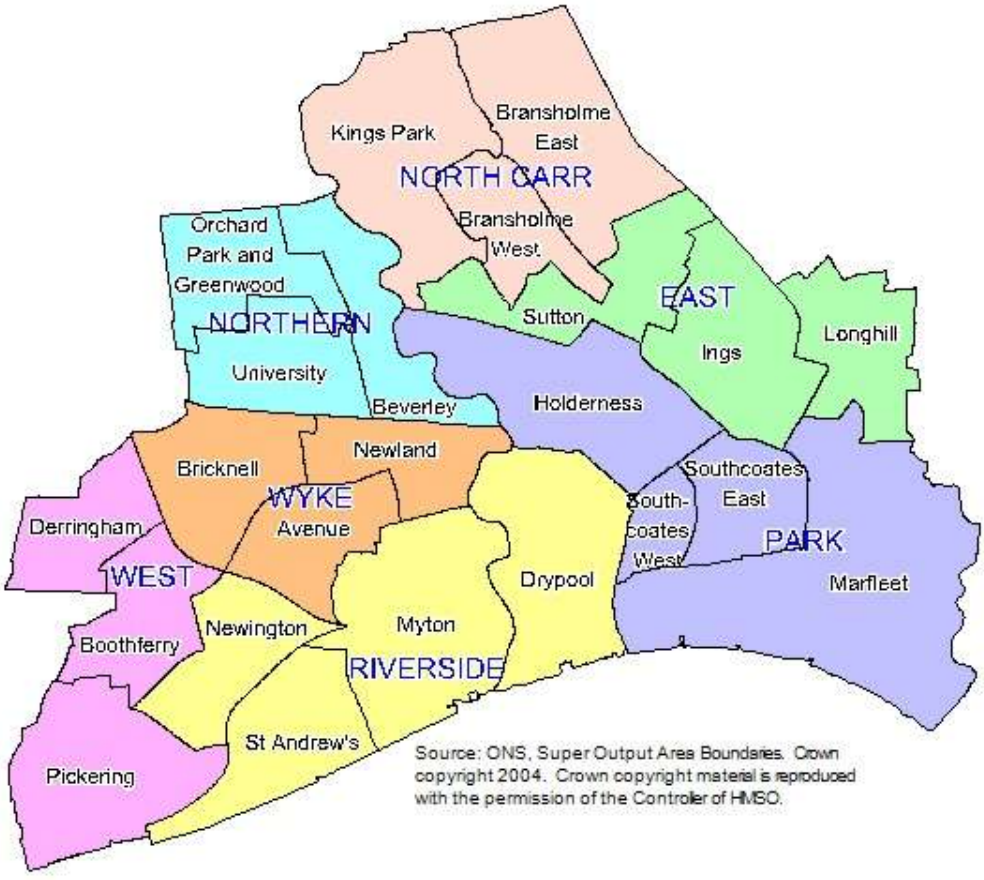
HULL JSNA TOOLKIT RELEASE 6:

Inpatient Hospital Admissions



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This document is one of a suite of reports that form the basis of Hull's Joint Strategic Needs Assessment (JSNA). Each of these JSNA documents and summaries are available for perusal or downloading at www.hullpublichealth.org.

Whilst this document contains a substantial quantity of information, it may not include everything you need. If you require any further information not included within this document, or require further explanation, please contact us and we'll try to help.

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This report and others are available at www.hullpublichealth.org.

HULL JSNA TOOLKIT: Inpatient Hospital Admissions

Contents

JSNA TOOLKIT:
Inpatient Hospital Admissions

1 SUMMARY

This release incorporates data provided by NHS Hull, Hull City Council and other partners and forms a foundation for the Joint Strategic Needs Assessment (JSNA) which can be found at www.hullpublichealth.org. It is important to examine levels of health and ill-health as well as levels of risk factors and attitudes towards health in different populations for monitoring purposes including the monitoring of health-related targets, examining trends over time, comparison with other geographical areas, examining patterns of health and risk factors within the population of Hull (e.g. comparison of different groups such as those defined by deprivation), assessment and evaluation of programmes designed to improve health, assessing the existing and future need for health-related services following changes in health, ill-health or risk factors so that the Commissioning function can be adequately fulfilled. Further documents such as the health equity audits, reports from the adult and young people health and lifestyle surveys, social capital surveys, child obesity reports and Index of Multiple Deprivation report are available at www.hullpublichealth.org. A local analysis of the Public Health Outcomes Framework is also available at www.hullpublichealth.org.

Public Health Outcomes Framework: Emergency re-admission within 30 days of discharge from hospital is an indicator within the Public Health Outcomes Framework.

Emergency re-admission within 30 days of discharge from hospital: In 2011-2012 the indirectly standardised rate of emergency re-admissions within 30 days of discharge from hospital in Hull was 12.09 per 100,000 residents, and was not significantly different to England, the Yorkshire and Humber region or most comparator areas.

Hospital admissions: Between 2008/09 and 2010/11 Hull residents had 224,410 hospital stays. The annual standardised rate of admissions (1976 European Standard Population) was highest in North Hull (277 per 1,000 residents), compared with 269 admissions per 1,000 residents of East Hull and 257 per 1,000 residents of West Hull. The rate of admissions exceeded 300 per 1,000 residents in eight wards, with the highest rate seen in Ings, St Andrews and Myton (331, 327 and 325 per 1,000 respectively). The lowest admissions rates were seen in Newland, Avenue and University wards (217, 227 and 239 per 1,000 respectively).

Deprivation: As expected, given the higher prevalence of lifestyle and behavioural risk factors, people living in the most deprived fifth of areas of Hull had the highest hospital admission rate (312 per 1,000 residents) decreasing as deprivation decreased to 229 per 1,000 residents of the least deprived fifth of areas of the city.

2 INTRODUCTION

2.1 Other Reports

This revision of the JSNA Toolkit for Hull is a series of stand alone reports on specific diseases or conditions, people groups, risk factors for disease and other health and wellbeing related issues. Each of these individual reports sum to form the JSNA Toolkit, which informs the production of the JSNA. Each of the JSNA Toolkit documents may be accessed on, and downloaded from, www.hullpublichealth.org. The full list of reports is as follows:

Executive Summary
Abbreviations
Glossary
Geographical Area
Demography and Demographics
Housing, Environment and Social Care
Deprivation and Associated Measures
General Health, Disabilities, Caring and Use of Services
Dental Health
Inpatient Hospital Admissions
Life Expectancy
Mortality
Overweight and Obesity
Physical Activity
Diet
Alcohol Consumption
Drug and Substance Abuse
Smoking
Vaccinations and Immunisations
Screening
All Circulatory Disease
Coronary Heart Disease
Stroke
Other Circulatory Diseases
All Cancers
Lung Cancer
Colorectal Cancer
Prostate Cancer
Breast Cancer
Diabetes
Chronic Kidney Disease
All Respiratory Disease
Asthma
Chronic Obstructive Pulmonary Disease

Epilepsy
Hypothyroidism
Palliative Care
Mental Health and Learning Disabilities (includes Social Capital)
Infectious Diseases
Digestive Diseases
Sexual Health
Accidents
Children and Young People
Older People

In order to avoid duplication between the individual reports, references will be made to other reports which may contain further information or explanation.

It is the intention to release the JSNA Toolkit documents on an on-going basis, with new information added to the documents and existing data updated as new information becomes available over time. The two tables in the ***APPENDIX*** starting on ***page 63*** give the time period to which the data refers, when the information was last updated and the source for each table and figure within this document.

2.2 Terminology, Abbreviations, Statistical Methods and Terms

Further more technical information is available in the Glossary document on www.hullpublichealth.org which includes specific information on particular datasets (e.g. delays between death occurrence and registration in Public Health Mortality File, explanation of clinical episodes within Hospital Episode Statistics, further information on the Quality Outcomes Framework data, etc), abbreviations used within these JSNA Toolkit documents and other local reports, and an explanation of some statistical methods and statistical terms used within the JSNA Toolkit documents and other local documents, such as problems associated with synthetic or modelled estimates, problems associated with small numbers, explanations of confidence intervals, significance testing, standardisation, life expectancy, total period fertility rate, confounding and effect modification, etc. Some of this information is also included within the ***APPENDIX***.

2.3 Data Sources

Where possible, we have used sources of data that are routinely available nationally, either as published material (e.g. the NHS Information Centre Indicator Portal (previously known as the Compendium of Clinical and Health Indicators or Compendium), the Census, labour market website (nomis), Quality and Outcomes Framework (QOF) data, Public Health Outcomes Framework indicators, etc), from Government websites (e.g. Department of Health) or other websites (e.g. those quoted

as data sources for Public Health Outcomes Framework). Elsewhere we have used raw data at patient or episode level (e.g. Public Health Mortality Files) to construct local indicators of health. Local information has been provided by colleagues within the NHS Hull Clinical Commissioning Group, the North Yorkshire and Humber Commissioning Support Unit, Hull City Council and other organisations. The prevalence of lifestyle behavioural risk factors comes from local surveys such as the local Health and Lifestyle and Social Capital Surveys, and comparison information from the annual Health Survey for England (Health Survey for England 2008) and the General Household Survey (Economic and Social Data Service 2008). Full information about each of the local surveys conducted is available at www.hullpublichealth.org. Furthermore, the source of each table and figure is given in ***section 6.11*** on ***page 64*** (tables) and in ***section 6.11.2*** on ***page 64*** (figures). Also see ***section 6.1*** on ***page 6.1***.

We have provided the most up-to-date data available. Not all the data relate to the same time period. Different sets of data are published at different times of the year and the most recent data may not yet be published, or if the numbers of events are very low for rare diseases, the data for several years are combined to obtain a more reliable picture.

2.4 Deprivation

Unemployment, poor housing, lack of qualifications, crime and many other social and environmental factors all indirectly affect the health of the population. Different scales and scores have been produced which attempt to measure deprivation. In general, in relation to national averages, Hull has a higher unemployment rate, more poor housing, residents qualified to a lower level and higher levels of crime. Increased deprivation means that there is poorer health, but this is compounded as poor health also affects other measures such as employment and motivation to improve employment, education and the person's environment such as housing. In addition, those who live in the most deprived area are more likely to have risk factors for ill health such as smoking, poor diet, lack of physical activity, etc. It is also generally more difficult to change lifestyle behaviour if the environment is more stressful resulting from poorer employment prospects and housing, increased debt, relationship problems, etc.

The Index of Multiple Deprivation (IMD) 2015 (Communities and Local Government 2015) score has been produced nationally and is a measure of deprivation derived for each lower layer super output area (LLSOA). There are 166 LLSOAs geographical areas defined within Hull following the 2011 Census. These geographical areas have a minimum population size of 1,000 and a mean population size of 1,500. The IMD 2015 index is based on seven domains which are weighted according to their relative importance in relation to the overall score (weights in brackets): (i) income deprivation (22.5%); (ii) employment deprivation (22.5%); (iii) health deprivation and disability (13.5%); (iv) education, skills and training deprivation (13.5%); (v) barriers to housing and services (9.3%); (vi) living environment deprivation (9.3%); and (vii) crime (9.3%). The IMD 2015 score measures deprivation, but is not such a good measure of affluence.

As it is applied to a geographical area, it relates to average levels of deprivation within an area. Therefore, there may be some residents of the area who are very much more deprived than the average and some very much better-off relative to the average.

Using the IMD 2015 score, Hull is ranked as the 3rd most deprived local authority out of 326 (bottom 1%). The IMD 2015 scores for all of England's LLSOAs have been divided into five approximately equal-sized groups ranging from the 20% most deprived areas to the 20% least deprived areas. These five groups are referred to as national quintiles. However, as more than half (52%) of Hull's LLSOAs are within the bottom 20%, local analyses have used Hull's local quintiles.

Further detailed analysis of the IMD and changes over time is available in a separate IMD report available at www.hullpublichealth.org. The Hull JSNA Toolkit: Deprivation and Associated Measures also includes additional information on deprivation as well as information on unemployment, benefit claimants, crime, etc.

2.5 Comparator Areas

Local analyses of comparator areas have been undertaken. The first analysis in 2007, which was updated in 2009, identified 10 comparator areas which were similar to Hull with regard some key measures such as deprivation, population, ethnicity, housing, etc. None of the comparators areas were very similar to Hull with regard to all the measures examined, which means that differences were evident for some comparator areas. The Office for National Statistics (ONS) grouped local authorities into groups, and Hull was in their Industrial Hinterlands group, but Hull was the least similar to the group average. Furthermore, ONS deemed that North East Lincolnshire was Hull's nearest comparator, but this was in a different classification group. Local analyses have used the 10 comparators identified plus North East Lincolnshire as comparator areas. A further analysis of comparator areas was undertaken during 2013 following transfer of Public Health Science to Hull City Council. Hull City Council generally uses 15 comparator areas for their analyses. All their areas together with the 11 areas used previously were examined (some were included in both groups). It was felt that there were too many to use all 15 of Hull City Council comparators and a number of the indicators used to determine similarity were not important from the health or public health point of view[1]. Whilst some of the 11 locally used comparators boundaries of local authority and NHS (i.e. Clinical Commissioning Group) no longer matched, it was decided to continue to use the 11 comparator areas previously used for consistency and comparability.

[1] Such as taxbase per head of population, percentage of daytime net flow, housing benefit caseload, percentage of households with less than four rooms, percentage of households in purpose-built flats rented from local authority, authorities with coast protection expenditure, etc.

The comparators are as follows:

1. Middlesbrough**
2. Stoke-on-Trent
3. Sandwell*
4. Salford
5. Wolverhampton
6. Sunderland
7. Plymouth*
8. Derby*
9. Leicester
10. Coventry*
11. North East Lincolnshire

*The boundary of the local authority does not match that of the CCG, so data relating to the Quality Outcomes Framework (see ***section 6.5*** on ***page 41***) is unavailable.
**Middlesbrough local authority and Redcar and Cleveland local authority form NHS South Tees CCG. All comparator QOF data trends use South Tees as a comparator area (historical data for the Middlesbrough Primary Care Trust (PCT) and Redcar and Cleveland PCT have been combined for comparability). Redcar and Cleveland local authority is one of the comparator areas used by Hull City Council so is quite similar to Hull in terms of certain characteristics.

Further information on these comparators is available at www.hullpublicheatlh.org.

2.6 Public Health Outcomes Framework Indicators

A local analysis of the outcome measures published as part of the Public Health Outcomes Framework (PHOF) is available at www.hullpublichealth.org. The JSNA Toolkit reports also include information on the relevant PHOF indicators for the specific topic. Further details of the indicators is available in ***Table 11***, which details which JSNA Toolkit report includes further analysis for each indicator.

Further information about the indicators which involve hospital admission rates are given in ***section*** 4 on ***page 33***.

3 INPATIENT HOSPITAL ADMISSIONS

Inpatient admission rates provide useful information about the general level of illness and the use of hospital services within geographical areas. Patients admitted to a bed for elective surgery, but discharged the same day are classed as daycases, and these are included within inpatients in this document, unless otherwise stated. However, it is very important to note that admission rates depend on how willing people are to make use of medical services, the location and accessibility of services, as well as differences in referral patterns and practices within primary and secondary care. These factors may differ between geographical areas, and may explain different levels of hospital activity rather than differences in the prevalence of disease. For example, in general, people who live in more deprived areas are less likely to visit their GP than people with similar levels of symptoms who live in more affluent areas. Referral rates can vary dramatically among different GPs which can influence admission rates. Therefore, these findings should be interpreted cautiously with regard to assessing the general level of illness. Nevertheless, analysis of inpatient admission rates will give an indication of the usage of hospital services by patients or residents of different geographical areas. It is also possible that one or more patients could have been admitted a number of times over the three year period, and each admission would be included. This could inflate the numbers, and it is possible that the total number of admissions might be considerably lower for another time period if these patients were not included. However, it was thought best to present the data in terms of the total number of admissions over a period of time rather than the total number of patients admitted, as admissions will reflect service usage. Further more detailed information about the dataset, for example, an explanation of 'clinician episodes', is given in Hull JSNA Toolkit: Glossary.

3.1 Data access issues

Since the transfer of Public Health to local authorities in April 2013, access to local inpatient admissions data has not been possible. Therefore this report contains local information derived from Hospital Episode Statistics up to the end of the 2010/2011 financial year. If access to inpatient admissions data is restored, these analyses will be updated. There are currently some more recent data related to hospital admissions that are produced centrally, in particular with regard to emergency admissions, which are available at a local authority level, and these are included in this report.

3.2 Admissions by Primary Cause of Diagnosis

It is possible to examine the primary cause of the admission for each clinician episode and for each hospital stay (using the primary diagnosis from the last clinician episode if there is more than one). ***Table 1*** give the total number of admissions over the three year period 2008/09 to 2010/11 for all admissions for Hull patients. Note that some

patients will have been admitted on more than one occasion over the three year period, with some of these patients having the same primary diagnosis code if they have been admitted for the same condition more than once over the three year period, but it is also possible that the same patient could have been admitted for different medical reasons and be counted under more than one of the diagnoses codes within ***Table 1***.

The description for the primary diagnosis of the admission is based on the International Classification of Diseases coding (version 10). Further limited information about the ICD10 coding is given within ***section 6.8.1***on ***page 56***, but if further information is required regarding the primary causes within ***Table 1*** it would be necessary to assess the ICD10 coding directly (www.who.int/classifications/icd/en). The diagnoses in the first column are in the same order as the ICD10 coding. Details of the coding are available on request (h-pct.hullpublichealthsciences@nhs.net).

Table 1: Total number of clinician episodes and hospital stays over the three financial years 2008/09 to 2010/11 by primary cause of admission

Primary diagnosis of admission	Total number over three financial years 2008/09 to 2010/11 for Hull residents			
	Clinician episodes		Hospital stays	
	Number	%	Number	%
Certain infectious & parasitic disease	3,364	1.27	2,971	1.32
Lip, oral cavity & pharynx cancer	426	0.16	409	0.18
Oesophagus cancer	590	0.22	469	0.21
Stomach cancer	466	0.18	381	0.17
Colorectal cancer	2,304	0.87	2,111	0.94
Pancreas cancer	709	0.27	644	0.29
Other digestive system cancers	258	0.10	219	0.10
Lung cancer	2,863	1.08	2,544	1.13
Malignant melanoma	146	0.06	142	0.06
Other malignant neoplasms of the skin	673	0.25	665	0.30
Breast cancer	2,675	1.01	2,652	1.18
Cervical cancer	265	0.10	258	0.11
Ovary cancer	436	0.16	421	0.19
Prostate cancer	464	0.18	447	0.20
Other reproductive system cancers	450	0.17	438	0.20
Kidney cancer	257	0.10	240	0.11
Bladder cancer	2,304	0.87	2,285	1.02
Brain cancer	261	0.10	240	0.11
Hodgkins disease	258	0.10	251	0.11
Peripheral & cutaneous T-cell lymphomas & non-Hodgkins lymphoma	944	0.36	895	0.40
Multiple myeloma & malignant plasma cells neoplasms	770	0.29	752	0.34
Leukaemia	1,058	0.40	999	0.45
Other cancers	3,384	1.28	3,165	1.41
In situ neoplasms, benign neoplasms & neoplasms of unknown behaviour	4,751	1.79	4,597	2.05
Nutritional anaemias	1,204	0.45	918	0.41
Haemolytic anaemias, aplastic and other anaemias	1,940	0.73	1,472	0.66
Agranulocytosis	137	0.05	122	0.05

Primary diagnosis of admission	Total number over three financial years 2008/09 to 2010/11 for Hull residents			
	Clinician episodes		Hospital stays	
	Number	%	Number	%
Other diseases of the blood, blood forming organs and certain immune mechanism disorders	750	0.28	723	0.32
Diabetes	1,316	0.50	999	0.45
Other endocrine, nutritional & metabolic diseases	2,695	1.02	2,247	1.00
Dementia	306	0.12	217	0.10
Mental & behavioural disorders due to substance abuse	1,727	0.65	1,399	0.62
Other mental & behavioural disorders	1,493	0.56	1,352	0.60
Extrapyramidal & movement disorders	207	0.08	150	0.07
Multiple sclerosis	472	0.18	441	0.20
Epilepsy	1,611	0.61	1,222	0.54
Transient cerebral ischaemic attacks & related syndromes	580	0.22	435	0.19
Other episodic & paroxysmal disorders	586	0.22	523	0.23
Mononeuropathies of upper limb	1,018	0.38	1,015	0.45
Hemiplegia	416	0.16	201	0.09
Other diseases of the nervous system	1,087	0.41	893	0.40
Disorders of the lens (eye)	4,608	1.74	4,600	2.05
Other diseases of the eye & adexa	3,275	1.24	3,174	1.41
Diseases of the ear & mastoid process	1,620	0.61	1,589	0.71
Hypertensive diseases	602	0.23	539	0.24
Coronary heart disease	6,267	2.36	5,137	2.29
Pulmonary embolism	650	0.25	442	0.20
Atrial fibrillation & flutter	1,262	0.48	1,007	0.45
Heart failure	1,404	0.53	938	0.42
Cerebrovascular diseases	2,839	1.07	1,534	0.68
Diseases of the arteries, arterioles & capillaries	1,158	0.44	1,061	0.47
Varicose veins of lower extremities	824	0.31	821	0.37
Other disease of the veins, lymphatic vessels and lymph nodes	1,814	0.68	1,540	0.69
Other diseases of the circulatory system	1,854	0.70	1,487	0.66
Acute tonsillitis	1,353	0.51	1,342	0.60
Other acute upper respiratory infections	1,194	0.45	1,164	0.52
Influenza & pneumonia	3,373	1.27	2,328	1.04

Primary diagnosis of admission	Total number over three financial years 2008/09 to 2010/11 for Hull residents			
	Clinician episodes		Hospital stays	
	Number	%	Number	%
Acute bronchitis, acute bronchiolitis and other acute lower respiratory infections	2,939	1.11	2,287	1.02
Other diseases of upper respiratory tract	1,681	0.63	1,674	0.75
Bronchitis, emphysema and other chronic obstructive pulmonary disease	5,332	2.01	3,283	1.46
Asthma	1,361	0.51	1,095	0.49
Other diseases of the respiratory system	1,998	0.75	1,258	0.56
Disorders of tooth development & eruption, embedded & impacted teeth, dental caries and other diseases of hard tissues of teeth	1,638	0.62	1,632	0.73
Oesphagitis	863	0.33	629	0.28
Gastro-oesphageal reflux disease	1,061	0.40	981	0.44
Other diseases of oesophagus	1,077	0.41	829	0.37
Gastric ulcer	705	0.27	425	0.19
Duodenal ulcer	473	0.18	227	0.10
Gastritis & duodenitis	1,143	0.43	961	0.43
Dyspepsia	581	0.22	576	0.26
Diseases of the appendix	712	0.27	669	0.30
Inguinal hernia	1,203	0.45	1,191	0.53
Umbilical hernia	450	0.17	432	0.19
Ventral hernia	432	0.16	415	0.18
Diaphragmatic hernia	731	0.28	653	0.29
Crohns diseases, ulcerative colitis & other noninfective gastroenteritis & colitis	3,859	1.46	2,959	1.32
Diverticular disease of the intestines	2,007	0.76	1,759	0.78
Haemoffhage of anus & rectum	1,553	0.59	1,258	0.56
Cholelithiasis	2,130	0.80	1,698	0.76
Acute pancreatitis	422	0.16	333	0.15
Other diseases of the digestive system	11,585	4.37	8,901	3.97
Infections of the skin & subcutaneous tissue	2,532	0.96	1,947	0.87
Disorders of the skin appendages	993	0.37	991	0.44
Other diseases of the skin & subcutaneous tissue	3,527	1.33	3,346	1.49
Arthropathies	8,719	3.29	8,352	3.72
Dorsopathies	3,077	1.16	2,574	1.15
Soft tissue disorders	3,416	1.29	2,980	1.33

Primary diagnosis of admission	Total number over three financial years 2008/09 to 2010/11 for Hull residents			
	Clinician episodes		Hospital stays	
	Number	%	Number	%
Other diseases of the musculoskeletal system & connective tissue	1,731	0.65	1,649	0.73
Glomerular diseases & renal tubulo-interstitial diseases	797	0.30	652	0.29
Renal failure	853	0.32	618	0.28
Calculus of kidney & ureter	896	0.34	867	0.39
Cystitis	377	0.14	375	0.17
Urinary tract infections	2,373	0.90	1,823	0.81
Other diseases of the urinary tract	1,261	0.48	1,240	0.55
Hyperplasia of prostate	563	0.21	556	0.25
Redundant prepuse, phimosis & paraphimosis	558	0.21	557	0.25
Other disease of the male genital organs	965	0.36	939	0.42
Disorders of the breast	252	0.10	249	0.11
Inflammatory diseases of female pelvic organs	595	0.22	573	0.26
Endometrosis	313	0.12	309	0.14
Female genital prolapse	465	0.18	463	0.21
Noninflammatory disorders of ovary, fallopian tube & broad ligament	436	0.16	412	0.18
Polyp of female genital tract	760	0.29	753	0.34
Erosion & ectropion of cervix uteri	228	0.09	227	0.10
Excessive, frequent & irregular menstruation	1,548	0.58	1,541	0.69
Other abnormal uterine & vaginal bleeding	459	0.17	453	0.20
Menopausal & other perimenopausal disorders	378	0.14	376	0.17
Other noninflammatory disorders of female genital tract	1,344	0.51	1,326	0.59
Other disorders of genitourinary system	30	0.01	28	0.01
Pregnancy with abortive outcome	3,900	1.47	3,882	1.73
Oedema, proteinuria & hypertensive disorders in pregnancy, childbirth & the puerperium	525	0.20	518	0.23
Other maternal disorders predominantly related to pregnancy	5,035	1.90	4,964	2.21
Maternal care related to the foetus & amniotic cavity & possible delivery problems	6,742	2.54	6,214	2.77
Complications of labour & delivery	5,008	1.89	4,939	2.20
Delivery	1,712	0.65	1,706	0.76
Other conditions associated with pregnancy, childbirth & the puerperium	531	0.20	510	0.23
Disorders related to length of gestation and foetal growth	686	0.26	513	0.23

Primary diagnosis of admission	Total number over three financial years 2008/09 to 2010/11 for Hull residents			
	Clinician episodes		Hospital stays	
	Number	%	Number	%
Other conditions originating in the perinatal period	795	0.30	607	0.27
Congenital malformations, deformations & chromosomal abnormalities	1,487	0.56	1,439	0.64
Symptoms & signs involving abnormalities of the heart, cardiac murmurs & other cardiac sounds	670	0.25	527	0.23
Symptoms & signs involving abnormalities of the breathing	2,625	0.99	1,058	0.47
Symptoms & signs involving pain in throat & chest	7,675	2.90	5,726	2.55
Other symptoms & signs involving circulatory & respiratory systems	1,403	0.53	999	0.45
Symptoms & signs involving abdominal & pelvic pain	5,888	2.22	4,658	2.08
Symptoms & signs involving nausea & vomiting	1,388	0.52	784	0.35
Symptoms & signs involving dysphagia	707	0.27	491	0.22
Other symptoms & signs involving digestive system & abdomen	1,938	0.73	1,522	0.68
Symptoms & signs involving the urinary system	2,802	1.06	2,635	1.17
Symptoms & signs involving cognition, perception, emotional state & behaviour	2,539	0.96	1,251	0.56
Fever of unknown origin	303	0.11	159	0.07
Headache	1,532	0.58	1,018	0.45
Malaise & fatigue	960	0.36	446	0.20
Senility	1,377	0.52	645	0.29
Syncope & collapse	3,585	1.35	2,177	0.97
Convulsions	1,017	0.38	736	0.33
Symptoms & signs concerning food & fluid intake	732	0.28	430	0.19
Abnormal smear	1,266	0.48	1,266	0.56
Other abnormal findings on examination of body fluids, substances or tissue, without diagnosis	273	0.10	213	0.09
Abnormal findings on diagnostic imaging of lung	391	0.15	344	0.15
Other symptoms, signs & abnormal clinical & laboratory findings	2,745	1.04	1,911	0.85
Injuries to the head	3,120	1.18	2,674	1.19
Injuries to the neck & thorax	502	0.19	382	0.17
Injuries to the abdomen, lower back, lumbar spine & pelvis	603	0.23	425	0.19
Injuries to the shoulder & upper arm	645	0.24	531	0.24
Fracture of forearm	992	0.37	920	0.41
Other injuries to elbow & forearm	262	0.10	231	0.10

Primary diagnosis of admission	Total number over three financial years 2008/09 to 2010/11 for Hull residents			
	Clinician episodes		Hospital stays	
	Number	%	Number	%
Injuries to wrist & hand	1,933	0.73	1,869	0.83
Fracture of femur	1,114	0.42	955	0.43
Other injuries to hip & thigh	214	0.08	155	0.07
Injuries to knee & lower leg	1,142	0.43	995	0.44
Injuries to ankle & foot	326	0.12	294	0.13
Poisoning by drugs, medicaments & biological substances	2,756	1.04	2,510	1.12
Complications of surgical & medical care	2,406	0.91	2,108	0.94
Other injuries, poisoning & certain other consequences of external causes	980	0.37	841	0.37
Other external causes of morbidity & mortality	7	0.00	7	0.00
Medical observation & evaluation for suspected diseases & conditions	1,189	0.45	582	0.26
Follow-up examination after treatment for malignant neoplasm	1,783	0.67	1,771	0.79
Follow-up examination after treatment for conditions other than malignant neoplasm	601	0.23	598	0.27
Special screening examination for neoplasms	317	0.12	296	0.13
Special screening examination for other diseases & disorders	219	0.08	211	0.09
Other encounters with health services for examination & investigation	319	0.12	310	0.14
Contraceptive management	527	0.20	521	0.23
Supervision of a normal pregnancy	606	0.23	577	0.26
Liveborn infants according to place of birth	3,296	1.24	3,111	1.39
Other encounters with health services in circumstances related to reproduction	470	0.18	463	0.21
Attention to artificial openings	391	0.15	294	0.13
Adjustment & management of implanted devices	573	0.22	564	0.25
Fitting & adjustment of urinary device	648	0.24	644	0.29
Other orthopaedic follow-up care	501	0.19	501	0.22
Other encounters with health services for examination & investigation	1,288	0.49	313	0.14
Total	**265,067**	**100.00**	**224,410**	**100.00**

3.3 Admissions by Ward

From Hospital Episode Statistics, the annual age-gender-standardised (age bands: 0, 1-4, 5-9, 10-14, etc to 85+ years standardised to the European Standard Population) rate of hospital in-patient admission (first clinician episode) for the three financial years 2008/09 to 2010/11 for residents of Hull is given in ***Table 2***. The population is given as the average for October 2008, October 2009 and October 2010, and the number of admissions represents the total over the three year period.

Table 2: Age-gender-standardised inpatient admission rate for the three financial years 2008/09 to 2010/11 by ward (all admissions)

Area	Three year total inpatient admissions for financial years 2008/09 to 2010/11 per 1,000 Hull residents			
	Inpatient admissions	Resident population	Crude rate	Annual standardised rate (95% CI)
Bransholme East	8,952	10,952	272	294 (287, 300)
Bransholme West	8,100	8,767	308	290 (284, 297)
Kings Park	6,734	8,995	250	260 (253, 266)
Area: North Carr	**23,786**	**28,714**	**276**	**282 (278, 285)**
Beverley	7,419	8,351	296	250 (243, 256)
Orchard Park & Greenwood	14,030	15,006	312	314 (308, 319)
University	7,677	10,697	239	246 (240, 251)
Area: Northern	**29,126**	**34,054**	**285**	**274 (271, 278)**
North Hull	**52,912**	**62,768**	**281**	**277 (274, 279)**
Ings	12,582	12,659	331	263 (257, 268)
Longhill	11,809	12,340	319	280 (275, 286)
Sutton	10,571	13,085	269	252 (247, 257)
Area: East	**34,962**	**38,085**	**306**	**265 (262, 268)**
Holderness	9,948	13,685	242	231 (227, 236)
Marfleet	12,970	13,634	317	305 (299, 310)
Southcoates East	8,088	8,821	306	295 (288, 302)
Southcoates West	7,073	8,068	292	265 (259, 272)
Area: Park	**38,079**	**44,207**	**287**	**272 (269, 275)**
Drypool	10,828	12,617	286	267 (262, 272)
East Hull	**83,869**	**94,909**	**295**	**269 (267, 270)**
Myton	14,866	15,241	325	307 (302, 312)
Newington	10,393	12,833	270	271 (266, 276)
St Andrew's	8,684	8,858	327	310 (304, 317)
Area: Riverside	**44,771**	**49,550**	**301**	**288 (285, 290)**
Boothferry	10,125	12,476	271	244 (239, 249)
Derringham	9,837	11,399	288	249 (244, 254)
Pickering	10,847	12,165	297	257 (252, 262)

Area	Three year total inpatient admissions for financial years 2008/09 to 2010/11 per 1,000 Hull residents			
	Inpatient admissions	Resident population	Crude rate	Annual standardised rate (95% CI)
Area: West	**30,809**	**36,041**	**285**	**250 (247, 253)**
Avenue	9,147	13,421	227	222 (218, 227)
Bricknell	6,686	8,504	262	228 (222, 234)
Newland	7,224	11,120	217	240 (234, 246)
Area: Wyke	**23,057**	**33,045**	**233**	**226 (222, 229)**
West Hull	**87,809**	**106,018**	**276**	**257 (255, 259)**
HULL	**225,169**	**263,696**	**285**	**266 (265, 267)**

Table 3 and ***Table 4*** give the same information for elective and non-elective admissions respectively. Both these tables exclude admissions relating to maternity admissions. ***Table 5*** summarises the differences between the elective and non-elective admissions[2].

Table 3: Age-gender-standardised inpatient admission rate for the three financial years 2008/09 to 2010/11 by ward (elective admissions excludes maternity)

Area	Three year total inpatient admissions for financial years 2008/09 to 2010/11 per 1,000 Hull residents (elective admissions excludes maternity)			
	Inpatient admissions (3 yr tot)	Resident population (average)	Crude rate	Annual standardised rate (95% CI)
Bransholme East	4,075	10,952	124	140 (136, 145)
Bransholme West	3,990	8,767	152	144 (139, 149)
Kings Park	3,620	8,995	134	140 (135, 145)
Area: North Carr	**11,685**	**28,714**	**136**	**141 (139, 144)**
Beverley	4,659	8,351	186	148 (143, 152)
Orchard Park & Greenwood	6,415	15,006	142	148 (144, 151)
University	3,938	10,697	123	130 (126, 134)
Area: Northern	**15,012**	**34,054**	**147**	**142 (140, 145)**
North Hull	**26,697**	**62,768**	**142**	**142 (140, 144)**
Ings	6,676	12,659	176	141 (138, 145)
Longhill	6,157	12,340	166	148 (144, 152)
Sutton	5,600	13,085	143	130 (127, 133)
Area: East	**18,433**	**38,085**	**161**	**139 (137, 142)**
Holderness	5,905	13,685	144	133 (129, 136)
Marfleet	6,202	13,634	152	150 (146, 154)
Southcoates East	3,899	8,821	147	145 (140, 149)

[2] The sum of individual standardised rates (elective, non-elective and the rest) almost sum to the total standardised rate so it is reasonable to look at the percentage of non-elective admissions out of the total.

Area	Three year total inpatient admissions for financial years 2008/09 to 2010/11 per 1,000 Hull residents (elective admissions excludes maternity)			
	Inpatient admissions (3 yr tot)	Resident population (average)	Crude rate	Annual standardised rate (95% CI)
Southcoates West	3,335	8,068	138	129 (124, 133)
Area: Park	**19,341**	**44,207**	**146**	**139 (137, 141)**
Drypool	5,403	12,617	143	134 (131, 138)
East Hull	**43,177**	**94,909**	**152**	**139 (137, 140)**
Myton	6,325	15,241	138	133 (130, 137)
Newington	4,822	12,833	125	131 (127, 135)
St Andrew's	3,339	8,858	126	126 (122, 130)
Area: Riverside	**19,889**	**49,550**	**134**	**132 (130, 134)**
Boothferry	5,836	12,476	156	136 (132, 140)
Derringham	5,470	11,399	160	137 (133, 140)
Pickering	5,639	12,165	155	131 (127, 135)
Area: West	**16,945**	**36,041**	**157**	**135 (132, 137)**
Avenue	4,514	13,421	112	112 (109, 116)
Bricknell	3,881	8,504	152	130 (126, 135)
Newland	3,166	11,120	95	115 (111, 119)
Area: Wyke	**11,561**	**33,045**	**117**	**117 (115, 119)**
West Hull	**42,992**	**106,018**	**135**	**128 (127, 129)**
HULL	**112,867**	**263,696**	**143**	**135 (134, 136)**

Table 4: Age-gender-standardised inpatient admission rate for the three financial years 2008/09 to 2010/11 by ward (non-elective admissions excludes maternity)

Area	Three year total inpatient admissions for financial years 2008/09 to 2010/11 per 1,000 Hull residents (non-elective admissions excludes maternity)			
	Inpatient admissions (3 yr tot)	Resident population (average)	Crude rate	Annual standardised rate (95% CI)
Bransholme East	3,578	10,952	109	119 (115, 123)
Bransholme West	3,298	8,767	125	117 (113, 121)
Kings Park	2,230	8,995	83	90 (86, 94)
Area: North Carr	**9,106**	**28,714**	**106**	**108 (106, 110)**
Beverley	2,364	8,351	94	82 (78, 85)
Orchard Park & Greenwood	5,890	15,006	131	132 (128, 135)
University	3,024	10,697	94	95 (92, 99)
Area: Northern	**11,278**	**34,054**	**110**	**106 (104, 108)**
North Hull	**20,384**	**62,768**	**108**	**106 (105, 108)**
Ings	5,242	12,659	138	97 (94, 100)

Area	Three year total inpatient admissions for financial years 2008/09 to 2010/11 per 1,000 Hull residents (non-elective admissions excludes maternity)			
	Inpatient admissions (3 yr tot)	Resident population (average)	Crude rate	Annual standardised rate (95% CI)
Longhill	4,725	12,340	128	105 (102, 108)
Sutton	3,968	13,085	101	94 (91, 97)
Area: East	**13,935**	**38,085**	**122**	**99 (97, 100)**
Holderness	3,218	13,685	78	75 (72, 77)
Marfleet	5,372	13,634	131	122 (118, 125)
Southcoates East	3,367	8,821	127	120 (116, 124)
Southcoates West	2,981	8,068	123	105 (102, 110)
Area: Park	**14,938**	**44,207**	**113**	**103 (102, 105)**
Drypool	4,300	12,617	114	104 (101, 107)
East Hull	**33,173**	**94,909**	**117**	**102 (100, 103)**
Myton	7,007	15,241	153	145 (142, 149)
Newington	4,358	12,833	113	112 (108, 115)
St Andrew's	4,242	8,858	160	148 (143, 152)
Area: Riverside	**19,907**	**49,550**	**134**	**126 (124, 128)**
Boothferry	3,541	12,476	95	83 (80, 86)
Derringham	3,449	11,399	101	83 (80, 86)
Pickering	4,397	12,165	120	101 (97, 104)
Area: West	**11,387**	**36,041**	**105**	**89 (87, 91)**
Avenue	3,684	13,421	91	89 (86, 92)
Bricknell	2,363	8,504	93	75 (72, 79)
Newland	3,155	11,120	95	105 (101, 109)
Area: Wyke	**9,202**	**33,045**	**93**	**88 (86, 90)**
West Hull	**36,196**	**106,018**	**114**	**104 (103, 105)**
HULL	**89,785**	**263,696**	**113**	**103 (103, 104)**

St Andrew's and Myton wards have the highest percentage of non-elective admissions (around 47%), and Holderness, Beverley and Bricknell have the lowest percentages (around 33%).

Table 5: Age-gender-standardised inpatient admission rate for the three financial years 2008/09 to 2010/11 by ward (elective versus non-elective admissions)

Area	Average annual standardised admission rate for 2008/09 to 2010/11 per 1,000 Hull residents (95% CI)			
	Total*	Elective	Non-elective	Non-elective to total (%)
Bransholme East	294 (287, 300)	140 (136, 145)	119 (115, 123)	40.7
Bransholme West	290 (284, 297)	144 (139, 149)	117 (113, 121)	40.2
Kings Park	260 (253, 266)	140 (135, 145)	90 (86, 94)	34.7
Area: North Carr	**282 (278, 285)**	**141 (139, 144)**	**108 (106, 110)**	**38.4**
Beverley	250 (243, 256)	148 (143, 152)	82 (78, 85)	32.7
Orchard Park & Greenwood	314 (308, 319)	148 (144, 151)	132 (128, 135)	42
University	246 (240, 251)	130 (126, 134)	95 (92, 99)	38.8
Area: Northern	**274 (271, 278)**	**142 (140, 145)**	**106 (104, 108)**	**38.6**
North Hull	**277 (274, 279)**	**142 (140, 144)**	**106 (105, 108)**	**38.4**
Ings	263 (257, 268)	141 (138, 145)	97 (94, 100)	37.1
Longhill	280 (275, 286)	148 (144, 152)	105 (102, 108)	37.5
Sutton	252 (247, 257)	130 (127, 133)	94 (91, 97)	37.2
Area: East	**265 (262, 268)**	**139 (137, 142)**	**99 (97, 100)**	**37.3**
Holderness	231 (227, 236)	133 (129, 136)	75 (72, 77)	32.3
Marfleet	305 (299, 310)	150 (146, 154)	122 (118, 125)	40
Southcoates East	295 (288, 302)	145 (140, 149)	120 (116, 124)	40.6
Southcoates West	265 (259, 272)	129 (124, 133)	105 (102, 110)	39.8
Area: Park	**272 (269, 275)**	**139 (137, 141)**	**103 (102, 105)**	**38**
Drypool	267 (262, 272)	134 (131, 138)	104 (101, 107)	38.9
East Hull	**269 (267, 270)**	**139 (137, 140)**	**102 (100, 103)**	**37.8**
Myton	307 (302, 312)	133 (130, 137)	145 (142, 149)	47.3
Newington	271 (266, 276)	131 (127, 135)	112 (108, 115)	41.2
St Andrew's	310 (304, 317)	126 (122, 130)	148 (143, 152)	47.6
Area: Riverside	**126 (124, 128)**	**288 (285, 290)**	**132 (130, 134)**	**43.8**
Boothferry	244 (239, 249)	136 (132, 140)	83 (80, 86)	34.2
Derringham	249 (244, 254)	137 (133, 140)	83 (80, 86)	33.4
Pickering	257 (252, 262)	131 (127, 135)	101 (97, 104)	39.1
Area: West	**250 (247, 253)**	**135 (132, 137)**	**89 (87, 91)**	**35.6**
Avenue	222 (218, 227)	112 (109, 116)	89 (86, 92)	40.1
Bricknell	228 (222, 234)	130 (126, 135)	75 (72, 79)	32.9
Newland	240 (234, 246)	115 (111, 119)	105 (101, 109)	43.7
Area: Wyke	**226 (222, 229)**	**117 (115, 119)**	**88 (86, 90)**	**39**
West Hull	**257 (255, 259)**	**128 (127, 129)**	**104 (103, 105)**	**40.3**
HULL	**266 (265, 267)**	**135 (134, 136)**	**103 (103, 104)**	**38.9**

*Total includes maternity, birth of babies and other admissions were admission method is unknown.

3.4 Admissions by GP Practice

Table 6 gives the equivalent information but for each GP practice and the averages of the primary care groupings (see ***section 6.6*** on ***page 42*** for more information). It can be seen that as the age and deprivation of practice patients increase, the percentage of non-elective admissions increase relative to the total. Practices with patients living in the least deprived areas have around 30% of admissions that are non-elective compared to 43% for practices whose patients live in the most deprived areas of Hull. Practices in group A have registered patients who live in the least deprived areas, practices in groups B, C and D have similar levels of deprivation (patients in group B have lower levels of deprivation compared to D and both have older patients compared to group C practices). Practices in groups E and F have similar levels of deprivation, but group E practices tend to be older. Practices in group G have the second highest deprivation levels and those in group H the highest levels.

The Quays Medical Practices with a high percentage of patients with social problems (such as homelessness, drug addicts, refugees, etc) have the highest non-elective admission rate - 70% of the total admission rate and is an outlier relative to all other practices. The only other practice with rates higher than 50% is the Story Street Practice and Walk-In Centre, which may include a higher proportion of unregistered patients.

Table 6: Age-gender-standardised inpatient admission rate for the three financial years 2008/09 to 2010/11 by practice (elective versus non-elective admissions)

Group*	Practice**	Total number of admissions over three years	Annual average standardised admission rate per 1,000 population (95% CI)			Non-elective to total (%)
			Total***	Elective	Non-elective	
A	B81020: Sutton Manor Surgery	6,096	243 (237, 249)	119 (115, 124)	85 (82, 89)	35
A	B81021: Faith House Surgery	7,006	289 (282, 296)	153 (148, 158)	100 (96, 104)	35
A	B81035: Avenues Medical Centre	4,859	238 (231, 246)	130 (125, 136)	73 (70, 77)	31
A	B81048: Dr Lorenz & Partners	6,816	253 (247, 260)	135 (130, 139)	87 (83, 91)	34
A	B81056: Springhead Medical Centre	10,537	244 (239, 249)	135 (132, 139)	72 (69, 74)	29
A	B81072: Dr Percival & Partners	6,537	275 (268, 282)	146 (141, 151)	93 (89, 97)	34
A	B81075: Dr Mallik	1,691	207 (195, 220)	108 (100, 116)	65 (58, 72)	31
A	B81085: Burnbrae Surgery	4,699	247 (239, 255)	132 (127, 138)	81 (77, 85)	33
A	B81094: Dr Datta	1,468	241 (228, 254)	136 (127, 146)	72 (65, 79)	30
A	B81095: Dr Cook	3,695	254 (245, 263)	129 (123, 135)	89 (83, 94)	35
A	B81097: Dr Yagnik	1,345	225 (212, 239)	109 (100, 118)	77 (69, 85)	34
A	B81104: Dr Nayar	2,107	212 (196, 229)	107 (96, 119)	77 (66, 89)	36
A	B81635: Dr Dave	2,433	240 (229, 250)	141 (134, 148)	67 (62, 73)	28
A	B81644: Chestnut Farm Surgery	1,711	271 (258, 285)	148 (139, 159)	91 (83, 99)	34
A	Y02747: Kingswood Surgery	448	409 (340, 483)	188 (141, 240)	168 (119, 223)	41
A	Y02748: Haxby Orchard Pk Surgery (D)	196	356 (303, 414)	166 (128, 211)	125 (95, 161)	35
A	Y02786: Priory Surgery	282	321 (283, 363)	114 (91, 141)	117 (95, 142)	36
B	B81002: Dr Kumar-Choudhary	3,048	291 (281, 302)	135 (128, 142)	111 (104, 117)	38
B	B81008: Morrill Street Group Practice	14,847	310 (305, 315)	157 (154, 161)	113 (110, 116)	36
B	B81027: St Andrews Group Practice (D)	6,576	330 (322, 339)	151 (145, 157)	137 (131, 142)	41
B	B81049: Dr Rawcliffe & Partners	7,692	261 (255, 267)	135 (131, 140)	88 (85, 92)	34
B	B81052: Dr Musil & Partner	4,189	246 (239, 254)	128 (122, 133)	80 (75, 84)	32
B	B81057: St Andrews-Newington (C)	2,876	258 (248, 269)	116 (109, 123)	100 (94, 107)	39

Group*	Practice**	Total number of admissions over three years	Annual average standardised admission rate per 1,000 population (95% CI)			Non-elective to total (%)
			Total***	Elective	Non-elective	
B	B81066: Dr Chowdhury & Partner	2,281	280 (268, 292)	134 (126, 143)	105 (98, 113)	38
B	B81112: St Andrews - Bransholme	3,050	296 (286, 307)	130 (123, 138)	124 (117, 131)	42
B	B81119: Dr Palooran & Partners	3,853	282 (273, 291)	133 (127, 139)	109 (104, 115)	39
B	B81616: Dr Hendow	2,373	282 (270, 294)	147 (139, 156)	98 (91, 105)	35
B	B81634: Dr Venugopal & Partner	2,510	299 (287, 311)	148 (140, 157)	110 (103, 117)	37
B	B81645: East Park Practice	2,061	265 (253, 278)	143 (135, 153)	95 (88, 102)	36
B	B81674: Dr Joseph	2,071	304 (291, 318)	138 (129, 148)	121 (113, 130)	40
B	B81675: Dr Tak & Partners	8,002	281 (275, 287)	124 (120, 129)	113 (109, 117)	40
B	B81683: Dr Raghunath & Partners (D)	1,516	297 (282, 313)	137 (126, 148)	116 (106, 126)	39
B	B81685: Dr Poulose & Partners	1,904	271 (258, 283)	126 (118, 135)	102 (95, 110)	38
B	B81688: Dr Gopal (D)	1,746	302 (288, 317)	151 (141, 162)	107 (98, 116)	35
B	B81690: St Andrews Northpoint (A)	1,212	235 (221, 249)	109 (100, 118)	92 (83, 101)	39
B	Y02344: Northpoint (D)	1,568	282 (268, 297)	120 (111, 130)	121 (112, 131)	43
B	Y02896: Story St Practice & Walk In (D)	286	299 (260, 341)	105 (82, 131)	153 (126, 185)	51
C	B81011: Kingston Health (Hull)	4,566	262 (254, 270)	135 (130, 141)	89 (84, 94)	34
C	B81038: Dr Miller & Partners	7,617	289 (282, 296)	140 (136, 145)	108 (104, 112)	37
C	B81053: Diadem Medical Practice	9,787	278 (273, 284)	144 (140, 148)	97 (93, 100)	35
C	B81054: Clifton House Medical Centre	9,745	277 (272, 283)	132 (128, 136)	106 (103, 110)	38
C	B81058: Dr Lovett & Partner	7,913	273 (267, 280)	129 (125, 133)	104 (100, 108)	38
C	B81074: Dr Rej	3,455	289 (279, 299)	156 (149, 163)	89 (83, 94)	31
C	B81080: Dr Malczewski	1,799	223 (211, 235)	107 (100, 115)	78 (71, 84)	35
C	B81081: New Green Surgery	2,970	256 (246, 265)	133 (126, 140)	87 (81, 92)	34
C	B81682: Dr Shaikh & Partner	4,235	340 (329, 351)	168 (161, 176)	130 (123, 137)	38
D	B81017: Kingston Medical Group	6,296	286 (279, 293)	130 (125, 134)	116 (112, 121)	41
D	B81018: Dr Awan & Partners	6,400	320 (312, 328)	149 (144, 155)	127 (122, 133)	40
D	B81032: Wilberforce Surgery	2,235	291 (279, 304)	111 (104, 119)	135 (127, 144)	46

Group*	Practice**	Total number of admissions over three years	Annual average standardised admission rate per 1,000 population (95% CI)			Non-elective to total (%)
			Total***	Elective	Non-elective	
D	B81040: Dr Weir & Partners	16,535	310 (305, 314)	147 (143, 150)	118 (115, 121)	38
D	B81046: Bridge Group Practice	9,317	328 (321, 335)	155 (150, 159)	128 (123, 132)	39
D	B81047: Dr Singh & Partners	6,272	274 (267, 281)	132 (127, 136)	104 (100, 108)	38
D	B81089: Dr Witvliet	2,834	260 (250, 269)	126 (120, 133)	94 (89, 100)	36
D	B81631: Dr Raut & Partner	2,724	303 (291, 315)	151 (143, 161)	113 (106, 121)	38
D	B81692: Quays Medical Centre	2,561	491 (461, 522)	105 (92, 118)	344 (318, 372)	70
D	Y00955: Riverside Medical Centre	2,822	374 (359, 389)	153 (143, 163)	173 (163, 183)	46
D	Y01200: Calvert Practice (A)	1,844	305 (290, 320)	177 (166, 189)	93 (85, 102)	31
	HULL	**253,637**	**276 (275, 277)**	**136 (136, 137)**	**101 (101, 102)**	**37**

*(A)/(C)/(D) would have been in group in brackets based on age and deprivation score of practice, but assigned to another group as part of a group of practices.
**Practices with fewer than 5 admissions are excluded
***Total includes maternity, birth of babies and other admissions were admission method is unknown.

3.5 Emergency Re-Admission with 30 Days of Discharge

Emergency re-admissions within 30 days of discharge is an NHS Outcomes Framework and Public Health Outcomes Framework indicator (indicators 3b and 4.11 respectively). Information on this indicator is available at local authority level from the NHS Information Centre Indicator Portal and Public Health Outcomes Framework portal, and can be found in ***Table 7***. The rates for Hull were a little higher than for England, although only significantly higher in 2010-11. Readmissions for cancer and obstetrics are excluded.

Table 7: Emergency re-admission within 30 days of discharge from hospital for Hull and comparators, 2009/10 to 2011/12

Area	Emergency readmission rate per 100,000 persons with lower and upper confidence limits		
	2009-10	2010-11	2011-12
England	11.58 (11.55, 11.61)	11.78 (11.76, 11.81)	11.78 (11.75, 11.81)
Hull	**11.95 (11.58, 12.33)**	**12.25 (11.88, 12.62)**	**12.09 (11.73, 12.46)**
Yorkshire and Humber	11.69 (11.61, 11.78)	11.99 (11.91, 12.08)	12.03 (11.95, 12.12)
Wolverhampton	11.72 (11.33, 12.12)	11.77 (11.38, 12.17)	11.87 (11.48, 12.28)
Salford	12.28 (11.90, 12.67)	12.29 (11.91, 12.68)	12.77 (12.39, 13.17)
Derby	13.02 (12.61, 13.44)	13.19 (12.77, 13.61)	12.32 (11.91, 12.73)
Stoke-on-Trent	13.68 (13.29, 14.07)	13.53 (13.13, 13.93)	12.86 (12.49, 13.25)
Coventry	12.16 (11.79, 12.53)	12.58 (12.21, 12.96)	12.26 (11.90, 12.63)
Plymouth	11.47 (11.08, 11.87)	10.49 (10.12, 10.87)	10.84 (10.45, 11.23)
Sandwell	12.42 (12.07, 12.78)	13.18 (12.83, 13.55)	12.25 (11.91, 12.61)
Middlesbrough	12.88 (12.41, 13.36)	13.36 (12.89, 13.84)	13.00 (12.54, 13.48)
Sunderland	12.54 (12.19, 12.91)	12.88 (12.51, 13.25)	13.34 (12.98, 13.72)
Leicester	13.31 (12.96, 13.67)	13.52 (13.16, 13.88)	11.74 (11.37, 12.13)
North East Lincolnshire	8.49 (8.04, 8.96)	8.87 (8.40, 9.36)	9.15 (8.68, 9.64)

3.5.1 Public Health Outcomes Framework

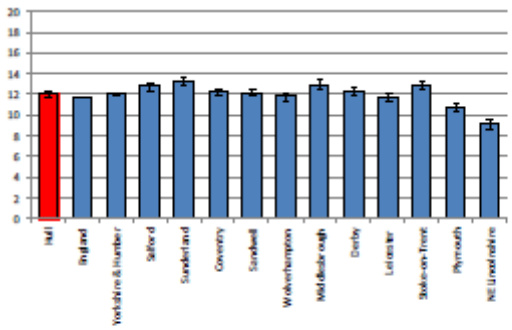
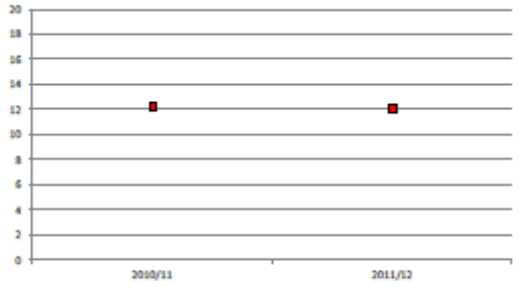
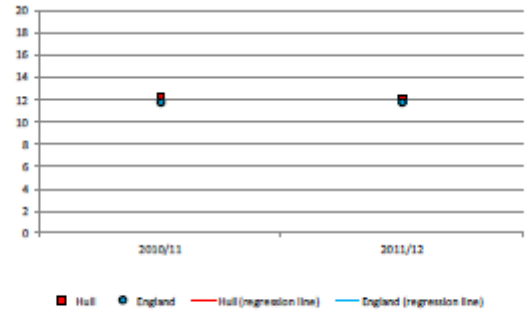
One of the indicators (4.11) within the public health outcomes framework published in January 2012 (Department of Health 2012; Department of Health 2012) relates to emergency re-admissions within 30 days of discharge from hospital. Screenshots from the latest Public Health Outcomes Framework report produced by Hull Public Health Sciences (Porter 2015) are shown in this section for indicator 4.11 for all persons (***Figure 1***), males (***Figure 2***) and females (***Figure 3***).

This report is updated regularly as and when new data are released. The full report may be downloaded from www.hullpublichealth.org.

Figure 1: Public Health Outcomes Framework Indicator 4.11 Emergency re-admissions within 30 days of discharge from hospital

4.11 Emergency readmissions within 30 days of discharge from hospital (persons)

Indirectly standardised percentage of emergency admission to any hospital in England occurring within 30 days of the last, previous discharge from hospital after admission. Admissions for all patients over the year discharged prior to 31st March. Day cases, spells with a discharge coded as death, maternity spells (based on specialty, episode type, diagnosis), and those with mention of a diagnosis of cancer or chemotherapy for cancer anywhere in the spell are excluded. Patients with mention of a diagnosis of cancer or chemotherapy for cancer anywhere in the 365 days prior to admission are excluded.

Hull relative to comparators	Trends over time	Inequalities gap relative to England
		

Local inequalities gap	Latest ward data	Ranking and tartan rug colour
Local data not available	*Local data not available*	Comparator ranking: 5th out of 12 (Medium) worse Hull trends: insufficient data National inequalities gap: insufficient data Local inequalities gap: insufficient data

Key points:

The baseline emergency readmission rate in Hull is 12.3% (95% confidence interval: 11.9% to 12.6%)
The latest emergency readmission rate in Hull is 12.1% (95% confidence interval: 11.7% to 12.5%)

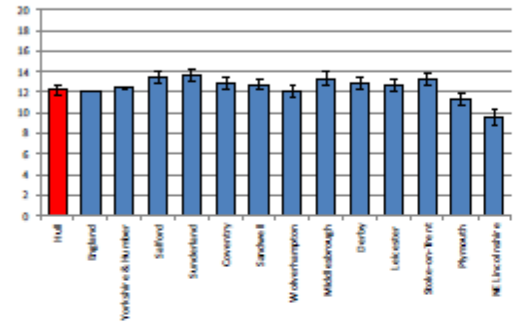
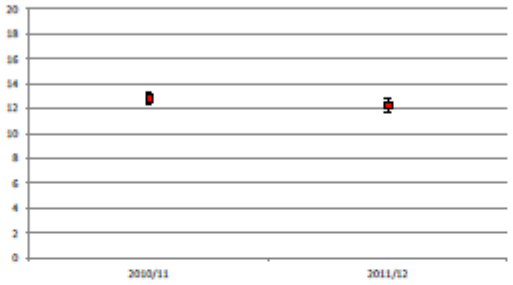
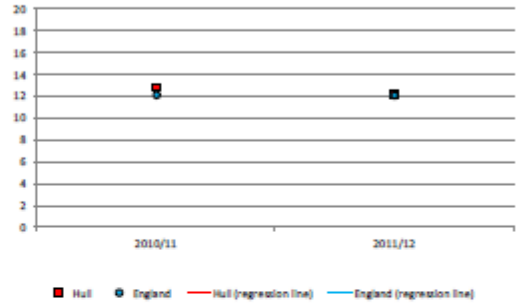
Data points:

Source: Hospital Episode Statistics (HES). Baseline period: 2010/11. Latest data: 2011/12. Standardised to 2006/07 admissions.
The page was last updated on 15/05/2014

Figure 2: Public Health Outcomes Framework Indicator 4.11 Emergency re-admissions within 30 days of discharge from hospital, males

4.11 Emergency readmissions within 30 days of discharge from hospital (males)

Indirectly standardised percentage of emergency admission to any hospital in England occurring within 30 days of the last, previous discharge from hospital after admission. Admissions for male patients over the year discharged prior to 31st March. Day cases, spells with a discharge coded as death, maternity spells (based on specialty, episode type, diagnosis), and those with mention of a diagnosis of cancer or chemotherapy for cancer anywhere in the spell are excluded. Patients with mention of a diagnosis of cancer or chemotherapy for cancer anywhere in the 365 days prior to admission are excluded.

Hull relative to comparators	Trends over time	Inequalities gap relative to England
		

Local inequalities gap	Latest ward data	Ranking and tartan rug colour
Local data not available	*Local data not available*	Comparator ranking: 4th out of 12 (Good)
		worse
		Hull trends: insufficient data National inequalities gap: insufficient data Local inequalities gap: insufficient data

Key points:

The baseline emergency readmission rate for males in Hull is 12.9% (95% confidence interval: 12.3% to 13.4%)

The latest emergency readmission rate for males in Hull is 12.3% (95% confidence interval: 11.7% to 12.8%)

Data points:

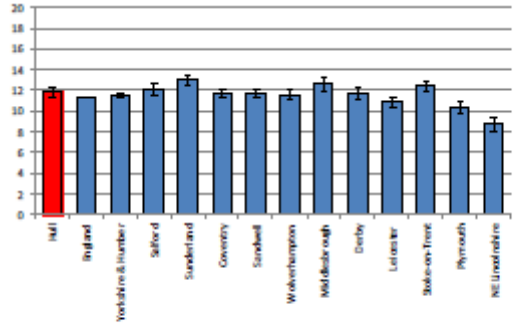
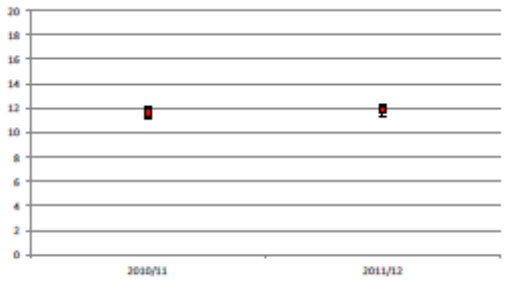
Source: Hospital Episode Statistics (HES). Baseline period: 2010/11. Latest data: 2011/12. Standardised to 2006/07 admissions.

The page was last updated on 15/05/2014

Figure 3: Public Health Outcomes Framework Indicator 4.11 Emergency re-admissions within 30 days of discharge from hospital, females

4.11 Emergency readmissions within 30 days of discharge from hospital (females)

Indirectly standardised percentage of emergency admission to any hospital in England occurring within 30 days of the last, previous discharge from hospital after admission. Admissions for female patients over the year discharged prior to 31st March. Day cases, spells with a discharge coded as death, maternity spells (based on specialty, episode type, diagnosis), and those with mention of a diagnosis of cancer or chemotherapy for cancer anywhere in the spell are excluded. Patients with mention of a diagnosis of cancer or chemotherapy for cancer anywhere in the 365 days prior to admission are excluded.

Hull relative to comparators	Trends over time	Inequalities gap relative to England
		

Local inequalities gap	Latest ward data	Ranking and tartan rug colour
Local data not available	*Local data not available*	Comparator ranking: 8th out of 12 (Medium) worse Hull trends: insufficient data National inequalities gap: insufficient data Local inequalities gap: insufficient data

Key points:

The baseline emergency readmission rate for females in Hull is 11.7% (95% confidence interval: 11.2% to 12.2%)
The latest emergency readmission rate for females in Hull is 11.9% (95% confidence interval: 11.4% to 12.4%)

Data points:

Source: Hospital Episode Statistics (HES). Baseline period: 2010/11. Latest data: 2011/12. Standardised to 2006/07 admissions.
The page was last updated on 15/05/2014

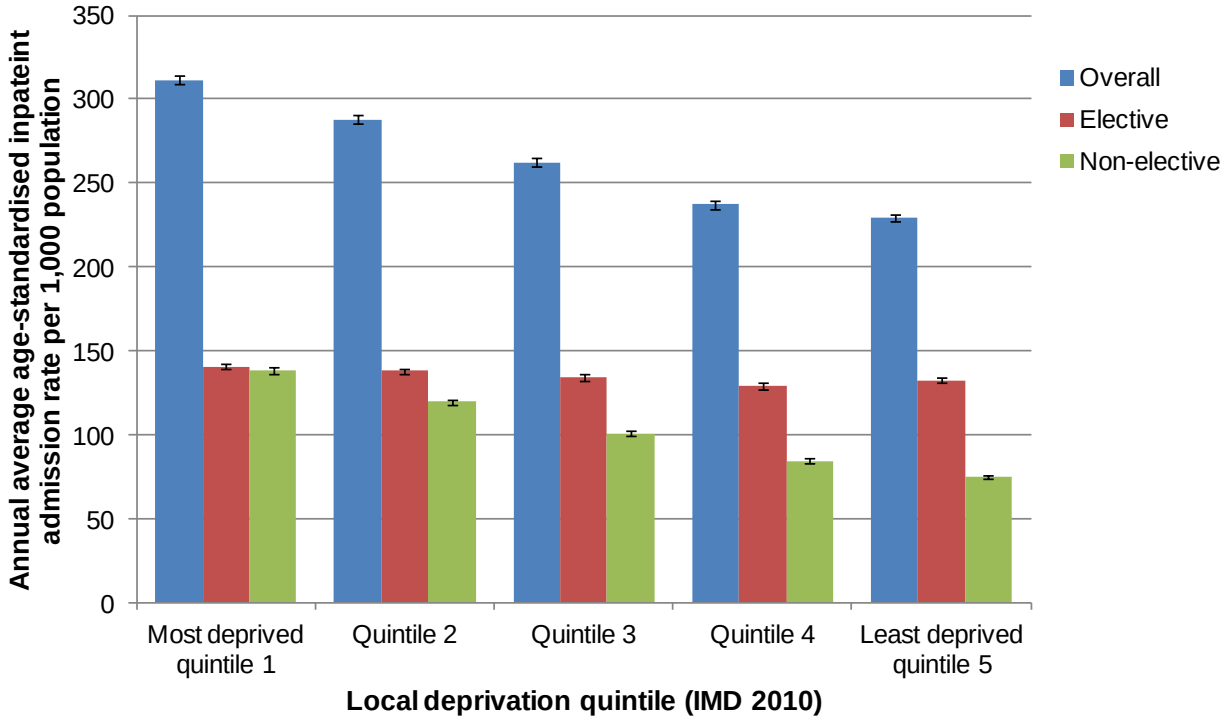
3.6 Inpatient Admissions Relative to Deprivation

Figure 4 illustrates the average annual directly age-standardised daycase and inpatient admission rates by local deprivation quintile over three financial years 2008/09 to 2010/11 (standardised to the 1976 European Standard Population). The 95% confidence intervals are shown. See ***section 2.4*** on ***page 8*** for more information on deprivation. There is a statistically significant difference among the quintiles for daycase and inpatient admissions for all admissions and for non-elective admissions. The underlying data are given in the ***APPENDIX*** on ***page 62***.

As expected, given the higher prevalence of lifestyle and behavioural risk factors, people living in the most deprived areas have a higher hospital admission rate. However, it is difficult to ascertain if this pattern is reflecting 'need'. It could be that the gradient between the most and least deprived quintiles should be steeper or less steep than the gradient observed.

It is possible that referral and treatment differs among the practices which could potentially affect admission rates when examined at deprivation level. A very small number of patients could have a relatively large number of admissions over the three year period, which could influence the admission rates. However, it was felt it was more useful to examine total admissions over the three year period rather than the total patients admitted, as admissions reflect service use and 'need'.

Figure 4: Age-standardised annual daycase and inpatient admission rate per 1,000 population for all ages by local deprivation quintile for Hull



4 PUBLIC HEALTH OUTCOMES FRAMEWORK

Further information about the Public Health Outcomes Framework (PHOF) which was published in January 2012 (Department of Health 2012; Department of Health 2012) is given within ***section 6.7.3*** on ***page 51***.

A number of the PHOF indicators relate to hospital admission for specific medical conditions or diseases.

4.1 1.12i – Hospital Admissions for Violence

Further information on this indicator is given within the JSNA Toolkit: Deprivation and Associated Measures report.

4.2 2.07 – Hospital Admissions for Injuries (Under 25s)

Further information on this indicator (sub-indicators for separate age groups 0-14, 0-4 and 15-24 years) is given within the JSNA Toolkit: Accidents report.

4.3 2.10 – Hospital Admissions for Self-Harm

Further information on this indicator is given within the JSNA Toolkit: Mental Health report.

4.4 2.18 – Alcohol-Related Admissions

Further information on this indicator is given within the JSNA Toolkit: Alcohol report.

4.5 2.24 – Falls Among Those Aged 65+ Years

Further information on this indicator is given within the JSNA Toolkit: Older People report.

4.6 4.11 – Emergency Re-Admissions Within 30 Days

Further information is given in ***Figure 1*** in ***section 3.5.1*** on ***page 29*** for males and females combined; in ***Figure 2*** in ***section 3.5.1*** on ***page 30*** for males; in ***Figure 3*** in ***section 3.5.1*** on ***page 31*** for females.

4.7 4.14 – Hip Fractures Among Those Aged 65 Years

Further information on this indicator is given within the JSNA Toolkit: Older People report.

5 REFERENCES

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6 APPENDIX

6.1 Data Sources

The data sources for each table and figure included within this report are listed in ***section 6.11*** on ***page 63***.

Local and national data is available from the NHS Information Centre Indicator Portal (www.indicators.ic.nhs.uk/webview) which was previously known as the Compendium (of Clinical and Health Indicators). The information provided is quite varied, such as resident population estimates, information from the Quality and Outcomes Framework (GP disease and quality of care registers), age-specific and indirectly and directly standardised mortality rates for the main causes of death, cancer incidence, screening uptake rates, number of births, fertility rates, hospital episode statistics, standardised admission or procedural rates for a limited number of diseases or procedures, etc. The NHS Information Centre Indicator Portal provides information for different geographical areas (national – England, regional, and at local authority and/or CCG level). Some information, particularly mortality rates, is usually provided for males and females separately and combined, and for different age groups. The standardised mortality rates are generally provided for all ages and for those aged under 75 years, with (indirectly) standardised mortality ratios (SMRs) standardised to the English population and the directly standardised mortality rates standardised to the 2013 European Standard Population. This report generally[3] uses the mortality rates from the NHS Information Centre Indicator Portal when presenting information for Hull overall, because these are the nationally recognised figures and it is also useful to have the equivalent comparison information for England, the local region and comparator areas.

For indicators within the Public Health Outcomes Framework (PHOF), England and the local authority level data can be downloaded at www.phoutcomes.info. The Excel data file also contains a "meta data" worksheet which contains information about the definition of the indicator and the data sources. In some indicators, reference is made to nationally available data which is available at geographical areas smaller than local authorities. For other indicators, it is possible to calculate the indicator at different geographical area using local data (e.g. using hospital records or mortality data).

A number of other datasets and reports are available from the Information Centre (www.ic.nhs.uk), including vaccination data (Information Centre for Health and Social Care 2011) and Stop Smoking Service data (Information Centre for Health and Social Care 2010).

[3] Note that locally derived estimates for mortality rates and life expectancy differ in relation to the national estimates as different population estimates are used locally, however, the local estimates are produced as the information is available around 4-6 months earlier and local estimates can be produced for different defined groups (such as by deprivation quintile or at ward or area level), and these rates are not produced nationally.

Information from the 2011 Census is available for different geographical areas from http://neighbourhood.statistics.gov.uk and www.nomisweb.co.uk/census/2011.

Information relating to the Index of Multiple Deprivation 2015 was downloaded from the Communities and Local Government website (Communities and Local Government 2015). ACORN and Health ACORN classifications at postcode and output area level were purchased from CACI (www.caci.co.uk/insite). Customer profile types (housing types) were obtained from Hull City Council who derived the profiles.

The prevalence from the Quality and Outcomes Framework (QOF) GP disease registers (see ***section 6.5*** on ***page 41*** for more information) have been taken from Excel files downloaded from the Information Centre (Information Centre for Health and Social Care 2010).

The GP registration file was available on the Primary Care Information System (PCIS), previously known as Open Exeter (Connecting for Health, 2009). This file included individual level data on all people registered with GPs within the Hull and East Riding of Yorkshire PCTs (plus a few practices outwith this area). The file included gender, date of birth, GP information and the postcode of the residence, and was merged with the NHS postcode lookup file so that other geographical information was available (e.g. lower layer super output areas). From this file, an estimate of the resident population could be derived for subpopulations of Hull, such as the number of residents based on ward or deprivation scores (derived from the Index of Multiple Deprivation 2015 score assigned to the lower layer super output area (LLSOA) geography which includes the residents' postcodes, see Hull JSNA Toolkit: Deprivation and Associated Measures and ***section 2.4*** on ***page 8*** for more information about deprivation scores). However, since 2013, individual-level population data has not been available. Aggregated data is still available for each primary care practice[4], and has been used in some local analyses in particular analyses involving the registered or patient population of Hull such as the analysis of the QOF GP disease registers. For local analyses which require an estimate of the resident population, figures from the Office for National Statistics have been used who produce estimates at ward and LLSOA level as well as for Hull overall. Their estimates are produced for each gender separately and by single year of age. Breast and cervical cancer screening uptake rates are also available from PCIS at practice level.

The Public Health Mortality Files (PHMF) and the Public Health Birth Files (PHBF) are both available to PCTs and more recently Public Health analysts at the local authority from the Office for National Statistics (most recently via the Primary Care Mortality Database). These files contain individual records for all deaths and births respectively in Hull. The age, gender and postcode of each individual are included in the file. The PHMF includes the date of death, underlying cause of death and place of death. The PHMF has been used for analyses involving the calculation of the number of deaths

[4] For all primary care practices in England, the number of registered patients by gender and single year of age is available, as well as the total number of registered patients living in each LLSOA.

from specific causes as well as the calculation of standardised rates when mortality information has been presented for wards and other local geographical areas, or by deprivation quintiles. For these analyses, resident population estimates were derived from the GP registration file mentioned above (Connecting for Health, 2009). In some cases, the estimate for Hull has been presented, but this will not be the same as the figure produced in the NHS Information Centre Indicator Portal due to the differing population estimates. In these circumstances, the figure from the NHS Information Centre Indicator Portal should be used in preference to any locally derived figures. Using the resident population estimate from the GP registration file tends to produce a slightly higher life expectancy estimate and a slightly lower directly standardised mortality rate compared to the NHS Information Centre Indicator Portal, because the local population estimate (from the GP file) is slightly higher than ONS's estimate.

Patient level data for daycase and inpatient admissions was obtained from local Hospital Episode Statistics (Office for National Statistics 2009; Information Centre for Health and Social Care 2014). Prior to April 2013, the HES dataset was provided by colleagues in the Performance team of NHS Hull. The file included patient's gender, date of birth, dates of admission and discharge, primary and secondary causes of admission and information on any surgical procedures undertaken as well as the type of admission (daycase, elective or emergency). For more information about Hospital Episode Statistics data, see ***section 6.4*** on ***page 40***.

Projected population estimates were obtained from the Office for National Statistics (ONS) from www.statistics.gov.uk.

Local information on the prevalence of lifestyle and behavioural risk factors and measures of social capital was obtained from local surveys (see ***section 6.3*** on ***page 38***). National prevalence information was obtained from the General Lifestyle Survey (previously General Household Survey) (Economic and Social Data Service 2008), the Health Survey for England (Health Survey for England 2008) or Integrated Household Survey (Office for National Statistics 2013). Alternatively, for indicators within the Public Health Outcomes Framework, the data from the PHOF data tool was used (Public Health England 2015) or data from sources quotes from within the "metadata" worksheet within Excel data file downloaded from the PHOF data tool website.

Population projections relating to older people were obtained from the Projecting Older People Population Information System (POPPI) website (see www.poppi.org.uk).

Social care information was obtained from Projecting Adult Needs and Service Information (PANSI) (Oxford Brookes University and Institute of Public Care 2012).

Yorkshire & the Humber Public Health Observatory Programme Budgeting and Marginal Analysis toolkit was available from www.yhpho.org.uk.

6.2 Synthetic or Modelled Estimates

Synthetic or modelled estimates have been generated nationally, particularly in relation to estimating the prevalence of behavioural and lifestyle risk factors at local authority level. They are not based on 'real' data, but the estimates have been generated from a statistical model. There are a number of reasons why they can be misleading such as the poor quality or narrow focus of the original research, statistical problems with the model such as 'over-fitting' a model or lack of testing of the model, there are often problems with generalisability of the model, and there is often lack of transparency so it is not possible to assess the quality of the underlying research or the model or know when the model might be updated. Furthermore, just because the factors included in the model change (e.g. age distribution or number of benefit claimants), it does not necessarily mean that this will have a direct influence on the value obtained when the model is updated. The synthetic estimates that have been generated to estimate the smoking prevalence in Hull are misleading.

Further more detailed discussion of the problems with synthetic estimates is available in the JSNA Toolkit: Glossary report. A further detailed document on this specific topic available at www.hullpublichealth.org.

6.3 Local Surveys

In order to have an impact on reducing inequity in health and preventing disease rather than just treating disease, it is necessary to influence people's attitudes and behaviours towards health, and in order to accomplish this it is necessary to have knowledge about health-related attitudes and behaviours and people's perceptions towards their health, as well as the prevalence of risk factors, such as smoking, and prevalence of diseases and medical conditions.

National data are available for some health and lifestyle issues from nationally conducted surveys, but since this covers the whole of England, historically relatively few people within the local area have participate in the survey but more recently the numbers within each local authority are much larger. Information from these national surveys is useful as local results can be compared with national results (usually for England), e.g. prevalence of smoking, prevalence of alcohol consumption or general health status. However, in many cases different questions and response categories, and differences in the survey designs, mean that it is not straightforward to compare the results directly.

A number of local quantitative and qualitative surveys have been conducted as follows:

- Adult Health and Lifestyle Surveys
  - 2003
  - 2007
  - 2009
  - 2011-12
  - 2014
- Adult Black and Minority Ethnic Health and Lifestyle Surveys
  - 2007
  - 2012
- Young People Health and Lifestyle Surveys
  - 2002
  - 2008-09
  - 2012
- Veterans' Health and Lifestyle Survey 2009
- Social Capital Surveys
  - 2004
  - 2009
  - (2007, 2011-12 and 2014 Adult Health and Lifestyle Surveys also contained some questions on social capital)
- Qualitative and Social Marketing Research
  - Attitudes to Health Focus Groups 2007
  - Reflector Groups Following 2007 Adult Health and Lifestyle Survey
  - Reflector Groups Following 2008-09 Young People Health and Lifestyle Survey
  - Reflector Groups Following 2011-12 Adult Health and Lifestyle Survey
  - Reflector Groups Following 2012 Young People Health and Lifestyle Survey

Further information about each of these local surveys and all the survey reports can be found at www.hullpublichealth.org

Further (less detailed) information about each survey is also given in the Hull JSNA Toolkit: Summaries and Information, and some of the other Hull JSNA Toolkit reports where local survey data is presented, for example, those reports reporting health status or the prevalence of risk factors.

Some other quantitative and qualitative surveys, and patient and public involvement projects have also been conducted by colleagues in NHS Hull as follows:

- Other Surveys
  - 5-A-DAY Survey 2004
  - Community Groups Physical Activity Survey 2006-09 (see Hull JSNA Toolkit: Physical Activity for more information)
- Patient and Public Involvement Projects
  - Membership
  - Listening Exercise "We're All Ears"

Further information about these other surveys and patient and public involvement projects are given within the Hull JSNA Toolkit Release 4 report.

A number of other research projects have examined attitudes towards risk factors and diseases for the purposes of informing local social marketing projects, and these are mentioned within the specific Hull JSNA Toolkit documents, e.g. Chronic Obstructive Pulmonary Disease, Breastfeeding.

6.4 Hospital Episode Statistics

Hospital Episode Statistics (HES) refers to the data generated during a stay in hospital. Inpatient admission rates provide useful information about the general level of illness and the use of hospital services within geographical areas. Patients admitted to a bed for elective surgery, but discharged the same day are classed as daycases, and these are included within inpatients in this document, unless otherwise stated. However, it is very important to note that admission rates depend on how willing people are to make use of medical services, the location and accessibility of services, as well as differences in referral patterns and practices within primary and secondary care. These factors may differ between geographical areas, and may explain different levels of hospital activity rather than differences in the prevalence of disease. For example, in general, people who live in more deprived areas are less likely to visit their GP than people with similar levels of symptoms who live in more affluent areas. Referral rates can vary dramatically among different GPs which can influence admission rates. Therefore, findings should be interpreted cautiously with regard to assessing the general level of illness. Nevertheless, analysis of inpatient admission rates will give an indication of the usage of hospital services by patients or residents of different geographical areas.

When a patient is admitted to hospital a "clinician episode" is generated. If the patient is transferred to the care of another clinician during their hospital stay, another clinician episode is generated. Thus, there could be one or many clinician episodes during a patient's hospital stay. It is not necessarily the case that the primary and secondary diagnoses codes remain the same. A patient could be admitted for cancer treatment with this as the primary diagnosis, but they may develop respiratory problems during their stay and be transferred under the care of another clinician (generating another

clinician episode) and their primary diagnosis may change. Therefore, when examining hospital episode statistics with a specific primary or secondary diagnosis, or assessing the number of procedures or operations that have occurred, different results will be obtained depending on which clinician episode is examined. If all clinician episodes are examined then this will mean that all relevant diagnoses or procedures are included, but reporting on the number of clinician episodes is not as useful as reporting on the number of hospital stays/admissions or the number of patients.

The majority of admissions generate a single clinician episode, but a small number of admission can generate a number of clinician episodes. There were 266,244 clinician episodes for Hull residents over the three year period 2008/2009 to 2010/2011, and 224,590 (84%) were first clinician episodes, 29,886 (11%) were second clinician episodes, and 7,489 (2.8%) were third clinician episodes. The maximum number of clinician episodes during one patient's hospital stay was 20.

These 266,244 clinician episodes were the result of 225,169 hospital admissions for Hull residents over the three year period, and a total of 98,221 patients were admitted to hospital during the three year period. Therefore, these patients were admitted on average 2.3 times over the three year period.

For specific disease the number of admissions and the number of patients admitted over the three year period could differ substantially. Therefore, when examining the data at ward or practice level, it is possible that one or two patients could inflate the numbers substantially. However, it was thought best to present the data in terms of the total number of admissions over a period of time rather than the total number of patients admitted, as admissions will reflect service usage. A small number of tables present diagnoses out of all clinician episodes.

6.5 Quality and Outcomes Framework

As part of the General Medical Services contract implemented in April 2004, the Quality Outcomes and Framework (QOF) was set out as a means for practices to measure achievement against a set of clinical and other indicators that reflected the quality of care provided to their patients. As part of QOF, practices obtained funds for producing and maintaining disease registers for specific diseases. The data from these registers have been used to measure diagnosed prevalence of disease within each of the Hull JSNA Toolkit disease-specific reports. These prevalence estimates are not adjusted in any way for the patient population, and practices with a relatively high percentage of elderly patients or patients living in the most deprived areas will tend to have a higher prevalence of disease. Other factors which can influence the practice prevalence rates and further information about QOF are given within the JSNA Toolkit: Glossary report.

6.6 General Practice Groupings

The general practices in Hull differ with regard to their registered population in terms of deprivation and age of patients (and other characteristics). When assessing different characteristics of a practice in terms of health need, such as the prevalence of diagnosed disease, hospital admission rates or mortality rates, it is generally more useful to consider if a particular practice has a higher or lower prevalence or rate in relation to other similar Hull practices (comparing like-with-like[5]) rather than compare each practice with the Hull average or a national figure.

The Index of Multiple Deprivation 2015 has been used to measure deprivation (see Hull JSNA Toolkit: Deprivation and Associated Measures and ***section 2.4*** on ***page 8*** for more information). Nationally, a deprivation score has been assigned to each of the lower layer super output areas (LLSOAs) within Hull. On average, 1,500 residents live in each of the 166 LLSOAs in Hull. This IMD 2015 score has been determined for each registered patient based on their postcode (and which of the 166 LLSOA they live within). There is an assumption that the average deprivation score for the LLSOA is representative for each registered patient and this might not be the case (the patients registered at a specific practice may be more deprived than the average for their area – see Hull JSNA Toolkit: Deprivation and Associated Measures for more information). The age distribution of all the patients registered with a practice is also known, so it is possible to calculate the mean deprivation scores and mean ages of the patients for each Hull practice.

The primary care groups were originally defined using the IMD 2007 using the population as at April 2010 to calculate the mean IMD score and mean age of the patients and practices were grouped into eight different groups (in JSNA Toolkit Release 4). However, the local CCG preferred a four peer comparison groups with a small number of practices assigned to the same group for practical reasons, e.g. the practices share the same practice manager[6]. In 2013, these four groupings were derived from the mean IMD 2010 score and mean age of their patients to group practices into four different groups (least deprived, most deprived, middle deprivation group with younger population, middle deprivation group with older population).

In November 2015, a new Index of Multiple Deprivation 2015 was published (see Hull JSNA Toolkit: Deprivation and Associated Measures and ***section 2.4*** on ***page 8*** for more information), and the local CCG were forming their own groups of practices for different purposes. Their groups were based on economies of scale, and were based

[5] Theoretically it is possible to group practices using more characteristics than deprivation and age, however, as the number of characteristics increase, in practice, it becomes much more difficult to group the practices into similar groups.

[6] The Clinical Commissioning Group (CCG) asked if practices could be grouped into four different groups with certain practices included in the same group as the practice manager was the same, and they did not want to produce different 'peer group' reports if their practices were in two or more peer groups.

on which practices were currently working together or which practices might work together in the future. Thus their groupings were more geographically based.

Within the JSNA Toolkit reports, the reason for grouping practices was different, so a different set of groupings were produced. These comparison groupings together with the CCGs geographical-based groupings have both been used when presenting practice-level information such as disease prevalence information from the Quality and Outcomes Framework, or hospital admission rates.

The new 2015 PHS groupings are based on the mean IMD 2015 scores and not the mean age of the patients. It can be seen that within ***Figure 5***, the mean age of the patients does not differ greatly except for practices with a mean deprivation score under 30 or so. Thus, to simplify the primary care groupings, it was decided to simply group on deprivation alone. As five groupings have generally been used in other analyses, it was decided to use five primary care groups.

Table 8 gives the mean age of the patients registered with each practice (as at April 2015). The deprivation scores are given in ***Table 8***, and should be used as a guide to the level of deprivation within each practice.

Table 8 and ***Figure 6*** give the assigned groups for each practice based on the mean deprivation score of their registered patients. The groupings finalised so the total list size of each group of practices were approximately similar. Group A (least deprived) included 12 practices and had a total list size of 56,076 patients as at April 2015, Group B included 8 practices with a total list size of 57,155 patients, Group C included 11 practices with a total list size of 55,980, Group D had 12 practices with a total list size of 59,043 and Group E (most deprived) included 12 practices with a total list size of 62,044 patients.

Table 8 includes seven practices which were open in 2004/05 when the QOF GP disease registers were first introduced, but have since closed. The list sizes, mean deprivation scores (IMD 2004, 2007 or 2010) and mean age of patients are based on their registered patients prior to closure.

Table 9 and ***Table 10*** give the CCG groupings which are more geographical-based. There are two versions as a final decision has not been made as to which group “Bridge Group” will be assigned. It will either be assigned to North 3 (***Table 9***) or West 2 (***Table 10***).

A map illustrating the location of general practices in Hull is given In Hull JSNA Toolkit: Geographical Area.

Figure 5: Mean deprivation score and mean age of registered patients for each general practice as at April 2015

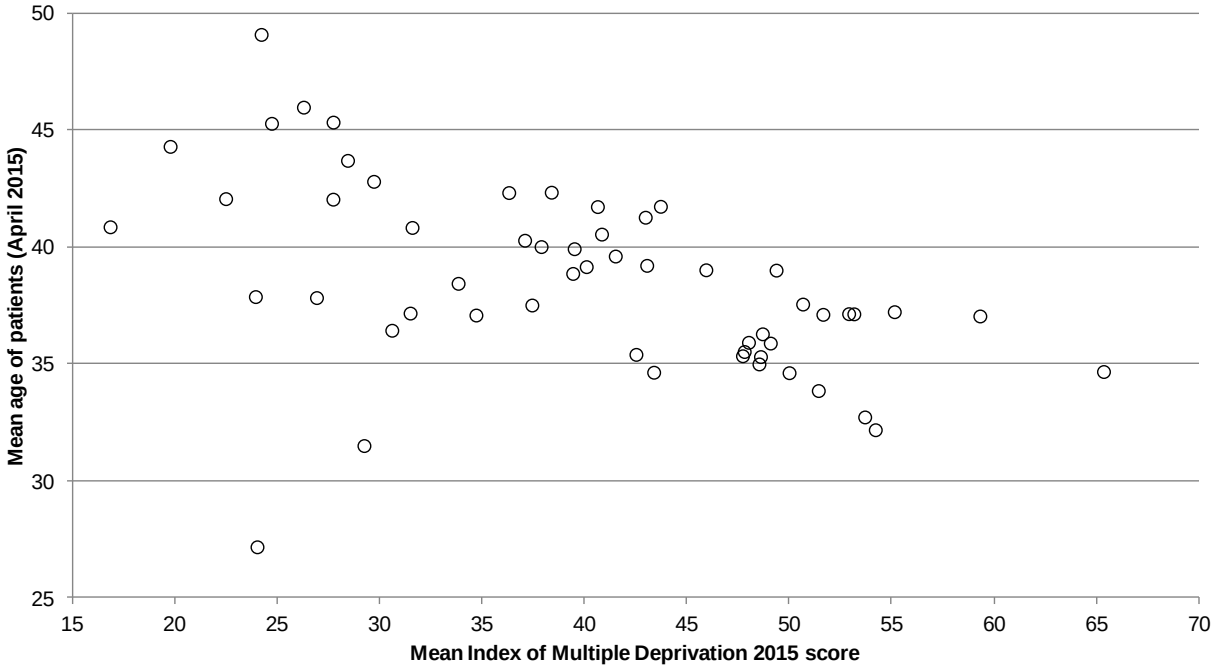

Figure 6: Mean deprivation score and mean age of registered patients for each general practice as at April 2015 and assignment to peer groups (based on deprivation alone)

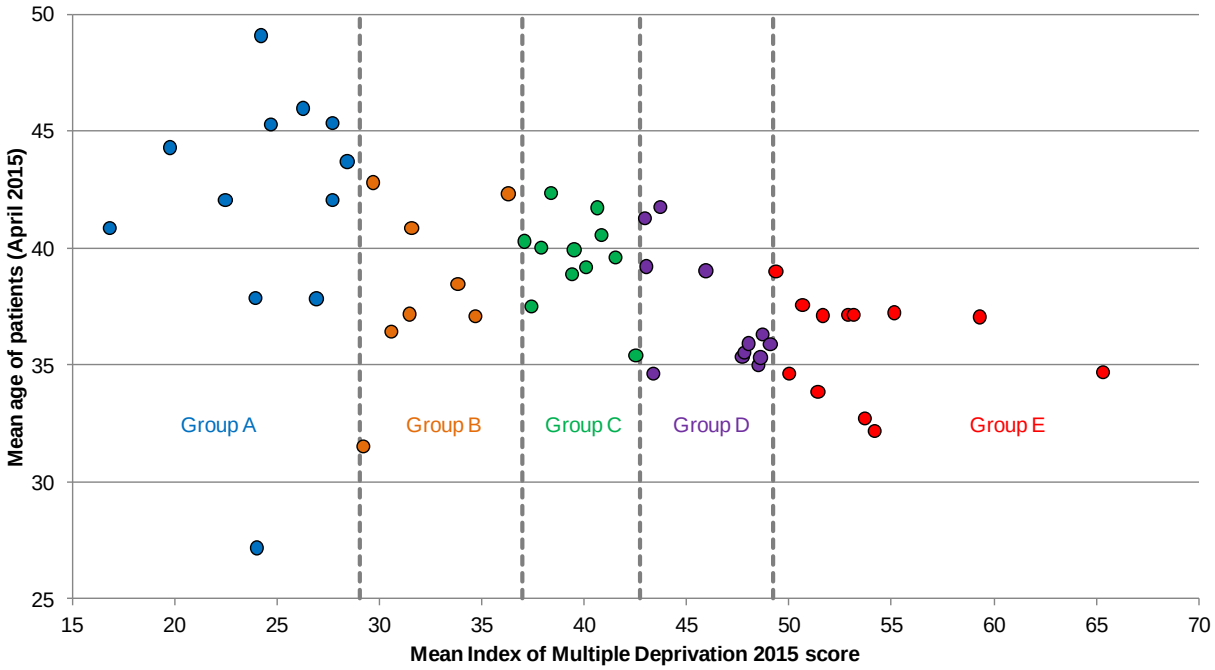

Table 8: Mean deprivation score and mean age of registered patients for each general practice as at April 2015 and assignment to peer groups (based on deprivation alone)

Group	Practice	List size	Mean IMD 2015	Mean patient age	Approximate closure date (if applicable)
A	B81021: Faith House Surgery	7,639	27.71	42.04	
A	B81035: The Avenues Medical Centre	6,004	22.47	42.06	
A	B81056: The Springhead Medical Centre	15,266	16.82	40.86	
A	B81075: Dr Mallik	1,792	24.20	49.08	
A	B81085: Dr Richardson (Haxby - Burnbrae Surgery)	5,000	28.42	43.70	
A	B81094: Dr Datta (Dr Raut)	1,309	24.71	45.28	
A	B81095: Dr Cook (Field View Surgery)	3,828	27.71	45.33	
A	B81097: Holderness Health Open Door	1,502	26.27	45.97	
A	B81104: Dr Nayar (Newland Health Centre)	5,685	24.00	27.17	
A	B81635: Dr Dave	3,128	19.75	44.30	
A	B81644: Chestnut Farm Surgery	2,242	26.90	37.83	
A	B81662: Mizzen Road Surgery*	*1,719*	*22.36*	*45.18*	*Dec-2011*
A	B81668: Dr Stryjakiewicz*	*3,282*	*26.12*	*37.95*	*Mar-2008*
A	B81676: Dr Jones & Partner*	*2,620*	*20.69*	*26.51*	*Jul-2005*
A	Y01200: The Calvert Practice (CHCP)	2,681	23.92	37.87	
A	Y02786: Priory Surgery*	*1,716*	*28.78*	*34.91*	*Jul-2015*
B	B81001: Dr Ogunba & Partners*	*3,333*	*32.10*	*38.92*	*Mar-2011*
B	B81020: Sutton Manor Surgery	7,457	31.57	40.83	
B	B81038: The Oaks Medical Centre	7,170	36.29	42.32	
B	B81048: The Newland Group	8,800	30.58	36.43	
B	B81049: New Hall Surgery	9,322	33.82	38.44	
B	B81052: Dr Musil	5,741	34.69	37.08	
B	B81072: Dr Percival & Partners	6,552	31.48	37.17	
B	B81646: Dr Shaikh*	*1,822*	*33.98*	*40.53*	*Nov-2010*

Group	Practice	List size	Mean IMD 2015	Mean patient age	Approximate closure date (if applicable)
B	B81690: St Andrew's - Northpoint	1,266	29.69	42.80	
B	Y02747: Haxby Group (Kingswood, Orchard Park & Priory Surgeries)	10,847	29.22	31.50	
C	B81008: Morrill Street Group Practice	13,789	39.42	38.86	
C	B81011: Kingston Health (Hull)	8,738	37.88	40.01	
C	B81057: St Andrew's (Dr MacPhie, Raghunath & Partners)	2,591	40.83	40.54	
C	B81066: Dr Chowdhury	2,300	40.08	39.15	
C	B81074: Dr Rej (CHCP)	3,009	38.37	42.34	
C	B81080: Dr Malczekski	2,081	40.63	41.72	
C	B81081: New Green Surgery (Dr Tang)	3,880	39.49	39.92	
C	B81616: Dr Hendow	2,505	41.50	39.61	
C	B81645: East Park Practice (Assura)	3,657	37.42	37.51	
C	B81675: Newington (CHCP)	8,153	42.51	35.40	
C	B81682: Longhill Health Care Centre (Dr Shaikh)	5,277	37.07	40.28	
D	B81002: Dr Kumar-Choudhary	3,453	48.68	36.28	
D	B81047: Wolseley Medical Centre	7,015	45.92	39.02	
D	B81053: Diadem Medical Practice	11,881	43.03	39.21	
D	B81054: Dr Varma (Clifton House)	9,281	43.70	41.73	
D	B81058: Sydenham House Group Practice	7,743	42.96	41.27	
D	B81112: St Andrew's - Bransholme	3,141	48.59	35.31	
D	B81119: Dr Palooran & Koshy	4,376	49.07	35.88	
D	B81634: St Andrew's -Dr J Venugopal	2,794	48.01	35.92	
D	B81674: Dr Joseph	2,362	43.37	34.64	
D	B81685: Dr Poulose	2,338	47.71	35.34	
D	Y02344: Northpoint (Assura)	3,192	47.80	35.52	
D	Y02748: Haxby Orchard Park Surgery*	*1,824*	*48.16*	*33.08*	*Jul-2015*
D	Y02896: Story Street Practice & Walk In Centre	1,467	48.52	34.99	
E	B81017: Kingston Medical Group (CHCP)	7,110	53.15	37.13	
E	B81018: Dr Awan & Partners (Orchard 2000)	6,044	59.31	37.04	

Group	Practice	List size	Mean IMD 2015	Mean patient age	Approximate closure date (if applicable)
E	B81027: St Andrew's Group Practice	6,231	49.35	39.00	
E	B81032: Wilberforce Surgery	2,949	51.64	37.11	
E	B81040: Dr Weir & Partners (Marfleet Group Practice)	14,732	50.65	37.55	
E	B81046: Bridge Group	8,972	55.13	37.23	
E	B81089: Dr Witvliet	3,644	52.90	37.14	
E	B81631: Dr Raut	3,516	54.20	32.18	
E	B81683: St Andrew's (Dr Raghunath & Partners - Koul)	1,806	51.42	33.85	
E	B81688: Dr Gopal	1,915	49.99	34.62	
E	B81692: The Quays Medical Centre (CHCP)	2,638	53.68	32.72	
E	Y00955: Riverside Medical Centre (CHCP)	2,487	65.35	34.67	

*Practice closed.

Table 9: CCG primary care groupings, 2015 (version 1)

Group	Practice code	Practice name	List size, Sept 2015
North 1	B81002	Dr Kumar-Choudhary	3,463
	B81112	St Andrew's - Bransholme	3,204
	B81119	Dr Palooran & Koshy	4,427
	B81616	Dr Hendow	2,513
	B81634	St Andrew's -Dr J Venugopal	2,722
	B81685	Dr Poulose	2,394
	B81688	Dr Gopal	1,921
	B81690	St Andrew's - Northpoint	1,234
	Y02344	Northpoint (Assura)	3,152
North 2	B81021	Faith House Surgery	7,683
	B81035	The Avenues Medical Centre	6,123
	B81048	The Newland Group	8,785
	B81049	New Hall Surgery	9,401
	B81072	Dr Percival & Partners	6,608
	B81095	Dr Cook (Field View Surgery)	3,742
	B81104	Dr Nayar (Newland Health Centre)	5,510
North 3	B81018	Dr Awan & Partners (Orchard 2000)	6,049
	B81046	Bridge Group	9,017
	B81094	Dr Datta (Dr Raut)	1,323
	B81631	Dr Raut	3,523
	B81644	Chestnut Farm Surgery	2,252
	Y02747	Haxby Group (Kingswood, Orchard Pk & Priory Surgeries)	11,136
East 1	B81008	Morrill Street Group Practice	13,836
	B81020	Sutton Manor Surgery	7,446
	B81053	Diadem Medical Practice	11,875
	B81080	Dr Malczekski	2,070
	B81081	New Green Surgery (Dr Tang)	3,964
	B81635	Dr Dave	3,141
	B81674	Dr Joseph	2,395
	B81682	Longhill Health Care Centre (Dr Shaikh)	5,274
East 2	B81040	Dr Weir & Partners (Marfleet Group Practice)	14,644
	B81066	Dr Chowdhury	2,297
	B81074	Dr Rej (CHCP)	3,005
	B81085	Dr Richardson (Haxby - Burnbrae Surgery)	4,942
	B81089	Dr Witvliet	3,571
	B81097	Holderness Health Open Door	1,496
	B81645	East Park Practice (Assura)	3,660

Group	Practice code	Practice name	List size, Sept 2015
City Centre	B81017	Kingston Medical Group (CHCP)	7,172
	B81032	Wilberforce Surgery	3,092
	B81047	Wolseley Medical Centre	7,046
	B81052	Dr Musil	5,782
	B81054	Dr Varma (Clifton House)	9,250
	B81692	The Quays Medical Centre (CHCP)	2,866
	Y00955	Riverside Medical Centre (CHCP)	2,552
	Y02896	Story Street Practice & Walk In Centre	1,459
West 1	B81011	Kingston Health (Hull)	8,824
	B81038	The Oaks Medical Centre	7,222
	B81056	The Springhead Medical Centre	15,652
	B81057	St Andrew's (Dr MacPhie, Raghunath & Partners)	2,606
	B81075	Dr Mallik	1,773
	B81675	Newington (CHCP)	7,923
	B81683	St Andrew's (Dr Raghunath & Partners - Koul)	1,769
	Y01200	The Calvert Practice (CHCP)	2,757
West 2	B81027	St Andrew's Group Practice	6,280
	B81058	Sydenham House Group Practice	7,784

Table 10: CCG primary care groupings, 2015 (version 2)

Group	Practice code	Practice name	List size, Sept 2015
North 1	B81002	Dr Kumar-Choudhary	3,463
	B81112	St Andrew's - Bransholme	3,204
	B81119	Dr Palooran & Koshy	4,427
	B81616	Dr Hendow	2,513
	B81634	St Andrew's -Dr J Venugopal	2,722
	B81685	Dr Poulose	2,394
	B81688	Dr Gopal	1,921
	B81690	St Andrew's - Northpoint	1,234
	Y02344	Northpoint (Assura)	3,152
North 2	B81021	Faith House Surgery	7,683
	B81035	The Avenues Medical Centre	6,123
	B81048	The Newland Group	8,785
	B81049	New Hall Surgery	9,401
	B81072	Dr Percival & Partners	6,608
	B81095	Dr Cook (Field View Surgery)	3,742
	B81104	Dr Nayar (Newland Health Centre)	5,510

Group	Practice code	Practice name	List size, Sept 2015
North 3	B81018	Dr Awan & Partners (Orchard 2000)	6,049
	B81094	Dr Datta (Dr Raut)	1,323
	B81631	Dr Raut	3,523
	B81644	Chestnut Farm Surgery	2,252
	Y02747	Haxby Group (Kingswood, Orchard Pk & Priory Surgeries)	11,136
East 1	B81008	Morrill Street Group Practice	13,836
	B81020	Sutton Manor Surgery	7,446
	B81053	Diadem Medical Practice	11,875
	B81080	Dr Malczekski	2,070
	B81081	New Green Surgery (Dr Tang)	3,964
	B81635	Dr Dave	3,141
	B81674	Dr Joseph	2,395
	B81682	Longhill Health Care Centre (Dr Shaikh)	5,274
East 2	B81040	Dr Weir & Partners (Marfleet Group Practice)	14,644
	B81066	Dr Chowdhury	2,297
	B81074	Dr Rej (CHCP)	3,005
	B81085	Dr Richardson (Haxby - Burnbrae Surgery)	4,942
	B81089	Dr Witvliet	3,571
	B81097	Holderness Health Open Door	1,496
	B81645	East Park Practice (Assura)	3,660
City Centre	B81017	Kingston Medical Group (CHCP)	7,172
	B81032	Wilberforce Surgery	3,092
	B81047	Wolseley Medical Centre	7,046
	B81052	Dr Musil	5,782
	B81054	Dr Varma (Clifton House)	9,250
	B81692	The Quays Medical Centre (CHCP)	2,866
	Y00955	Riverside Medical Centre (CHCP)	2,552
	Y02896	Story Street Practice & Walk In Centre	1,459
West 1	B81011	Kingston Health (Hull)	8,824
	B81038	The Oaks Medical Centre	7,222
	B81056	The Springhead Medical Centre	15,652
	B81057	St Andrew's (Dr MacPhie, Raghunath & Partners)	2,606
	B81075	Dr Mallik	1,773
	B81675	Newington (CHCP)	7,923
	B81683	St Andrew's (Dr Raghunath & Partners - Koul)	1,769
	Y01200	The Calvert Practice (CHCP)	2,757
West 2	B81027	St Andrew's Group Practice	6,280
	B81046	Bridge Group	9,017
	B81058	Sydenham House Group Practice	7,784

6.7 Outcome Measures, Performance Targets and Progress Towards Targets

6.7.1 Historical Indicators, Outcome Measures and Targets

Further information about historical outcome measures and targets, and progress towards historical targets is given in the JSNA Toolkit Release 4.

6.7.2 Problems Associated With Some Outcome Measures

Further information about some of the problems associated with specific measures, such as using life expectancy and the all age all cause mortality rate as outcome measures are given in Hull JSNA Toolkit: Mortality report.

6.7.3 Public Health Outcomes Framework

6.7.3.1 Introduction

The current key indicators for public health are those specified in the Public Health Outcomes Framework (PHOF) which was published in January 2012 (Department of Health 2012; Department of Health 2012).

From the Introduction to the Public Health Outcomes Framework 2013 to 2016 document produced in January 2012[7], "The responsibility to improve and protect our health lies with us all – government, local communities and with ourselves as individuals. There are many factors that influence public health over the course of a lifetime. They all need to be understood and acted upon. Integrating public health into local government will allow that to happen – services will be planned and delivered in the context of the broader social determinants of health, like poverty, education, housing, employment, crime and pollution. The NHS, social care, the voluntary sector and communities will all work together to make this happen. The new Public Health Outcomes Framework (PHOF) that has been published is in three parts. Part 1 introduces the overarching vision for public health, the outcomes we want to achieve and the indicators that will help us understand how well we are improving and protecting health. Part 2 specifies all the technical details we can currently supply for each public health indicator and indicates where we will conduct further work to fully specify all indicators. Part 3 consists of the impact assessment and equalities impact assessment."

[7] https://www.gov.uk/government/publications/healthy-lives-healthy-people-improving-outcomes-and-supporting-transparency

The vision for the PHOF is "to improve and protect the nation's health and wellbeing, and improve the health of the poorest fastest". There are two overarching outcomes to "increase healthy life expectancy and to reduce differences in life expectancy and healthy life expectancy between communities." There are also four domains:

- "**Domain 1 – Improving the wider determinants of health**
  - Objective: improvements against wider factors that affect health and wellbeing, and health inequalities.
- **Domain 2 – Health improvement**
  - Objective: people are helped to life healthier lifestyles, make healthy choices and reduce health inequalities
- **Domain 3 – Health protection**
  - Objective: the population's health is protected from major incidents and other threats, while reducing health inequalities
- **Domain 4 – Healthcare public health and preventing premature mortality**
  - Objective: reduced numbers of people living with preventable ill health and people dying prematurely, while reducing the gap between communities."

A small number of the PHOF outcomes are still under development, but where data is available it has been published nationally on www.phoutcomes.info. A number of the indicators also have sub-indicators, and data has been published males and females separately in addition to main indicator for some of the indicators. There are approximately 200 indicators or sub-indicators. A list of the main indicators is available in ***Table 11*** in ***section 6.7.3.3***. Specific details of all the indicators and sub-indicators are given in the local analysis of the PHOF indicators at www.hullpublichealth.org as well as in Hull's JSNA Toolkit documents specified in ***Table 11***.

6.7.3.2 National Profile for Hull and "Tartan Rug"

Nationally, profiles for each local authority have been produced and can be downloaded from www.phoutcomes.info. These are referred to as 'tartan rugs' as each indicator is colour coded for the local authority depending on whether its value is statistically significantly higher or lower than England's value. Pale blue is used where the local authority's value is significantly higher than England's, amber where there is no significant difference, and dark blue where the local authority's value is significantly lower than England's.

6.7.3.3 Local Analysis

A local analysis of indicators within the PHOF has been undertaken. The following documents have been produced:

- Each indicator summarised on single page of a document
- Each indicator summarised on single row on a single table
- Performance card summarising key local PHOF outcome measures

The first set of documents (one document for overarching outcome measures and one document for each of the four domains, plus other documents grouping some of the outcome measures, e.g. a document covering all indicators for Children and Young People) give a detailed description of the indicator, and information about the indicator such as data source, time periods of baseline and latest data, and other relevant information about the indicator data. There are also up to five graphs for each indicator depending on how much data is available for the specific indicator. These five graphs are: (1) the latest figures for Hull and its comparator geographical areas; (2) trends over time for Hull; (3) comparison trends over time for Hull relative to England (together with regression lines if appropriate); (4) differences among the five local deprivation quintiles/fifths (based on the Index of Multiple Deprivation 2010) over time; and (5) latest data for the 23 wards in Hull. Six key points summarises Hull's baseline and latest values of the indicator, the change in the inequalities gap between Hull and England, and between the most and least deprived local deprivation quintiles, and differences across the wards. There is also a section which gives the ranking (out of 12 comparators), the 'tartan' rug colour and whether the trends and national and local inequalities gaps have improved over time or not. A significant lower indicator might denote a worse situation for some indicators whereas for other indicators a significantly higher indicator might denote a worse situation. . Therefore, for the local 'tartan rug', whether the value of Hull's indicator is 'worse', 'identical' or 'better' than England has also been noted. Although the 'tartan rug' colour may differ for one or two indicators within this report from those published nationally as within this document they are based on overlapping or non-overlapping 95% confidence intervals, and the 'tartan rug' colours might be determined differently for those published nationally.

The summary table document summarises each indicator in a single line of a table. For each indicator, the following information is given: latest values for Hull and England, the ranking of Hull for the latest value of the indicator in relation to 11 other geographical areas which are comparable to Hull, the 'tartan rug' colour for the indicator for Hull, if the indicator has improved or not in Hull over time, and whether the difference in the indicator (national (England v Hull) and local (most v least deprived quintile/fifth of areas of Hull) inequalities gap) has narrowed or widened over time.

Within these two sets of local documents, the comparator areas used for Hull are Coventry, Derby City, Leicester City, Middlesbrough, North East Lincolnshire, Plymouth, Salford, Sandwell, Stoke-on-Trent, Sunderland and Wolverhampton.

These documents are all available on our website www.hullpublichealth.org.

Information relating to each specific outcome measure has also been included within the JSNA Toolkit documents. ***Table 11*** details which JSNA Toolkit documents gives more information for each of the PHOF indicators.

Table 11: List of which JSNA Toolkit documents include information on each of the Public Health Outcomes Framework indicators

Domain and indicator	Hull JSNA Toolkit:
Indicators corresponding to overarching outcomes	
0.1 Healthy life expectancy	Life Expectancy
0.2 Differences in life expectancy and healthy life expectancy between communities	Life Expectancy
Domain 1: Improving the wider determinants of health	
1.01 Children in poverty	Deprivation and Associated Measures
1.02 School readiness	Deprivation and Associated Measures
1.03 Pupil absence	Deprivation and Associated Measures
1.04 First-time entrants to the youth justice system	Deprivation and Associated Measures
1.05 16-18 year olds not in education, employment or training (NEETS)	Deprivation and Associated Measures
1.06 People with mental illness or disability in settled accommodation	Mental Health
1.07 People in prison who have a mental illness or significant mental illness*	Mental Health
1.08 Employment for those with a long-term health condition including those with a learning difficulty / disability or mental illness	Mental Health
1.09 Sickness absence rate	Deprivation and Associated Measures
1.10 Killed or seriously injured casualties on England's roads	Accidents
1.11 Domestic abuse	Deprivation and Associated Measures
1.12 Violent crime (including sexual violence)	Deprivation and Associated Measures
1.13 Re-offending	Deprivation and Associated Measures
1.14 The percentage of the population affected by noise	Housing, Environment and Social Care
1.15 Statutory homelessness	Housing, Environment and Social Care
1.16 Utilisation of green spaces for exercise / health reasons	Housing, Environment and Social Care
1.17 Fuel poverty	Deprivation and Associated Measures
1.18 Social isolation among adult social care users and their carers	Housing, Environment and Social Care
1.19 Older people's perception of community safety	Mental Health
Domain 2. Health improvement	
2.01 Low birth weight of term babies	Children and Young People
2.02 Breastfeeding	Children and Young People

Domain and indicator	Hull JSNA Toolkit:
2.03 Smoking status at time of delivery	Smoking
2.04 Under 18 conceptions	Sexual Health
2.05 Child development at 2-2.5 years*	Children and Young People
2.06 Excess weight in 4-5 and 10-11 year olds	Overweight and Obesity
2.07 Hospital admissions caused by unintentional and deliberate injuries in children	Accidents
2.08 Emotional wellbeing of looked-after children	Children and Young People
2.09 Smoking prevalence – 15 year olds	Smoking
2.10 Hospital admissions as a result of self-harm*	Mental Health
2.11 Diet	Diet
2.12 Excess weight in adults	Overweight and Obesity
2.13 Proportion of physically active and inactive adults	Physical Activity
2.14 Smoking prevalence – adult (over 18s)	Smoking
2.15 Successful completion of drug treatment	Drug and Substance Abuse
2.16 People entering prison with substance dependence issues who are previously not known to community treatment*	Drug and Substance Abuse
2.17 Recorded diabetes	Diabetes
2.18 Alcohol-related admissions to hospital	Alcohol Consumption
2.19 Cancer diagnosed at stage 1 and 2	Cancer
2.20 Cancer screening coverage	Screening
2.21 Access to non-cancer screening programmes	Screening
2.22 Take up of the NHS Health Check Programme – by those eligible	Screening
2.23 Self-reported wellbeing	Mental Health
2.24 Falls and injuries in the over 65s	Older People
Domain 3. Health protection	
3.01 Air pollution	Housing, Environment and Social Care
3.02 Chlamydia diagnoses (15-24 year olds)	Sexual Health
3.03 Population vaccination coverage	Vaccinations and Immunisations
3.04 People presenting with HIV at a late state of infection	Sexual Health
3.05 Treatment completion for tuberculosis	Infectious Diseases
3.06 Public sector organisations with board-approved sustainable development management plans	Housing, Environment and Social Care
3.07 Comprehensive, agreed inter-agency plans for responding to public health incidents	Housing, Environment and Social Care
Domain 4. Healthcare public health and preventing premature mortality	
4.01 Infant mortality	Mortality
4.02 Tooth decay in children aged 5 years	Dental Health
4.03 Mortality from causes considered preventable	Mortality
4.04 Mortality from all cardiovascular disease	All Circulatory Disease
4.05 Mortality from cancer	All Cancers
4.06 Mortality from liver disease	Digestive Diseases
4.07 Mortality from respiratory disease	All Respiratory Disease
4.08 Mortality from communicable diseases	Infectious Disease
4.09 Excess under 75 mortality in adults with serious mental health	Mental Health
4.10 Suicide	Mental Health

Domain and indicator	Hull JSNA Toolkit:
4.11 Emergency re-admissions within 30 days of discharge from hospital	Inpatient Hospital Admissions
4.12 Preventable sight loss	General Health, Disabilities, Caring and Use of Services
4.13 Health-related quality of life for older people	Older People
4.14 Hip fractures in over 65s	Older People
4.15 Excess winter deaths	Mortality
4.16 Dementia and its impacts	Mental Health

*No national data published. The indicator is mentioned within the JSNA Toolkit stated, but no data is generally available.

6.8 Definitions and Classifications

6.8.1 Disease Definitions Using International Classification of Diseases

The International Classification of Disease (ICD) is the international standard method used to diagnose and define disease status. The version currently being used is version 10 (since 2001). The disease definitions are also given in relation to the indicators within the Public Health Outcomes Framework (PHOF), see ***section 6.7.3*** on ***page 51*** for more information. ***Table 12*** gives the ICD codes for the different diseases used in this document. Prior to 2001, ICD version 9 was used, but versions 9 and 10 are not easily cross-linked for all diseases and medical conditions. Therefore, for these tables and figures, there have been some adjustments so that trends over time are more comparable so the information being presented is comparing like-with-like. These adjustments have been made by the Office for National Statistics and the details of such adjustments are not given within this report.

Table 12: International Classification of Diseases: classifications used

Disease or medical condition	ICD 10
Deaths considered preventable (PHOF 4.03)	A15-19, B17.1, B18.2, B20-24, B90, C00-16, C18-22, C33-34, C43, C45, C50, C53, E10-14, F10-16, F18-19, G31.2, G62.1, I20-26, I42.6, I71, I80.1-80.3, I80.9, I82.9, J09-11, J40-44, K29.2, K70, K73-74 (excl. K74.3-74.5), K86.0, U50.9, V01-Y34, Y60-69, Y83-84 for under 75s except E10-14 (aged under 50 only) and B20-24, U50.9, V01-Y34, Y60-69, Y83-84 (all ages).
Alcohol-related (locally defined)	See Hull JSNA Toolkit: Alcohol Consumption
Alcohol-related (Jones, Bellis et al. 2008)	See Hull JSNA Toolkit: Alcohol Consumption
Cancer (PHOF 4.05i)	C00 to C97
Cancer deaths considered preventable (PHOF 4.05ii)	C00-C16, C18-C22, C33-C34, C43, C45, C50, C53 for under 75s
Bladder cancer	C67
Brain cancer	C71
Breast cancer	C50
Cervical cancer	C53
Colorectal cancer	C17 to C21*
Haematological cancers	C81 to C96
Kidney cancer	C64
Lung cancer	C33 to C34**
Oesophagus cancer	C15
Ovary	C56
Prostate cancer	C61
Pancreatic cancer	C25
Skin cancer	C43 to C44***
Stomach	C16
Uterus	C54****
Cardiovascular disease (PHOF 4.04i)	I00 to I99
Cardiovascular deaths considered preventable (PHOF 4.04ii)	I20-I26, I42.6, I71, I80.1-I80.3, I80.9, I82.9 for under 75s
Coronary heart disease	I20 to I25
Stroke	I60 to I69[#]
Communicable disease (PHOF 4.08)	A00-B99, J09-J18 (all ages)
Dementia	F00 to F03
Diabetes	E10 to E14
Fractured neck of the femur (PHOF 1.14)	S72.0, S72.1, S72.2
Injuries among children – unintentional and deliberate (PHOF 2.07)	S00-T79 and/or V01-Y36
Injuries due to falls (PHOF 2.24)	Primary diagnosis codes S00-T98 and secondary cause W00-W19
Injury, poisoning and certain other consequences	S00-T98

Disease or medical condition	ICD 10
of external causes	
Liver disease (PHOF 4.06i)	B15-B19, C22, I81, I85, K70-K77, T86.4
Liver disease deaths considered preventable (PHOF 4.06ii)	B17.1, B18.2, C22, K70, K73-K74 (excluding K74.3-K74.5) for under 75s
Chronic liver disease including cirrhosis	K70, K73 to K74
Mental/behavioural disorders (drugs)	F10-F19
Intentional self-harm	X60 to X84
Respiratory disease (PHOF 4.07i)	J00-J99
Respiratory disease deaths considered Preventable (PHOF 4.07ii)	J09-J11, J40-J44 for under 75s
Chronic obstructive pulmonary disease	J40 to J44
Suicide or event of undetermined intent	X60 to X84 and Y10 to Y34 excl Y33.9
Suicide (PHOF 4.10)	X60-X84 (all ages), Y10-Y34 (ages 15+ only)
Violent crime – hospital admissions (PHOF 1.12i)	X85-Y09

*Also defined as C18-C20 if otherwise stated in specific table/figure.
**Also defined as just C34 if otherwise stated in specific table/figure.
***Melanoma of the skin only is defined as C43 and is stated in specific table/figure.
****Also defined as C54 and C55 if otherwise stated in specific table/figure.
#Although the ICD10 coding for stroke differs in the NHS Information Centre Indicator Portal depending on if mortality or hospital admission data are being analysed.

6.9 Statistical and Epidemiological Methods and Terms

Knowledge of these statistical methods is essential for many tables and figures in order to interpret the information correctly.

More detailed information on these topics is also given within the Hull JSNA Toolkit: Glossary document, including other topics not covered here, e.g. variation, incidence and prevalence, health scores and scales, etc.

There is also a statistical presentation on www.hullpublichealth.org which covers the following topics (with detailed 'notes' pages):

- What is statistics?
- Variability
- Confidence intervals
- Problems of small numbers
- Standardisation
- Causality
- Questions to ask (when examining/interpreting data/statistics)

This document also gives examples of variability in relation to numbers surveyed and the implication on the width of confidence intervals.

Another document on www.hullpublichealth.org provides more detailed information on standardisation, including worked examples of both indirect and direct standardisation.

6.9.1 Confounding, Effect Modification and Interaction

Confounding occurs when another factor (or factors) influences the association of interest. This occurs when this other factor is associated with both the risk factor of interest and the outcome of interest. Age, gender and deprivation are frequently confounders. Failure to take into account or consider confounders when examining associations can lead to biased results – known as confounding bias. Therefore, it is important to adjust for, or consider confounders when interpreting statistical and epidemiological data.

It is also possible that one factor modifies the effect of one factor on another (effect modification). For example, it could be that there is a strong association between two factors at younger ages, but at older ages the association could disappear. Age is modifying the association between the two factors of interest.

Interaction between two different factors can also occur which influence the relationship with another factor. For example, there could be twice the risk of developing a disease for a smoker compared to a non-smoker, and twice the risk of developing the same disease if the person is overweight compared to someone who is within the 'desirable' weight category, but for an overweight smoker the risk of developing the disease may be ten times greater than a person who is a non-smoker and not overweight.

6.9.2 Confidence Intervals

A confidence interval (CI), calculated using statistical methods, gives a range of likely values for the parameter of interest. Since one cannot generally survey all people for all years within all geographical areas of interest, it is common practice to obtain necessary data from a sample of the population. However, different samples will result in different estimates for the measure of interest due to natural variation of measurement data (assuming all other influences remain constant). Therefore, it is useful to have a range of values for the measure of interest (e.g. percentage or mean, difference between two means or measure of risk, etc) rather than a single value to get an idea of the range of likely values. The usual CI calculated is the 95% CI, in which we are 95% confident that the interval obtained (from the sample) will contain the true underlying measure of interest (of your population of interest).

Interpreting confidence intervals is an essential to interpreting statistical and epidemiological data. Interpretation also needs to be considered in relation to clinical significance.

When dealing with small numbers of events (see ***section 6.9.3*** on ***page 60***), it is very important to consider the implications of this and present and assess the width of CIs to

determine how much confidence there is in the estimate presented. If there is too much variability or the numbers are too small, and the confidence intervals are wide, then it is not possible to present any conclusions, and it is possible that findings could be misleading with incorrect assumptions being drawn.

6.9.3 Small Number of Events

When comparing the mortality rates for specific relatively rare cancers, for example, skin cancer, differences in the mortality rates can occur which appear to be large, but are actually only based on a very small number of deaths. This can lead to incorrect conclusions being drawn. Therefore, it is important to consider the confidence (see ***section 6.9.2*** on ***page 59***) of the estimate before drawing conclusions.

6.9.4 Percentiles, Quartiles, Quintiles and Medians

Percentiles divide a distribution of ordered numerical values into groups. The 10th percentile is the value of a numerical variable for which 10% of the people or sample of values fall below. For example, if from a survey of employees at a particular company the 10th percentile for annual income is £10,000, then this would mean that 10% of the employees for this particular company were earning £10,000 or less (and 90% were earning £10,000 or more). Deciles, quintiles and quartiles are alternative names for specific percentiles. Deciles divide the observations into 10 groups (tenths) as illustrated in the example above which present one of these (10%). The quintiles divide the sample or observations or people into five groups (fifths) whereas the quartiles divide the observations into four groups. The median is the name given to the middle quartile or 50th percentile.

6.9.5 Standardisation

The prevalence of ill-health, risk factors and disease and mortality within a particular population will depend on the age and gender structure of that population (as well as many other factors such as deprivation).

In terms of the provision of resources in relation to the prevalence of ill-health, disease and risk factors in the population, it is most helpful to report on the prevalence without taking into account the age and gender distribution of the population. This is because it is necessary to treat and have the provision to treat the existing population, regardless of the age and gender structure. However, if one wishes to assess whether one population has an excess rate of disease or if there is a difference in the prevalence of disease among different levels of deprivation, it is necessary to take the age and gender structure into consideration. Otherwise any differences found may be simply due to differences in the age and gender structure of the different populations, and not due to the factor of interest, e.g. deprivation. The age and gender structure can be taken into

consideration by using standardisation. Two different methods are used to standardise: direct[8] or indirect[9] standardisation.

6.9.6 Moving Average

A moving average is an average or mean value over a number of years, with the years 'moving' over time. A three-year moving average is very common (where the value presented is the mean value over three years). A moving average is very useful in summarising data where the number of events are small on an annual basis and there are potentially large fluctuations in the rate of events. Calculating the moving average smoothes out the fluctuations and makes interpretation easier so that the overall trend can be better seen.

6.9.7 Significance Testing

It is often useful to compare a particular summary parameter (for instance, mean, median, measure of risk) among different groups. Since there is natural variation associated with virtually all measurements and since we generally only have a sample and have not measured the entire population, it is necessary to distinguish between differences which are close enough together to be explained by chance and differences which are 'unlikely' to be explained by chance. Such a comparison can be undertaken using a statistical test which takes into the account chance variation. However, even if a difference is statistically significant, the differences might not be sufficiently large enough to be of clinical importance.

[8] Involves applying the age/gender specific rates of disease/prevalence of a risk factor observed in the study (e.g. Hull) population to a 'standard' population. For direct standardisation, the 'standard' population is generally the 2013 European Standard Population. The resulting directly standardised (mortality) rate (DSR) is frequently given as the number of deaths per 10,000 or 100,000 population.

[9] Involves applying the age/gender specific rates of disease/prevalence of a risk factor observed in the 'standard' population to the study (e.g. Hull) population. For indirect standardisation, the 'standard' population is generally England (latest mortality rates). This results in a standardised mortality (or morbidity) ratio with 100 denoting the same mortality (morbidity) rate as England after adjusting for the differences in the age/gender structure of the local study population and a value of more than 100 denoting increased mortality relative to England (e.g. an SMR of 150 denotes a mortality rate 50% higher than England after adjusting for the age/gender structure of the local population).

6.10 Underlying Data for Figures

Age-gender standardised annual inpatient admission rate per 100,000 persons by local deprivation quintile

The underlying data for ***Figure 4*** derived from Hospital Episode Statistics and Primary Care Information System (population) is given in the table below.

Local deprivation quintile (IMD 2010)	**Standardised admission rate per 100,000 persons aged under 75 years (95% CI)**		
	All admissions	**Elective admissions**	**Non-elective admissions**
Most deprived	312 (309, 314)	141 (139, 143)	138 (137, 140)
2	288 (285, 291)	138 (136, 140)	120 (118, 121)
3	262 (260, 265)	134 (133, 136)	101 (99, 103)
4	237 (235, 240)	129 (128, 131)	85 (83, 86)
Least deprived	229 (227, 232)	133 (131, 134)	75 (74, 77)
Hull	**266 (265, 267)**	**135 (134, 136)**	**103 (103, 104)**

6.11 Time Period for Information, Date Last Updated and Source for Each Table and Figure

The data refer to the dates or years as indicated (Q refers to quarters generally based on financial years so April-June is referred to as Q1). Where dates or years are in brackets after the specified dates, it means that the data was applied to the specified time period by applying rates from the dates or years in brackets. For example, [2012-2035 (2012)] might be the population predicted for the years 2012-2035 from the population estimate of 2012. For example, [2007 (2013)] might be the prevalence of diabetes estimated for the Hull population for the year 2013 from national prevalence figures from the year 2007, i.e. national prevalence estimates for the year 2007 were applied to the most recent population estimates for Hull (2013). Where a range of years is given, the data may be either combined from a number of years (particularly if the event is relatively rare and small numbers might be a problem) or the data is presented over a period of time to assess the trend over time. Where there is a source in brackets, this is generally secondary such as the source of data for the prevalence which was then applied to local population estimates or national age-specific mortality rates which were then applied to local data to calculate a standardised mortality ratio, etc.

Further information about data sources is also given in ***section 6.1*** on ***page 35***.

Reference	Description of source
C&LG	Index of Multiple Deprivation 2015 from Communities and Local Government (Communities and Local Government 2015)
HES	Hospital Episode Statistics (Office for National Statistics 2009; Information Centre for Health and Social Care 2014)
ICIP	NHS Information Centre Indicator Portal (Information Centre for Health and Social Care 2012) previously known as the Compendium of Clinical and Health Indicators (Information Centre for Health and Social Care, 2008a)
PCIS	Primary Care Information System (Open Exeter). Hull and East Riding of Yorkshire population file of GP registrations (Connecting for Health, 2009)
PHOF	Public Health Outcomes Framework (Public Health England 2015)

6.11.1 Tables

Reference	Page	Data time period	Last updated	Data source(s)
Table 1	***13***	2008/09 – 2010/11	Mar 12	HES
Table 2	***19***	2008/09 – 2010/11	Aug 11	HES / PCIS
Table 3	***20***	2008/09 – 2010/11	Aug 11	HES / PCIS
Table 4	***21***	2008/09 – 2010/11	Aug 11	HES / PCIS
Table 5	***23***	2008/09 – 2010/11	Aug 11	HES / PCIS
Table 6	***25***	2008/09 – 2010/11	Sep 11	HES / PCIS
Table 7	***28***	2009/10 – 2011/12	Mar 12	ICIP

6.11.2 Figures

Reference	Page	Data time period	Last updated	Data source(s)
Figure 1	***29***	2010/11 – 2011/12	Nov 14	PHOF
Figure 2	***30***	2010/11 – 2011/12	Nov 14	PHOF
Figure 3	***31***	2010/11 – 2011/12	Nov 14	PHOF
Figure 4	***32***	2008/09 – 2010/11	Oct 11	HES / PCIS / C&LG (IMD)

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