

MSK Needs Assessment: Epidemiological Report for Bristol, North Somerset & South Gloucestershire (BNSSG)

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The BNSSG Intelligence Network

The West of England Intelligence network covers the footprint of Bristol, North Somerset and South Gloucestershire (BNSSG) and includes the Local authorities and Clinical Commissioning Groups (CCGs).

The BNSSG area has a large and diverse population, and its constituent parts have their own distinctive composition. Whilst wherever possible data is presented at the BNSSG level to explain the variation within the area, indicators are also looked at in terms of the three CCG / LA areas..

Scope of this report

This epidemiological report seeks to provide analysis from a Public Health perspective to paint a picture of the current MSK landscape to inform future MSK commissioning and service provision. It focuses on populations, prevalence and burden of disease, injury incidence, patient outcomes and, where possible, looks at these with key public health drivers in mind such as inequalities. It does not cover a review of the current evidence base, service mapping or stakeholder views as these areas are to be covered by future allied reports.

Using the MSK Data Pack

A data pack available for health professionals and commissioners is available and includes a summary of all key statistics and their sources, as well as over 70 tabs of detailed information. Each tab is labelled to correspond to figure or table references to ensure cross referencing is straightforward.

Executive summary

The term “musculoskeletal conditions” encompasses well over 200 disorders affecting bones, muscles and soft tissues and also includes musculoskeletal injuries due to sports and in the workplace and trauma related to external causes such as falls and road traffic accidents

MSK conditions place a burden on health, services and the economy

Musculoskeletal conditions contribute significant expenditure to services both nationally and in BNSSG, with MSK conditions and trauma and injury accounting for 9% and 6% of total expenditure respectively in BNSSG and combined cost £48.6 million in 2013/14. If local patterns follow that observed regionally and nationally, MSK conditions contribute the single biggest cause of years lived with disability. Although the exact number of individuals suffering with MSK conditions in BNSSG is unknown, estimates suggest around 150,000 people have at least one MSK condition, and prevalence rates for certain conditions such as osteoporosis appear to be underrepresented in official figures. Days off work due to MSK and the costs of benefits claimed due to MSK conditions are examples of how the financial burden extends beyond health and care settings.

The spread of hospital admissions relating to MSK conditions, and an individual’s chances of dying during their admission spell, are not equally distributed but disproportionately affect older people and those living in deprived neighbourhoods.

Care should be taken to consider the impact the aging population will have on service demand, large increases in the 85+ population have been observed in the last decade, and this population is set to increase a further 131% by 2039. Attention should also be paid to the impact of deprivation in relation to MSK to ensure inequalities are being addressed, with particular attention paid to the higher admission rates and increased likelihood of death amongst the most deprived compared to the least deprived. The overall low relative deprivation within BNSSG masks very deprived areas and this should not be overlooked.

There is a preventable element to the burden of MSK

A growing level of obesity coupled with low levels of physical activity are storing up potential problems for future generations.

Falls are the largest cause of emergency hospital admission amongst older people nationally and a significant determining factor to a permanent move into nursing or residential care. The majority of hospital admissions for falls within BNSSG occur in the home and relate to falls on the same level, indicating proprioception, balance or muscle strength issues – issues that could be tackled through exercise therapy or support from OT services. With some MSK conditions associated with lifestyle factors such as obesity and lack of physical activity, a preventative approach may also be possible with sub-clinical groups.

Consider the differences and uniqueness of each area

Though this report looks to provide information for BNSSG as a whole, it is useful to

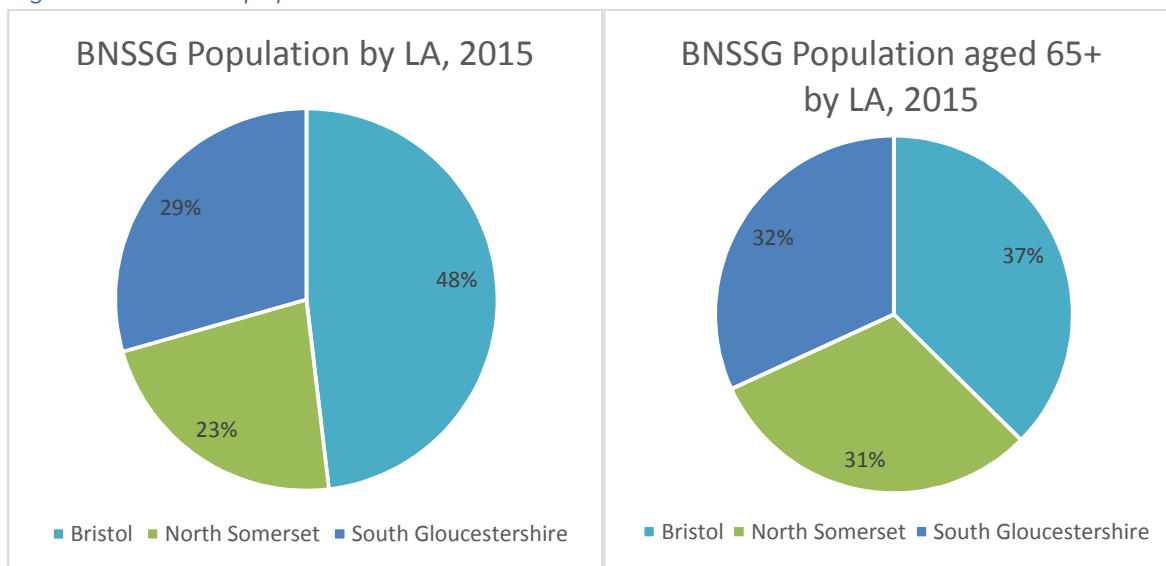
consider the differences between the areas that make up BNSSG in terms of their age structure, level of deprivation and potential types of barriers to services, for example rurality based barriers in parts of north Somerset and South Gloucestershire and cultural or language barriers in Bristol. The variation in these will need to be considered when service gaps are being investigated.

1 Population & Demographics

Current population, growth and projections

Core populations and urban rural mix

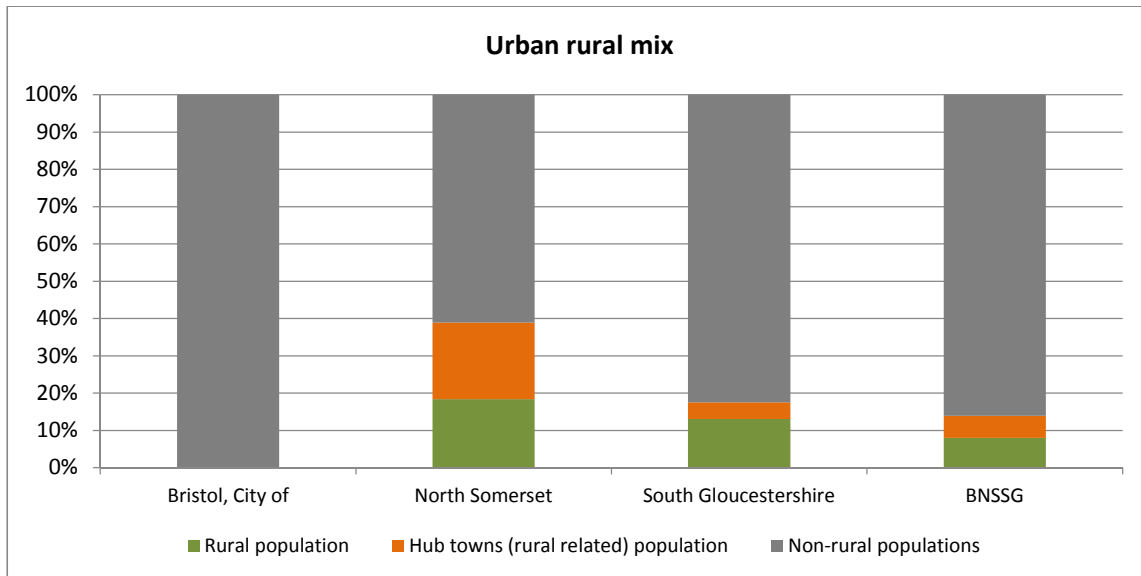
Figure 1.0: BNSSG population 2015



Source: ONS mid-year population estimates, 2015

The boundaries between each of the areas that make up BNSSG are blurred. As an area containing a city, the greatest proportion of residents and registered patients are in Bristol, with 48% of BNSSG residents and 51% of BNSSG GP registered patients. When isolating the population to those over 65, the age group most at risk of MSK conditions, then the proportion that each area contributes is more equally distributed. The area known as 'Greater Bristol' spills into the neighbouring local authorities of South Gloucestershire to the north, Bath and North East Somerset to the east, and North Somerset to the south. The Bristol Local Authority area makes up approximately 70% of the greater Bristol area and is defined as urban, with no rural areas. The urban rural mix in North Somerset and South Gloucestershire show more variation, with nearly 40% of North Somerset residents and 17.5% of South Gloucestershire residents living in rural and rural relating areas, creating an average for BNSSG of 14% living in rural or rural related areas.

Figure 1.1: Rural and rural related population

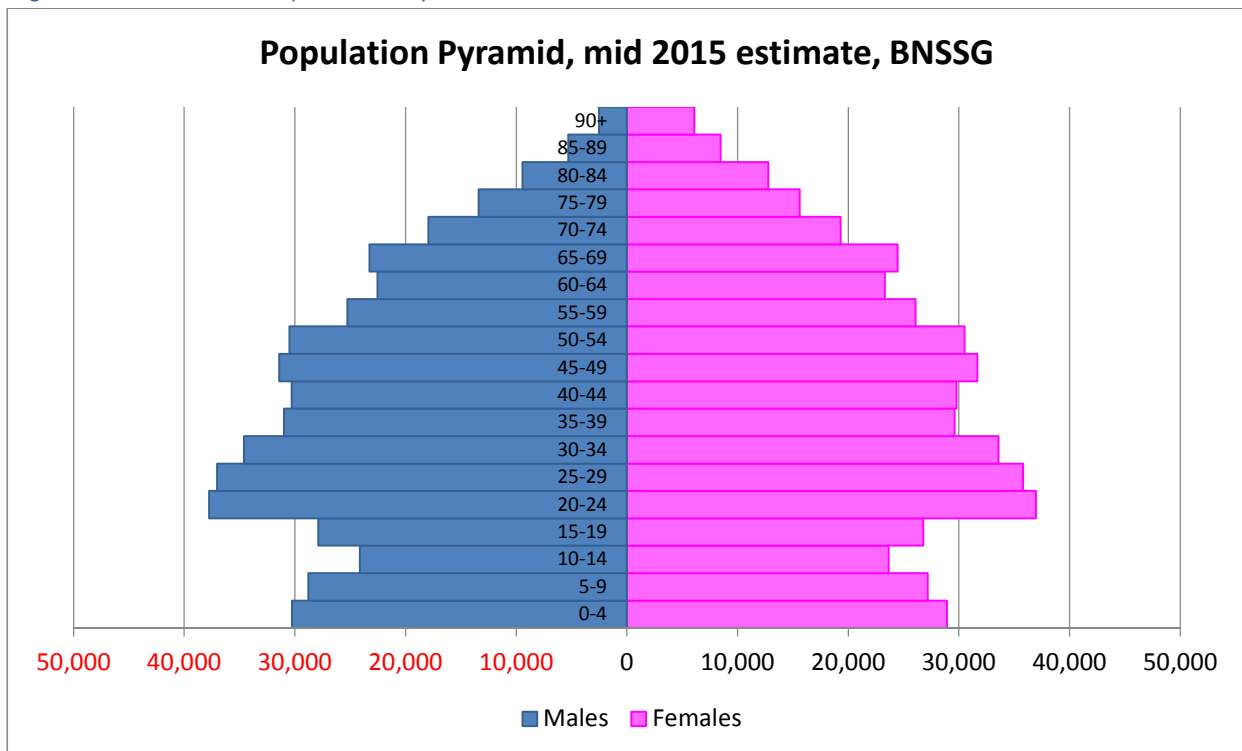


Source: ONS mid-year population estimates, 2015

Estimated resident population by age

By collating the most recent ONS midyear population estimates for 2015, the resident BNSSG population is approximately 933,933, with 20.6% aged 0 to 17, 62.4% aged 18 to 64 and 17.0% over the age of 65.

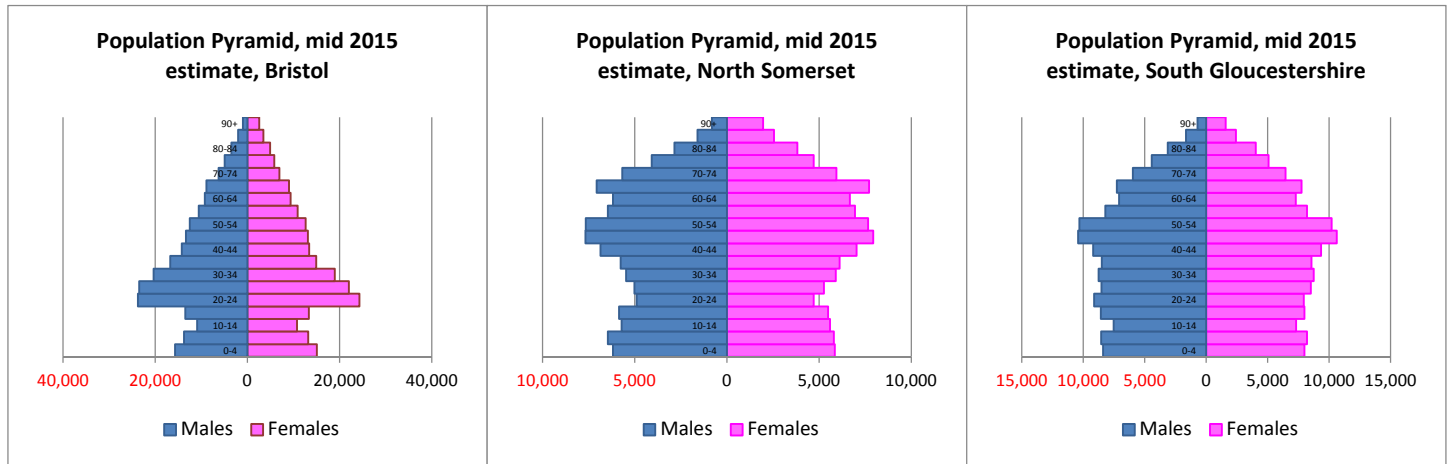
Figure 1.2a: BNSSG Population Pyramid 2015



Source: ONS mid-year population estimates, 2015

The age structures of the three areas that make up BNSSG are quite distinct from one another. Whilst the median age of BNSSG is 36, the median ages for Bristol, North Somerset and South Gloucestershire are 32, 44 and 40 respectively. This is best illustrated in their different population pyramids (see tab 1.2 in data pack).

Figure 1.2b Population Pyramid 2015 by Local authority



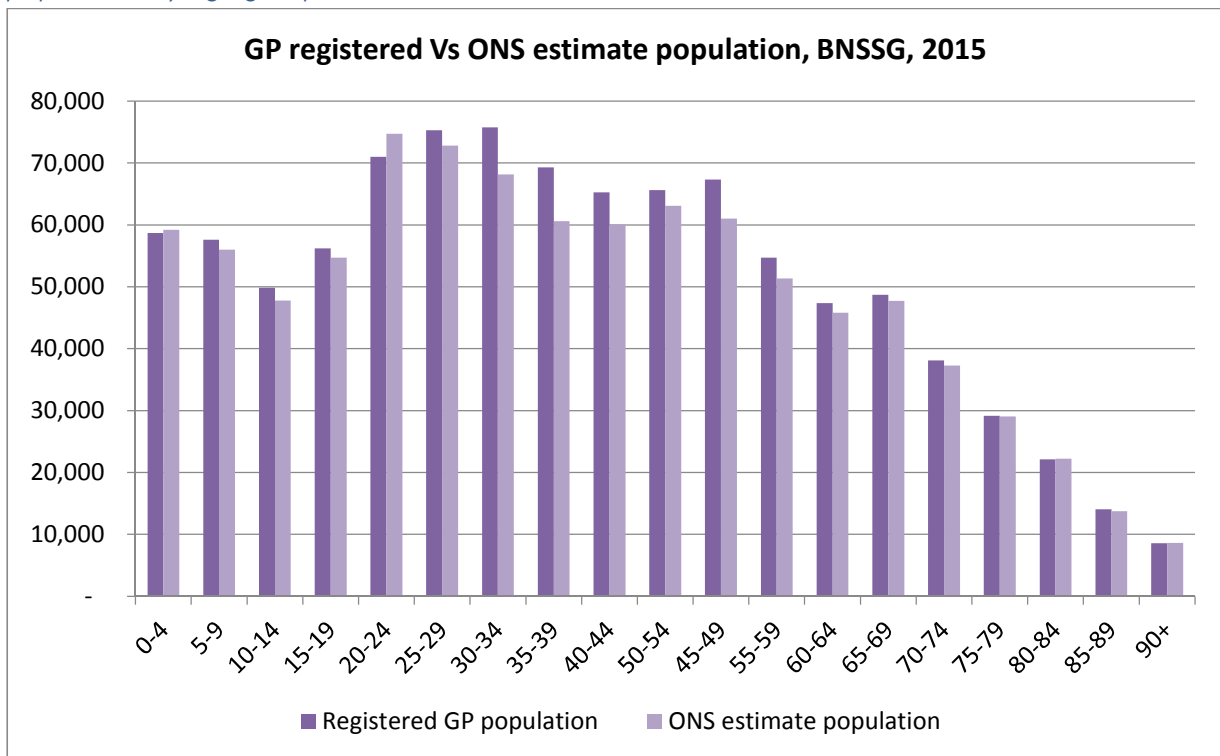
Source: ONS mid-year population estimates, 2015

So whilst at the all age level, North Somerset’s residents make up less than a quarter of BNSSG residents, when isolating those aged 90 and over, North Somerset contributes nearly a third of the BNSSG total for that age group. And whilst the residents of Bristol make up almost a half of the BNSSG population, they have nearly two thirds of 20-24 year olds.

GP Registered Population

The population registered with a GP with each of the three CCG areas differs slightly from the ONS estimated population. GP capitation records from December 2015 put the total BNSSG registered population at 974,713, approximately 4% higher than the closest ONS estimates. There is variation across the patch however, with both Bristol and North Somerset having larger registered than resident population (10% and 3% respectively), whereas South Gloucestershire has a 4% smaller registered population than its ONS estimate. It is likely that a large degree of cross boarder flow is responsible for the difference in the two population measures, and in the case of Bristol, the large Student population will likely add substantially to the difference.

Figure 1.4: BNSSG registered population by broad age group & CCG and BNSSG resident population by age group and LA



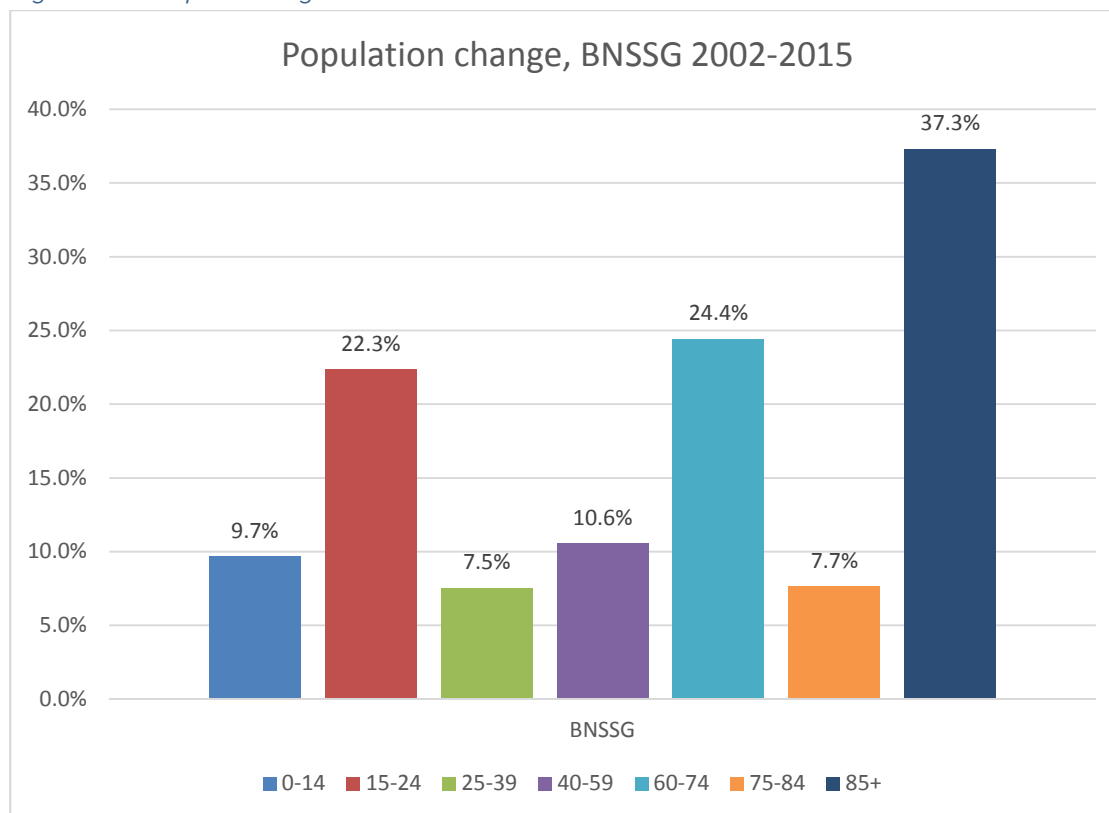
Source: Open Exeter data courtesy of South Gloucestershire CCG

Population Growth

The estimated resident population has increased from an estimated 827,100 in 2002 to the latest (2015) figures, an increase of 13%. The area that has experienced the greatest increase is Bristol (15%) with North Somerset and South Gloucestershire both having experienced increases of 11%.

In relation to age, the greatest increases in BNSSG have been amongst those aged 85+ (37%). Bristol has seen its largest increases over this period amongst its 15-24 year olds (27%), North Somerset amongst 60-74 year olds (37%) and South Gloucestershire amongst those aged 85 and over (68%).

Figure 1.5: Population growth 2002-2015



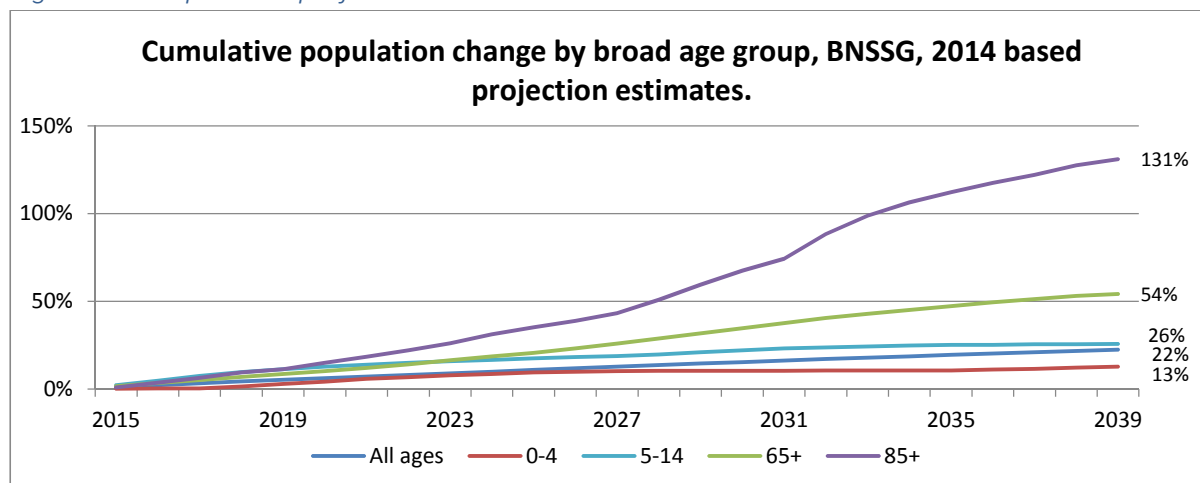
Source: ONS mid-year population estimates, 2002-2015

Population Projections

The estimated resident population is set to increase to almost 1.13 million by 2039, based on current population, this amounts to an increase of over 195,000 people, or population growth equating to 20.9%. This is higher than national or regional population growth forecasts. If the all-age percentage increases of the resident population projections are applied to the registered population, then the registered population could rise to almost 1.18 million by 2039.

This population growth is not equally distributed across all age groups or among each of the three areas that make up BNSSG. Absolute and percentage population increases in BNSSG are predicted to be 7,600 (13%) amongst 0-4s, 26,000 (26%) amongst 5-14s, 23,300 (18%) amongst 15-24, 66,100 (14%) amongst 25-64s, 55,500 (41%) amongst 65-84s, and 29,100 (131%) in those aged 85 and over between the 2014 projection baseline and 2039.

Figure 1.6: Population projections



Source: ONS 2014 based subnational population projections

The predicted increases in numbers and proportion of those aged 65+ are greatest in North Somerset and South Gloucestershire with 60% and 61% increases respectively, higher than the Bristol increase of 44% but similar to the national and regional increases of 59% and 57% respectively. The increases in those ages 85+ of 162% and 166% for North Somerset and South Gloucestershire respectively are higher than both the Bristol increase of 84% and the national and regional increases of 138% and 137% respectively. See tab 1.5 in data pack for more detail.

The high absolute and percentage increases in the 65-84 and 85+ population will have a significant impact on health and social care provision, particularly in relation to musculoskeletal conditions and the care and services it requires.

Vulnerable Populations

Certain population groups are at increased likelihood of having poorer health outcomes compared with others. This includes the economically disadvantaged, racial and ethnic minorities, those for whom English is a second language, children in low-income families, the elderly, the homeless, and those with chronic health conditions including severe mental illness. Those in rural areas also encounter physical barriers to accessing healthcare services.

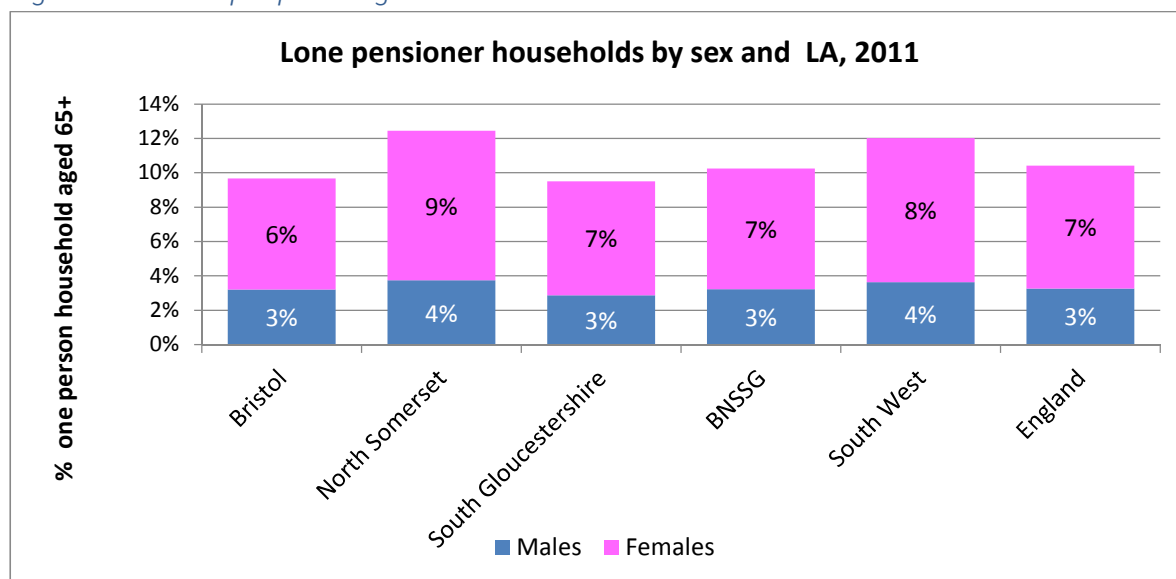
Those at greater risk of developing MKS conditions include older people, postmenopausal women, people who are obese, are physically inactive, or are suffering from depression¹, as well as people from low income groups. Those more likely to experience trauma and Injuries include children, older people, and people with osteoporosis. These population groups need to be considered for targeted preventive and supportive interventions.

The population data in section 2 starts to illustrate the different vulnerable groups within BNSSG, with North Somerset having both a proportionally large elderly population, and the largest proportion of rural residents. The following sections expand on intelligence on vulnerable populations using various data sources.

Lone Pensioner households

Just over 5% of households within BNSSG are lone pensioner households, similar to the national but lower than the regional averages of 5.2% and 6.1% respectively. The area with the highest proportion of lone pensioner households is North Somerset, at 6.3%, higher than the regional figure. Bristol and South Gloucestershire both have 4.8% of their population being lone pensioners, lower than both the national and regional averages. A substantially greater proportion of lone pensioners are females, largely due to their longer life expectancy.

Figure 1.7: Older people living alone



Source: ONS Census 2011

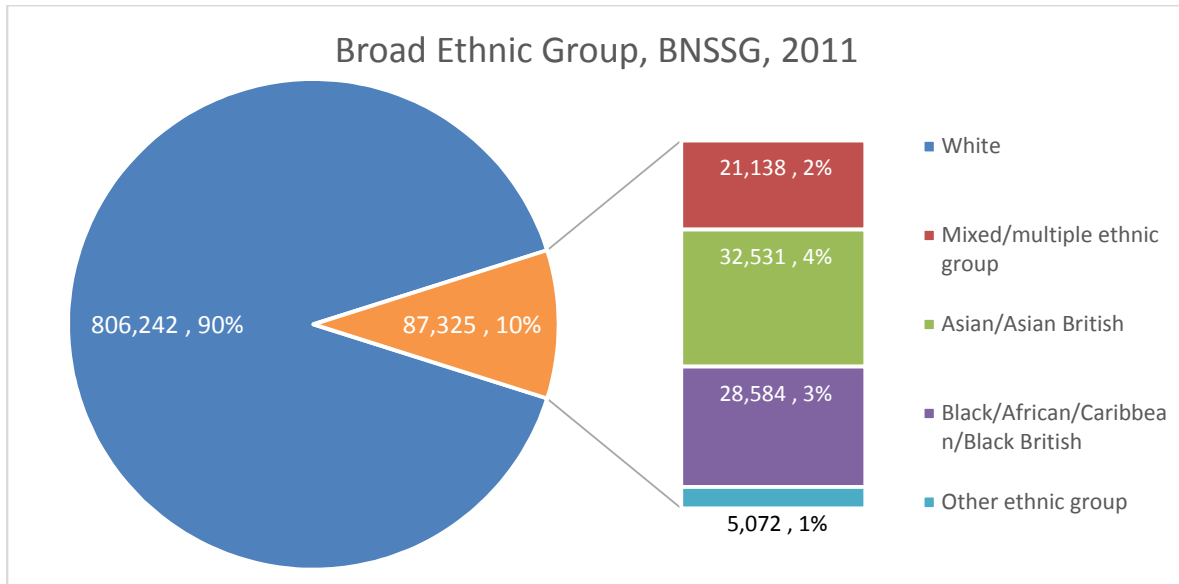
Population by BME Group

The proportion of the BNSSG population as a whole who defined themselves as from non-white ethnic group at the time of the 2011 census is 9.8%, higher than the regional average of 4.6% but lower than the national average of 14.6%. The proportion of BME groups varies across the patch, with Bristol having the greatest BME population at 16%, South Gloucestershire at 5% and North Somerset at 2.7%. BME populations also vary by age within BNSSG and nationally, with younger populations tending to have the greatest proportion of the population belonging to a BME group. Whilst the broad ethnic group making up the highest proportion of all BME populations in BNSSG are Asian / Asian British, when detailed ethnicity is looked at, white other is the most common non-white-British ethnic group, with 3.8% at the time of the 2011 census, followed by African, at 1.5%. Components of population change published by the ONS show that the increase in white other populations closely ties in with EU succession and the resulting migration from eastern European countries. Community Profile of Somalis living in Bristol (BCC) estimates that Bristol has a significantly greater proportion of Somalis living in the local authority area than the national average, though no defined ethnic category is possible through the census, the profile estimate the population to be around 10,000.

Differences in language, culture and health systems may impact on the choice of appropriate health care services by this population group.

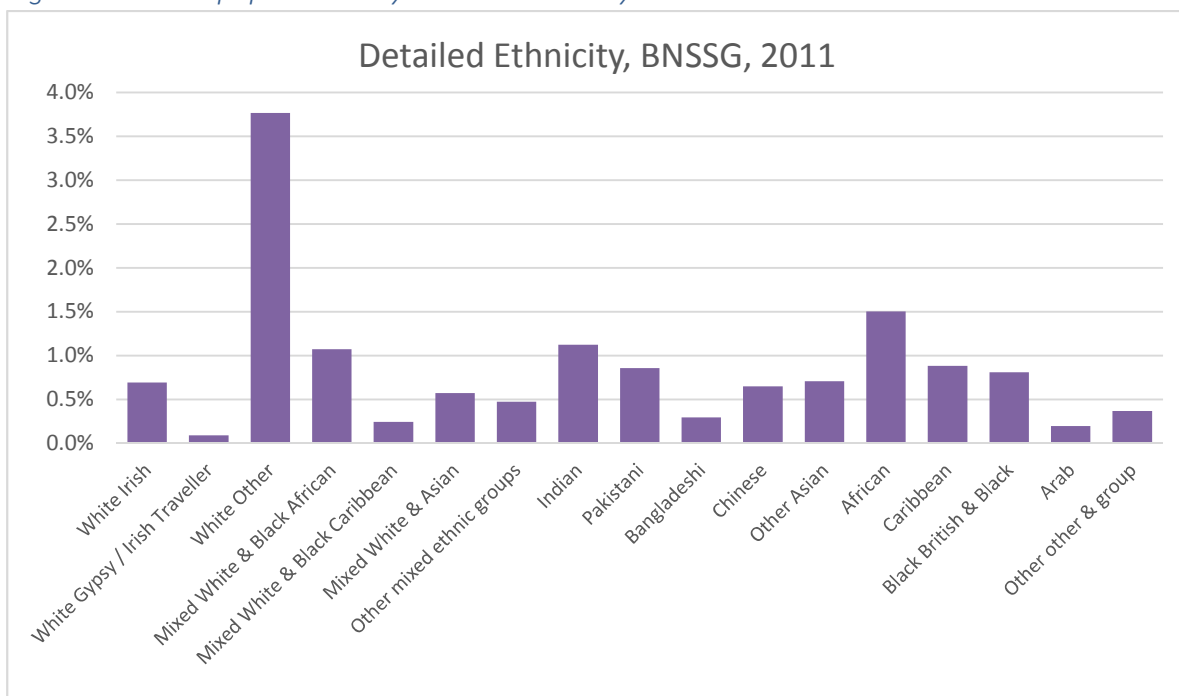
<https://www.bristol.gov.uk/documents/20182/33107/Equality%20Profile%20Somalis%202014.pdf/99f13ec0-da03-4928-9971-77246a812b17>

Figure 1.8: BME populations by broad ethnicity



Source: ONS Census 2011

Figure 1.9: BME populations by detailed ethnicity



Source: ONS Census 2011

Main Language Spoken

Within BNSSG, 95% of the population use English as their main language, this is higher in South Gloucestershire and North Somerset (97% and 97.5% respectively) than in Bristol (91.5%). The most common languages other than English spoken as a main language are Polish, other EU languages and African languages. The proportion of people using these languages is similar to national, but higher than regional averages. The proportion speaking African languages in BNSSG is almost entirely attributed to Bristol, where 1.5% of the 2011 census population reported it being their main language, it is likely that the Somali population contribute substantially to this figure as analysis by BCC suggests that the Somali population in Bristol is proportionally one the largest in the UK.

Table 1.10a: Main language spoken

Main language	BNSSG	South West	England
English	94.5%	96.5%	92.0%
French	0.2%	0.1%	0.3%
Portuguese	0.2%	0.2%	0.3%
Spanish	0.2%	0.1%	0.2%
Polish	1.1%	0.8%	1.0%
Other European language (EU):	1.1%	0.7%	1.3%
Other European language (non EU)	0.2%	0.2%	0.5%
Arabic	0.2%	0.1%	0.3%
West/Central Asian language	0.2%	0.1%	0.4%
South Asian language: Panjabi	0.2%	0.0%	0.5%
South Asian language: Urdu	0.2%	0.1%	0.5%
South Asian language: Bengali (with Sylheti and Chatgaya)	0.1%	0.1%	0.4%
South Asian language: Gujarati	0.1%	0.0%	0.4%
South Asian language: Tamil	0.1%	0.0%	0.2%
South Asian language: Any other South Asian language	0.3%	0.2%	0.4%
East Asian language: Chinese	0.4%	0.3%	0.4%
East Asian language: Any other East Asian language	0.3%	0.2%	0.3%
African language	0.7%	0.2%	0.5%
Other language	0.0%	0.0%	0.1%

Source: ONS Census 2011

Those whose main language is not English tend to be younger than the population in general. The lowest proportion using English as their main language is the 25-34 year olds and EU languages other than French, Spanish and Portuguese are the most commonly spoken by this and all age groups across BNSSG. The use of African languages amongst the 3-15 year olds and South Asian languages amongst the 50-84 year olds will also need to be considered in relation to trauma and orthopaedics and MSK conditions respectively.

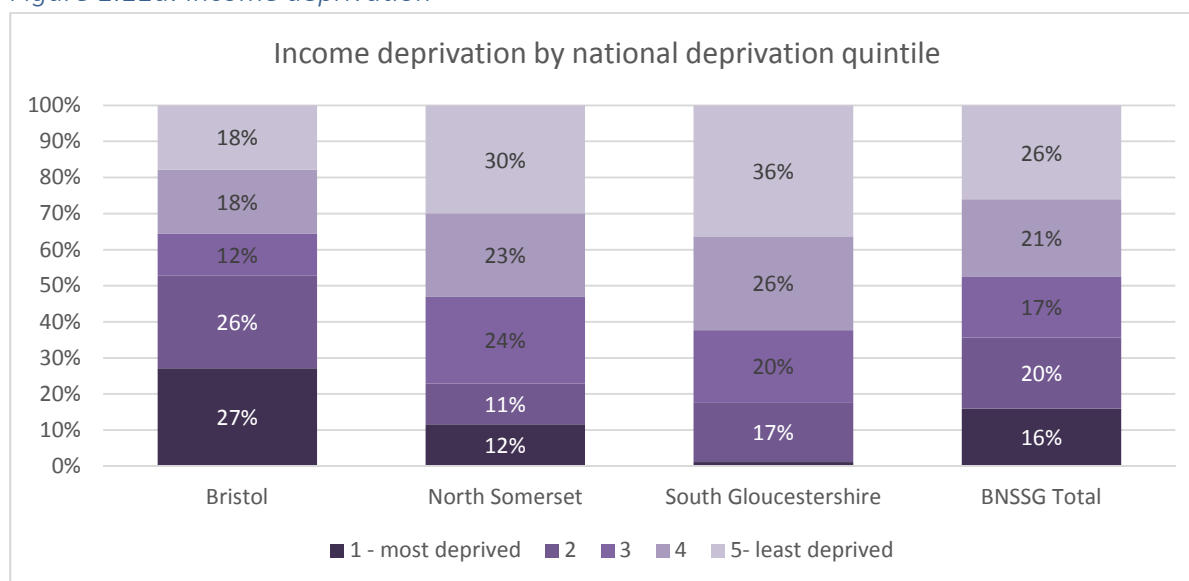
Table 1.10b: Main language spoken by age group

Main language	3-15	16-24	25-34	35-49	50-64	65-74	75-84	85+
English	95.6%	93.2%	87.3%	93.8%	97.5%	98.5%	98.7%	98.8%
French	0.1%	0.3%	0.5%	0.3%	0.1%	0.1%	0.1%	0.0%
Portuguese	0.1%	0.2%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%
Spanish	0.1%	0.2%	0.6%	0.3%	0.1%	0.1%	0.0%	0.0%
Other EU language	1.4%	2.5%	6.3%	1.9%	0.7%	0.5%	0.5%	0.6%
Other Non EU language	0.1%	0.3%	0.5%	0.3%	0.1%	0.0%	0.0%	0.1%
Arabic	0.1%	0.1%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%
West/Central Asian language	0.1%	0.2%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%
South Asian language	0.7%	0.7%	1.7%	1.1%	0.6%	0.4%	0.4%	0.2%
African language	1.2%	0.8%	1.1%	0.9%	0.2%	0.2%	0.1%	0.0%
Other language	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: ONS Census 2011

Income Deprivation

Figure 1.11a: Income deprivation



Source: IMD 2015

It is possible to assess the relative deprivation of a population using the Index of Multiple Deprivation (2015), its domains and sub-domains¹, .

As a whole, BNSSG is comparatively less deprived in terms of income deprivation than England, with 16% of its population among the *most* deprived 5th nationally, and 26% amongst the *least* deprived 5th – if BNSSG matched England then all quintiles would contain 20% of the population. Bristol is the most relatively deprived in terms

¹ The English Indices of Deprivation measure relative levels of deprivation in 32,844 small areas or neighbourhoods, called Lower-layer Super Output Areas, in England. It combines information from seven domain indices (income, employment, education, skills & training, health deprivation & disability, crime, barriers to housing and services and Living environment) and two further subdomain (geographical barriers, wider barriers, indoors living environment and outdoors environment) to produce an overall relative measure of deprivation

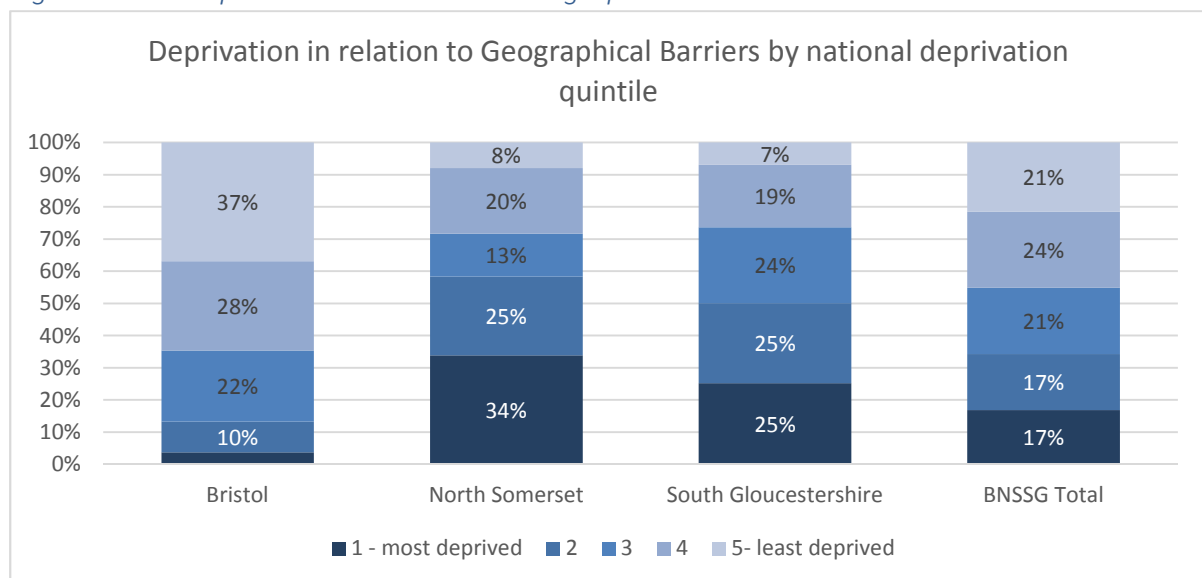
of income of the three areas, and South Gloucestershire is the least deprived, with only 1% of its population among the 5th most deprived nationally.

Within BNSSG, income deprivation affects a greater proportion of children than older people, with 20% of BNSSG child population amongst the most 5th deprived nationally but 13% of the BNSSG over 60 population being amongst the most deprived 5th nationally. Again income deprivation affecting both Children and older people is highest in Bristol and lowest in South Gloucestershire.

Geographical Barriers to Services

When one of the sub-domains of the IMD, Geographical Barriers, is looked at independently, a different pattern of relative deprivation emerges, with North Somerset and South Gloucestershire having a greater proportion of the population in the most deprived 5th nationally suggesting these populations are vulnerable in terms of their ability to physically access services.

Figure 1.11b: Deprivation in relation to Geographical Barriers



Source: IMD 2015

Mental Health

BNSSG has a higher prevalence of recorded depression than that at the national or regional level but other mental health indicators show it is similar to the national and regional picture. Both Bristol and north Somerset stand out as having relatively high prevalence of mental health conditions, whilst South Gloucestershire has the lowest rates in the patch across all four indicators.

Figure 1.12: Recorded prevalence of mental health conditions

Area \ mental health indicator	Depression: Recorded prevalence	Depression & Anxiety Prevalence	Mental Health problem	Percentage reporting a long-term mental health problem
NHS Bristol CCG	7.62	13.76	0.92	5.91
NHS North Somerset CCG	9.19	14.06	0.79	5.26
NHS South Gloucestershire CCG	7.71	9.22	0.55	4.35
BNSSG	7.99	12.57	0.79	5.33
South West NHS region	7.78	12.07	0.81	5.02
England	7.33	12.44	0.88	5.09

Source: National General Practice Profiles

Lifestyle Risk Factors

Lifestyle factors can contribute significantly to the prevalence of MSK conditions. One of the risk factors associated with osteoarthritis is obesity, due to the increased mechanical load that excess weight causes. Obese people are more than twice as likely to develop osteoarthritis of the knee compared to people of normal weight² Evidence suggests that obesity in early adult life predicts osteoarthritis many years later and that two in three obese adults will go on to develop osteoarthritis later in life. More than two out of three knee replacements and one in four hip replacements in middle aged women in the UK are attributable to obesity³. Obesity also increases the risk of other MSK conditions including gout (twice as likely and at a younger age⁴, and back pain (risk increases with rising body BMI)

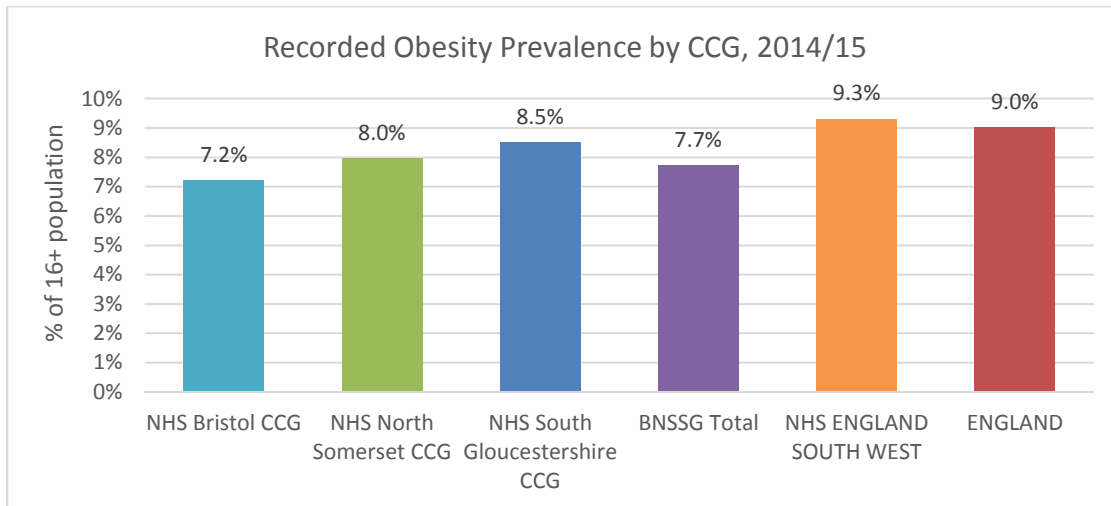
Recorded obesity at the CCG level shows that BNSSG as a whole has a lower prevalence rate of recorded obesity than the regional or national averages. These prevalence rates are likely to be an underestimate of the true prevalence of obesity as not all patients will have a record of their BMI on their medical records. Sampled estimates from the Active People Survey suggest that adult obesity is substantially higher than GP practice recorded prevalence.

² Blagojevic M et al (2010). Risk factors associated with osteoarthritis of the knee in older adults: a systematic review and meta-analysis. *Osteoarthritis Cartilage* 18(1): 24-33

³ Liu B et al (2007). Relationship of height, weights and body mass index to the risk of hip and knee replacements in middle-aged women. *Rheumatology (Oxford)* 46(5): 861-867

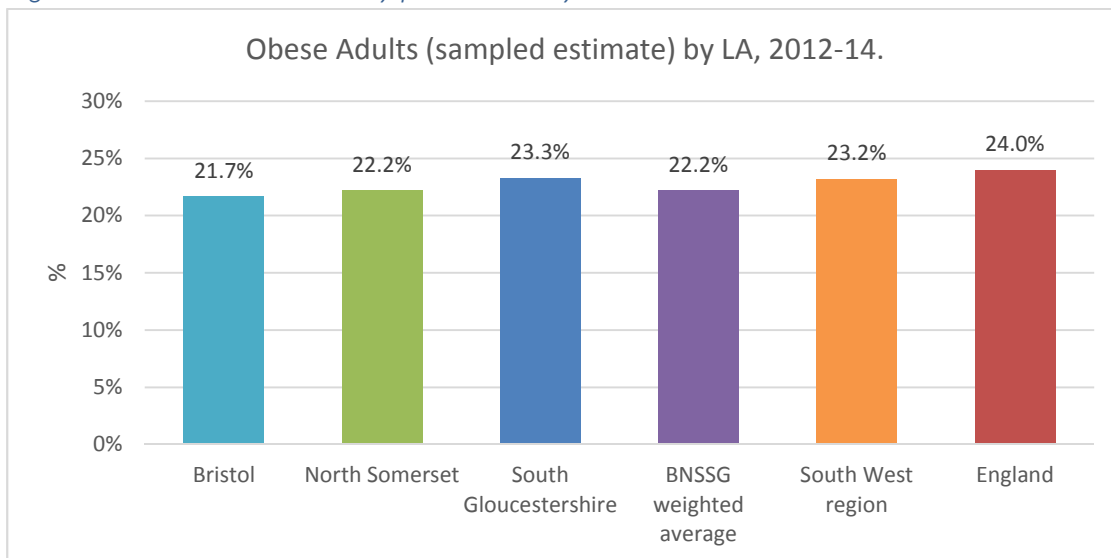
⁴ DeMarco MA et al. (2011). Obesity and younger age at gout onset in a community-based cohort. *Arthritis Care Res (Hoboken)* 63(8): 1108-1114

Figure 1.13: recorded prevalence of obesity by CCG



Source: QOF

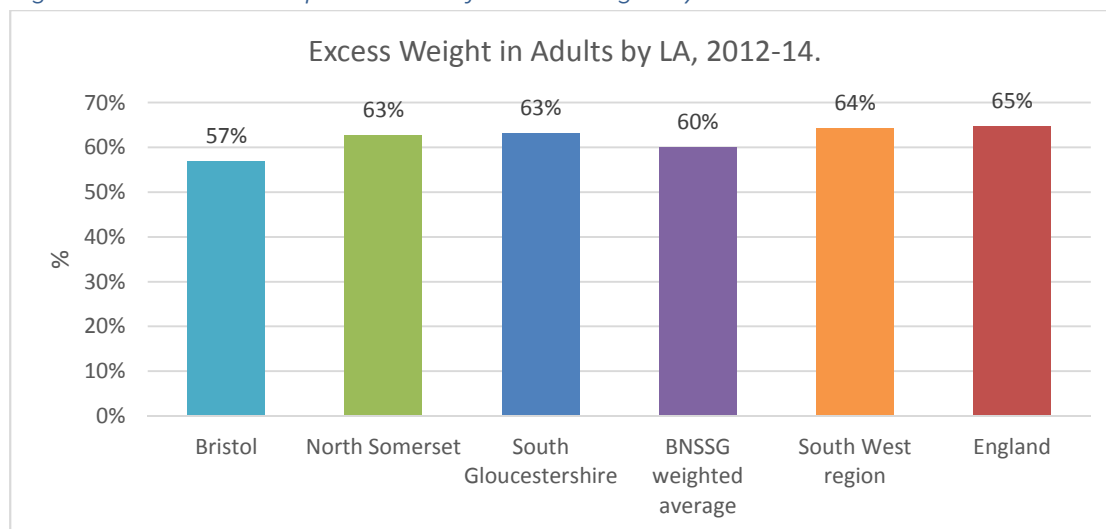
Figure 1.14: Estimated obesity prevalence by LA



Source: Public Health England, Health Profiles

When all excess weight is estimated, the overall patterns within BNSSG remain the same as both obesity indicators, with South Gloucestershire having the higher rates than the other two areas in the patch.

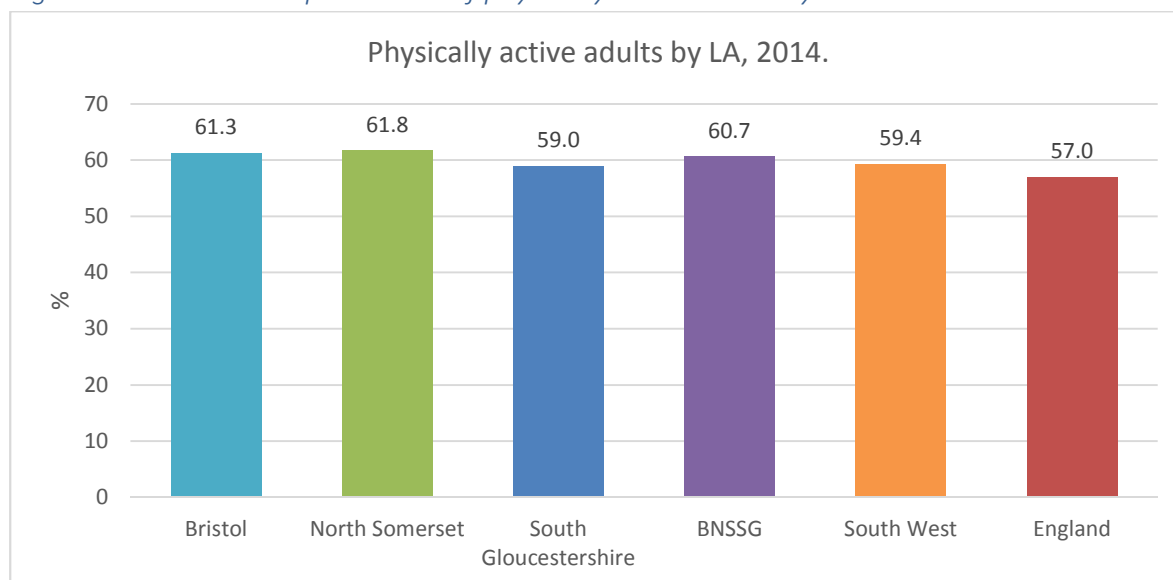
Figure 1.16: Estimated prevalence of excess weight by LA



Source: Public Health England, Health Profiles

Disability due to musculoskeletal disorders is increasing due not only to the combination of the aging population and increased obesity but also to a lack of physical activity as strong and supple muscles are key to musculoskeletal health. 60% of the BNSSG population is estimated to meet the recommended minimum levels of weekly physical activity. Although this is slightly higher than the national average, inactivity is still an important contributor to the burden of MSK conditions.

Figure 1.17: Estimated prevalence of physically active adults by LA



Source: Public Health England, Health Profiles

These lifestyle risk factors underline the importance of preventative measures. Normal weight at every stage of life reduces the risk of developing osteoarthritis and for people with osteoarthritis, being a normal weight improves symptom and may slow progression. Healthy physical activity improves musculoskeletal health, increasing strength, preserving bone density and maintaining balance and

coordination. A combination of dietary measures and exercise is the best strategy to improve or prevent a significant proportion MSK symptoms.

Summary: Population, demographics & vulnerable groups

There is a discrepancy between GP registered patients and ONS estimated residents, with the registered population being 4% higher than ONS estimates

BNSSG comprises a diverse population in terms of age, with younger populations residing in Bristol, and older populations residing in South Gloucestershire and North Somerset

The population that has increased most in the last 15 years are the 15-24s and the over 60s – high risk age groups for trauma and injuries; MSK conditions respectively.

The population predicted to increase most significantly over the next 25 years are those aged 85 and over – the same population most at risk from MSK conditions.

Rural populations that may have difficulty accessing services reside predominately in Somerset and also South Gloucestershire.

The proportion of people from BME backgrounds varies across BNSSG and are highest in Bristol. Access barriers for this group may be based more on cultural and linguistic barriers rather than geographical ones.

At the BNSSG level, relative deprivation is similar to the national level. However, this masks pockets of deprivation that exist in South Gloucestershire and North Somerset, and greater levels of deprivation that exist in Bristol.

High prevalence of depression across BNSSG, and other mental health indicators showing Bristol and North Somerset having higher than average prevalence rates, could be both associated with MSK prevalence, and serve as a barrier to individuals affectively accessing services.

An estimate of nearly 40% of the population do not meet the minimum recommended level of regular physical activity and with estimated prevalence of obesity and excess weight at 22% and 60% respectively, there is a large proportion of adults at risk of MSK conditions due to life style factors.

2. Musculoskeletal Conditions, health burden and wider impacts

Musculoskeletal conditions overview

The term “musculoskeletal conditions” encompasses well over 200 disorders affecting bones, muscles and soft tissues and include inflammatory joint diseases such as rheumatoid arthritis, juvenile arthritis, ankylosing spondylitis, psoriatic arthritis and gout; joint failure (osteoarthritis); connective tissue diseases such as lupus, scleroderma and polymyalgia rheumatica; bone diseases such as osteoporosis and non-articular conditions such as back, neck or other regional or chronic generalised pain. It also includes musculoskeletal injuries due to sports and in the workplace and trauma related to external causes such as falls and road traffic accidents.

Although not limited to older populations the prevalence of musculoskeletal conditions generally rises with age. At a national level, over the last couple of decades, as the number of elderly people in the community has increased, the number of people with musculoskeletal conditions has also risen. With the population aged 65 and over projected to rise by 54% between 2014 and 2039 in BNSSG, this trend is expected to continue.

Musculoskeletal complaints are widespread and are a frequent cause of consultation with GPs. Arthritis UK estimate that nationally, 20% of adults will consult their GP with a musculoskeletal problem each year, a figure that rises to 30% for those aged 75 and over. The ageing population in BNSSG will intensify the demand on primary care especially around managing osteoarthritis and osteoporosis the prevalence of which increases with age increasing age.

The health burden of MSK conditions

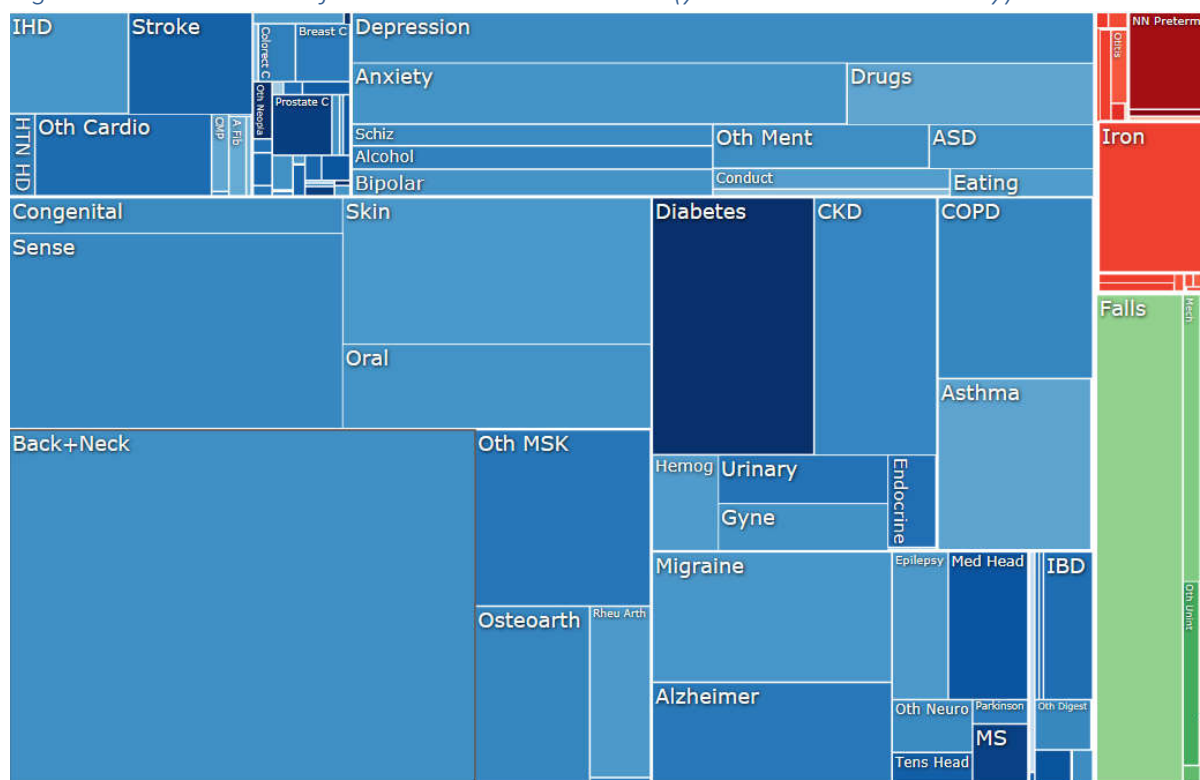
MSK conditions are a significant cause of disability, as measured by rates and proportion of years lived with disability (YLDs), and account for 19.25% of all years lived with disability globally, 24.2% in England and 24.6% in the South West region.

The treemap below shows the proportion of all years lived with disability by cause amongst the South West all age population in 2013, and illustrates the contribution back and neck pain alone make to the proportion of years lived with disability (all MSK conditions are located in the left corner). The darker colours indicate the conditions that have increased most since 1990. Whilst MSK conditions appear to have remained relatively constant, the annual increase of 3.18% in diabetes is of interest due to its associations with amputations.

The tree-map also illustrates that falls make up the greatest proportion of YLD of any of the injuries (coloured green), a proportion that increases if the over 75s are looked at in isolation

(Dark colour indicates greatest increase since 1990, blue is non-communicable diseases, red communicable, maternal, neonatal & nutritional causes, and green is injuries)

Figure 2.0: The burden of disease in the South West (years lived with Disability)



Source: The Global Burden of Disease: <https://vizhub.healthdata.org/gbd-compare/england/>

The South West has the highest burden for years lived with a MSK disorder of all the regions in England, at 3,457 YLDs per 100,000

Within the South West, low back pain alone accounts for 1,695 YLDs per 100,000, a significantly greater burden than any other condition except neck pain, which itself accounts for 816 YLD per 100,000. Osteoarthritis accounts for 311.9 YLDs Rheumatoid arthritis 156.7 YLDs and other MSK conditions 468.6 YLDs per 100,000

Trauma and injuries

Trauma and injuries include general injuries, land transport injuries, falls and other selected injuries and causes of trauma that are relevant to MSK. Injuries are in theory preventable and as such their prevention should be of central focus. Children under the age of 4 are most at risk of injury in the home whilst older children, teenagers and young adults can be more at risk outside the home, particularly in relation to leisure activities and on the road.

Falls are a common but often over looked cause of death. At a national level over one in three adults over the age of 65 who live at home will have one fall a year, and about half of these will experience falls frequently. Although most falls do not result in serious injury, they carry the risk of broken bones and can have a severe adverse

psychological effect on older people in relation to loss of confidence and potential loss of independence.

Wider impacts of MSK conditions

Whilst the bulk of musculoskeletal conditions do not require admission to hospital or result in death, they do however have a significant economic impact not only in terms of cost of treatment, but also the wider indirect costs to the economy through work absenteeism and benefits claimants.

Musculoskeletal Conditions and the Workplace

Some occupations can cause or worsen MSK conditions and contribute significantly to absenteeism. The Health and Safety Executive (HSE) provides latest estimates from the Labour Force Survey (LFS) which shows that the total number of MSK cases in 2014/15 was 533, 000 out of a total 1,243,000 or 44% of all work-related illnesses. The number of new cases of MSKs in 2013/14 was 169 000, an incidence rate of 530 cases per 100,000 people.

There has generally been a downward trend in the rate of total and new cases of work-related MSKs since 2001/02, and whilst there was an increase in 2013/14, the latest figures have remained stable.

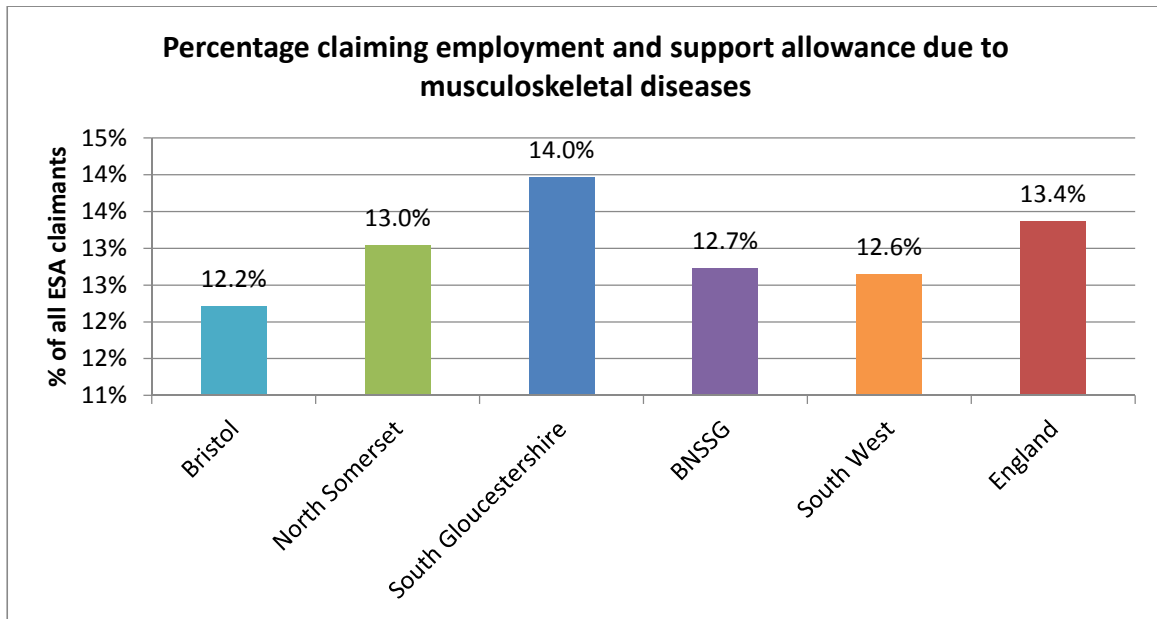
The estimated total number of working days lost due to MSK conditions in 2014/15 was 9.5 million, and with an average of 17 days per case of MSKs this represents 40% of all days lost due to work related ill-health.

By occupation, elevated rates of musculoskeletal conditions are seen in occupations such as agriculture, construction, health and social care occupations, transportation, storage industries and postal workers, and also in some occupations such as manufacturing, public administration and defence.

Benefits Claimants

Recent figures from the Department for Work and Pensions (DWP) suggest that nearly 4,200 individuals in BNSSG claim employment and support allowance due to musculoskeletal conditions, equating to 12.7%. This is slightly lower than the national average of 13.4%, though there is variation within BNSSG, with Bristol having the lowest proportion at 12.2%, and South Gloucestershire having the highest at 14%.

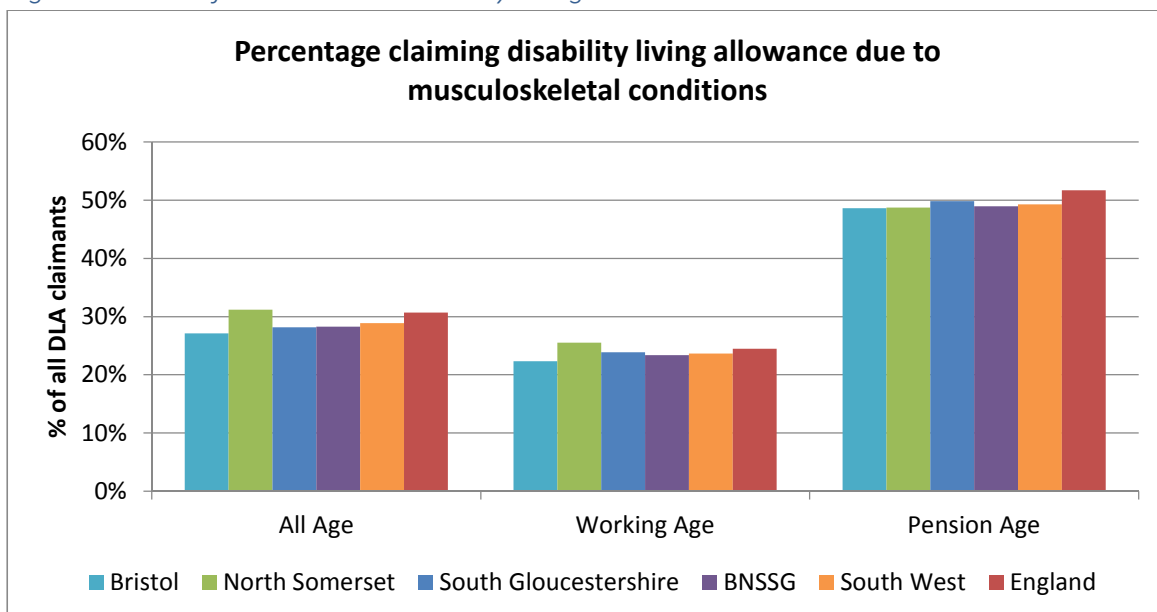
Figure 2.2: Benefit claimants - employment and support allowance due to MSK



Source: Work & Pensions Longitudinal Study, DWP via NOMIS

The estimated number claiming disability living allowance due to musculoskeletal conditions is just over 11,300 individuals in November 2015. This proportion, equal to 28% of all claimants, is slightly lower in BNSSG than compared to the national average. When broken down by working age and pensionable age it can be seen that claiming due to musculoskeletal conditions accounts for a greater proportion of claimants of pensionable age than those of working age with 49% and 23% of pensionable age and working age and claimants respectively.

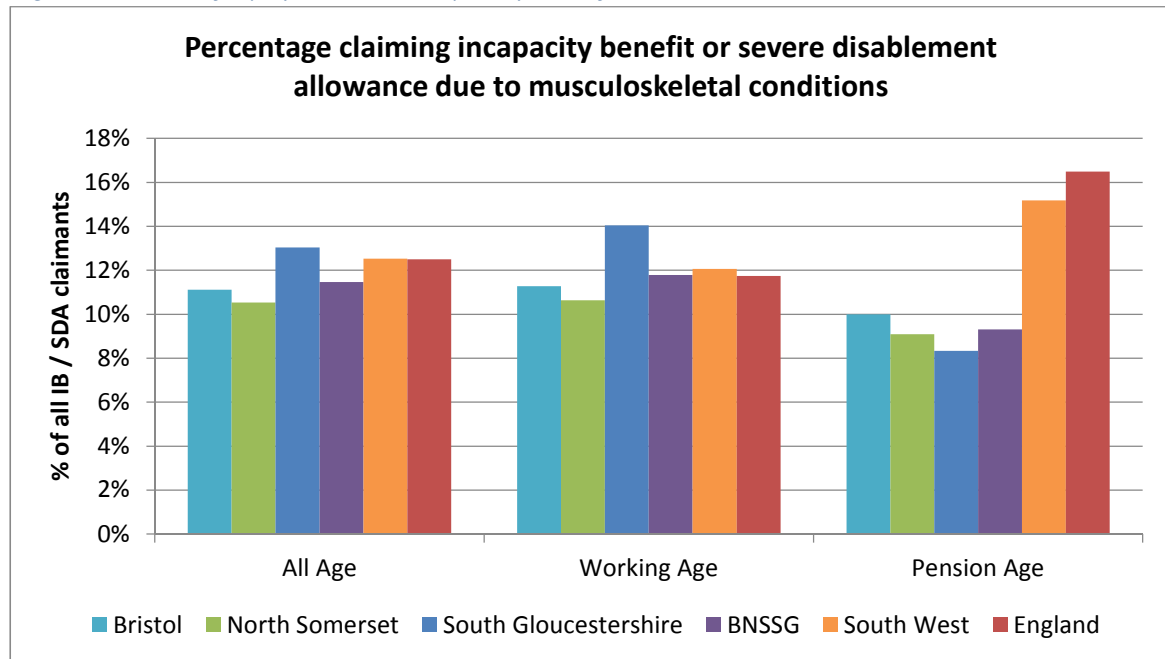
Figure 2.3: Benefit claimants - disability living allowance due to MSK



Source: Work & Pensions Longitudinal Study, DWP via NOMIS

The number of people claiming incapacity benefit for severe disablement due to musculoskeletal conditions in November 2015 was 330. This equates to 11.5% of all claimants and is similar to the national average amongst the working age claimants, but is significantly lower in pension age claimants compared to national proportions.

Figure 2.4: Benefit payments - incapacity benefit / severe disablement due to MSK



Source: Work & Pensions Longitudinal Study, DWP via NOMIS

Summary: Wider impact of MSK conditions

MSK conditions account for over 24% of all years lived with disability.

At a national level 44% of work related illnesses were due to MSK conditions and accounted for 40% of all days lost due to work related ill health, with some occupations carrying greater risk or worsening MSK conditions.

In BNSSG recent figures show 11.5% of all incapacity benefit/severe disablement, 12.7% of Employment and Support Allowance (ESA) and 28.3% of disability living allowance payments were for diseases of the musculoskeletal system and connective tissue.

3. Assessing the Current Level of Need

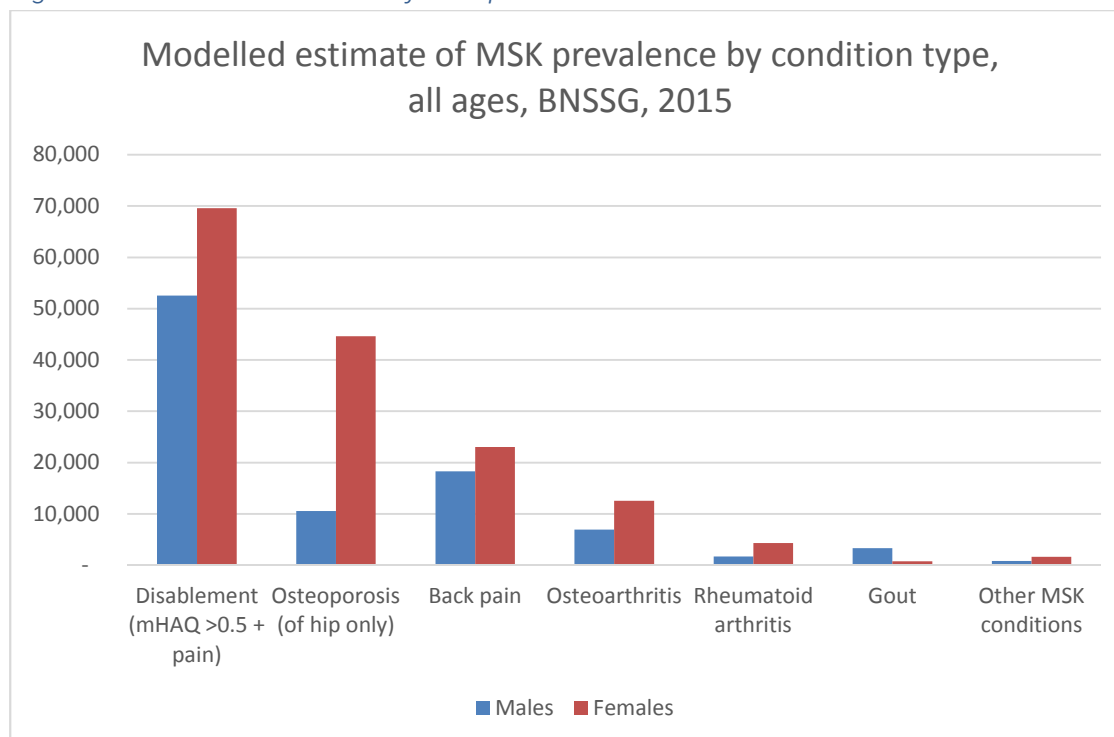
The majority of musculoskeletal conditions are not life threatening and do not result in a hospital admission so routine health data sources only show the tip of the iceberg in terms of prevalence, incidence and general burden. Although disease registers and patient questionnaires can give an indication of prevalence of MSK conditions among populations, there are likely to be substantial sub-clinical or undiagnosed disease amongst the population, yet to be formally included in official disease registers.

Estimating the prevalence of musculoskeletal conditions

Exact prevalence of MSK conditions is unknown but using research carried out by the Manchester Epidemiology Unit (MEU), it is possible to calculate estimates in any given population based on age and gender specific rates of certain MSK conditions. The MEU template as applied to the current BNSSG population estimates that there are approximately 150,000 individuals predicted to have at least one MSK condition. The most common condition is expected to be general disablement (an mHAQ score of $>5^5$ with pain) with upwards of 120,000 (13%) people thought to be affected, followed by osteoporosis with 55,000 (5.9%) individuals, back pain with 41,000 (4.4%) people and arthritis with 19,000 people (2.1%). It is worth noting that the overall estimate of 150,000 individuals will include people with more than one MSK condition, so the sum of the specific condition estimates will always exceed the total population thought to be affected. MSK conditions are more prevalent amongst women (58% of estimated prevalence) and amongst people over the age of 65 (32% of estimated prevalence)

⁵ Modified Health Assessment Questionnaire used to assess rheumatoid arthritis which asks patients to rate the level of difficulty experienced in relation to dressing, arising, eating, walking, hygiene, reach, grip, and activities. A score of 0=without difficulty, and 3= cannot do. An average score of 0.3 across all activities is considered 'normal'.

Figure 3.0 Modelled estimate of MSK prevalence



Source: MEU template applied to ONS mid-year population estimates 2015

Registered Disease Prevalence

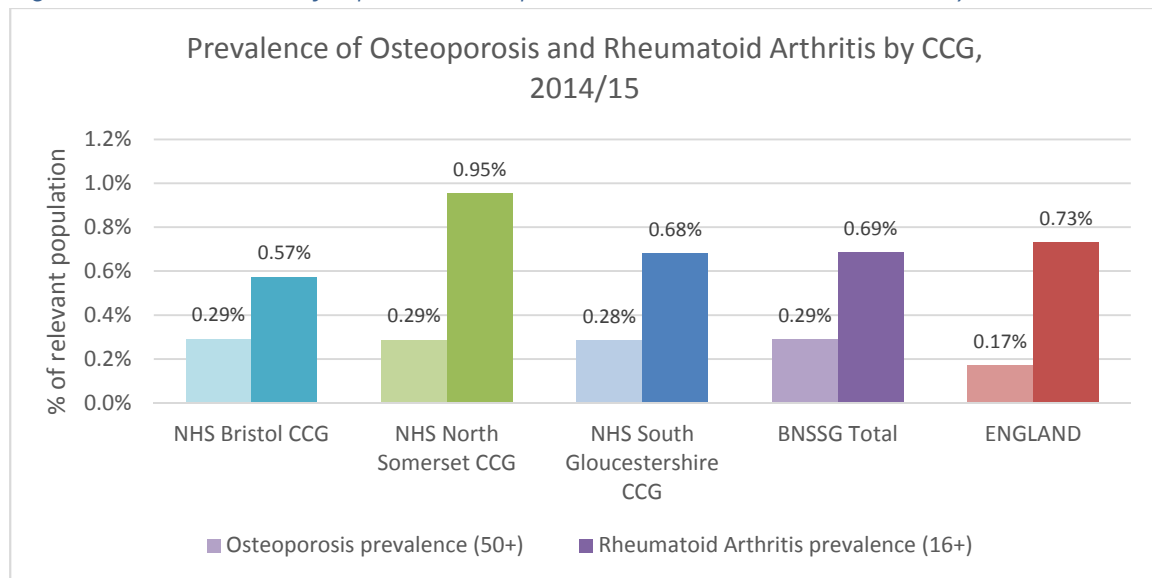
Not all MSK conditions are routinely registered, but some are covered as part of the Quality Outcomes Framework, including Osteoporosis and Rheumatoid Arthritis, so prevalence of these conditions is recorded. The prevalence of osteoporosis among BNSSG registered patients aged fifty and over is 0.3%, and accounts for 930 individuals. It should be born in mind that this only includes those diagnosed with and registered as having osteoporosis so is likely to be an underestimate of the number at risk of a fragility fracture. The prevalence rate in BNSSG is similar in each CCG area, and as a whole is higher than regional or national averages of 0.2% and 0.17% respectively.

The disparity between the modelled estimated prevalence and the recorded disease prevalence is stark, with modelled estimates suggesting prevalence's is closer to 5% of the over 50 population, alluding to a substantial number of individuals undiagnosed. It is estimated that one in two women and one in five men over the age of 50 will break a bone as a result of osteoporosis (Osteoporosis UK), which will have implications on MSK services., Accurate osteoporosis prevalence data will help to better plan services in the future.

The prevalence of Rheumatoid Arthritis (RA) is 0.69% in BNSSG, lower than the regional and national averages of 0.8% and 0.73% respectively. However there is variation by CCG, with North Somerset having a prevalence of 0.95%, higher than the national or regional average. The recorded prevalence on RA is much more

closely aligned to the modelled estimates, which is assessed to be around 0.8% of the population.

Figure 3.1: Prevalence of reported osteoporosis and rheumatoid arthritis by CCG

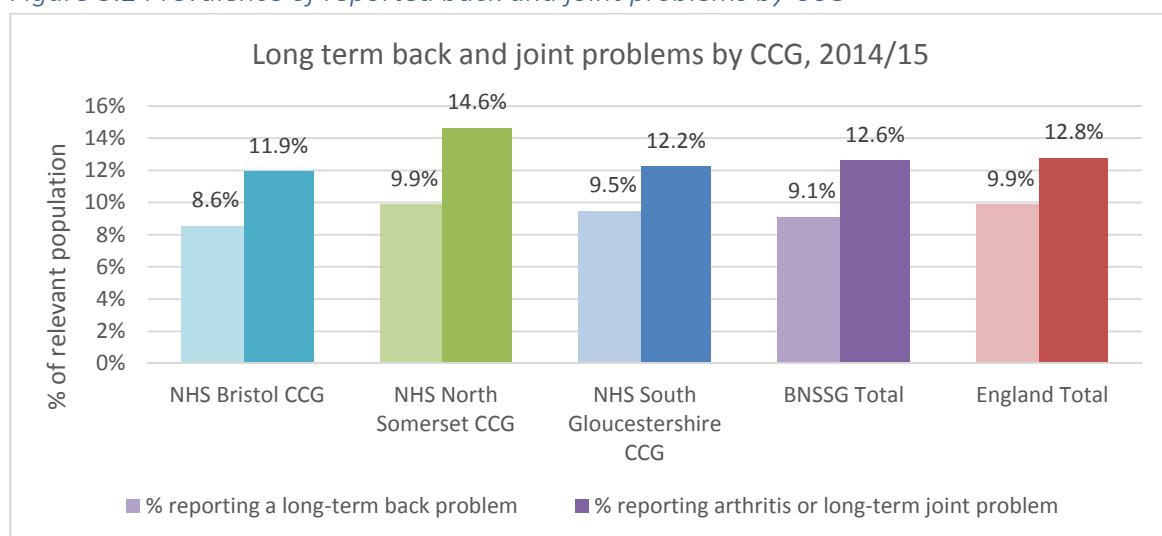


Source: QOF

The prevalence of long term back problems (9.1%) and arthritis and joint problems (12.6%) in BNSSG is similar to national averages. North Somerset has slightly higher rates of people reporting arthritis or a long term joint problem than England with 14.6% of the population compared to 12.8% respectively.

An estimate of the number and proportion of people with a long term back or joint problem can be gained from responses to the GP patient survey. Data from 2014/15 suggest that the prevalence of long term back problems (9.1%) and arthritis and joint problems (12.6%) in BNSSG is similar to national averages. North Somerset has slightly higher rates of people reporting arthritis or a long term joint problem than England with 14.6% of the population compared to 12.8% respectively.

Figure 3.2 Prevalence of reported back and joint problems by CCG



Source: National General Practice Profiles

In addition to the sampled data above, modelled data from Arthritis Research UK MSK calculator for Bristol, North Somerset and South Gloucestershire suggests that the prevalence of knee osteoarthritis amongst those aged 45 and above in BNSSG is estimated to be 17.8%, slightly lower than the national estimate of 18.2%. The MSK calculator also estimated that 10.8% of those aged 45 and over in BNSSG are likely to have hip osteoarthritis, similar to the national average of 10.9%

Summary: estimating the current level of need

The exact number of individuals suffering from an MSK condition is unknown but modelled estimates for BNSSG based on MEU template suggest that around 150,000 (16%) have at least one MSK condition.

There is a stark disparity between registered osteoporosis and modelled estimates, suggesting possible wide scale underdiagnoses – other MSK conditions show a closer match between modelled estimates and recorded prevalence.

North Somerset has generally higher prevalence of MSK conditions than Bristol, South Gloucestershire and national and regional figures. However as a whole, BNSSG is generally similar to or lower than regional and national levels.

4. Demand for Acute Services

As previously mentioned many MSK conditions do not require admission to hospital so only more acute or severe conditions or injuries will be picked up through scrutinising data sources such as hospital admissions. However, hospital admissions relating to MSK conditions and injuries are a significant contributor to NSH expenditure, bed days and delayed discharge and the following will look at three primary indicators; hip fractures, injuries sustained from falls in older people and injuries in younger people.

Hip Fracture

Hip fracture is a debilitating condition – only one in three sufferers return to their former levels of independence and one in three ends up leaving their own home and moving to long-term care. Hip fractures are almost as common and costly as strokes and the incidence is rising. In the UK, about 75,000 hip fractures occur annually at an estimated health and social cost of about £2 billion a year. The incidence is

projected to increase by 34% by 2020, with an associated increase in annual expenditure⁶.

At a national level the average age of a person with hip fracture is about 83 years, with about 73% of fractures occurring in women – these figures are similar in BNSSG with 72% of emergency admissions being women and the average age being 84. There is a high prevalence of comorbidity in people with hip fracture⁷ and local data show that the most common secondary diagnoses are hypertension, UTI, Other Anaemia, Atrial Fibrillation and Pneumonia. The National Hip Fracture Database⁸ reports that mortality from hip fracture is high - about one in ten people with a hip fracture die within 1 month and about one in three within 12 months. Local data for 2010/11 to 2015/16 show that out of 5,096 finished spells for neck of femur fracture, 451 (8.9%) resulted in death during the spell, and the proportion that died was higher amongst men (12.6%) compared to women (7.5%), and higher amongst the most deprived 20% of the population (9.8%) compared to the least deprived (7.9%).

The National Institute for Health and Clinical Excellence (NICE) has produced a quality standard that covers the management and secondary prevention of hip fracture in adults (18 years and older). The standard is designed to drive measurable improvements in the 3 dimensions of quality – patient safety, patient experience and clinical effectiveness for fragility fracture of the hip or fracture of the hip due to osteoporosis or osteopenia⁹.

The admission rates for hip fracture in those aged over 60 for each of the CCGs in BNSSG varies by area and year of admission, with rates having fallen in Bristol between 2013/14 and 2014/15, but rising over the same period in South Gloucestershire and North Somerset, though North Somerset has remained significantly lower than England as a whole.

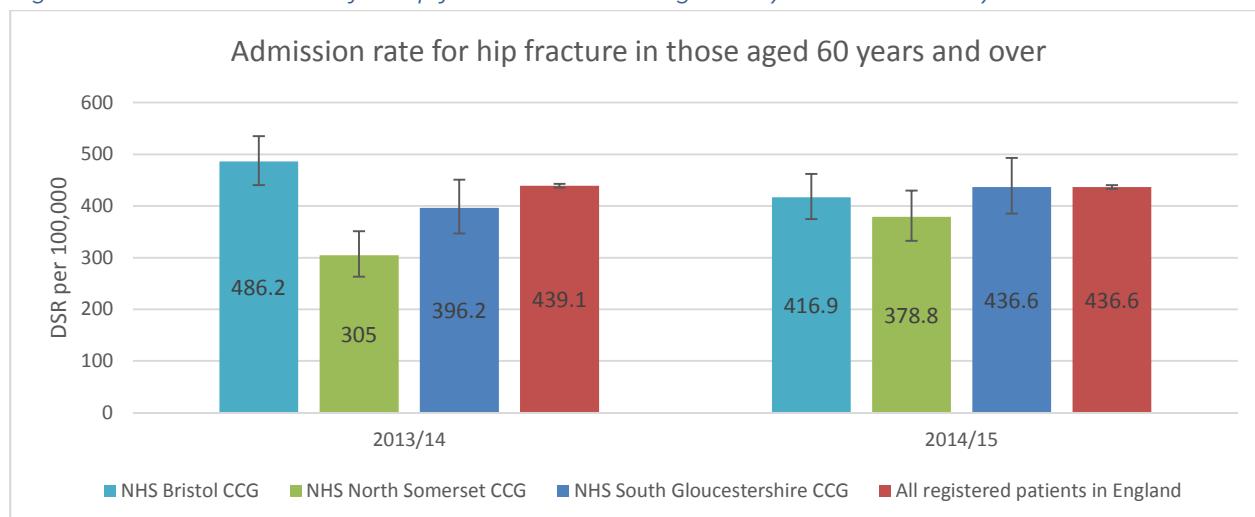
⁶ National Institute for Health and Clinical Excellence (2015), Quality standard for hip fracture. Available at: <https://www.nice.org.uk/guidance/QS16/chapter/introduction-and-overview> last Accessed 03/04/2015

⁷ National Hip Fracture Database (NHFD), National Hip Fracture Database National report 2013

⁸ National Hip Fracture Database (NHFD), National Hip Fracture Database National report 2013

⁹ National Institute for Health and Clinical Excellence (2015), Quality standard for hip fracture. Available at: <https://www.nice.org.uk/guidance/QS16/chapter/introduction-and-overview> last Accessed 03/04/2015

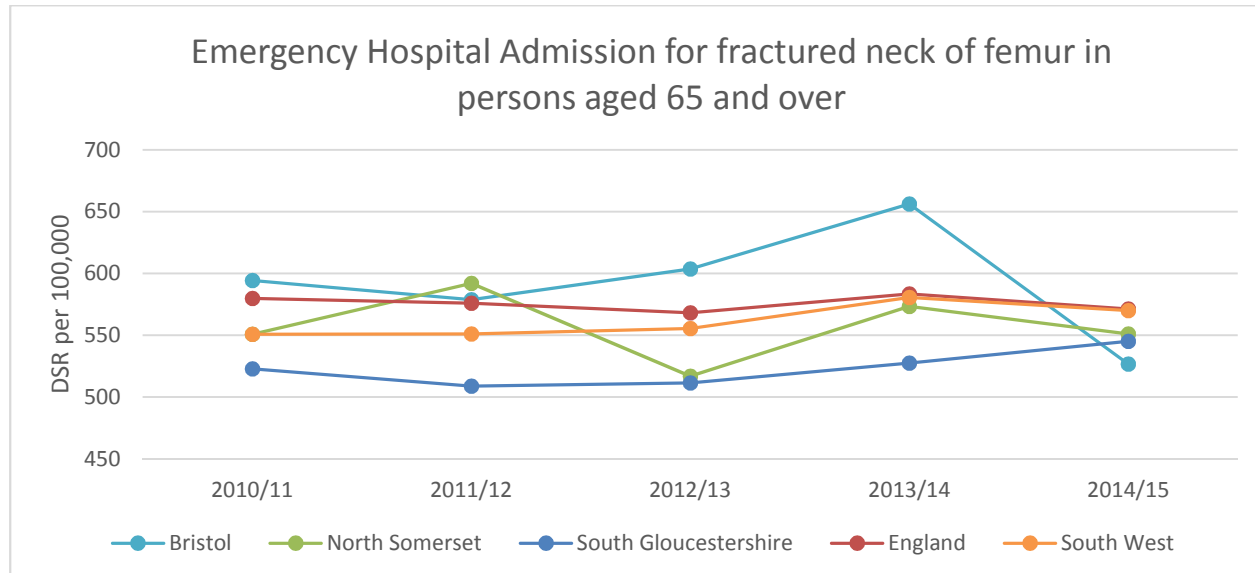
Figure 4.0: Admission rate for hip fracture in those aged 60 years and over by CCG



Source: Health and Social Care Information Centre

If looked at in terms of residents age 65 and over, as reported in the Public Health Outcomes Framework (PHOF¹⁰), then a longer term trend can be seen. As with data at the CCG level, directly age standardised rates are not available nationally at the BNSSG level and although the variation in rates and trend patterns in the three LAs suggest little change over the last 5 years, the average rate of the three LA's did increase from 556 per 100,000 in 2010/11 to 586 per 100,000 in 2013/14.

Figure 4.1: Trend in admission rate for hip fracture in those aged 65 years and over by LA



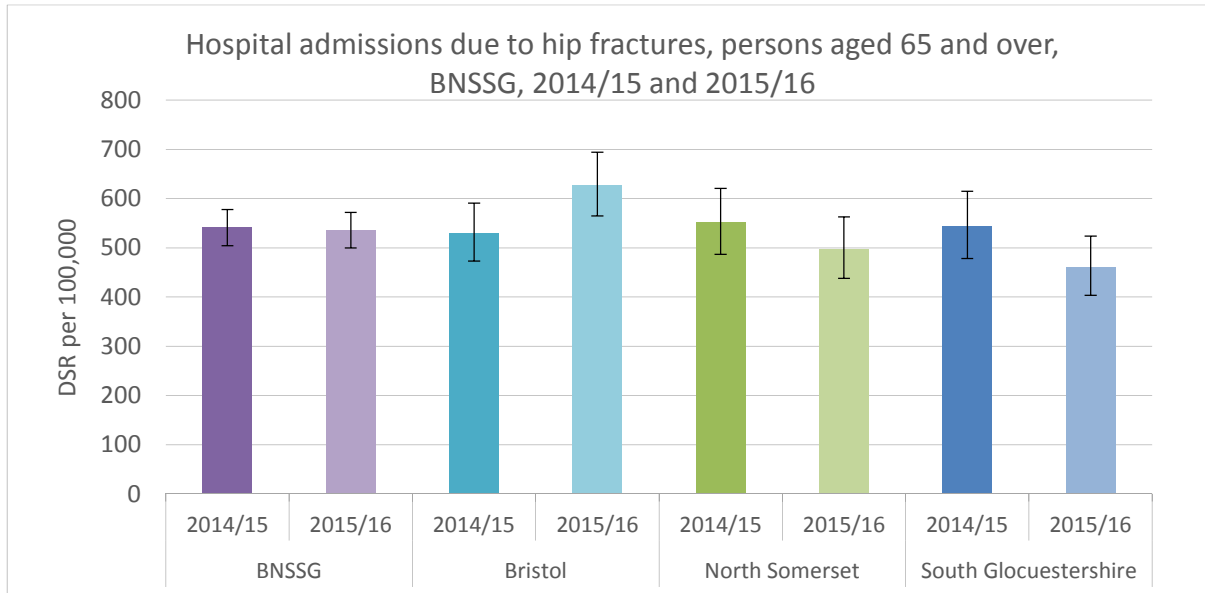
Source: Public Health England

Local analysis conducted using comparable data sources and replicating methods used in PHOF can provide rates at the BNSSG level, though this has been restricted to the most recent two years of data. In 2014/15 there were 917 admissions for hip

¹⁰The Public Health Outcomes Framework Healthy lives, healthy people: Improving outcomes and supporting transparency comprises of a set of indicators that help with the understanding of how well public health is being improved and protected.

fractures recorded on Secondary Uses Service (SUS), equating to an age and sex standardised rate of 540.4 per 100,000 population aged 65 and over, lower than the national and regional rate, though not significantly so. As the data source, SUS¹¹, is available for more recent data than HES, it has been possible to provide rates for 2015/16, which show a slight fall in admission rate in North Somerset and South Gloucestershire, but an increase in Bristol.

Figure 4.2a: Admission rate for hip fracture in those aged 65 years and over by CCG

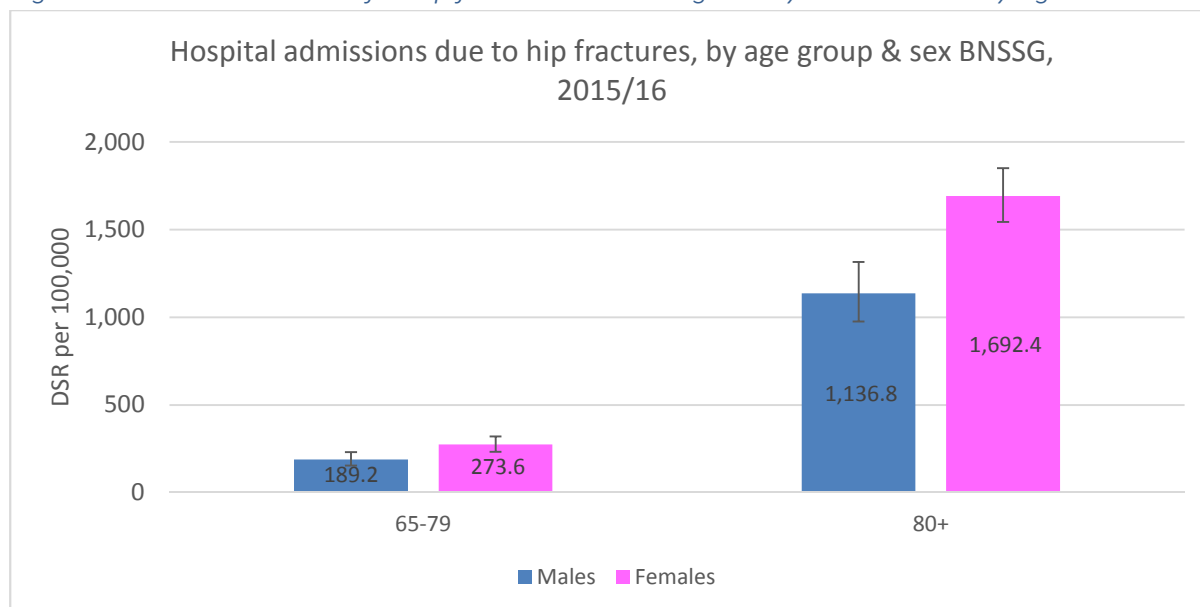


Source: SUS APC and ONS mid-year population estimates

As in line with national research, the rate of admissions amongst those aged 80 and over is significantly higher than in those aged 65-79, and the rate of admissions is significantly greater amongst women than men in both age groups.

¹¹ SUS: Secondary Uses Service is a national database that once cleaned, goes on to become HES. When a patient or service user is treated or cared for, information is collected which supports their treatment. This information is also useful to commissioners and providers of NHS-funded care for 'secondary' purposes - purposes other than direct or 'primary' clinical care

Figure 4.2b: Admission rate for hip fracture in those aged 65 years and over by age and sex



Source: SUS APC and ONS mid-year population estimates

Falls

A major cause of hip fractures and other injuries that require treatment from MSK specialist are falls. Falls are the largest cause of emergency hospital admissions for older people, and significantly impact on long term outcomes, and are often the decisive factor for people moving from their own home to long-term nursing or residential care¹².

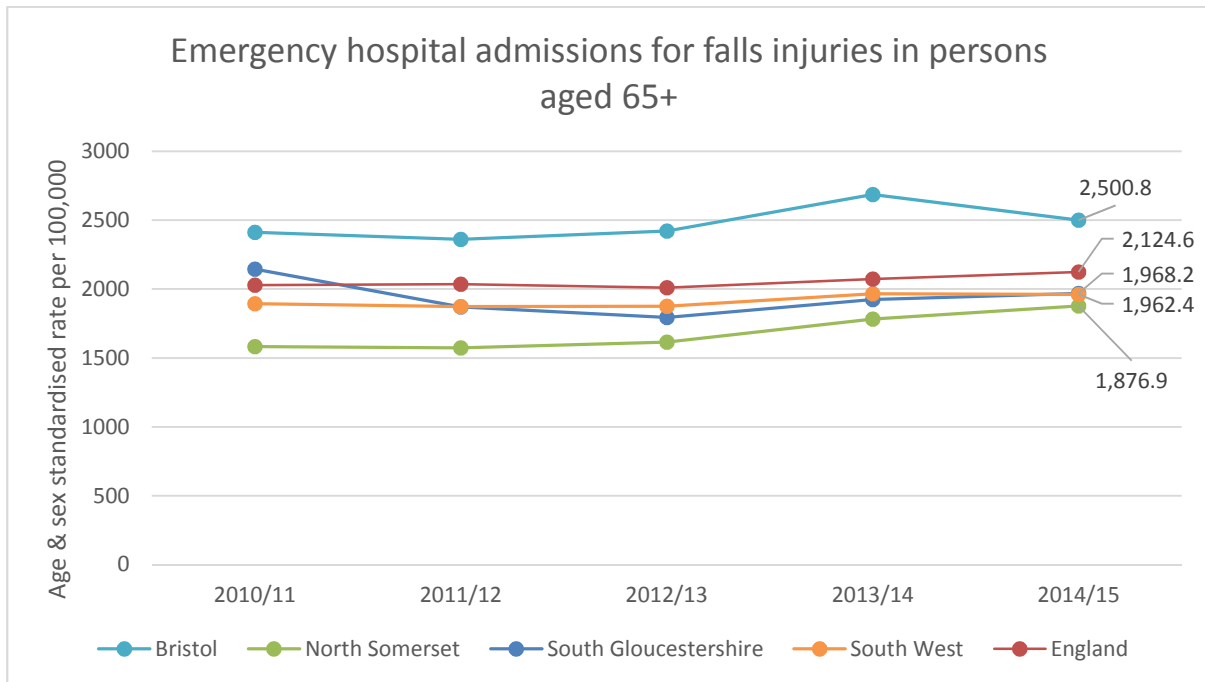
The highest risk of falls is in those aged 65 and above and it is estimated that about 30% people (2.5 million) aged 65 and above living at home and about 50% of people aged 80 and above living at home or in residential care will experience an episode of fall at least once a year¹³. Falls that results in injury can be very serious - approximately 1 in 20 older people living in the community experience a fracture or need hospitalisation after a fall. Falls and fractures in those aged 65 and above account for over 4 million bed days per year in England alone, at an estimated cost of £2 billion¹⁴.

¹² Department of Health (2012), improving outcomes and supporting transparency. Part2: Summary technical specifications of public health indicators. Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_132358 last Accessed 03/04/2015

¹³ National Institute for Health and Clinical Excellence (2015), Falls in older people: assessment after a fall and preventing further falls. Available at: <http://www.nice.org.uk/guidance/qs86/chapter/introduction> last Accessed 03/04/2015

¹⁴ Royal College of Physicians (2011), NHS services for falls and fractures in older people are inadequate, finds national clinical audit. Available at: <https://www.rcplondon.ac.uk/news/nhs-services-falls-and-fractures-older-people-are-inadequate-finds-national-clinical-audit> Last Accessed 03/04/2015

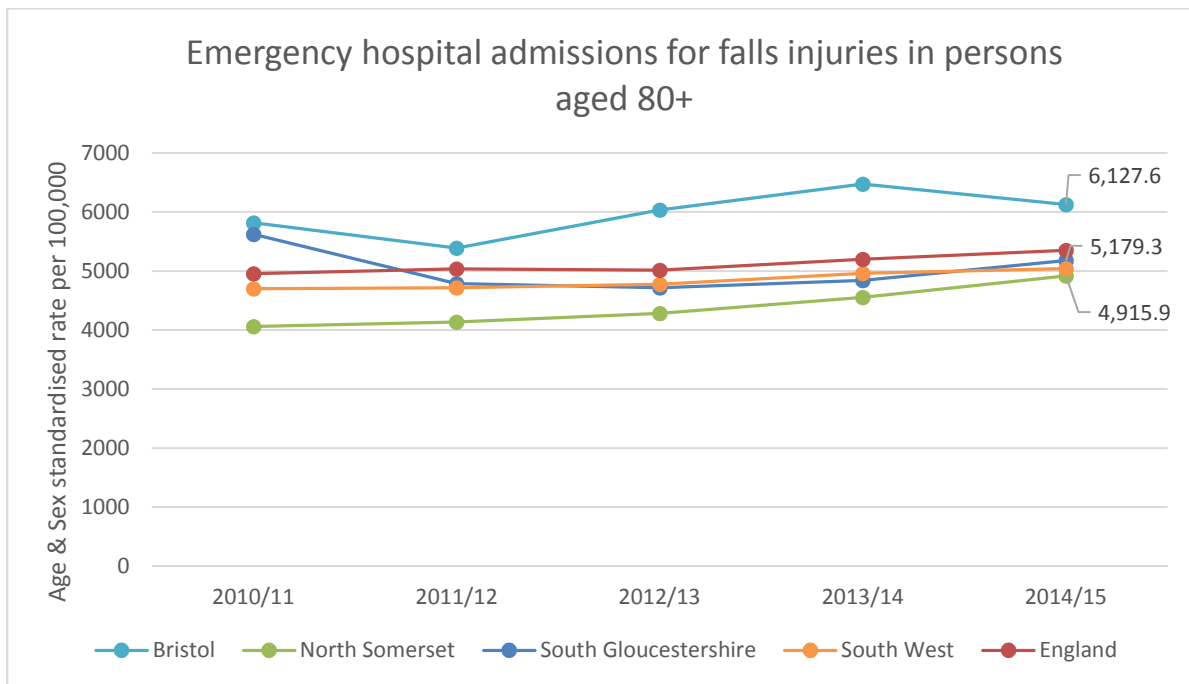
Figure 4.3a: Trend in emergency hospital admissions for falls injuries in persons aged 65 and over by LA



Source: Public Health England

Rates for BNSSG are not produced nationally and rates by the three LA's show some variation with higher rates in Bristol than regional or national rates, and lower rates in North Somerset though both have a general rising trend, predominantly driven by falls amongst those aged 80 and over, though fluctuating increases in Bristol and North Somerset amongst the 65-79 age group warrant observing in coming years. South Gloucestershire has a similar rate to regional and national figures but until 2012/13 appear to have a declining trend, which has since started to increase, again mainly driven by the 80+ age group.

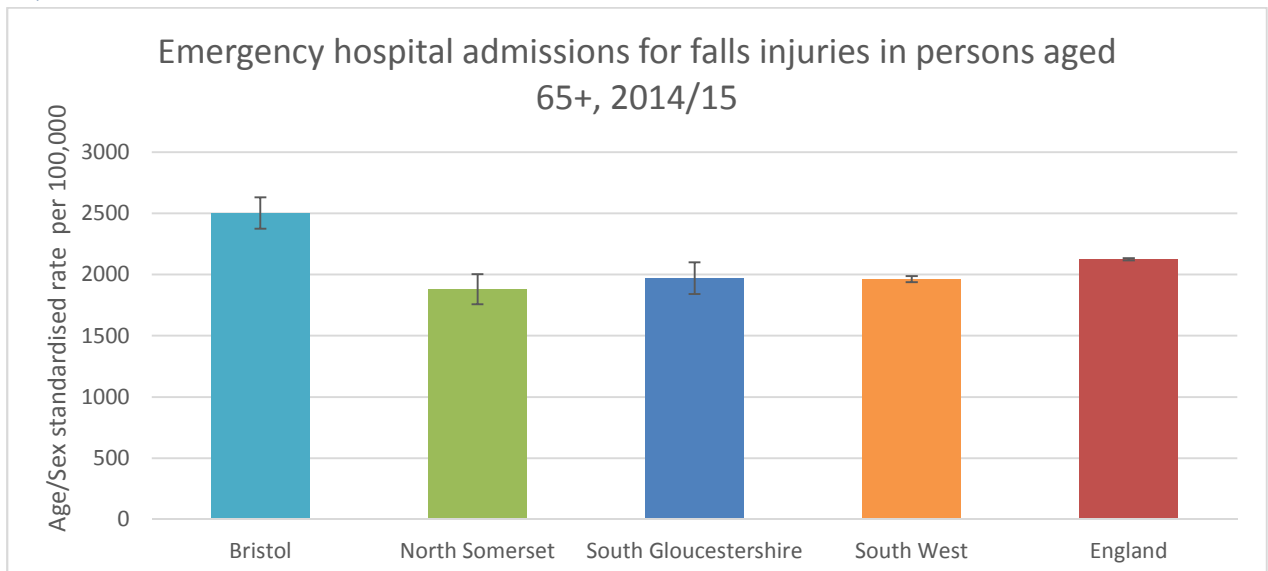
Figure 4.3b: Emergency hospital admissions for falls injuries in persons aged 80 and over by LA



Source: Public Health England

A snapshot of 2014/15 data produced nationally shows that Bristol has a significantly higher admission rate for falls compared to elsewhere in BNSSG, regional and national rates.

Figure 4.3c: Emergency hospital admissions for falls injuries in persons aged 65 and over by LA, 2014/15

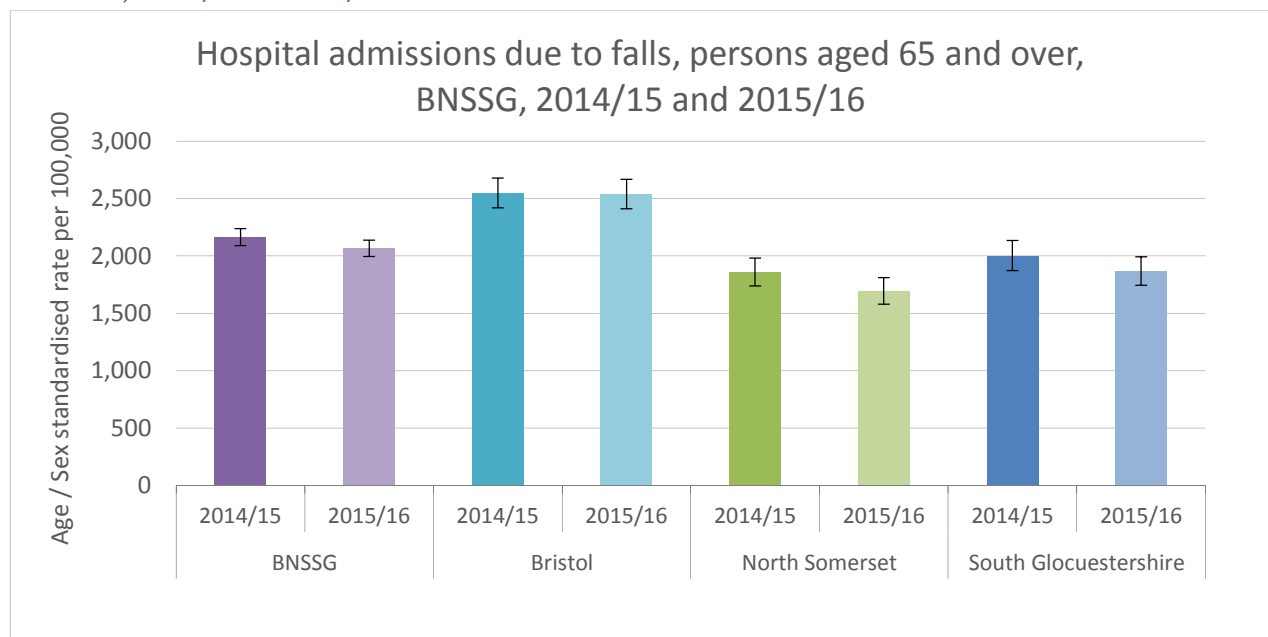


Source: Public Health England

Directly age and sex standardised rates for BNSSG calculated in house to replicate PHOF methodology put the rate of admissions for falls at 2,162 per 100,000 in 2014/15, significantly higher than the regional rate, and marginally higher than the

national rate, though not significantly so. The BNSSG rate has reduced slightly to 2,066 per 100,000 in 2015/16, however there are currently no nationally available benchmarks to see if this is an observation that has occurred at the regional or national level also, or is unique to BNSSG. It should be born in mind that whilst every effort was made to replicate this particular PHOF indicator, a match of counts couldn't be achieved so these comparisons should be interpreted with caution as may indicate coding issues between SUS and Hospital Episode Statistics (HES) data.

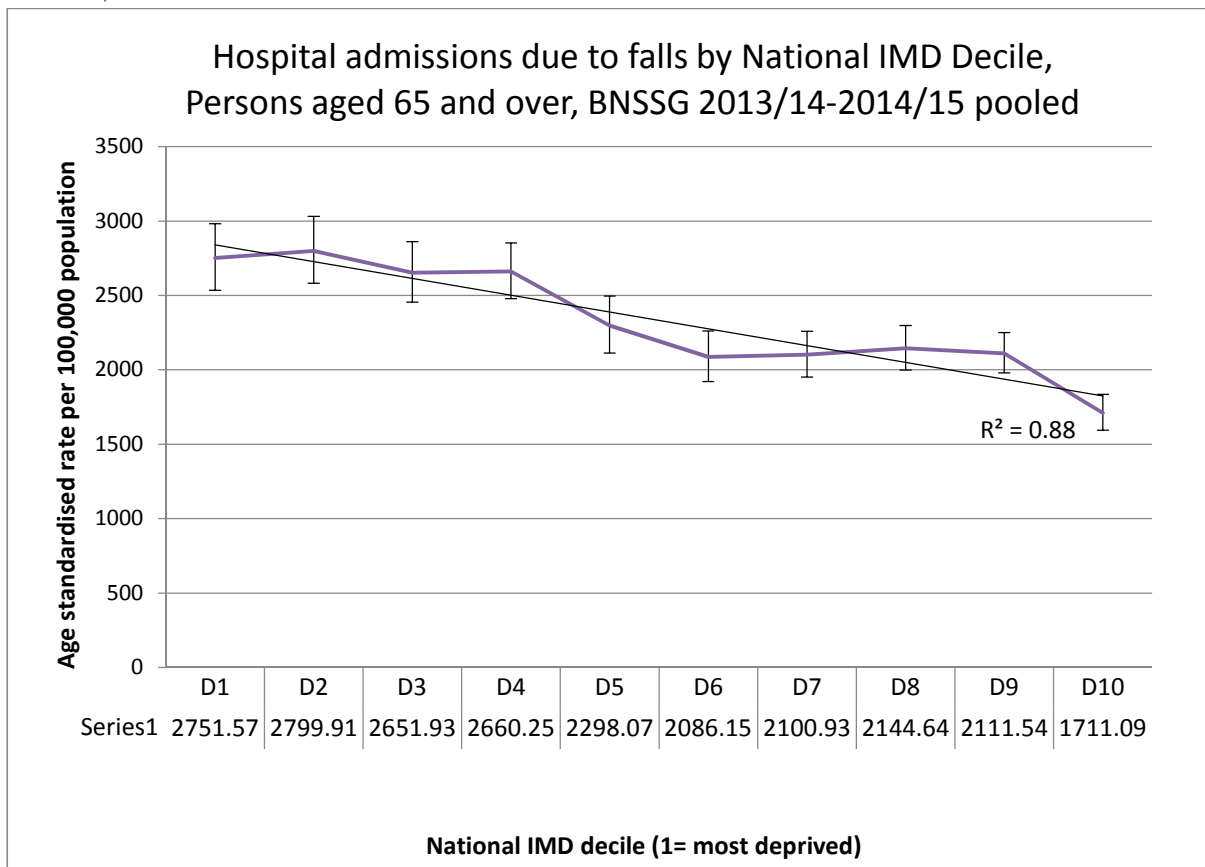
Figure 4.4: Emergency hospital admissions for falls injuries in persons aged 65 and over by LA & BNSSG, 2014/15 & 2015/16



Source: SUS APC and ONS mid-year population estimates

When falls are looked at in relation to area deprivation an association between deprivation and admission rate emerges, with those that live in the most deprived areas have significantly higher admission rates for falls than those that live in the least deprived areas with 2,752 admissions per 100,000 in the most deprived areas, compared to 1,711 per 100,000 in the least deprived areas. Though this data as has only been standardised for age and not sex and includes pooled years, it supports analysis of other indicators which show that those that live in more deprived areas experience higher rates of admissions that those that live in less deprived areas.

Figure 4.5: Emergency hospital admissions for falls injuries in persons aged 65 and over by area deprivation



Source: SUS APC, ONS mid-year population estimates and IMD 2015

By examining the detailed ICD10 coding, the cause of the fall and the place of occurrence can be identified. Amongst those aged 65 and over the most common type of specified fall is a fall on same level from slipping tripping and stumbling, and other falls on same level, possibly a result of poor proprioception and / or muscle strength and co-ordination. Falls involving ice and snow show the greatest annual variance, with a high number of falls (n=62) in 2010/11 accounting for two thirds of all falls that occurred over the six year period of investigation – this ties in with the prolonged below average temperatures experienced in the winter of 2010/11, and a smaller peak appeared in 2012/13 (n=16) when snowfall and sub-zero temperatures affected the area.

Table 4.6a: Emergency hospital admissions for falls injuries in persons aged 65 and over by recorded cause of fall (counts)

Diagnosis description - fall type	2010 – 2015/16	% of 6yr total
Unspecified fall	7,316	36.0%
Fall on same level from slipping tripping and stumbling	6,525	32.1%
Other fall on same level	2,581	12.7%
Fall on and from stairs and steps	1,699	8.4%
Fall involving bed	940	4.6%
Fall involving chair	502	2.5%
Fall on and from ladder	186	0.9%
Fall involving other furniture	171	0.8%
Other fall from one level to another	104	0.5%
Fall on same level involving ice and snow	95	0.5%
Fall involving wheelchair	90	0.4%
Other fall on same level due to collision with or pushing by another person	65	0.3%
Other fall	49	0.2%
Total	20,323	

Source: SUS APC

Over half of all falls occur in the home, accounting for nearly 59% of all falls, or 67% of falls with a specified place of occurrence. A further 15% of all falls occur in residential institutions, accounting for 17% of falls with a specified place of occurrence.

Table 4.6b: Emergency hospital admissions for falls injuries in persons aged 65 and over by recorded place of occurrence (counts)

Diagnosis description - place of occurrence	2010/11 – 2015/16	% of 6yr total
Occurrence at home	11,888	58.5%
Occurrence in residential institution	2,976	14.6%
Occurrence at unspecified place	2,690	13.2%
Occurrence on street / highway	1,425	7.0%
Occurrence at other specified place	487	2.4%
Occurrence at trade / service area	451	2.2%
Occurrence at school other instit'n / pub admin area	321	1.6%
Occurrence at sports / athletics area	65	0.3%
Occurrence at industrial / construction area	Suppressed	<0.2%
Occurrence on farm	Suppressed	<0.2%
Total	20,322	

Source: SUS APC

Detailed examination of the ICD10 coding can also reveal the most common types of injury sustain from falls. Amongst people aged 65 and older, the majority (30%) of injuries were to the hip and thigh, with over 3,000 being fractured neck of femur, and over 1,700 being a pertrochanteric fracture accounting for 24% of all falls admissions. Fractures to the pelvis also accounted for a number of admissions.

Looking at site of injury, a further 17% of falls injuries relating to the shoulder, arm, wrist or hand, and 10% relating to injuries of the leg, knee ankle and foot, though it should be noted that these could be injuries such as contusions so may not directly relate to MSK services.

Table 4.7: Emergency hospital admissions for falls injuries in persons aged 65 and over by primary injury sustained (counts)

Diagnosis description - Injury	Total	% of 6yr total
injuries to the hip & thigh	6,063	29.8%
Injuries to the head	5,944	29.2%
Injuries to the knee & lower leg	1,771	8.7%
Injuries to the shoulder and upper arm	1,605	7.9%
Injuries to the abdomen, lower back, lumbar spine and pelvis	1,483	7.3%
Injuries to the elbow and forearm	1,426	7.0%
Injuries to the thorax	663	3.3%
Injuries to the wrist and hand	507	2.5%
Injuries to the ankle & foot	283	1.4%
Injuries to the neck	234	1.1%
Other	393	1.9%
Grand Total	20,372	

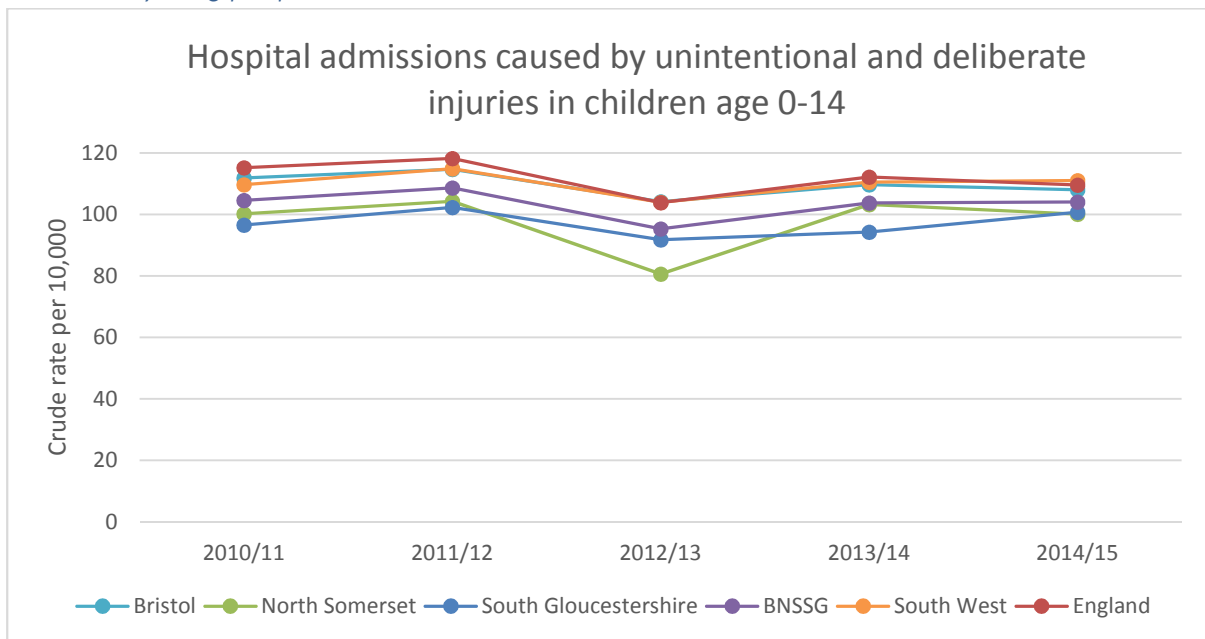
Source: SUS APC

Accidents and injuries in children & young people

Injuries are a leading cause of hospitalisation in children, with injuries to the wrist and forearm alone being the fourth most common reason to be admitted to hospital amongst 10-14 year olds in England in 2014 (HSCIC HES analysis 2014).

Data produced as part of the Public Health Outcome framework (PHOF) shows that LAs within BNSSG have similar rates of admissions for unintentional and deliberate injuries to national or regional comparators amongst children aged 14 and younger, though the rates have appeared to rise in some areas in recent years.

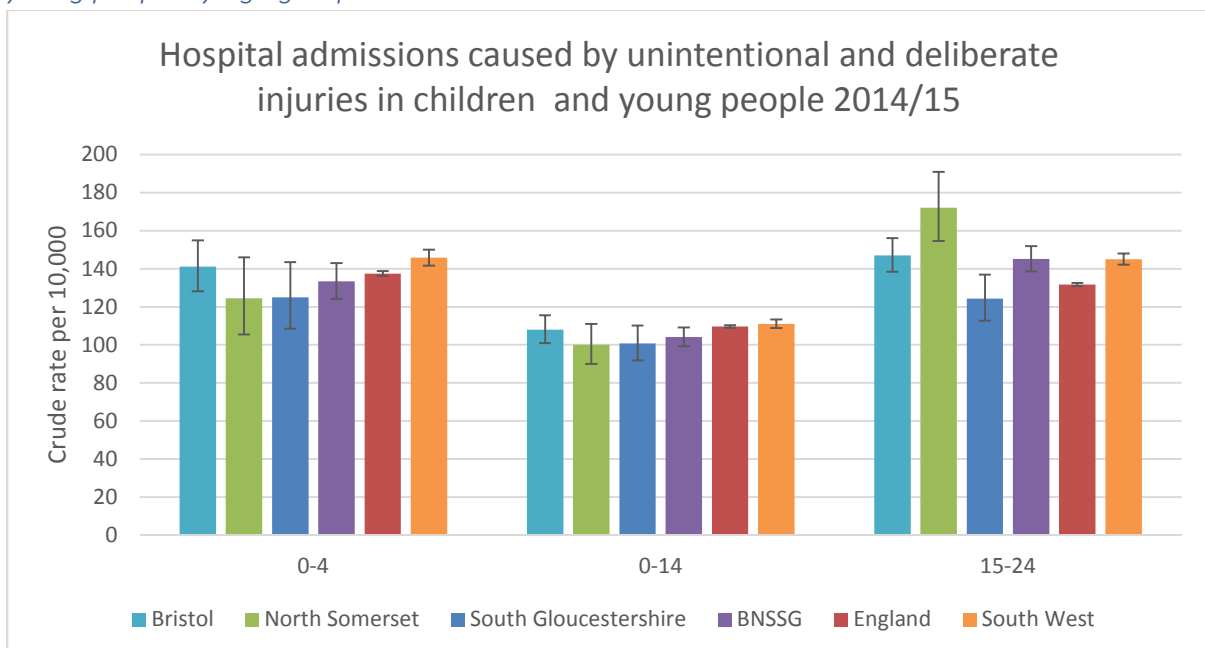
Figure 4.8a: Trend in hospital admissions caused by unintentional and deliberate injuries in children & young people



Source: Public Health England

North Somerset had significantly higher rate of admission for unintentional and deliberate injuries amongst 15-24 year olds than BNSSG as a whole, regional or national comparators, however, local analysis suggests that this could be due to intentional self-harm, so although a public health concern, may not directly relevant to MSK services.

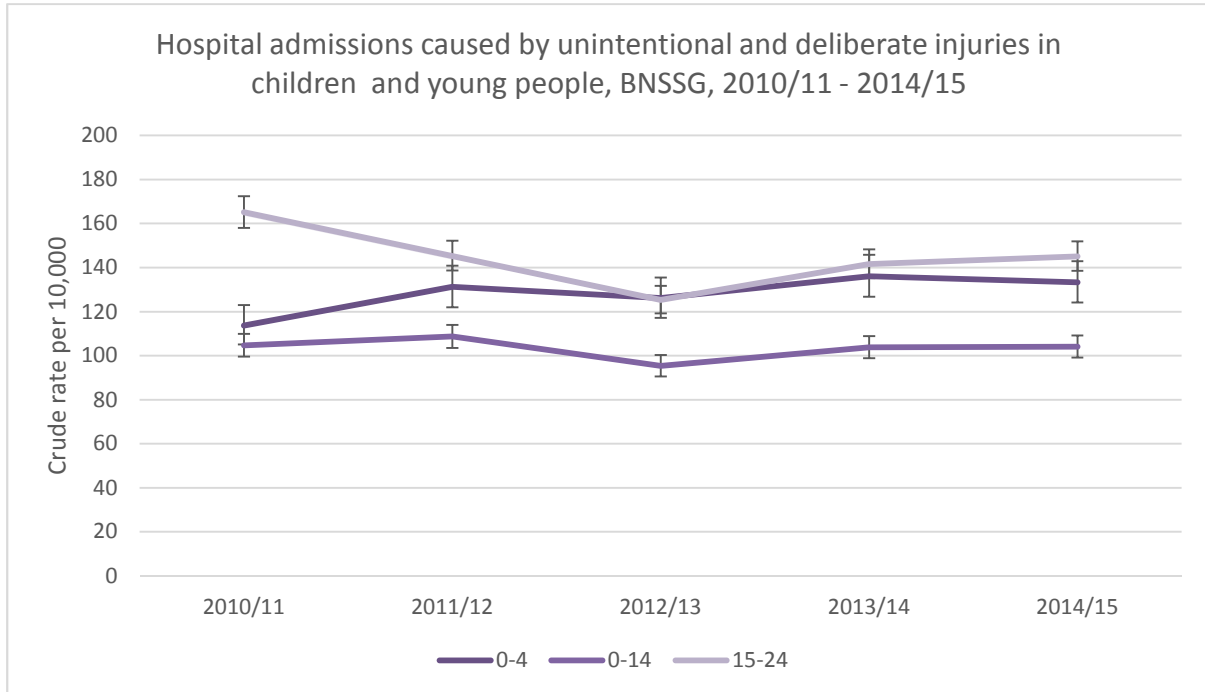
Figure 4.8b: Hospital admissions caused by unintentional and deliberate injuries in children & young people by age group



Source: Public Health England

The overall trend in hospital admissions for unintentional and deliberate injuries in BNSSG is one of fluctuation, though rates do appear to be increasing amongst the 0-4 age group.

Figure 4.8c: Trend in hospital admissions caused by unintentional and deliberate injuries in children & young people by age group



Source: Public Health England

Local analysis of this indicator shows that although the most common reason for admission overall is poisoning, this is skewed by the large number of admissions in the 15-24 age group. Hand, wrist, elbow and forearm injuries contribute a significant number of admissions between 2010/11 and 2015/16 in BNSSG, though this crude analysis does not differentiate between fractures, sprains or contusions.

Table 4.9a: Hospital admissions caused by unintentional and deliberate injuries in children & young people by primary injury sustained (counts)

Location of primary injury sustained	0-4	5-14	15-24	Total	% all admsns
poisoning	349	523	4143	5015	24.4%
head injuries	1551	1039	1972	4562	22.2%
wrist & hand	392	559	1029	1980	9.6%
elbow - forearm	196	1201	553	1950	9.5%
burns & corrosions	871	241	125	1237	6.0%
knee & lowe leg	103	417	670	1190	5.8%
shoulder & upper arm	178	363	205	746	3.6%
other external causes	172	121	394	687	3.3%
abdomen to pelvis	42	176	394	612	3.0%
foreign body entering natural orifice	203	103	134	440	2.1%
ankle & foot	79	117	208	404	2.0%
hip & thigh	105	105	167	377	1.8%
Toxic effects	109	34	97	240	1.2%
neck	24	42	117	183	0.9%
thorax	13	18	152	183	0.9%
multiple body regions	11	34	57	102	0.5%
unspecified body parts	10	21	37	68	0.3%
certain early complications of trauma	s	s	s	s	0.3%
frostbite	s	s	s	s	0.0%
No injury coded	72	128	340	540	2.6%

Source: SUS APC. Some data (s) suppressed due to small numbers.

Without detailed diagnostic analysis it isn't possible to ascertain which admissions ultimately fed into MSK services. However by looking at the type of injuries sustained recorded as a primary diagnosis that are likely to require attention from MSK consultants, it is possible to see a variation in the proportion of admissions for unintentional and deliberate injuries that relate to MSK injuries by age.

Table 4.9a: Hospital admissions caused by unintentional and deliberate injuries in children & young people by primary MSK related injury sustained (counts)

Primary musculoskeletal injury sustained	0-4	5-14	15-24	Total
Dislocation sprain and strain of joints and ligaments	35	102	225	362
Fracture	648	2189	2036	4873
Injury of muscle and tendon	12	20	162	194
Traumatic amputation	56	45	25	126
Total musculoskeletal	751	2,356	2,448	5,555
% of all primary unintentional & deliberate injuries	17.1%	45.3%	22.7%	27.2%

Source: SUS APC

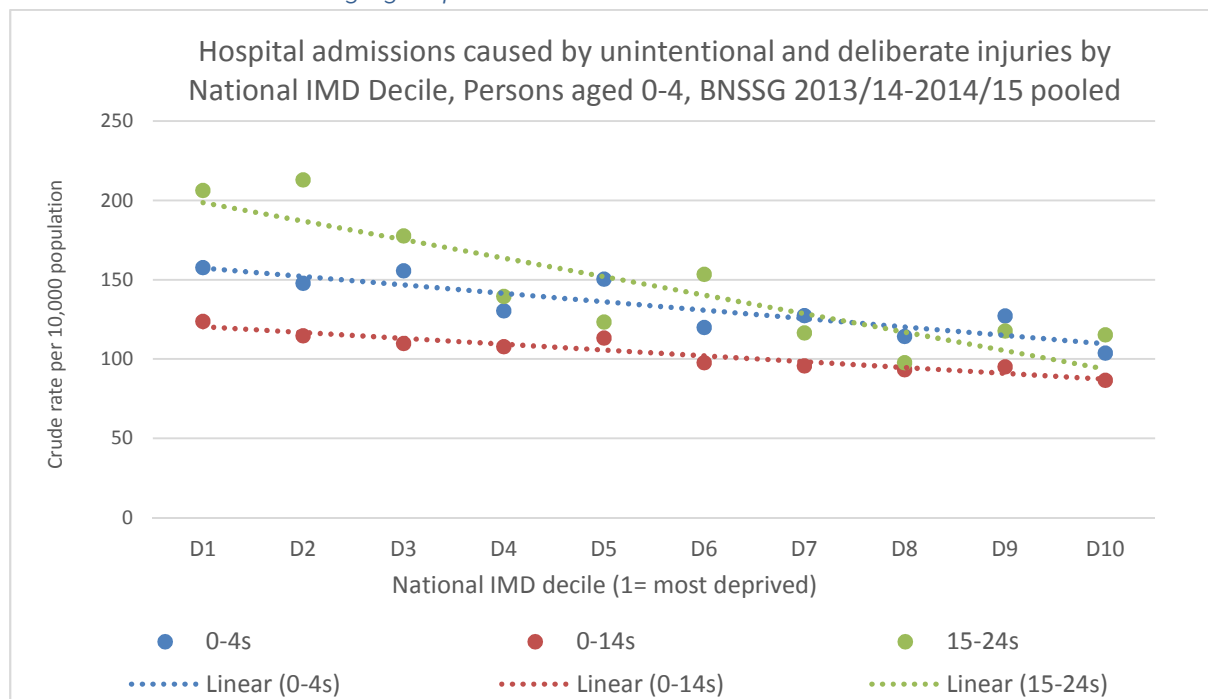
Within BNSSG almost half (45.3%) of all admissions for deliberate or unintentional injuries amongst 4-15 year olds relate to an MSK injury, with fractures alone making up almost 42% of primary injury admissions between 2010/11 and 2015/16. The contribution that MSK related injuries makes to injury admissions amongst 15-24 year olds is lower than 5-14 year olds, though the total number of admissions is higher, with nearly 2,500 admissions over a six year period, most relating to fractures.

The most common cause of children being admitted for a deliberate or unintentional injury are falls, followed by exposure to inanimate mechanical forces. Bicycle injuries are a common reason for admission amongst 5-14 year olds and recent analysis in

South Gloucestershire has shown that these admissions show peaks that appear to match up with school holidays – particularly Easter and the summer holidays. If grouped together, transport accidents account for 8% of injury admissions children and young people, which rises to 10% amongst 5-14 year olds. Excluding transport accidents, the most common place of occurrence appears to be in the home or other specified place – which would include parks and informal recreation areas. A relatively large number of injuries occurred at industrial or construction areas among 5-14 year olds – this coupled with the proportion of transport and specifically bicycle accidents suggest that a great number of these injuries are potentially avoidable (see tab 4.10 in data pack for more detail).

There is evidence of an association between area deprivation and rate of hospital admissions for unintentional and deliberate injuries amongst children and young people which is more pronounced amongst the 15-24 year olds (though it should be born in mind that such admission will include intentional self-harm) and significantly more children from the most deprived 10% of the population are admitted to hospital than those from the least deprived 10% of the population across all age groups.

Figure 4.11: Rate of hospital admissions caused by unintentional and deliberate injuries by National IMD Decile and age group.



Source: SUS APC, ONS mid-year population estimates and IMD 2015

Summary: Demand for Acute Services

There is a degree of inequality relating to hospital admissions for falls and neck of femur fractures amongst older people, and injuries in children and young people, with people from the most deprived areas experiencing significantly higher rates of admission to hospital than their less deprived counterparts.

As well as having significantly higher rates of hospital admissions, older people from more deprived areas admitted for a Neck of Femur Fracture (NOFF) are more likely to die during their spell of care than those from less deprived areas, and men are more likely to die than women.

Although rates of emergency admissions for NOFFs are generally lower than national or regional rates, the average age of patients admitted is higher and a slightly higher proportion of men are admitted than national figures report.

The rate of emergency hospital admissions due to falls in BNSSG appear to be higher than regional rates, predominantly caused by the high emergency admission rate in Bristol, which is significantly higher than both regional and national rates.

Falls on same level, including from slipping tripping and stumbling, account for the majority of known causes of falls, indicating issues with balance and proprioception. Extreme cold weather events are a seasonal risk factor that may increase admission rates.

The vast majority of falls (59%) occurred in the home, with a further 15% occurring in residential institutions.

The most common sites of injuries from a fall are to the hip and thigh and these include, but are not limited to fractured neck of femur and pertrochanteric fracture.

The types of injuries sustained by children and young people varies by age, with notable demand on MSK services relating to 5-14 year olds, who have high admission rates for wrist forearm and leg fractures, and 15-24 year olds with high rates of wrist and hand, and injuries to the leg.

Most injuries in 0-25 year olds occur within the home, and the majority of injuries amongst 0-14 year olds are caused by falls or exposure to inanimate mechanical forces (i.e. thrown object, hit with door etc.).

5. Spend and Outcomes

NHS spend on MSK and trauma and injuries

At a national level, the total aggregate Primary Care Trust (PCT) spend, and spend per head across all budgeting categories increased substantially between 2003/4 and 2012/13 with an 83% increase in spend, and a 70% increase in spend per head.

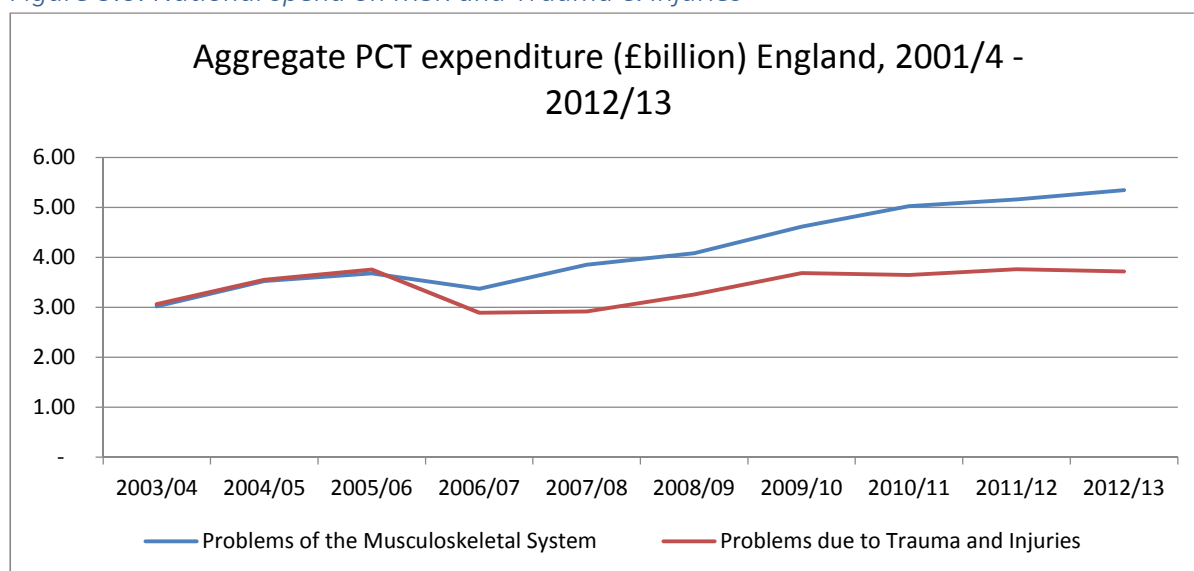
Over the same time period, expenditure due to problems of the musculoskeletal system have increased by 77%, and spend per head has increased by 64%, an average increase of 7% per annum. The most recent figures put the aggregate PCT expenditure at 5.34 billion for MSK 2012/13 with cost per head of £100.86.

National expenditure and spend per head on problems due to trauma and injuries has shown a smaller increase of 21%, accounting for an overall spend per head increase of 13% or an average of 3% per annum.

Programme expenditure relating to trauma and injuries was 3.72 billion in 2012/13, having increased 21.4% since 2003/04, and currently accounting for a cost per head of £70.19.

It is important to note that there is no detail as to what the denominator used to calculate spend per head is. The spend per head figures, though likely to take into account population increases over the time period, do not stipulate that they include any form of age standardisation to control for the aging population.

Figure 5.0: National spend on MSK and Trauma & Injuries



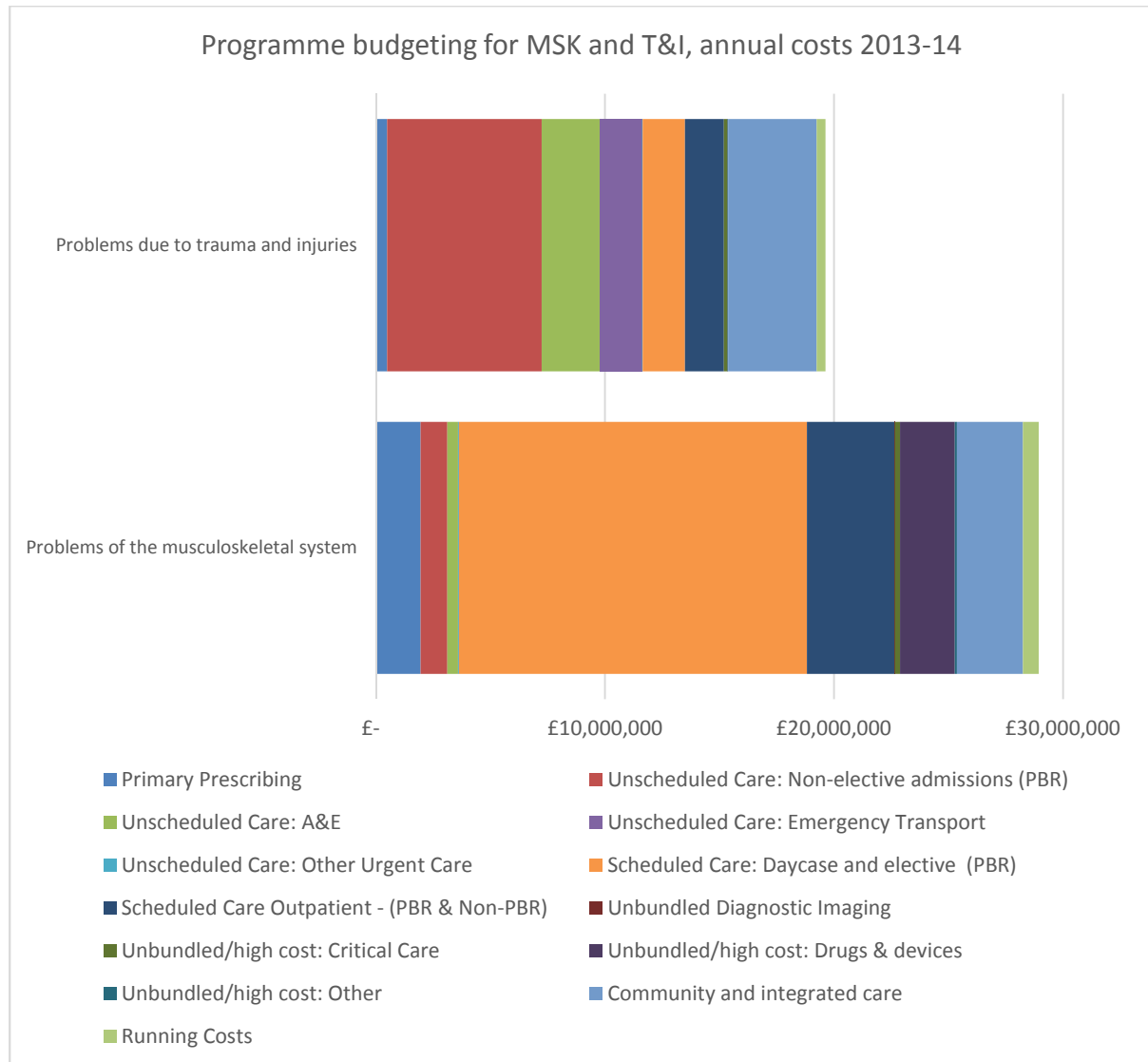
Source: NHS Programme Budgeting Aggregate PCT Expenditure

Programme budgeting data for 2013/14 showed that within BNSSG, problems of the musculoskeletal system account for nearly 9% of total expenditure, and problems due to trauma and injuries 6% the two programmes adding up to £48.6 million in 2013-14.

The majority of costs related musculoskeletal problems come from scheduled care (67%), the biggest component being daycase and elective care, which cost nearly £15. Million, and accounted for 52% of the programme budget.

Due to the nature of trauma and injuries, the majority of the costs are associated with unscheduled care (57%) with non-elective admissions, A&E and emergency transport costing £6.7, £2.6 and £1.8 million respectively.

Figure 5.2: Programme budgeting annual costs for MSK and T&I



Source: NHS CCG Programme Budgeting Benchmarking Tool

The Spend and Outcome Tool (SPOT) developed by Public Health England provides an overview of spend and outcomes across all programmes of care.

Spend and outcome data is not available at the BNSSG level and is only produced for the three constituent CCGs. Both the musculoskeletal and trauma and injuries programmes appear in the top ten areas of spend for each CCG and while South Gloucestershire doesn't exhibit any outliers, North Somerset has two outcomes defined as a 'worse outlier' (Hip fracture: collaborative orthogeriatric care and Hip fracture: multifactorial risk assessment) whilst simultaneously having a better

outlier for Hip fracture: incidence. Bristol, whilst doesn't exhibit any outliers in terms of outcomes relating to MSK programmes, does have a high spend outlier for Problems due to trauma & Injuries.

Average spend per head reported in 2015 across the three CCGs in BNSSG was £97 for MSK conditions and £66 for trauma and injuries, equivalent national figures for MSK and T&I were £86 and £57, indicating that BNSSG is spending more per patient in these areas than is done so nationally. There is variation between the CCGs however, with North Somerset and South Gloucestershire having higher than national spend per head on MSK, whilst Bristol had high spend per head on trauma and injuries.

Outcomes for the MSK programme are the EQ-5D for hips and knees and Oxford scores for hips and knees, whereas outcomes for the trauma and injury programme is mortality from accidents, these will be looked at in the next sub-section.

Figure 5.3: Spend and Outcome Quadrants 2015



Source: Public Health England

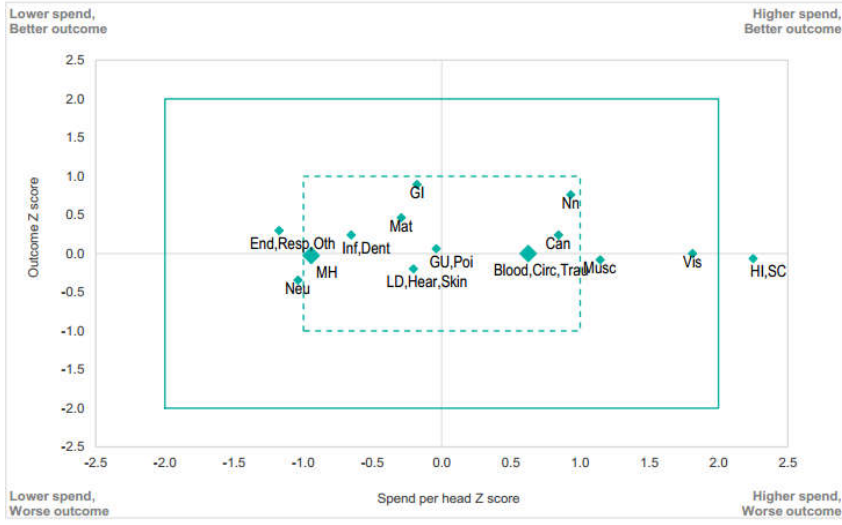
Spend and outcome tool: Quadrant chart

Organisation: North Somerset

Type: CCG

Period: 2015

Weighted Unweighted outcomes



Interpreting the chart:

Each dot represents a programme budget category. The outcome measures on the chart have been chosen because they are reasonably representative of the programme as a whole. This means that for Other and Total programmes no outcome data is available. The source data for the outcome measures shown on the chart can be found in the Spend and Outcome Tool.

A programme lying outside the solid +/- 2 z scores box, may indicate the need to investigate further. If the programme lies to the left or right of the box, the spend may need reviewing, and if it lies outside the top or bottom of the box, the outcome may need reviewing. Programmes outside the box at the corners may need a review of both spend and outcome. Programmes lying outside the dotted/thin +/- 1 z score box may also warrant further exploration.

Details of the specific spend and outcome measured used are available in the Reference tab.

CCG chart quadrant key			
Inf	Infection	GI	Gastro Intestinal
Can	Cancers	Skin	Skin
Blood	Blood	Musc	Musculo Skeletal
End	Endocrine	Trau	Trauma and Inj.
MH	Mental Health	GU	Genito Urinary
LD	Learning Dis.	Mat	Maternity
Neu	Neurological	Nn	Neonates
Vis	Vision	Poi	Poisoning...
Hear	Hearing	HI	Healthy Individ.
Circ	Circulation	SC	Social Care
Resp	Respiratory Sys.	Oth	Other
Dent	Dental		

Z score:
A z score essentially measures the distance of a value from the mean (average) in units of standard deviations. A positive z score indicates that the value is above the mean, whereas a negative z score indicates that the value is below the mean. A z score below -2 or above +2 may indicate the need to investigate further. Each dot represents a programme budget category.

Source: Public Health England

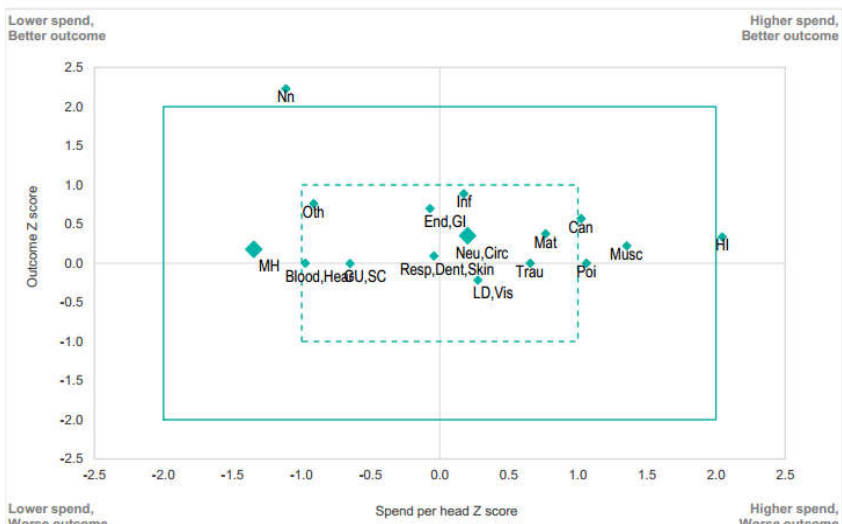
Spend and outcome tool: Quadrant chart

Organisation: South Gloucestershire

Type: CCG

Period: 2015

Weighted Unweighted outcomes



Interpreting the chart:

Each dot represents a programme budget category. The outcome measures on the chart have been chosen because they are reasonably representative of the programme as a whole. This means that for Other and Total programmes no outcome data is available. The source data for the outcome measures shown on the chart can be found in the Spend and Outcome Tool.

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Source: Public Health England

Outcomes

Success in terms of MSK and trauma an injuries can be measured against defined outcomes in an indicator set. The CCG Outcomes Indicator Set measures are developed from these NHS Outcomes framework indicators that can be measured at the CCG level together with additional indicators developed by NICE and the HSCIC (now NHS Digital). They provide simple and comparative information about the quality of health services commissioned by CCGs and the associated health outcomes. They can be used for identifying local priorities for quality improvement and can be used to demonstrate progress that local health systems are making on outcomes. The CCG outcomes framework indicators relevant to MSK and trauma and injury are

- Hip fracture incidence
- Timely surgery for hip fracture
- Multifactorial risk assessment
- Collaborative orthogeriatric care
- Proportion of patients recovering to their previous mobility at 30 and 120 days.
- Increased health gain as assessed by patients for elective procedures (hip and knee replacements)
- People feeling supported to manage their own condition

Hip fracture incidence

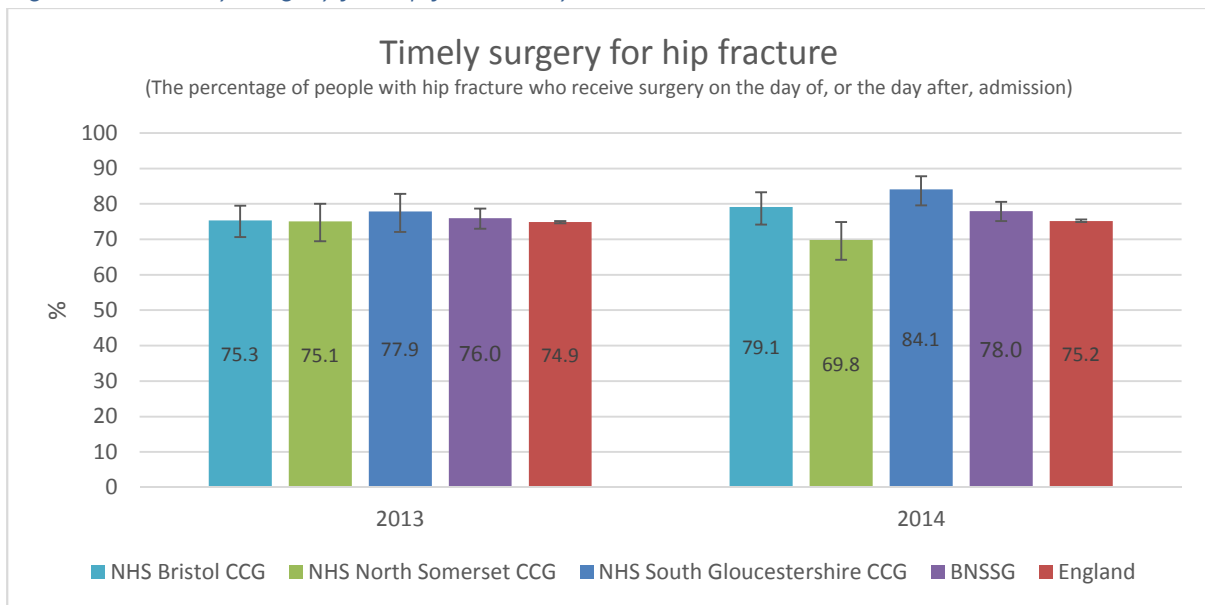
As has been seen in the demand for acute services section, there were 919 emergency hospital admissions for fractured neck of femur among the 65+ BNSSG population between April 2015 and March 2016, equating to an age and sex standardised rate of 540.4 per 100,000 population. Although the BNSSG rate is likely to be lower than national and regional averages, data from 2015/16 shows an elevated level of admissions for Bristol, particularly amongst 65-79 year olds, though without an official comparator, it is not known whether this difference is significant (see section 4 of this report or tabs 4.0 – 4.2 in data pack for more details).

Timely surgery

Of those who get admitted to hospital with a hip fracture the majority receive surgery on the day of or the day following admission. The Nice clinical guideline on hip Fracture (NICE clinical guidance 124) recommends that surgery is performed on the day of, or the day after admission, as this is considered to have a high impact outcomes that are important to patients. Whilst in 2013 there was little variation in timely surgery for hip fracture, a degree of variation in the CCGs within BNSSG can be observed in 2014, with North Somerset having significantly lower percentage of people receiving surgery on the day or day after admission than the national level, and South Gloucestershire having a significantly higher percentage. These discrepancies will need to be explored further and close attention will need to be paid

to 2015 figures when they are released to see if the position of North Somerset improves, remains the same or worsens.

Figure 5.4: Timely surgery for hip fracture by CCG



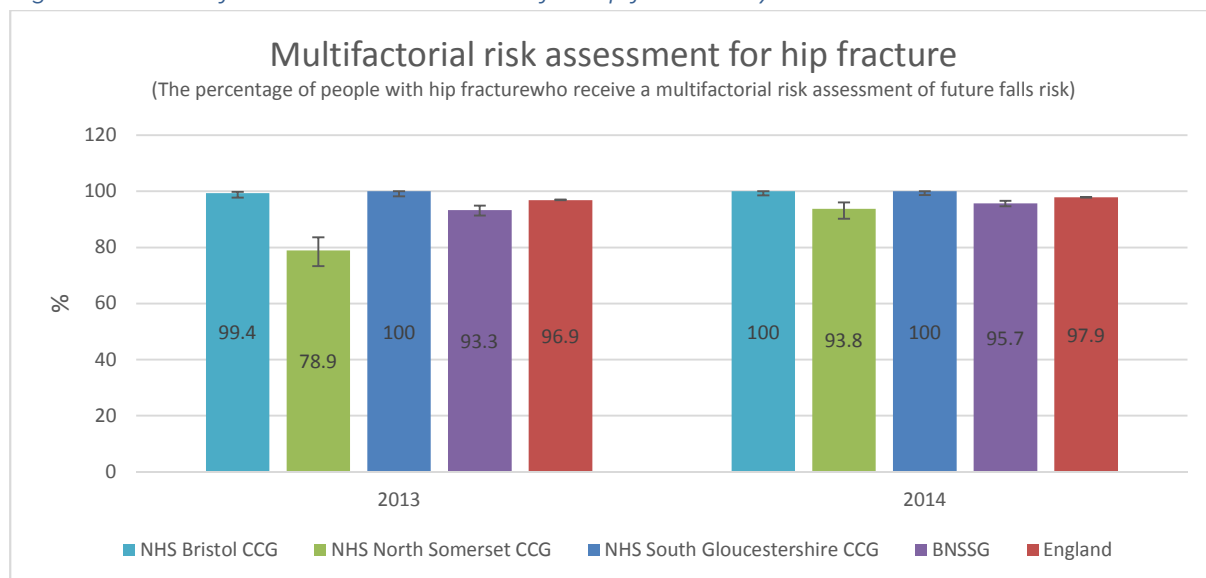
Source: 2015, Health and Social Care Information Centre

Multifactorial Risk Assessment

NICE’s quality standard 16 includes the statement that “People with hip fracture are offered a multifactorial risk assessment to identify and address future falls risk, and are offered individualised intervention if appropriate”. Improvements against this indicator would lead to improved outcomes in terms of reduced re-admissions and mortality following falls. Between 2013 and 2014 the majority of people with hip fractures received a multifactorial risk assessment in BNSSG, though the proportions were lower than the England average in each year. Both Bristol and South Gloucestershire CCGs had higher proportions receiving of people receiving a risk assessment, so the overall BNSSG level figure was attenuated by the low proportions receiving the risk assessment in North Somerset, particularly in 2013, when only 79% received the MRA, although this has improved significantly in 2014 it remains significantly lower than both the national rate and it’s neighbouring CCGs.

This coupled with the performance of the timely surgery indicator should be closely observed, and researched in more depth if required.

Figure 5.5: Multifactorial risk assessment for hip fracture by CCG

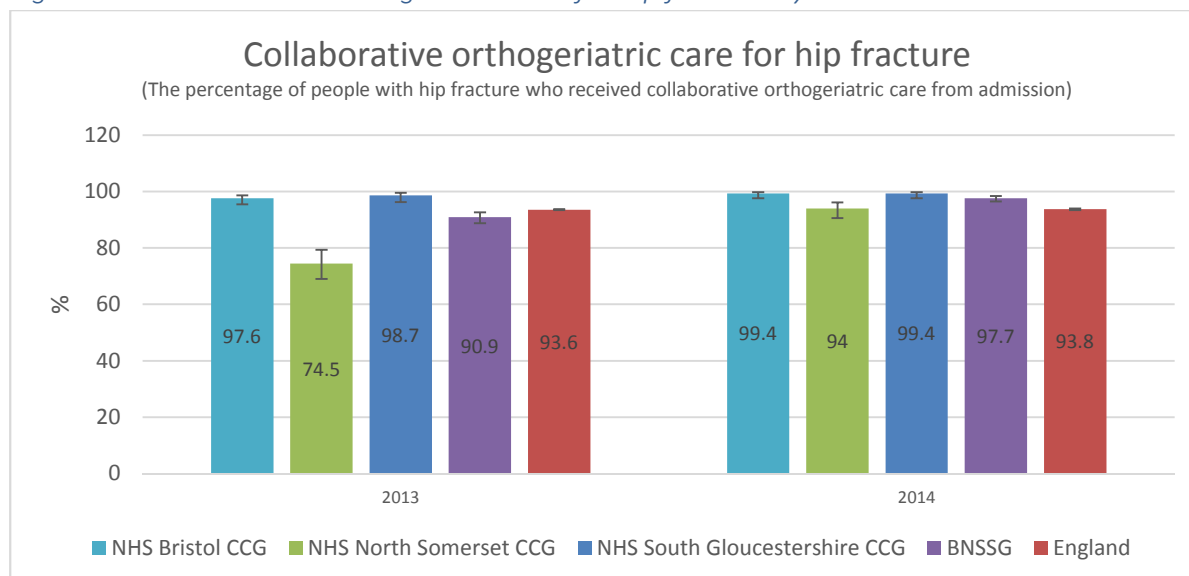


Source: 2015, Health and Social Care Information Centre

Since there is a high prevalence of co-morbidity in people with a hip fracture, falls and fractures often indicate an underlying health problem. A joint acute care protocol enacted upon admission in the form of a formal hip fracture programme which includes regular assessment and continued rehabilitation from a range of healthcare professionals with different skills enhances outcomes for those that fall.

The proportion of individuals with a hip fracture that receive collaborative orthogeriatric care from admission at the BNSSG area was similar to national levels in 2013 but appears to have risen in 2014, and is significantly higher with 98% of people receiving collaborative orthogeriatric care from admission compared to the national level of 94%. A difference between 2013 and 2014 is both the levelling of the variation between the three CCGs within BNSSG, and a significant increase in the proportion collaborative orthogeriatric care in North Somerset, which was significantly lower than national, regional or the rates of the other two CCG's in BNSSG. Close attention will need to be paid to 2015 figures to see if North Somerset can maintain or improve the increase it achieved in 2014.

Figure 5.6: Collaborative orthogeriatric care for hip fracture by CCG



Source: 2015, Health and Social Care Information Centre

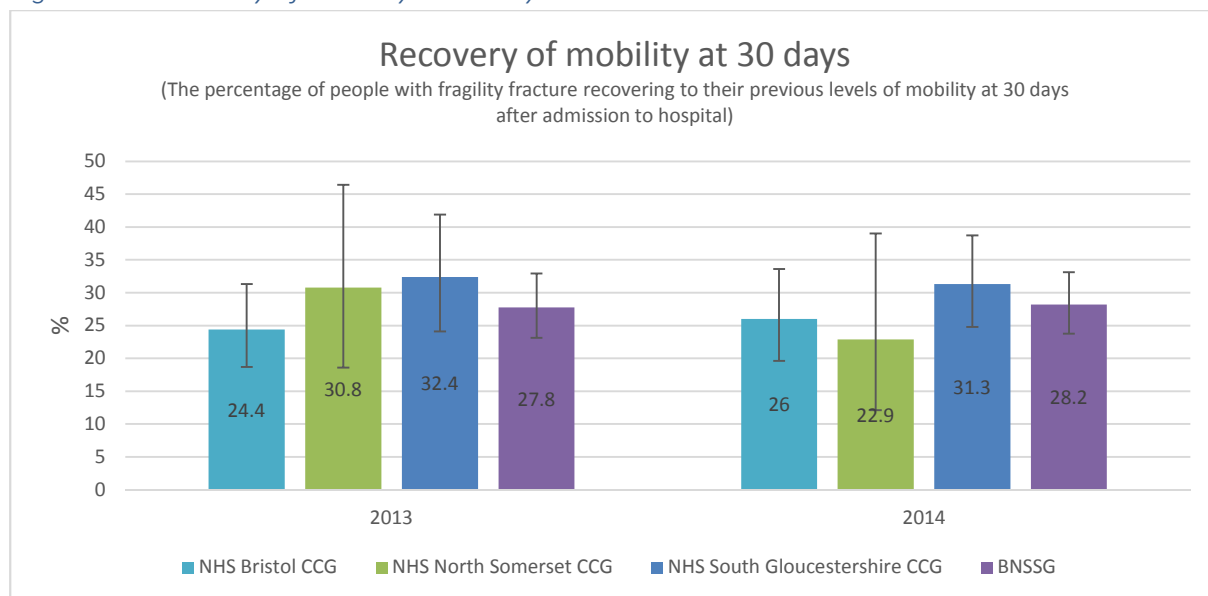
Recovery to previous levels of mobility

As has been highlighted already, a noteworthy proportion of patients affected by injuries such as neck of femur fractures die during their spell of care, this rate of death is higher amongst men compared to women, and higher amongst those living in more deprived areas compared to those that reside in less deprived areas. Of those that do survive, many never recover their original levels of mobility and independence and some information is available on levels of recovery.

Fragility fractures brought about by low bone density and osteoporosis include but are not limited to hip fractures. The rate of recovery following a fragility fracture are poor with some people never regaining their previous levels of mobility.

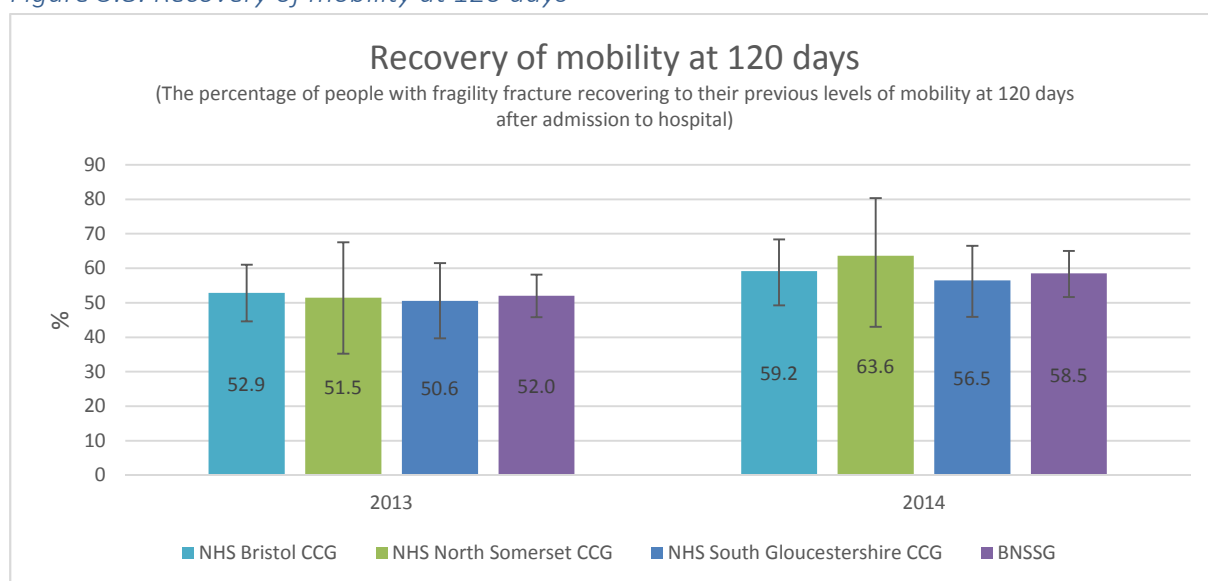
Monitoring recovery to previous mobility at 30 and at 120 days helps inform the degree of effectiveness of treatment of hip fracture, including the package of care following discharge. Recovery of mobility at 30 days following admission to hospital stand at around 31% at a national level, whilst the proportion recovering by 120 days is estimated to be 54%. Within BNSSG, the proportion of those suffering a fragility fracture that recover to their previous mobility within 30 days is slightly lower than the national estimate, at 28%. The percentage that have recovered their mobility within 120 days in BNSSG was 52% in 2013 and 59% in 2014. There is variation both over time and within the patch, particularly in relation to recovery at 30 days, however any differences are not statistically significant and furthermore the completeness of the data is known to be poor therefore indicator values are unlikely to be robust. Nevertheless, despite its limitations, the data still provides a useful picture of recovery.

Figure 5.7: Recovery of mobility at 30 days



Source: 2015, Health and Social Care Information Centre

Figure 5.8: Recovery of mobility at 120 days



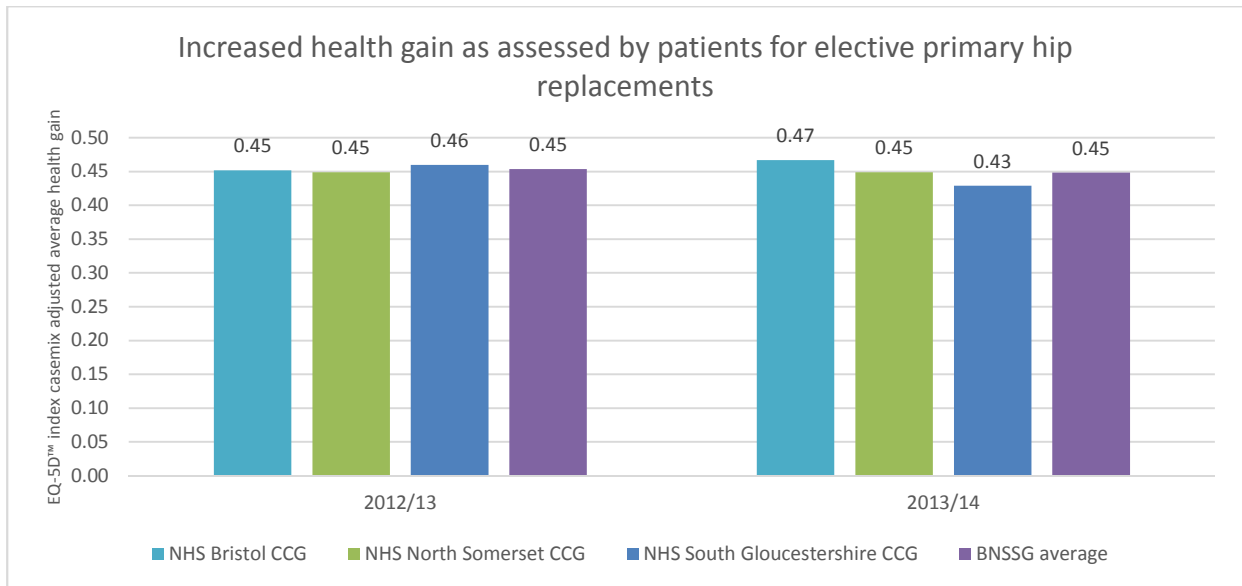
Source: 2015, Health and Social Care Information Centre

Patient reported outcome measures

PROM's measure health gain in patients hip replacements, knee replacement, varicose vein and groin hernia surgery in England and is based on responses to a questionnaire completed before and after surgery. Adjusted health gains have been calculated using statistical models which account for the fact that each provider organisation deals with patients with different case-mixes. This allows for fair comparisons between provider organisations and England as a whole. The health gain from hip replacement is similar to the national average of 0.44 in 2012/13 and slightly higher in BNSSG than the national average for 2013/14 of 0.43. Health gain following knee replacement is not as high as for hip replacement but is in line with

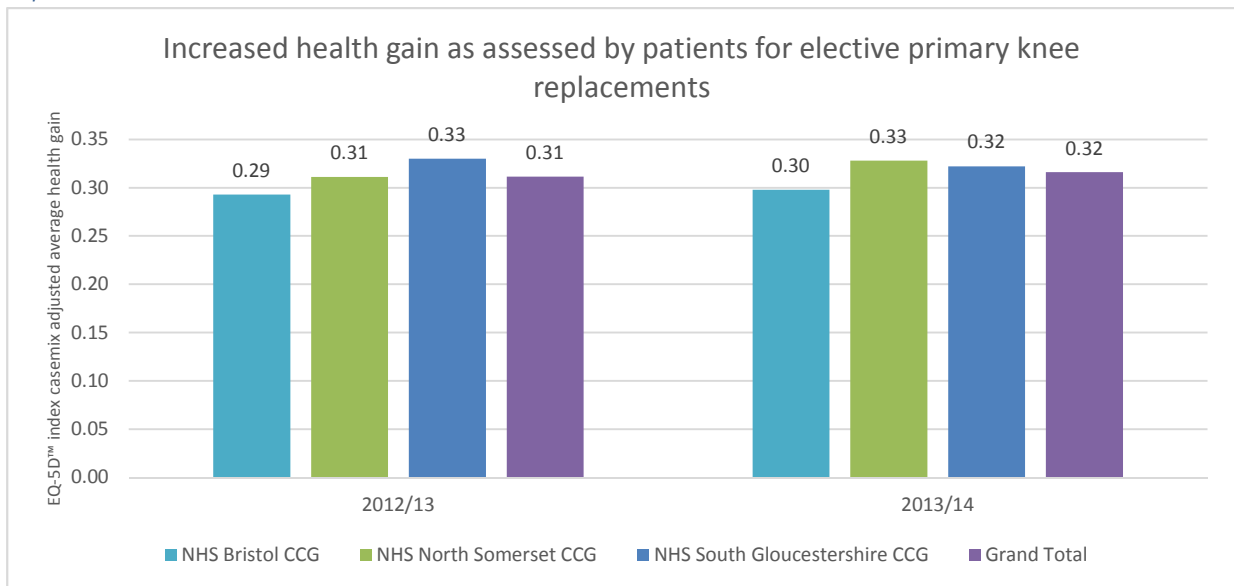
the national average of 0.32, though Bristol appears to have slightly lower health gain than the national average, BNSSG as a whole is similar.

Figure 5.9a: Increased health gain as assessed by patients for elective primary hip replacements



Source: 2015, Health and Social Care Information Centre

Figure 5.9b: Increased health gain as assessed by patients for elective primary knee replacements



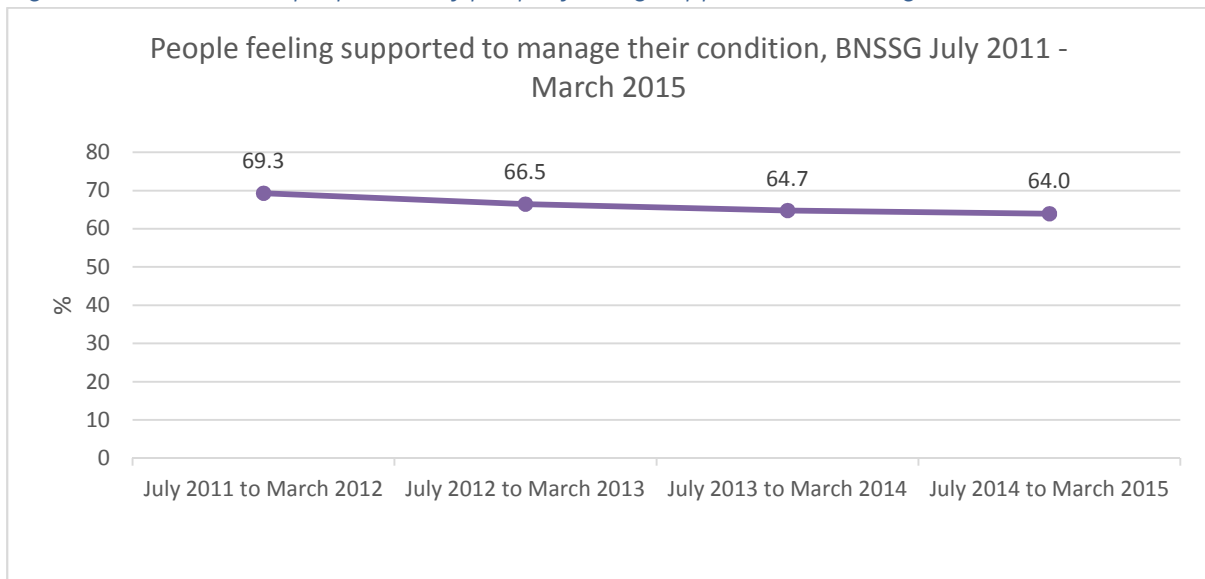
Source: 2015, Health and Social Care Information Centre

Support to manage long term condition

Many MSK conditions, for example back pain and arthritis, can cause disability and can be considered to be a long term condition in that they may last a year or longer, impact on a person's life and may require ongoing care and support. Supporting patients to manage their condition is central to MSK treatment and management. The GP patient survey can show the proportion of people that feel they are

supported to manage their long term condition. Data from the last couple of year's shows that the proportion of people feeling supported to manage their long term condition in BNSSG has declined.

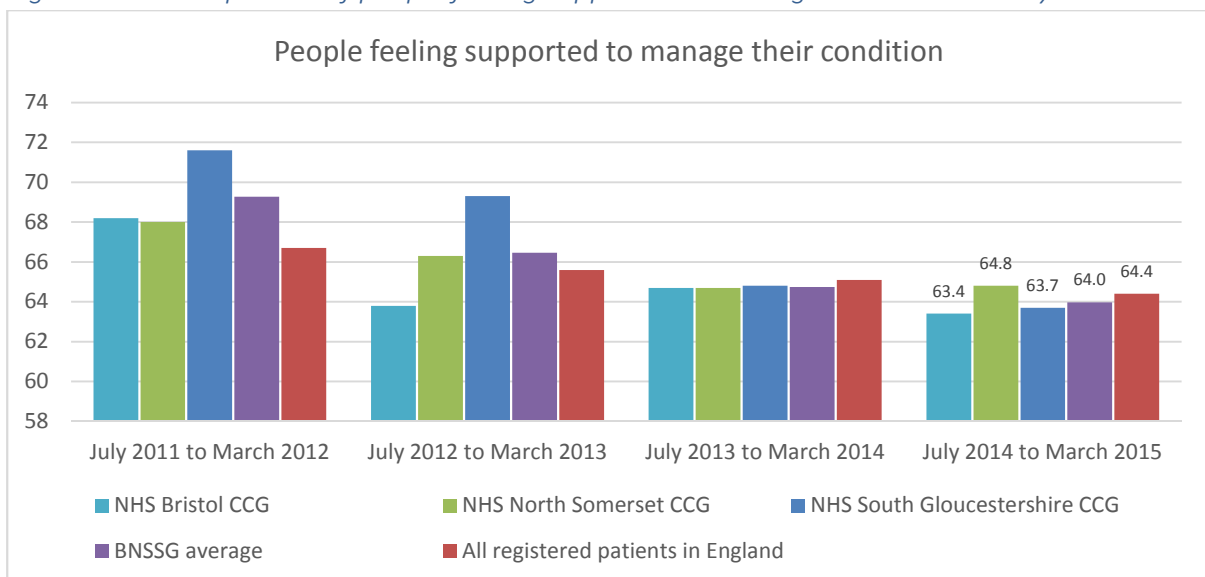
Figure 5.10a: Trend in proportion of people feeling supported to manage their condition



Source: 2015, Health and Social Care Information Centre

This trend is observed at the national level, and within BNSSG the most stark decline has been in South Gloucestershire

Figure 5.10b: Proportion of people feeling supported to manage their condition by CCG

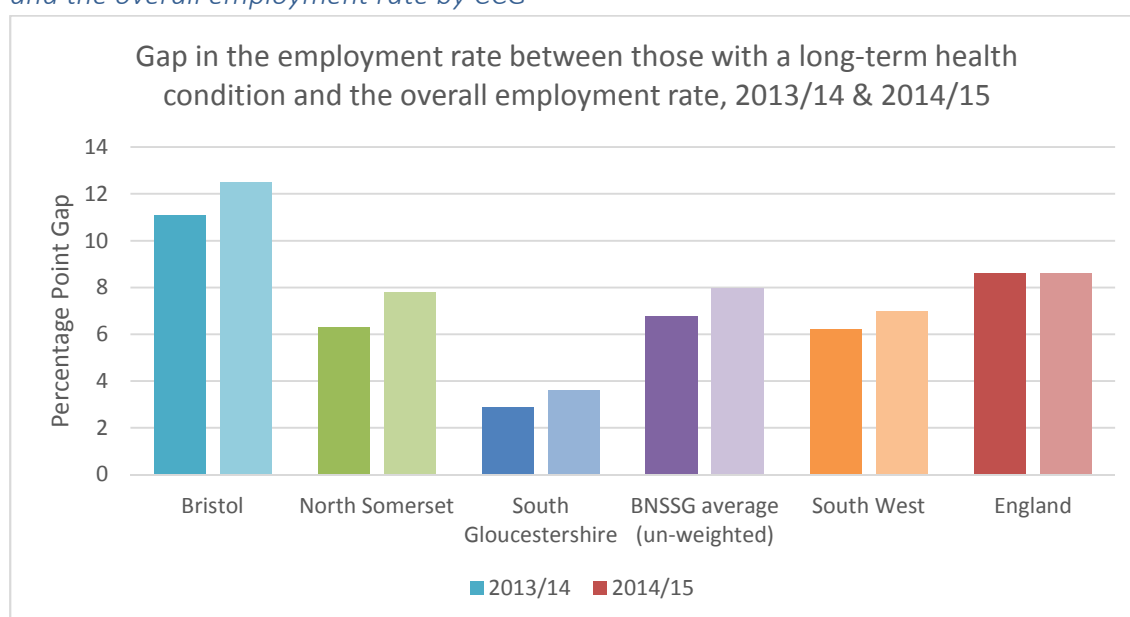


Source: 2015, Health and Social Care Information Centre

Employment of those with a long term health condition

The gap in employment rate between those with a long term health condition and the overall employment rate provides a good indication of the impact of limiting long term illness has on in employment of those of working age. BNSSG performs well compared to national figures, though the gap has increased by 1.2% from 2013/14 to 2014/15 and is higher than regional figures. The gap in employment rates of those with long term conditions and the overall employment rate in BNSSG is principally driven by the large gap observed in Bristol, though all areas within BNSSG have displayed increases despite national rates remaining consistent.

Figure 5.12: Gap in the employment rate between those with a long-term health condition and the overall employment rate by CCG



Source: Annual Population Survey - Labour Force Survey accessed via Nomisweb

How people receiving social care rate their quality of life is measured as part of the Adult Social Care Outcomes Framework. Quality of life is assessed via a series of questions and expressed as a score of 24. Rates of BNSSG are not available but an average of Bristol, North Somerset and South Gloucestershire for 2015/16 put the measure at 19.2, having fallen slightly from 19.4 in the previous year. This is similar to the regional and national figures of 19.3 and 19.1 respectively and shows that peoples experience in BNSSG is similar to that experienced at the national and regional level. There has been a notable fall in the Bristol score, falling from 19.4 in 2014/15 to 18.9 in 2015/16, although this fall is not significant, it will worth monitoring going forward.

The proportion of service users who feel they have control over their own lives is also a measure on ASCOF. Within BNSSG, the proportion of service user who felt that had as much control over their daily lives as they would like to, or adequate control is 78.5% slightly higher than regional but slightly lower than national

comparators which were 76.6 and 78.8 respectively. As with the quality of life measure, the score has fallen from the previous year by 1.6%, again this is driven by the fall in Bristol, which fell by 5.9% when the other two areas saw marginal improvements (see tab 5.12 in data pack for more details).

Summary: Spend and Outcome

MSK and T&A programmes appear in the top ten areas of spend for each CCG and North Somerset has two outcomes defined as a 'worse outlier'. Bristol also has a high spend outlier for Problems due to Trauma & Injuries

Though BNSSG exhibits similar rates to the national average, North Somerset has a significantly lower percentage of people receiving surgery on the day or day after admission than the national level.

The proportions people receiving a multifactorial risk assessment were lower in BNSSG than the England average. High proportions in Bristol and South Gloucestershire Bristol were attenuated by the low proportions receiving the risk assessment in North Somerset.

The proportion of individuals with a hip fracture that receive collaborative orthogeriatric care from admission at the BNSSG area was similar to national levels

Within BNSSG, the proportion of those suffering a fragility fracture that recover to their previous mobility within 30 days is slightly lower than the national estimate, but similar at 120 days, however the robustness of this indicator is questionable.

The health gain from hip replacement is similar to the national average and although health gain following knee replacement is not as high as for hip replacement it is in line with the national average.

The proportion of people feeling supported to manage their long term condition in BNSSG has declined, this is most notable in South Gloucestershire.

The gap in employment between the overall employed population and those with long term conditions, though increased in the last year, remains similar to the national rate and is mainly driven by the large gap in Bristol.

Review of all key findings

MSK and T&A programmes appear in the top ten areas of spend for each of the three CCGs and North Somerset has two outcomes defined as a 'worse outlier' (Hip fracture: collaborative orthogeriatric care and Hip fracture: multifactorial risk assessment). Bristol also has a high spend outlier compared all other CCGs nationally for "problems due to trauma & Injuries"

MSK conditions are the single largest contributor to the national burden of disease, accounting for over 24% of all years lived with disability.

The exact number of individuals suffering from an MSK condition is unknown but modelled estimates for BNSSG suggest that around 150,000 have at least one MSK condition.

There is a stark disparity between registered osteoporosis and modelled estimates, suggesting possible wide scale underdiagnoses.

MSK conditions can affect any age group but their greatest prevalence is amongst the over 65s, a population that has and will continue to increase disproportionately more than any other age group.

There is a significant degree of inequality associated with area deprivation in relation to the use of acute services such as emergency hospital admissions for falls, neck of femur fracture and childhood injuries. Furthermore, older people from more deprived areas admitted for a Neck of Femur Fracture (NOFF) are more likely to die during their spell of care than those from less deprived areas. The overall low deprivation in BNSSG masks very deprived areas and this should not be overlooked.

The majority of falls occurred in the home, and falls on same level account for the majority of known causes of falls, indicating issues with balance and proprioception. Extreme cold weather events are a seasonal risk factor that may increase falls and subsequent admission rates.

Most injuries in children occur within the home, and are caused by falls or exposure to inanimate mechanical forces (for example being struck or crushed by an object, contact with sharp glass, knife or tools, explosion such as discharge of firework, and objects entering through the skin or natural orifices). The types of injuries sustained vary by age, with notable demand on MSK services relating to 5-14 year olds, who have high admission rates for wrist forearm and leg fractures.

The prevalence of mental health conditions, sub-optimum physical activity and rates of obesity and excess weight result in a large proportion of adults at risk of developing or inadequately managing MSK conditions.

Barriers to access to services can include geographical factors, language and cultural differences and these have great variance within BNSSG.

Though the majority of MSK conditions are not life threatening and do not require hospital admission, they cause pain, disability and loss of personal and economic independence.

MSK conditions have a wider burden on society beyond the individual level.

44% of work related illnesses and 40% of all days lost due to work related ill health were due to MSK conditions.

11.5% of all incapacity benefit/severe disablement, 12.7% of Employment and Support Allowance (ESA) and 28.3% of disability living allowance payments were for MSK related conditions.

MSK related outcome measures in BNSSG are generally similar to national levels. However North Somerset exhibits some worse patient outcomes in relation to some MSK indicators, including a lower percentage of people receiving surgery on the day or day after admission than the national level and a lower proportion of people receiving a multifactorial risk assessment

Within BNSSG, the proportion of those suffering a fragility fracture that recover to their previous mobility within 30 days is slightly lower than the national estimate, but similar at 120 days.

The health gain from hip replacement is similar to the national average and although health gain following knee replacement is not as high as for hip replacement it is in line with the national average.

The proportion of people feeling supported to manage their long term condition in BNSSG has declined, this is most notable in South Gloucestershire.

The gap in employment between the overall employed population and those with long term conditions, though increased in the last year, remains similar to the national rate and is mainly driven by the large gap in Bristol.

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