

HDIG report 1. Healthy life expectancy and prevention opportunities

Health Data Interpretation Group, 29 November 2023

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The Health Data Interpretation Group (HDIG) at the University of East Anglia (UEA) was funded by Norfolk County Council (NCC) to address several questions in 2023. Previous HDIG reports addressed question 1, 'What is the impact of Covid on health services activity and health outcomes?' with regards to accident and emergency and children's mental health services.

The aim of this report is to answer questions 2 and 3:

- 'What's happening with healthy life expectancy and other top level health measures, analysed overall and by location and socioeconomic status and what are the drivers?'
- *'Where are the opportunities for prevention of poor health? Specifically:*
 - What are the variations between different areas in terms of healthcare, health status and the big risk factors for health?
 - What are the opportunities to improve health?'

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Key findings

- Healthy life expectancy is the number of years a person would expect to live in good health
- Healthy life expectancy at birth was 66.5 years for men and 67.5 years for women in Norfolk and Waveney in 2021
- The gap between highest and lowest healthy life expectancy at birth across 128 small geographic areas in Norfolk and Waveney was 21 years for men (range 52 to 73) and 18 years for women (range 56 to 74), as big as the gap between the most and least deprived areas in England
- The areas experiencing the lowest healthy life expectancy were around Great Yarmouth and the coast, Norwich, and King's Lynn. Risk exposure varied substantially, and people living and dying in these areas have been exposed to high levels of avoidable risks
- Substantial and broadly similar changes in healthy life expectancy for men and women, at birth and at age 65 were associated with changes in risk factors, including weekly income, physical inactivity, air pollution, and high alcohol consumption
- Healthy life expectancy at age 65 for men and women increased by:
 - \circ 2.4 months for each £10 rise in weekly income after housing cost
 - o 6-7.2 months for each 10% more people being physically active
 - \circ 6.4-7.0 months for each 1 µg/m³ less PM 2.5 in air pollution
- A limitation when risk factors have not been measured accurately, as for example with our measure of smoking, is that the estimated associations between them and outcomes such as HLE will be biased towards showing no effect
- Healthy life expectancy could be improved and the big gaps between areas narrowed by reducing the high levels of exposure to risk in the specific geographic areas identified in this report.

Abbreviations

BMI	Body Mass Index
HLE	Healthy Life Expectancy
IMD	English Index of Multiple Deprivation
LE	Life expectancy
LSOA	Lower Layer Super Output Area
MSOA	Middle Layer Super Output Area
LTLA	Lower Tier Local Authority
N&W	Norfolk and Waveney
OHID	Office for Health Improvement and Disparities
QOF	Quality and Outcomes Framework
NCC	Norfolk County Council
N&W	Norfolk and Waveney
ONS	Office for National Statistics
ELSA	English Longitudinal Study of Ageing
A&E	Accident and Emergency
СҮР	Children and Young People
HES	Hospital Episode Statistics
GP	General Practitioner
QALY	Quality adjusted life year
PM2.5	Particulates < 2.5 microns in diameter
FEV	Forced Expiratory Volume
FVC	Forced Vital Capacity
COPD	Chronic Obstructive Pulmonary Disease
NCMP	National Child Measurement Programme
DEFRA	Department for Environment, Food and Rural Affairs

Introduction

Life expectancy (LE) and healthy life expectancy (HLE) are key measures of population health, and HLE is not increasing in the UK (4) (8). LE is the average number of years a person can expect to live given their age ¹. HLE adds a quality of life dimension and is the average number of years a person would expect to live in good health ². The difference between life expectancy and HLE is years lived in poorer states of health. For England, differences between LE and HLE exist by gender and deprivation, with those in the most deprived areas having both a lower LE and HLE, and spending more years in poor health ³ (Figure 1).



Figure 1 Life Expectancy and Healthy Life Expectancy at birth in England, 2018 to 2020, for the 10% of least deprived and 10% of most deprived (IMD 2019) small areas in England for males and females

HLE in England changed relatively little between 2014 and 2019⁴, and in 2022 the UK government set out its ambition to gain five extra years of HLE by 2035 and narrow the gap between local areas where it is highest and lowest by 2030⁵. The health of the population is determined both by disease and by the social determinants of health: 'the conditions in which people are born, grow, live, work and age and inequities in power, money, and resources' ⁶. How well the health service is funded and functions is also important. The greatest historical improvements in HLE followed improvements in sanitation, preventive health care, vaccination programmes, occupational safety regulations and other public health interventions ⁷⁸.

The major causes of all-age death in Norfolk and Waveney in 2019 were cancer (32% of deaths) and cardiovascular disease (31%)⁹. The major risk factors associated with these conditions are smoking, obesity, high cholesterol, and high blood pressure. Poorer self-reported health has been found to be associated with musculoskeletal conditions as well as being male, a diet low in fruit and vegetables, physical inactivity, smoking, low income,

neighbourhood deprivation, loneliness, social isolation, too low or too high body mass index (BMI) and too little or too much sleep ^{4 10 11}. Morbidity is higher in deprived areas with large inequalities in the prevalence of cardiovascular and respiratory conditions, diabetes, anxiety and depression, chronic pain, and alcohol related harm ¹².

The longer-term effects of the Covid pandemic on population health are still emerging. There is much that we do not know about LE and HLE in Norfolk and Waveney (N&W), including variations between locations, prevalence of disease, self-reported good health prevalence, and exposure to associated risk factors. We aimed to estimate LE and HLE for men and women in N&W at birth and age 65, analyse associated conditions and risk factors, and highlight opportunities for local policy makers to improve health.

Methods

Aim

We aimed to identify areas in Norfolk and Waveney where the biggest gains in healthy life expectancy could be expected through action to reduce specific risk factors.

Objectives

To estimate for all 128 Middle Layer Super Output Areas (MSOAs) in Norfolk and Waveney (N&W):

- 1. Life expectancy (LE) and healthy life expectancy (HLE) in 2021 at birth and age 65 for male and female
- 2. Prevalence of long-term health conditions associated with lower LE and HLE
- 3. Prevalence of other risk factors for lower LE and HLE
- 4. Associations between LE and HLE and conditions, risk factors, deprivation and rurality

Geography

MSOAs are geographical areas used for official statistics including the national census. MSOAs typically contain 2,000-6,000 households or 5,000-15,000 people ¹³ (mean 7,000). MSOAs are built from groups of contiguous Lower Layer Super Output Areas (LSOA), which allows accurate aggregation of data from LSOA to MSOA level. MSOA and LSOA boundaries change over time, which is of relevance to some of our risk factor variables which are mapped to area codes from 2011, although LE and HLE derived data is mapped to 2021 area codes. MSOA codes in 2011 and 2021 were matched by comparing area codes, and the number and proportion of matching postcodes for previously unmatched MSOAs used to identify the best MSOA match. This process accounted for all previously unmatched MSOAs, with six postcodes not possible to directly compare between years. A breakdown of this comparison is provided in Appendix 3. Additionally, some variables originate at the Lower Tier Local Authority (LTLA) level, and between 2011 and 2021, Waveney merged with Suffolk Coastal to form East Suffolk. Therefore, LTLA level data for 2021 for Waveney instead uses East Suffolk data.

Calculation of healthy life expectancy and life expectancy

We estimated HLE and LE using the Sullivan method, which is widely used in the UK and for international comparisons ¹⁴⁻¹⁶ This method combines data from period life tables which give the current probability of death based on age and sex, and cross-sectional census data on self-reported health. 'Period' life expectancy is the average number of additional years a person can be expected to live for, if he or she experienced the age-specific mortality rates of the given area and time period for the rest of his or her life. These estimates are therefore suitable for comparing different populations, but they are not projections or forecasts. Census data on the proportion of the population self-reporting good or very good health (out of five levels of self-assessed general state of health) was obtained by age, sex and MSOA for 2021 ¹⁷.

A HLE calculation template in MS Excel ¹⁸ was obtained from the Office for Health Improvement and Disparities (OHID, formerly part of Public Health England) and used to calculate the estimated LE and HLE for each age and sex at MSOA level in N&W using population count, death count and proportion of population reporting good or very good health. Age was grouped into under one year, 1-4 years, then five-year bands, then age 90 and above. We estimated HLE and LE at birth and age 65 years to align with published national data and reports ¹⁹.

LE (and therefore HLE) could not be calculated if the total person-years per MSOA were less than 5,000 or if there were no person-years per year of age ²⁰. We verified this requirement was fulfilled. LE and HLE could not be estimated when there were zero deaths in the year studied for people aged 90 and above per MSOA, so where this occurred we replaced the zero death rate with the mean death rate for people aged 90 and above in N&W. Census self-reported health data was for the complete population and not from a sample, so the age adjustment factor and design effect adjustments were not used (by altering these values to 1).

Risk factors for lower healthy life expectancy and life expectancy

Risk factors were initially considered in three categories:

- 1. Risk factors for lower life expectancy (i.e. mortality)
- 2. Risk factors for poorer self-reported health (i.e. morbidity)
- 3. The wider determinants of health

Exploration of risk factors for lower LE was based on risk–outcome pairs that met criteria for convincing or probable evidence reported in the Global Burden of Disease Study ²¹. We included "Level 3" causes and risk factors for Years of Life Lost and Years Lived with Disability for all ages and sexes in the United Kingdom population (2019), as listed by Global Burden of Disease ⁹. We included risk factors for poorer self-reported health based on the findings of a recent literature review conducted by OHID ⁴.

Many of the risk factors for lower LE and poorer health were health conditions. The Quality and Outcomes Framework (QoF)²² sets out a consistent method for general practices to report the prevalence of selected health conditions at small area level. We modified the method shared by the House of Commons Library²³ to produce prevalence estimates that split GP level data to the resident MSOAs of its patients, by age. This method for combining MSOA populations with general practice and QoF data is described further in Appendix 3.

The Index of Multiple Deprivation (IMD) 2019 is the official measure of relative socioeconomic deprivation for small areas in England ²⁴. The IMD is made up of domains, which are composites of multiple risk factors for the wider determinants of health²⁴. We used the IMD and its domains, except for 'Barriers for housing & services', which is made up of potentially conflicting sub-domains of physical proximity of services and housing affordability. The domains of IMD for 2019 and their relative weightings in the IMD are:

- Income deprivation (22.5%)
- Employment deprivation (22.5%)
- Health deprivation and disability (13.5%)
- Education, skills, and training deprivation (13.5%)
- Crime (9.3%)
- Barriers to Housing & Services (9.3%) (excluded)
- Living Environment Deprivation (9.3%)

We also used the Index of Income Deprivation Affecting Children Index (IDACI) and Income Deprivation Affecting Older People Index (IDAOPI), and estimated average weekly income (total, net, and after housing expenditure). The Rural Urban Classification for 2011 was our measure of rurality, and matched the geography codes to 2021²⁵. We included other risk factors associated with wider determinants of health from the 2019 Health Profile for England ¹⁹.

2021 was the most recent year for which most relevant data was available. If data for 2021 was not available, we used the next most recent year. Data were obtained by sex where possible, and if not available, equal distribution by sex was assumed. The final set of risk factors was selected on the basis of validity, reliability, availability, relevance, and time proximity to 2021 for all MSOAs. Validity was assessed by reviewing whether the data item was a direct measure or proxy measure, whether the sampled population included N&W or could be considered similar and transferrable to the N&W population. Reliability was assessed by reviewing whether data was collected, measured and used in a consistent and transparent manner over time and place or population, and whether there were any data quality issues reported that could affect reliability. Relevance was assessed by considering the similarity between the available data item and the evidence-base used to scope our data search.

We considered health conditions (Table 1) separately from other risk factors for lower LE and HLE (Table 2). The risk factors span a spectrum from so-called 'lifestyle' factors such as smoking, alcohol and physical inactivity, through broader factors such as diet and living arrangements, to environmental factors such as air pollution and then to socio-economic deprivation. Many risk factors for lower LE were also risk factors for lower self-reported poor health or were wider determinants of health. Many are also associated with each other (such as obesity and coronary heart disease) which causes collinearity if they are inserted into a multiple linear regression model, meaning that true effects may not be apparent. Therefore, we constructed a Direct Acyclic Graph ²⁶ to consider the causal relationships and associations, and select risk factors for analysis. For example, we selected 'weekly income after housing' in place of deprivation or other income data, due to its easily interpretable units of measurement. Data sources and methods are described in more detail in Appendix

2.

Table 1 Health conditions

Health condition	Description
Asthma (%)	Prevalence (age 6+)
Atrial fibrillation (%)	Prevalence
Cancer (%)	Prevalence
Chronic kidney disease (%)	Prevalence (age 18+)
Coronary heart disease (%)	Prevalence
COPD (%)	Prevalence of chronic obstructive pulmonary disease
Dementia (%)	Prevalence
Depression (%)	Prevalence (age 18+)
Diabetes mellitus (%)	Prevalence (age 17+)
Epilepsy (%)	Prevalence (age 18+)
Hypertension (%)	Prevalence
Learning disability (%)	Prevalence
Osteoporosis (%)	Prevalence (age 50+)
Peripheral arterial disease (%)	Prevalence
Stroke or TIA	Prevalence
Rheumatoid arthritis (%)	Prevalence (age 16+)

Risk Factor	Description
Rurality (Urban or Rural)	Rural Urban Classification. Rural is the reference
	group.
Index of Multiple Deprivation (Score)	Relative socio-economic deprivation
Income IMD domain (%)	Proportion population in relative income deprivation
Employment IMD domain (%)	Proportion working-age population involuntarily
	excluded from labour market
Education, Skills, and Training IMD	Measure of lack of attainment and skills in local
domain (Score)	children, young people, and adults
Health Deprivation and Disability IMD	Risk of premature death and impaired quality of life
domain (Score)	through poor physical or mental health
Crime IMD domain (Score)	Risk of personal and material victimisation
Living environment (Score)	Quality of indoor and outdoor living environments
Income deprivation affecting children	Proportion children aged 0 to 15 living in income
index (IDACI) (%)	deprived families
Income deprivation affecting older	Proportion people aged 60 or over who experience
people index (IDAOPI) (%)	income deprivation
Weekly total income (GBP)	_ Estimated average per household
Weekly net income (GBP)	_
Weekly net income after housing	
expenditure (GBP)	
Ever smokers (men) (%)	Prevalence
Ever smokers (women) (%)	_
Adult obesity (%)	_
Childhood obesity (%)	_
Poor diet (not meeting 5 portions of	
fruit and vegetables per day) (%)	_
Physical inactivity (adults) (%)	
Low birth weight (%)	Percentage of live births
People aged over 65 living alone (%)	Prevalence
High anxiety (%)	
Falls admissions (men) (rate)	Directly standardised rate per 100,000 hospital
Falls admissions (women) (rate)	admissions due to falls in people over 65
Alcohol admissions (rate)	Directly standardised rate per 100,000 hospital
	admissions for alcohol attributable conditions
Road casualties (n)	Number of casualties on the road reported to police
Air pollution (microgram per metre cubed)	Average daily PM 2.5 concentration

Table 2 Risk factors for lower life expectancy and healthy life expectancy

Statistical analyses

Simple linear regression models were developed to test the association between each risk factor and HLE and LE at MSOA level using R statistical software version 4.2.2. In simple linear regression analyses we applied a significance threshold of p<0.001 to interpret a relationship as significant instead of the convention p<0.05 in view of the multiple tests carried out. Health condition prevalence in QoF is simply the number of people with a condition in each area, with no information about age of those with or without the condition. To estimate the effect of health conditions on LE and HLE, we included the proportion of the population in different 20-year age groups (omitting age 0-19) at MSOA level as controlled covariates.

All variables with a p-value <0.001 in simple linear regression were selected for the multiple linear regression models using a backwards elimination method with the olsrr R package. This sequentially removed variables of least statistical significance, using a significance level of 5%, until only statistically significant variables remained. Linear regression models were built for LE and HLE, for each sex and each age of interest. We excluded QoF health condition variables from the final models in order to assess the effect of the causative risk factors. We selected 'weekly net income after housing expenditure' as the single measure of deprivation, to avoid collinearity from multiple deprivation variables.

Data presentation

Geographic information software was used to map the results across N&W using geographical census boundaries at MSOA level and thematic (choropleth) mapping, to observe clustering of risk factors in specific geographies. We tabulated the relative prevalence deciles of each statistically significant risk factor (predictor variable in simple linear regression analyses) per MSOA in N&W, with 1 meaning an MSOA is among the 10% of N&W MSOAs with the greatest prevalence of the predictor characteristic, and 10 meaning the among the 10% of MSOAs with the lowest prevalence. If data originated at LTLA level, MSOA prevalence was ranked by LTLA level prevalence, with 1 meaning an MSOA is within the LTLA with the highest prevalence, and 8 the least.

Results

Life expectancy and healthy life expectancy

The average LE at birth for N&W MSOAs in 2021 was 82.02 years for men (range 71 to 89), and 85.08 years for women (75 to 92). The average HLE at birth was 66.52 years for men (52 to 73) and 67.48 years for women (56 to 74).

	Life expe	ectancy (ye	ears)		Healthy life expectancy (years)				
	At birth		Age 65	Age 65			Age 65		
	Male	Female	Male	Female	Male	Female	Male	Female	
Mean	82.02	85.08	18.98	21.34	66.52	67.48	10.97	12.18	
SD	3.27	3.06	2.10	2.27	4.28	3.99	1.78	1.85	
Range	71 - 89	75 - 92	14 - 27	13 - 27	52 - 73	56 - 74	6 - 16	5 - 15	

Table 3 Life expectancy and healthy life expectancy in Norfolk and Waveney (2021) at birth and age 65

We found that changes in risk factor exposures were associated with substantial changes in LE and HLE (Tables 4 and 5). Index of multiple variation (2019) explained between 54% and 79% of the variation in healthy life expectancy, and between 21% and 46% of the variation in life expectancy. That is: R square values for correlation between index of multiple deprivation and healthy life expectancy were 0.79 and 0.58 for males at birth and at age 65, and 0.76 and 0.54 for females at birth and at 65. R square values for life expectancy were 0.46 and 0.26 for males at birth and at age 65, and 0.26 and 0.21 for females at birth and at 65.

The risk factors that were highly significantly associated (p<0.001) with lower LE and HLE at birth or age 65 (in 2021) for men and/or women in simple linear regression were prevalence of adult obesity, childhood obesity, physical inactivity, a diet not meeting five portions of fruit and vegetables on a usual day, people aged over 65 living alone, rate of alcohol attributable hospital admissions, air pollution, IMD (as well as Employment, Education, Health Deprivation and Crime domains), IDACI, IDAOPI, and living in an urban area (Table 4). Higher weekly income (total, net, and net after housing expenditure) was highly significantly associated with longer LE. The prevalence of people who have ever smoked was also highly significantly associated (p<0.001) with lower HLE at age 65 (in 2021) for men.

LE at birth, using simple linear regression (Table 4), dropped by:

- 4.5 (95% Cl 2.0 to 7.1) years for men per 10% increase in prevalence of obesity
- 2.0 (0.9 to 3.0) years for women per 10% increase in prevalence of physically inactive adults
- 2.3 (1.1 to 3.6) years for men per 10% greater prevalence of people not eating five portions of fruit and vegetables on a usual day
- 2.2 (1.5 to 2.8) years for men and 1.3 years (0.2 to 2.6) for women per 10% increase in prevalence of people aged over 65 living alone
- 0.6 (0.5 to 0.8) years for men and 0.3 (0.2 to 0.5) for women per 10% increase in the rate of

alcohol attributable admissions to hospital

- 2.04 (1.11 to 2.96) years for men and 1.45 (0.56 to 2.34) for women for each 1 microgram per cubic metre increase in PM 2.5 (air pollution).
- 0.3 (0.3 to 0.4) years for men and 0.3 (0.2 to 0.3) for women per £10 fall in weekly income after housing expenditure
- 3.7 (3.1 to 4.4) years for men and 2.7 (2.0 to 3.5) for women per 10% increase in prevalence of income deprivation
- 2.42 (3.49 to 1.36) years for men and 1.69 (2.72 to 0.66) for women living in an urban compared to a rural area

HLE at age 65, using simple linear regression (Table 5), dropped by:

- 2.7 (95% CI 1.3 to 4.0) years for women per 10% increase in prevalence of obesity
- 0.6 (0.1 to 1.2) years for men for each 10% increase in prevalence of people who have ever smoked
- 1.1 (0.5 to 1.7) years for men and 1.1 (0.5 to 1.8) for women per 10% increase in area prevalence of adult physical inactivity
- 1.7 (1.0 to 2.3) years for men and 1.6 (0.9 to 2.3) for women per 10% greater prevalence of people not eating five portions of fruit and vegetables on a usual day
- 1.2 (0.9 to 1.5) years for men and 1.2 (0.8 to 1.5) for women per 10% increase in prevalence of people aged over 65 living alone
- 0.3 (0.2 to 0.4) years for men and 0.3 (0.2 to 0.4) for women per 10% increase in the rate of alcohol attributable admissions to hospital
- 1.24 (0.74 to 1.73) years for men and 1.18 (0.66 to 1.70) for women for each 1 microgram per cubic metre increase in PM 2.5 (air pollution)
- 0.24 (0.2 to 0.3) years for men and 0.2 (0.2 to 0.3) for women per £10 fall in weekly income after housing expenditure
- 2.3 (2.0 to 2.6) years for men and 2.2 (1.9 to 2.6) for women for each 10% increase in prevalence of income deprivation
- 1.5 (0.93 to 2.07) years for men and 1.43 (0.83 to 2.03) for women living in an urban compared to a rural area

Risk factor	Value	Male at age 0 (years)		Female at age 0 (years)		Male at age 65 (years)		Female at age 65 (years)	
Adult obesity (%)	10.7	-0.45	(-0.71, -0.20)	-0.34	(-0.59, -0.09)	-0.13	(-0.30, 0.05)	-0.21	(-0.40, -0.02)
Ever smokers (%)	51.5	-0.10	(-0.21, 0.01)	-0.04	(-0.14, 0.06)	-0.03	(-0.10, -0.04)	-0.04	(-0.12, 0.03)
Childhood obesity (%)	22.4	-0.42	(-0.61, -0.23)	-0.35	(-0.53, -0.17)	-0.27	(-0.39, -0.14)	-0.20	(-0.34, -0.06)
Low birth weight (%)	2.7	-1.24	(-2.41, -0.08)	-0.74	(-1.84, 0.36)	-0.78	(-1.53, -0.04)	-0.75	(-1.56, 0.07)
Physical inactivity (adults) (%)	25.9	-0.12	(-0.23, -0.01)	-0.20	(-0.30, -0.09)	-0.09	(-0.16, -0.01)	-0.11	(-0.19, -0.03)
Diet not meeting 5 a day on usual day (%)	41.7	-0.23	(-0.36, -0.11)	-0.14	(-0.26, -0.02)	-0.13	(-0.21, -0.49)	-0.12	(-0.21, -0.03)
People over 65 living alone (%)	47.9	-0.22	(-0.28, -0.15)	-0.13	(-0.26, -0.02)	-0.10	(-0.14, -0.06)	-0.09	(-0.13, -0.04)
High anxiety (%)	22.7	-0.09	(-0.26, 0.07)	-0.14	(-0.29, 0.01)	-0.05	(-0.15, 0.06)	-0.03	(-0.14, 0.09)
Alcohol admission rate	103	-0.06	(-0.08, -0.05)	-0.03	(-0.05, -0.02)	-0.03	(-0.04, -0.02)	-0.02	(-0.03, -0.01)
Falls admission rate	1308	<0.01	(-0.00, 0.00)	<0.01	(-0.00, 0.00)	<0.01	(-0.00, 0.00)	<0.01	(-0.00, 0.00)
Air pollution $\mu g/m^3$	6.35	-2.04	(-2.96, -1.11)	-1.45	(-2.34, -0.56)	-1.06	(-1.67, -0.45)	-0.91	(-1.58, -0.25)
Road causalities (n)	5.9	-0.12	(-0.28, 0.04)	-0.01	(-0.16, 0.14)	-0.03	(-0.14, 0.07)	-0.05	(-0.16, 0.06)
Weekly total income (£)	£796	0.02	(0.01, 0.02)	0.01	(0.01, 0.02)	0.01	(0.01, 0.01)	0.01	(0.00, 0.01)
Weekly net income (£)	£614	0.03	(0.02, 0.04)	0.02	(0.01, 0.03)	0.02	(0.01, 0.02)	0.01	(0.01, 0.02)
Weekly net income after housing expenditure (£)	£555	0.03	(0.03, 0.04)	0.03	(0.02, 0.03)	0.02	(0.01, 0.02)	0.01	(0.01, 0.02)
Index of Multiple Deprivation (score)	21.6	-0.20	(-0.24, -0.16)	-0.14	(-0.19, -0.10)	-0.10	(-0.13, -0.07)	-0.10	(-0.13, -0.06)
Income IMD domain (%)	13	-0.37	(-0.44, -0.31)	-0.27	(-0.35, -0.20)	-0.19	(-0.24, -0.14)	-0.18	(-0.23, -0.12)

Table 4 Associations between risk factors and life expectancy in Norfolk and Waveney in 2021, using simple linear regression. Data are regression coefficients (95% confidence interval)

Risk factor	Value	Male at a	ale at age 0 (years)		Female at age 0 (years)		Male at age 65 (years)		Female at age 65 (years)	
Employment IMD domain (%)	1	-0.48	(-0.57 <i>,</i> -0.38)	-0.36	(-0.46, -0.26)	-0.24	(-0.30, -0.17)	-0.23	(-0.31, -0.15)	
Education, Skills, and Training IMD domain (score)	21.6	-0.13	(-0.16, -0.10)	-0.09	(-0.13, -0.06)	-0.07	(-0.09, -0.05)	-0.07	(-0.09, -0.04)	
Health Deprivation and Disability IMD domain (score)	0.01	-3.51	(-4.31, -2.71)	-2.58	(-3.41, -1.76)	-1.85	(-2.41, -1.29)	-1.67	(-2.31, -1.04)	
Crime IMD domain (score)	0	-2.80	(-3.45, -2.15)	-2.08	(-2.75, -1.41)	-1.47	(-1.93, -1.02)	-1.43	(-1.94, -0.92)	
and services domain (score)	21.8	0.11	(0.04, 0.18)	0.09	(0.02, 0.15)	0.06	(0.02, 0.11)	0.05	(<0.01, 0.10)	
Living environment domain (score)	21.8	-0.03	(-0.07, 0.02)	-0.01	(-0.05, 0.04)	0.01	(-0.02, 0.04)	-0.01	(-0.04, 0.03)	
Income deprivation affecting children index (IDACI) (%)	16	-0.27	(-0.33, -0.22)	-0.21	(-0.26, -0.15)	-0.14	(-0.18, -0.10)	-0.13	(-0.18, -0.09)	
Income deprivation affecting older people index (IDAOPI) (%)	16	-0.35	(-0.42, -0.29)	-0.24	(-0.32, -0.17)	-0.18	(-0.22, -0.13)	-0.16	(-0.22, -0.11)	
Urban Area (%)	47.1	-2.42	(-3.49, -1.36)	-1.69	(-2.72, -0.66)	-1.36	(-2.06, -0.66)	-1.15	(-1.92, -0.38)	

Note: **Bold** text indicates p < 0.001. Data descriptions are available in Appendix 2.

Risk factor	Value	Male at age 0 (years)		Female at age 0 (years)		Male at age 65 (years)		Female at age 65 (years)	
Adult obesity (%)	10.7	-0.61	(-0.91, -0.30)	-0.69	(-0.96, -0.42)	-0.21	(-0.34, -0.08)	-0.27	(-0.40, -0.13)
Ever smokers (%)	51.5	-0.21	(-0.35, -0.08)	-0.20	(-0.96, -0.07)	-0.06	(-0.12 <i>,</i> - <0.01)	-0.07	(-0.40, 0.19)
Childhood obesity (%)	22.4	-0.75	(-0.98, -0.52)	-0.75	(-0.96, -0.54)	-0.32	(-0.42, -0.23)	-0.29	(-0.40, -0.19)
Low birth weight (%)	2.7	-2.63	(-4.11, -1.15)	-2.30	(-3.69, -0.91)	-0.96	(-1.59, -0.34)	-0.81	(-1.47, -0.15)
Physical inactivity (adults) (%)	25.9	-0.15	(-0.30, 0.01)	-0.21	(-0.35, -0.07)	-0.11	(-0.17, -0.05)	-0.11	(-0.18, -0.05)
Diet not meeting 5 a day on usual day (%)	41.7	-0.39	(-0.55, -0.23)	-0.32	(-0.47, -0.17)	-0.17	(-0.23, -0.10)	-0.16	(-0.23,-0.09)
People over 65 living alone (%)	47.9	-0.37	(-0.44, -0.31)	-0.32	(-0.39, -0.25)	-0.12	(-0.15, -0.09)	-0.12	(-0.15,-0.08)
High anxiety (%)	22.7	-0.07	(-0.29, 0.14)	-0.13	(-0.33, 0.07)	-0.06	(-0.15, 0.03)	-0.06	(-0.15, 0.04)
Alcohol admission rate	103	-0.10	(-0.12, -0.08)	-0.08	(-0.10, -0.06)	-0.03	(-0.04, -0.02)	-0.03	(-0.04, -0.02)
Falls admission rate	1308	<0.01	(-0.00, 0.00)	<0.01	(-0.00, 0.00)	<0.01	(-0.00, 0.00)	0.00	(-0.00, 0.00)
Air pollution μg/m ³	6.35	-3.09	(-4.26, -1.92)	-2.98	(-4.07, -1.90)	-1.24	(-1.73, -0.74)	-1.18	(-1.70, -0.66)
Road causalities (n)	5.9	-0.12	(-0.33, 0.09)	-0.04	(-0.24, 0.15)	-0.05	(-0.14, 0.03)	-0.04	(-0.13, 0.05)
Weekly total income (£)	796	0.03	(0.03, 0.03)	0.03	(0.02, 0.03)	0.01	(0.01, 0.01)	0.01	(0.01, 0.01)
Weekly net income (£)	614	0.05	(0.05, 0.06)	0.05	(0.04, 0.05)	0.02	(0.02, 0.02)	0.02	(0.01, 0.02)
Weekly net income after housing expenditure (£)	555	0.06	(0.05, 0.07)	0.06	(0.05, 0.06)	0.024	(0.02, 0.03)	0.02	(0.02, 0.03)
Index of Multiple Deprivation (score)	21.6	-0.35	(-0.38, -0.32)	-0.32	(-0.35, -0.29)	-0.13	(-0.14, -0.11)	-0.13	(-0.15, -0.11)
Income IMD domain (%)	13	-0.63	(-0.68, -0.58)	-0.58	(-0.63, -0.53)	-0.23	(-0.26, -0.20)	-0.22	(-0.26, -0.19)

Table 5 Associations between risk factors and healthy life expectancy in Norfolk and Waveney in 2021, using simple linear regression. Data are regression coefficients (95% confidence interval)

Risk factor	Value	Male at age 0 (years)		Female at age 0 (years)		Male at age 65 (years)		Female at age 65 (years)	
Employment IMD domain (%)	1	-0.82	(-0.89, -0.74)	-0.75	(-0.83, -0.68)	-0.29	(-0.34, -0.25)	-0.29	(-0.34, -0.24)
Education, Skills, and Training IMD domain (score)	21.6	-0.23	(-0.26, -0.20)	-0.22	(-0.25, -0.19)	-0.09	(-0.10, -0.08)	-0.09	(-0.11, -0.08)
Health Deprivation and Disability IMD domain (score)	0.01	-6.29	(-7.01, -5.57)	-5.82	(-6.50, -5.13)	-2.37	(-2.73, -2.02)	-2.26	(-2.67, -1.85)
Crime IMD domain (score)	0	-4.83	(-5.48, -4.18)	-4.54	(-5.14, -3.94)	-1.81	(-2.12, -1.50)	-1.84	(-2.17, -1.51)
Barriers to housing and services domain (score)	21.8	0.17	(0.08, 0.26)	0.17	(0.09, 0.26)	0.07	(0.03, 0.11)	0.07	(0.03, 0.11)
Living environment domain (score)	21.8	-0.04	(-0.11, 0.02)	-0.02	(-0.08, 0.04)	0.00	(-0.03, 0.03)	-0.01	(-0.03, 0.02)
Income deprivation affecting children index (IDACI) (%)	16	-0.47	(-0.52, -0.43)	-0.17	(-0.20, -0.14)	-0.17	(-0.20, -0.14)	-0.17	(-0.20, -0.14)
Income deprivation affecting older people index (IDAOPI) (%)	16	-0.60	(-0.65, -0.55)	-0.22	(-0.25, -0.20)	-0.22	(-0.25, -0.20)	-0.22	(-0.25, -0.19)
Urban Area (%)	47.1	-3.52	(-4.89, -2.15)	-3.45	(-4.72, -2.19)	-1.50	(-2.07, -0.93)	-1.43	(-2.03, -0.83)

Note: **Bold** text indicates p < 0.001. Data descriptions are available in Appendix 2.

Table 6 Independent associations between risk factors and life expectancy in Norfolk and Waveney in 2021, using multiple linear regression. Data are regression coefficients (95% confidence interval)

	Males at age 0		Females at age 0		Males at age 65		Females at age 65	
Risk factor	Coeff	(95% CI)	Coeff	(95% CI)	Coeff	(95% CI)	Coeff	(95% CI)
Weekly net income								
after housing								
expenditure (£)	0.02	(0.01, 0.03)	0.02	(0.01, 0.03)	0.01	(0.00, 0.02)	0.02	(0.01, 0.02)
Alcohol admissions								
rate	-0.04	(-0.06, -0.02)			-0.02	(-0.03, -0.00)		
Air pollution μg/m ³	-0.93	(-1.70, -0.17)						
Physical inactivity								
(adults) (%)			-0.13	(-0.23, -0.03)				

Note: Coeff=Coefficient; CI=confidence interval. All p <0.05. Data descriptions are available in Appendix 2.

Table 7 Independent associations between risk factors and healthy life expectancy in Norfolk and Waveney 2021, using multiple linear regression. Data are regression coefficients (95% confidence interval)

	Males at	age 0	Females	at age 0	Males at	age 65	Females	at age 65
Risk factor	Coeff	(95% CI)	Coeff	(95% CI)	Coeff	(95% CI)	Coeff	(95% CI)
Weekly net income								
after housing								
expenditure (£)	0.04	(0.03, 0.05)	0.05	(0.04, 0.06)	0.02	(0.01, 0.02)	0.02	(0.02, 0.03)
Alcohol admissions								
rate	-0.03	(-0.05, -0.02)			-0.01	(-0.02, -0.00)		
Air pollution μg/m ³					-0.58	(-0.92, -0.24)	-0.53	(-0.91, -0.15)
Physical inactivity								
(adults) (%)					-0.05	(-0.10, -0.01)	-0.06	(-0.10, -0.01)
People over 65 living								
alone (%)	-0.12	(-0.18, -0.05)	-0.11	(-0.16, -0.05)				

Note: Coeff=Coefficient; CI=confidence interval. All p < 0.05. Data descriptions are available in Appendix 2.

The risk factors that remained significantly associated (p<0.05) with LE in the multiple regression model were weekly net income after housing expenditure, rate of alcohol attributable hospital admissions, air pollution, and physical inactivity (Table 6). LE at age 65 increased in the multiple regression model for men by 0.1 (95% Cl 0.0 to 0.2) years and for women by 0.2 (0.1 to 0.2) for each £10 rise in weekly income after housing expenditure. For men, LE decreased by 0.2 (0.0 to 0.3) years for each 10% rise in the rate of attributable alcohol admissions to hospital.

The risk factors that remained significantly associated (p<0.05) with HLE in the multiple regression model were weekly net income after housing expenditure, rate of alcohol attributable hospital admissions, air pollution, physical inactivity, and people over 65 years old living alone (Table 7).

Healthy life expectancy at age 65, using multiple regression (Table 7), dropped by:

- 0.2 (95% CI 0.1 to 0.2) years (2.4 months) for men and 0.2 (0.2 to 0.3) years (2.4 months) for women for each £10 fall in weekly income after housing expenditure
- 0.10 (0.0 to 0.2) years (1.2 months) for men for each 10% drop in alcohol admissions to hospital
- 0.58 (0.24 to 0.92) years (7 months) for men and 0.53 (0.15 to 0.91) years (6.4 months) for women for each 1 microgram per cubic metre less PM 2.5 concentration in air pollution
- 0.5 (0.1 to 1.0) years for men (6 months) and 0.6 (0.10 to 1.0) years (7.2 months) for women for each 10% more people being physically active.

Prevalence of health conditions

As expected, increasing prevalence of specific health conditions were associated with lower LE and HLE for men and women at birth and age 65 (Appendix 1, supplementary results: Tables 10 and 11). Specifically, associations were observed between lower LE and HLE and higher prevalence of cardiovascular and obesity associated health conditions, conditions associated with or exacerbated by smoking and air pollution (COPD and asthma), depression, learning disability and epilepsy.

Variations in LE, HLE and risk factor exposure between small areas

LE, HLE and risk factor exposure varied substantially across MSOAs in 2021 (Tables 8 and 9). Tables 8 and 9 show results for the 15 MSOAs with the lowest and highest HLE, and results for all 128 MSOAs in N&W are shown in Appendix 1. These tables offer a visual snapshot of the complexity of the drivers of HLE and show that no single cause is solely implicated. The areas experiencing the lowest HLEs were in King's Lynn, Great Yarmouth, Gunton, Thetford (Breckland), Lowestoft and Norwich. The large gaps in HLE between adjacent areas is highlighted by areas in King's Lynn, Great Yarmouth, Breckland and Norwich also experiencing the highest HLEs. Some MSOAs in Great Yarmouth experienced the highest exposure to many risk factors. The red and blue shading in tables 8 and 9 highlights that those areas with the lowest HLE are the same areas that experience the highest exposure to risks, and vice versa. Urban areas were more likely to have low HLE than rural areas.

All the measures of deprivation or poverty were consistently associated with low HLE in all areas. Some patterns emerged by area for other risk factors which highlight opportunities to improve HLE. Areas of Great Yarmouth with lower HLE usually also had higher prevalence of child obesity and of diets not meeting the recommended '5 a day'. Areas of King's Lynn with lower HLE for men and women, were among those with a higher rate of alcohol attributable hospital admissions. For both men and women, the areas of Norwich with lower HLE also had a relatively higher prevalence of smoking.

		ural/urban dassification	fe expectancy at birth, men (years)	ealthy life expectancy at birth, men (years)	fe expectancy at birth, women (years)	ealthy life expectancy at birth, women (years)	fe expectancy at 65 years, men (years)	ealthy life expectancy at 65 years, men (years)	fe expectancy at 65 years, women (years)	ealthy life expectancy at 65 years, women (years)	ver smoked, men (%)	ver smoked, women (%)	lcohol admission (rate)	hildhood obesity (%)	hysical inactivity (%)	ot eating 5-a-day (%)	ving alone at 66 (%)	articulate matter 2.5 (mg per metre cubed)	//D score	4D Income	4D Employment	//D Education	viD Health	VD Crime	VID Living environment	ncome deprivation affecting children index (IDACI)	ncome deprivation affecting older people index (IDAOPI)	rcome, net after housing (weekly, GBP)
Lower tier local authority	MSOA name	2		I		I	10	I		I	ш́ ГО	ш́ ла	4	0	0	Z	1	9	=	=	=	=	<u> </u>	=	=	-	-	-
King's Lynn and West Norrolk	North Lynn	Urban	78	59	78	58	10	6	15	2	58	42	187	25	31	43	54	0	4/	20	18	/0	1	1	25	32	31	425
Great Varmouth	Gorleston West	Urban	/1 81	52	75	57	14	8	17	2	49	44	112	20	29	50	50	7	27	22	19	48	1	0	12	27	25	469
Fast Suffolk	Gunton West	Urban	80	61	79	58	17	8	18	8	49	35	77	24	20	35	53	8	46	27	21	60	1	1	14	32	28	448
Great Yarmouth	Yarmouth North	Urban	80	61	83	62	17	9	18	8	49	44	125	26	29	50	51	6	39	23	17	50	1	1	30	30	24	456
Breckland	Thetford South	Urban	86	66	82	63	23	12	17	9	48	33	101	22	22	43	51	6	30	16	13	61	0	0	6	21	18	496
Great Yarmouth	Yarmouth Central & Northgate	Urban	73	55	84	61	15	7	19	9	49	44	157	26	29	50	57	6	56	29	26	68	1	1	34	33	27	433
East Suffolk	Lowestoft Central	Urban	73	54	79	58	16	7	18	9	49	35	109	24	20	35	57	8	47	27	20	51	1	1	52	38	24	462
Great Yarmouth	Gorleston North	Urban	78	59	81	59	15	8	18	9	49	44	105	26	29	50	54	7	43	25	21	51	1	0	24	34	23	454
East Suffolk	Lowestoft Harbour & Kirkley	Urban	77	57	76	56	17	9	17	9	49	35	148	24	20	35	66	7	54	31	27	52	1	1	45	33	28	458
Breckland	Mundford, Weeting & Forest	Rural	85	68	83	67	20	11	18	10	48	33	75	22	22	43	37	6	20	8	8	33	0	-1	26	9	10	567
Norwich	Heartsease & Pilling Park	Urban	76	59	81	62	15	8	18	10	59	49	123	25	19	48	53	7	35	20	16	52	1	0	17	26	21	469
Norwich	Bowthorpe & West Earlham	Urban	78	61	83	63	14	7	20	10	59	49	123	25	19	48	52	7	34	20	14	48	1	0	7	28	25	438
Norwich	University & Avenues	Urban	85	65	84	64	20	11	19	10	59	49	110	25	19	48	55	7	21	14	9	36	1	0	9	27	22	458
Norwich	City Centre East	Urban	83	65	83	65	18	10	18	10	59	49	126	25	19	48	71	7	25	12	10	20	1	1	33	16	18	550
																_	_			_								
East Suffolk	Oulton Broad West	Urban	83	71	86	71	18	12	23	14	49	35	66	24	20	35	37	7	10	7	7	16	0	-1	6	7	8	602
North Norfolk	Holt & Weybourne	Rural	86	69	88	70	21	13	23	14	57	47	89	22	16	39	48	6	18	9	9	24	0	-1	19	11	9	571
Breckland	East Harling, Garboldisham & Kenninghall	Rural	82	69	91	74	20	12	26	15	48	33	98	22	22	43	35	6	15	7	6	18	0	-1	36	9	8	619
South Norfolk	Trowse, Poringland & Stoke Holy Cross	Rural	83	71	88	73	19	13	24	15	50	36	79	19	19	39	42	6	8	6	5	9	-1	-1	21	7	7	654
Broadland	Spixworth & St Faiths	Rural	89	72	91	74	24	13	26	15	44	37	81	18	22	39	42	6	10	7	6	20	-1	-1	10	8	8	554
South Norfolk	Thurlton, Haddiscoe & Geldeston	Rural	89	73	90	72	27	16	25	15	50	36	62	19	19	39	35	6	20	8	7	19	-1	-1	47	9	9	587
King's Lynn and West Norfolk	Brancaster, Burnham Market & Docking	Rural	84	70	90	73	19	12	25	15	58	42	100	25	31	43	42	6	25	10	9	25	0	-1	42	18	9	619
Norwich	Eaton	Urban	85	73	90	73	20	14	25	15	59	49	81	25	19	48	47	7	8	6	5	8	0	-1	9	10	8	669
King's Lynn and West Norfolk	Wootton	Urban	86	73	88	74	21	14	23	15	58	42	95	25	31	43	36	6	8	4	4	11	0	-2	6	6	5	673
Broadland	Brundall & Cantley	Rural	82	69	90	73	19	12	25	15	44	37	98	18	22	39	40	6	12	7	6	13	0	-1	19	8	7	637
East Suffolk	Southwold, Reydon & Wrentham	Rural	86	71	87	71	21	14	25	15	49	35	71	24	20	35	46	6	17	9	9	22	0	-1	25	17	9	602
North Norfolk	weils & Blakeney	Rural	87	72	89	72	22	14	24	15	57	47	100	22	16	39	46	6	22	10	9	26	0	-1	41	12	10	613
North Norfolk	Overstrand, Roughton & the Runtons	Rural	84	69	90	/1	19	12	25	15	57	4/	103	22	16	39	38	6	20	9	9	18	0	-1	37	14	8	581
Great Yarmouth	Socieston South & Beach	Durban	81	00	88	09	18	10	25	15	49	44	85	20	29	50	40	1	15	13	11	2/	0	0	25	15	15	500
NOTOTINOTOK	Sheringhan	nurai	00	00	00	11	10	11	23	15	57	47	103	22	10	33	43	0	15	9	3	10	0	-1	10	10	10	021

Table 8 HLE and LE estimates and significant predictors, by MSOA, according to HLE at 65 years for women (lowest and highest 15 MSOAs, 2021)¹

¹ Ordered according to HLE at 65 years for women (lowest to highest number of years). Risk factors are presented as deciles with 1 being the worst, coloured red, and 10 being the best, coloured blue. Deciles 1 and 10 for HLE and LE are also coloured red and blue respectively.

Lower tier local authority	MSOA name	Rural/urban classification	Life expectancy at birth, men (years)	Healthy life expectancy at birth, men (years)	Life expectancy at birth, women (years)	Healthy life expectancy at birth, women (years)	Life expectancy at 65 years, men (years)	Healthy life expectancy at 65 years, men (years)	Life expectancy at 65 years, women (years)	Healthy life expectancy at 65 years, women (years)	Ever smoked, men (%)	Ever smoked, women (%)	Alcohol admission (rate)	Childhood obesity (%)	Physical inactivity (%)	Not eating 5-a-day (%)	Living alone at 66 (%)	Particulate matter 2.5 (mg per metre cubed)	IMD score	IMD Income	IMD Employment	IMD Education	IMD Health	IMD Crime	IMD Living environment	Income deprivation affecting children index (IDACI)	Income deprivation affecting older people index (IDAOP	Income, net after housing (weekly, GBP)
Great Yarmouth	Yarmouth Parade	Urban	71	52	79	56	14	6	16	7	49	44	224	26	29	50	61	7	67	37	29	85	1	1	32	44	34	390
King's Lynn and West Norfolk	North Lynn	Urban	78	59	78	58	16	7	13	5	58	42	187	25	31	43	54	6	47	26	18	76	1	1	25	32	31	425
Great Yarmouth	Yarmouth Central & Northgate	Urban	73	55	84	61	15	7	19	9	49	44	157	26	29	50	57	6	56	29	26	68	1	1	34	33	27	433
East Suffolk	Lowestoft Central	Urban	73	54	79	58	16	7	18	9	49	35	109	24	20	35	57	8	47	27	20	51	1	1	52	38	24	462
Norwich	Bowthorpe & West Earlham	Urban	78	61	83	63	14	7	20	10	59	49	123	25	19	48	52	7	34	20	14	48	1	0	7	28	25	438
East Suffolk	Pakefield North	Urban	77	61	82	61	14	7	19	10	49	35	102	24	20	35	52	7	33	21	17	50	1	0	15	30	19	475
Great Yarmouth	Southtown & Cobholm	Urban	72	56	82	60	14	7	20	10	49	44	129	26	29	50	54	7	43	25	19	57	1	0	35	33	25	477
Great Yarmouth	Gorleston West	Urban	81	63	75	57	16	8	17	8	49	44	112	26	29	50	50	7	37	23	19	48	1	0	13	27	25	469
East Suffolk	Gunton West	Urban	80	61	79	58	17	8	18	8	49	35	77	24	20	35	53	8	46	27	21	60	1	1	14	32	28	448
Great Yarmouth	Gorleston North	Urban	78	59	81	59	15	8	18	9	49	44	105	26	29	50	54	7	43	25	21	51	1	0	24	34	23	454
Norwich	Heartsease & Pilling Park	Urban	76	59	81	62	15	8	18	10	59	49	123	25	19	48	53	7	35	20	16	52	1	0	17	26	21	469
King's Lynn and West Norfolk	Town, South Lynn & West Lynn	Urban	78	61	81	62	16	8	20	10	58	42	190	25	31	43	65	6	37	20	16	53	1	0	27	23	24	446
Norwich	Mile Cross	Urban	75	57	88	62	19	8	23	10	59	49	156	25	19	48	56	7	42	24	17	58	1	1	23	30	28	458
Norwich	Earlham	Urban	77	59	81	60	16	8	20	10	59	49	118	25	19	48	51	7	35	22	14	52	1	1	17	30	24	465
Norwich	Heigham Grove & St Augustines	Urban	11	50	86	60	19	8	23	10	59	49	202	25	19	48	76	8	43	24	20	29	2	1	22	29	31	500
Proadland	Coltichall Buyton & Frottonham	Bural	02	60	05	71	21	12	20	12	44	27	70	10	22	20	40	6	14	7	7	14	0	1	20	0	0	500
North Norfolk	Reeston Regis Saythorne & Aldborough	Rural	86	71	86	70	21	12	20	12	57	47	72	22	16	29	29	6	21	9	9	19	0	-2	12	12	9	595
Fast Suffolk	Oulton	Urban	87	70	88	68	22	13	23	13	49	35	71	24	20	35	42	7	20	12	12	30	0	0	5	16	11	546
King's Lynn and West Norfolk	Dersingham Sandringham & Massingham	Rural	81	67	87	69	22	13	24	14	58	42	118	25	31	43	44	6	16	9	8	23	0	-2	15	13	10	558
South Norfolk	Cringleford, Little Melton & Faston	Rural	85	73	85	72	20	13	22	14	50	36	87	19	19	39	37	6	11	7	5	7	-1	-1	24	10	6	688
North Norfolk	Walsingham & Raynham	Rural	87	70	90	70	22	13	25	14	57	47	105	22	16	39	43	6	25	10	9	34	0	-1	45	15	10	542
North Norfolk	Holt & Weybourne	Rural	86	69	88	70	21	13	23	14	57	47	89	22	16	39	48	6	18	9	9	24	0	-1	19	11	9	571
South Norfolk	Trowse, Poringland & Stoke Holy Cross	Rural	83	71	88	73	19	13	24	15	50	36	79	19	19	39	42	6	8	6	5	9	-1	-1	21	7	7	654
Broadland	Spixworth & St Faiths	Rural	89	72	91	74	24	13	26	15	44	37	81	18	22	39	42	6	10	7	6	20	-1	-1	10	8	8	554
South Norfolk	Loddon, Surlingham & Alpington	Rural	87	72	85	71	22	14	20	12	50	36	78	19	19	39	41	6	14	9	8	14	-1	-1	20	11	9	612
Norwich	Eaton	Urban	85	73	90	73	20	14	25	15	59	49	81	25	19	48	47	7	8	6	5	8	0	-1	9	10	8	669
King's Lynn and West Norfolk	Wootton	Urban	86	73	88	74	21	14	23	15	58	42	95	25	31	43	36	6	8	4	4	11	0	-2	6	6	5	673
East Suffolk	Southwold, Reydon & Wrentham	Rural	86	71	87	71	21	14	25	15	49	35	71	24	20	35	46	6	17	9	9	22	0	-1	25	17	9	602
North Norfolk	Wells & Blakeney	Rural	87	72	89	72	22	14	24	15	57	47	100	22	16	39	46	6	22	10	9	26	0	-1	41	12	10	613
South Norfolk	Thurlton, Haddiscoe & Geldeston	Rural	89	73	90	72	27	16	25	15	50	36	62	19	19	39	35	6	20	8	7	19	-1	-1	47	9	9	587

Table 9 HLE and LE estimates and significant predictors, by MSOA, according to HLE at 65 years for men (lowest and highest 15 MSOAs, 2021)²

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² Ordered according to HLE at 65 years for men (lowest to highest number of years). Risk factors are presented as deciles with 1 being the worst, coloured red, and 10 being the best, coloured blue. Deciles 1 and 10 for HLE and LE are also coloured red and blue respectively.

Maps of LE, HLE and risk factor exposure

Lower HLE for men and women mostly occurs in and near to Great Yarmouth and on the coast, and in Norwich and King's Lynn (Figures 2 and 3). Areas of lower LE and HLE visually correlate with higher levels of the risk factors identified in linear regression analyses (Figures 4 to 9). Rural areas of N&W generally experience longer estimated LE and HLE for both men and women, although some rural areas have higher levels of alcohol attributable hospital admissions and a higher prevalence of people over 65 living alone. The highest concentration of physically inactive adults are in West Norfolk and around Great Yarmouth, with the lowest concentration in North Norfolk. Air pollution is highest in Norwich, Gorleston, Beccles and Lowestoft.



Figure 2 Female healthy life expectancy at 65 years of age, for MSOAs across Norfolk and Waveney, in 2021.

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Figure 3 Male healthy life expectancy at 65 years of age, for MSOAs across Norfolk and Waveney, in 2021.

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Figure 4 Indices of Multiple Deprivation 2019 Income Deprivation scores, for Norfolk and Waveney MSOAs ³ IMD 2019 - Income deprivation Score, MSOA (quintile)

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Figure 5 Estimated average weekly net income after housing, for Norfolk and Waveney MSOAs, in 2021⁴

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³ Ministry of Housing, Communities & Local Government. 2019.

⁴ Office for National Statistics. Income estimates for small areas, England and Wales 2021.



Figure 6 Alcohol admissions measured as a directly standardised rate per 100,000 hospital admissions for alcohol attributable conditions, for Norfolk and Waveney MSOAs, in 2021⁵

Figure 7 Percentage of physically inactive adults aged 19 years and over, for district councils in Norfolk and Waveney, 2021-22⁶



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⁵ Office for Health Improvement and Disparities. Fingertips: Public Health Profiles 2023.

⁶ Office for Health Improvement and Disparities (based on the Active Lives Adult Survey, Sport England.



Figure 8 Average daily PM_{2.5} concentration (micrograms per m³) for Norfolk and Waveney MSOAs, in 2021⁷

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Figure 9 Prevalence of people aged over 65 years living alone, for MSOAs across Norfolk and Waveney, in 2021⁸

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⁷ Department for Environment Food and Rural Affairs (Defra). Modelled background pollution data 2022.

⁸ Office for National Statistics. Lifestage of household reference person in the 2021 Census 2021.

Discussion Summary of findings

HLE at birth was 66.5 years for men and 67.5 years for women in N&W in 2021, with big gaps between the 128 small geographic areas in Norfolk and Waveney with highest and lowest HLE at birth: 21 years for men (range 52 to 73) and 18 years for women (range 56 to 74). Levels of harmful risk factors also varied substantially, and we identified those areas where the biggest gains in healthy life expectancy can be expected through risk reduction. Substantial changes in LE and HLE for men and women, at birth and at age 65 were associated with changes in major risk factors, particularly weekly income, physical inactivity, and air pollution. High alcohol consumption was associated with lower LE and HLE for men. The areas experiencing the lowest HLE were around Great Yarmouth and the coast, Norwich and King's Lynn.

Comparison with other findings

Our findings are similar to trends observed in national analyses of HLE and LE ⁴⁸. The 20-year gap in HLE at birth between the most and least deprived areas in N&W is as big as the gap between the most and least deprived areas in England ⁸. The UK Office for National Statistics (ONS) found correlations between lower HLE in local authority areas and risk factors including higher unemployment, lower education, higher disability, smoking, obesity, high alcohol intake, physical inactivity or low dietary intake of fruit and vegetables ²⁷. Lower HLE (defined as estimated LE without chronic disease) was associated with alcohol intake on 5 or more days per week, current smoking, obesity, and physical inactivity in the English Longitudinal Study of Ageing ²⁸. Similar findings emerged from UK Biobank, a large longitudinal study of health status. LE was lower in individuals with higher alcohol consumption, who were current smokers, were physically inactive or had a diet low in fruit and vegetables ²⁹.

Strengths and limitations

Sullivan's method of HLE and LE estimation is widely accepted ^{27 28}. Alternative methods for calculating HLE are multi-state models that draw on direct measurements and other sensitive individual level data that are less publicly available. Likely differences in estimates produced by the Sullivan and multistate methods are described elsewhere ³⁰⁻³². The Sullivan and multistate methods are especially likely to agree when changes in population health are relatively slow or smooth over time ³³.

We used a wide range of reliable data sources that could be mapped to MSOAs, including GP health condition prevalence, environmental data per square metre, and deprivation at LSOA level. We used a structured process to appraise data choices and we carefully considered the relationships between our variables to inform our statistical method, with a focus on risk factors rather than health conditions, to identify public health opportunities for prevention.

A limitation is that we have estimated associations between recent risk factor exposure and recent HLE, when many important risk factors (such as deprivation, physical inactivity and air 30

pollution) act over decades. However, these risk factors also have consequences in the short term. This is an ecological study, meaning we are using areas (MSOAs) as our unit of analysis instead of individuals, which risks ecological fallacy, a situation where area-based findings which pool information on populations, translate less well back to those individuals ³⁴. This is one reason why we have focused our recommendations on population interventions rather than individuals. Our analyses have relatively low statistical power and wide 95% confidence intervals because of a relatively small sample size (there were 128 MSOAs in N&W in 2021).

There were some limitations in data. If variables have not been measured accurately - as for example with our measure of smoking - then the estimated associations between them and outcomes such as HLE will be biased towards showing no effect. Smoking prevalence using the 'ever smoked' variable ranged from 44-59% for men and 33-49% for women, but problems with the smoking data meant that smoking was not suitable for inclusion in the multiple regression models. The survey sample size at LTLA level in N&W was small (range 100-380 people) relative to the Lower Tier Local Authority population size, and the overall response rate in 2021 was low at 23% (for the Labour Force Survey, which collects the variable about smoking for the Annual Population Survey). Some populations were excluded from the survey (members of armed forces if not living in private accommodation, and people living in communal housing other than NHS housing and students in halls of residence). The prevalence changed during a switch to telephone sampling and approximately 30% of responses were made by people other than the individual surveyed. The statistical output when trialled in the model was unusual and we believe this reflects unreliable data quality for this variable.

Self-reported health, which was used to estimate HLE, may be biased ^{35 36} and vary by age (but less by sex), and we cannot make adjustments for these potential biases. The health condition prevalence estimates derive from QoF data which has variable levels of completeness and accuracy, but which broadly align with other estimates of prevalence. We were unable to adjust condition prevalence for populations less likely to be registered with a GP, such as homeless people and asylum seekers.

Our ability to compare risk factors is limited by differences in units of measurement, years, populations included, and original area level of the data source. We were unable to obtain information on certain risk factors of interest, for example infection and infection prevention, and a direct measure of alcohol consumption (we used alcohol attributable hospital admissions as a proxy). Public data was not available at the geographical level required. Finally, our method of analysis was linear regression, which assumes a linear relationship between the predictor variable and LE or HLE.

Implications for practice

Common strategies for increasing LE or HLE focus on reducing exposure to risk factors such as smoking, unhealthy diets, physical inactivity and high alcohol consumption. These factors are often called 'behavioural' which can detract from the important role of the obesogenic and physical environments and the commercial determinants of health ^{37 38}. OHID advocate for programmes to address the underlying causes of obesity in deprived and disadvantaged populations ³⁹⁻⁴¹. Unhealthy diets, physical inactivity and high alcohol intake are complex public health challenges with multiple drivers. Early intervention can be cost-effective, for example the Steps Towards Alcohol Misuse Prevention Programme (STAMPP) with school pupils aged 11-12, which cost £426 per school and £8 per pupil ⁴². It is increasingly recognized that a whole system approach to obesity is required to 'enable local stakeholders, including communities, to come together, share an understanding of the reality of the challenge, consider how the local system is operating and where there are the greatest opportunities for change' ^{40 43}.

Policy interventions are needed to improve environments in the areas most exposed to high levels of risk factors, which are often the most deprived areas in Norfolk and Waveney. Income deprivation, low employment, low education skills and training, and crime IMD domains were strongly associated with lower LE and HLE. Many of the risk factors and health conditions found to be associated with lower LE and HLE in N&W are associated with socio-economic deprivation. Therefore, targeting support toward communities in areas of relative deprivation is likely to offer the greatest benefit. NCC public health commissioned services are described on the Council website ⁴⁴.

Play parks, neighbourhoods that encourage walking and cycling and reduced traffic can improve activity and reduce air pollution 45 . Air pollution exacerbates respiratory conditions such as COPD and asthma 21 . Air pollution was associated with lower LE and HLE in Norfolk and Waveney. Reducing PM 2.5 concentration by 1 µg/m³ yielding 63,000 QALYs in adults aged 40 and above in London, and 540,000 QALYs in Wales 46 . OHID published guidance on the steps local authorities may take in reducing air pollution, such as subsiding public transport, promoting low emission zones and strategic tree planting 47 .

The prevalence of people aged 65 and over who live alone was also associated with lower HLE and LE, and fostering good mental health can address loneliness and social isolation ⁴⁸. Community initiatives such as the Retirement in Action (REACT) programme improve can quality of life and reduce health and social care utilization. REACT had similar costs over a 24-month trial for the intervention (£3943) and control (£4043) groups ⁴⁹.

Interventions to improve access to affordable high-quality food would benefit people living in some of the areas we have highlighted in this report. The commercial incentives to supply unhealthy foods should be reduced through regulation. A 10% fruit and vegetable subsidy (with

30% subsidy targeted towards low-income households) and a social marketing campaign increased intake of fruits and vegetables and reduced associated disease burdens ⁵⁰. This was particularly beneficial for individuals from disadvantaged backgrounds, and the low-income targeted subsidy was most cost-effective intervention at £16,860 per year of life saved. Retail provision of fruit and vegetables and tax on soft drinks each provided a lifetime value of £11 per person (costs saved and benefits valued at £20,000 per QALY) ⁵¹.

Conclusions

This report provides the first estimates of male and female life expectancy and healthy life expectancy at birth and at age 65 for 128 small areas in Norfolk and Waveney, together with the size and direction of associations with important evidence-based risk factors. This detailed information offers public health professionals new evidence to inform the development and delivery of public health interventions which aim to improve healthy life expectancy and narrow the substantial differences between local areas.

A long-term strategic priority to improve healthy life expectancy and narrow the differences between local areas would involve a commitment to reducing the harmful risks that drive low healthy life expectancy in Norfolk and Waveney, particularly poverty, air pollution, physical inactivity, and high alcohol intake. Developing and delivering better ways to improve air quality, increase opportunities for physical activity, and reduce high alcohol use in the worst affected areas (identified in the maps and tables in this report) will involve sustained work by partners and communities living in those areas. Reducing the harmful effects of deprivation, the biggest driver of low life expectancy, is a major challenge for society, and the effects can be mitigated at local level, for example through promoting training and good employment practices and opportunities and providing accessible advice to ensure people receive all their benefits. Monitoring trends in healthy life expectancy and exposure to risks in all Middle Layer Super Output Areas in Norfolk and Waveney and will enable evaluation of the impact of interventions and policies which aim to improve healthy life expectancy and narrow the differences between local areas.

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Appendix 1: Supplementary results Table 10 Associations between health conditions and life expectancy 2021 (simple linear regression)

Health condition	Value	Male at	age 0 (years)	Female	at age 0 (years)	Male at	age 65 (years)	Female	at age 65 (years)
Atrial fibrillation (%)	2.8	-0.50	(-1.69, 0.68)	-0.60	(-1.78, 0.58)	-0.13	(-0.93, 0.66)	-0.30	(-1.18, 0.58)
Cancer (%) Coronary heart	4.1	-0.15	(-1.07, 0.76)	0.04	(-0.86, 0.94)	-0.24	(-0.85, 0.37)	0.21	(-0.46, 0.88)
disease (%)	3.7	-1.97	(-3.01, -0.93)	-1.90	(-2.93, -0.87)	-1.18	(-1.88, -0.48)	-1.03	(-1.82, -0.25)
COPD (%)	2.3	-2.41	(-3.28, -1.54)	-2.05	(-2.92, -1.18)	-1.45	(-2.04, -0.85)	-1.24	(-1.91 <i>,</i> -0.57)
Dementia (%)	0.91	-1.67	(-4.48, 1.13)	-2.60	(-5.39 <i>,</i> 0.19)	-1.05	(-2.93, 0.83)	-1.92	(-3.95, 0.16)
Hypertension (%)	16.4	-0.49	(-0.75, -0.22)	-0.52	(-0.77, -0.27)	-0.27	(-0.45, -0.09)	-0.34	(-0.53, -0.15)
Learning disability (%) Peripheral arterial	0.7	-4.61	(-7.07, -2.14)	-3.11	(-5.61, -0.60)	-1.45	(-3.16, 0.27)	-2.23	(-4.20, -0.47)
disease (%)	0.6	-6.44	(-9.88, -2.99)	-3.74	(-7.22, -0.26)	-3.05	(-5.41, -0.68)	-3.13	(-5.70, -0.55)
Stroke or TIA (%)	2.3	-1.66	(-3.29, -0.03)	-1.67	(-3.28, -0.06)	-0.80	(-1.90, 0.30)	-0.81	(-2.03, 0.40)
Asthma (%) Rheumatoid arthritis	7.6	-1.10	(-1.95, -0.25)	-0.46	(-1.32, 0.39)	-0.31	(-0.89, 0.27)	-0.24	(-0.88, 0.40)
(%)	0.99	-1.22	(-4.63, 2.19)	-0.50	(-3.89 <i>,</i> 2.90)	0.28	(-2.00, 2.57)	-0.09	(-2.63, 2.44)
Diabetes mellitus (%)	7.82	-1.19	(-1.63, -0.75)	-1.19	(-1.61, -0.76)	-0.67	(-0.98, -0.37)	-0.69	(-1.02, -0.35)
Depression (%) Chronic kidney disease	12.5	-0.25	(-0.48, -0.01)	-0.11	(-0.34, 0.13)	-0.10	(-0.26, 0.06)	-0.09	(-0.27, 0.09)
(%)	4.26	0.08	(-0.40, 0.55)	-0.03	(-0.49, 0.43)	0.08	(-0.23, 0.40)	-0.02	(-0.37, 0.32)
Epilepsy (%)	0.91	-7.94	(-11.72, -4.16)	-6.71	(-10.53, -2.89)	-5.05	(-7.59, -2.50)	-5.08	(-7.93, -2.24)
Osteoporosis (%)	0.51	0.57	(-1.00, 2.14)	0.37	(-1.19, 1.92)	0.38	(-0.67, 1.43)	0.34	(-0.82, 1.50)

Bold text indicates p<0.001.

Health condition	Value	Male at a	ge 0 (years)	Female at	t age 0 (years)	Male at a	ge 65 (years)	Female at	age 65 (years)
Atrial fibrillation (%)	2.8	-0.60	(-2.07, 0.85)	-0.63	(-1.99, 0.72)	-0.17	(-0.78, 0.44)	0.05	(-0.60, 0.70)
Cancer (%) Coronary heart	4.1	0.05	(-1.07, 1.17)	0.19	(-0.84, 1.23)	0.05	(-0.42, 0.52)	0.48	(-0.01, 0.96)
disease (%)	3.7	-2.69	(-3.94, -1.44)	-2.93	(-4.06, -1.79)	-1.22	(-1.74, -0.70)	-0.93	(-1.50, -0.36)
COPD (%)	2.3	-3.96	(-4.91, -3.01)	-4.06	(-4.87, -3.25)	-1.75	(-2.14, -1.36)	-1.54	(-1.98, -1.10)
Dementia (%)	0.91	-1.48	(-4.92, 1.96)	-2.41	(-5.63, 0.82)	-0.75	(-2.20, 0.71)	-0.82	(-2.37, 0.72)
Hypertension (%)	16.4	-0.67	(-0.99, -0.35)	-0.75	(-1.03, -0.47)	-0.31	(-0.45, -0.18)	-0.28	(-0.42, -0.14)
Learning disability (%) Peripheral arterial	0.7	-6.84	(-9.76, -3.91)	-6.14	(-8.88, -3.40)	-2.27	(-3.56, -0.99)	-2.10	(-3.46, -0.74)
disease (%)	0.64	-11.93	(-15.81, -8.04)	-11.06	(-14.62, -7.50)	-4.35	(-6.06, -2.63)	-4.21	(-6.01, -2.42)
Stroke or TIA (%)	2.36	-2.18	(-4.17, -0.19)	-2.40	(-4.24, -0.57)	-0.85	(-1.70, <-0.00)	-0.48	(-1.38, 0.42)
Asthma (%) Rheumatoid arthritis	7.66	-1.04	(-2.09, 0.01)	-0.63	(-1.61, 0.35)	-0.30	(-0.75, 0.15)	-0.07	(-0.54, 0.40)
(%)	0.99	-0.47	(-4.64, 3.71)	0.23	(-3.68, 4.14)	-0.24	(-2.01, 1.53)	0.87	(-0.99, 2.74)
Diabetes mellitus (%)	7.82	-1.77	(-2.28, -1.27)	-1.93	(-2.36, -1.51)	-0.83	(-1.03, -0.62)	-0.74	(-0.97, -0.51)
Depression (%) Chronic kidney disease	12.46	-0.56	(-0.84, -0.29)	-0.43	(-0.69, -0.17)	-0.16	(-0.28, -0.04)	-0.16	(-0.29, -0.03)
(%)	4.26	-0.21	(-0.78, 0.37)	-0.34	(-0.87, 0.9)	-0.03	(-0.28, 0.21)	-0.04	(-0.29, 0.22)
Epilepsy (%)	0.91	-13.64	(-17.93, -9.35)	-13.32	(-17.26, -9.38)	-5.54	(-7.38, -3.70)	-5.05	(-7.06, -3.05)
Osteoporosis (%)	0.51	0.52	(-1.39, 2.44)	0.61	(-1.18, 2.40)	0.47	(-0.34, 1.28)	0.63	(-0.22, 1.48)

Table 11 Associations between health conditions and healthy life expectancy 2021 (simple linear regression)

Bold text indicates p<0.001.

			ural/urban classification	fe expectancy at birth, men (years)	ealthy life expectancy at birth, men (years)	re expectancy at which, women (years) ealthy life expectancy at birth, women (years)	fe expectancy at 65 years, men (years)	ealthy life expectancy at 65 years, men (years) te expertancy at 65 years, women (years)	ealthy life expectancy at 65 years, women (years)	ver smoked, men (%)	/er smoked, women (%)	(cohol admission (rate)	hildhood obesity (%) bosical inactivity (%)	irjancer macunity (20) ot eating 5-a-day (%)	ving alone at 66 (%)	articulate matter 2.5 (mg per metre cubed)	sthma (%)	oronary nearc disease (%) hronic obstructive nulmonary disease (%)	epression (%)	iabetes mellitus (%)	oilepsy (%)	ypertension (%) aarning disability (%)	besity (adults, %)	steoporosis (%)	eripheral arterial disease (%) Toba or transiont isobaconis attack (%)	AD score	AD Income	/ID Employment	AD Education	AD Freattr	AD Living environment	come deprivation affecting children index (IDACI)	icome deprivation affecting older people index (IDAOPI) icome, net after housing (weekly, GBP)
King's Lung and West Norfalk	North Lunn	FOR COUR	Linh an	70	50 7	J T	16	7 1		50	42	107				6	4		11	0	1	15 1	10	0	4 0	47	26	10	76		25	22	21 425
Creat Vermouth	North Lynn	E02005557	Urban	78	59 7	0 56	10	6 1	5 5	38	42	10/	25 3	1 43	5 54	0	7	4 2	11	0	1	15 1	10	1	1 2	47	20	10	/0 1		25	32	31 425
Great Yarmouth	Farmouth Parade	E02005543	Urban	/1	52 7	5 57	14	0 1	7 0	49	44	112	20 2	9 50	50	'	7	3 3	10	9	1	15 1	13	1	1 2	27	37	10	40	1 0	12	27	34 390
Great rarmouth	Gunten West	E02005548	Urban	80	61 7	5 57 0 50	10	0 10		49	44	77	20 2		50			4 3	17	9	1	16 1	12	1	1 2	37	23	21	48 1	1 1	14	27	20 409
Great Varmouth	Varmouth North	E02000503	Urban	80	61 9	2 62	17	9 19	0 0 0 0	49	33	125	24 2	9 50	51	6	7	2 2	16	9	1	16 1	12	0	1 2	20	27	17	50	1 1	20	20	24 456
Breckland	Thetford South	E02005541	Urban	86	66 8	2 63	23	12 1	7 9	49	33	101	20 2	2 43	51	6	6	3 2	13	7	1	13 1	11	0	1 2	30	16	13	61 (50	21	18 496
Great Yarmouth	Yarmouth Central & Northgate	E02005542	Urban	73	55 8	4 61	15	7 19	9 9	49	44	157	26 2	9 50	57	6	7	3 3	16	9	1	16 1	13	1	1 2	56	29	26	68	1 1	34	33	27 433
East Suffolk	Lowestoft Central	E02006305	Urban	73	54 7	9 58	16	7 18	8 9	49	35	109	24 2	0 35	5 57	8	8	4 3	17	9	1	16 1	12	1	1 2	47	27	20	51	1 1	52	38	24 462
Great Yarmouth	Gorleston North	E02005546	Urban	78	59 8	1 59	15	8 1	8 9	49	44	105	26 2	9 50	54	7	8	4 3	12	9	1	16 1	12	0	1 2	43	25	21	51	1 0	24	34	23 454
East Suffolk	Lowestoft Harbour & Kirkley	E02006308	Urban	77	57 7	6 56	17	9 1	7 9	49	35	148	24 2	0 35	66	7	7	4 3	15	9	1	17 1	14	0	1 2	54	31	27	52	1 1	45	33	28 458
Breckland	Mundford, Weeting & Forest	E02005514	Rural	85	68 8	3 67	20	11 18	B 10	48	33	75	22 2	2 43	3 37	6	8	4 3	15	9	1	20 0	13	1	1 3	20	8	8	33 (0 -1	26	9	10 567
Norwich	Heartsease & Pilling Park	E02005587	Urban	76	59 8	1 62	15	8 1	8 10	59	49	123	25 1	9 48	53	7	7	3 2	13	6	1	14 1	10	0	1 2	35	20	16	52	1 0	17	26	21 469
Norwich	Bowthorpe & West Earlham	E02005588	Urban	78	61 8	3 63	14	7 20	0 10	59	49	123	25 1	9 48	3 52	7	7	2 2	12	6	1	10 1	11	1	0 1	34	20	14	48	1 0	7	28	25 438
Norwich	University & Avenues	E02005593	Urban	85	65 8	4 64	20	11 19	9 10	59	49	110	25 1	9 48	3 55	7	5	1 1	13	3	1	5 0	4	1	0 1	21	14	9	36 .	1 0	9	27	22 458
Norwich	City Centre East	E02006907	Urban	83	65 8	3 65	18	10 18	B 10	59	49	126	25 1	9 48	8 71	7	7	2 1	13	5	1	9 1	8	1	0 2	25	12	10	20 1	1 1	33	16	18 550
King's Lynn and West Norfolk	Town, South Lynn & West Lynn	E02005561	Urban	78	61 8	1 62	16	8 20	0 10	58	42	190	25 3	1 43	65	6	7	3 2	11	8	1	14 1	10	0	1 2	37	20	16	53 1	1 0	27	23	24 446
King's Lynn and West Norfolk	Gaywood Chase & Old Gaywood	E02005559	Urban	79	64 7	9 62	16	9 19	9 10	58	42	199	25 3	1 43	51	7	7	4 2	11	8	1	16 1	11	0	1 2	27	14	13	39 1	1 0	24	16	17 475
Norwich	Mile Cross	E02005585	Urban	75	57 8	8 62	19	8 23	3 10	59	49	156	25 1	9 48	56	7	7	3 2	14	7	1	11 1	10	1	1 2	42	24	17	58 1	1 1	23	30	28 458
Norwich	Earlham	E02005589	Urban	77	59 8	1 60	16	8 20	0 10	59	49	118	25 1	9 48	3 51	7	7	2 2	13	6	1	9 1	. 8	0	0 1	35	22	14	52 1	1 1	17	30	24 465
Norwich	Heigham Grove & St Augustines	E02007052	Urban	77	56 8	6 60	19	8 23	3 10	59	49	202	25 1	9 48	8 76	8	7	2 2	12	6	1	11 1	8	1	1 2	43	24	20	29	2 1	22	29	31 500
East Suffolk	Normanston & Oulton Broad East	E02006306	Urban	82	65 8	4 65	21	11 19	9 10	49	35	80	24 2	0 35	48	8	7 .	4 3	15	9	1	18 1	13	0	1 2	26	15	15	36 (0 0	21	18	14 508
East Suffolk	Pakefield North	E02006309	Urban	77	61 8	2 61	14	7 19	9 10	49	35	102	24 2	0 35	52	7	7 .	4 3	15	9	1	17 1	14	0	1 2	33	21	17	50 1	1 0	15	30	19 475
Great Yarmouth	Southtown & Cobholm	E02005544	Urban	72	56 8	2 60	14	7 20	0 10	49	44	129	26 2	9 50	54	7	7	3 3	15	9	1	15 1	13	1	1 2	43	25	19	57 1	1 0	35	33	25 477
King's Lynn and West Norfolk	Upwell, Delph & Emneth	E02005566	Rural	83	66 8	4 66	19	10 2:	1 11	58	42	96	25 3	1 43	3 40	6	9	4 3	11	10	1	19 1	9	0	1 3	29	13	11	41 1	1 0	33	17	15 508
Norwich	Lakenham & Tuckswood	E02005596	Urban	80	62 8	7 64	17	9 22	2 11	59	49	155	25 1	9 48	60	7	8	3 2	15	7	1	13 1	9	1	1 2	34	22	16	48 1	1 0	15	28	25 483
King's Lynn and West Norfolk	Marshland, Walpole & Walton	E02005563	Rural	81	65 8	4 66	17	9 2	1 11	58	42	129	25 3	1 43	3 40	6	8 .	4 3	12	10	1	18 1	13	0	1 2	29	14	11	35 1	1 0	32	18	15 535
King's Lynn and West Norfolk	Terrington & Clenchwarton	E02005558	Rural	83	66 8	3 65	20	10 2	1 11	58	42	87	25 3	1 43	39	6	7	3 2	10	9	1	16 1	13	0	0 2	24	12	11	32 (0 -1	28	14	14 525
Norwich	Inorpe Hamlet & Mousehold South	E02006908	Urban	86	68 8	6 66	21	12 2	1 11	59	49	141	25 1	9 48	61	8	/	3 2	13	6	1	11 1	. 9	1	0 2	28	15	13	24 1		21	15	18 569
King's Lynn and West Norrolk	Fairstead & Springwood	E02005560	Urban	81	05 /	9 62	18	10 19	9 11	58	42	130	25 3	43	5 50	0	-	4 2	11	9	1	1/ 1	12	0	1 3	25	15	10	39	0	8	19	17 494
Norwich	Earlnam Road & College Road	E02005592	Urban	83	/1 8	2 69	18	12 1	/ 11	59	49	8/ .	25 1	9 48	5 51	ð	-	2 2	12	5	1		9	1	0 2	9	5	3	2 0	0 0	3/	10	11 052
Great Varmouth	Relton	E02005580	Rural	82	66 9	2 66	17	10 20	1 11	29	49	200	25 1	9 40	0 J1	6	0	2 1 2	13	9	1 .	14 1	9	0	1 2	25	14	10	20 1		22	10	11 521
Great Varmouth	Hemsby & Ormesby	E02005545	Rural	02	67 9	2 66	17	10 20	0 11	49	44	94	26 2	9 50	29	6	0	5 2	10	10	1	22 1	10	0	1 2	21	11	11	25 (0 .1	24	12	12 550
North Norfolk	Mundesley, Trunch & Bacton	E02005538	Rural	81	65 8	4 65	20	12 19	9 11	57	47	109	20 2	5 39	40	6	10	6 4	16	10	1	22 2	14	0	1 3	22	11	12	25 0	0 -1	26	14	11 550
Great Yarmouth	Bradwell South & Honton	E02005570	Urban	82	66 8	5 67	19	10 20	11	49	44	77	26 2	9 50	48	6	8	4 3	12	9	1	17 1	11	0	1 2	18	12	10	25 (0 0	6	13	16 573
Great Yarmouth	Caister on Sea	E02005540	Rural	85	68 8	3 66	20	11 20	0 11	49	44	73	26 2	9 50	46	6	7	4 3	14	9	1	19 1	12	0	1 3	21	13	12	28 (0 -1	12	19	13 540
King's Lynn and West Norfolk	Hunstanton	E02005551	Rural	84	65 8	1 64	22	12 19	9 11	58	42	125	25 3	1 43	48	6	8	5 3	11	9	1	20 1	13	0	1 3	27	13	14	37	1 -1	25	22	11 544
Breckland	Thetford North	E02005517	Urban	80	61 9	2 65	18	9 2	7 12	48	33	100	22 2	2 43	3 50	6	6	3 2	13	7	1	13 1	11	1	1 2	32	17	13	72 1	0 0	7	20	23 479
Breckland	Thetford Central & East	E02005518	Urban	84	69 8	7 70	21	12 2	2 12	48	33	86	22 2	2 43	48	7	6	3 2	13	7	1	13 1	11	0	1 2	13	6	5	33 /	0 0	9	7	9 535
Breckland	Wayland, Ellingham & Great Hockham	E02005512	Rural	80	65 8	4 69	18	11 19	9 12	48	33	102	22 2	2 43	32	6	7	4 2	11	8	1	17 1	11	0	1 2	24	9	8	31 /	0 -1	33	13	9 588
Breckland	Watton	E02005511	Rural	81	66 8	7 68	18	10 23	2 12	48	33	108	22 2	2 43	43	6	7	4 2	12	9	1	18 1	11	0	1 2	19	9	9	50 (0 -1	10	10	11 521
King's Lynn and West Norfolk	Southery, Feltwell & Hockwold	E02005569	Rural	82	67 8	8 69	19	11 23	3 12	58	42	78	25 3	1 43	40	6	8 .	4 3	15	10	1	21 0	17	0	1 3	21	9	8	37 (0 -1	33	11	12 529
Breckland	Dereham West, Necton & Gressenhall	E02005506	Rural	82	67 8	3 68	17	10 2:	1 12	48	33	88	22 2	2 43	38	6	8	4 2	13	9	1	18 1	13	1	1 3	17	9	8	24 (0 -1	18	10	10 581

41

Brockland	Hockoring Mattichall & Cranworth	E02005509	Pural	94	70	05 7	0 2	2 12	20	12	10	22	97 2	2 22	2 42	20	6 9	1	2	10 9	1	10	1 1	2 1	1	2 1	7 9	6	20	0	1 2	10	10	500
Dieckland	Hockering, Mattishan & chanworth	E02005508	Nulai	04	70		0 2	2 15	20	12	40	33	5/ 2	2 24	2 43	35	0 0	-	2	10 0	1	15	1 1		-	2 1	./ 0		20	0	1 5.	10	10	550
Broadiand	Horstord, Hainford & Hevingham	E02005523	Rural	83	/0	84 /	0 1	8 11	19	12	44	37	79	8 24	2 39	38	0 9	3	2	11 /	1	10	1 8	1	0	2 1	.5 8		20	-1 -	1 10	01 6	10	590
Breckland	Dereham North & Neatherd	E02005505	Urban	87	69	85 6	8 2	2 12	20	12	48	33	90 2	2 22	2 43	44	6 8	4	2	14 8	1	16	1 1	2 0	1	2 2	0 1	2 11	24	0	0 8	15	12	558
King's Lynn and West Norfolk	Stoke Ferry, Hilgay & Wimbotsham	E02005568	Rural	80	66	83 6	7 1	9 11	20	12	58	42	149 2	5 31	1 43	39	6 7	4	2	10 9	1	18	0 1	1 0	1	3 2	0 9	8	25	0 .	-1 37	8	12	569
Breckland	Dereham Central & Toftwood	E02005507	Urban	80	65	85 6	6 1	9 11	22	12	48	33	97 2	2 22	2 43	46	6 8	3	2	14 8	1	17	1 1	3 0	1	2 2	0 1	2 11	33	0	0 6	14	12	521
Broadland	Thorpe St Andrew North	E02005534	Urban	84	69	87 7	0 2	1 13	22	12	44	37	93 1	8 22	2 39	48	7 8	3	2	13 7	1	15	1 1	2 0	1	2 1	2 8	8	16	0 .	-1 1	5 7	10	563
South Norfolk	Scole Dickleburgh & Bressingham	E02005610	Rural	82	69	86 7	0 1	9 12	21	12	50	36	87 1	9 19	9 39	39	6 8	4	2	9 8	1	18	1 1	3 0	0	2 1	8 8	7	14	0	-1 4	10	9	606
North Norfolk	Eakonham	E02005590	Rural	02	67	05 6	7 1	0 11	20	12	57	47	115 2	2 16	20	40	6 0	5	2	11 0	1	10	0 1	2 0	1	2 1	0 1	1 0	21	0	1 1	12	12	522
NOTHINGTOK		E02003380	Rurai	05	07			0 11	20	12	57	4/	115 2	2 10	55	49			2	11 9	1	10	0 1	5 0	-	5 1		1 5	51		1 14	1. 1.5	12	525
South Nortolk	Loddon, Suringham & Alpington	E02005604	Rural	87	12	85 /	1 2	2 14	20	12	50	30	/8 1	9 19	9 39	41	0 0	3	2	9 /	1	15	1 9	0	1	3 1	.4 9	8	14	-1 -	-1 20	, 11	9	012
East Suffolk	Halesworth & Wangford	E02006316	Rural	81	66	80 6	5 1	7 11	21	12	49	35	77 2	4 20	0 35	49	6 7	5	2	16 7	1	18	0 8	2	1	3 1	9 1	2 9	25	0 .	1 21	18	11	550
South Norfolk	New Costessey	E02007055	Urban	83	67	84 6	7 2	0 11	21	12	50	36	111 1	9 19	9 39	46	6 7	3	2	16 7	1	13	1 1	1 0	0	2 1	.3 9	8	22	0 .	·1 7	9	11	594
King's Lynn and West Norfolk	Watlington, Wiggenhall & Terrington St John	E02005565	Rural	81	66	83 6	6 1	8 10	20	12	58	42	100 2	5 31	1 43	39	6 7	4	3	9 9	1	17	1 1	1 0	1	3 2	4 1	3 11	30	0 .	-1 3:	15	15	556
Norwich	Catton Grove & Airport	E02005584	Urban	79	62	84 6	4 1	8 9	23	12	59	49	140 2	5 19	9 48	53	7 7	3	2	15 6	1	12	1 9	1	1	2 3	0 1	8 13	45	1	0 1	21	23	487
Broadland	Hellesdon North West	E02005529	Urban	83	67	86 6	8 1	8 10	21	12	44	37	99 1	8 22	2 39	46	7 7	4	2	12 7	1	15	1 6	0	1	2 1	3 8	9	21	0 .	-1 8	9	9	550
Broadland	Hellesdon South East	E02005520	Urban	94	70	25 6	0 1	9 11	20	12	44	27	94 1	e 2'	2 20	45	7 7	2	2	12 7	1	14	1 7	0	1	2 1	1 7	7	19	0	1 1		0	556
Kingle lung and Mast Nasfalls	Henesdon South East	502005550	Dural	04			0 1	0 11	20	12	50	40	110 0	5 24	2 55	40	6 0	5	2	11 1	1	22	1 1	0	-		0 1	, 10	10	1	1 1	10	11	550
king's Lynn and West Norrolk	Heacham & Shettisham	E02005553	Rural	84	09	84 0	1 8	.9 11	21	12	58	42	112 2	5 3.	1 43	43	0 9	2	3	11 10	1	23	1 9	0	1	4	9 1	0 10	28	1 .	1 10	0 13	11	550
Great Yarmouth	Fleggburgh, Rollesby & Martham	E02005539	Rural	84	67	84 6	8 2	1 11	21	12	49	44	67 2	6 29	9 50	36	6 8	5	3	11 10) 1	23	1 1	0 0	1	3 2	1 1	9	24	0 .	·1 35	5 13	12	567
North Norfolk	North Walsham East	E02007032	Urban	79	64	85 6	7 2	0 11	21	12	57	47	112 2	2 16	6 39	50	6 9	5	3	14 9	1	19	1 1	2 0	1	3 2	1	3 11	25	0 .	-1 10	16	14	538
North Norfolk	North Walsham West	E02007033	Urban	77	62	85 6	7 2	0 11	21	12	57	47	112 2	2 16	6 39	49	6 9	5	3	14 9	1	19	1 1	2 0	1	3 2	0 1	3 11	25	0 .	-1 10	16	14	538
East Suffolk	Carlton Colville	E02006310	Urban	82	67	85 6	7 1	9 11	22	12	49	35	77 2	4 20	0 35	45	7 8	4	3	16 9	1	18	1 1	2 0	1	2 1	8 1	2 10	25	0	0 8	14	14	552
North Norfolk	Stalham & Sea Palling	E02005582	Rural	85	67	86 6	7 2	0 11	21	12	57	47	107 2	2 16	6 39	45	6 8	5	3	14 10	1	23	1 1	3 1	1	3 2	4 1	2 10	26	0 .	-1 4	13	14	525
Great Yarmouth	Bradwell North	E02005545	Urban	85	70	86 7	0 2	0 11	21	12	49	44	78 2	6 29	9 50	41	6 8	4	3	13 9	1	17	1 1	0 0	1	2 1	3 7	8	22	0	-1 5	7	10	556
North Norfolk	Cromor	E02005572	Rural	20	62	05 6	7 1	7 10	20	12	57	47	149 2	2 16	5 20	51	6 0	5	2	15 0	1	22	1 6	1	1	2 2	7 1	1 15	26	1	1 2	16	14	510
NOTHINGTOK	cromer	E02003372	Rula	00	05		1	/ 10	20	12	57	47	140 2	2 10	35	51	0 5	-	5	15 5		25	1 0			3 4	. 1	+ 15	20	1	1 2.	, 10	14	515
Breckland	Swattham	E02005509	Rural	83	66	85 6	6 1	8 11	23	13	48	33	109 2	2 2.	2 43	45	6 8	5	3	1/ 10) 1	22	0 1	2 1	1	3 2	5 1	4 12	43	0	0 8	20	12	519
Breckland	Shipdham, Bradenham & Saham Toney	E02005510	Rural	82	67	87 6	9 1	9 12	22	13	48	33	103 2	2 22	2 43	40	6 8	4	3	15 9	1	21	1 1	4 1	1	3 1	.8 9	9	27	0 .	-1 17	7 10	11	542
Broadland	Reepham, Cawston & Lenwade	E02005521	Rural	85	71	81 6	7 2	0 12	21	13	44	37	83 1	8 22	2 39	40	6 9	4	2	8 7	1	17	1 1	3 0	1	2 1	.6 8	7	14	-1 -	-1 39	9	9	590
Breckland	Whissonsett, Litcham & Narborough	E02005504	Rural	81	67	86 7	0 1	9 11	21	13	48	33	92 2	2 22	2 43	37	6 8	5	2	13 9	1	19	0 1	4 1	1	3 1	9 9	8	20	0 .	-1 30	11	10	573
South Norfolk	Hempnall, Ditchingham & Wortwell	E02005608	Rural	82	68	84 6	9 1	8 11	22	13	50	36	89 1	9 19	9 39	40	6 8	4	2	10 8	1	17	1 1	1	1	3 1	7 8	7	18	0 .	-1 35	5 11	9	604
South Norfolk	Hingham, Morley & Barnham Broom	E02005600	Rural	83	70	87 7	0 2	1 13	22	13	50	36	73 1	9 19	9 39	40	6 8	3	1	11 7	1	15	1 1	1 0	0	2 1	5 7	7	13	-1	1 3/	5 8	8	612
Breckland	Bawdeswell Swanton Morley & North Elmham	E02005503	Rural	81	69	RA F	9 1	8 11	21	13	48	33	78 2	2 22	2 43	37	6 7	4	2	9 8	1	18	1 1	3 0	1	3 1	8 8	7	22	0	1 3	2 11	10	585
North Norfolk	Melton Constable Briston & Little Sporing	E02005577	Rural	92	67	00 -	20 2	0 12	22	12	57	47	74 2	2 16	5 20	41	6 9	4	2	0 0	1	10	0 1		1	2 1	0 0	7	26	0	1 20	12	10	592
Kingle Lung and Mast Marfalls	Crimeter Conter & Fort Winch	502005562	Dural	02	66		0 2	0 11	23	10	50	47	142 2		1 42	41	c 0	-	2	15 14	1	21	1 1			2 2	0 1		10	0	1 4	10	10	565
King's Lynn and West Nortolk	Grimston, Gayton & East Winch	E02005562	Rural	82	66	80 0	9 2	0 11	23	13	58	42	142 2	5 31	43	41	6 9	5	3	15 10) 1	21	1 1	1 1	1	3 2	2 1	0 9	19	0 .	-1 40	10	12	565
Broadland	Wroxham, Rackheath & the Plumsteads	E02005527	Rural	86	71	85 7	1 2	1 12	20	13	44	37	100 1	8 22	2 39	37	6 8	4	2	12 8	1	18	1 1	0 0	1	3 1	.2 7	8	14	-1 -	-1 11	7	6	648
East Suffolk	Bungay & the Saints	E02006314	Rural	82	68	87 6	9 1	9 12	22	13	49	35	83 2	4 20	0 35	47	6 8	4	3	13 8	1	18	1 1	1 2	1	3 2	1 1	1 9	26	0	0 25	16	10	563
Broadland	Taverham	E02005525	Urban	83	70	83 7	0 1	9 13	19	13	44	37	91 1	8 22	2 39	42	6 8	3	1	13 7	1	15	1 7	1	0	2	B 6	5	13	-1 -	-2 6	7	8	642
South Norfolk	Hethersett	E02005599	Rural	80	67	89 7	1 1	8 11	24	13	50	36	98 1	9 19	9 39	43	6 7	3	1	10 6	1	14	1 8	1	0	2 1	0 8	7	14	-1 -	-1 7	9	9	640
Fast Suffolk	Beccles	F02006311	Urban	82	66	84 6	6 1	7 10	22	13	49	35	100 2	4 20	0 35	48	7 7	5	2	16 8	1	17	1 1	2	1	3 2	4 1	5 13	32	0	0 2	21	14	531
South Norfolk	Long Stratton, Carlton Rode & Tibenham	E02005607	Rural	83	69	86	20 2	1 12	22	12	50	36	88 1	9 10	9 39	28	6 8	2	2	11 8	1	15	1 1	2 0	0	2 1	5 9	6	17	-1	1 2	11	9	590
Breadland	Serenisten Fast	E02005007	Urban	70	67		0 1	0 11	23	10	44	27	01 1	0 2	2 20	44	7 0	2	2	12 7	-	15	1 1		1	2		6	10		1 1		7	501
Broadiand	sprowston East	E02003532	orban	75	0/ 0	55 0	9 1	.9 11	25	15	44	57	01	0 24	2 39	44	/ 0	3	2	12 /	1	15	1 1	2 0	1	2	5 3	0	10	-1	1 14		/	301
King's Lynn and West Norfolk	Downham Market	E02005567	Urban	78	65	84 0	6 1	8 11	21	13	58	42	103 2	5 31	1 43	50	6 /	4	2	11 9	1	18	0 1	1 0	0	3 1	9 1	2 9	2/	0 .	-1 11	16	11	554
Broadland	Old Catton	E02005528	Urban	82	70	87 7	1 1	9 13	22	13	44	37	95 1	8 22	2 39	43	7 8	3	2	13 6	1	14	1 9	1	1	2	96	6	15	-1 -	-1 11	1 8	8	587
Broadland	Sprowston Central	E02005531	Urban	85	70	87 7	1 2	0 12	22	13	44	37	105 1	8 22	2 39	43	7 8	3	2	11 7	1	15	1 1	2 0	1	2 1	.3 8	8	24	0 .	-1 12	10	9	563
King's Lynn and West Norfolk	West Winch, Marham & Shouldham	E02005564	Rural	86	71	88 7	0 2	1 12	23	13	58	42	95 2	5 31	1 43	37	6 7	4	2	10 9	1	17	1 1	0 0	1	3 1	6 7	7	19	0 -	-2 19) 10	9	573
Broadland	Drayton & Thorpe Marriott	E02005526	Urban	85	71	83 6	9 2	0 12	22	13	44	37	110 1	8 22	2 39	42	6 9	3	2	12 7	1	15	1 7	1	0	2 1	.0 7	7	13	0 .	1 6	8	9	606
Breckland	Attleborough	E02005513	Urban	82	67	86 6	9 1	7 10	23	13	48	33	99 2	2 22	2 43	50	6 7	3	2	13 7	1	15	1 1	0 0	0	2 1	5 9	8	32	0 .	-1 9	10	13	556
Broadland	Thorpe St Andrew South & Dussindale	E02005535	Urban	84	71	83 7	0 1	9 12	20	13	44	37	69 1	8 23	2 39	46	7 8	3	2	13 7	1	15	1 1	1 0	1	2 1	0 7	6	12	-1	-1 10	9	7	692
South Norfolk	Diss & Boudon	E02005533	Urban	00	67		0 1	7 11	22	12	50	26	00 1	0 10	0 20	50	6 7		2	. 7	1	10	1 1	2 0	0	2 1	5 1		24	0	0 0	12	11	562
South Norroik		E02003011	orban	00	70	05 0	19 1	/ 11	22	15	50	50	35 1	J 1:	5 55	30	0 /	4	2	5 /	-	10	1 1		0	2 1			24	0		12	11	505
South Norfolk	Old Costessey & Queens Hills	E02007054	Urban	83	70	85 7	0 1	9 12	21	13	50	36	111 1	9 19	9 39	38	6 7	3	2	16 7	1	13	1 1	1 1	0	2 1	.3 9	8	22	0 .	·1 7	9	11	594
Broadland	Coltishall, Buxton & Frettenham	E02005522	Rural	83	69	85 7	1 2	1 13	20	13	44	37	79 1	8 22	2 39	40	6 7	3	2	14 8	1	18	0 9	1	1	2 1	.4 7	7	14	0 .	·1 30	8 (9	588
North Norfolk	Beeston Regis, Saxthorpe & Aldborough	E02005575	Rural	86	71	86 7	0 2	1 13	21	13	57	47	72 2	2 16	6 39	39	6 8	4	2	8 8	1	20	1 1	0 0	1	3 2	1 9	8	19	0	2 43	12	9	585
Norwich	Town Close	E02005594	Urban	78	64	86 6	9 1	7 10	21	13	59	49	106 2	5 19	9 48	64	7 8	3	2	12 6	1	12	1 9	1	1	2 1	.8 1	1 9	13	0	0 25	5 13	17	592
King's Lynn and West Norfolk	Gaywood North Bank	E02005556	Urban	79	66	86 6	9 1	7 9	23	13	58	42	142 2	5 31	1 43	45	6 7	4	2	10 8	1	16	1 1	1 0	1	2 1	6 8	7	30	0 .	-1 9	8	11	533
Broadland	Acle & Reedham	F02005537	Rural	82	68	86 6	9 2	0 11	21	13	44	37	97 1	8 23	2 39	46	6 9	4	2	15 7	1	21	1 1	3 2	1	2 1	5 8	8	21	-1 -	-1 2	10	9	608
North Norfolk	Hoveton Horning & Botter Heigham	E02005592	Pural	94	69	95 6	0 1	0 12	22	12	57	47	127 2	2 16	5 20	40	6 9	5	2	12 0	1	21	1 1	2 1	1	2 2	0 1	1 0	25	0	1 20	16	11	619
Readland	Distiglish Ligging & Forter Heigham	502005503	Dural	04	71		0 1	0 10	22	10	57		05 1	2 10	35	20	0 0	-	2	10 7	-	10			-	2 2			2.5		1 2	10		610
Broadland	Biofield, Lingwood & Opton	E02005533	Rurai	85	/1 4	80 /	0 2	0 12	21	13	44	3/	85 1	8 24	2 39	39	0 8	3	2	12 /	1	18	1 1	1 1	1	3 1		0	11	-1	1 13	9	9	029
East Suffolk	Gunton East, Corton & Somerleyton	E02006302	Urban	83	69	88 7	1 1	8 11	23	13	49	35	72 2	4 20	0 35	38	6 8	4	3	14 9	1	17	1 1	1 0	1	2 1	/ 8	8	16	0	0 20	8	9	594
East Suffolk	Oulton	E02006304	Urban	87	70	88 6	8 2	2 13	23	13	49	35	71 2	4 20	0 35	42	7 8	4	3	16 9	1	18	1 1	2 1	1	2 2	1	2 12	30	0	0 5	16	11	546
East Suffolk	Pakefield South & Kessingland	E02006313	Urban	84	68	86 6	7 1	9 11	23	13	49	35	78 2	4 20	0 35	45	6 8	4	3	15 10) 1	19	1 1	3 0	1	3 2	0 1	2 11	29	0	0 15	3 14	12	558
Broadland	Aylsham	E02005520	Rural	80	67	88 7	1 1	9 12	23	14	44	37	115 1	8 22	2 39	45	6 8	4	2	10 7	1	16	1 1	2 1	1	2 1	4 9	8	18	0 .	-1 1/	3 11	9	621
South Norfolk	Mulbarton, Tasburgh & Saxlingham Nethergate	E02005605	Rural	83	70	88	3 1	9 12	23	14	50	36	79 1	9 10	9 39	38	6 7	3	1	9 7	1	14	0 9	0	0	2 1	1 6	5	11	-1	2 2'	8	8	638
Breckland	Buckenhams & Snetterton	F02005515	Rural	85	70	88	2 2	0 13	22	14	49	32	107 3	2 2	2 /12	39	6 7	2	2	12 7	1	15	1 1		0	2 1	4	5	19	-1	1 2	7	8	570
Kingle Lung and Mart No. 7-11	Descinations & Sherterton	502005515	Dural	01	67		2	0 12	20	14	40	40	110 2		4.5	44	6	5	2	11 0	-	10			1	2 1			10		2 24		10	515
King's Lynn and West Norfolk	Dersingham, Sandringham & Massingham	EU2005554	Kurai	81	0/	5/ 6	19 2	z 13	24	14	28	42	118 2	S 31	43	44	0 8	5	3	11 9	1	20	1 1	5 U	1	3 1	.0 9	8	23	0	Z 1.	13	10	228

South Norfolk	Wymondham East & Spooner Row	E02005603	Urban	83	70 8	6 71	18	11	23 1	4 5	i0 30	6 96	19	19	39	45 6	8	3	1	13	7	1 14	1	11	1	1	2 12	. 8	7	13	-1	-1 1	16 9	9	608
East Suffolk	Worlingham & Barnby	E02006312	Urban	85	70 8	7 71	20	12	22 1	4 4	9 35	5 56	24	20	35 4	40 7	7	4	2	16	8	1 17	7 1	10	1	1	3 13	7	7	14	0	-1 1	4 9	8	608
South Norfolk	Wymondham West	E02005601	Urban	83	66 8	9 71	22	12	24 1	4 5	0 30	6 105	19	19	39 5	54 6	8	3	1	13	7	1 14	1 1	11	1	1	2 13	9	8	17	0	-1 1	4 9	11	1 548
South Norfolk	Cringleford, Little Melton & Easton	E02005598	Rural	85	73 8	5 72	20	13	22 1	4 5	i0 30	6 87	19	19	39	37 6	5 7	3	1	11	6	1 13	3 1	8	1	0	2 11	. 7	5	7	-1	-1 7	4 1	0 6	688
South Norfolk	Harleston & Pulham	E02005609	Rural	85	70 8	7 70	20	12	22 1	4 5	0 30	6 90	19	19	39 4	44 6	5 7	4	2	9	8	1 19	1	11	0	1	3 14	. 9	8	23	-1	-1 2	21 1	3 10	552
North Norfolk	Walsingham & Raynham	E02005578	Rural	87	70 9	0 70	22	13	25 1	4 5	7 4	7 105	22	16	39 4	43 6	8	5	2	12	9	1 18	8 0	13	0	1	3 25	10	9	34	0	-1 4	15 1	5 10	0 542
Norwich	City Centre West	E02007053	Urban	77	57 8	5 66	18	10	23 1	4 5	9 49	9 202	25	19	48	70 8	3 7	2	2	12	6	1 11	1	8	1	1	2 43	24	20	29	2	1 7	22 2	9 31	1 500
North Norfolk	Felmingham, Worstead & Happisburgh	E02005581	Rural	82	66 9	0 71	20	12	25 1	4 5	7 47	7 70	22	16	39	37 6	8	4	3	14	9	1 20) 1	11	1	1 :	3 22	. 9	7	20	0	-1 4	13 1	1 10	0 571
East Suffolk	Oulton Broad West	E02006307	Urban	83	71 8	6 71	18	12	23 1	4 4	9 35	5 66	24	20	35 3	37 7	8	4	3	15	9	1 18	3 1	12	0	1	2 10	7	7	16	0	-1	6 7	8	602
North Norfolk	Holt & Weybourne	E02005573	Rural	86	69 8	8 70	21	13	23 1	4 5	7 47	7 89	22	16	39 4	48 6	8	4	2	8	8	1 19) 1	9	0	1	3 18	9	9	24	0	-1 1	19 1	1 9	571
Breckland	East Harling, Garboldisham & Kenninghall	E02005516	Rural	82	69 9	1 74	20	12	26 1	15 4	8 33	3 98	22	22	43 3	35 6	8	4	2	11	7	1 15	5 0	10	0	0	2 15	7	6	18	0	-1 3	36 9	, 8	619
South Norfolk	Trowse, Poringland & Stoke Holy Cross	E02005602	Rural	83	71 8	8 73	19	13	24 1	15 5	0 30	6 79	19	19	39 4	42 6	5 7	3	1	9	6	1 15	5 0	6	0	1 :	2 8	6	5	9	-1	-1 7	21 7	7	654
Broadland	Spixworth & St Faiths	E02005524	Rural	89	72 9	1 74	24	13	26 1	15 4	4 31	7 81	18	22	39 4	42 6	8	3	2	14	7	1 17	7 0	8	1	1 :	2 10	7	6	20	-1	-1 7	10 8	8	554
South Norfolk	Thurlton, Haddiscoe & Geldeston	E02005606	Rural	89	73 9	0 72	27	16	25 1	15 5	60 36	6 62	19	19	39	35 6	5 7	4	2	13	8	1 17	7 1	11	1	1	3 20	8	7	19	-1.	-1 4	17 9	9	587
King's Lynn and West Norfolk	Brancaster, Burnham Market & Docking	E02005552	Rural	84	70 9	0 73	19	12	25 1	15 5	8 42	2 100	25	31	43 4	42 6	8	5	3	13	8	1 19	0	10	0	1	4 25	10	9	25	0	-1 4	12 1	8 9	619
Norwich	Eaton	E02005595	Urban	85	73 9	0 73	20	14	25 1	15 5	i9 49	9 81	25	19	48 4	47 7	7 7	3	2	13	6	1 12	2 1	8	1	1 :	2 8	6	5	8	0	-1	9 1	0 8	669
King's Lynn and West Norfolk	Wootton	E02005555	Urban	86	73 8	8 74	21	14	23 1	15 5	8 42	2 95	25	31	43	36 6	5 7	4	2	10	8	1 16	5 1	10	0	0	2 8	4	4	11	0	-2	6 6	5	673
Broadland	Brundall & Cantley	E02005536	Rural	82	69 9	0 73	19	12	25 1	15 4	4 31	7 98	18	22	39 4	40 6	9	3	2	11	7	1 17	0	11	0	1 :	2 12	. 7	6	13	0	-1 1	19 8	7	637
East Suffolk	Southwold, Reydon & Wrentham	E02006315	Rural	86	71 8	7 71	21	14	25 1	15 4	9 35	5 71	24	20	35 4	46 6	5 8	5	3	12	7	1 20	0	10	0	1	3 17	9	9	22	0	-1 7	25 1	79	602
North Norfolk	Wells & Blakeney	E02005571	Rural	87	72 8	9 72	22	14	24 1	15 5	7 47	7 100	22	16	39 4	46 6	8	5	2	11	8	1 19	0	10	0	1	3 22	10	9	26	0	-1 4	11 1	2 10	0 613
North Norfolk	Overstrand, Roughton & the Runtons	E02005574	Rural	84	69 9	0 71	19	12	25 1	15 5	7 4	7 103	22	16	39	38 6	i 9	5	3	13	9	1 22	2 1	8	1	1 :	3 20	9	9	18	0	-1 3	87 1	4 8	581
Great Yarmouth	Gorleston South & Beach	E02005547	Urban	81	66 8	8 69	18	10	25 1	4	9 44	4 85	26	29	50	46 7	7 7	4	3	12	9	1 16	5 1	12	0	1 3	2 24	13	11	27	0	0 7	25 1	5 15	5 560
North Norfolk	Sheringham	E02005570	Rural	83	68 8	8 71	18	11	23 1	15 5	7 4	7 105	22	16	39 4	45 6	9	5	3	8	9	1 24	1	9	1	1 4	4 15	9	9	16	0	-1 1	18 1	0 10	0 621

Ordered according to HLE at 65 years for women (lowest to highest number of years). Risk factors are presented as deciles with 1 being the worst, coloured red, and 10 being the best, coloured blue. Deciles 1 and 10 for HLE and LE are also coloured red and blue respectively.

			ural/urban classification	fe expectancy at birth, men (years)	ealthy life expectancy at birth, men (years)	ealthy life expectancy at birth, women (years)	fe expectancy at 65 years, men (years)	ealthy life expectancy at 65 years, men (years) Le expectancy at 65 years, women (years)	ealthy life expectancy at 65 years, women (years)	ver smoked, men (%)	rer smoked, women (%)	lcohol admission (rate)	hildhood obesity (%)	nysical inactivity (%) ot eating 5-a-day (%)	ving alone at 66 (%)	articulate matter 2.5 (mg per metre cubed)	sthma (%) oronarv heart disease (%)	hronic obstructive pulmonary disease (%)	epression (%)	iabetes mellitus (%)	oliepsy (%) ypertension (%)	sarning disability (%)	besity (adults, %)	steoporosis (%) erinheral arterial disease (%)	eripriter al autorial viscose (<i>m</i>) :roke or transient ischaemic attack (%)	AD score	/ID Income	/IU Employment /ID Education	AD Health	AD Crime	AD Living environment. مستقدمية معالمات ماناطيعيا الماضي (IDACI)	וכסודים מפרוע אנוטר או דכטוויון איז	icome, net after housing (weekly, GBP)
Creat Vermouth	WisoA hame	FOR CODE	CC Lishes	71	E0 7	J I	14	6 10		40		224	26 2			4	4 0	0	16			1	12			67	27 6		4		-		200
King's Lynn and Wort Norfolk	North Lunn	E02005557	Urban	70	50 7	9 50	14	7 13) /) =	49	44	107	20 2	1 43	01	6	7 3	3	10	9	1 15	1	10		2	47	3/ 2	9 80	1	1	32 4	4 34	390
Great Varmouth	Varmouth Central & Northgate	E020055572	Urban	70	55 9	o Jo	15	7 10		19	42	157	25 5	91 43	57	6	7 2	2	16	9	1 16	1	12	1 1	2	56	20 1	6 69	1	1	20 3	2 2	7 /22
Fast Suffolk	Lowestoft Central	E02005342	Urban	73	54 7	9 58	16	7 19	2 9	49	35	109	24 2	20 35	57	8	8 4	3	17	9	1 16	1	12	1 1	2	47	27 3	0 51	1	1	52 3	8 24	4 462
Norwich	Bowthorpe & West Earlham	E02005588	Urban	78	61 8	3 63	14	7 20	10	59	49	123	25 1	9 48	3 52	7	7 2	2	12	6	1 10	1	11	1 0	1	34	20 1	4 48	1	0	7 2	8 25	5 438
East Suffolk	Pakefield North	E02006309	Urban	77	61 8	2 61	14	7 19	9 10	49	35	102	24 2	20 35	52	7	7 4	3	15	9	1 17	1	14	0 1	2	33	21 1	7 50	1	0	15 3	0 19	475
Great Yarmouth	Southtown & Cobholm	E02005544	Urban	72	56 8	2 60	14	7 20	10	49	44	129	26 2	9 50	54	7	7 3	3	15	9	1 15	1	13	1 1	1 2	43	25 1	9 57	1	0	35 3	3 25	477
Great Yarmouth	Gorleston West	E02005548	Urban	81	63 7	5 57	16	8 1	7 8	49	44	112	26 2	29 50	50	7	7 4	3	12	9	1 16	1	12	0 1	2	37	23 1	9 48	1	0	13 2	7 25	469
East Suffolk	Gunton West	E02006303	Urban	80	61 7	9 58	17	8 18	8 8	49	35	77	24 2	20 35	53	8	8 4	3	17	9	1 16	1	12	1 1	2	46	27 2	1 60	1	1 :	14 3	2 28	448
Great Yarmouth	Gorleston North	E02005546	Urban	78	59 8	1 59	15	8 18	39	49	44	105	26 2	29 50	54	7	8 4	3	12	9	1 16	1	12	0 1	2	43	25 2	1 51	1	0 3	24 3	4 23	454
Norwich	Heartsease & Pilling Park	E02005587	Urban	76	59 8	1 62	15	8 18	3 10	59	49	123	25 1	48	53	7	7 3	2	13	6	1 14	1	10	0 1	2	35	20 1	.6 52	1	0 :	17 2	.6 21	469
King's Lynn and West Norfolk	Town, South Lynn & West Lynn	E02005561	Urban	78	61 8	1 62	16	8 20	10	58	42	190	25 3	43	65	6	7 3	2	11	8	1 14	1	10	0 1	2	37	20 1	.6 53	1	0 :	27 2	.3 24	446
Norwich	Mile Cross	E02005585	Urban	75	57 8	8 62	19	8 23	3 10	59	49	156	25 1	9 48	3 56	7	7 3	2	14	7	1 11	1	10	1 1	. 2	42	24 1	7 58	1	1 3	23 3	0 28	458
Norwich	Earlham	E02005589	Urban	77	59 8	1 60	16	8 20	10	59	49	118	25 1	9 48	3 51	7	7 2	2	13	6	1 9	1	8	0 0	1	35	22 1	.4 52	1	1 :	17 3	0 24	465
Norwich	Heigham Grove & St Augustines	E02007052	Urban	77	56 8	6 60	19	8 23	3 10	59	49	202	25 1	9 48	3 76	8	7 2	2	12	6	1 11	1	8	1 1	2	43	24 2	0 29	2	1 3	22 2	.9 31	500
Great Yarmouth	Yarmouth North	E02005541	Urban	80	61 8	3 62	17	9 18	38	49	44	125	26 2	29 50	51	6	7 3	3	16	9	1 16	1	13	0 1	. 2	39	23 1	.7 50	1	1	30 3	0 24	456
East Suffolk	Lowestoft Harbour & Kirkley	E02006308	Urban	77	57 7	6 56	17	9 1	79	49	35	148	24 2	20 35	66	7	7 4	3	15	9	1 17	1	14	0 1	2	54	31 2	7 52	1	1 4	45 3	3 28	\$ 458
King's Lynn and West Norfolk	Gaywood Chase & Old Gaywood	E02005559	Urban	79	64 7	9 62	16	9 19	10	58	42	199	25 3	81 43	51	7	7 4	2	11	8	1 16	1	11	0 1	. 2	27	14 1	.3 39	1	0	24 1	6 17	/ 475
Norwich	Lakenham & Tuckswood	E02005596	Urban	80	62 8	7 64	17	9 22	2 11	59	49	155	25 1	48	60	7	8 3	2	15	7	1 13	1	9	1 1	2	34	22 1	.6 48	1	0 :	15 2	8 25	483
King's Lynn and West Norfolk	Marshland, Walpole & Walton	E02005563	Rural	81	65 8	4 66	17	9 21	1 11	58	42	129	25 3	43	40	6	8 4	3	12	10	1 18	1	13	0 1	2	29	14 1	.1 35	1	0	32 1	8 15	535
Breckland	Thetford North	E02005517	Urban	80	61 9	2 65	18	9 2	12	48	33	100	22 2	43	3 50	6	6 3	2	13	7	1 13	1	11	1 1	2	32	17 1	.3 72	0	0	7 2	0 23	\$ 479
Norwich	Catton Grove & Airport	E02005584	Urban	79	62 8	4 64	18	9 23	3 12	59	49	140	25 1	9 48	3 53	7	7 3	2	15	6	1 12	1	9	1 1	. 2	30	18 1	.3 45	1	0 :	17 2	1 23	487
King's Lynn and West Norfolk	Gaywood North Bank	E02005556	Urban	79	66 8	6 69	17	9 23	3 13	58	42	142	25 3	31 43	3 45	6	7 4	2	10	8	1 16	1	11	0 1	. 2	16	8 .	7 30	0	-1	9 8	3 11	533
Norwich	City Centre East	E02006907	Urban	83	65 8	3 65	18	10 18	3 10	59	49	126	25 1	48	8 71	7	7 2	1	13	5	1 9	1	8	1 0	2	25	12 1	.0 20	1	1 3	33 1	6 18	\$ 550
King's Lynn and West Norrolk	Torrighter & Classic Matter	EU2005566	Rural	83	00 8	4 00	19	10 2		58	42	90	25 3	51 43	40	0	9 4	3	10	10	19	1	9		. 3	29	13 1	.1 41	1	0 3	33 I	/ 15	508
King's Lynn and West Norfolk	Fairstand & Springwood	E02003338	Lisban	00	65 7	0 60	10	10 2	11	50	42	120	25 3	43	55	6	7 5	2	11	9	1 10	1	10	0 1	2	24	15 1	.1 32	1	-1 .	20 1	4 14	7 404
Great Varmouth	Palistead & Springwood	E02003300	Rural	01	66 9	2 66	17	10 1	11	10	42	00	25 3	91 43	41	6	0 1	2	12	9	1 10	1	0			25 .	10 1	0 39	1	0	22 1	2 11	454
Great Varmouth	Hemshy & Ormeshy	E02003343	Rural	81	67 8	2 66	17	10 20	11	49	44	84	26 2	9 50	28	6	8 5	3	10	10	1 22	1	10	0 1	2	22	11 1	1 25	0	-1	34 1	2 11	558
Great Varmouth	Bradwell South & Honton	E02005550	Urban	82	66 8	5 67	19	10 20	11	49	44	77	26 2	9 50	48	6	8 4	3	12	9	1 17	1	11	0 1	2	18	12 1	0 25	0	0	6 1	2 16	5 573
Breckland	Watton	E02005550	Rural	81	66 8	7 68	18	10 23	2 12	48	33	108	22 2	2 43	40	6	7 4	2	12	9	1 18	1	11	0 1	2	19	9 7	9 50	0	-1	10 1	0 11	521
Breckland	Dereham West, Necton & Gressenhall	E02005506	Rural	82	67 8	3 68	17	10 21	1 12	48	33	88	22 2	2 43	38	6	8 4	2	13	9	1 18	1	13	1 1	3	17	9 1	8 24	0	-1	18 1	0 10	581
King's Lynn and West Norfolk	Watlington, Wiggenhall & Terrington St John	E02005565	Rural	81	66 8	3 66	18	10 20	12	58	42	100	25 3	43	39	6	7 4	3	9	9	1 17	1	11	0 1	1 3	24	13 1	1 30	0	-1	31 1	5 15	5 556
Broadland	Hellesdon North West	E02005529	Urban	83	67 8	6 68	18	10 2	1 12	44	37	99	18 2	2 39	46	7	7 4	2	12	7	1 15	1	6	0 1	2	13	8 1	9 21	0	-1	8 5	9 9	550
North Norfolk	Cromer	E02005572	Rural	80	63 8	5 67	17	10 20	12	57	47	148	22 1	6 39	51	6	9 5	3	15	9	1 23	1	6	1 1	3	27	14 1	5 26	1	-1	25 1	6 14	4 519
East Suffolk	Beccles	E02006311	Urban	82	66 8	4 66	17	10 22	2 13	49	35	100	24 2	20 35	48	7	7 5	2	16	8	1 17	1	10	2 1	3	24	15 1	3 32	0	0	22 2	1 14	1 531
Breckland	Attleborough	E02005513	Urban	82	67 8	6 69	17	10 23	3 13	48	33	99	22 2	2 43	3 50	6	7 3	2	13	7	1 15	1	10	0 0	2	15	9 1	8 32	0	-1	9 1	.0 13	3 556
Norwich	Town Close	E02005594	Urban	78	64 8	6 69	17	10 21	1 13	59	49	106	25 1	9 48	64	7	8 3	2	12	6	1 12	1	9	1 1	1 2	18	11 9	9 13	0	0	25 1	3 17	7 592
Norwich	City Centre West	E02007053	Urban	77	57 8	5 66	18	10 23	3 14	59	49	202	25 1	9 48	8 70	8	7 2	2	12	6	1 11	1	8	1 1	1 2	43	24 2	0 29	2	1	22 2	.9 31	500
Great Yarmouth	Gorleston South & Beach	E02005547	Urban	81	66 8	8 69	18	10 25	5 15	49	44	85	26 2	9 50	46	7	7 4	3	12	9	1 16	1	12	0 1	2	24	13 1	1 27	0	0	25 1	5 15	560
Breckland	Mundford, Weeting & Forest	E02005514	Rural	85	68 8	3 67	20	11 18	3 10	48	33	75	22 2	43	37	6	8 4	3	15	9	1 20	0	13	1 1	. 3	20	8 (8 33	0	-1 (26 9	10	567
Norwich	University & Avenues	E02005593	Urban	85	65 8	4 64	20	11 19	9 10	59	49	110	25 1	9 48	3 55	7	5 1	1	13	3	1 5	0	4	1 0	1	21	14 9	3 36	1	0	9 2	7 22	458
East Suffolk	Normanston & Oulton Broad East	E02006306	Urban	82	65 8	4 65	21	11 19	9 10	49	35	80	24 2	20 35	48	8	7 4	3	15	9	1 18	1	13	0 1	1 2	26	15 1	5 36	0	0	21 1	8 14	4 508

Table 13 HLE and LE estimates and ranked prevalence of significant predictors, by MSOA, according to HLE at 65 years for men (low to high, 2021)

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Norwich	New Catton & Mousehold North	E02005586	Urban	82	64	36 66	5 22	11	21	11	59 4	19 11	13 25	19	48	57 8	8	3	2 1	3 6	1 14	1	9 1	1	2	25 1	4 10	28	1 (39	18	20 535
Great Varmouth	Caister on Sea	E02005540	Rural	85	68	23 66	5 20	11	20	11	49 4	14 7	3 26	29	50	46 6	7	4	3 1	4 9	1 19	1	12 0	1	3	21 1	3 12	28	0	1 12	19	13 540
Brockland	Wayland Ellingham & Great Hockham	E02005512	Rural	20	65	24 60	10	11	10	12	10	22 10	12 22	22	42	22 6	7		2 1	1 0	1 1	7 1	11 0	1	2	24 0		21	0	1 22	12	0 500
Kingle Lung and Mart Marfalls	Couthers Saltural & Useland	E02003312	Dural	00	05	0.0	10	11	15	12	40 0	10 10	0 05	22	43	52 U		7	2 1	1 10	1 1		17 0	-	2	24 5		31	0 -	1 33	15	5 500
Ring's Lynn and West Noriolk	Southery, Feitwein & Hockwold	E02003309	Rural	02	70		19	11	25	12	36 4	+2 /	0 25	22	45	40 0	0	4	2 1	01 0	1 2		1/ 0	1	2	21 3		37		1 35	11	12 525
Broadland	Horstord, Hainford & Hevingham	E02005523	Rural	83	/0	54 /(18	11	19	12	44 3	5/ /	9 18	22	39	38 0	9	3	2 1	1 /	1 10		8 1	0	2	13 8		20	-1 -	1 10	10	10 590
King's Lynn and West Norfolk	Stoke Ferry, Hilgay & Wimbotsnam	E02005568	Rurai	80	00	53 0.	19	11	20	12	58 4	+2 14	19 25	31	43	39 0	1	4	2 1	0 9	1 10	5 0	11 0	1	3	20 9	8	25	0 -	1 3/	8	12 569
Breckland	Dereham Central & Toftwood	E02005507	Urban	80	65	35 66	5 19	11	22	12	48	33 9	7 22	22	43	46 6	8	3	2 1	4 8	1 1	1	13 0	1	2	20 1	2 11	33	0 0	0 6	14	12 521
North Norfolk	Fakenham	E02005580	Rural	83	67	35 67	7 18	11	20	12	57 4	17 11	15 22	16	39	49 6	8	5	2 1	1 9	1 18	3 0	13 0	1	3	19 1	1 9	31	0 -	1 12	13	12 523
East Suffolk	Halesworth & Wangford	E02006316	Rural	81	66	30 65	5 17	11	21	12	49 3	35 7	7 24	20	35	49 6	7	5	2 1	6 7	1 18	8 0	8 2	1	3	19 1	2 9	25	0 -	1 21	18	11 550
South Norfolk	New Costessey	E02007055	Urban	83	67	34 67	7 20	11	21	12	50 3	36 11	11 19	19	39	46 6	7	3	2 1	6 7	1 1	3 1	11 0	0	2	13 9	8	22	0 -	1 7	9	11 594
Broadland	Hellesdon South East	E02005530	Urban	84	70	35 69	9 19	11	20	12	44 3	37 8	4 18	22	39	45 7	7	3	2 1	3 7	1 14	1	7 0	1	2	11 7	7	18	0 -	1 15	8	8 556
King's Lynn and West Norfolk	Heacham & Snettisham	E02005553	Rural	84	69	34 68	3 19	11	21	12	58 4	12 11	12 25	31	43	43 6	9	5	3 1	1 10	1 2	3 1	9 0	1	4	19 1	0 10	28	1 -	1 16	13	11 550
Great Yarmouth	Fleggburgh, Rollesby & Martham	E02005539	Rural	84	67	34 68	3 21	11	21	12	49 4	14 6	7 26	29	50	36 6	8	5	3 1	1 10	1 2	3 1	10 0	1	3	21 1	0 9	24	0 -	1 35	13	12 567
North Norfolk	North Walsham East	E02007032	Urban	79	64	35 67	7 20	11	21	12	57 4	47 11	12 22	16	39	50 6	9	5	3 1	4 9	1 19	1	12 0	1	3	20 1	3 11	25	0 -	1 10	16	14 538
North Norfolk	North Walsham West	E02007033	Urban	77	62	35 67	7 20	11	21	12	57 4	17 11	12 22	16	39	49 6	9	5	3 1	4 9	1 19	1	12 0	1	3	20 1	3 11	25	0 -	1 10	16	14 538
East Suffolk	Carlton Colville	E02006310	Urban	82	67	35 67	7 19	11	22	12	49 3	35 7	7 24	20	35	45 7	8	4	3 1	6 9	1 18	3 1	12 0	1	2	18 1	2 10	25	0 0	0 8	14	14 552
North Norfolk	Stalham & Sea Palling	F02005582	Rural	85	67	36 6	7 20	11	21	12	57 4	17 10	17 22	16	39	45 6	8	5	3 1	4 10	1 2	1	13 1	1	3	24 1	2 10	26	0 -	1 43	13	14 525
Great Varmouth	Bradwall North	E02005502	Urban	95	70	26 70	20	11	21	12	10 /	14 7	0 26	20	50	41 6	0	4	2 1	2 0	1 1	7 1	10 0	1	2	12 7	/ 0	20	0	1 5	7	10 556
Brockland	Swaffham	E02005545	Dural	00	66		10	11	22	12	40 4	10	0 20	20	42			-	2 1	7 10	1 2		10 0	1	2	15 /	4 12	42	0 -		20	10 550
Breckland	Swallham	E02003309	Rural	00	00		10	11	25	15	40 3	10	2 22	22	45	45 0	•	5	3 1	/ 10	1 2	0	12 1	1	3	25 1	+ 12	45	0 1	1 20	20	12 519
Breckland	whissonsett, Litcham & Narborough	E02005504	Rural	81	0/	50 /(19	11	21	13	48	53 9.	2 22	22	43	37 0	8	5	2 1	3 9	1 12		14 1	1	3	19 5	8	20	0 -	1 30	11	10 5/3
South Norfolk	Hempnall, Ditchingham & Wortwell	E02005608	Rural	82	68	34 69	9 18	11	22	13	50 3	36 8	9 19	19	39	40 6	8	4	2 1	0 8	1 1	/ 1	10 1	1	3	17 8	7	18	0 -	1 35	11	9 604
Breckland	Bawdeswell, Swanton Morley & North Elmham	E02005503	Rural	81	69	34 69	9 18	11	21	13	48 3	33 7	8 22	22	43	37 6	7	4	2 9	8	1 18	3 1	13 0	1	3	18 8	; 7	22	0 -	1 38	11	10 585
King's Lynn and West Norfolk	Grimston, Gayton & East Winch	E02005562	Rural	82	66	36 69	20	11	23	13	58 4	12 14	12 25	31	43	41 6	9	5	3 1	5 10	1 2	1 1	11 1	1	3	22 1	0 9	19	0 -	1 40	10	12 565
South Norfolk	Hethersett	E02005599	Rural	80	67	39 7 1	L 18	11	24	13	50 3	36 9	8 19	19	39	43 6	7	3	1 1	0 6	1 14	1	8 1	0	2	10 8	; 7	14	-1 -	1 7	9	9 640
Broadland	Sprowston East	E02005532	Urban	79	67	85 69	19	11	23	13	44 3	37 8	1 18	22	39	44 7	8	3	2 1	2 7	1 1	5 1	12 0	1	2	8 5	6	18	-1 -	1 12	5	7 581
King's Lynn and West Norfolk	Downham Market	E02005567	Urban	78	65	66	5 18	11	21	13	58 4	12 10	3 25	31	43	50 6	7	4	2 1	1 9	1 18	3 0	11 0	0	3	19 1	2 9	27	0 -	1 11	16	11 554
South Norfolk	Diss & Roydon	E02005611	Urban	80	67	35 69	9 17	11	22	13	50 3	36 9	9 19	19	39	50 6	7	4	2 9	7	1 18	3 1	13 0	0	2	15 1	0 9	24	0 0	9	12	11 563
Broadland	Acle & Reedham	E02005537	Rural	82	68	36 69	20	11	21	13	44 3	37 9	7 18	22	39	46 6	9	4	2 1	5 7	1 2	1	13 2	1	2	15 8	8	21	-1 -	1 23	10	9 608
East Suffolk	Gunton East, Corton & Somerleyton	E02006302	Urban	83	69	38 71	18	11	23	13	49 3	35 7	2 24	20	35	38 6	8	4	3 1	4 9	1 1	7 1	11 0	1	2	17 8	8	16	0 0	20	8	9 594
East Suffolk	Pakefield South & Kessingland	E02006313	Urban	84	68	36 67	7 19	11	23	13	49 3	35 7	8 24	20	35	45 6	8	4	3 1	5 10	1 19	9 1	13 0	1	3	20 1	2 11	29	0 0	18	14	12 558
South Norfolk	Wymondham Fast & Spooner Bow	F02005603	Urban	83	70	36 71	18	11	23	14	50 3	36 9	6 19	19	39	45 6	8	3	1 1	3 7	1 14	1 1	11 1	1	2	12 8	2 7	13	-1 -	1 16	9	9 608
North Norfolk	Sheringham	E02005570	Rural	83	68	88 71	18	11	23	15	57 4	17 10	15 22	16	39	45 6	9	5	3 8	9	1 2/	1 1	9 1	1	4	15 0	4 9	16	0 .	1 18	10	10 621
Prockland	Thetford South	E02005519	Urban	96	66	22 63	2 22	12	17	0	10 2	10	11 22	22	42	51 6	6	2	2 1	2 7	1 13	1	11 0	1	2	20 1	6 12	61	0		21	19 496
bleckland	There is the south	E02003319	Urban	00	00	02 03	23	12	1/	2	40	10 10	1 22	10	45	51 0	7	2	2 1				11 0	1	2	20 1	5 15	10			21	10 450
Norwich	Inorpe Hamiet & Mousehold South	E02006908	Urban	80	08	50 00	21	12	21		59 4	49 14	1 25	19	48	8 10	<u>'</u>	3	2 1	3 0	1 1		9 1	0	2	28 1	5 13	24	1	21	15	18 509
Norwich	Earlnam Road & College Road	E02005592	Urban	83	/1	32 69	18	12	1/	11	59 4	19 8	/ 25	19	48	51 8	/	2	2 1	2 5	1 10	1	9 1	0	2	9 5	3	2	0 0	5 37	1	11 652
North Nortolk	Mundesley, Trunch & Bacton	E02005576	Rural	81	65	34 65	5 20	12	19	11	57 4	47 10	09 22	16	39	40 6	10	6	4 1	6 10	1 23	2 2	14 0	1	3	23 1	1 12	28	0 -	1 26	14	11 550
King's Lynn and West Norfolk	Hunstanton	E02005551	Rural	84	65	31 64	1 22	12	19	11	58 4	12 12	25 25	31	43	48 6	8	5	3 1	1 9	1 20) 1	13 0	1	3	27 1	3 14	37	1 -	1 25	22	11 544
Breckland	Thetford Central & East	E02005518	Urban	84	69	37 70	21	12	22	12	48 3	33 8	6 22	22	43	48 7	6	3	2 1	3 7	1 13	3 1	11 0	1	2	13 6	5	33	0 (9	7	9 535
Breckland	Dereham North & Neatherd	E02005505	Urban	87	69	35 68	3 22	12	20	12	48 3	33 9	0 22	22	43	44 6	8	4	2 1	4 8	1 10	5 1	12 0	1	2	20 1	2 11	24	0 (8	15	12 558
South Norfolk	Scole, Dickleburgh & Bressingham	E02005610	Rural	82	69	36 70	19	12	21	12	50 3	36 8	7 19	19	39	39 6	8	4	2 9	8	1 18	3 1	13 0	0	2	18 8	; 7	14	0 -	1 41	10	9 606
Breckland	Shipdham, Bradenham & Saham Toney	E02005510	Rural	82	67	87 69	9 19	12	22	13	48 3	33 10	3 22	22	43	40 6	8	4	3 1	59	1 2	L 1	14 1	1	3	18 9	9	27	0 -	1 17	10	11 542
Broadland	Reepham, Cawston & Lenwade	E02005521	Rural	85	71	67	7 20	12	21	13	44 3	37 8	3 18	22	39	40 6	9	4	2 8	7	1 1	7 1	13 0	1	2	16 8	7	14	-1 -	1 39	9	9 590
North Norfolk	Melton Constable, Briston & Little Snoring	E02005577	Rural	82	67	38 70	20	12	23	13	57 4	17 7	4 22	16	39	41 6	8	4	2 9	8	1 19	0	10 0	1	3	19 9	1 7	26	0 -	1 39	13	10 583
Broadland	Wroxham, Rackheath & the Plumsteads	E02005527	Rural	86	71	35 71	21	12	20	13	44 3	37 10	00 18	22	39	37 6	8	4	2 1	2 8	1 18	3 1	10 0	1	3	12 7	8	14	-1 -	1 11	7	6 648
East Suffolk	Bungay & the Saints	E02006314	Rural	82	68	37 69	19	12	22	13	49 3	35 8	3 24	20	35	47 6	8	4	3 1	3 8	1 18	3 1	11 2	1	3	21 1	1 9	26	0 0	29	16	10 563
Broadland	Sprowston Central	F02005531	Urban	85	70	37 71	20	12	22	13	44 3	37 10	15 18	22	39	43 7	8	3	2 1	1 7	1 1	5 1	12 0	1	2	13 8	8	24	0 -	1 11	10	9 563
King's Lynn and West Norfolk	West Winch Marham & Shouldham	E02005564	Rural	86	71	88 70	21	12	23	13	58 4	12 9	5 25	31	43	37 6	7	4	2 1	9	1 1	7 1	10 0	1	3	16 7	, 7	19	0	2 19	10	9 573
Broadland	Drayton & Thorpe Marriott	E02005526	Urban	95	71	22 60	20	12	22	12	44 2	27 11	10 19	22	20	12 6	ć	2	2 1	2 7	1 19	1	7 1	0	2	10 7	, ,	12	0	1 6	0	9 606
Decedland	There a thorpe Marriet	E02003320	Urban	0.0	71	55 U:	20	12	22	15	44 3		0 10	22	20	42 0	2	2	2 1	2 7	1 1		11 0	0	2	10 7		15	0	1 10	°	3 600
Broadland	Inorpe St Andrew South & Dussindale	E02005535	Urban	84	/1	33 /0	19	12	20	13	44 3	3/ 0	9 18	22	39	46 /	8	3	2 1	3 /	1 1:	> 1	11 0	1	2	10	6	12	-1 -	1 10	9	/ 692
South Nortolk	Old Costessey & Queens Hills	E02007054	Urban	83	70	35 70) 19	12	21	13	50 3	36 11	11 19	19	39	38 6	7	3	2 1	6 7	1 13	3 1	11 1	0	2	13 9	8	22	0 -	1 7	9	11 594
North Nortolk	Hoveton, Horning & Potter Heignam	E02005583	Rural	84	68	35 65	9 19	12	22	13	5/ 4	1/ 12	27 22	16	39	40 6	8	5	3 1	3 9	1 2	1	12 1	1	3	20 1	1 9	25	0 -	1 29	16	11 619
Broadland	Blofield, Lingwood & Upton	E02005533	Rural	85	71	36 70	20	12	21	13	44 3	37 8	5 18	22	39	39 6	8	3	2 1	2 7	1 18	3 1	11 1	1	3	11 7	6	11	-1 -	1 15	9	9 629
Broadland	Aylsham	E02005520	Rural	80	67	38 71	19	12	23	14	44 3	37 11	15 18	22	39	45 6	8	4	2 1	0 7	1 10	5 1	12 1	1	2	14 9	8	18	0 -	1 18	11	9 621
South Norfolk	Mulbarton, Tasburgh & Saxlingham Nethergate	E02005605	Rural	83	70	38 73	3 19	12	23	14	50 3	36 7	9 19	19	39	38 6	7	3	1 9	7	1 14	0	9 0	0	2	11 6	5	11	-1 -	2 25	8	8 638
Breckland	Buckenhams & Snetterton	E02005515	Rural	85	70	38 72	2 20	12	23	14	48 3	33 10	07 22	22	43	38 6	7	3	2 1	2 7	1 1	5 1	10 0	0	2	14 6	5	18	-1 -	1 32	7	8 579
East Suffolk	Worlingham & Barnby	E02006312	Urban	85	70	37 71	L 20	12	22	14	49 3	35 5	6 24	20	35	40 7	7	4	2 1	6 8	1 1	1	10 1	1	3	13 7	7	14	0 -	1 14	9	8 608
South Norfolk	Wymondham West	E02005601	Urban	83	66	39 71	22	12	24	14	50 3	36 10	05 19	19	39	54 6	8	3	1 1	3 7	1 14	1 1	11 1	1	2	13 9	8	17	0 -	1 14	9	11 548
South Norfolk	Harleston & Pulham	E02005609	Rural	85	70	37 70	20	12	22	14	50 3	36 9	0 19	19	39	44 6	7	4	2 9	8	1 1	1	11 0	1	3	14 9	8	23	-1 -	1 21	13	10 552
North Norfolk	Felmingham, Worstead & Hannishurgh	E02005581	Rural	82	66	30 71	20	12	25	14	57 4	17 7	0 22	16	39	37 6	8	4	3 1	4 9	1 20) 1	11 1	1	3	22 0	7	20	0	1 42	11	10 571
Fast Suffolk	Oulton Broad West	F02006207	Urban	82	71	36 71	19	12	22	14	49 3	25 6	6 24	20	35	37 7	Q	4	3 1	5 9	1 10	1	12 0	1	2	10 3	7	16	0	1 6	7	8 602
Prockland	Fact Harling Carboldicham & Konnischall	E02000507	Bural	00	60	1 7	20	12	25	15	47 3		0 22	20	42	25 6		4	2 1	1 7	1 10		10 0	1	2	16 -	, ć	10	0 -	1 26	0	0 610
Dieukidnu	cast naming, Garboldisham & Kenninghall	202003316	Rurai	82	09	/4	20	12	20	15	40	9	0 22	22	43	55 0	°	4	2 1	1 /	1 13		10 0	0	2	10 1	0	10	0 -	1 30	9	0 019
King's Lynn and West Norfolk	Brancaster, Burnham Market & Docking	E02005552	Kural	84	/0	90 73	19	12	25	15	58 4	12 10	10 25	31	43	42 6	8	5	3 1	38	1 19	0	10 0	1	4	25 1	J 9	25	0 -	1 42	18	9 619

Broadland	Brundall & Cantley	E02005536	Rural	82	69	90 7	3 19	12	25	15	44	37	98	18	22 39	40	6	9	3	2	11	7 1	17	0	11	0	1	2 :	12	7 (5 13	0	-1	19	8	7 637
North Norfolk	Overstrand, Roughton & the Runtons	E02005574	Rural	84	69	90 7	1 19	12	25	15	57	47	103	22 1	16 39	38	6	9	5	3	13	1	22	1	8	1	1	3 2	20	9 9	18	0	-1	37	14	8 581
Breckland	Hockering, Mattishall & Cranworth	E02005508	Rural	84	70	85 7	0 22	13	20	12	48	33	97	22 2	22 43	3 39	6	9	4	2	10	3 1	19	1	13	1	1	2 :	17	в (5 20	0	-1	35	10	10 590
Broadland	Thorpe St Andrew North	E02005534	Urban	84	69	87 7	0 21	13	22	12	44	37	93	18 2	22 39	48	7	8	3	2	13	7 1	15	1	12	0	1	2 :	12	8 8	3 16	6 0	-1	15	7	10 563
South Norfolk	Hingham, Morley & Barnham Broom	E02005600	Rural	83	70	87 7	0 21	13	22	13	50	36	73	19 1	19 39	40	6	8	3	1	11	7 1	15	1	11	0	0	2 :	15	7 7	13	-1	-1	36	8	8 612
Broadland	Taverham	E02005525	Urban	83	70	83 7	0 19	13	19	13	44	37	91	18	22 39	9 42	6	8	3	1	13	7 1	15	1	7	1	0	2	8	5 5	13	-1	-2	6	7	8 642
South Norfolk	Long Stratton, Carlton Rode & Tibenham	E02005607	Rural	83	69	86 7	0 21	13	23	13	50	36	88	19 1	19 39	38	6	8	3	2	11 :	3 1	15	1	12	0	0	2 :	15	3 (5 17	-1	-1	33	11	9 590
Broadland	Old Catton	E02005528	Urban	82	70	87 7	1 19	13	22	13	44	37	95	18 3	22 39	9 43	7	8	3	2	13	5 1	14	1	9	1	1	2	9	5 (5 15	-1	-1	11	8	8 587
Broadland	Coltishall, Buxton & Frettenham	E02005522	Rural	83	69	85 7	1 21	13	20	13	44	37	79	18 2	22 39	40	6	7	3	2	14	3 1	18	0	9	1	1	2 1	14	7 7	14	0	-1	30	8	9 588
North Norfolk	Beeston Regis, Saxthorpe & Aldborough	E02005575	Rural	86	71	86 7	0 21	13	21	13	57	47	72	22 1	16 39	39	6	8	4	2	8	3 1	20	1	10	0	1	3	21	9 8	19	0	-2	43	12	9 585
East Suffolk	Oulton	E02006304	Urban	87	70	88 6	8 22	13	23	13	49	35	71	24	20 35	5 42	7	8	4	3	16	9 1	18	1	12	1	1	2 2	20 1	2 1	2 30	0	0	5	16	11 546
King's Lynn and West Norfolk	Dersingham, Sandringham & Massingham	E02005554	Rural	81	67	87 6	9 22	13	24	14	58	42	118	25 3	31 43	3 44	6	8	5	3	11) 1	20	1	13	0	1	3 1	16	9 8	3 23	0	-2	15	13	10 558
South Norfolk	Cringleford, Little Melton & Easton	E02005598	Rural	85	73	85 7	2 20	13	22	14	50	36	87	19 1	19 39	37	6	7	3	1	11	5 1	13	1	8	1	0	2 :	11	7 3	5 7	-1	-1	24	10	6 688
North Norfolk	Walsingham & Raynham	E02005578	Rural	87	70	90 7	0 22	13	25	14	57	47	105	22 1	16 39	9 43	6	8	5	2	12) 1	18	0	13	0	1	3 1	25 1	0 9	34	0	-1	45	15	10 542
North Norfolk	Holt & Weybourne	E02005573	Rural	86	69	88 7	0 21	13	23	14	57	47	89	22 1	16 39	48	6	8	4	2	8	3 1	19	1	9	0	1	3 :	18		24	0	-1	19	11	9 571
South Norfolk	Trowse, Poringland & Stoke Holy Cross	E02005602	Rural	83	71	88 7	3 19	13	24	15	50	36	79	19 1	19 39	9 42	6	7	3	1	9	5 1	15	0	6	0	1	2	8	5 5	5 9	-1	-1	21	7	7 654
Broadland	Spixworth & St Faiths	E02005524	Rural	89	72	91 74	4 24	13	26	15	44	37	81	18	22 39	9 42	6	8	3	2	14	7 1	17	0	8	1	1	2 1	10	7 (5 20) -1	-1	10	8	8 554
South Norfolk	Loddon, Surlingham & Alpington	E02005604	Rural	87	72	85 7	1 22	14	20	12	50	36	78	19 1	19 39	9 41	6	6	3	2	9	7 1	15	1	9	0	1	3 1	14	9 8	3 14	-1	-1	20	11	9 612
Norwich	Eaton	E02005595	Urban	85	73	90 7	3 20	14	25	15	59	49	81	25 1	19 48	3 47	7	7	3	2	13	5 1	12	1	8	1	1	2	8	5 5	5 8	0	-1	9	10	8 669
King's Lynn and West Norfolk	Wootton	E02005555	Urban	86	73	88 7	4 21	14	23	15	58	42	95	25 3	31 43	3 36	6	7	4	2	10	3 1	16	1	10	0	0	2	8	\$ 4	11	0	-2	6	6	5 673
East Suffolk	Southwold, Reydon & Wrentham	E02006315	Rural	86	71	87 7	1 21	14	25	15	49	35	71	24	20 35	5 46	6	8	5	3	12	7 1	20	0	10	0	1	3 1	17	9 9	22	0	-1	25	17	9 602
North Norfolk	Wells & Blakeney	E02005571	Rural	87	72	89 7	2 22	14	24	15	57	47	100	22 1	16 39	9 46	6	8	5	2	11	3 1	19	0	10	0	1	3	22 1	.0 .9	26	0	-1	41	12	10 613
South Norfolk	Thurlton, Haddiscoe & Geldeston	E02005606	Rural	89	73	90 7	2 27	16	25	15	50	36	62	19 1	19 39	35	6	7	4	2	13	3 1	17	1	11	1	1	3 2	20	8 1	19	-1	-1	47	9	9 587

Ordered according to HLE at 65 years for men (lowest to highest number of years). Risk factors are presented as deciles with 1 being the worst, coloured red, and 10 being the best, coloured blue. Deciles 1 and 10 for HLE and LE are also coloured red and blue respectively.



Figure 10 Patients with coronary heart disease, for MSOAs across Norfolk and Waveney, in 2021-229 Patients with coronary heart disease (%, 2021-22)

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*Figure 11 Percentage of population aged 16 years or over reporting they do not eat the recommended five portions of fruit and vegetables on a usual day, for district councils across Norfolk and Waveney, in 2021-22*¹⁰



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⁹ Quality and Outcomes Framework 2021-22, NHS Digital.

¹⁰ Calculated using difference between total population and population reporting they eat the recommended 'five a day' on a usual day. Source: Office for Health Improvement and Disparities (based on the Active Lives Adult Survey, Sport England.

Appendix 2: Data and sources

Category	Year	Data Item	Data Description	Area	Source
			HLE and LE 2021		
			Number of people in the resident population, by age and		
		Population count	sex		
HLE and LE		Deaths count	Number of recorded deaths, by age and sex		
Calculation			Number of people by age and sex self-reporting health		
		Self-reported health	as good or very good on a 5-point scale ranging from		
	2021	rating counts	very bad to very good	MSOA	Census 2021 52
		Estimated	Percentage of patients age 6+ with AST005 code,		
		prevalence of	indicating diagnosis of asthma, excluding patients not		
		asthma	prescribed asthma related drugs in preceding 12 months		
		Estimated			
		prevalence of atrial	Percentage of patients with AF001 code, indicating		
		fibrillation	diagnosis of atrial fibrillation)	-	
Prevalence		Estimated	Percentage of patients with CAN001 QOF code,		
estimates		prevalence of	indicating cancer diagnosis excluding non-melanotic skin		
of health		cancer	cancers diagnosed on or after 1 April 2003	-	
conditions ¹¹		Estimated			
		prevalence of			
		chronic kidney	Percentage of patients aged 18+ with CKD005 code,		
		disease	indicating chronic kidney disease categories G3a to G5		
			Percentage of patients with COPD009 code, indicating		
			diagnosis of COPD before 1 April 2021, and patients with		
		Estimated	COPD on or after 1 April 2021 confirmed by quality	GP	
	2021	prevalence of COPD	assured post-bronchodilator spirometry FEV/FVC ratio	practice	QoF 2021/22 53

¹¹ Estimates applied to patient resident MSOAs, apportioned by GP-MSOA age distributions. See xxx for detail of the method.

	below 0.7 between 3 months before or 6 months after diagnosis or if newly registered in preceding 12 months without a record of spirometry having been performed, a record of an FEV1/FVC ratio below 0.7 recorded within 6 months of registration, and patients with a diagnosis of COPD on or after 1 April 2021 unable to undertake spirometry	
Estimated prevalence of depression	Percentage of patients aged 18 with DEP003 code, indicating a new diagnosis of depression 1 April 2021 to 31 March 2022 reviewed no earlier than 10 days after and no later than 56 days after date of diagnosis	
Estimated prevalence of dementia	Percentage of patients with DEM001 code, indicating diagnosis of dementia	
Estimated prevalence of diabetes mellitus	Percentage of patients aged 17+ by resident MSOA with DM017 code, indicating diagnosis of Type 1 or 2 diabetes mellitus	
Estimated prevalence of epilepsy	Percentage of patients aged 18+ with EP001 code, indicating on drug treatment for epilepsy	
Estimated prevalence of hypertension	Percentage of patients by resident MSOA with HYP001 code, indicating hypertension	
Estimated prevalence of coronary heart disease	Percentage of patients with CHD001 code, indicating coronary heart disease	
Estimated prevalence of learning disability	Percentage of patients all ages with LD004 code, indicating learning disability	

		Estimated prevalence of stroke	Percentage of patients with STIA001 code, indicating		
		Estimated prevalence of peripheral arterial disease	Percentage of patients with PAD001 code, indicating		
		Estimated prevalence of rheumatoid arthritis	Percentage of patients aged 16+ with RA001 code, indicating diagnosis of rheumatoid arthritis		
	2021	Estimated prevalence of osteoporosis	Percentage of patients with OST004 code, indicating DXA scan confirmed osteoporosis without fragility fracture on or after 1 April 2012	GP practice	OoF 2021/22 53
	2021		Directly standardised rate (per 100,000) of emergency hospital admissions due to falls in people aged 65 and		OHID Fingertips
	2022	Road traffic accident casualties	Number of people killed or injured on the roads		Department for
	2021	Estimated prevalence of adult obesity	Percentage of patients aged 18 + with OB002 code, indicating BMI >30 measured in preceding 12 months	GP	OoF 2021/22 ⁵³
Risk factors for poor health	2021 - 2022	Prevalence of child obesity	Proportion children in Year 6 (aged 10-11 years) with valid BMI measured by NCMP classified as obesity or severe obesity	LTLA	NCMP ⁵⁴
	2021 - 2022	Physical inactivity in adults	, Percentage of physically inactive adults aged 19+	LTLA	Active Lives Survey ⁵⁴

	2019	Not eating 5	Proportion of population aged 16+ reporting they had not eaten the recommended 5 portions of fruit and vegetables a day on a usual day. Calculated using difference between total population and population		
	-	portions fruit and	reporting they eat the recommended '5 a day' on a usual		Active Lives
	2020	vegetables per day	day.	LTLA	Survey 54
			Admissions to hospital where the primary diagnosis or any of the secondary diagnoses are an alcohol-specific		
	2017	Admission episodes	(wholly attributable) condition. Directly age		
	-	for alcohol-specific	standardised rate per 100,000 population (standardised		OHID Fingertips
	2019	conditions	to the European standard population).	LTLA	54
	2021	Prevalence of ever	The sum of the percentage prevalence for current smokers and ex-smokers, by sex	LTLA	Annual Population Survey ⁵⁶
	2021	Air Pollution	Modelled average annual concentration PM2 5 μ g / m ³	km ²	DEERA 57
	2019- 2020	Weekly average income	We obtained three variables: weekly total income per household per MSOA, weekly net income per household per MSOA, and weekly net income after housing per MSOA	MSOA	ONS ⁵⁸
	2021	Proportion of people aged 66 and over living alone	Age of Household Reference Person by Household lifestage	MSOA	Census 2021 ⁵²
	2021	Low birth weight	Proportion babies born 37 weeks or later with birth weight <2.5kg	LTLA	OHID Fingertips
	2021	High levels of anxiety	Percentage of population with high levels of anxiety, as an indicator of poor wellbeing	LTLA	Annual Population Survey ⁵⁹
Deprivation	Index of Multiple Aggregate average IMD score per MSOA		LSOA	DLUHC 60	

		IDACI Score	Aggregate average Income Deprivation Affecting Children Index score per MSOA		
			Aggregate average Income Deprivation Affecting Older		
		IDAOPI Score	People Index score per MSOA		
		Income Domain			
		Score	Aggregate average income score per MSOA		
		Crime Domain Score	Aggregate average Crime score per MSOA		
			Aggregate average Education, Skills, and Training		
		EST Domain Score	Domain score per MSOA		
		Employment			
		Domain Score	Aggregate average employment score per MSOA		
			Aggregate average Health Deprivation and Disability		
		HDD Domain Score	score per MSOA		
		Living Environment			
		Domain Score	Aggregate average living environment score per MSOA		
Burality					DEFRA and ONS
Nurality	2011	Rurality	Rural vs Urban	LSOA	61

Appendix 3: Data preparation

Year	MSOA	LSOA code	Best LSOA	Single best	Postcodes	Total
	code	(same year)	match	MSOA match	matching best	Postcodes
	(same		(comparison	(comparison	MSOA n (%)	
	year)		year)	year)	(comparison year)	
201	E0200557	E01026753	E01026753	E02007032	164 (100)	164
1	9	E01026754	E01026754	E02007032	34 (100)	34
		E01026755	E01026755	E02007032	34 (100)	34
		E01026756	E01026756	E02007032	27 (100)	27
		E01026757	E01026757	E02007032	26 (96.3)	27
		E01026758	E01026758	E02007033	32 (100)	32
		E01026759	E01026759	E02007033	38 (100)	38
		E01026760	E01026760	E02007033	76 (98.7)	77
		E01026761	E01026761	E02007033	48 (100)	48
		Best overall I	MSOA match	E02007032	285 (59.3)	481
		Aggregate m	atch: E02007032 +	E02007033	481 (100)	481
	E0200559	E01026822	E01305139	E02007053	273 (100)	273
	0	E01026823	E01026823	E02007053	241 (98.4)	245
		E01026824	E01026824	E02007052	45 (100)	45
		E01026825	E01026825	E02007052	43 (100)	43
		E01026826	E01026826	E02007052	94 (98.9)	95
		E01026827	E01026827	E02007052	65 (100)	65
		Best overall I	MSOA match	E02007053	514 (67.1)	766
		Aggregate m	atch: E02007052 +	E02007053	761 (99.3)	766
	E0200559	E01026916	E01026916	E02007055	63 (100)	63
	7	E01026917	E01026917	E02007055	34 (100)	34
		E01026918	E01026918	E02007055	44 (100)	44
		E01026924	E01026924	E02007054	38 (100)	38
		E01026925	E01026925	E02007055	58 (100)	58
		E01033538	E01035153	E02007054	95 (100)	95
		E01033540	E01033540	E02007054	31 (100)	31
		Best overall I	MSOA match	E02007055	199 (54.8)	363
		Aggregate m	atch: E02007054 +	E02007055	363 (100)	363
202	E0200703	E01026758	E01026758	E02005579	32 (100)	32
1	3	E01026759	E01026759	E02005579	38 (100)	38
		E01026760	E01026760	E02005579	75 (100)	75
		E01026761	E01026761	E02005579	50 (100)	50
		Best overall I	MSOA match	E02005579	195 (100)	195
	E0200705	E01026823	E01026823	E02005590	241 (100)	241
	3	E01035139	E01026822	E02005590	241 (100)	241
		E01035140	E01026822	E02005590	60 (96.8)	62
		Best overall I	MSOA match	E02005590	542 (99.6)	544

MSOA geography boundary matching

E0200705	E01026916	E01026916	E02005597	63 (100)	63
5	E01026917	E01026917	E02005597	34 (100)	34
	E01026918	E01026918	E02005597	44 (100)	44
	E01026925	E01026925	E02005597	58 (100)	58
	Best overall MSOA match		E02005597	199 (100)	199

Prevalence estimates of health conditions

The Quality and Outcomes Framework (QoF) is an incentive programme for GP practices in England ²², who may voluntarily submit data as an indicator of the delivery of quality care, to achieve QoF points in exchange for payment if meeting specified targets. QoF data is published annually at practice level, without a breakdown by patient age or residence. QoF data has been used before to estimate prevalence of specific health conditions and behaviours at small area geography ⁶²⁻⁶⁴. We used a modified version of the method shared by the House of Commons Library ²³, and describe the modifications made below.

In summary, we used the age distribution of MSOAs, the age distribution of practice patient lists, and MSOAs of residence on the patient list, to apportion GP level QoF data to MSOAs, to calculate the estimated prevalence of specific health conditions.

Data was obtained for MSOA population estimates by age ⁶⁵, GP patient list size by age and LSOA of residence (in separate data files), and QoF data per practice for variables of interest⁶⁶ ⁶⁷. The QoF data contained the number of people with a specified condition of the eligible patient list size (which may be age restricted, depending on the variable) per practice. Data was restricted to N&W, the GP patient list size by LSOA was aggregated to MSOA, and QoF data restricted to variables of interest. ⁶⁵⁻⁷⁰

Firstly, we estimated the number and proportion of patients of specific age ranges living in each MSOA for each GP practice, by applying MSOA population age distribution data from ONS to the number of patients in each MSOA per practice. Patients were excluded if MSOA of residence was missing from the GP patient list data, which affected 0.88% (9,550 of 1,080,827) patients in 2021, and 0.87% (8,894 of 1,018,180) in 2011. For 2011-12, GP patient list data by single year of age was available for 2014-15 at the earliest. Therefore, 2011-12 QOF data was used, and the 2014-15 GP patient list data was adjusted by applying a ratio comparing 2014 and 2011 MSOA age distributions. This initial step assumes that a practice's patients in a specified MSOA have the same age distribution as the MSOA overall. For this reason, we calculated a ratio comparing the estimated number of patients of specific ages at MSOA level (i.e., by combining estimations across GP surgeries, per MSOA) to the actual MSOA population age distribution. The estimations were then multiplied by this ratio, to adjust for the difference between the estimated age distribution per MSOA per GP practice, and the MSOA's overall age distribution. This adjustment had minimal effect on the estimation values.

We then estimated the number of people with a specific health condition by multiplying the QoF value (e.g., total number of people with a learning disability per practice) by the estimated proportion of patients of a specific age range (as relevant to the QOF variable) living in each MSOA for each GP practice. This was summed by MSOA, to produce an estimated number of people with a condition at MSOA level (our prevalence numerator). Then, the estimated number of people of specific ages per MSOA per practice were summed at the MSOA level, to produce a prevalence denominator per MSOA. This process apportioned the data from GP level to MSOA level, considering the age distributions of the GP patient list and MSOA, and the age-related inclusion and exclusion criteria of each QoF variable.

Finally, the numerator was divided by the denominator, and multiplied by 100 to calculate percentage prevalence of each condition at MSOA level. The prevalence estimates were compared to published national or regional prevalence estimates, and maximum and minimum values examined, to verify plausibility.

The modifications made to the published method shared by the House of Commons Library on GitHub ²³ were:

- We did not apply the IMD adjustment values, which intended to adjust the numerator by differences in relative deprivation, as the author had not described how these values were created to permit replication.
- We did not apply the Census self-reported health derived adjustment values, which
 intended to adjust the numerator by differences in morbidity distribution, for the same
 reason as the above, and because this was not found to correlate well with most QoF
 variables studied by Martin & Wright⁷¹.
- We did not replace the population size and age distribution for MSOAs with fewer than expected GP registered patients relative to the MSOA population size, as the threshold for this difference and the process for selecting replacement values from other MSOAs was not described to permit replication.

Our method assumes that the QoF and GP patient list data is representative of the registered and unregistered population, and that there is an equal distribution of morbidity in QoF data, for the MSOAs linked to a single practice. Additionally, QOF data is not broken down by sex, therefore we assume an equal distribution.

We considered other methods of using QoF data to calculate MSOA level prevalence, however these assumed people are registered with the practice of shortest distance from their MSOA of residence, which the data obtained from NHS Digital demonstrated is not true. We also considered using the Longitudinal Patient Record to calculate health condition prevalence, however there was substantial missing data for the variables of interest, which would have resulted in low sample sizes or no sample for some MSOAs. There was no superior alternative source to QoF identified available at small area geography for the years of interest.

Risk factors for poor health

Pollution - particulate matter PM_{2.5}

Background pollution for particulate matter (PM_{2.5}), a pollutant which causes a range of health complications in humans ⁷², was modelled by Defra using a 1 km x 1 km grid resolution across the UK ⁷³. Data on annual mean concentration of PM_{2.5} for 2011 and 2021 were downloaded, imported into ArcGIS Pro version 3.0.1, and displayed spatially according to the coordinates in the data, to the British National Grid coordinate system. The resulting data were a grid of data points spaced 1km apart, each with a value for modelled PM_{2.5} concentration at that spatial location. The point data were spatially joined to the MSOA boundaries (2011 version, n=125) in Norfolk and Waveney, using the 'Add Spatial Join' tool. The tool was used to select all data points within a distance of 100m of each MSOA (to overcome potential edge/boundary effects ⁷⁴) and to calculate the average value of all of those points for each MSOA. This was repeated for the 2011 and 2021 PM_{2.5} data in turn.

Income

The closest available years to the target years for income data at MSOA level were for the years 2019-20, and 2011-12. This was obtained from ONS and restricted to N&W MSOAs. The 2019-20 file presented income per year, whilst 2011-12 was per week. To permit comparison, the 2019-20 data was divided by 52, to provide variables for weekly total income, weekly net income, and weekly net income after housing.