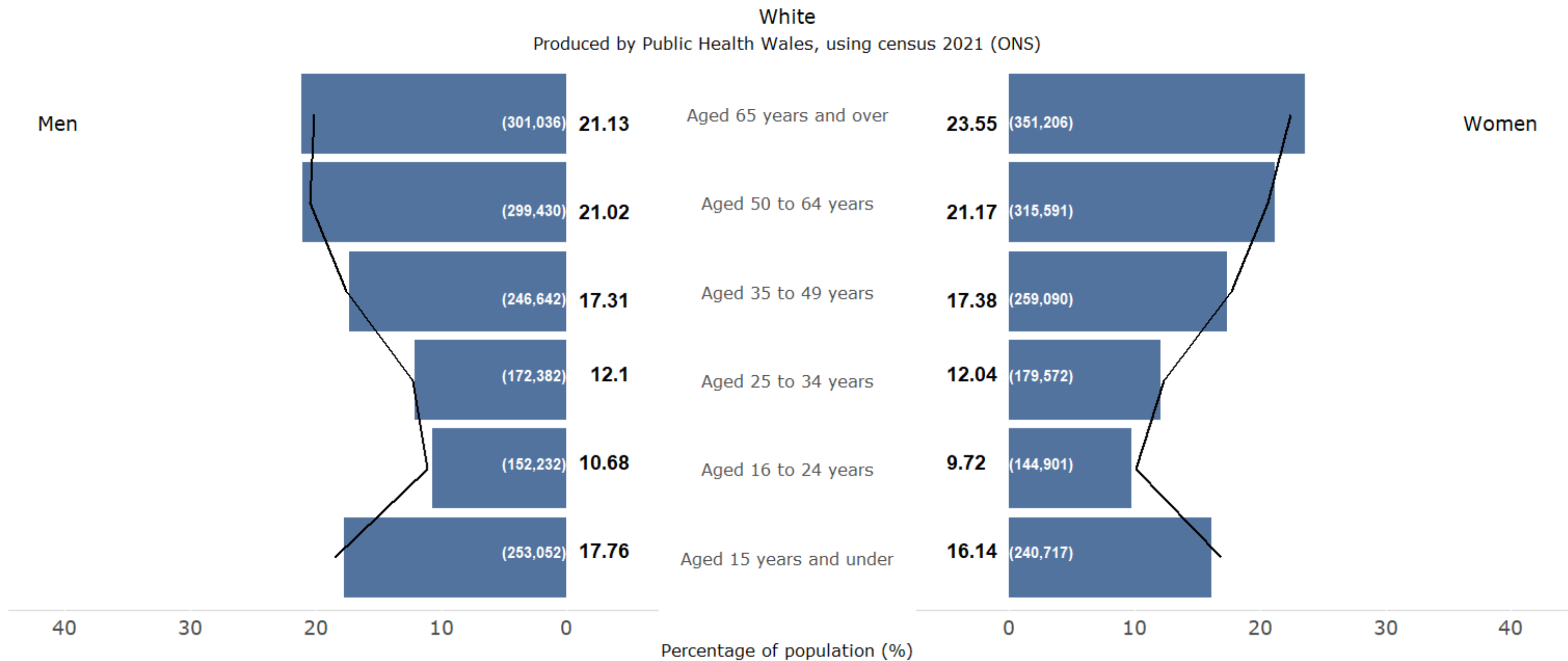
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Ethnicity Results



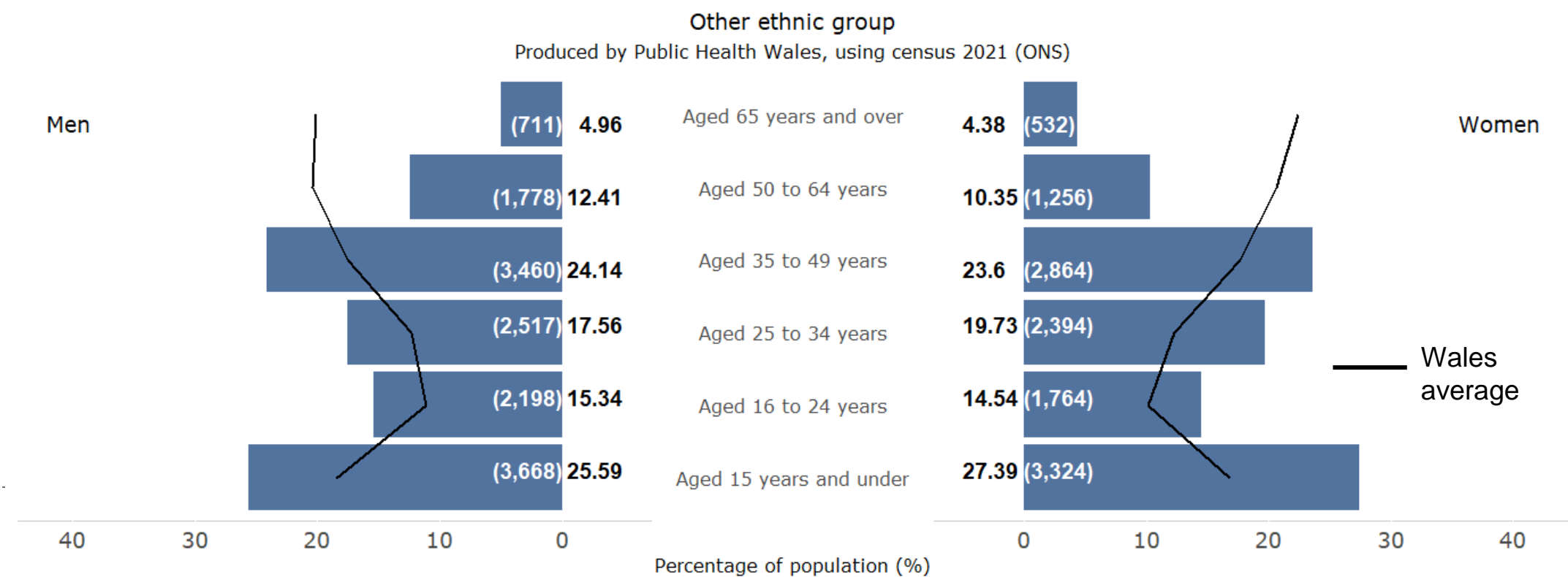
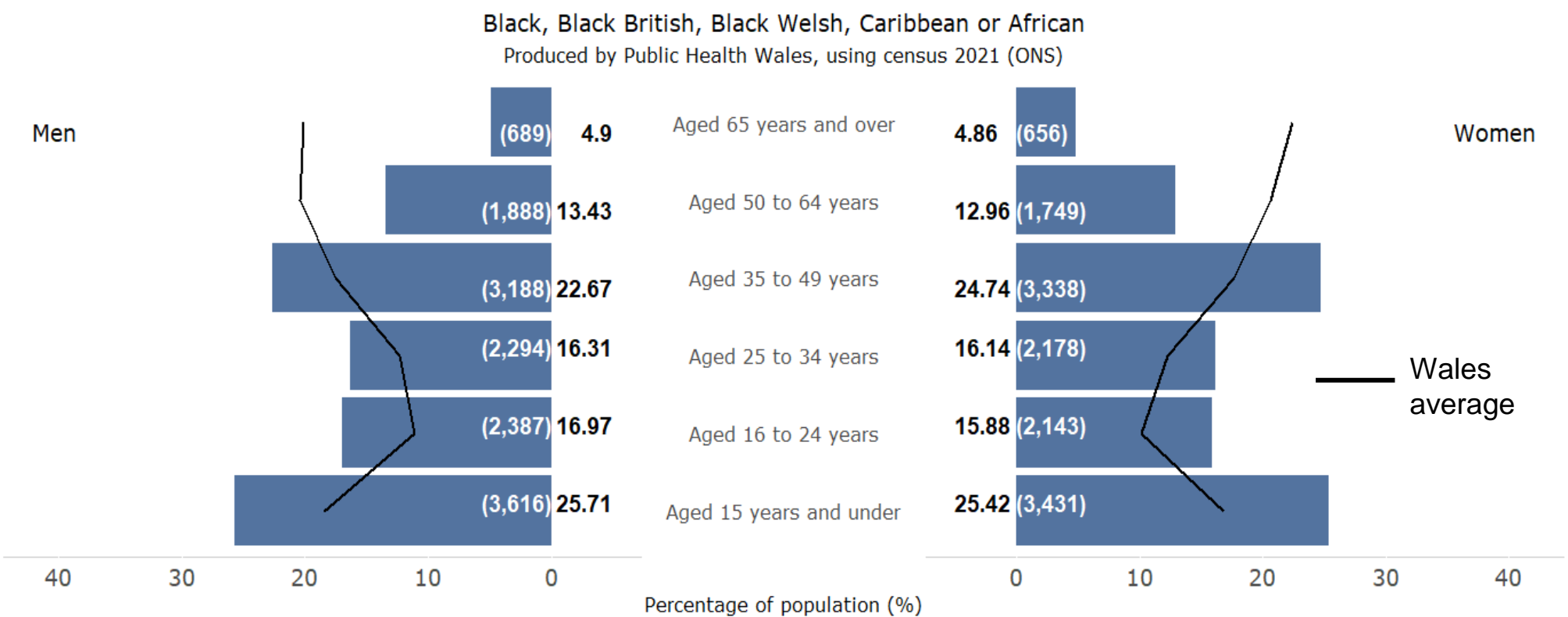
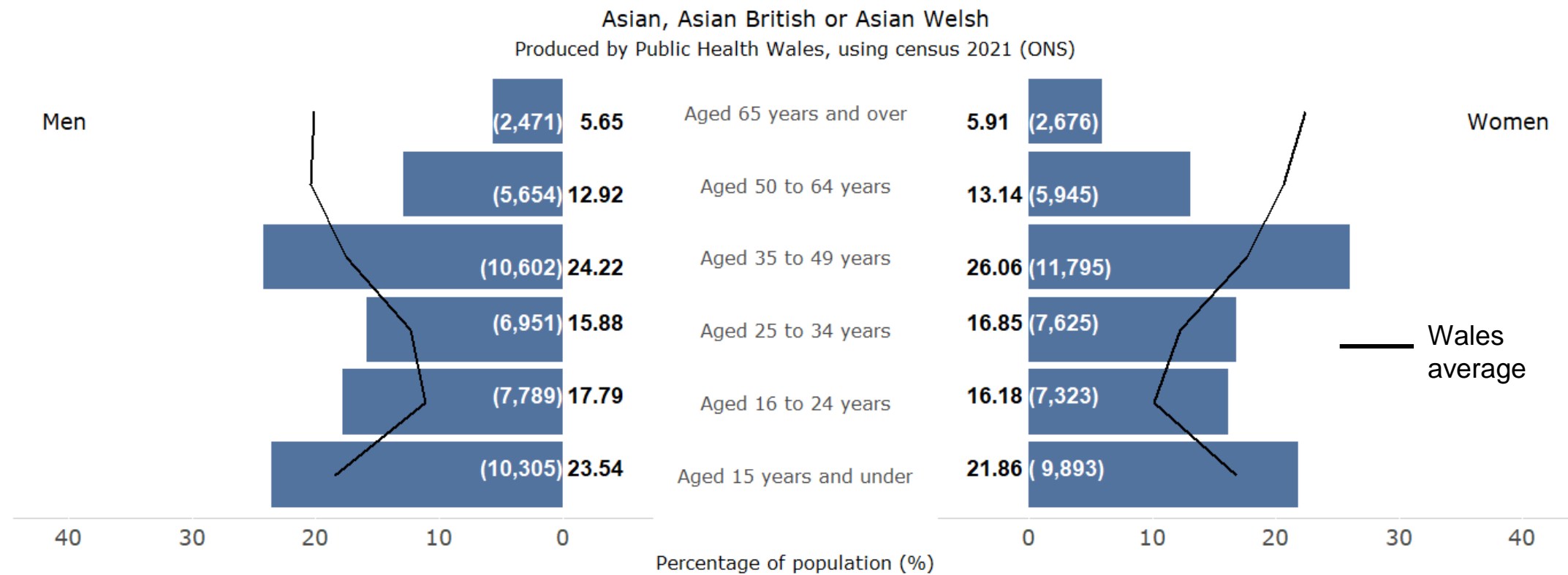
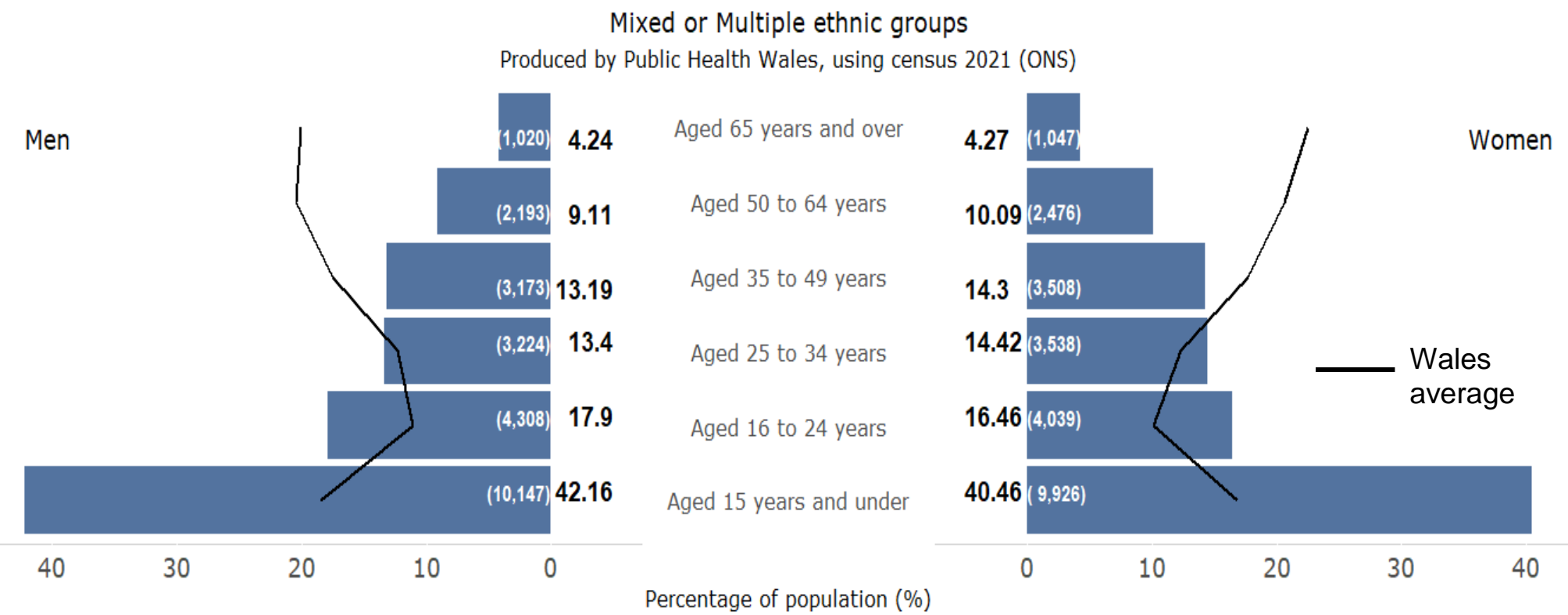
Percentage population by ethnic group and age-group, 2021

The **white ethnic group** is the largest population and has the **highest percentage of people in the older age categories.**



Percentage population by ethnic group and age-group, 2021

All other ethnic groups have much younger age-structure.

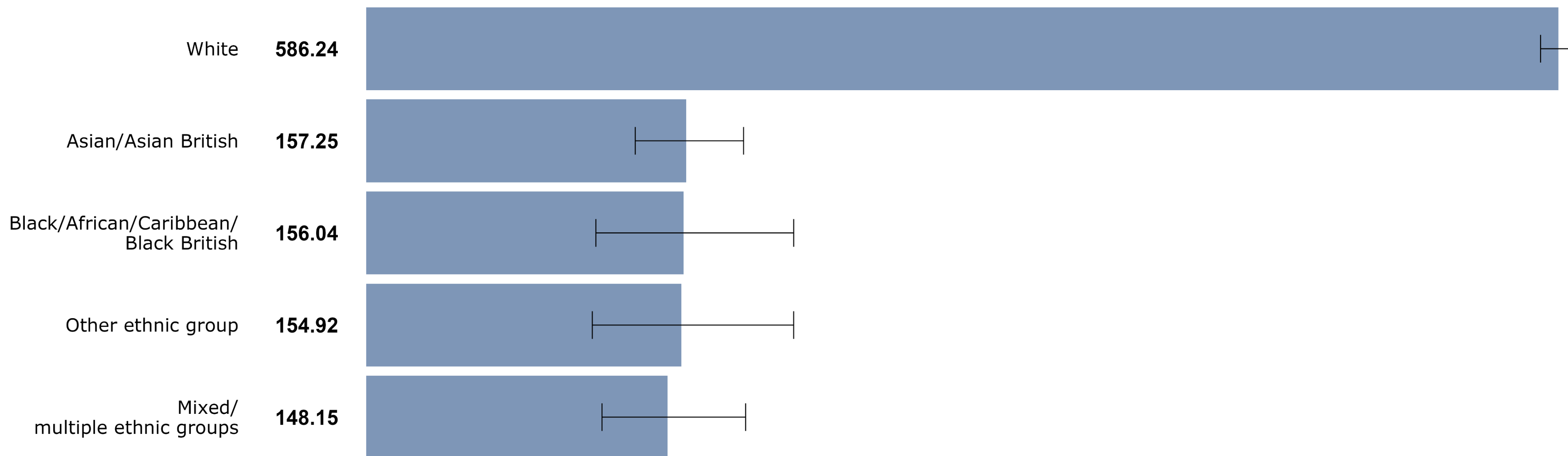


Crude rates

Before accounting for age, rates in the **white ethnic group** are significantly **higher** than any other ethnic group.

Cancer incidence, All malignancies excluding NMSC, crude rate per 100,000, Men ,2020, by ethnic group

Produced by Public Health Wales, using cancer registration data (WCISU), PHM & MYE (ONS), census11 (ONS, access via SAIL) & census21 (ONS)

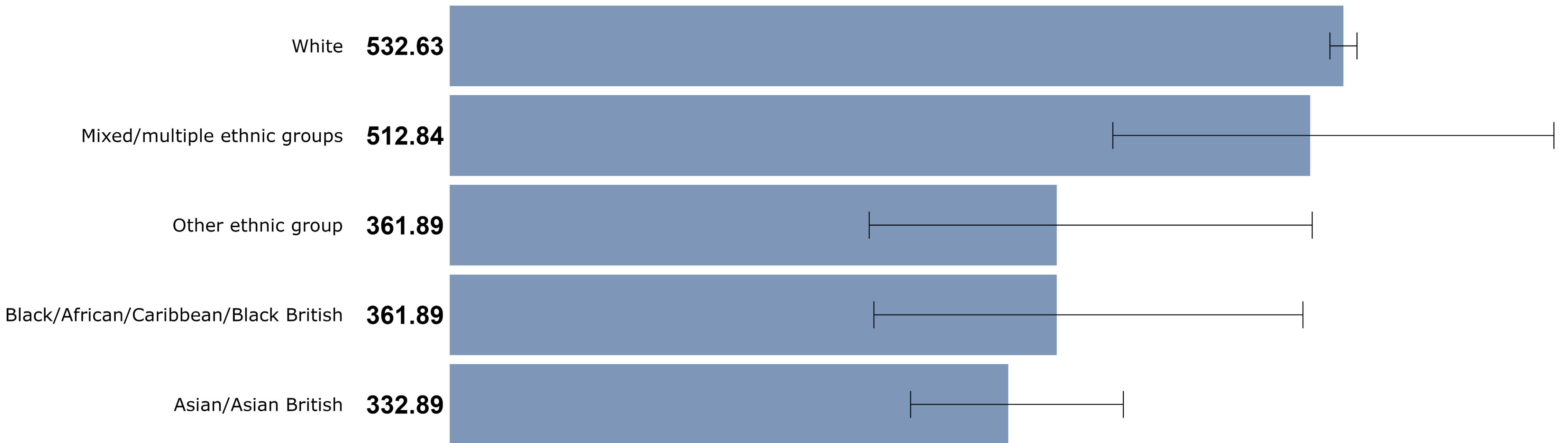


Age-standardised rates

Even after adjusting for age, rates remain **highest** in the **white ethnic group**, followed closely by mixed/multiple.

Cancer incidence, All malignancies excluding NMSC, EASR per 100,000, Persons, 2020, by ethnic group

Produced by Public Health Wales, using cancer registration data (WCISU), PHM & MYE (ONS), census11 (ONS, access via SAIL) & census21 (ONS)



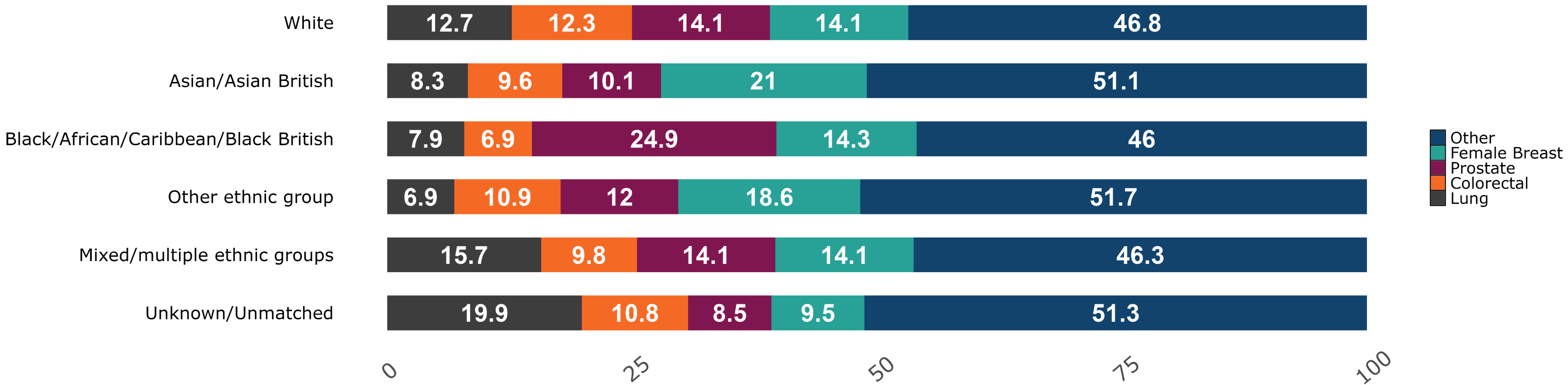
Cancer type by ethnic group

Mixed/Multiple ethnic group - lung cancer is more common*

Black/African/Caribbean/Black British - prostate cancer is more common*

All malignancies excluding NMSC, proportion of each cancer type by ethnicity, persons, all ages, Wales, 2011-2020

Produced by Public Health Wales, using cancer registration data (WCISU) and census data (ONS, access via SAIL)



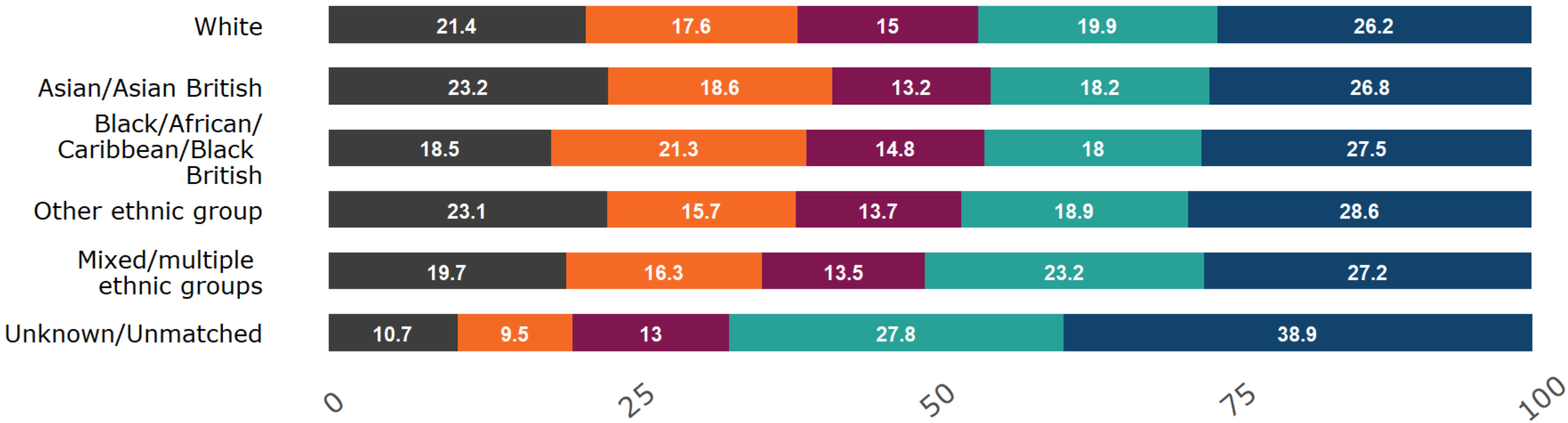
*than other types of cancer

Stage by ethnic group

All malignancies excluding NMSC, Persons, all ages, Wales, 2011-2020

Produced by Public Health Wales, using cancer registration data (WCISU) and census data (ONS, access via SAIL)

Stage 1
 Stage 2
 Stage 3
 Stage 4
 Unknown



Conclusion: Ethnicity

The **white** ethnic group has **highest incidence** after adjusting for age.

In the distribution of cancers within ethnic group:

Mixed/Multiple ethnic group - **lung** cancer is more common than other cancer types

Black/African/Caribbean/Black British - **prostate** cancer is more common than other cancer types

Some evidence to suggest the percentage of **early diagnosis** is **slightly better** for the **Asian/Asian British** group and **slightly worse** for the **Mixed/multiple** group, further analysis is required.



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Overcrowding Results

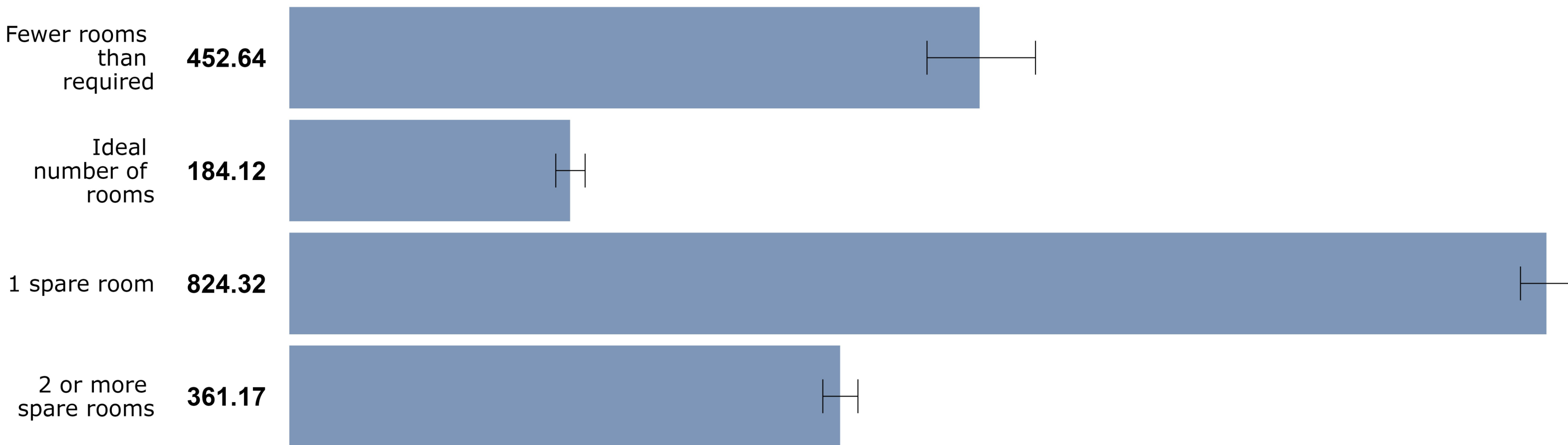


Crude rates

Before accounting for age, rates in the those with **1 spare room** are significantly **higher** than any other group.

Cancer incidence, All malignancies excluding NMSC, crude rate per 100,000, Persons, 2020, by number of bedrooms

Produced by Public Health Wales, using cancer registration data (WCISU), PHM & MYE (ONS), census11 (ONS, access via SAIL) & census21 (ONS)

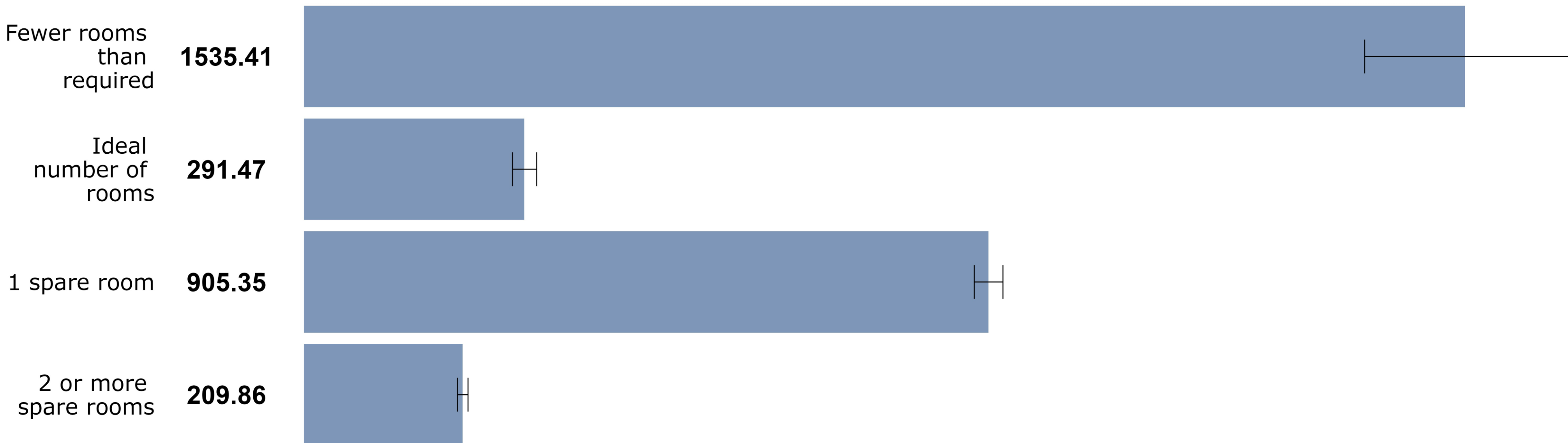


Age-standardised rates

Rates for those with **fewer rooms than required** is considerably **higher** than the other groups, and **lowest** in those with **2 or more spare rooms**

Cancer incidence, All malignancies excluding NMSC, EASR per 100,000, Persons, 2020, by number of bedrooms

Produced by Public Health Wales, using cancer registration data (WCISU), PHM & MYE (ONS), census11 (ONS, access via SAIL) & census21 (ONS)



Stage by number of bedrooms

Fewer unknown stages in those with ideal number of rooms.

All malignancies excluding NMSC, Persons, all ages, Wales, 2011-2020

Produced by Public Health Wales, using cancer registration data (WCISU) and census data (ONS, access via SAIL)



Conclusion: Overcrowding

Crude rates are significantly **higher** in those with **1 spare room**, likely reflecting the impact of age.

After adjusting for age, rates are **highest** in those with **fewer rooms than required**, likely reflecting the impact of deprivation.



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Occupation Results

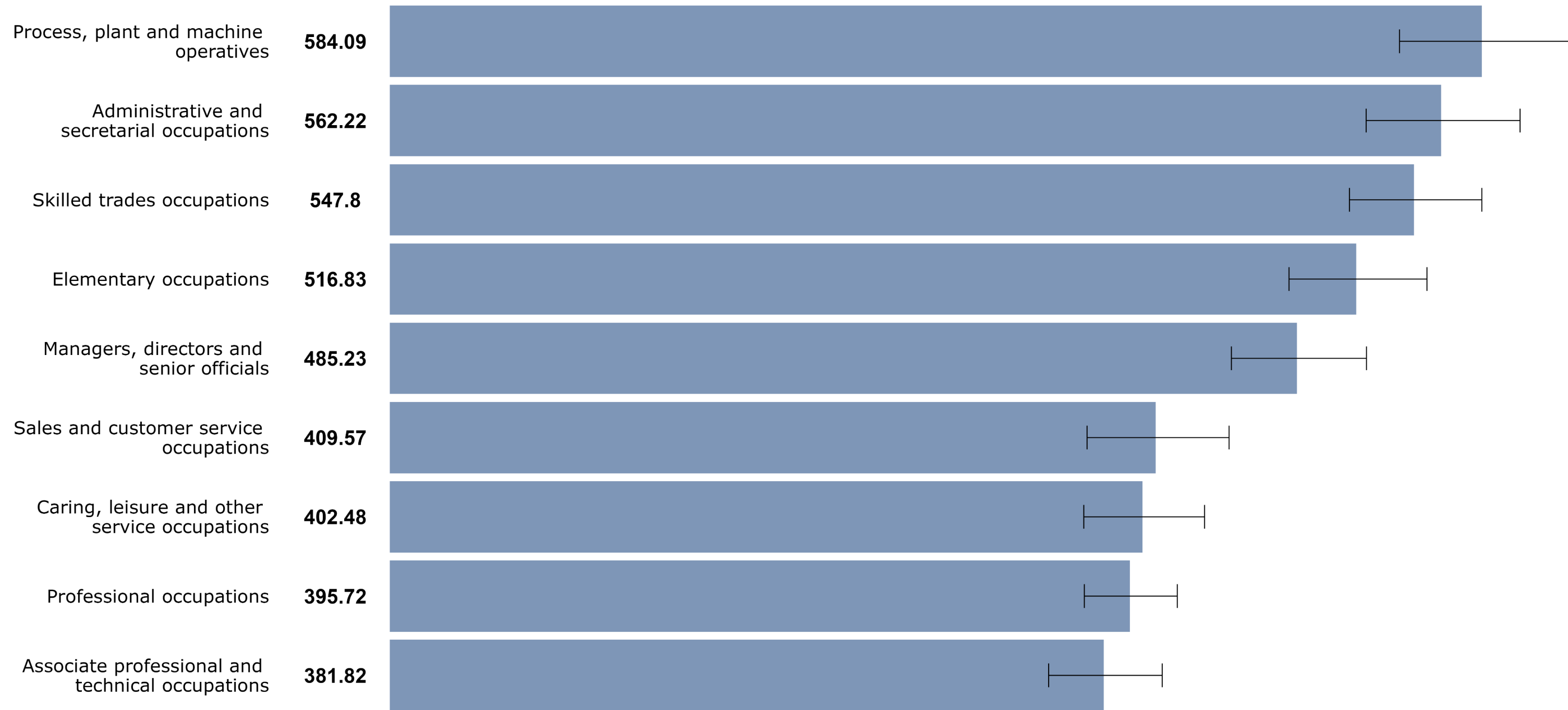


Crude rates: active occupation

Generally, rates are significantly **higher** in those with jobs requiring **lower-standards of education**.

Cancer incidence, All malignancies excluding NMSC, crude rate per 100,000, Persons, 2020, by active occupation

Produced by Public Health Wales, using cancer registration data (WCISU), PHM & MYE (ONS), census11 (ONS, access via SAIL) & census21 (ONS)

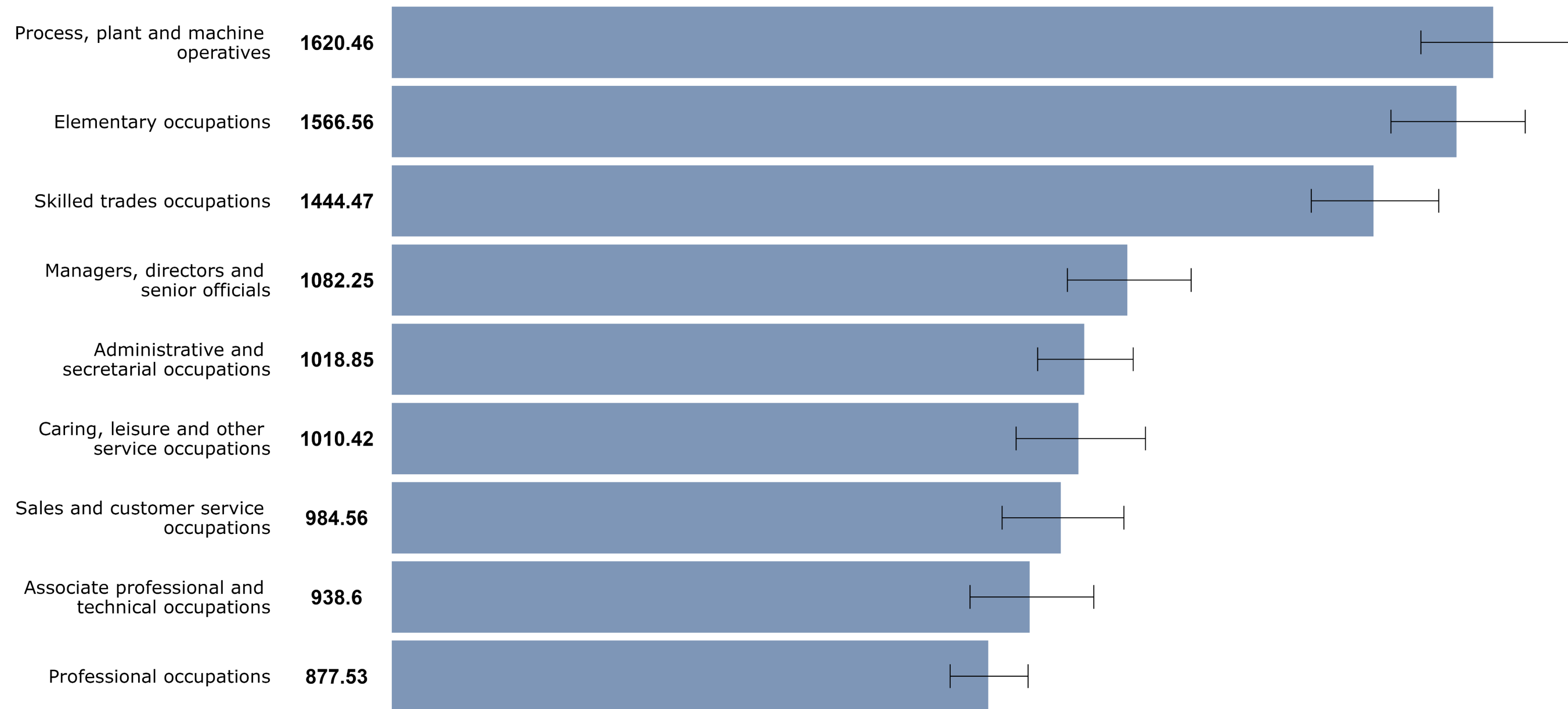


Crude rates: retired occupation

Generally, rates are significantly **higher** in those with jobs requiring **lower-standards of education**.

Cancer incidence, All malignancies excluding NMSC, crude rate per 100,000, Persons, 2020, by retired occupation

Produced by Public Health Wales, using cancer registration data (WCISU), PHM & MYE (ONS), census11 (ONS, access via SAIL) & census21 (ONS)

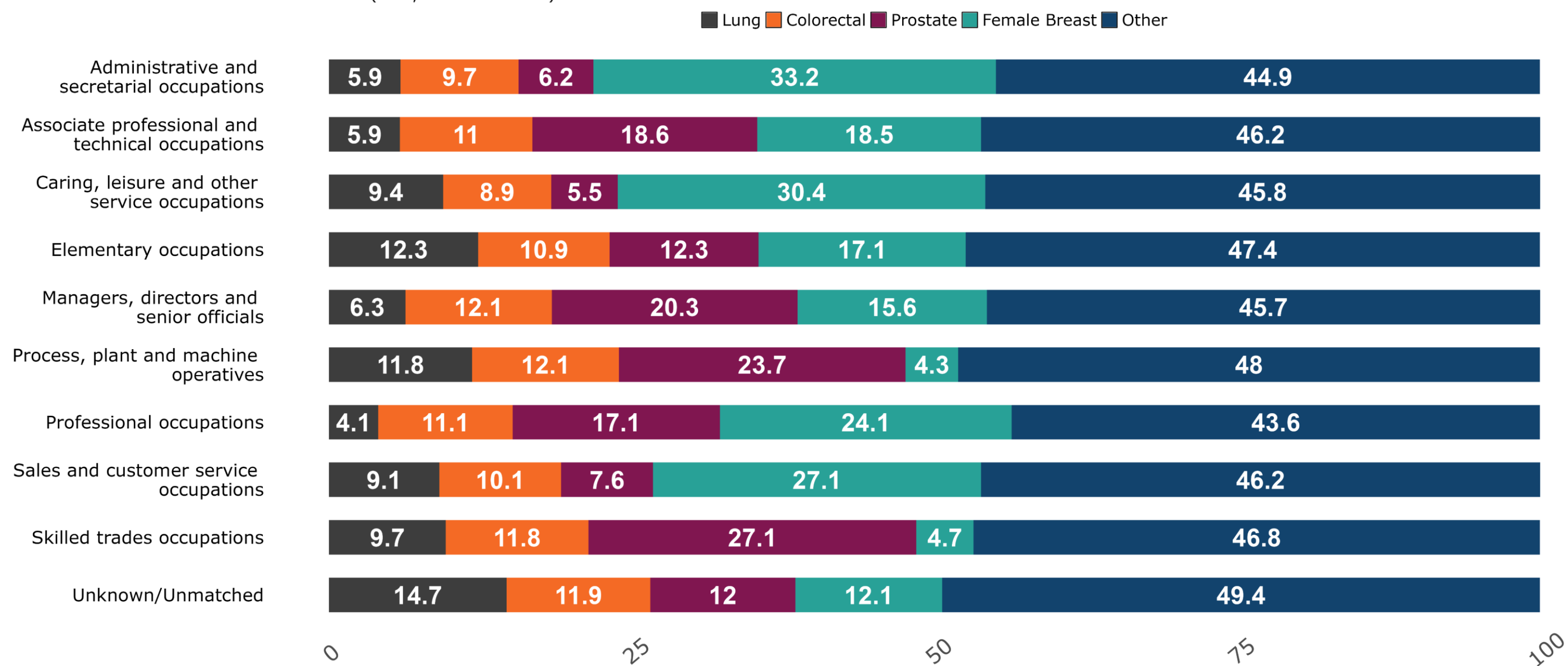


Cancer type by active occupation

Female breast cancer is more common than other cancer types in **occupation groups that are female dominant**. Prostate cancer is more common than other cancer types in **occupation groups that are male dominant**.

All malignancies excluding NMSC, proportion of each cancer type by active occupation, persons, all ages, Wales, 2011-2020

Produced by Public Health Wales, using cancer registration data (WCISU) and census data (ONS, access via SAIL)



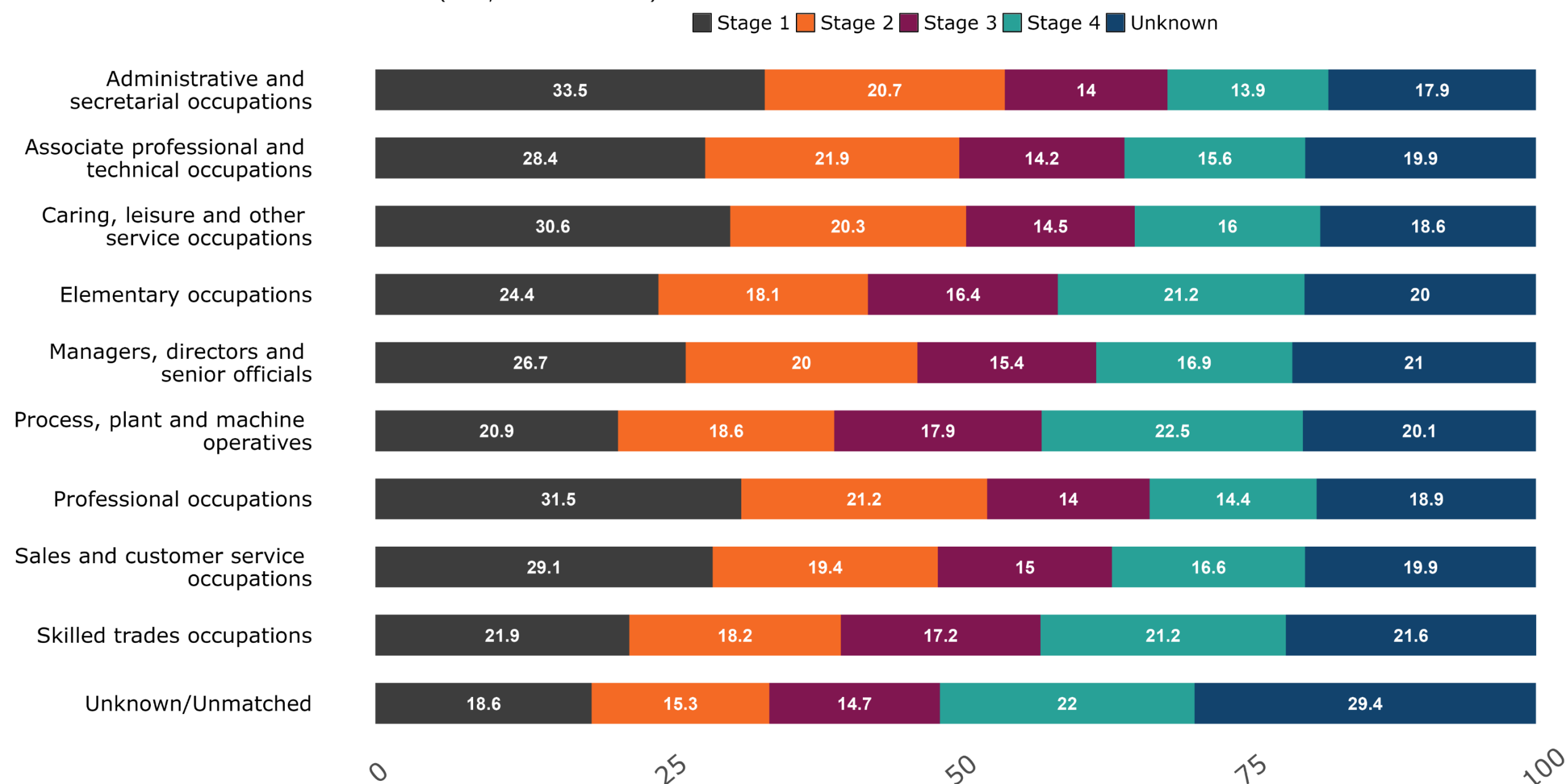
Stage by active occupation

Process, plant and machine operatives have **lowest** proportions of diagnoses at **early stage***

Administrative and secretarial and Professional occupations have **highest** proportions of diagnoses at **early stage***

All malignancies excluding NMSC, Persons, active occupation, all ages, Wales, 2011-2020

Produced by Public Health Wales, using cancer registration data (WCISU) and census data (ONS, access via SAIL)



*stage1 and stage2

Conclusion: Occupation

Generally, rates are significantly **higher** in those with jobs requiring **lower-standards of education**.

Process, plant and machine operatives have **lowest** proportions of diagnoses at **early stage**.

Administrative and secretarial and **Professional** occupations have **highest** proportions of diagnoses at **early stage**.

Caveats

- SAIL's ethnicity spine table was used to identify ethnicity for 12.4% of cases where there was no ethnicity recorded in the Census11 data or where cancer cases didn't map to a Census11 record.
- The cancer diagnosis data covers 2011-2020, with cases being assigned variables based on the 2011 census. For the calculation of crude and age-standardised rates, the numerator counts were based on the 2011 census or ethnicity spine, and denominator counts based on the 2021 census results as it was the only available data. As some demographic characteristics can change over a 10-year period, the different timeframes for each dataset should be considered when interpreting the results.
- Some outputs are suppressed for privacy disclosure control.
- Rates are calculated for 2020, because this was closest year of cancer data to the 2021 census data. 2020 had fewer diagnoses than usual due to the COVID pandemic and was an unprecedentedly atypical year. This should be considered when interpreting the results.

Next steps: Phase 2

- Use Census 2021 data for proportions
- Multivariate analysis to consider confounders
- Assess more protected characteristics