Health in Norfolk and Waveney's Coastal Population

Contents

What is the issue and why is it important to Norfolk and Waveney?

Whilst Norfolk and Waveney's coastline includes many beautiful, vibrant and historically important places, authors of the 2021 Chief Medical Officer's (CMO) report have highlighted that coastal populations may have:

1) **Poorer health outcomes** due to older and more deprived populations than inland populations, but even adjusting for these factors a 'coastal excess' may exist which requires further research to fully understand (Gibson & Asthana 2021).

2) **A mismatch in workforce** with fewer medical trainees, consultants and nurses per population despite having older and more deprived populations (Matin et al 2021).

3) **Service level challenges** in coastal health service provision, (Gibson & Asthana 2021) and longer-term challenges from the impacts of coastal flood risk (Landeg et al 2019, Munro 2021).

Whilst the CMO's report acknowledges the diverse characteristics of coastal communities' history, culture and economies it also suggests similar inequalities in coastal health outcomes could be addressed through a common coastal health policy response.

Scope of this report

This document compares some key indicators of health outcomes across the life course of our coastal population in Norfolk and Waveney to our non-coastal or 'inland' population (from herein) and the England average benchmark. These have largely been selected by their availability to County Council analysts and do not represent a comprehensive assessment of population health differences (see limitations). The purpose of this briefing is to provide an initial insight using readily available data sets to allow public health specialists to determine where further research may be required into Norfolk and Waveney's coastal populations.

For 2) and 3) above, research into local coastal health workforce and retention is being undertaken by the Norfolk Initiative for Coastal and rural Health Equalities (NICHE), which aims to support the strategic goals of the Norfolk and Waveney Integrated care board.

Limitations

- The simple census area approach to define coastal populations is also somewhat arbitrary; research is still being undertaken to improve how we can define coastal communities to best inform health policy[1].
- Using the whole of the inland population in Norfolk and Waveney as an average may provide a more favourable comparator, hiding some variation within it. To try to compensate for this, statistics in this report are also compared between coastal and inland populations within each of Norfolk and Waveney's deprivation quintile areas (see page 7).
- The findings are only applicable to the indicators presented. These are limited to the datasets that are readily available.

  These are:

  - Restricted administrative Hospital Episode Statistics datasets provided by NHS digital.
  - Restricted Primary Care Mortality Datasets provided by NHS digital.
  - Public, open data on health-related welfare claimants available from Stat-Xplore from the Department for Work and Pensions website.
  - Restricted Norfolk County Council Early Years Foundations Schools data sets.
  - Office for National Statistics mid-year population datasets are in the process of being rebased to the latest 2021 Census population. These have not been released at the time of this report. The population rates and proportion health statistics in this report have relied on substituting ONS modelled mid-year 2020 population structure estimates as approximations for later year denominators using older 2011 census small (LSOA) areas.
- It is important to note that the health statistics in this report are based on NHS administrative datasets and are subject to coding variation. Robust prevalence estimates for health conditions are not available for the small areas used to define the coastal populations and towns in this report.

[1] UK Research Councils are still funding large projects for the CMO report authors such as ESRC. S. Asthana, A Gibson, S. Agarwal, Y. Wei, C. Brayne. Understanding the research and policy needs of English coastal communities: a new coastal classification. October 2023-September 2026.

Key messages

- Defining coastal populations for health analysis is the subject of ongoing research. There is no consensus yet on the best way of doing this. This report adopts a definition developed by Suffolk County Council that selects small census areas bordering the coastline. Different definitions will produce different statistics.

- Figure 1 provides a summary of the coastal areas in Norfolk and Waveney where rates of hospital admissions and mortality used as indicators of population health are worse than Norfolk and Waveney's inland or England rates.

Urban rural divide

- A large proportion of Norfolk and Waveney's coastal population live on the East coast in urban town areas of Great Yarmouth and Lowestoft. The smaller rural North and West coast populations are similar to our inland rural population, with relatively more deprived rural town populations set amongst the less deprived rural village populations.

- This town, village, urban, rural divide in Norfolk and Waveney's coastal population is also reflected in the pattern of worse life expectancy and rates of premature mortality and hospital admissions associated mainly with the relatively more deprived larger East coast urban and town populations.

Limited evidence of a 'coastal excess' at this local level

- Unlike the 'coastal excess' seen with larger nationwide studies[2], most health indicators for Norfolk and Waveney's coastal areas are similar to inland populations within the same deprivation groups or quintiles.

- The key exceptions are:

    - *Hospital admissions of over 75+ year-olds with high-risk frailty scores.* Age standardised admission rates are greater for coastal areas than those inland for all deprivation quintiles. This indicates further inequality between elderly coastal and inland populations.

    - *Higher ratios to England for the proportion of claimants of Health-related Universal Credit* payments are found in the more deprived coastal quintiles than their inland counterparts.

    - *Alcohol specific admission rates, particularly in the female population living in the most deprived coastal areas. Most of which reside on the East coast.*

Is a generic coastal definition useful for Norfolk and Waveney?

Comparing Norfolk and Waveney's coastal population, as a whole, to its inland counterpart masks important differences within coastal areas, their urban and rural communities, and their health outcomes, (indicated here in hospital admissions and mortality rates). Worse health outcomes inferred by the statistics presented in this report, are mainly associated with deprivation and not so much with whether the deprived area is coastal or not. With respect to these, placed based approaches targeting deprived communities would be appropriate (McGowan 2021). Given the paucity of research on coastal communities and their health needs, attention should also be paid to relevant new research on this topic.

[2] Nationwide studies reported by the CMO report 2021 exposed a 'coastal excess', when controlling for deprivation, (Gibson & Asthana 2021), but it's likely there are too few areas to test for such an effect locally with similar methods.

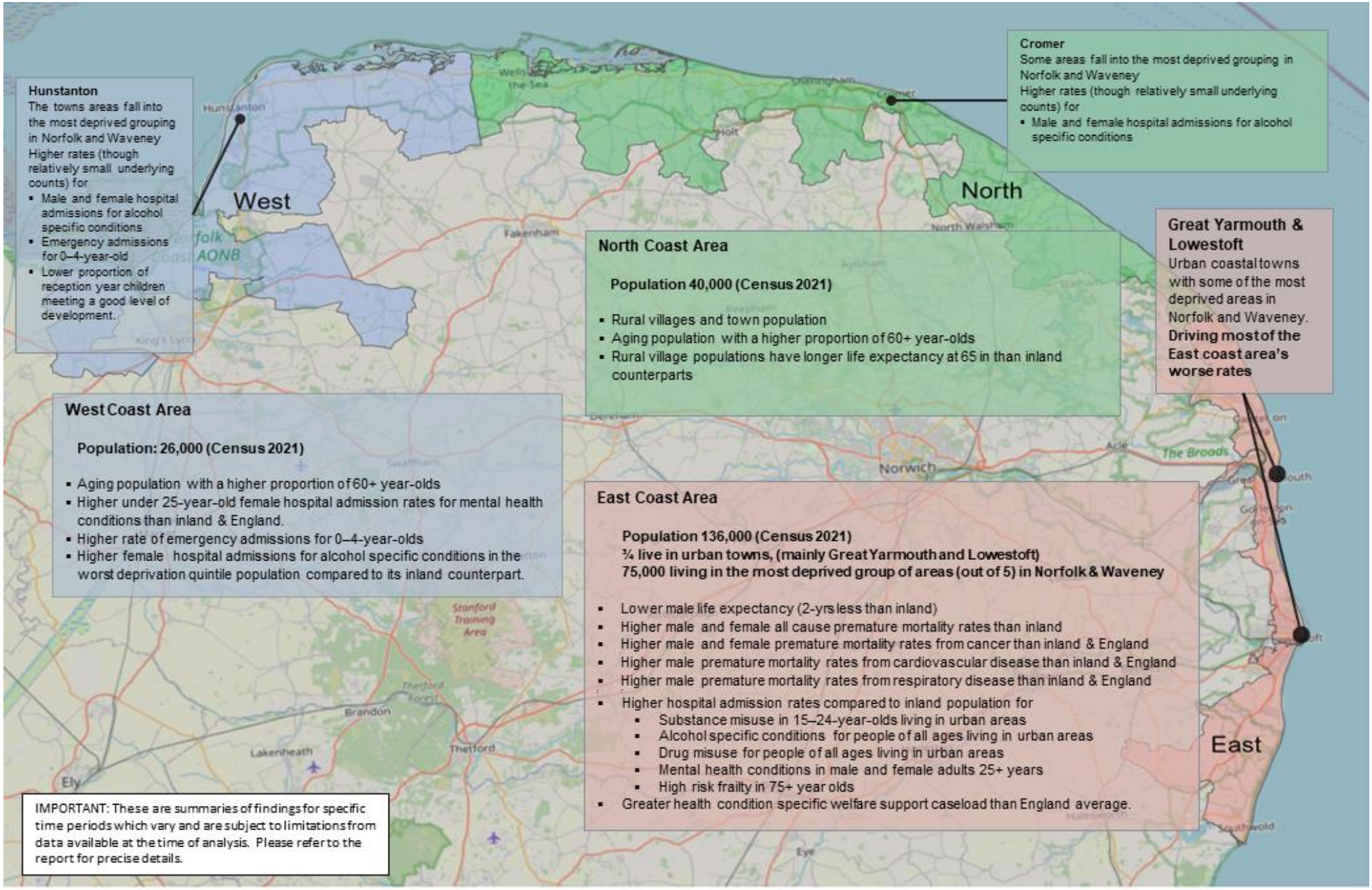

Figure 1: Summary map of coastal area health outcomes covered in the report.

Defining coastal communities

There is no nationally agreed definition or consensus on what constitutes a 'coastal community'. Academics, institutions, and policy makers have adopted various ways to compare coastal health outcomes from seaside towns to local authority areas that border the sea or estuaries. The resulting populations differ considerably[3].

This report adopts a method from Suffolk County Council which identifies coastal Census areas[4]. Figure 2 shows the coastal area for Norfolk and Waveney defined this way. For further comparison, the coastal area has been further divided into East, West and North coastal areas. The latter two falling into their respective lower tier district authorities of King's Lynn and West Norfolk and North Norfolk, the East including the district of Great Yarmouth and Waveney (now making up part of East Suffolk District Council). The town populations in this report are based on ordinance survey's built-up areas that have been assigned by a senior Council analyst to urban areas or parish market town names.

Figure 2: Map showing the best fit of census lower super output areas, (LSOA's) used to define Norfolk and Waveney's coastal area. The North and West coast have more dispersed populations in rural towns and villages. The East coast makes up the largest proportion of the whole coastal population due to the larger urban towns of Great Yarmouth and Lowestoft.

[3] Centre for Coastal Communities website states 'the ONS dataset was omitting almost half of coastal residents [living within 500m of the sea] from official 'coastal' statistics. This accounts for nearly 5 million people'. Accessed January 2024.

[4] Geographical population unit areas called LSOAs, defined for the national census, are determined as coastal areas where their population weighted centres fall within boundaries of any Parish that directly borders the coastline. Any other LSOAs that border the coast that don't fall into parishes are also included. These are used to aggregate numerators and denominators used to calculate statistics for the Norfolk and Waveney coastal area.

Characteristics of Norfolk and Waveney's coastal population

Deprivation

The Marmot Review highlighted the importance of social factors such as experiences in early childhood, housing, education, income, and the built environment as predictors of ill health (Marmot 2010). A national index of multiple deprivation considers various factors such as income, employment, education, health, crime, and living environment to measure the relative deprivation of different small areas within the country. The overall score, or index[5], is used to put similarly populated census areas in Norfolk and Waveney into rank order. These are split evenly into 5 groups called quintiles. Quintile 1 represents the most deprived areas, while 5 represents the least deprived areas.

More than 60% of Norfolk and Waveney's coastal population live within the East coast area for which a disproportionate population live in Norfolk and Waveney's most deprived quintile (Figure 4 & Figure 5). This leads to a greater proportion of the overall coastal population living in quintile 1, compared to the Inland population (40% and 15% respectively, Wilson Score 95%CI).

Most of the coastal area quintile 1 population reside in towns on the East coast, which are dominated by Great Yarmouth and Lowestoft, but with some representation in Seaside towns of Hunstanton (West coast), Cromer and the larger village parish of Happisburgh (North coast) (Figure 3).

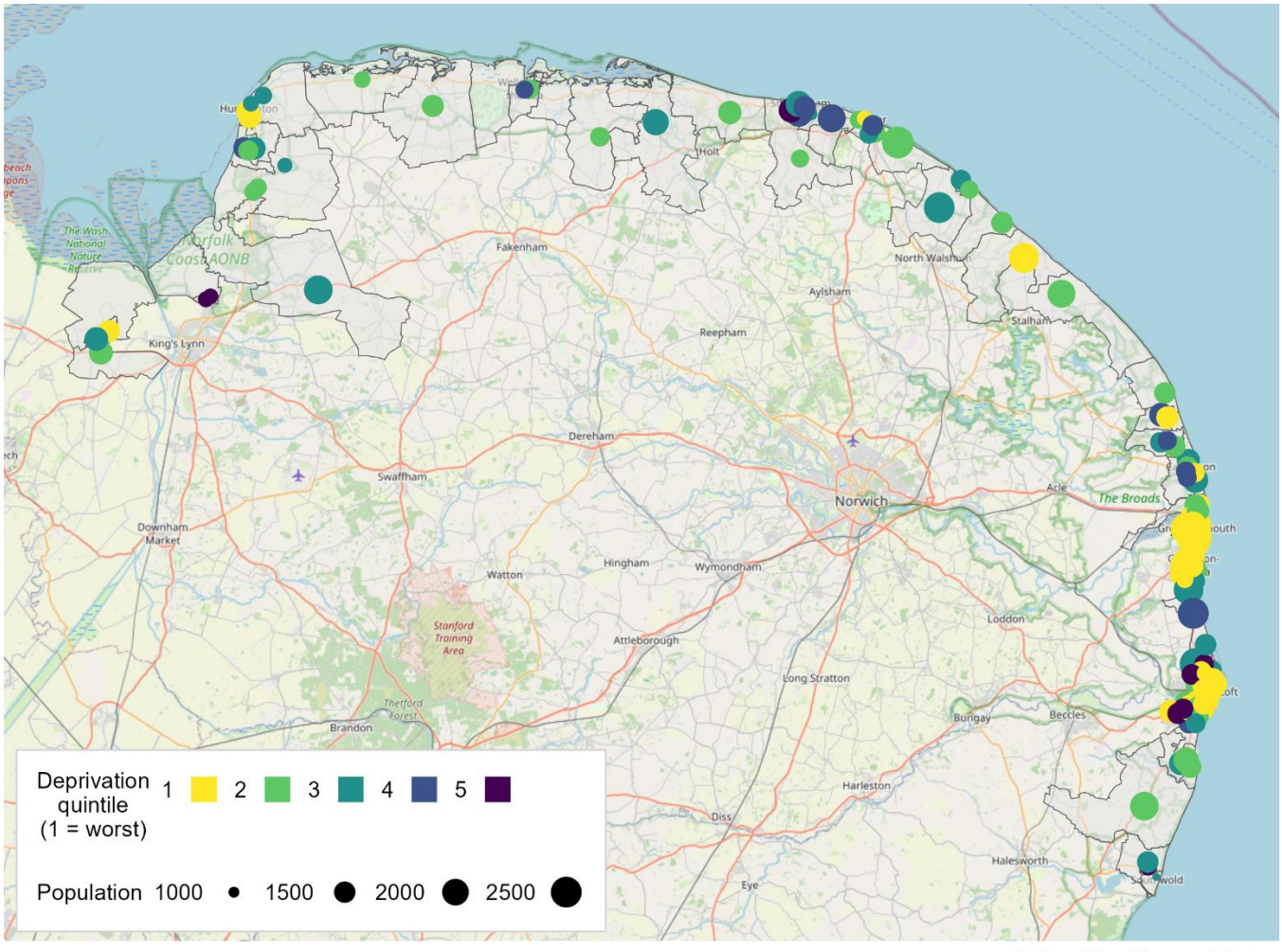

Figure 3: Map of Norfolk and Waveney coastal LSOAs, their population size and location and deprivation quintile in Norfolk and Waveney based on 2019 Indices of Multiple Deprivation[5]. Circle areas are used to represent population size, since the actual mapped areas visually underrepresent dense urban populations in the East as small areas and overrepresent larger areas that are sparsely populated e.g. in the North.

[5] The scores used to generate quintiles for comparison in this report were based on the 2019 Indices of Multiple Deprivation.

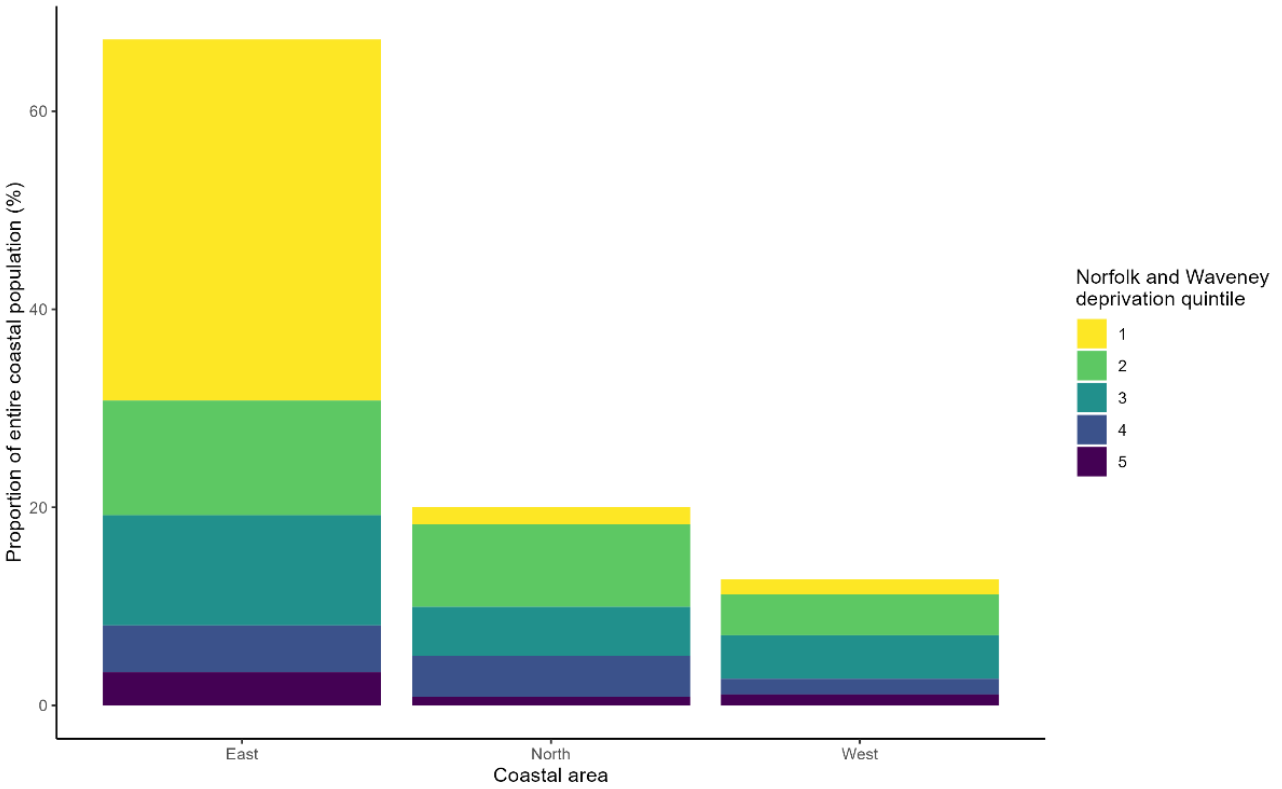

Figure 4: More than 60% of Norfolk and Waveney's coastal population live within the East coast area. The East coast has a disproportionately larger number of people living in the most deprived area quintile in Norfolk and Waveney (yellow) compared to the other coastal areas. (The population here is derived from the 2020 mid-year population estimate, ONS)

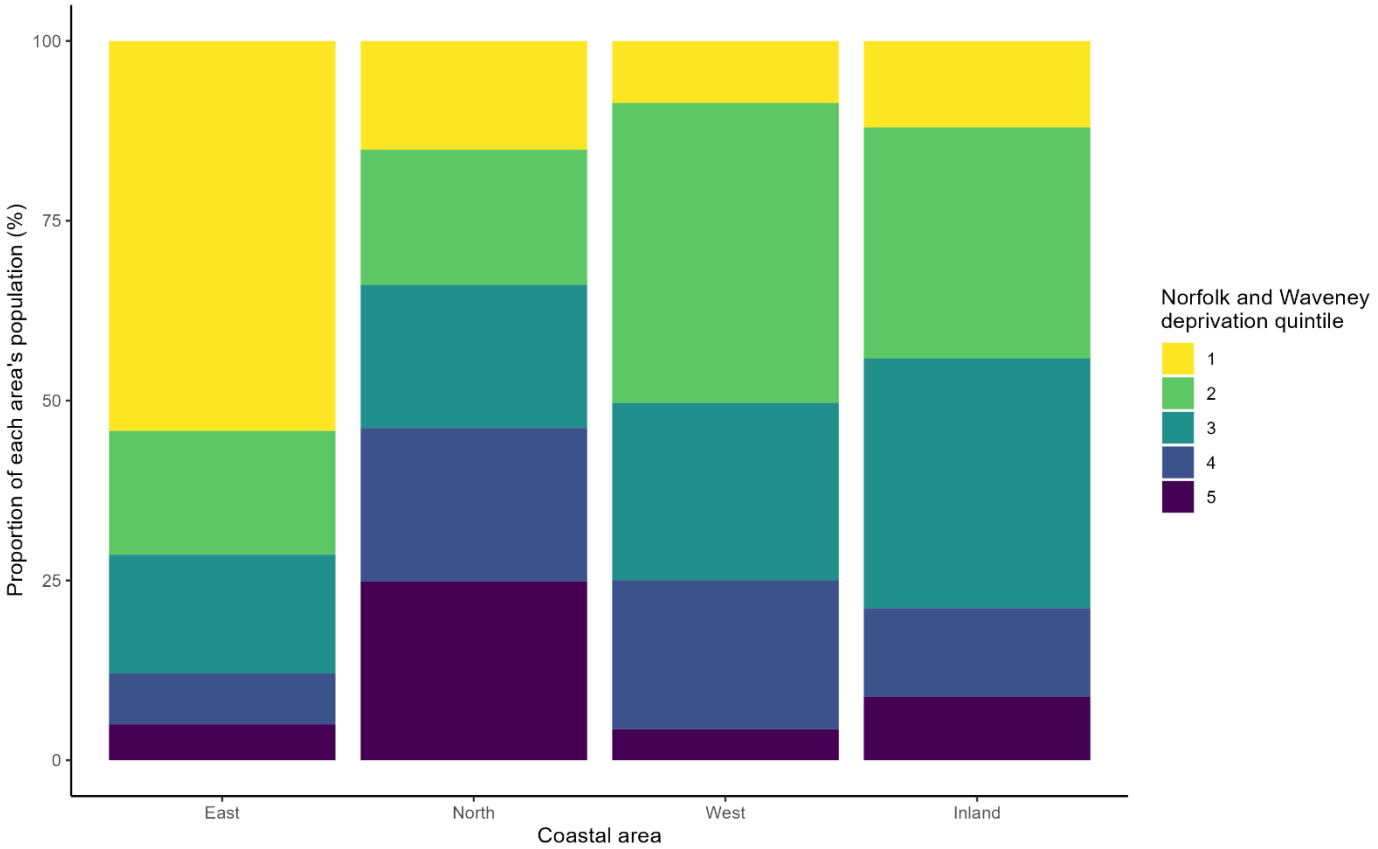

Figure 5: Proportions of each coastal area's population residing in Norfolk and Waveney's deprivation quintile. More than half of the East coast population live within Norfolk and Waveney's most deprived areas quintile (1, yellow) (2020 mid-year population, ONS)

Population age distribution

Using the most recent data from the 2021 Census, just over 200,000 people live in this coastal area, about one fifth of Norfolk and Waveney's population.

- Compared to England, and to a lesser extent inland, Norfolk and Waveney's coastal area population has a greater proportion of residents aged over 60 (Figure 6, top left).
- This is driven by the West and North coast populations, which though smaller populations overall have a much greater proportion of people aged over 60, and a markedly lower proportion of adults aged under 50, young people and children, as seen in their 'inverted pyramid' age profile (Figure 6, bottom charts).
- The East coast population age profile is similar to Norfolk and Waveney's inland population.

Key Implications

Though there will be variation associated with socio-economic status (Nazroo 2015), in general, the greater proportion of ageing people will mean a greater prevalence of age-related conditions in these coastal populations. Though the rural populations in the West and North coast areas are much smaller than the East coast area, they are sparsely distributed. This may have implications for access to services for older people in more rural areas given associations with travel distances and poorer outcomes for example in cancer treatment (Jones et al 2008, Turner et al 2017). For inequalities in health outcomes indicated by premature mortality, a study across England and Wales by socio-economic group found no evidence that people living in rural areas were disadvantaged (Jones and Lake 2013). Though differences by ethnicity, or coastal area were not compared.

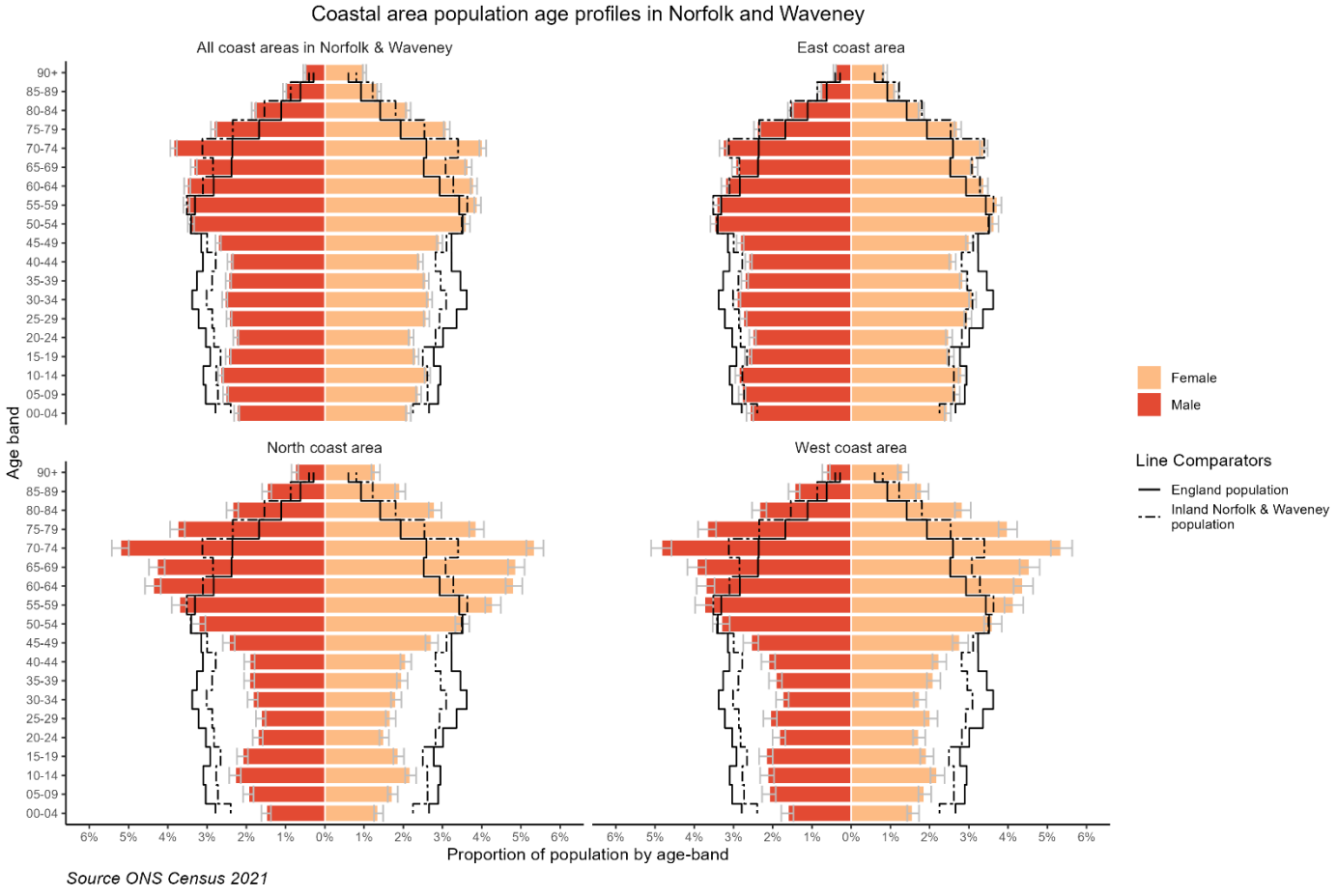

Figure 6: Census 2021 population distribution of coastal areas within Norfolk and Waveney compared to its inland population and England's. The East coast area are is within Waveney (now part of East Suffolk District) and Great Yarmouth District; the West coast area is within King's Lynn and West Norfolk District; the North coast area is within North Norfolk District. ICB Coastal is the population distribution of all ICB coastal areas. |---| Error bars indicate 95% confidence intervals of population proportions (Wilson-Score) as an indication that the percentage proportion is significantly different to England (solid line) or non-coastal 'inland' (dot-dash line) population percentages when the upper or lower bound of the confidence intervals do not overlap with these respective line comparators.

Life expectancy

Life expectancy at birth is an indication of the average number of years a newborn baby would live if they experienced the current age-specific mortality rates for each area, throughout their life (rather than the number of years a baby born now could expect to live). It is an important overall measure for showing current disparities in health between different populations. For numerous local communities in England there has been a decline in life expectancy associated with economic trends of unemployment and insecure and low-wage employment (Rashid et al 2021).

Life expectancy at birth

- Only the East coast male population life expectancy, at 77.8 years, is lower than Norfolk and Waveney's inland male population at 80.1[6] and the England overall male average 79.4 years (Figure 7).
- This is driven by lower life expectancy in urban coastal areas in the towns of Great Yarmouth and Lowestoft (Appendix 1: Figure 21, Figure 23).
- When comparing coastal area populations living in the same deprivation quintile as inland populations life expectancies do not differ (Appendix 1: Figure 22), so no coastal excess is apparent for similar measures of deprivation.
- The other coastal populations in the West and North have higher life expectancies, and this generally reflects the proportion of the population living in rural villages.

Implications

With no clear worsening life expectancy in coastal areas compared to inland populations when comparing within similar deprivation groups or quintiles, it appears deprivation is the key driver of worse life expectancy, and not additional coastal factors. For coastal areas, even those with longer overall life expectancies, we also don't know the proportion of life that will be lived in a relatively healthy state. Healthy life expectancy estimates are currently only available for Norfolk and Waveney due to the way it is reported nationally (Norfolk Insight 2022). We do know that healthy life expectancy is not keeping pace with overall life expectancy more widely in the UK. This has implications in aging populations for greater prevalence of age-related conditions, and greater risk of frailty requiring long-term care (Foresight 2016). Rates of hospital admissions of people with high-risk frailty from Norfolk and Waveney's older population are compared in the report section: Frailty in old age.

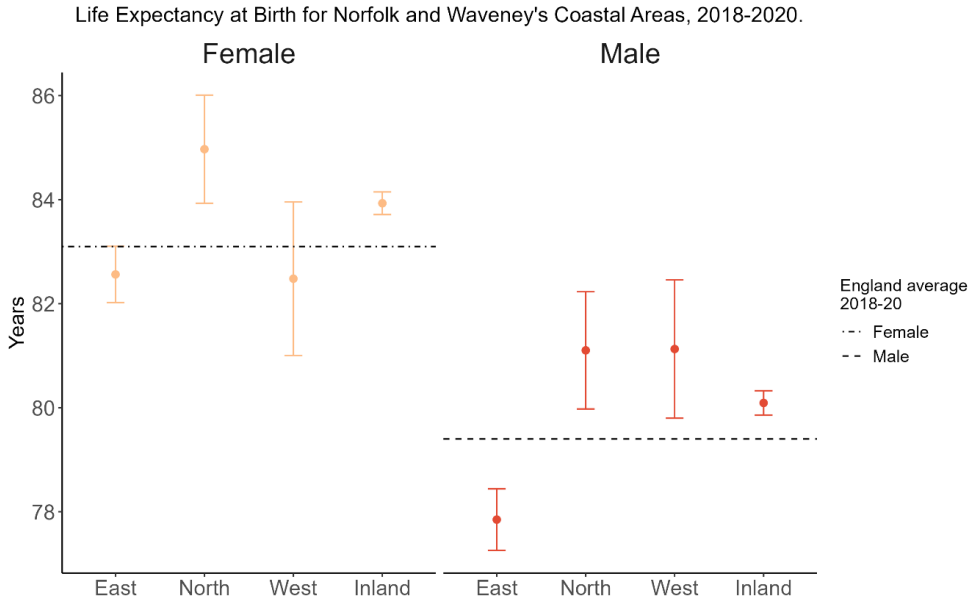

Figure 7 : Life expectancy at birth for Norfolk and Waveney's coastal area populations compared to inland (lines show 95% confidence intervals of estimates, where these don't overlap, the estimates are statistically significantly different).

[6] East coast male population 2018-20:77.8 years 95% CI 77.3 - 78.4, Inland 2018-20: 80.1 years (95% CI 79.9-80.3), England .

Premature mortality

Premature mortality is measured by the rate of people dying under the age of 75 and is a good high-level indicator of the overall health of a population, being correlated with many other measures of population health.

The following are established indicators of the key causes of premature mortality and are used by the NHS outcomes framework. Age stratified counts are published by NHS digital which allows England average age standardised rates to be calculated as benchmarks for comparison.

Cardiovascular disease (CVD) is one of the major causes of death in under 75s in England. This is a key indicator of avoidable deaths used for public health policy and interventions for prevention and treatment of CVD.

Cancer is the highest cause of death in England in under 75s. There are large inequalities in how cancer mortality has changed in England's districts with the widest variation observed for cancers strongly associated with behavioural and environmental risk factors (Rashid et al 2023). This indicates the importance, at the local level, of addressing timely treatment but also services being able to target prevention.

Respiratory disease is another major cause of death in England in under 75s and smoking is the major cause of chronic obstructive pulmonary disease (COPD), one of the major respiratory diseases.

Liver disease is one of the top causes of death in England and people are dying from it at younger ages. Most liver disease is preventable, and much is influenced by alcohol consumption and obesity prevalence, which are both amenable to public health interventions (OHID).

Coastal urban areas

The East coast male population has higher premature mortality rates for all four disease groups in 2018-20 than its inland counterpart, and, excepting liver disease, the England benchmark rate (Figure 8).

Premature cardiovascular mortality rates were greater for males living in coastal urban areas compared to inland urban areas (Appendix 2:Figure 24) driven by the population of Great Yarmouth, and to some extent Lowestoft (Appendix 2:Figure 26).

Inequality

Higher premature mortality rates are associated with populations living in the most deprived quintile for both inland and coastal areas (Appendix 2:Figure 25). When comparing the deprivation quintiles in Norfolk and Waveney, at this local scale there is no significant difference between inland and coastal rates in populations from the same deprivation quintile groups. Deprived coastal areas do not appear to exhibit any 'coastal excess' compared to their inland counterparts in Norfolk and Waveney.

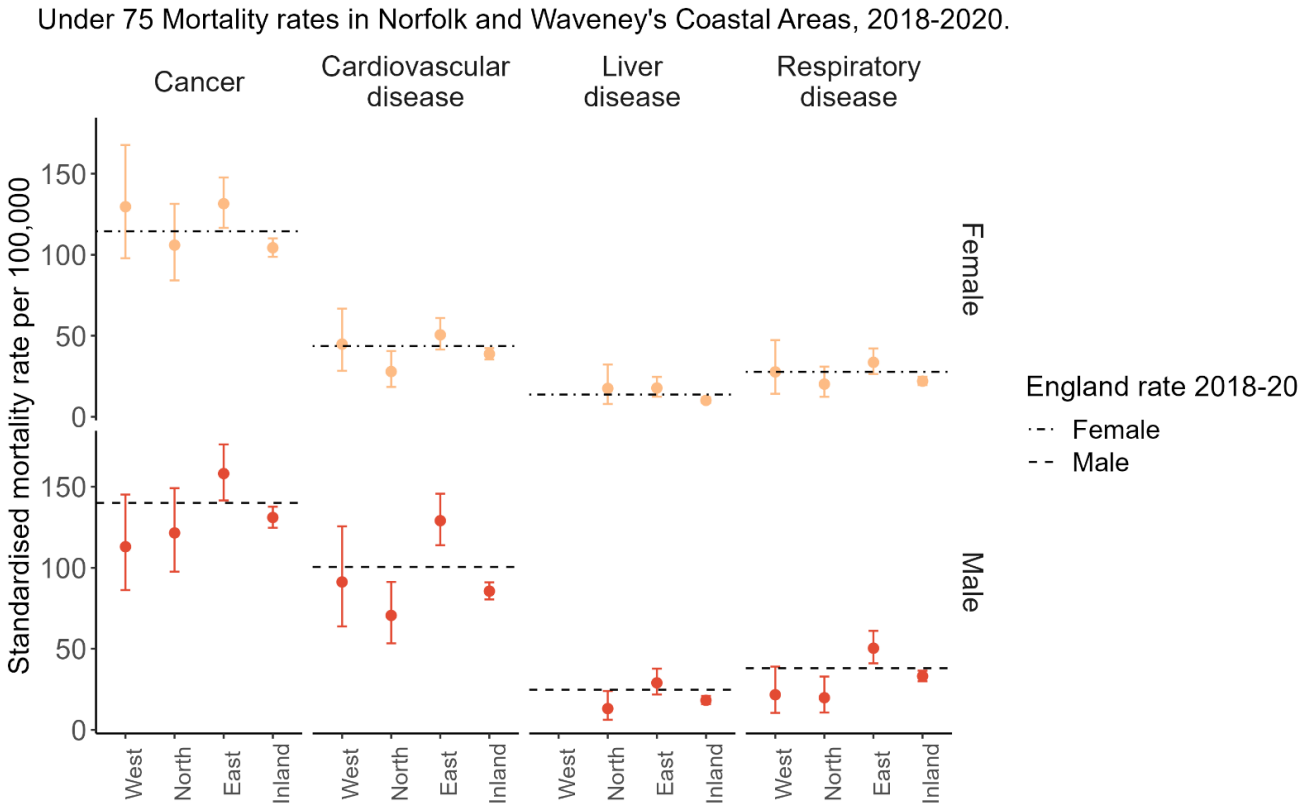

Figure 8: Under 75-year-old mortality rates for key causes comparing Norfolk and Waveney's coastal areas to inland. (lines show 95% confidence intervals of estimates, where these don't overlap, the estimates are statistically significantly different).

Frailty in old age

Frailty in older age from adverse health outcomes leads to greater vulnerability to risks of falls etc and increased demands on health and social care services. Various indicators of frailty have been shown to be useful predictors of mortality and demand on health services (Kojima et al 2018).

Hospital admissions of frail older people

Employing a method[7] to identify high-risk frailty in older people admitted to hospital (both elective and non-elective) shows higher age standardised admission rates in the East coast and urban populations, dominated by Great Yarmouth and Lowestoft (Figure 9, Appendix 3: Figure 27, Figure 28 respectively).

There are also differences in coastal and inland inequalities, indicating a coastal excess of frailty may be present. A consistently higher age standardised rate of high-risk frailty admissions than inland for the same Norfolk and Waveney deprivation quintiles (Figure 10). Though only the coastal area population living in Norfolk and Waveney's most deprived quintile has a higher admission rate than the England benchmark rate. This pattern of increased frailty in aging non-rural coastal populations in urban and coastal populations has been found across England (Sinclair et al 2019). With a paucity of research in this area the reasons for this are not understood (PHE 2019, Age UK 2021).

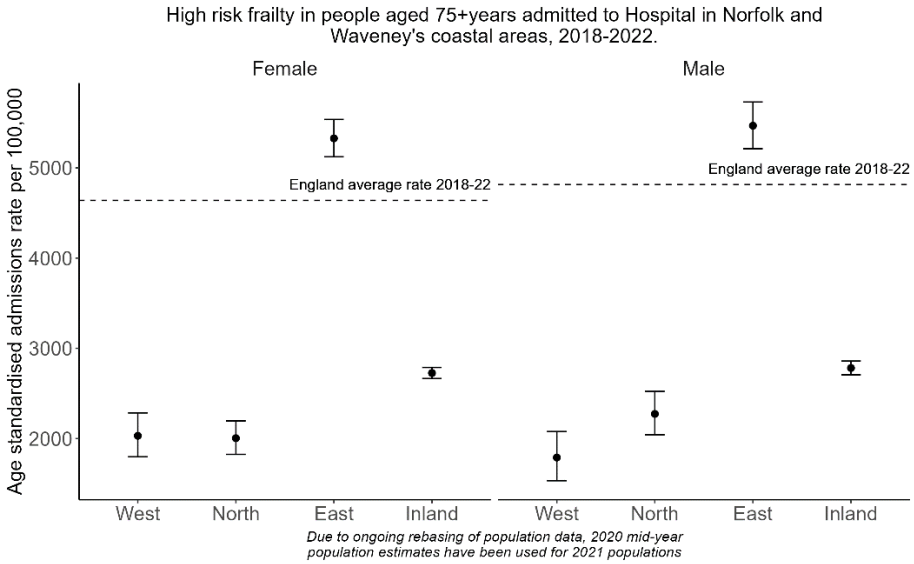

Figure 9: Age standardised admission rates of 75+ year olds with high -risk frailty scores 2018-22 in Norfolk and Waveney's coastal areas compared to inland and England.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

[7] Using weighted scores based on the presence of one or more of 109 three-character ICD-10 codes that were twice as prevalent in those of known frail groups (Gilbert et al 2019, Conroy et al 2019).

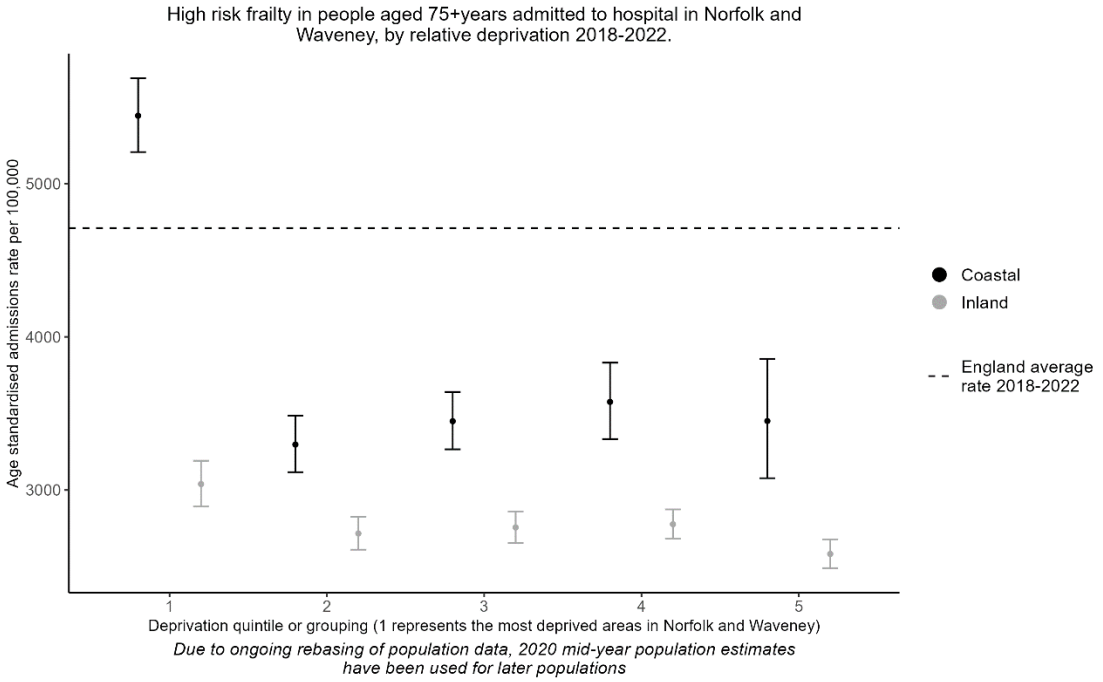

Figure 10: Age standardised admission rates of 75+ year olds (person) with high -risk frailty scores 2018-22 from populations within Norfolk and Waveney's deprivation quintile grouping comparing coastal population living in each quintile to their counterparts inland.

Child development

In public health policy a good start in life is seen to be crucial for securing health and reducing health inequalities across the life course (Marmot 2010).

Good level of infant development

The government measures children's level of development at the end of their first reception year called the Early Years Foundations Stage Profile (EYFSP) score. A good level of development score is achieved when children meet criteria for expected ability in communication and language; personal, social and emotional development; physical development; literacy; and mathematics. Studies on children's development in the EYFS have been used to help understand the impact that the COVID-19 pandemic may have had on child development (Tracey et al 2022).

The North coast population (Figure 11) and rural coastal towns (Appendix Figure 29) do have a lower proportion of children compared to national or inland levels. Within the same deprivation quintiles our coastal populations do not provide evidence for significant differences in reception year child development compared to inland (Appendix Figure 31).

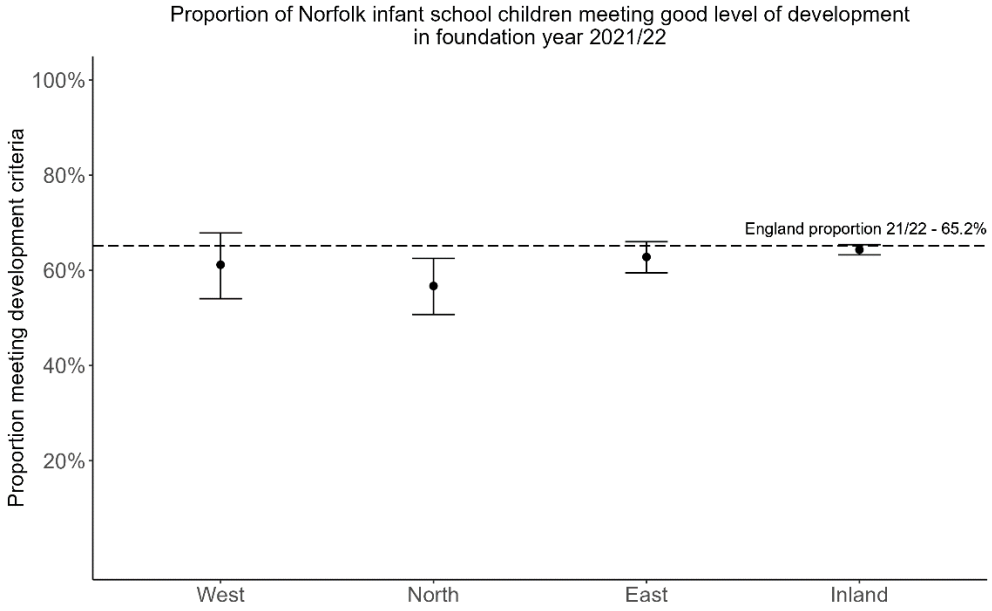

Figure 11 Early years foundations stage proportion of reception year children meeting a good level of development living in Norfolk and Waveney's coastal areas compared to inland.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Emergency admissions in young children

From a public health point of view, emergency admissions in under 5-year-olds gives an indication of wider determinants of poor health (OHID).

Higher rates of emergency admissions of young children than England's can be seen for East and West coast and inland areas in Norfolk and Waveney, with North Norfolk coast having a much lower rate (Figure 12). The admissions rate from the West coast and its seaside town Hunstanton (Appendix 5: Figure 34), and coastal rural town populations are notably higher compared to their inland counterparts (Appendix 5: Figure 32). When comparing areas in the worst deprivation quintile, the rate of emergency admissions of young children living inland exceeds those living in coastal areas (Appendix 5: Figure 33). These rates do not follow the general pattern of higher rates in the East coast population found in most admissions rates in this report. Nationally higher rates of admissions of under 5-year-olds have been associated with more deprived areas, but there has been variation in admissions across England, with differences in hospital practice and service provision being suggested as explanations (Keeble and Fisher 2020). Such factors may obscure the underlying differences in risk in the populations, so local knowledge of paediatric admission practices may be required to interpret differences in rates.

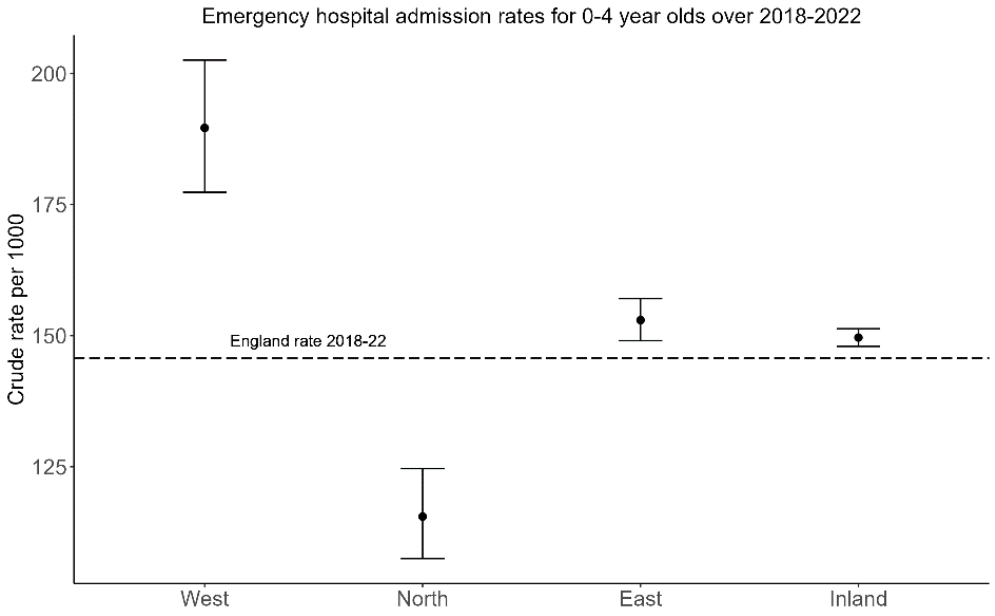

Figure 12: Emergency hospital admission rates in children under 5 years living in Norfolk and Waveney's coastal areas compared to inland.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Substance misuse

Substance misuse was a key concern for coastal public health directors in the CMO 2021 report. Smoking and substance related prevalence indicators have not been included in this report. These are typically based on surveys or primary care administrative datasets such as the quality outcome framework (QOF) and data coverage are not sufficient to attribute to coastal areas for useful comparisons[8].

Substance misuse in children and young people

There is evidence to suggest that young people who use recreational drugs run the risk of damage to mental health including suicide, depression and disruptive behaviour disorders. Regular use of cannabis or other drugs may also lead to dependence. Among 10- to 15-year-olds, an increased likelihood of drug use is linked to a range of adverse experiences and behaviour, including truancy, exclusion from school, homelessness, time in care, and serious or frequent offending (OHID).

Over 2017-2021 the rate of hospital admissions of 15- to 24-year-olds due to substance misuse in Norfolk and Waveney's East coast population is greater than its inland population and the England average rate (Figure 13). Rates have not been calculated by sex since the underlying counts, even over 5 years, are too few to produce reliable rates in the groupings below.

Coastal urban populations are associated with a higher rate of hospital admissions of 15- to 24-year-olds due to substance misuse than their inland counterparts, driven by the large coastal populations in Great Yarmouth and Lowestoft (Appendix 6: Figure 35, Figure 37). Though populations residing in the most deprived area quintile across Norfolk and Waveney have similar admission rates regardless of whether they reside in either coastal or inland areas defined here (Appendix 6: Figure 36)

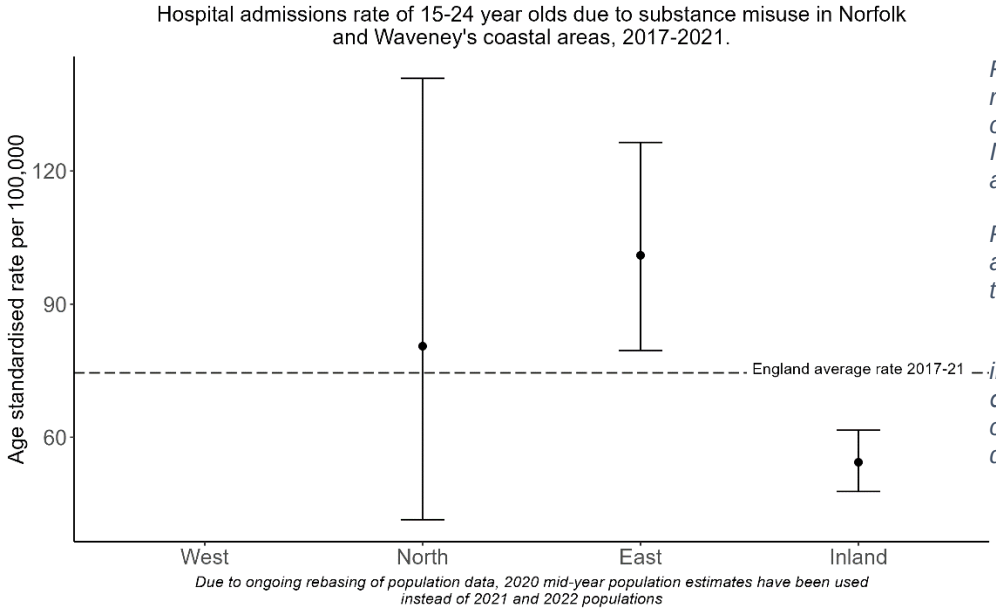

Figure 13: Hospital admission rates for substance misuse in children and young people living in Norfolk and Waveney's coastal areas compared to inland.

Rates for the west coast are absent due to too few admissions to calculate reliable rates.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

[8] Our smoking prevalence methodology uses deprivation indices (from 2019) as a correlate for attributing wider geographical prevalence estimates to much smaller areas. So smaller area smoking prevalence will simply reflect the distribution of deprivation from the 2019 indices datasets. Reliable confidence intervals are not then available to understand the precision of prevalence estimates for coastal areas to make useful conclusions. This also extends to assumptions on apportioning which counts from each GP register's prevalence estimate reside in a coastal area, not providing age stratified counts, in addition to non-random bias in missing patient record data held by GP's.

Alcohol specific hospital admissions, all ages.

Alcohol misuse is the biggest risk factor for death, ill-health, and disability among 15–49-year-olds in the UK. It's also the fifth biggest risk factor across all ages and is a causal factor in more than 60 medical conditions including liver disease, cancer and depression (OHID). Alcohol specific hospital admission rates, through directly caused conditions, is a useful indicator of alcohol misuse. It is important to note that this does not reflect the broader impact of alcohol on population health where alcohol consumption can partially influence a much wider set of health conditions and premature death in a population.

For both sexes, East coast (Figure 14) admission rates are significantly greater than both Norfolk and Waveney's inland rates and the national average over 2017-21. Various coastal towns exceed the national rates, but it is the larger coastal urban town populations of Great Yarmouth and Lowestoft that drive the high east coast rates (Appendix 7:Figure 38,Figure 39).

There are indications of a 'coastal excess' – with higher admission rates in coastal deprivation quintiles compared to their inland counterparts (Figure 15: female 1&3, male 3&4). The female admissions rate from the most deprived quintile is notable since it is the only quintile to both exhibit a coastal excess and exceed England's rate.

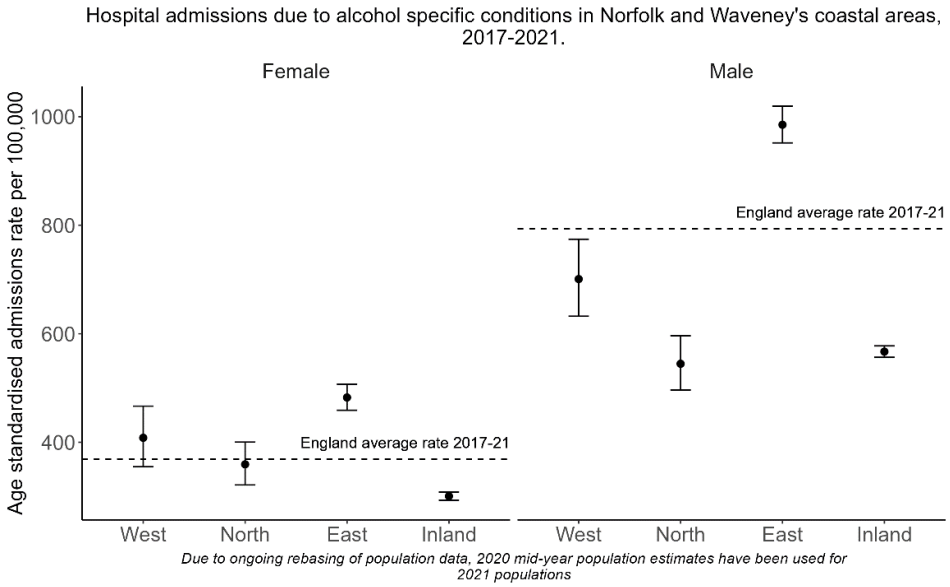

Figure 14: Hospital admission rates over 2017-21 for alcohol specific conditions for people living in Norfolk and Waveney's coastal areas compared to inland.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

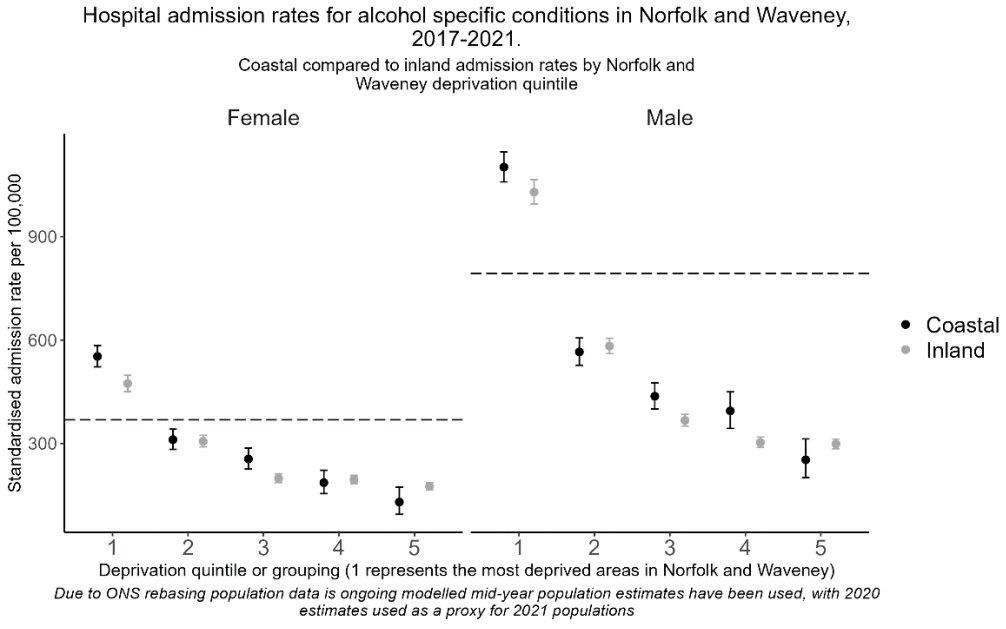

Figure 15: Hospital admission rates over 2017-21 for alcohol specific conditions for people living in Norfolk and Waveney's deprivation quintiles comparing rates from coastal quintile populations to their inland counterparts.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Drug misuse hospital admissions.

Drug misuse is a significant cause of premature mortality in the UK (OHID). Drug misuse hospital admission rates here combine NHS definitions for hospital admissions for drug-related mental and behavioural disorders and those with a primary diagnosis of poisoning by drugs listed as controlled under the Misuse of Drugs Act 1971 (includes both intentional and unintentional poisoning) (NHS Digital).

Only the East coast population admission rate is greater than the inland population rate (Figure 16). These are driven by admissions in Urban town areas largely in Great Yarmouth and Lowestoft (Appendix 8: Figure 40,Figure 42). Though greater than inland admission rates, these are similar to the England average over the same 5-year period. There are no differences in admission rates between coastal and inland areas in the same deprivation quintile that would indicate a coastal excess (Appendix 8: Figure 41)

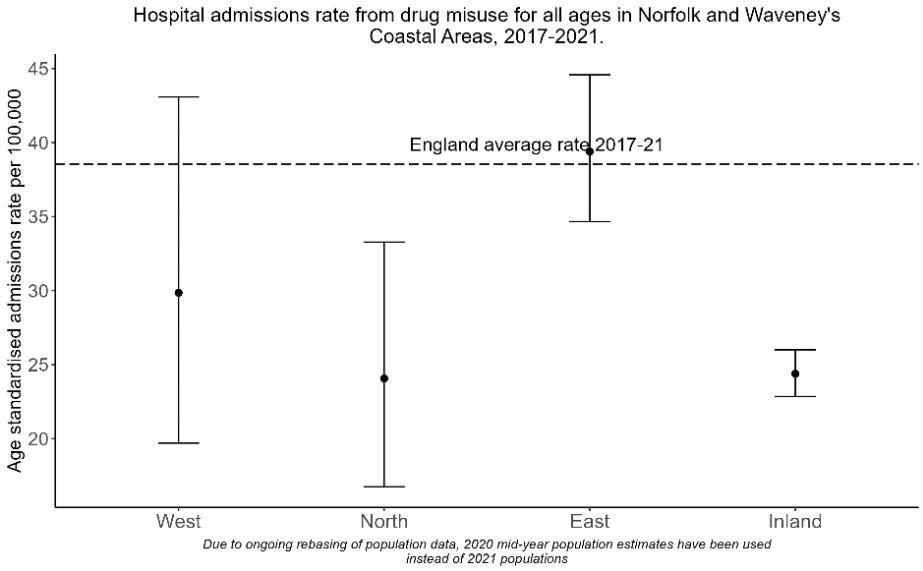

Figure 16: Hospital admission rates over 2017-21 for drug misuse for people living in Norfolk and Waveney's coastal areas compared to inland.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Health impacts on work

Universal Credit health claimants

When a person makes a claim for Universal Credit (UC) they will be asked if they have a mental/physical health condition or a disability which prevents, or limits, their ability to work. When claimants declare they have a restricted ability to work due to their health condition and the Department of Work and Pensions receives medical evidence in support of the claim - the claimant is placed on the UC health welfare payment scheme. This will include cases where claimants are in work but report a health condition which limits the amount of work they can do (DWP).

Comparing the ratio of health claimants with what would be expected for a population's age structure, by applying average age band specific proportion of claimants in England[9], we can see that the East coast population had over twice the average health claimant caseload than England (Figure 17). It is not valid to compare different area ratios since their local area population structures, (that the age specific England rates are applied to), are not standardised.

Aggregated coastal urban and rural town populations have greater UC health caseloads ratios to the England average, whereas their inland counterparts do not (Appendix 9: Figure 43). Towns from both inland and coastal area populations have greater ratios of health claimants to the average proportion of the population across England, including Southwold in the East, Cromer in the North and Hunstanton in the West. In absolute numbers the claimants in the populated areas assigned to these towns are less than 100 or so. Great Yarmouth and Lowestoft have both the greatest ratios to their England baseline (Appendix 9: Figure 45) and the greatest absolute number of claimants, (in the 1000's).

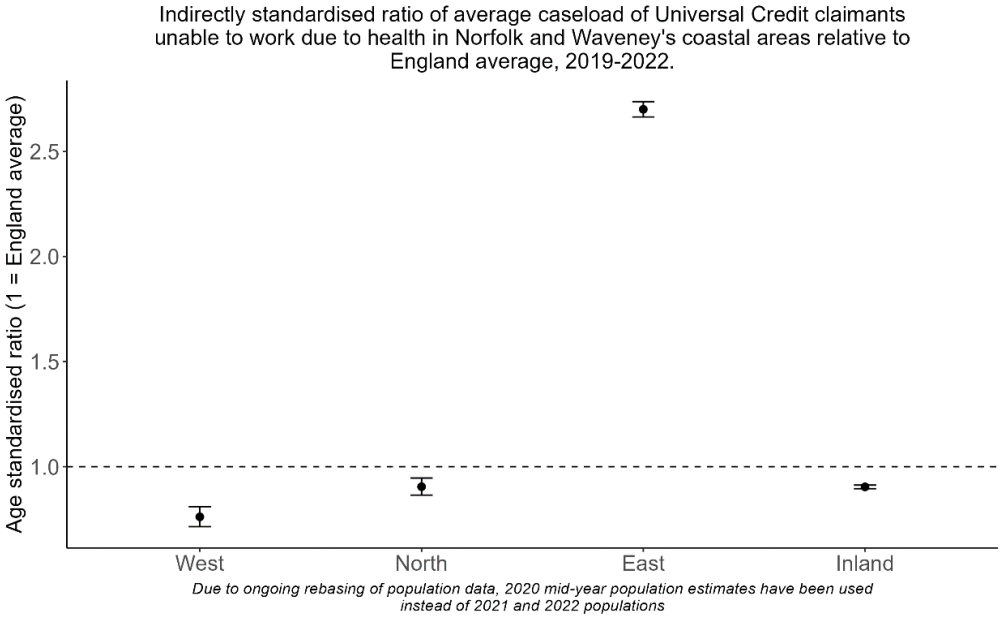

Figure 17: Indirectly standardised ratios for coastal and inland areas Universal Credit Health claimant caseload (DWP) per population. (lines show 95% confidence intervals of estimates, where these don't overlap 1 representing the national benchmark, the ratios are considered statistically significantly different to the national rate).

It is not valid to compare local ratios with each other since the local area population structures will differ.

[9] There may be differences in the phase of transition from older schemes to Universal Credit health between England and local claimants so to try ad ameliorate this both caseload population rates are based on a 4-year average, with caseload counts taken on December of each year.

Mental health

Evidence from the health survey for England cited by the CMO report 2021 suggests that there may be a protective effect on the mental health of people in the most socially deprived groups living near to the coast compared to those inland (Garrett et al 2019).

Small area mental health index

The authors of the CMO report 2021 also refer to the Small Area Mental Health Index (SAMHI) developed my researchers from the University of Liverpool. The index '*is a composite annual measure of population mental health for each Lower Super Output Area (LSOA) in England. The SAMHI combines data on mental health from multiple proprietary sources (NHS-Mental health-related hospital attendances, Prescribing data – Antidepressants, QOF - depression, and DWP - Incapacity benefit and Employment support allowance for mental illness) into a single index'* (Daras & Barr 2021).

Small areas across England are ranked according to the index value and divided into 10 equal groups, or deciles (1 is best, 10 is worst). The map below shows the distribution of these groups within our coastal areas. There is an over representation of the worst decile ('10') of MH index scored areas in England found in our coastal area overall, driven mainly by greater proportion found in the East coast area (Figure 18). The mental health scores are associated with deprivation, and more so in the East coast area (Appendix 10: Figure 46).

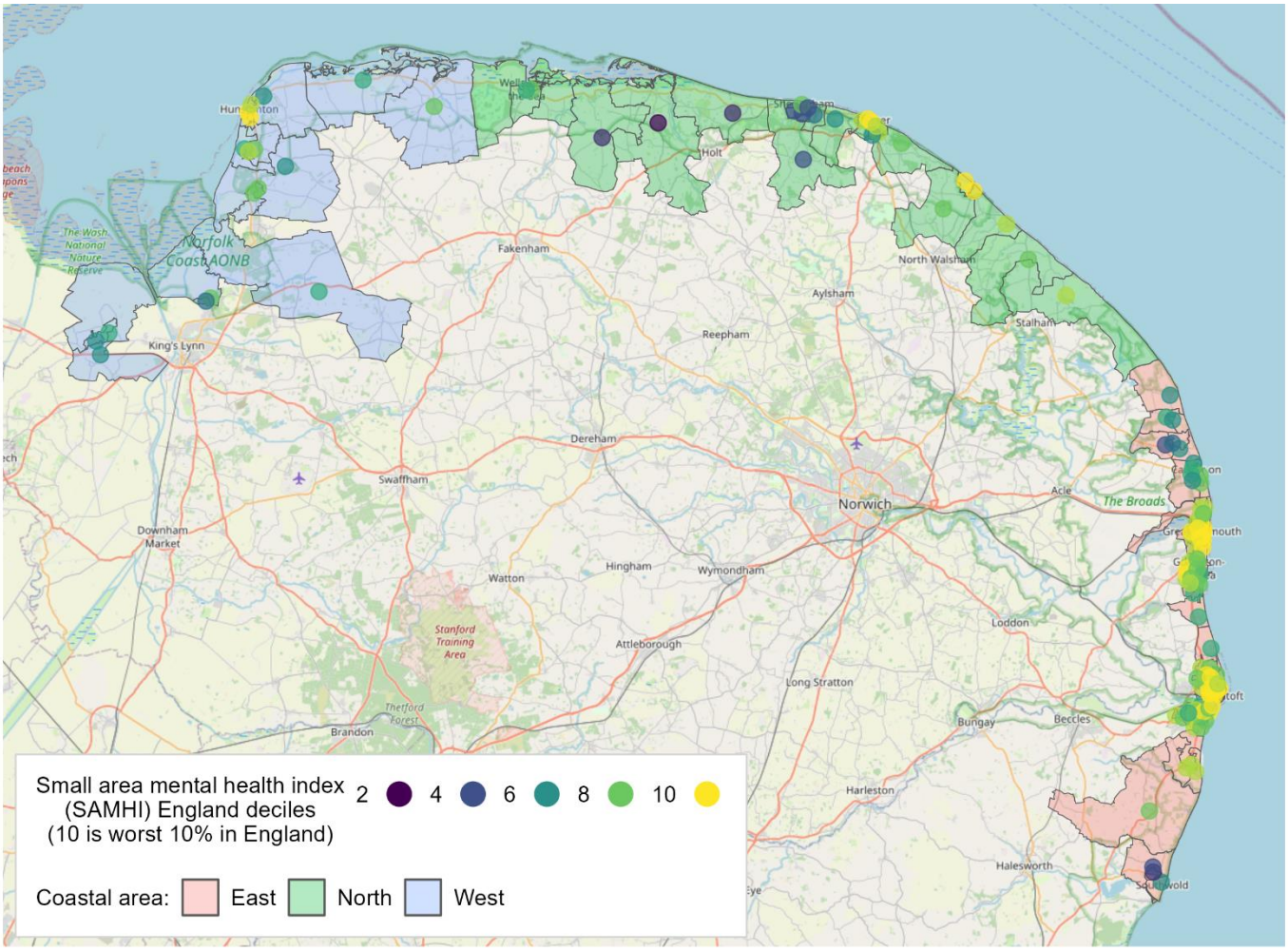

Figure 18: Distribution of small area mental health index (SAMHI) England deciles in Norfolk and Waveney's coastal areas). Decile '1', the better scoring group for mental health, is not represented in our coastal area.

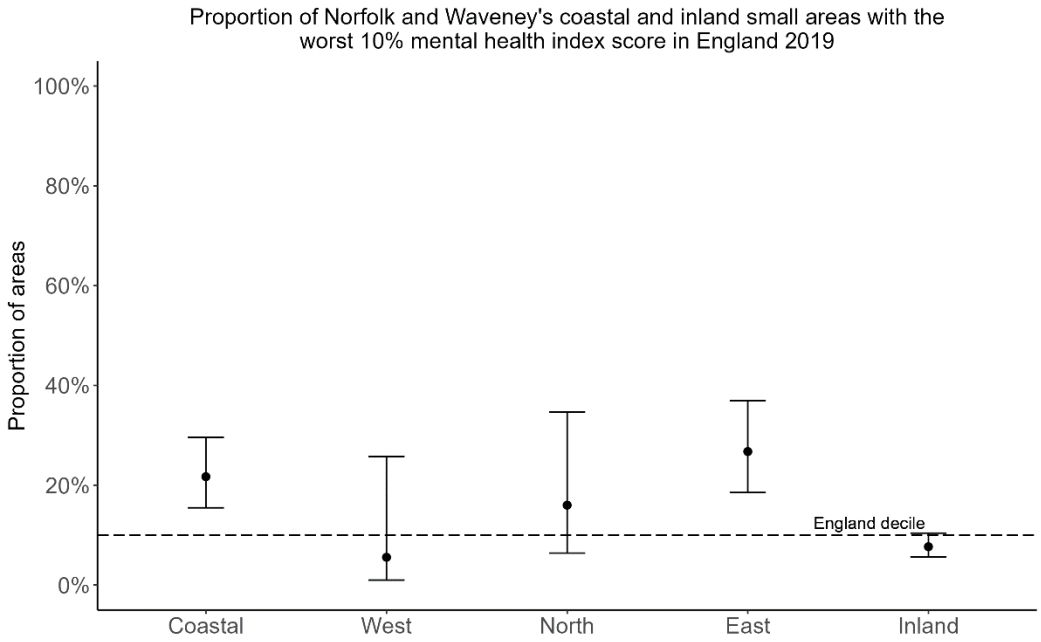

Figure 19: Proportion of small area mental health index (SAMHI) that are in the worst 10% across England in Norfolk and Waveney's coastal areas). The left most category, 'Coastal', constitutes all small areas within Norfolk and Waveney, combining West, North and East.

Suicide rates

Suicide is a significant cause of death in young adults and is seen as an indicator of underlying rates of mental ill-health (OHID).

Coastal rural and urban populations in Norfolk and Waveney exhibit similar suicide rates to their inland counterparts over this period (Figure 20) and by aggregated rural and urban area (Appendix 10: Figure 47). Comparing rates by deprivation quintiles coastal and inland areas are similar suggesting no coastal excess (Appendix 10: Figure 48).

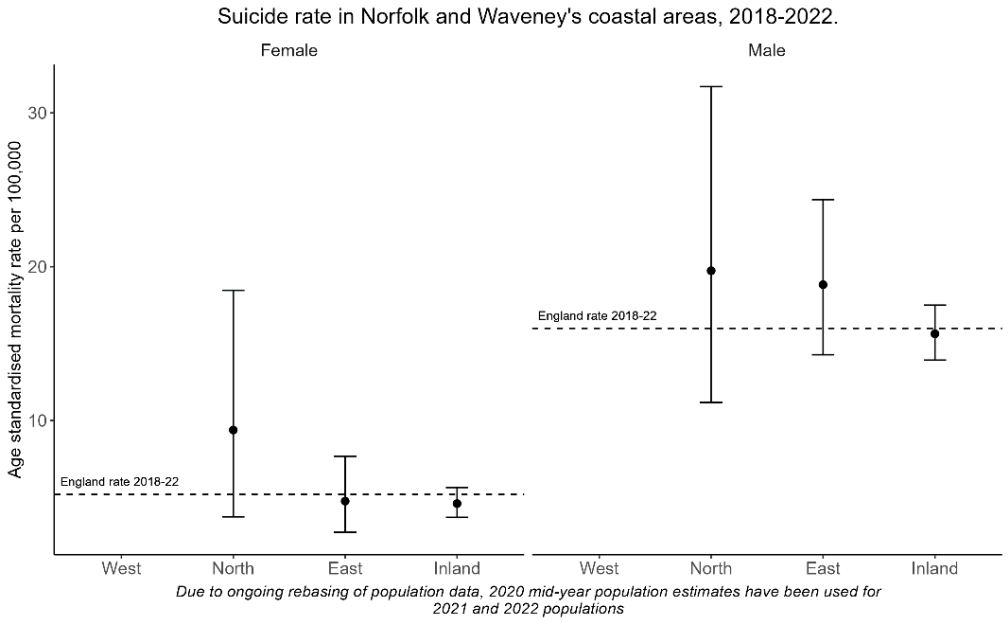

Figure 20: Suicide rates over 2018-22 in Norfolk and Waveney's coastal populations compared to inland. Rates are omitted for the West coastal population where numbers are too low to calculate reliable rates (lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Conclusion

The worst indicators of underlying population health risk *in this report* are associated with the most deprived group of areas. There is a greater proportion of the coastal population living in Norfolk and Waveney's most deprived grouping of areas compared to its inland population.

Coastal deprivation is unevenly distributed, with a greater proportion of the most deprived populations living on the East coast in the large towns of Great Yarmouth and Lowestoft. Smaller areas of deprivation are also found in rural seaside towns of Cromer and Hunstanton, and several parish areas, set amongst less deprived sparse rural village populations of the North and West Coasts.

When looking at the populations living in similar deprivation quintiles across Norfolk and Waveney most health indicator statistics in this report do not consistently differ between those on the coast to those inland.

There are several exceptions. One is the hospital admission rate of 75+ year olds with high-risk frailty scores. Norfolk and Waveney's coastal area rates are greater than inland rates for all deprivation quintiles, even the least deprived.

The Chief Medical Officer's report on Coastal Communities highlighted workforce and service level challenges in delivery of health care in coastal areas. It may be worth considering whether this may be having a greater impact on older populations, requiring further research. Even so, admission rates of 75+ year olds with high-risk frailty scores were still the highest from the East coast and its large urban town populations of Great Yarmouth and Lowestoft, associated with measures of worse deprivation.

Another exception is Universal Credit Health claimants, with Norfolk and Waveney's coastal population having higher ratios to the England average whereas the inland population do not. There is also an indication of a coastal excess in alcohol specific admissions with marginally greater rates in several of coastal population quintiles compared to inland. Though only East coast and the most deprived female quintile population rates exceeded respective England averages.

Given the association of deprivation with worse hospital admissions and mortality rates in this report, and driven by specific town populations, targeting these with local placed based approaches may be appropriate for dealing with health inequalities in Norfolk and Waveney's coastal areas.

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Appendices

Appendix 1: Life expectancy

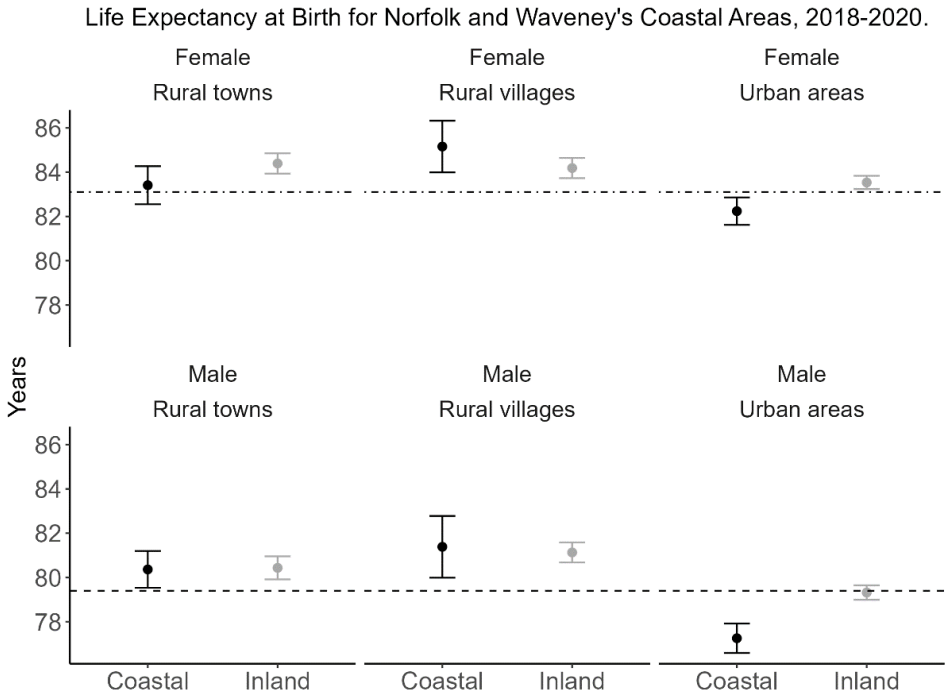

Figure 21: Life expectancy at birth for Norfolk and Waveney's coastal population compared to inland by rural and urban areas (lines show 95% confidence intervals of estimates, where these don't overlap, the estimates are statistically significantly different).

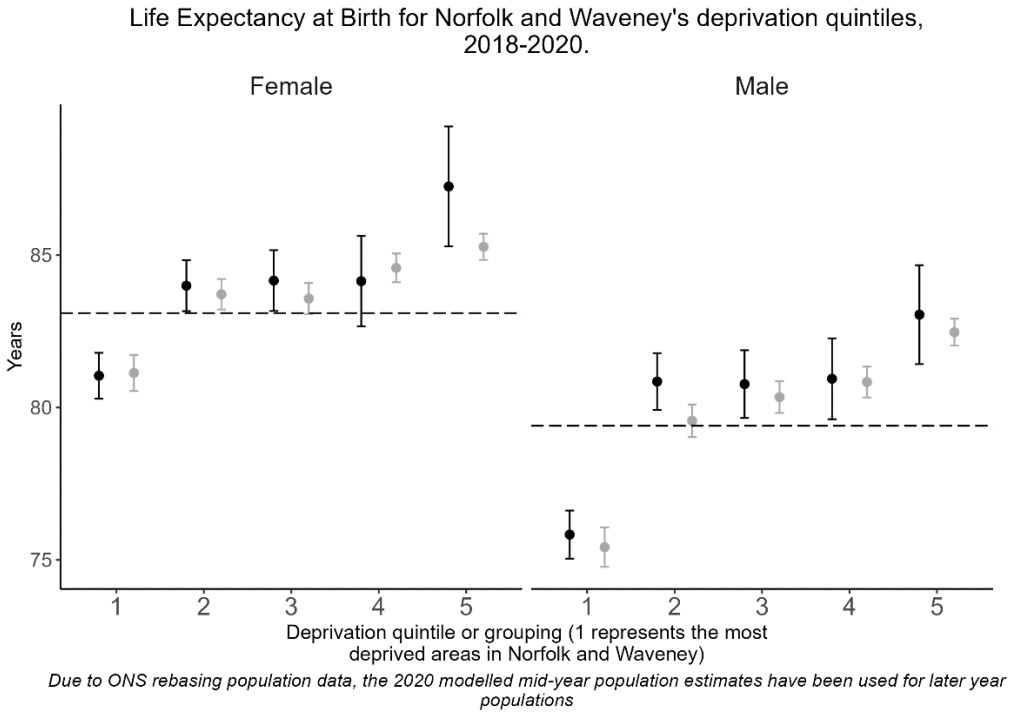

Figure 22: Life expectancy at birth for Norfolk and Waveney's coastal population compared to inland for similar deprivation quintiles (lines show 95% confidence intervals of estimates, where these don't overlap, the estimates are statistically significantly different).

Due to ONS rebasing population data, the 2020 modelled mid-year population estimates have been used for later year populations

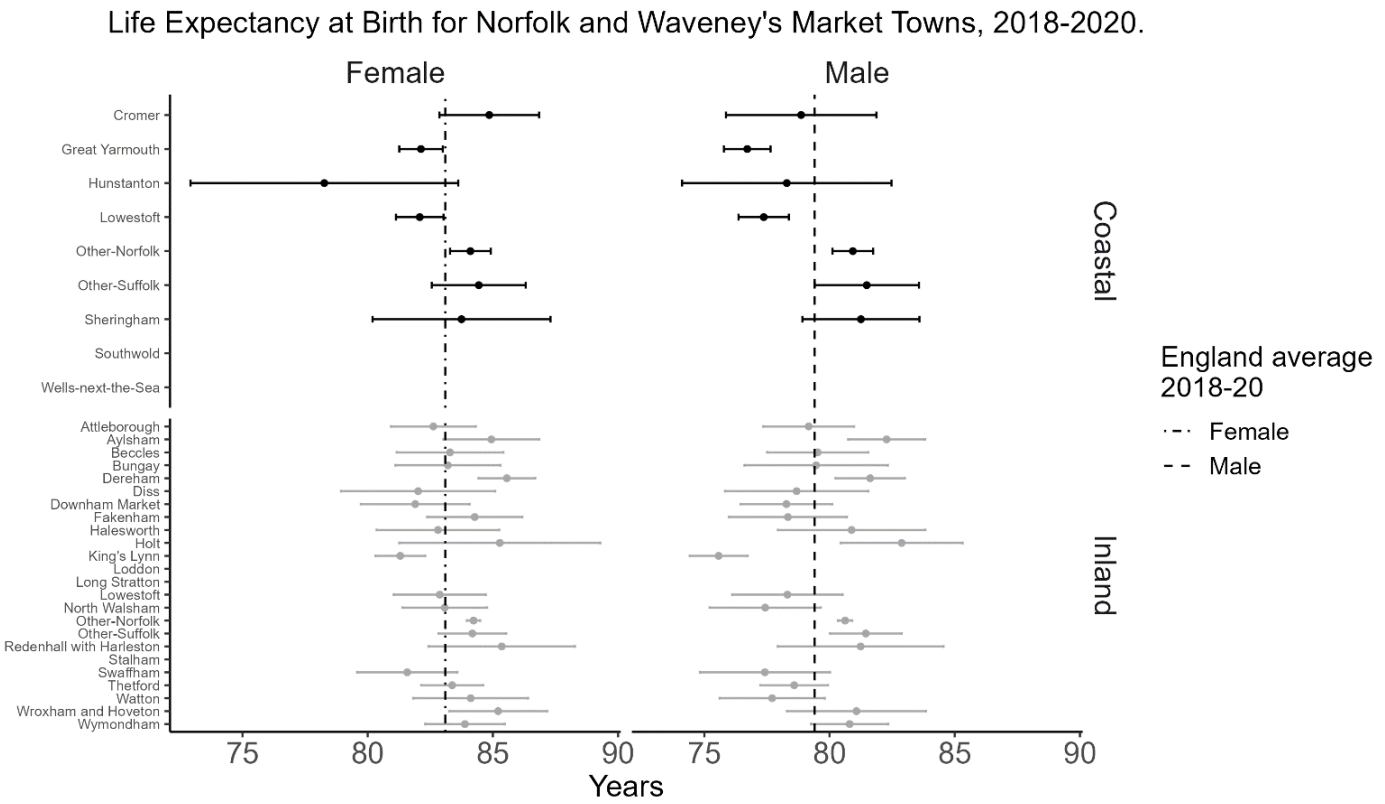

Figure 23: Life expectancy at birth for Norfolk and Waveney's coastal towns compared to inland (lines show 95% confidence intervals of estimates, where these don't overlap, the estimates are statistically significantly different).Note: large town names include in both coastal and inland categories since different areas assigned to the town are within the coastal defined areas others and other built up areas, such as suburban residential or fringe areas, stretch inland.

Appendix 2: Premature mortality

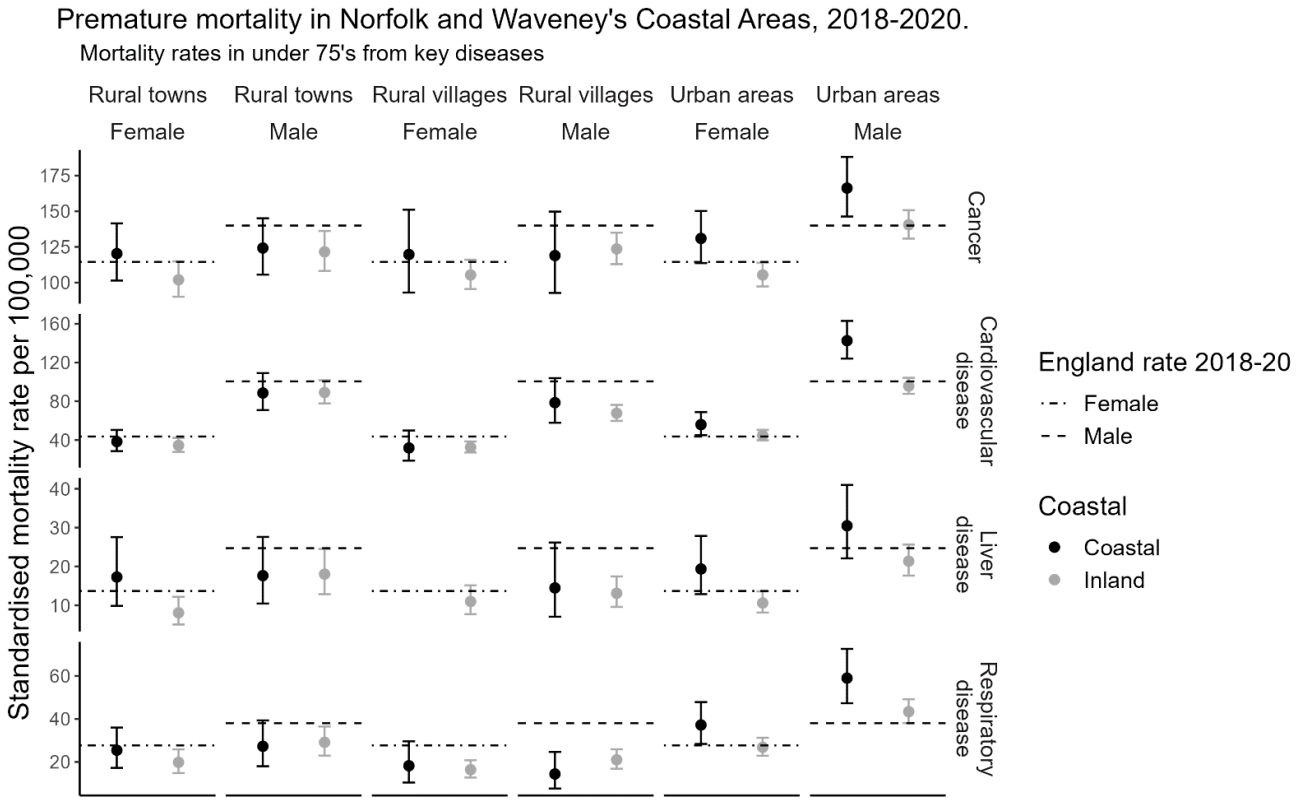

Figure 24 Under 75-year-old mortality rates for key causes comparing Norfolk and Waveney's rural and urban coastal area to those inland. Higher rates of cancer mortality and male cardiovascular and respiratory disease mortality are shown in urban coastal areas than the England rate, whereas the inland rural and urban areas are similar or lower for all rates (lines show 95% confidence intervals of estimates, where these don't overlap, the estimates are statistically significantly different). Missing points are due to too few counts for reliable rates to be calculated.

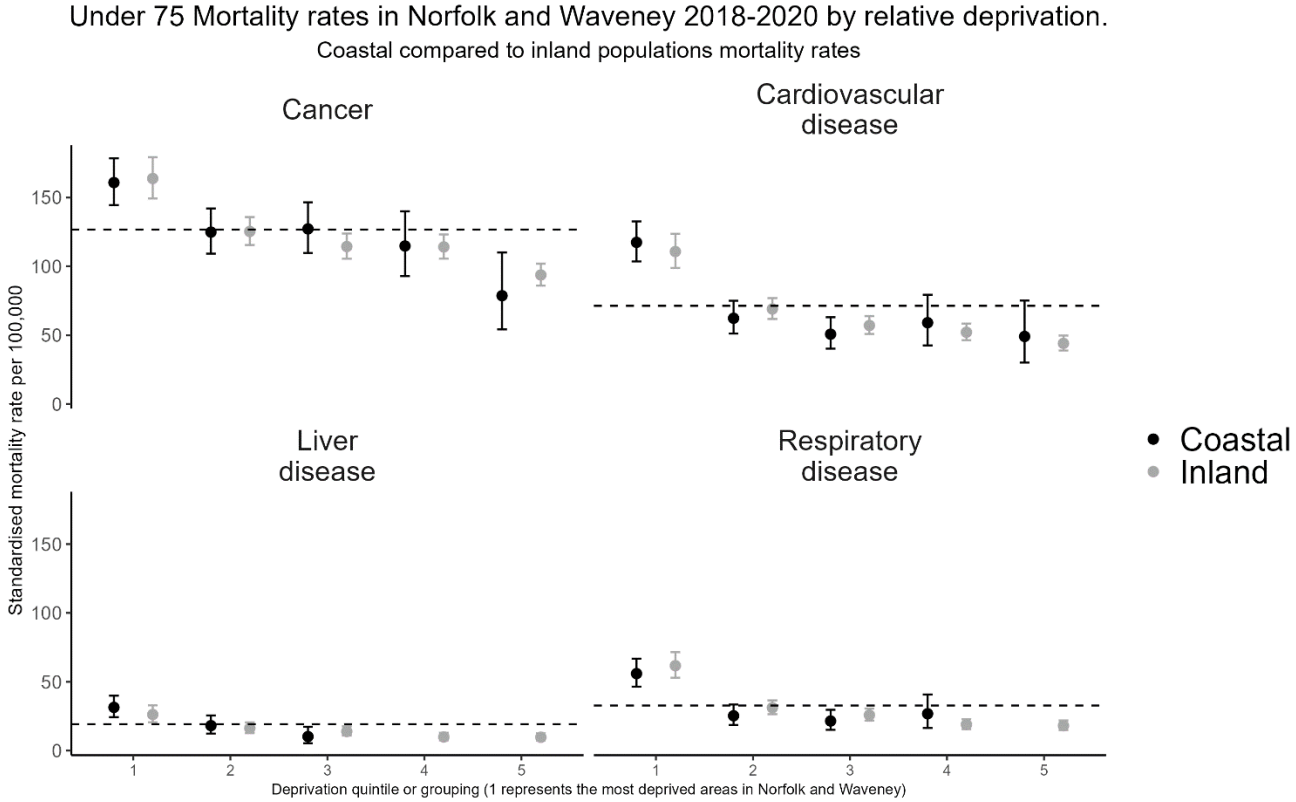

Figure 25 Under 75-year-old mortality rates for key causes comparing Norfolk and Waveney's deprivation quintiles for those living in coastal areas to those inland (lines show 95% confidence intervals of estimates, where these don't overlap, the estimates are statistically significantly different).

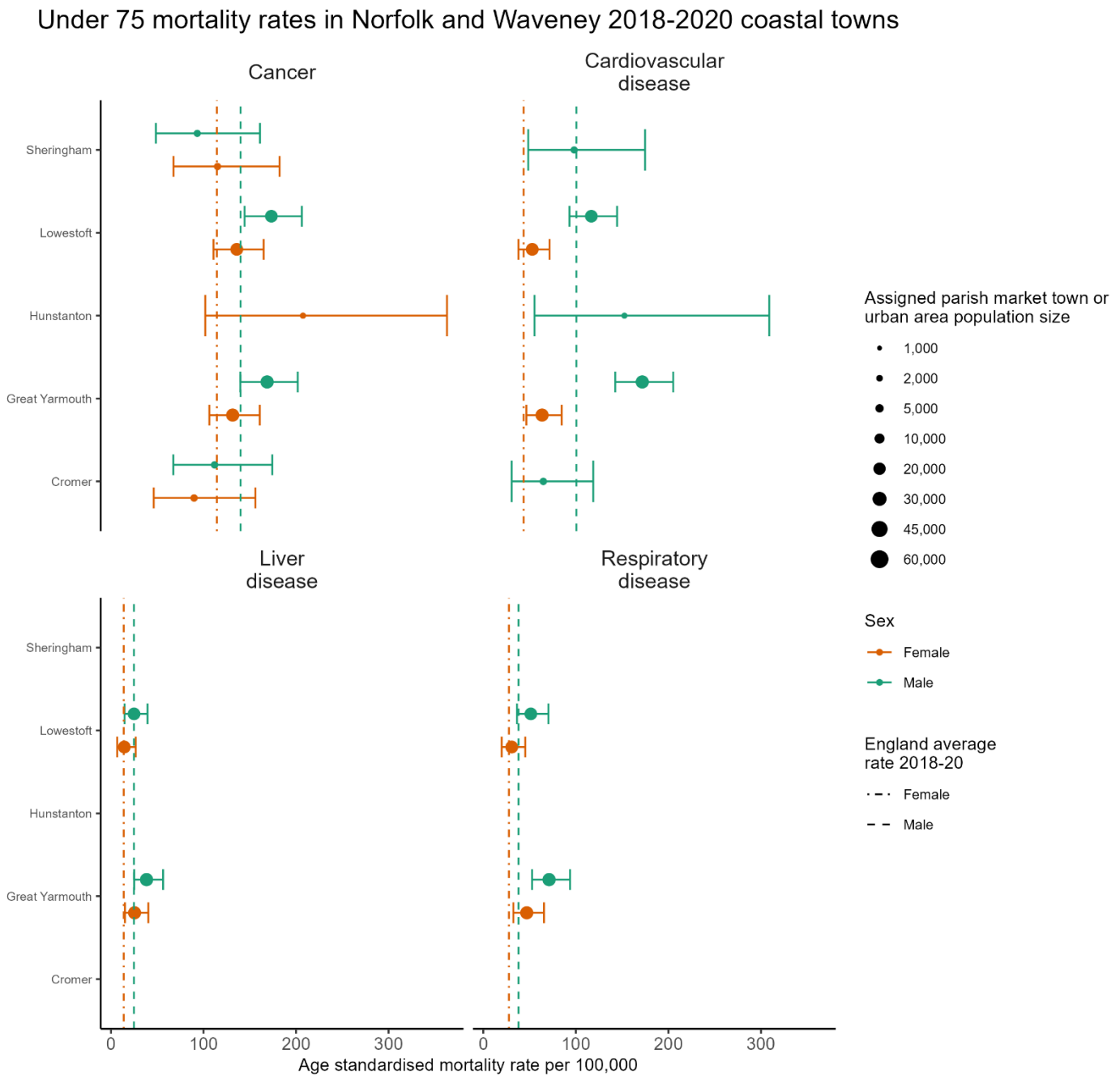

Figure 26 Under 75-year-old mortality rates for key causes comparing Norfolk and Waveney's coastal town areas where the number of deaths are large enough to calculate rates (lines show 95% confidence intervals of estimates, where these don't overlap the national benchmark, the rates are considered statistically significantly different).

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Appendix 3: Frailty in older people

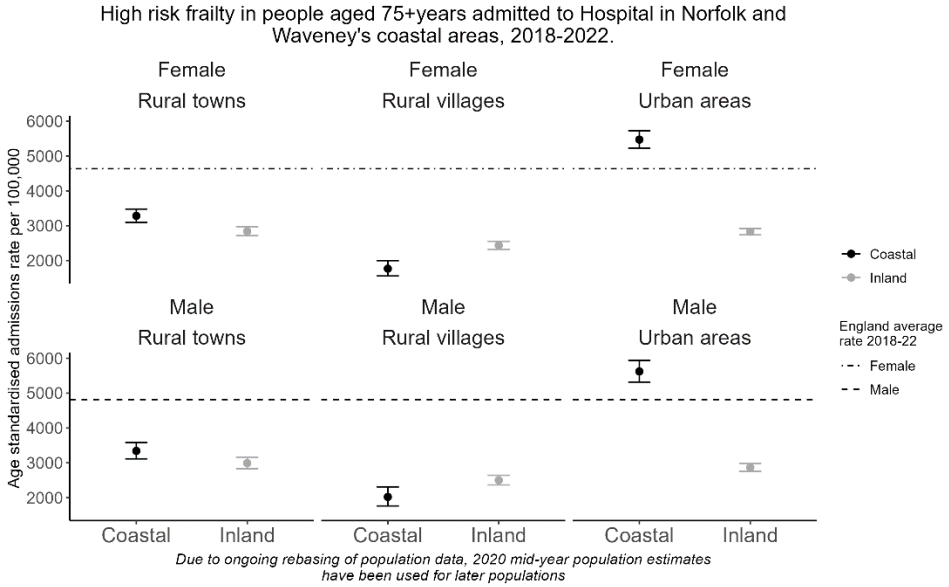

Figure 27: Age standardised admission rates of 75+ year olds with high -risk frailty scores 2018-22 in Norfolk and Waveney's coastal rural and urban areas compared to their counterparts inland.

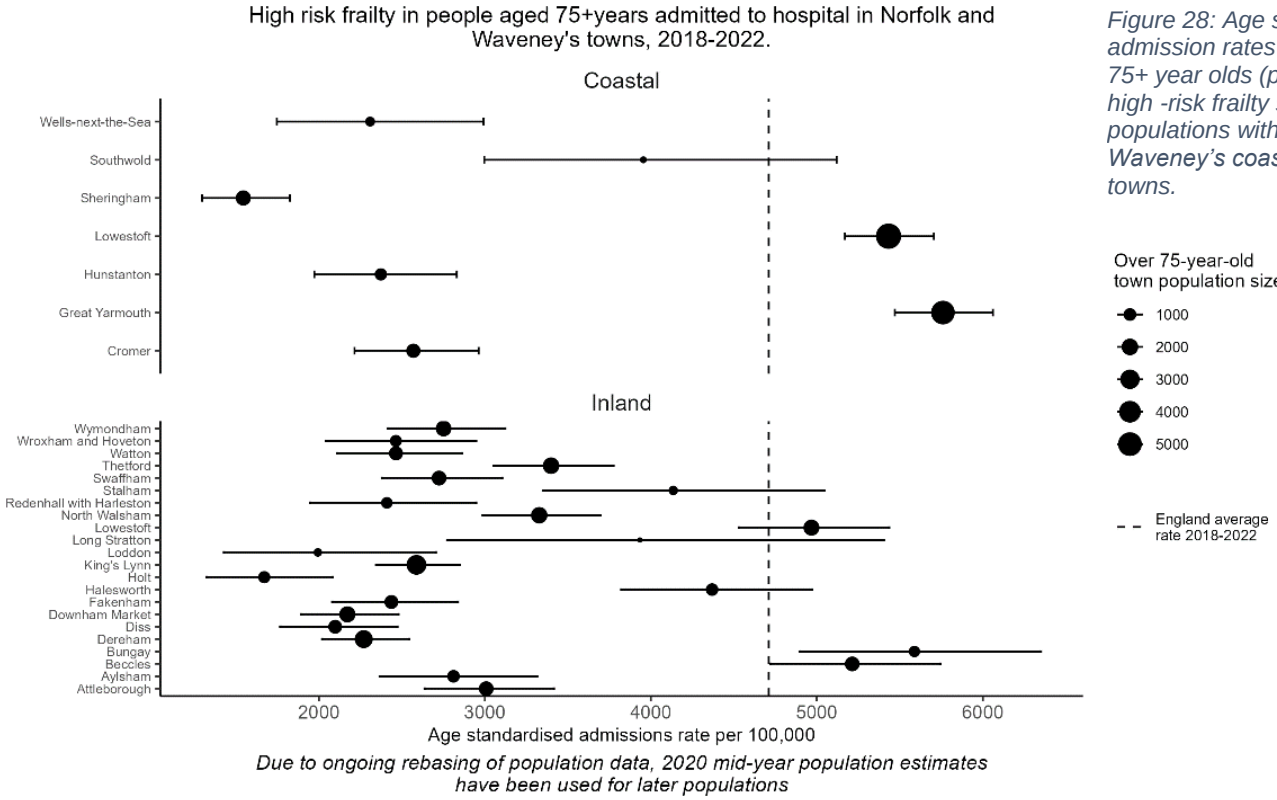

Figure 28: Age standardised admission rates 2018-22 of 75+ year olds (person) with high -risk frailty scores from populations within Norfolk and Waveney's coastal and inland towns.

Appendix 4: Good level of infant development

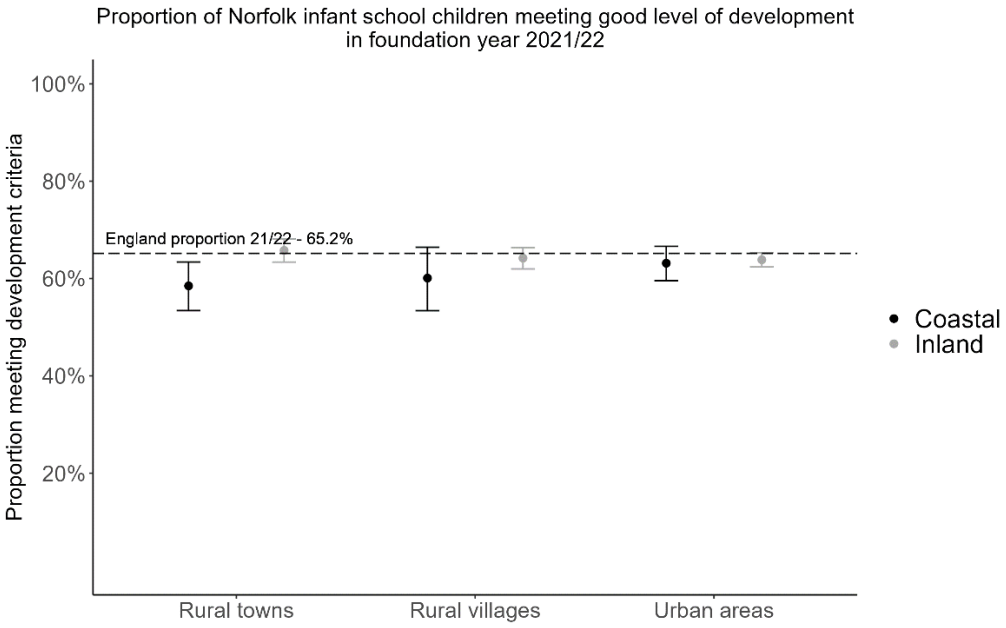

Figure 29 Early years foundations stage proportion of reception year children meeting a good level of development living in Norfolk and Waveney's coastal rural towns villages and urban areas compared to their inland counterparts.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

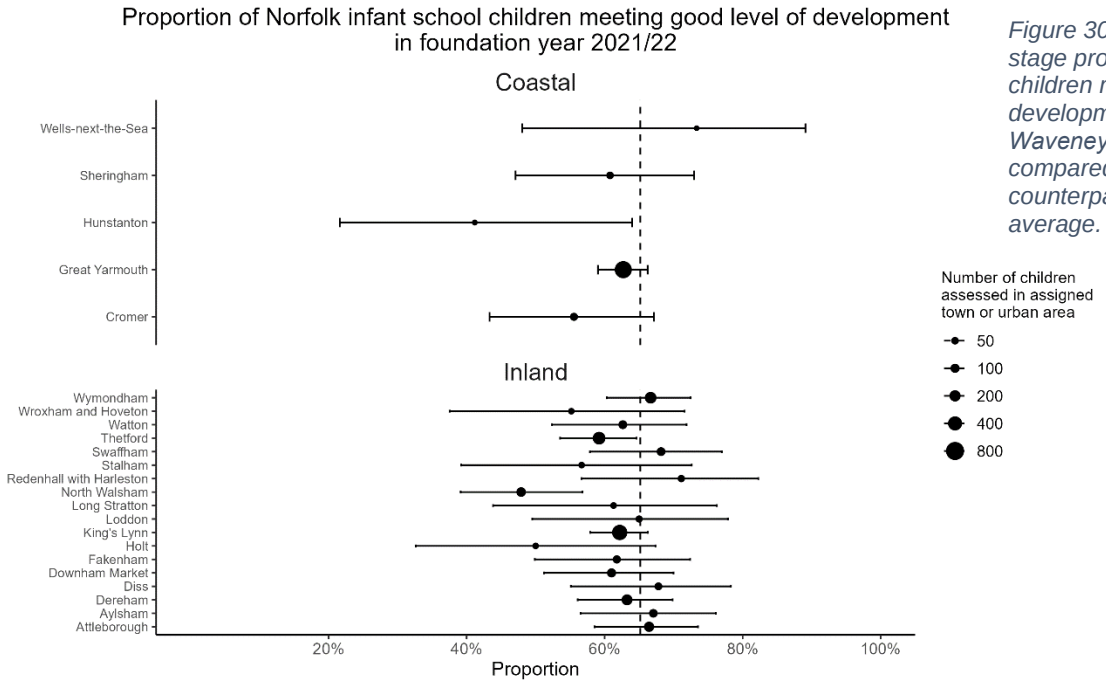

Figure 30 Early years foundations stage proportion of reception year children meeting a good level of development living in Norfolk and Waveney's coastal towns compared to their inland counterparts and the England average.

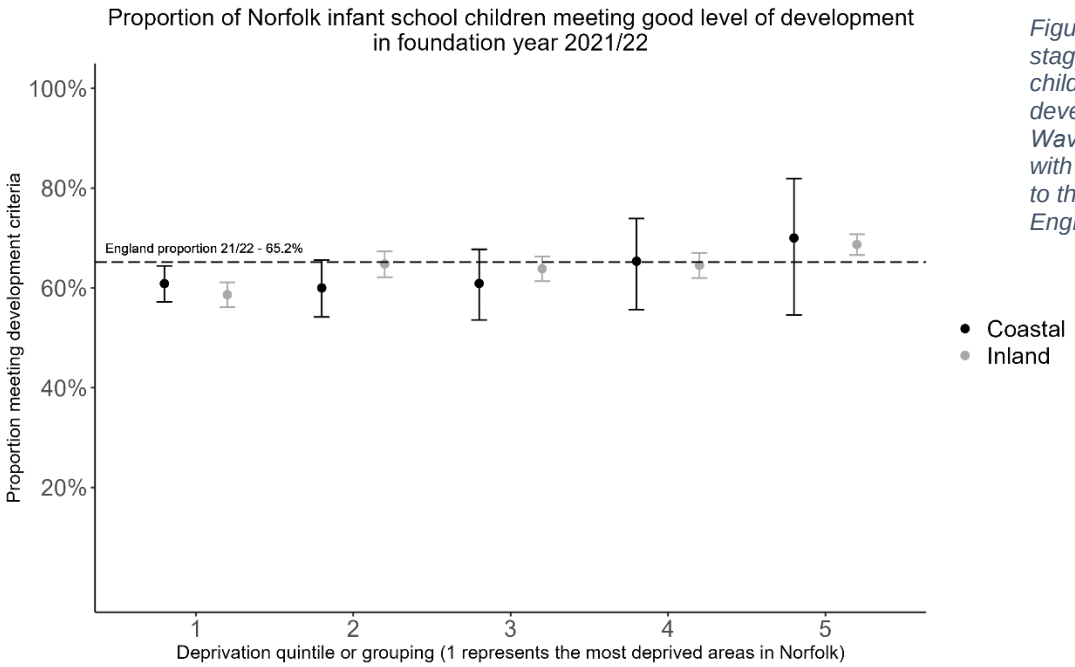

Figure 31 Early years foundations stage proportion of reception year children meeting a good level of development living in Norfolk and Waveney's deprivation quintiles with coastal populations compared to their inland counterparts and the England average.

Appendix 5: Emergency admissions in young children

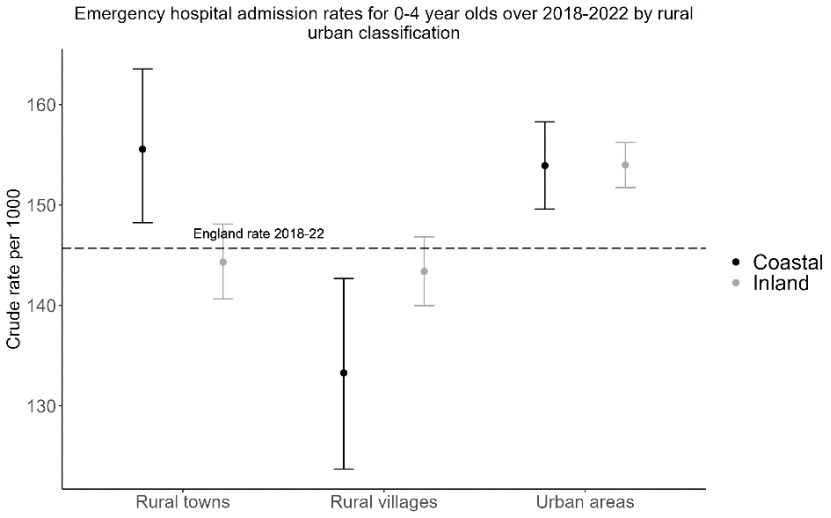

Figure 32: Emergency hospital admission rates in children under 5 years living in Norfolk and Waveney's coastal rural and urban areas compared to inland.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

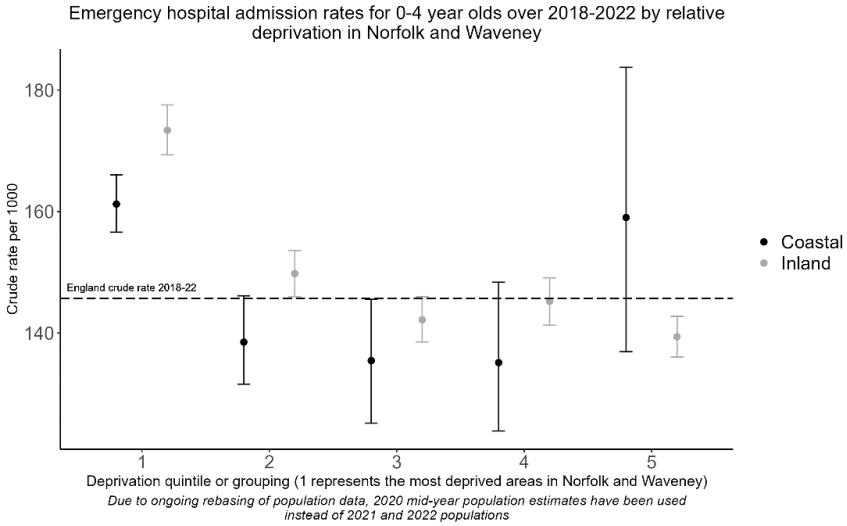

Figure 33: Emergency hospital admission rates in children under 5 years by Norfolk and Waveney's deprivation quintile, comparing coastal to inland.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

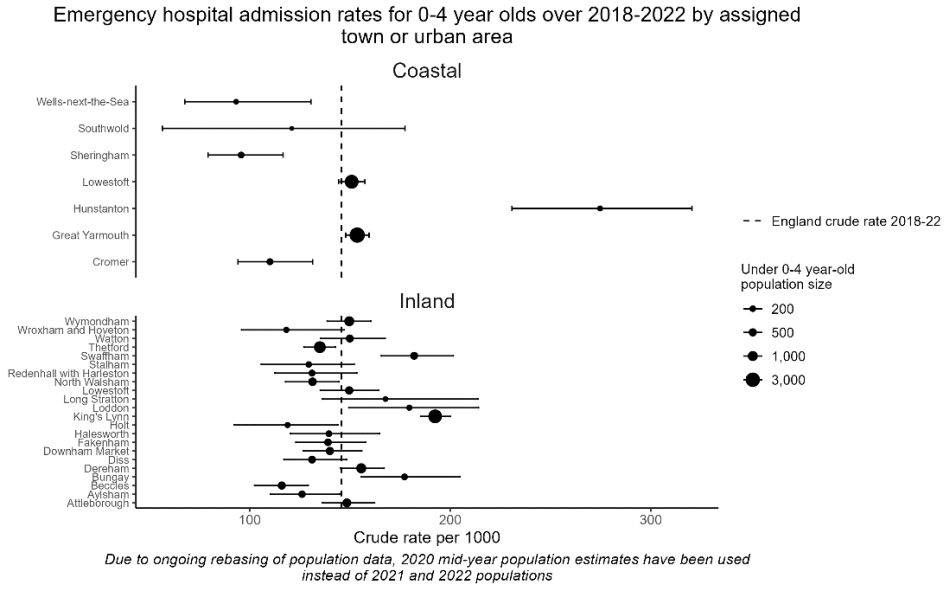

Figure 34: Emergency hospital admission rates in children under 5 years living in Norfolk and Waveney's coastal town populations compared to inland towns (lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Appendix 6: Substance misuse in children and young people

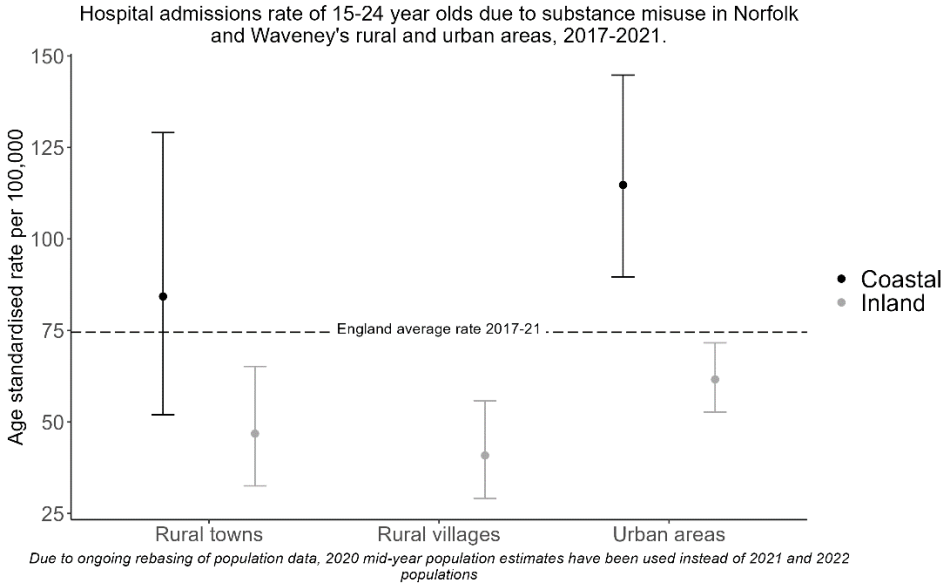

Figure 35:Hospital admission rates for substance misuse in children and young people living in Norfolk and Waveney's coastal rural and urban areas compared to their inland counterparts (lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

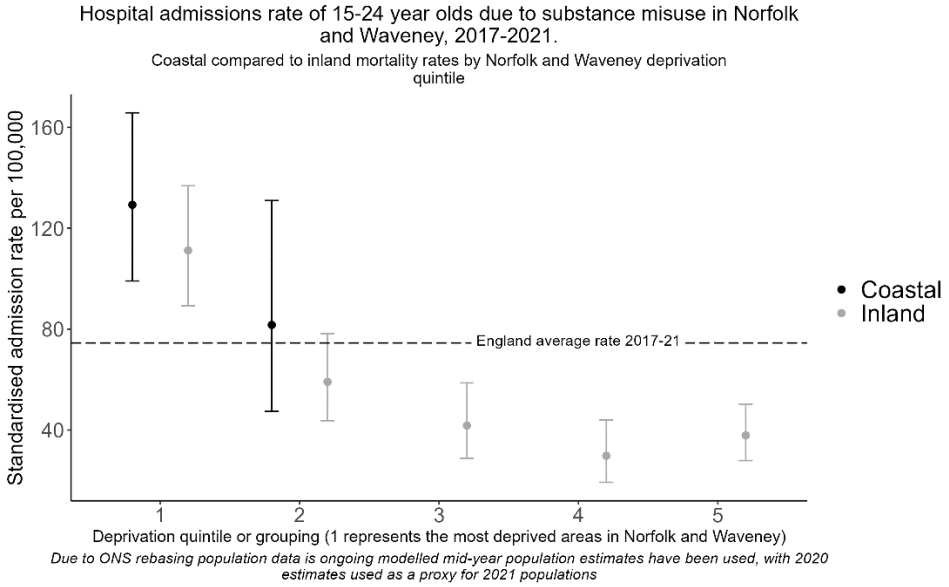

Figure 36: Hospital admission rates for substance misuse in children and young people living in Norfolk and Waveney's deprivation quintiles comparing rates from coastal quintile populations to their inland counterparts. Coastal rates are absent in less deprived quintiles >2 due to too few admissions from these populations to reliably calculate rates.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

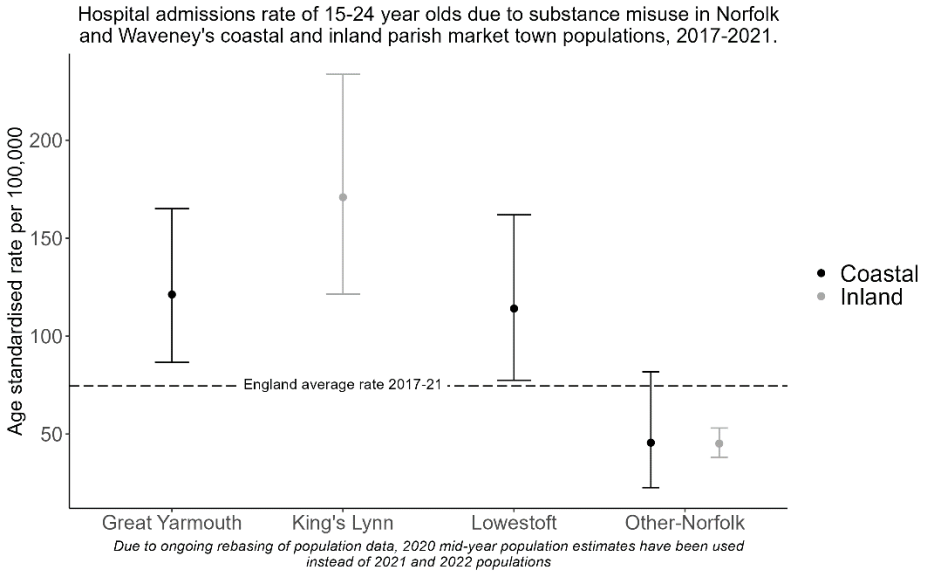

Figure 37: Hospital admission rates for substance misuse in children and young people living in Norfolk and Waveney's towns. Rates are absent due to too few admissions from these populations to reliably calculate rates.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Appendix 7: Alcohol specific hospital admissions

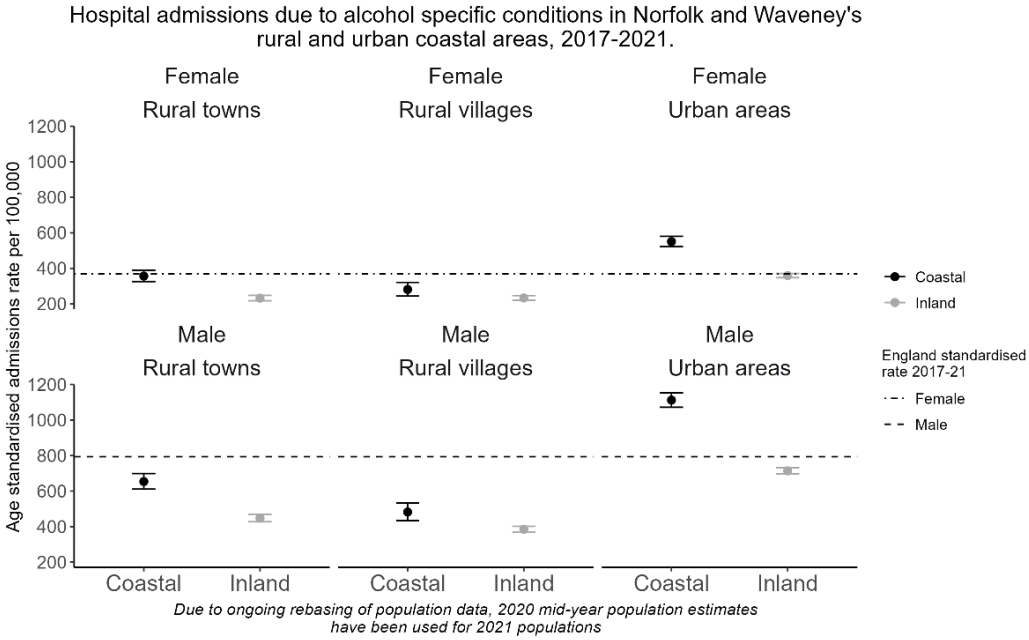

Figure 38: Hospital admission rates over 2017-21 for alcohol specific conditions for people living in Norfolk and Waveney's rural and urban coastal areas compared to their counterparts inland.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

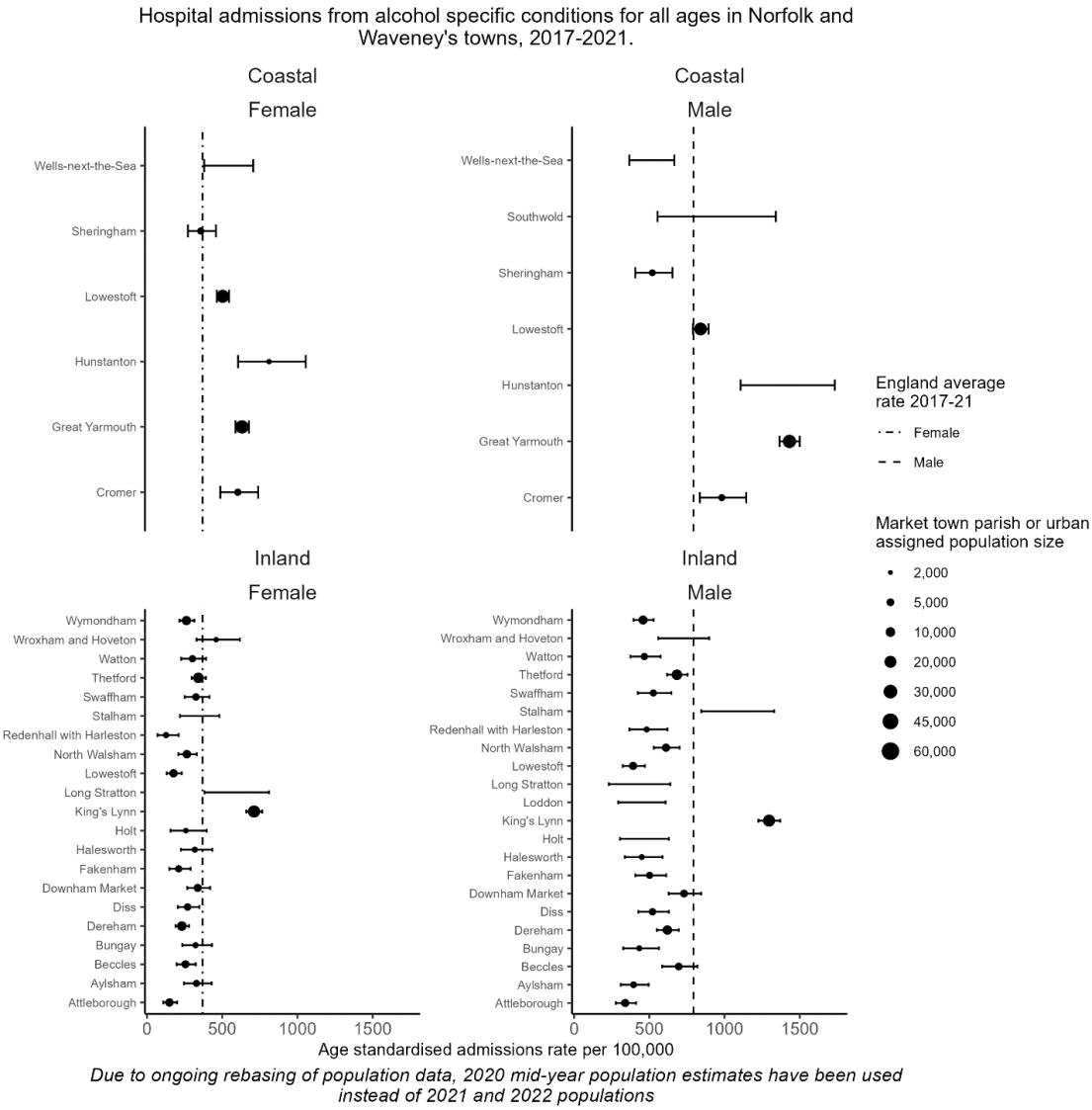

Figure 39: Hospital admission rates over 2017-21 for alcohol specific conditions for people living in Norfolk and Waveney's coastal town populations compared to inland towns (lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Appendix 8: Drug misuse hospital admissions

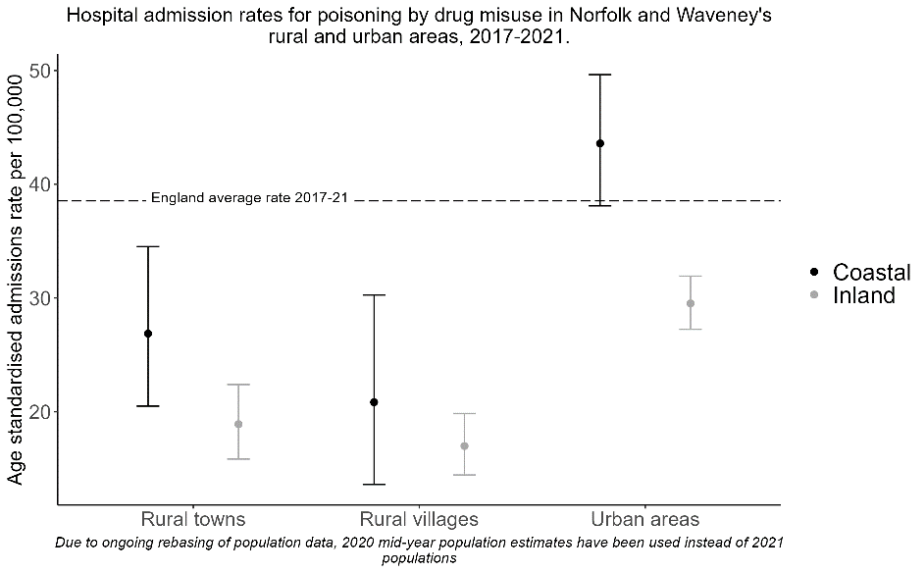

Figure 40: Hospital admission rates over 2017-21 for drug misuse for people living in Norfolk and Waveney's rural and urban coastal areas compared to their counterparts inland.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

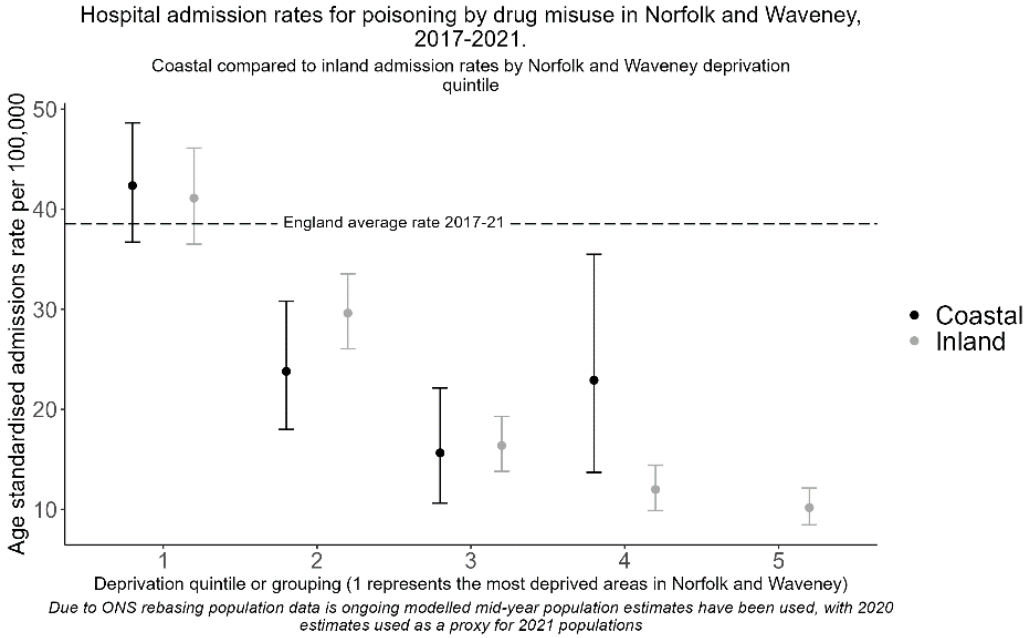

Figure 41: Hospital admission rates over 2017-21 for drug misuse for people living in Norfolk and Waveney's deprivation quintiles comparing rates from coastal quintile populations to their inland counterparts.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

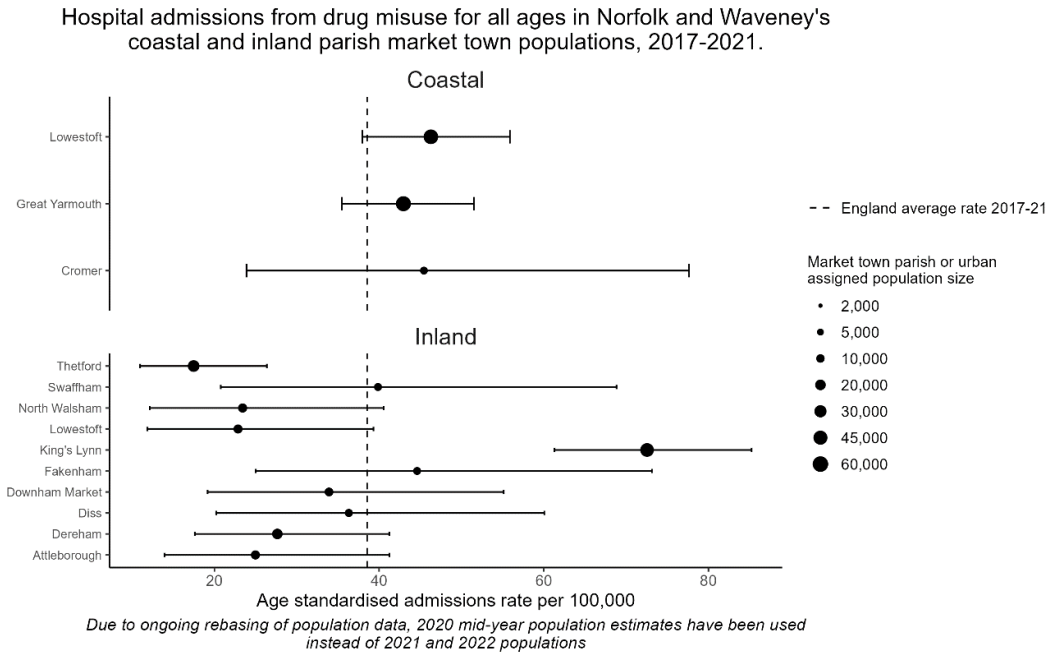

Figure 42: Hospital admission rates over 2017-21 for alcohol specific conditions for people living in Norfolk and Waveney's coastal town populations compared to inland towns (lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

Appendix 9: Universal Credit health claimants

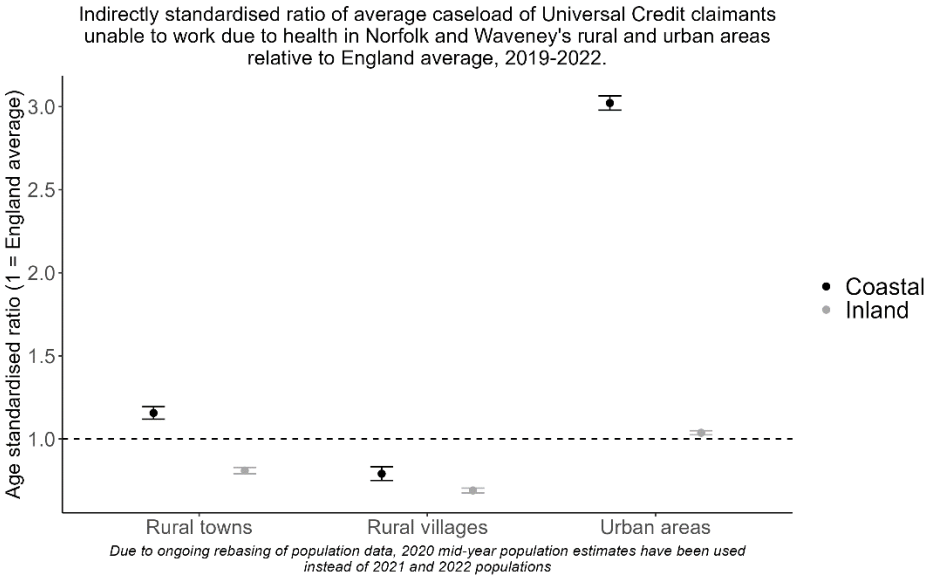

Figure 43: Indirectly standardised ratios for coastal and inland rural and urban areas Universal Credit Health claimant caseload per population. (lines show 95% confidence intervals of estimates, where these don't overlap 1 representing the national benchmark, the ratios are considered statistically significantly greater than to England average caseload proportion).

It is not valid to compare local ratios with other local ratios (and their confidence intervals) since the local area population structures differ and are not standardised like age standardised rates in other parts of this report. This approach is used here since the counts of claimants by age groups locally are small and subject to DWP methods of random variation/omission to prevent identifying individuals. So only the total caseload per small area is reliable for use.

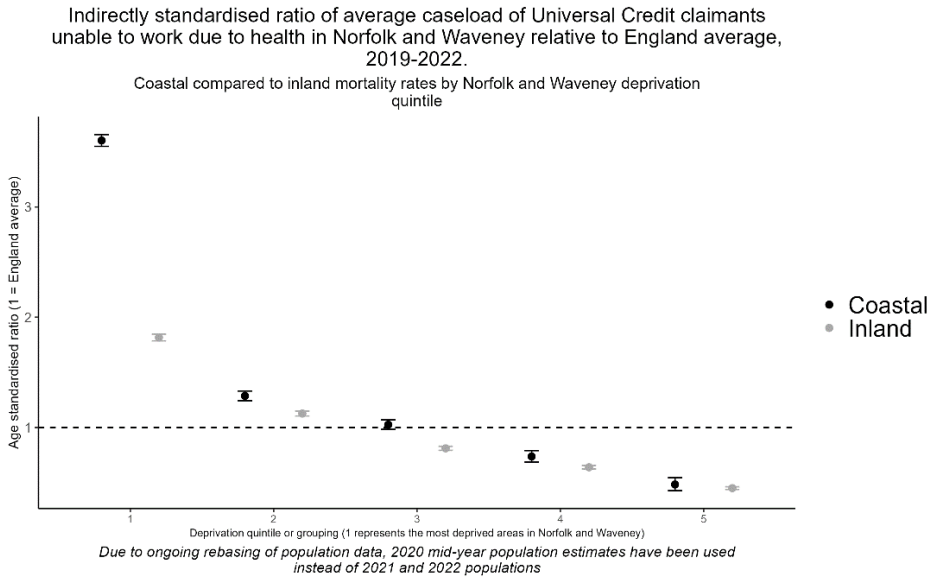

Figure 44: Indirectly standardised ratio for Universal Credit Health claimant caseload population rate by Norfolk and Waveney deprivation quintiles in coast and inland areas. (lines show 95% confidence intervals of ratio estimates, where these don't overlap 1, representing the national benchmark, the ratios are considered statistically significantly different). It is not valid to compare between ratios since the local area population structures will differ.

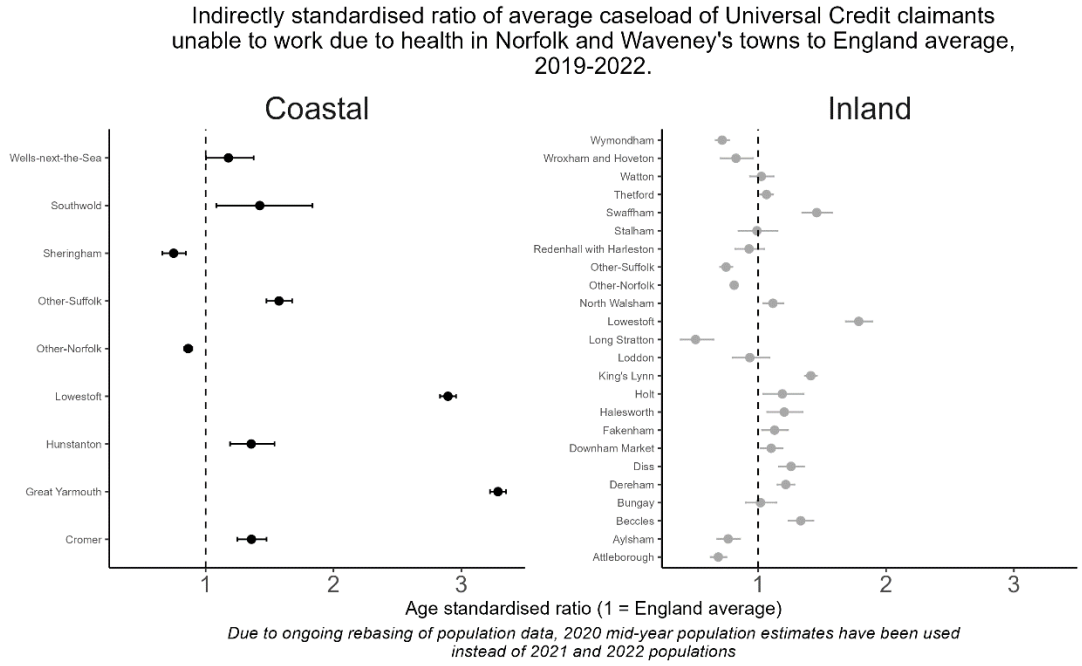

Figure 45: Indirectly standardised ratio for coastal and inland towns Universal Credit Health claimant caseload population rate. (lines show 95% confidence intervals of ratio estimates, where these don't overlap 1, representing the national benchmark, the ratios are considered statistically significantly different). It is not valid to compare between ratios since the local area population structures will differ.

Appendix 10: Mental Health

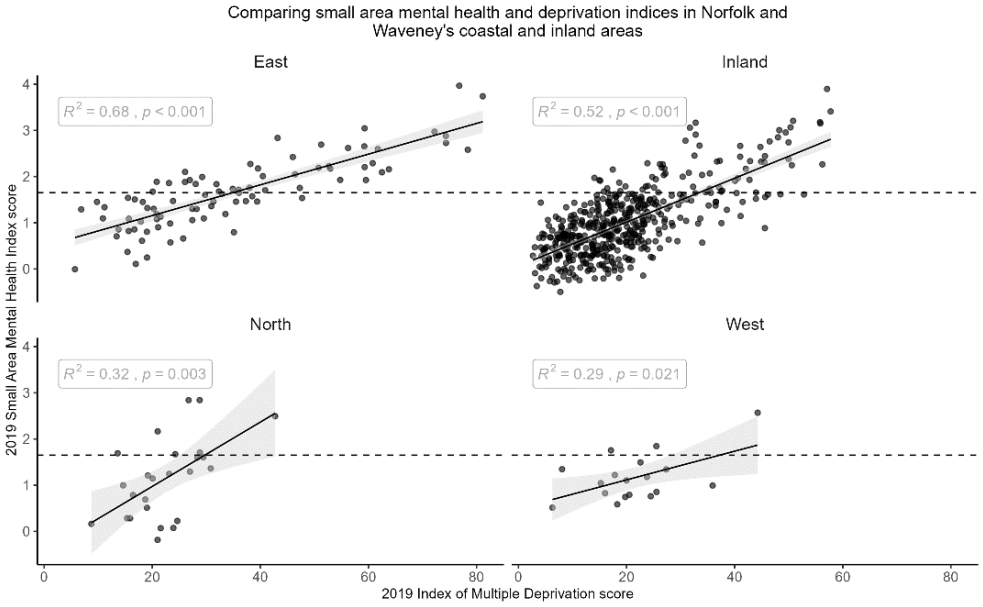

Figure 46 Small area mental health index (SAMHI) scores and their respective deprivation index scores in Norfolk and Waveney's coastal areas.

Coefficients of determination (R^2) represent the strength of association between the small area deprivation and mental health scores (the proportion of variation in mental health index that is associated with variation in deprivation index score). The associations are statistically significant ($p<0.05$) for each area, but the strength of association is greatest in the East coast area. SAMHI is normalised and the dashed line is the critical z-score, the area scores exceeding this are significantly greater than the England average (represented as 0)

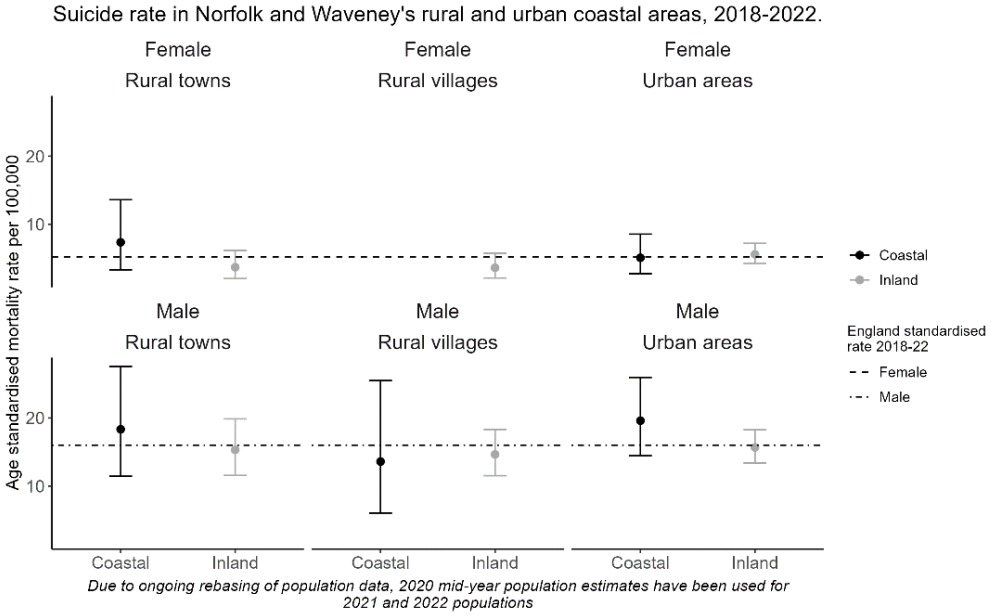

Figure 47: Suicide rates over 2018-22 in Norfolk and Waveney's coastal rural and urban population compared to counterparts inland. Rates are omitted for the female rural village coastal population where numbers are too low to calculate reliable rates (lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).

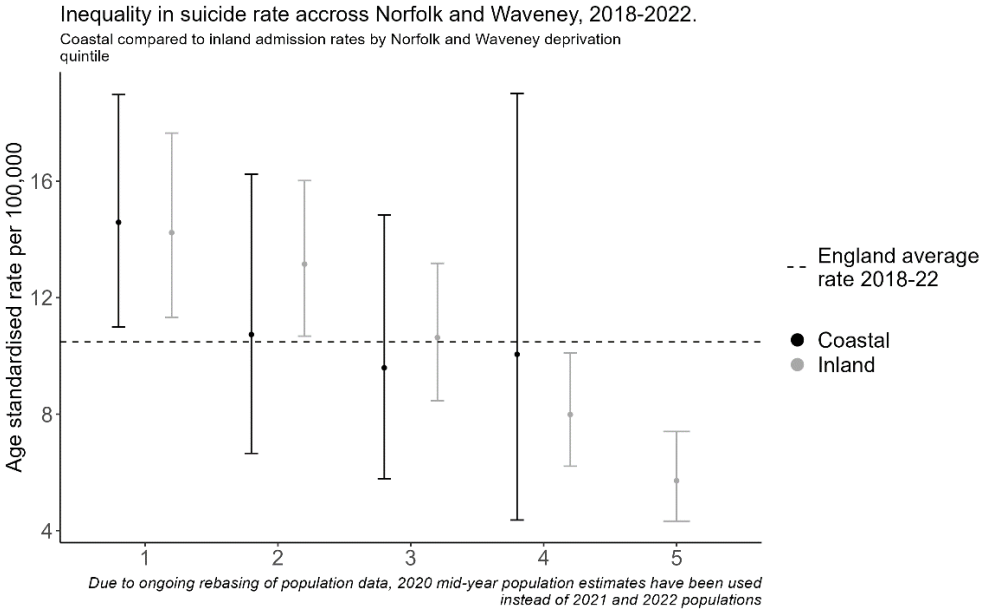

Figure 48: Suicide rates (persons) over 2018-22 for populations within Norfolk and Waveney's deprivation quintiles comparing rates from each coastal quintile population to their inland counterparts.

(lines show 95% confidence intervals of estimates, where these don't overlap the rates are considered statistically significantly different).