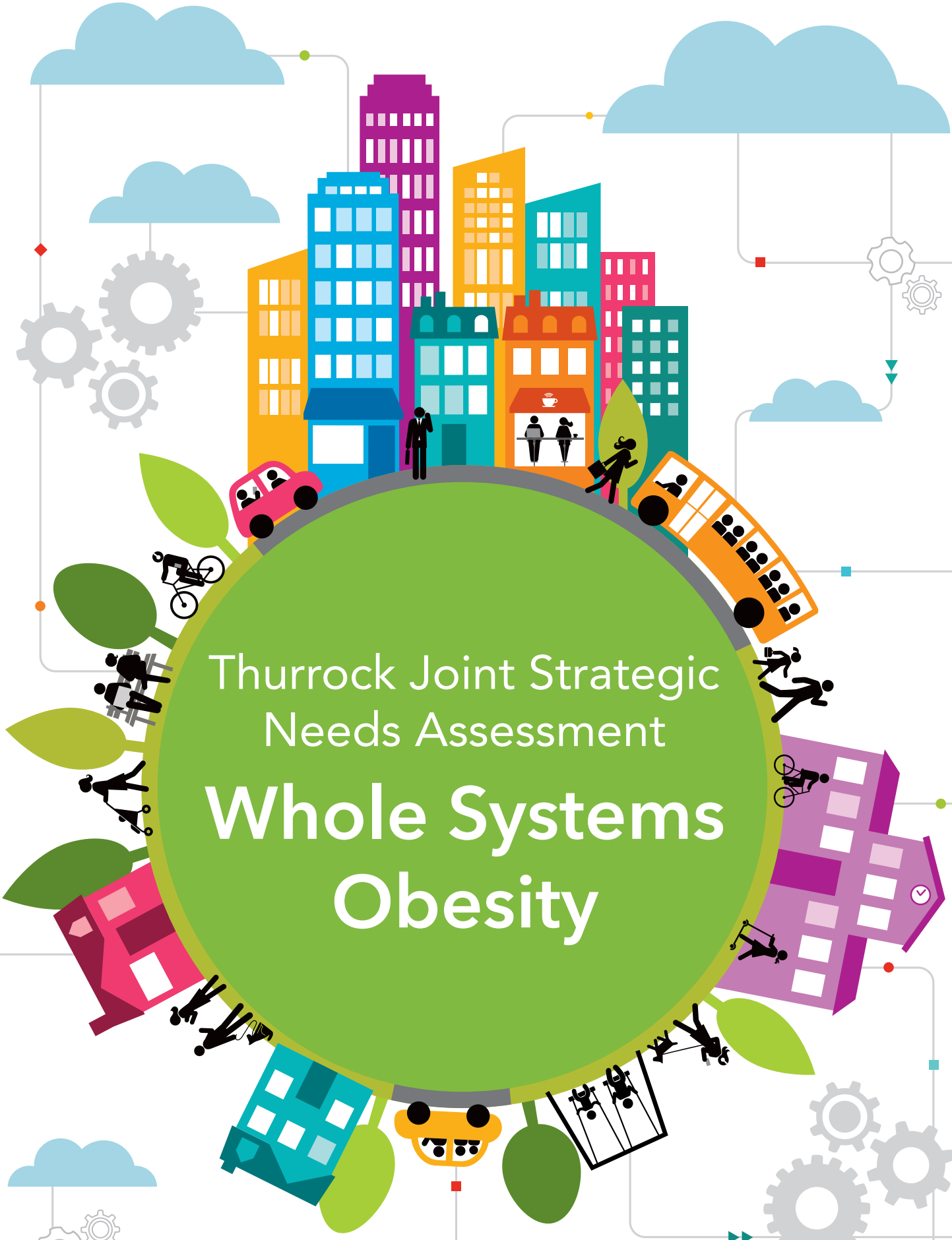


Thurrock Joint Strategic Needs Assessment

Whole Systems Obesity

Editor and Authors:

Helen Horrocks, Strategic Lead for Public Health – Place, Environment and Communities (Editor)

Maria Payne, Senior Public Health Programme Manager – Health Intelligence

Sue Bradish, Public Health Programme Manager

Tracey Finn, Health Improvement Officer

Acknowledgments:

Karen Balthasar, Graduate Trainee Public Health Practitioner

Kelly Clarke, Public Health Intelligence Information Support Officer

Nicola Smith, Public Health Intelligence Analyst

Kareema Olayeye, Graduate Trainee Public Health Practitioner

Navtej Tung, Principal Transport Planner

Robert Cotter, Principal Planning Officer

Jenny Pittam, School Catering and Traded Services Manager

Jane Darlow, Area Catering Manager

Beth Capps, Senior Public Health Programme Manager

"Despite the recognition of the seriousness of obesity to public health, no interventions have been effective in reducing obesity rates on a population basis. Reversing obesity rates within populations will require addressing both individual behaviour and the obesogenic environment."

[1]*(Hill, 2008)*

Document Published: September 2017

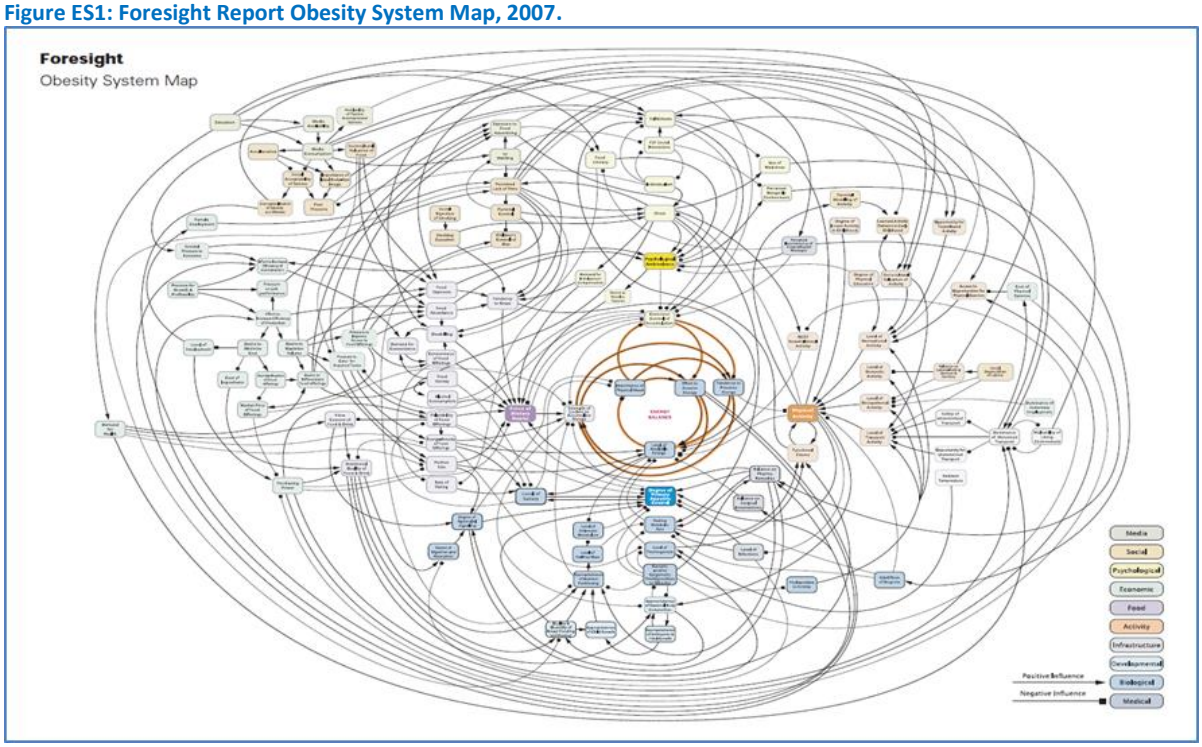
Contents

Executive Summary

There are social, economic, mental and physical consequences of excess weight which can lead to residents not fulfilling their full potential. With one in three Children at age 10 and 11 and seven in ten adults having excess weight in Thurrock, this has far reaching consequences for Thurrock residents. The vision for Thurrock Council is *"Thurrock: a place of opportunity, enterprise and excellence, where individuals, communities and businesses flourish".* In order to improve and safeguard the future of Thurrock residents, tackling the issue of obesity is a critical issue.

Time has demonstrated that there is not "one answer" or intervention that has successfully tackled obesity on a population level. In 2007, the Foresight report [2] on tackling obesity demonstrated why, and 10 years later a national pilot programme is underway in 4 areas to test out a 'Whole Systems Approach'. The current obesity system, which operates at a local, regional, national and international level, and as described by the Foresight's 2007 report on tackling obesity (see figure ES1) currently works in favour of individuals gaining weight. Drawing on the emerging material from the Whole Systems Obesity Pilots, the system needs "disrupting" in a way that halts this preference for gaining weight and instead works and interacts to assist people in the achievement of healthy lifestyles. This essentially means that, not only do we need to tackle the issue with a *comprehensive portfolio of interventions*, but more important to this, the interactions between them need to be defined and linked. Essentially the whole is greater than the sum of its parts.

Figure ES1: Foresight Report Obesity System Map, 2007.

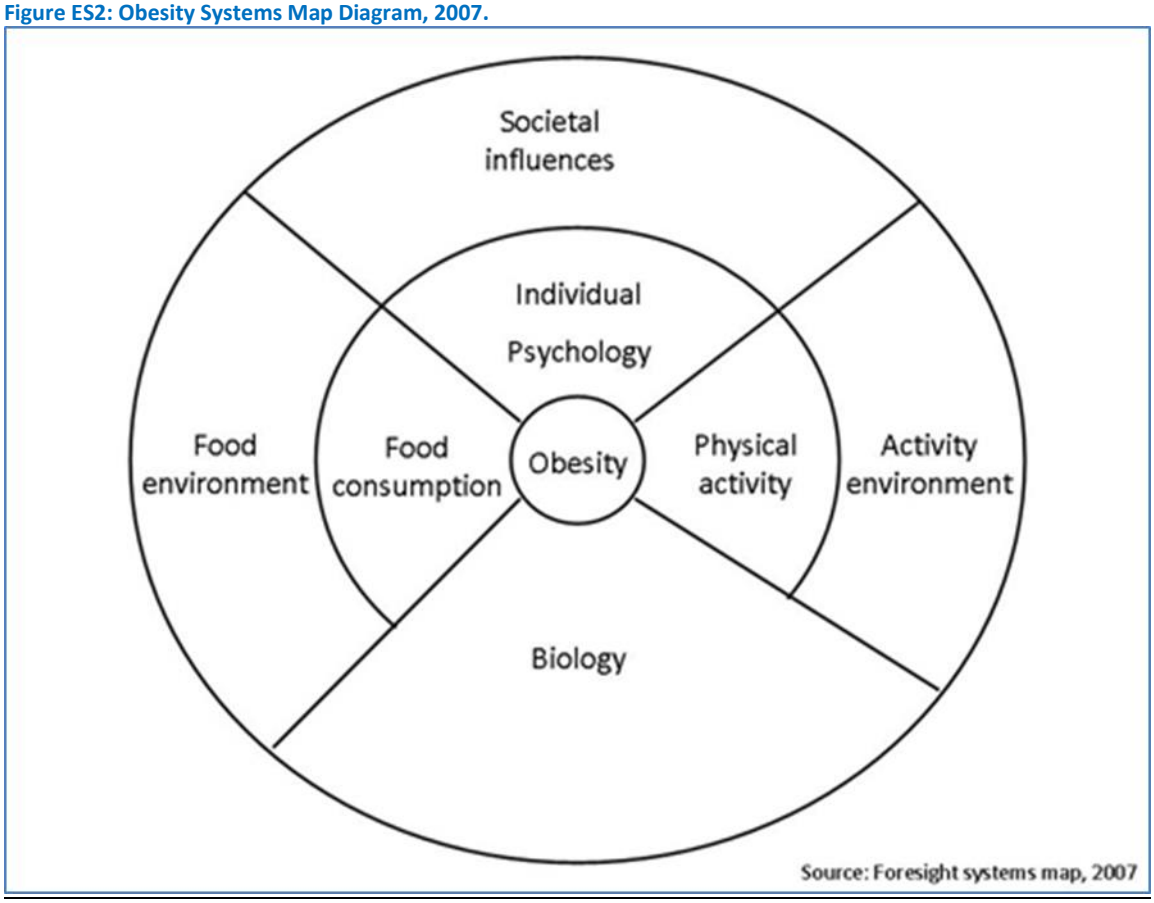


Source: Government Office for Science

This Joint Strategic Needs Assessment seeks to understand a proportion of the system which is operating on a local level in Thurrock, which is resulting in a year on year increase in childhood and adult overweight and obesity. In order to tackle obesity and achieve healthy weight in Thurrock across the population, whole systems thinking and a whole systems approach is required to both

understand it and to tackle it. This report seeks to understand it and to look at the evidence base and analyse data within the scope of the whole systems map (see figure ES2). This is the first step in understanding the local issues and interactions, but is by no means the end of the story. Further detailed analysis may follow to look at these in more depth, to inform the response to this as new data becomes available.

Figure ES2: Obesity Systems Map Diagram, 2007.



1. Overweight and Obesity in Thurrock

Over 70% of adults are overweight or obese in Thurrock, which is significantly higher than the national average. Children in Thurrock by age 5 (Reception year) have a similar rate of obesity to the national average. Despite this by age 10 and 11 (Year 6), 23.9% of children are obese in Thurrock and 37.9% have excess weight (are either overweight or obese), which is significantly higher than the national and regional averages.

The NCMP data shows that there is a link between deprivation and childhood obesity; the most deprived 10% of the population being likely to have twice the level of obesity compared to the least. There is also a link between obesity in childhood and rural and urban area classification, with obesity being significantly higher in urban areas.

In Thurrock there is a faster than national average increase in ethnic diversity population compared with average for England. The NCMP data shows that obesity levels amongst ethnic groups 'Black or Black British', 'Asian or Asian British', 'Any Other Ethnic Group' and 'Mixed' are seen to be significantly higher (21.5-29.4% dependent on which groups) than the national average (19.8%).

Local modelling predicts that there could be an increase of 27% in obesity numbers by 2026. There will be an overall increase in the levels of all clinical long term conditions linked to obesity. Costs for services such as the NHS, Primary Care and Social Care will increase. There will also be the economic costs due to long-term illness and disability, where obesity is a contributing factor.

2. Societal and Community Factors

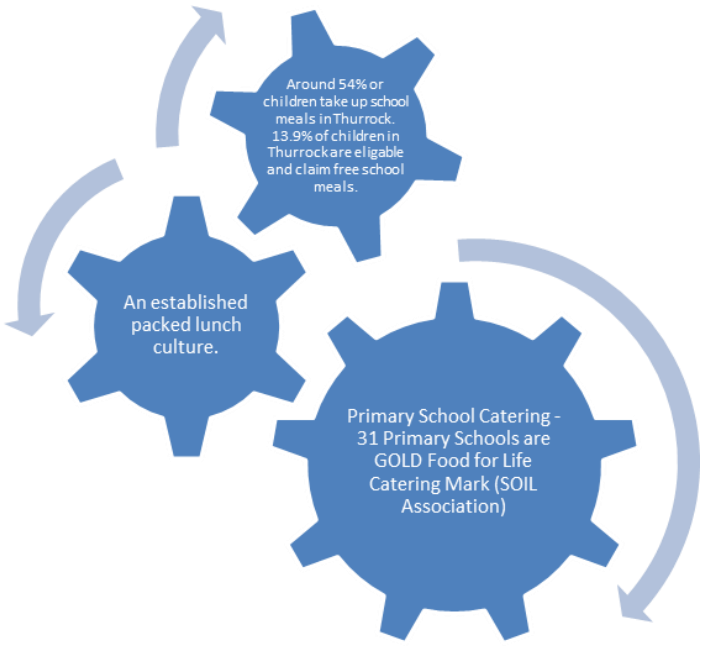
Socioeconomic factors such as unemployment and perceived status can influence the chances of obesity in individuals. Linked to this, low education attainment and obesity can be linked, with women more affected than men. Deprivation, poor housing tenure, environment and obesity can be linked through such things as lack of cooking facilities.

The family/parents and carers have an influential role in diet, physical activity and exercise behaviours. Social norms can normalise and encourage behaviours that can contribute to obesity. Different cultural and ethnicity factors can influence weight such as, physiological factors and inherited cooking norms.

3. Food in Thurrock

Thurrock is significantly lower than the regional and national averages for meeting 5-a-day fruit and vegetable consumption. Deprivation is associated with healthy eating with the most deprived eating less healthily.

One example of the food system in Thurrock



While Thurrock schools have a positive uptake to the Thurrock Catering Service which holds a SOIL association gold award, the proportion of children eligible for Free School Meals who take up this offer is seen to be poor due to a variety of reasons such as parent engagement and the meal time culture within the school.

The volume rather than the distance of fast food outlets appears to be associated with childhood obesity at year 6 (age 10-11). There are fewer than recommended allotment sites within the borough, limiting access for people to grow their own food.

4. Physical Activity in Thurrock

52.8% of adults in Thurrock reported meeting the physical activity guidelines, which is statistically similar to regional and national averages.

There are 38,000 inactive people within Thurrock (29.6%). Across Essex, the following groups have lower levels of physical activity:

- Females
- Adults, especially older adults
- People with a limiting illness or disability
- People with lower social gradient NS-SEC
- Part-time employees
- People with higher BMI levels

Participation in Physical Activity is not uniform across Thurrock.

In childhood, time spent being sedentary increases with age. Thurrock has statistically higher percentage of young people age 15 that are sedentary for more than 7 hours per day. Thurrock has statistically less adults who do any cycling, three times per week.

5. Weight Management, Treatment and Healthcare

There is widespread variation at GP practice level of identification of obesity in adults.

The tier 2 treatment options available in 2016/17 appeared to support participants to achieve the 5-10% weight loss in line with NICE guidance. Almost two thirds of those referred to the tier 3 treatment offer had at least one other long term condition.

The number of patients having bariatric procedures has increased since the previous year; however the complexity was greatest in 2014/15, indicating that there is a greater volume requiring a lower-level procedure.

It is estimated that approximately 28.4% of patients with diagnosed depression in Thurrock are also obese. This is expected to increase in the future, with around 33.7% of future depression patients likely to be obese if the current trends continue.

6. Emerging Key Themes and Recommendations

6.1 Focus on prevention in children

Considerable focus on prevention in childhood is a priority due to the impact on health and well-being during childhood in combination with the impact that this has carrying through to adulthood. Investment at early stage in prevention decreases potential long-term costs.

A detailed review of the local Healthy Start scheme provision locally should be undertaken and a recommendation to understand the effectiveness of the scheme and on methods to increase the uptake of the scheme.

There should be a concentrated effort to increase the uptake of Free School Meals in primary and secondary schools in Thurrock. Many eligible school pupils are not benefitting from the SOIL association Gold standard catering provision that is offered and taken up by schools within the borough. In addition to this, work should be undertaken to shift the culture of bringing in high sugar and high fat packed lunches to either school lunches or more nutritionally balanced lunches.

Schools, particularly in neighbourhoods of high childhood obesity, should consider taking up the Modeshift STARs scheme to promote active travel methods into school. How this links into the built environment in Thurrock and perceived safety should be considered.

It should be sought to understand what options in schools would encourage children to be more active. Schools, particularly in neighbourhoods of high childhood obesity, should use this understanding to work to encourage children to take part in daily physical activity.

A review of how the PE and School Sport premium is being spent by schools across Thurrock, with a view to understanding impact, sharing best practice and to understand opportunities to increase physical activity in children across the borough through this route.

6.2 Environments to facilitate and promote behaviour change

Food Environments

Housing, planning and environment departments should work to ensure that there are opportunities for physical activity, accessible healthy food outlets and suitable food preparation/ storage areas within housing, which includes private tenants.

Environmental health teams should work with existing fast food outlets to review the provision and offer alternative options and healthier food or healthier ways of cooking food. Furthermore, planning policy should consider the options on the restriction of the proliferation of fast food outlets in Thurrock, in particular in the areas of highest childhood obesity at year 6.

A review should be conducted of early years, childcare and school settings to understand the provision of healthy food environments locally. It should be ensured the nutritional quality of food in these settings is safeguarded.

School is a critical setting for a positive impact on reducing obesity and chronic related disease risk, and school environment and curriculum should deliver consistent messages on food and diet. School catering should work with schools to change and shift the culture of packed lunches to school meals or to encourage more nutritionally balanced packed lunch contents.

Planning and regeneration departments should work to influence the built environment to enable better access to affordable healthy food. Environmental health and public health should look at opportunities to work jointly with local supermarkets on healthy food promotion and marketing schemes and areas of food waste.

Environment, planning, regeneration and community development should increase allotment availability and accessibility. These should be linked to community growing schemes with opportunities to release excess food grown to communities.

Housing, public health and community development departments should investigate methods of identifying barriers to healthy eating relating to food storage and cooking skills. Where this is highlighted as an issue, further work is required within these populations and groups to identify opportunities to provide the tools and skills to overcome this.

Consideration should be given to the potential to pilot a healthy eating zone to test whether a systems approach is something which might have an impact on a local level.

Physical Activity Environments

Future planning should continue to be influenced to prioritise the need for communities to be physically active as a routine part of their life, with strong consideration for Active Design Principles (SportEngland) and Healthy Weight environments (TCPA).

Improve the quality and quantity of local sport and leisure, green spaces and pitch and play provision in response to local need and population growth as evidenced by the Active place Strategy. Using the Active Place Strategy findings as a benchmark, undertake further evaluation around sport and physical activity levels to identify any specific demand for additional services/club and obtain a clearer understanding of local demand for sport and PA to help shape future vision.

Regeneration and planning should consider integrating future development of further sports facility infrastructure with prospective integrated medical centres/ educational facilities where possible.

Improve the quality of parks, gardens and play areas across Thurrock, prioritising according to those areas with highest childhood obesity at year 6 and feedback from the residents survey.

Focus provision and commissioning on localities with lower levels of physical activity and below recommended physical activity levels and the least active groups to address Thurrock's health inequalities.

One example of the leisure and play system in Thurrock

Active travel should be enshrined in Thurrock's transport policy. Planning and transport policy should encourage new developments to maximise opportunities for active travel with appropriate infrastructure (e.g. cycle lanes, cycle parking) and ensure these are prioritised over car transport as part of designing safe and attractive neighbourhoods.

Planning, environment, regeneration and public health should collaboratively improve the provision of high quality, local, accessible and safe green space in line with recommendations by organisations including the Design Council CABE. The aesthetics of green space should be improved, alongside appropriate safety and crime prevention initiatives, to encourage people to use their local green space.

6.3 Inspire and stimulate behaviour change on a population level

There should be a focus on prevention opportunities and small behaviours changes that could have a population impact particularly in the key ages from the age of 16 through to 45 years. Working with communities, including schools and colleges, it should be sought to identify which behavioural change methods would be successful in creating a cultural shift away from health harming social norms to healthy ones.

All relevant directorates and partners should support and assist in the promotion of campaigns such as Dry January and One You to spread their messages and encourage a greater take up amongst communities.

Strategies to tackle overweight and obesity should give greater focus on community based methods of engagement with those from deprived geographical areas. Consultation activities should be developed to try and identify perceived and real barriers to physical activity in different communities.

Strategies to tackle overweight and obesity should consider more relevant methods of engagement and focus with those from Black and Minority Ethnic groups and communities where obesity and excess weight has been observed to be higher. A watching brief on further national research should be undertaken to further understand any association between ethnicity and obesity and how this can influence our action.

Adult social care should consider targeted opportunities towards those with limiting long term health problems and older people.

Partnership with local employers to develop a holistic health and wellbeing workplace model is key. Work with business should be undertaken to understand the links with obesity, mental health and employment. There should be a joined up approach between businesses, healthcare, social care and communities to better understand the opportunities and potential solutions from this approach.

To work with employers, unemployment agencies and relevant voluntary and public organisations to identify and develop healthy lifestyle opportunities to increase life chances.

The Health and Well-Being Board and its partners must give greater strategic focus should be given on promoting physical activity in order to increase the amount of adults meeting government activity recommendations, and more importantly, reduce the number of people who are inactive in the borough. Work should be undertaken to develop and enhance new and existing relationships and partnership working with Active Essex, Sport England and other external organisations.

Collective action should be undertaken to promote, encourage and support the community to get active and travel actively via walking and cycling. Collective action should also be undertaken to inspire the community to use their parks, gardens and open spaces more. Further work is needed to seek to understand why they are not used and what they are wanted to be used for.

Understand opportunities for the food bank and other community initiatives already in place have to identify healthy eating/ preparation ideas for their users.

6.4 Supporting the individual, when they need it

To support the development of family healthy weight opportunities including nutritional advice and physical activity, helping to create normalised healthy behaviour within communities. The Brighter Futures children's services model should review the provision of tier 2 childhood weight management and its impact on population childhood obesity outcomes considered.

The CCG should work to encourage GPs to identify and refer more obese patients for weight management support. Practice-level variation should be supported through the work of the healthcare public health improvement managers. This should link into the new models of care in development and the development of the Accountable Care Partnership.

Public health should undertake a health equity audit on weight management provision to understand if local groups and communities within the Thurrock population are accessing services equitably.

Tier 2 support should continue to provide a varied range of options, including physical activity options, to ensure it reaches all sectors of the community. Future weight management provision should also continue to target patients in more deprived areas as well as males.

Public health and NHS commissioners should ensure that there is clear connectivity between weight management and mental health support services.

Analysis of the tier 3 data indicates that a large proportion of patients have more than one long term condition. In order to prevent development of further ill-health, tier 3 obesity support and long term condition support should be delivered in an integrated way.

7. Conclusions

This report has looked at some of the evidence base and has analysed data within the scope of the Foresight report [2] Whole Systems Map. This is the first step to helping us to understand the local issues and interactions, but is by no means the end of the story.

In order for Thurrock to have a noticeable and lasting impact, recommendations should be actioned with a view to ensuring that we implement a *comprehensive portfolio of interventions.*

More important than this, the interactions between them need to be defined and linked, and "the whole is greater than the sum of its parts". Further work may need to be done to identify where these interactions might be and how they might influence one another, particularly in Thurrock, and particularly where they might be cross-departmental or span a number of partners. There is much more intelligence from key stakeholders and the community to be gathered to further support this.

The specific context, the assets and the opportunities that are provided in Thurrock, of which there are many, should be looked at to lever an impact on the system, which is currently operating in favour of population weight gain.

Further detailed analysis is likely follow to look at some areas in more depth and as new data becomes available. New and emerging evidence may also need to be reviewed ongoing. Any

response to this in the form of a strategy and framework for delivery needs to be dynamic and reactive to this.

This report should be promoted and shared for further discussion, to test out the recommendations made in this JSNA and to identify opportunities for action and implement joint solutions.

Stakeholder engagement will be undertaken to collect further local intelligence, understand the opportunities and to gain commitment to tackling this as a system wide approach.

A clear and overarching strategy will be developed, which will give a steer to the direction of travel in Thurrock for the obesity system for key stakeholders, the community and individuals to work towards.

A delivery framework will be developed as a collaborative partnership of core stakeholders to support in the implementation of the strategy, and this will link directly as an action plan to the Thurrock Health and Well-being Board.

1 Introduction

1.1 What is Overweight and Obesity?

Although the causes of obesity development are not fully understood, it is long-established that obesity occurs when calorific intake exceeds energy expenditure. There are, however, the exceptions of some medical conditions and more subtle factors that influence our weight status, such as societal influences, individual psychology, lifestyle preferences and the environment.

For adults, body mass index (BMI) is the most reliable way of measuring healthy weight. For most adults BMI is calculated by dividing body weight (kilograms) by height (metres) squared. Having a high BMI (Table 1) in adulthood is generally an indicator of health risk.

Although BMI does not measure body fat directly it is used as a reliable indicator for screening weight categories that may lead to health problems. Further additional assessments may include waist circumference, consideration of muscle mass, body frame, age, gender and lifestyle discussions around diet and exercise.

In children BMI is adjusted to take account of the child's age and gender against reference charts to give a BMI percentile. This is then compared with other children of the same age and gender (Table 2). In a small number of cases childhood obesity is due to genes such as leptin deficiency or medical causes such as hypothyroidism and growth hormone deficiency or side effects due to drugs such as steroids. [3]

Table 1: UK BMI Classification for Adults.

Table 1: UK BMI classification for adults	
Classification	BMI
Underweight	<18.5
Healthy weight	18.5 – 24.9
Overweight	25 – 29.9
Obese	30 – 39.9
Morbidly Obese	>40

Table 2: UK National BMI Percentile Classification for Children.

Table 2: UK National BMI percentile classification for children	
Classification	BMI Centile
Underweight	<2nd centile
Healthy Weight	2nd centile – 84.9th centile
Overweight	85th centile – 94.5th centile
Obese	>95th centile

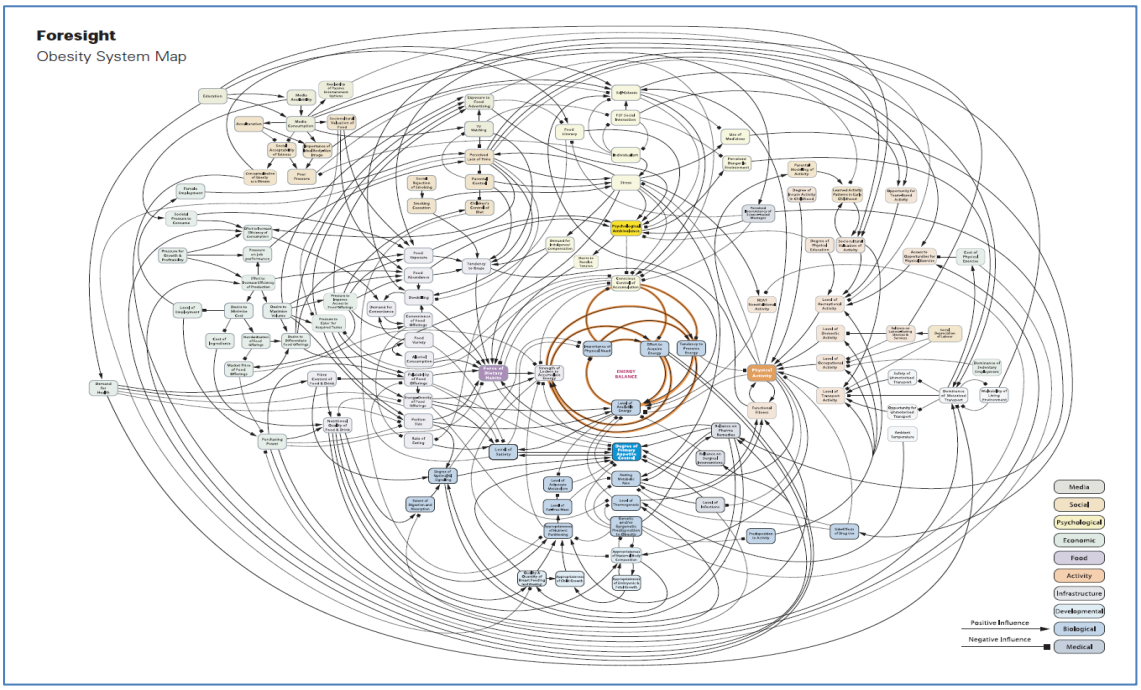
Source: Centre for Disease Control and Prevention 2017

1.2 The Foresight Report

The Foresight Report on Tackling Obesities was published in 2007, commissioned by the Department of Health to take a 40 year forward view on how the UK can respond sustainably to rising levels of obesity. It brings together evidence and expertise from across a wide range of disciplines and from professionals and interested organisations both inside and outside government. The authors of the

Foresight Report on Tackling Obesities constructed a 'system map' for obesity, providing a whole system view of the determinants and interactions of energy balance:
"The system map, together with scientific and other evidence, confirms that energy balance (or imbalance) is determined by a ***complex multifaceted system of determinants (causes)*** *where no single influence dominates."* [2]

Figure 1: Foresight Report Obesity System Map, 2007.



Source: Government Office for Science

The report authors developed five core principles for developing a strategy framework to tackle obesity:

1. *A system-wide approach, redefining the nation's health as a societal and economic issue.*
2. *Higher priority for the prevention of health problems, with clearer leadership, accountability, strategy and management structures.*
3. *Engagement of stakeholders within and outside Government.*
4. *Long-term, sustained interventions.*
5. *Ongoing evaluation and a focus on continuous improvement* [2].

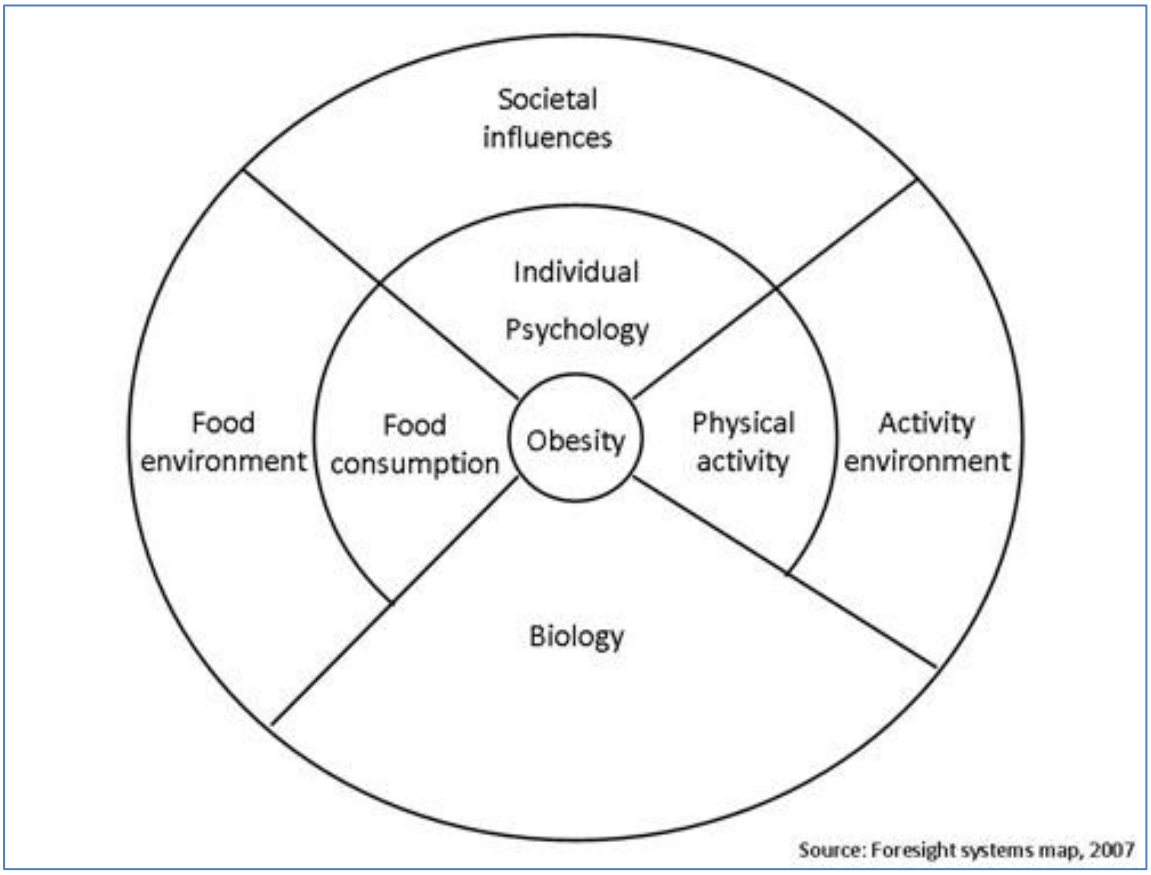
The report clearly outlines that a strategy to tackle obesity needs a **comprehensive portfolio of interventions** targeting a broad set of variables and different levels within the obesity system. It also recognises that each component part of the strategy alone may not create significant impact, but their complementary and reinforcing action is critical to achieving the significant shift required in population obesity trends. [2]

1.3 Scope and Structure of the Joint Strategic Needs Assessment

In order to fully understand the causes and systems in Thurrock, the scope and structure of this JSNA product has been structured in line with the Whole Systems Map, with consideration of the intelligence and evidence base available. The scope and structure of this report therefore looks at the following key components of the system which are outlined in the diagram below (Figure 2); Societal and Community Influences, Individual psychology, Physical Activity and the Activity Environment, Food and the Food Environment. Biology is the only area not covered by the report,

instead focussing on the healthcare and treatment intelligence and evidence base. Early Life experiences and childhood are covered throughout the document, to ensure that it is considered within a whole systems approach.

Figure 2: Obesity Systems Map Diagram, 2007.



Source: Government Office for Science

1.4 National Strategic Picture

Together, Public Health England, the Local Government Association and the Association of Directors of Public Health are exploring how to make greater in-roads into tackling obesity by developing 'whole systems approaches' that act across the local system. As a part of this, Leeds Beckett University has been commissioned to lead a three year programme to explore with LAs and other partners what a Whole Systems Approach may look like on the ground [4].

They have been commissioned to find out how a Local Authority can use its levers, leadership, evidence and relationships with stakeholders and communities to create a more effective, sustainable system-wide approach to tackling obesity. To do this they have selected and are working with four Local Authority pilot areas to answer this question and to test a route map for Local Authorities to follow.

In addition to this, in August 2016, HM Government released a key policy document titled "Childhood Obesity: A Plan for Action" [5]. This key policy document launched the national action plan to significantly reduce the rate of Childhood Obesity in England over the next ten years. Actions include the introduction of a soft drinks levy, making school food healthier, a programme to reduce sugar intake and helping children to get an hour of physical activity every day. It highlights the

complexity of the problem, but also sets out the strategic actions to achieve long-term, sustainable change which is to be achieved through the active engagement of schools, communities, families and individuals. Local Authorities are in an ideal position to support these changes and amplify them to an extent that we see the maximum benefit locally.

1.5 Local Strategic Picture: Thurrock Healthy Weight Strategy 2014/17

The Thurrock Healthy Weight Strategy 2014-17, was produced after an extensive programme of consultation and engagement with community and professional representatives which informed the development and direction for travel of the document. The main areas of focus identified though the consultations were that consultees wanted family approaches and community-based interventions run by community members within local accessible settings. They wanted the activities to be fun, have a non-judgmental ethos and include psychological support as needed. Closer links with schools was suggested and also an exercise referral scheme.

Strategy Deliverables

To enable the strategy to be delivered, a range of objectives were developed to be able to measure achievement against. The main objectives incorporated deliverables such as tackling the obesogenic environment, including working with the planning department and the development of policies and programmes that reflected the needs of Thurrock communities. These would be targeted appropriately to help tackle inequalities in relation to obesity. A check and monitoring group were to be established to ensure effectiveness of delivery. Parks and open spaces were seen as playing an important part in the obesity challenge and also supporting the development and delivery of the Sport and Physical Activity Strategic Action Plan.

Achievement to date

To date there have been some successes against objectives such as;

The Healthy Weight Work stream was a precursor to the Whole Systems Obesity work and comprised of representatives from council departments (including planning and transport) and CVS.

Two community grant programmes were developed, one preventative and administered through Thurrock CVS and the other to deliver Tier 1 and 2 weight management services. These programmes were targeted to address inequalities in health relating to obesity and to appeal to different populations within the Thurrock community. Some of these programmes were family-based and all were held within local accessible community venues and run by community members. The identification of the need for a psychological element was added to the range of tier 2 weight management and this added to the ethos of non-judgmental delivery. Although the services are now undergoing a period of change, with the intention to provide a single point of access, moving forward community programmes will continue to feature as part of the offer, and building on the work of the previous strategy's consultation and engagement.

There has been some interaction with schools through the Beat the Street (BTS) and Thurrock 100 (T100) programmes and through the NCMP data collection. Tier 2 weight management programmes for the 0 to 5 and 16 to 19 age range provided some fun weight management programmes outside of any school provision, delivered through commissioned providers and the school nursing service. The BTS and T100 programmes also engaged with various council departments and community groups.

Public Health have been involved in the Local Sustainable Transport Fund and Active Place Strategy development and have more recently been working strategically with the Environment, Planning and Regeneration agendas. Stronger links have also been forged with Active Essex.

An Exercise on Referral pilot has been commissioned though a provider, which complies with NICE guidelines requiring individuals to have a co-morbidity in addition to obesity to be eligible for the scheme.

Gaps and Next Steps

All of the objectives have been actioned but only partly achieved with further development required. The main component of the strategy around the obesogenic environment has been touched on and relationships have started to be developed with other stakeholders but there is a great deal of further work to be undertaken, locally, regionally and nationally around this agenda.

The linking in with schools is being strengthened with the 0 to 19 pathways and the work that will be undertaken through the Government's National Childhood Obesity Action Plan. The BTS and T100 pilots achieved some success but these were of short duration; there is a need for long term preventative behavioural change initiatives.

A new stakeholder base needs to be identified and a strategic vision and delivery framework developed. This will build on the emerging integrated working that is already being established. The community-led weight management programmes that have been commissioned have had some success and it is envisioned that they will be incorporated into the new Integrated Healthy Lifestyle programme. The Exercise on Referral pilot has been extended.

Conclusion

The strategy has partly achieved many of its objectives and a majority of these can be built on going forward within the work of the new integrated Healthy Lifestyle programme. Further emphasis now needs to be given to a more strategic approach, a wider local, regional and national involvement and an extension of current stakeholder and partnership working to undertake the wider whole system obesity agenda.

1.6 Local Strategic Picture: Thurrock Health and Wellbeing Strategy 2017-21

Reducing obesity and increasing healthy weight in the population is a top health and well-being priority in Thurrock; identifiable as a key objective to achieving the Thurrock Health and Well-being Strategy's Goal 5: *"Healthier for Longer – reducing avoidable ill-health and death"* [6].

Obesity is recognised as a 'wicked' problem which we need to tackle with 'Whole Systems' thinking, in response to the complexity of the issue which has been illustrated by the Foresight report published in 2007.

By understanding and furthermore tackling obesity with a whole systems approach, outcomes to objectives should be supported across the breadth of the whole strategy but also should impact wider across the system on areas such as climate change, congestion, and sustainability. Figure 3 below highlights those objectives in green where a whole systems approach should have a direct and

positive impact and those objectives in yellow where a whole systems obesity approach should have an indirect and positive impact on objectives.

Figure 3: Thurrock Health and Well-being Strategy Goals, with direct and indirect impacts highlighted, 2016-21.

Goals	1. Opportunity for All	2. Healthier Environments	3. Better Emotional Health and Well-being	4. Quality Care Centre around the Person	5. Healthier for Longer
Objectives	1A. All children in Thurrock making good educational progress	2A. Create outdoor places that make it easy to exercise and to be active	3A. Give parents the support they need	4A. Create four integrated healthy living centres	5A. Reduce obesity
	1B. More Thurrock residents in employment, education or training	2B. Develop homes that keep people well and independent	3B. Improve children's emotional health and wellbeing	4B. When services are required, they are organised around the individual	5B. Reduce the proportion of people who smoke
	1C. Fewer teenage pregnancies in Thurrock	2C. Build strong, well connected communities	3C. Reduce social isolation and loneliness	4C. Put people in control of their own care	5C. Significantly improve the identification and management of long term conditions
	1D. Fewer children and adults in poverty	2D. Improve air quality in Thurrock	3D. Improve the identification and treatment of depression, particularly in high risk groups	4D. Provide high quality GP and hospital care to Thurrock	5D. Prevent and treat cancer better

Source: Thurrock Council Health and Wellbeing Strategy.

2. An overview of the population of Thurrock and Excess Weight in Thurrock

Key Points

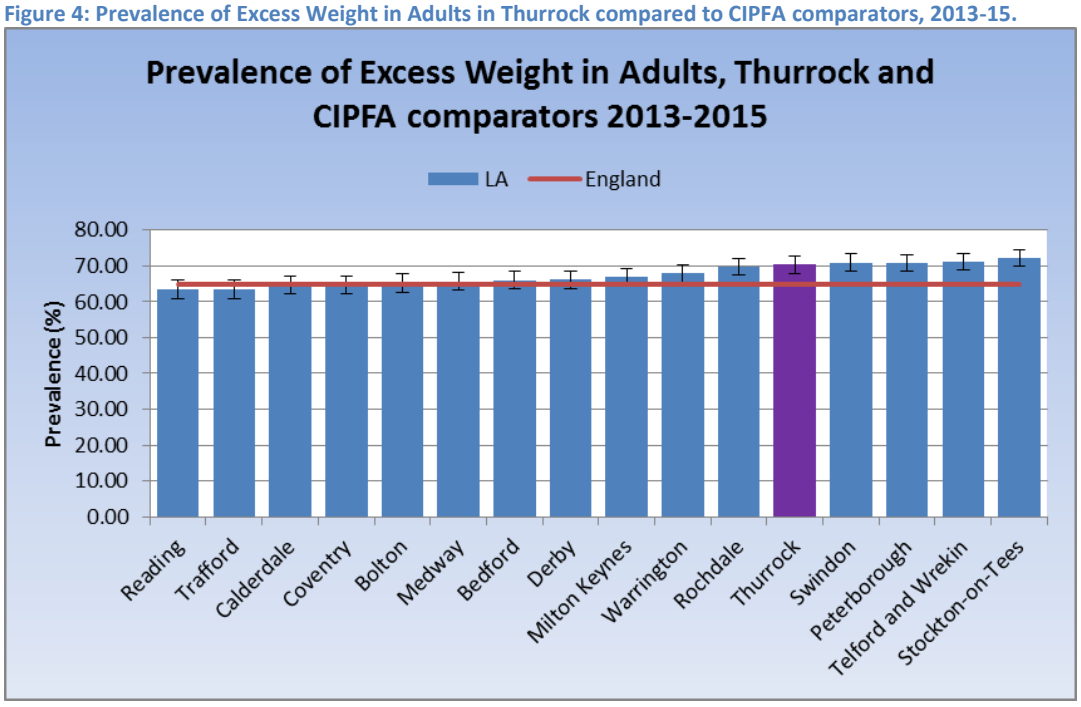
- 70.3% of adults in Thurrock are either overweight or obese adults.
- Reception aged children similar to the national average but increasing.
- 23.9% of year 6 children in Thurrock are obese, which is significantly higher than regional and national levels.
- There is a projected population increase of 11.2% (conservative estimate) by 2026.
- There is a link between deprivation and weight, with Thurrock being ranked 84th out of 152 as most relatively deprived local authority in England (1 most deprived)
- There is a faster than national average increase in ethnic diversity population with the obesity prevalence for England, noting that the obesity levels amongst ethnic groups Black or Black British, Asian or Asian British are significantly higher than the national average.

2.1 Obesity and Overweight in Thurrock

2.1.1 Obesity in Adults in Thurrock

The Public Health Outcomes Framework has an indicator measuring prevalence of excess weight (overweight or obesity) taken from the Active People Survey (i.e. it is a self-reported measure). These are then standardised by Public Health England, as it is documented that when asked, people often under report their weight. The latest data (2013-2015) shows that 70.3% of adults in Thurrock over the age of 16 years are overweight or obese, which is significantly higher than the national average of 64.8%. When comparing Thurrock within its CIPFA comparator group (Thurrock's nearest statistical neighbours), it has the fifth-highest prevalence, with Stockton-On-Tees having the highest prevalence in the group.

Figure 4: Prevalence of Excess Weight in Adults in Thurrock compared to CIPFA comparators, 2013-15.

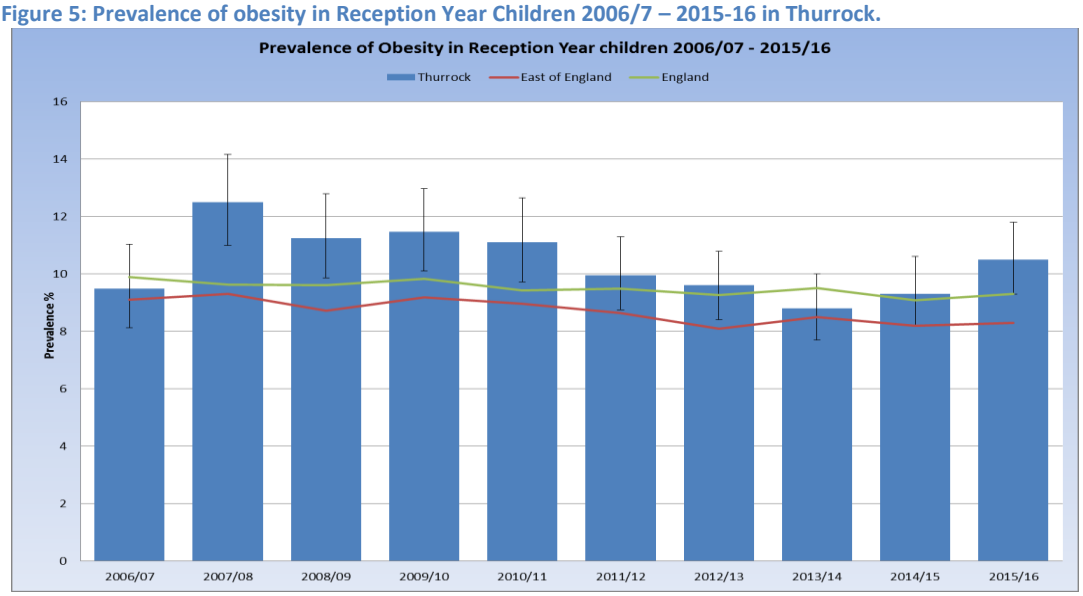


Source: Active People Survey and Public Health England

2.1.2 Obesity in children in Thurrock at age 5 (Reception year)

The obesity rate in Reception pupils in Thurrock was 9.3% in 2014/15, and in 2015/16 was 10.5%. Figure 5 below shows the trend in obesity rates for Thurrock compared to national and regional data, and it can be seen that whilst the Thurrock prevalence has increased, it is still statistically similar to the national average.

Figure 5: Prevalence of obesity in Reception Year Children 2006/7 – 2015-16 in Thurrock.



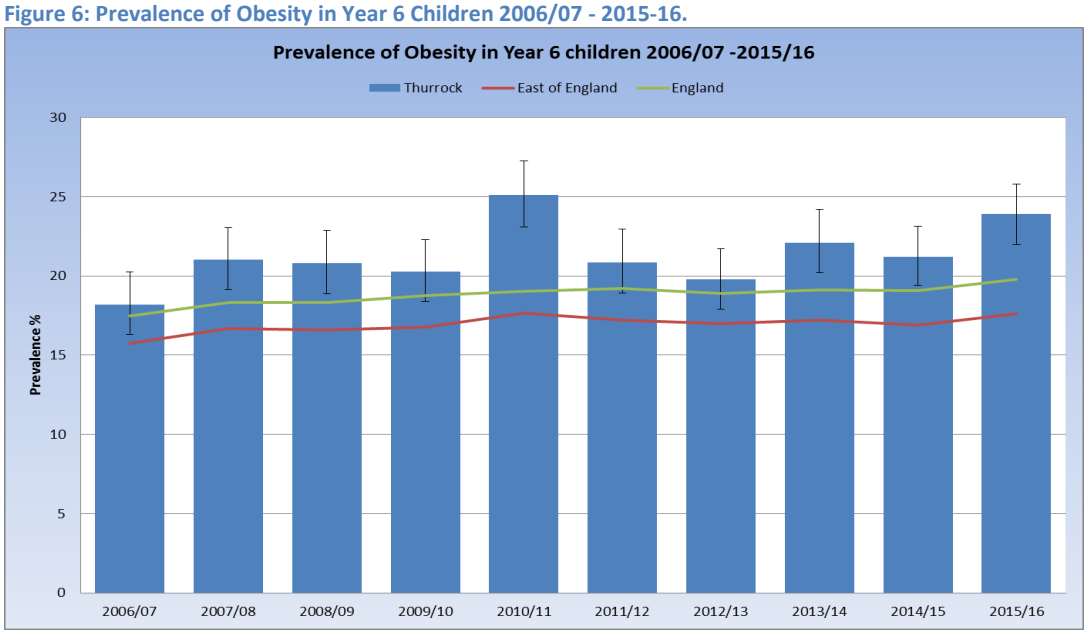
Source: National Child Measurement Programme

2.1.3 Obesity in children in Thurrock at age 10/11 (year 6)

The obesity rate in Year 6 pupils in Thurrock was 21.3% in 2014/15 and increased in 2015/16 to 23.9%.

Figure 6 shows the trend in obesity rates for Thurrock compared to national and regional data, and it can be seen that the Thurrock prevalence remains significantly higher than the regional and national averages.

Figure 6: Prevalence of Obesity in Year 6 Children 2006/07 - 2015-16.



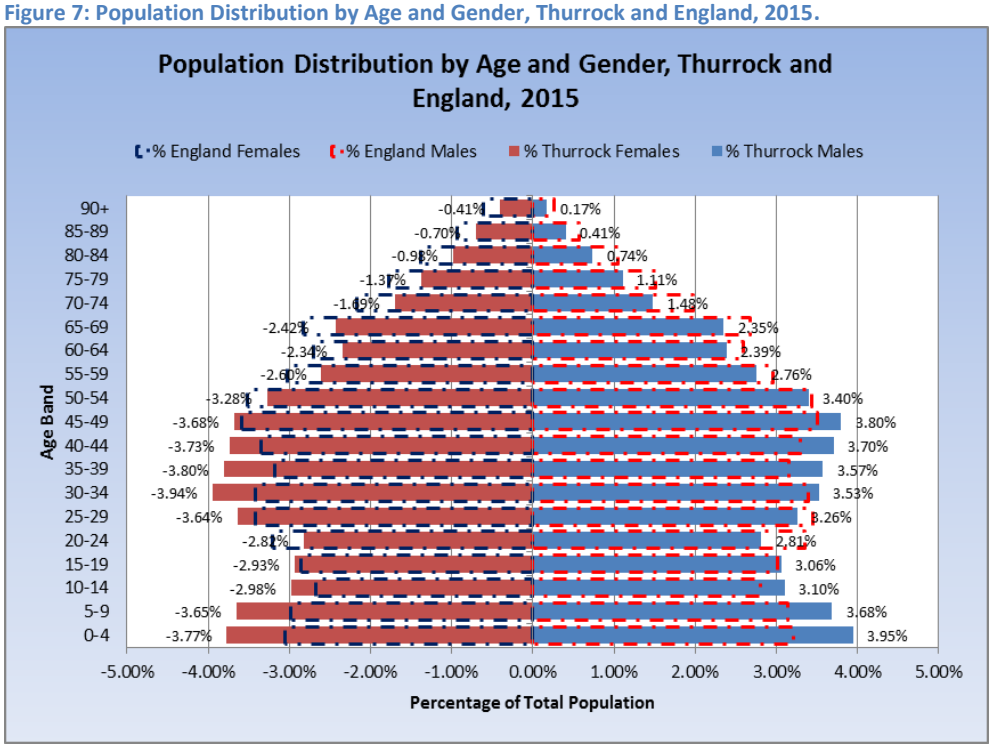
Source: National Child Measurement Programme

2.2 Demography and Obesity in Thurrock

2.2.1 Population Distribution in Thurrock

It is estimated that there were 165,184 people living in Thurrock in 2015. Around 27.1% of this population are children and young people aged less than 20 years. This is a higher proportion of children and young people than the national average of 23.6%. The population pyramid below shows the population distribution for Thurrock in five year age bands compared to national data. It can be seen that proportionally, Thurrock has a higher proportion of both males and females aged 0-4 years and 5-9 years than the national average, but lower proportions of those in the older child age groups. There is also a larger proportion of young-to-middle-aged adults and a smaller proportion of older people than the national average.

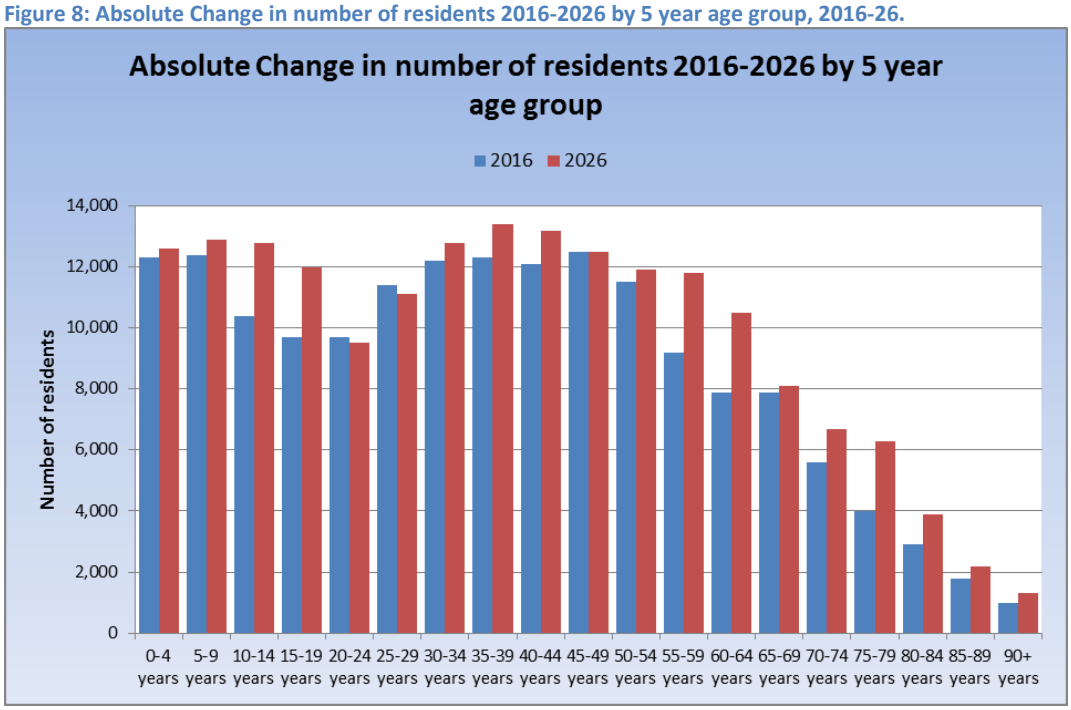
Figure 7: Population Distribution by Age and Gender, Thurrock and England, 2015.



Source: ONS Mid-Year Estimates 2015

The total population of Thurrock is projected to increase by 11.2% between 2016 and 2026, compared to a national estimated increase of 7.1%. The 0-19 year old population in Thurrock is estimated to increase at an even higher rate, with an estimated increase of 12.4% compared to the national increase of 7.1% which is in line with the all-age increase. Figure 8 below depicts the absolute change in numbers of residents by age group. It can be seen that the largest increase in numbers is within the 55-59 & 60-64 age groups [2600 additional in each group], the 10-14 and 15-19 age groups [2400 and 2300 additional] and 75-79 age groups [2300 additional].

Figure 8: Absolute Change in number of residents 2016-2026 by 5 year age group, 2016-26.

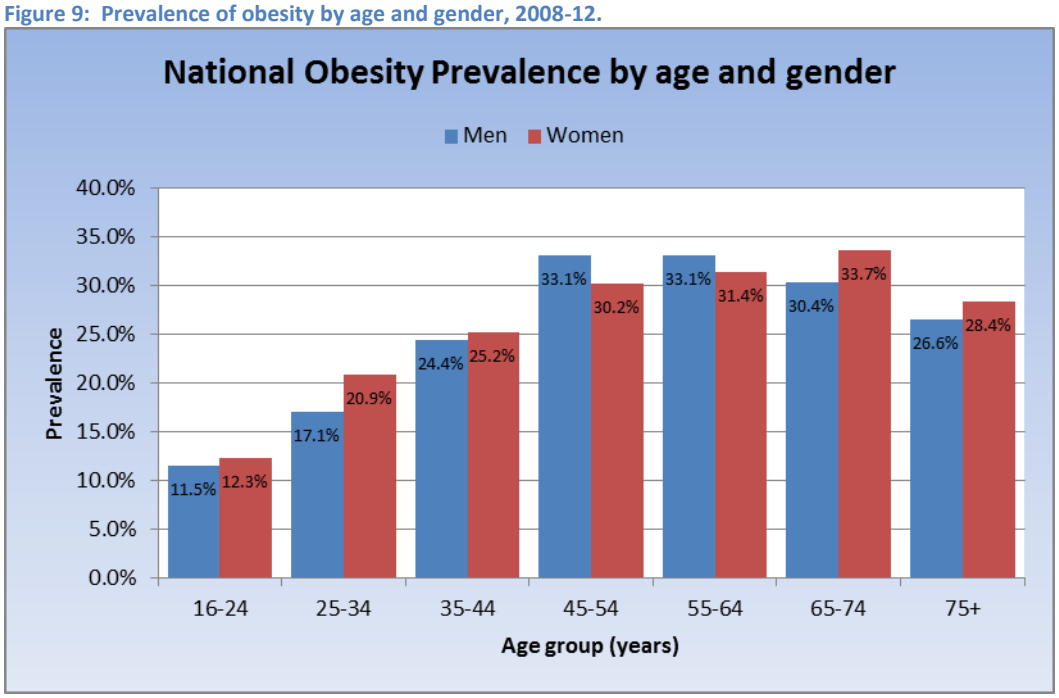


Source: ONS Sub-National Population Projections, 2014

2.2.2 Age, Gender and Obesity

There are differences in obesity prevalence by both age and sex. The prevalence of obesity and overweight changes with age with the prevalence of obesity lowest in the 16-24 year age group, and generally higher in the older age groups among both men and women. There is a decline in prevalence in the oldest age group, which is particularly apparent in men. This pattern has remained consistent over time.

Figure 9: Prevalence of obesity by age and gender, 2008-12.



Source Health Survey for England.

Obesity in Childhood

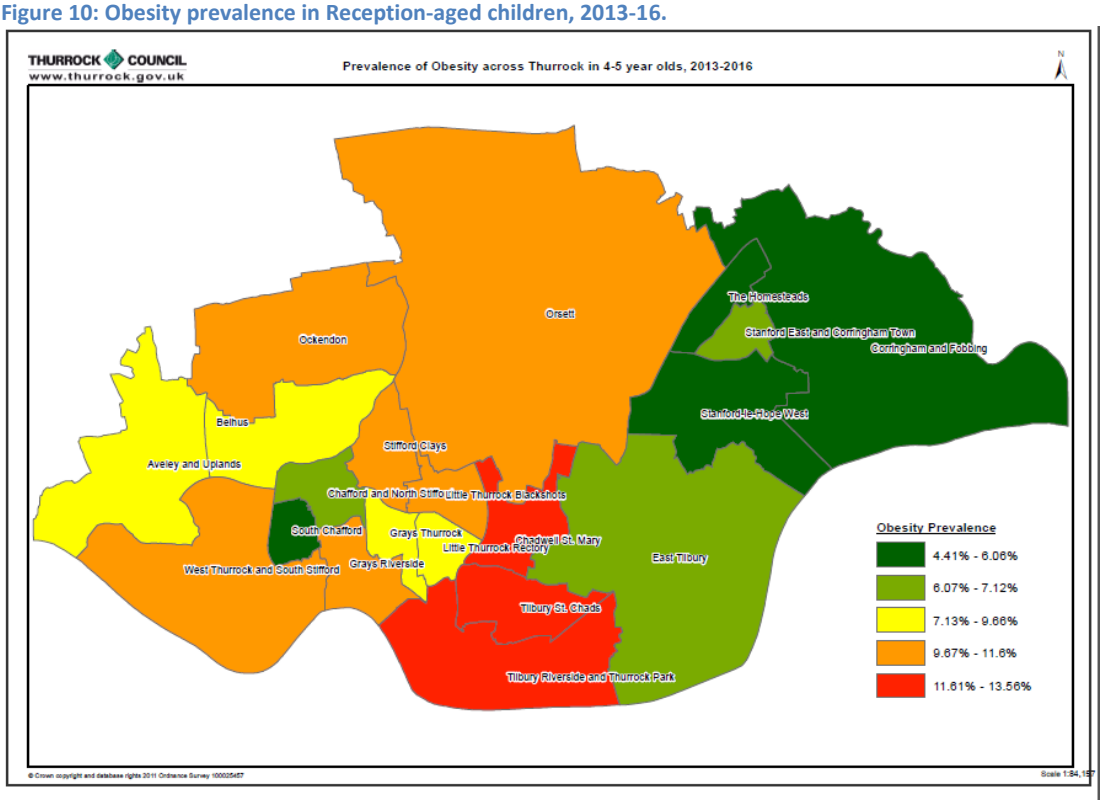
Obesity trends for children are a growing concern with the prevalence of obesity increasing nationally and locally. Obesity in children is measured through the annual Health Survey for England (HSE) and the National Child Measurement Programme (NCMP) implemented in schools since 2005/6. NCMP data measures the height and weight of school children in reception (aged 4-5) and again in year 6 (aged 10-11 years).

Key Facts:

- NCMP data indicates that for children in reception (aged 4-5) the obesity figure has remained fairly immobile from 9.2% in 2006/7 to 10.5% in 2015/16 and Thurrock is statistically similar to regional and national averages.
- The trends in obesity in Year 6 continue to show year-on-year increases but the rates of increase over recent years are slowing. Rates have risen from 18% in 2006/7 to 23.9% in 2015/16. Thurrock remains higher than regional and national averages.
- Gender differences are small; HSE found that in Thurrock 16% of boys and 15% of girls aged 2 – 11 were obese which is similar to NCMP results.
- Obesity prevalence rises with increasing socioeconomic deprivation.
- Childhood obesity is more prevalent in urban, compared with rural areas.
- Obesity is also more prevalent among children from Black, Asian 'mixed' and 'other' minority ethnic groups than among white counterparts.
- Research suggests that 79% of children that are obese in their early teens will remain obese as adults.
- Physical activity levels amongst 5-15 year olds are falling.

There is variation in obesity prevalence within Thurrock. The two maps below depict ward-level obesity using three years' worth of NCMP data, and it can be seen that for reception-aged children, the four wards with the highest obesity prevalence are to the south of the borough [Tilbury and Chadwell St Mary].

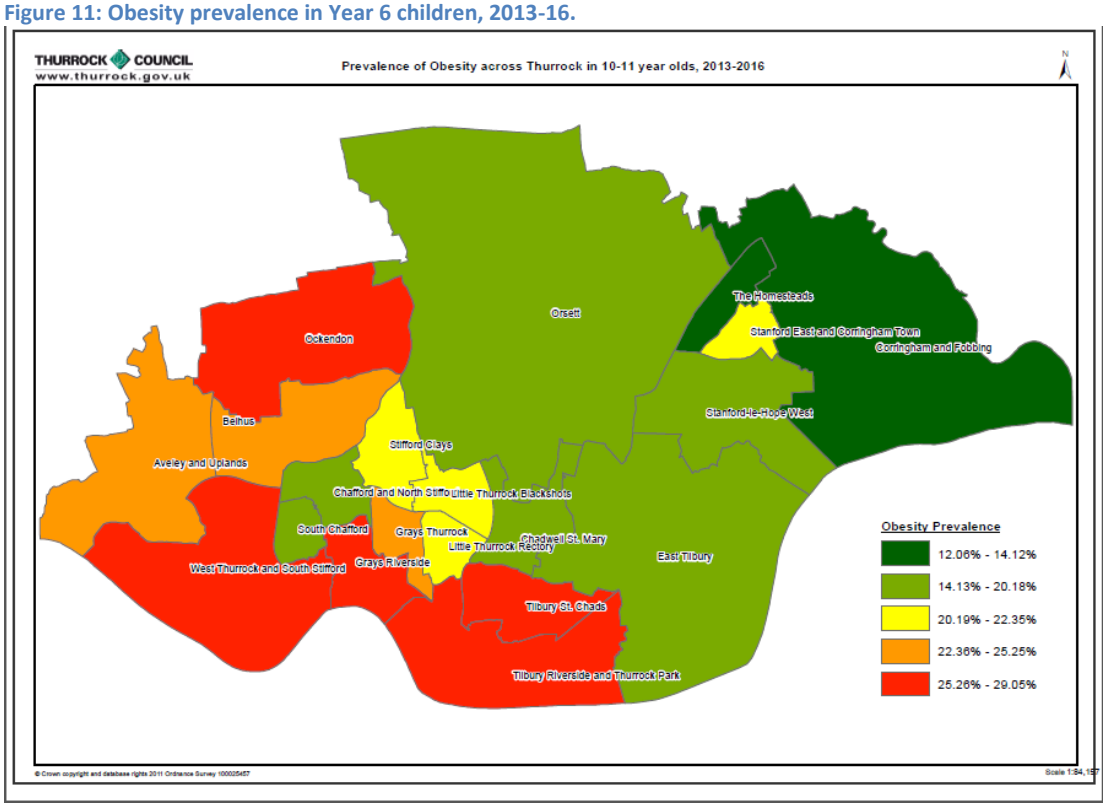
Figure 10: Obesity prevalence in Reception-aged children, 2013-16.



Source: Public Health England

A slightly different picture can be seen for Year 6 obesity, as whilst the Tilbury wards still have amongst the highest prevalence in the borough, Chadwell St Mary has a relatively low Year 6 obesity prevalence compared to its reception prevalence, and instead wards such as Ockendon, Grays Riverside and West Thurrock & South Stifford have higher obesity prevalence rates in Year 6.

Figure 11: Obesity prevalence in Year 6 children, 2013-16.



Source: Public Health England

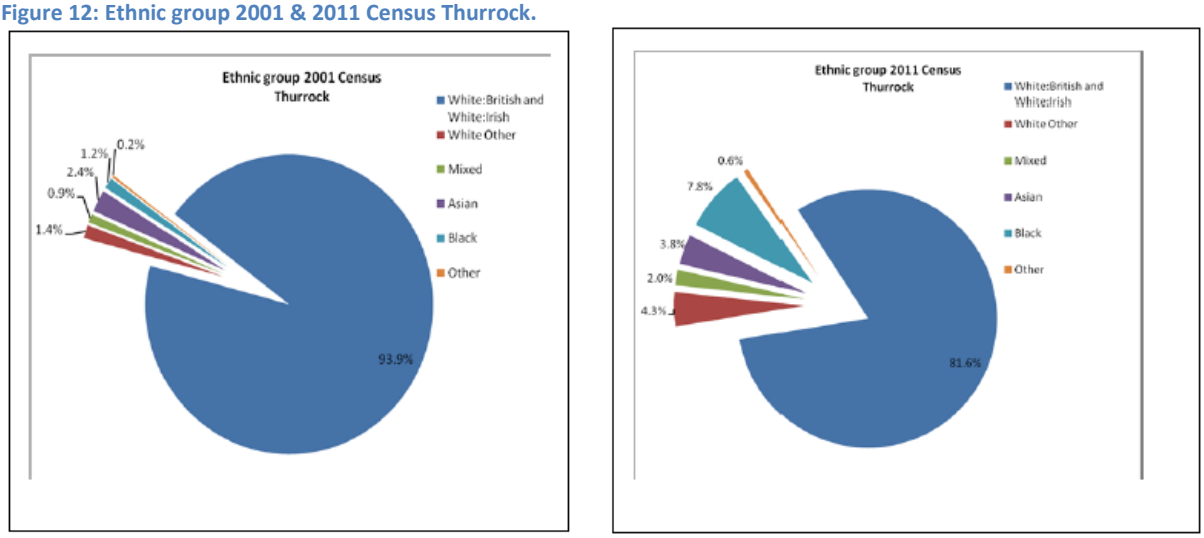
Obesity in children can lead to longer term health consequences and more children than ever are developing type 2 diabetes [7]. Additionally, being overweight during childhood can significantly increase the likelihood of developing cardiovascular risk factors [8] . There is also increased risk from asthma, sleep apnoea and self esteem issues that could result in bullying and stigma [9], sychological disorders such as depression are more likely to occur in obese children.

According to the Chief Medical Officer up to 79% of children who are obese in the early teens will remain obese as adults and children are much more likely to be obese if one or more parent are obese. [10]

2.2.3 Ethnicity and Obesity in Thurrock

The ethnic diversity of Thurrock's population has increased at a faster rate than the national average. The two charts below show the proportions of the main ethnic groups in 2001 and 2011, and it can be seen that the proportion of White British has decreased from 93.9% to 81.6% in the 10 year period. The largest increase is in the Black groups, which have increased from 1.2% to 7.8%.

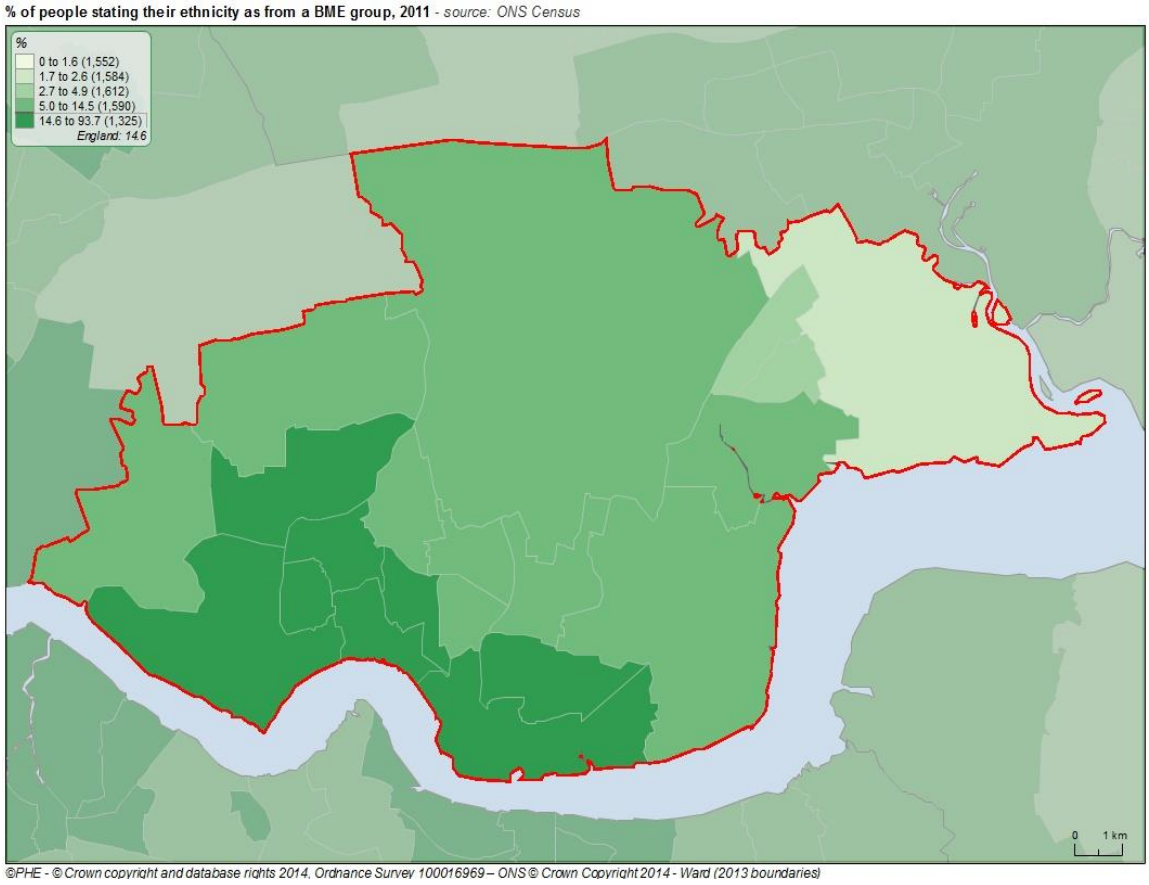
Figure 12: Ethnic group 2001 & 2011 Census Thurrock.



Source: Thurrock Demography JSNA, 2015

Ethnic diversity varies within Thurrock, with areas towards the west of the borough having higher proportions of residents from BME groups than those towards the north and east, with the highest percentage in South Chafford (33.19%) and the lowest in Corringham and Fobbing (2.5%).

Figure 13: % of people stating their ethnicity as from BME group, 2011.



Source: Local Health

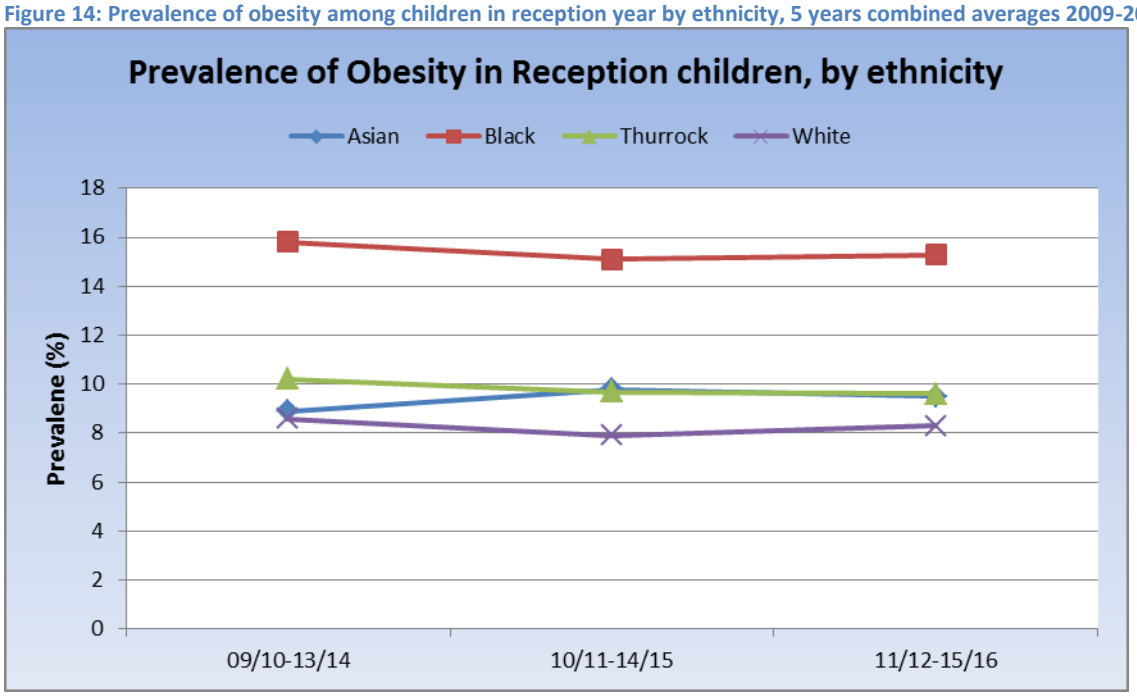
The Health & Social Care Information Centre report 'National Child Measurement Programme England, 2014/15 school year' concluded that for the whole of England obesity prevalence was significantly higher than the national average for children in both school years in the ethnic groups 'Black or Black British', 'Asian or Asian British', 'Any Other Ethnic Group' and 'Mixed'.

There is also significant variation between ethnic groups in Thurrock:

- In Thurrock Reception Year obesity prevalence rates range from 8% in white and Chinese children to 15% in Black/Black British children.
- In Year 6 obesity prevalence rates range from 19% for white and Chinese children to 29% for Black/Black British children.
- Latest CHIMAT figures (2016) indicate that 31.4% of school children in Thurrock are from a minority ethnic group.
- Thurrock's ethnicity obesity percentages are statistically similar to national and regional figures.

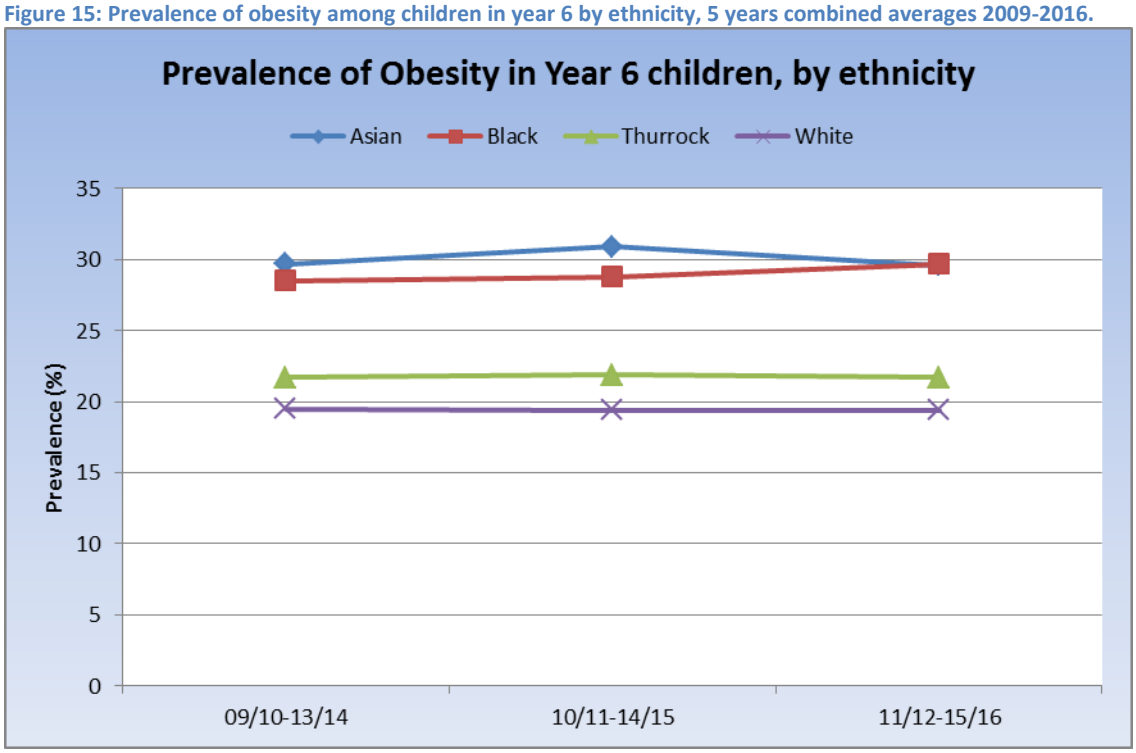
NB: It is worth noting that the validity of current definitions of obesity for non-white ethnic groups continues to be debated and consideration should be given to different body shapes and physiological responses to fat storage (covered in more detail in the adult section). [i] [11]

Figure 14: Prevalence of obesity among children in reception year by ethnicity, 5 years combined averages 2009-2016.



Source: Public Health England NCMP Local Authority Profile
**Data was not available for other ethnicities*

Figure 15: Prevalence of obesity among children in year 6 by ethnicity, 5 years combined averages 2009-2016.



Source: Public Health England NCMP Local Authority Profile
**Data was not available for other ethnicities*

2.2.4 Deprivation and Obesity in Thurrock

Research has shown that children living in poorer areas are more likely to be overweight or obese compared to those living in more affluent areas. Measurements of deprivation can explain up to 60% of the variation in prevalence of obesity between areas [12]. Thurrock is ranked the 84th most relatively deprived local authority in England (out of 152) with 1 being the most deprived.

In 2016 20.4% of children aged 0-16 years lived in poverty in Thurrock. The national figure is 18.6% [13].

Figure 16 and Figure 17 below demonstrate a strong correlation between obesity and deprivation within Thurrock (2011-2016), for both reception year and year 6. It can be seen for example in reception children, the most deprived parts of Thurrock had an obesity prevalence of 11.9% compared to the prevalence in the least deprived areas of 7.3% - meaning obesity in the deprived areas was 63% higher than the least deprived areas. Initiatives, campaigns, programmes and services should be targeted appropriately to reduce the variation in excess weight between the least and most deprived areas and to ensure there is equity of access to these.

Figure 16: Prevalence of Obesity among children in Reception, 5 years data combined - Thurrock, 2011/12-15/16.

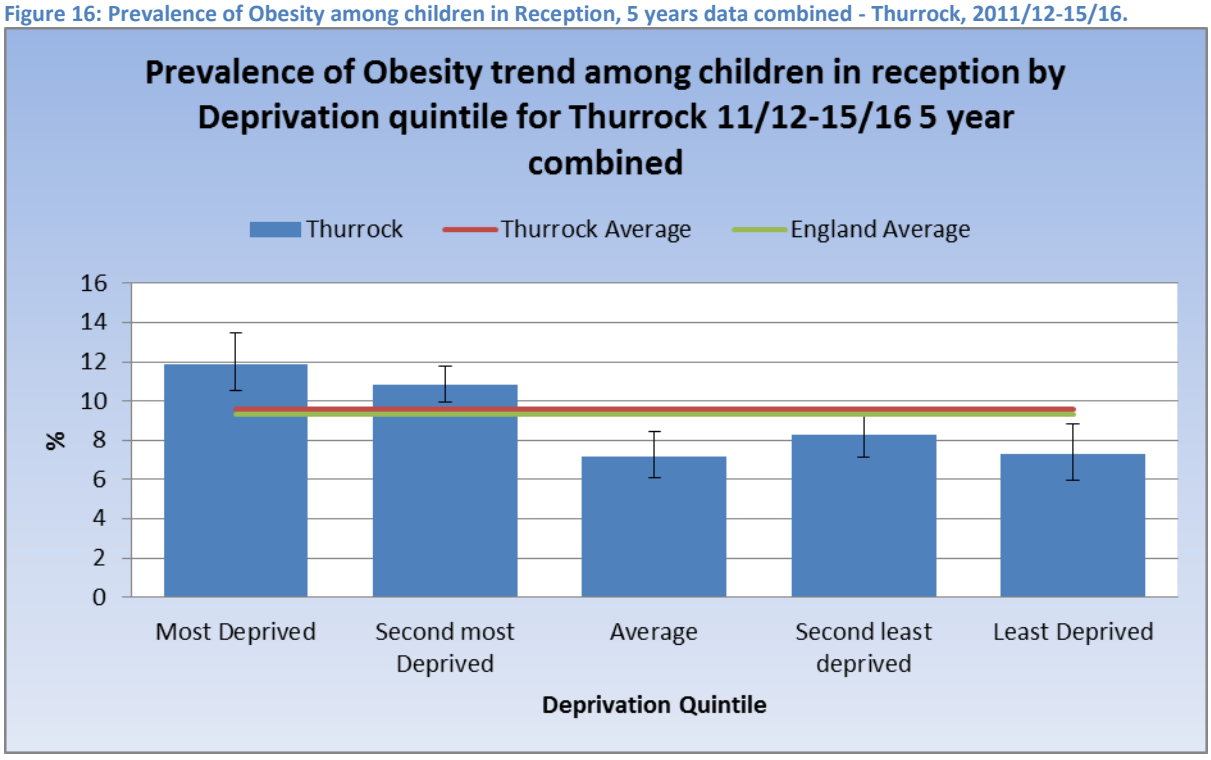
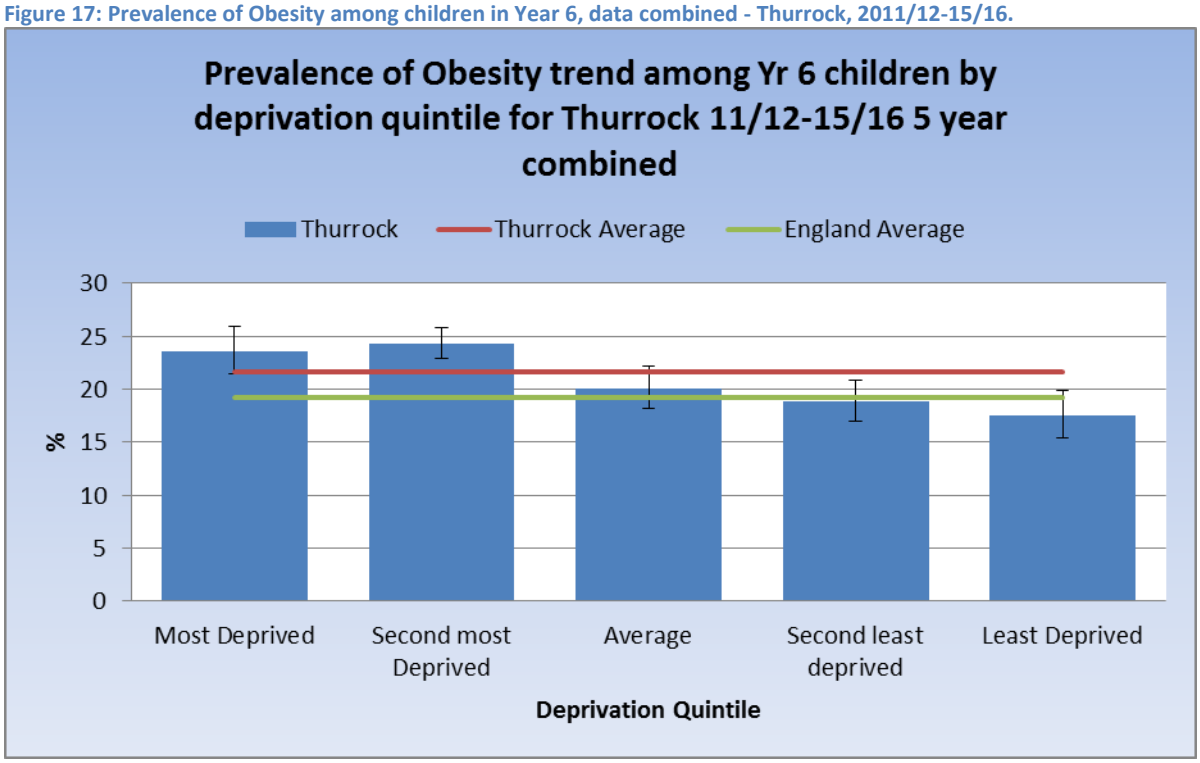


Figure 17: Prevalence of Obesity among children in Year 6, data combined - Thurrock, 2011/12-15/16.



Source fig 16 and 17: Public Health England NCMP Local Authority Profile

2.2.5 Rural and Urban areas and Obesity

The NCMP gives details of prevalence of obesity and overweight children measured by Rural and Urban Area Classification. Obesity prevalence in children was significantly higher in urban areas than in rural areas for each age group.

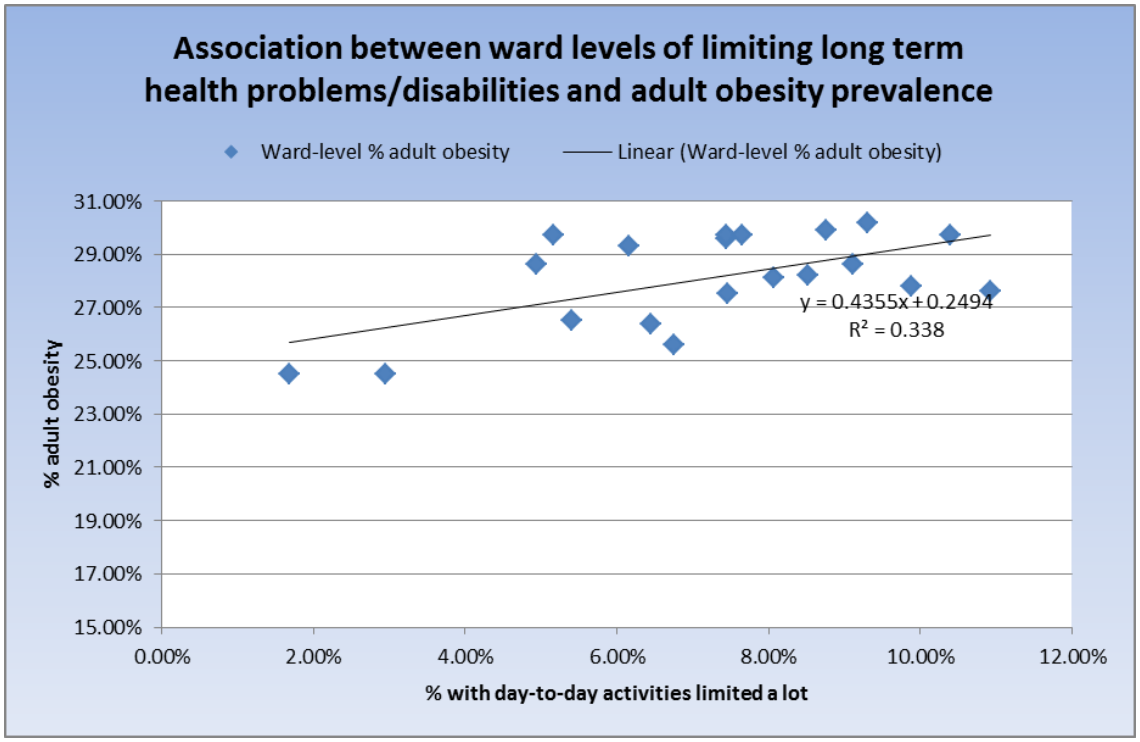
- Obesity prevalence among reception children living in urban areas was 9.4% compared with 8% and 7.2% of those living in town areas and village areas respectively
- Obesity prevalence among year 6 children living in urban areas was 19.9% compared with 16% and 14.8% of those living in town areas and village areas respectively.

The impact of urban sprawl in long-term planning and developments and access to open and green spaces should be considered.

2.2.6 Disability and Obesity

The literature linking levels of disability/morbidity and obesity is mixed in terms of quantifying the exact relationship. It is known that those with higher levels of disability or long term illness often can experience difficulties in keeping active via active transport methods for instance, and can therefore place more reliance on a car.
Figure 18 below considered whether an association could be drawn between areas with higher levels of disability and adult obesity prevalence, and it can be seen that there is an R^2 value of 0.338 – indicating that 33.8% of the variation can be explained by levels of limited activity.

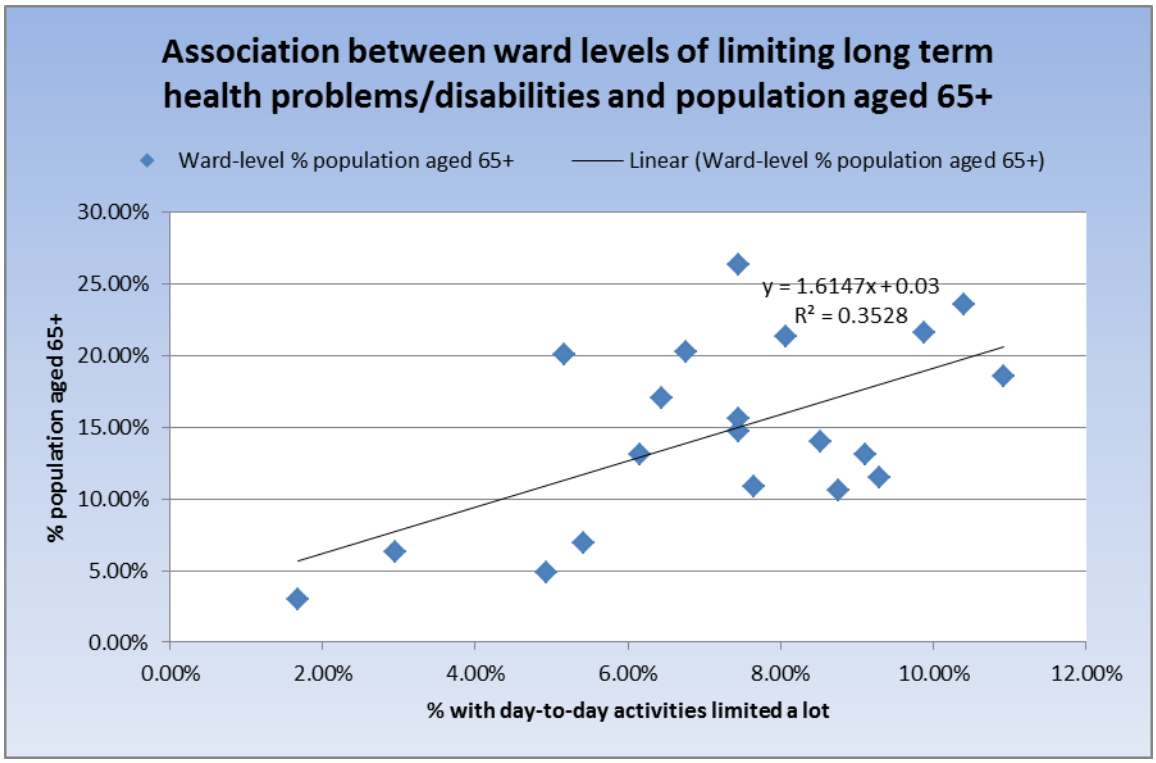
Figure 18: Association in Thurrock wards between limiting long term health problems and adult obesity prevalence, 2011.



Source: Census 2011 and Local Health

However it should also be considered that areas with higher proportions of those with limited activity would also have higher proportions of older people – within Thurrock this association was found to be $R^2 = 0.35$ – i.e. 35.3% of the variation is explained by this. Caution should therefore be applied when drawing any conclusions between these variables.

Figure 19: Association in Thurrock wards between limiting long term health problems and % population aged 65+, 2015.



Source: Census 2011 and Small Area Population Estimates, 2015

2.3 Recommendations

Recommendations

- Considerable focus on preventative measures in childhood should be given as out lined within the Childhood Obesity Strategy as this is key due to the impact on health and well-being during childhood in combination with the impact that this has carrying through to adulthood.
- Focus on, existing and new, prevention opportunities and small behaviours changes that could have a population impact should be at the key ages of increase from the age of 16 through to age 45.
- Strategies to tackle overweight and obesity should give a greater focus on community based methods of engagement with those from deprived geographical areas.
- Strategies to tackle overweight and obesity should consider more relevant methods of engagement and focus with those from Black and Minority Ethnic groups and communities where obesity and excess weight has been observed to be higher.
- Adult social care should consider targeted opportunities towards those with limiting long term health problems and older people.

3. The case to invest in Whole Systems Obesity in Thurrock

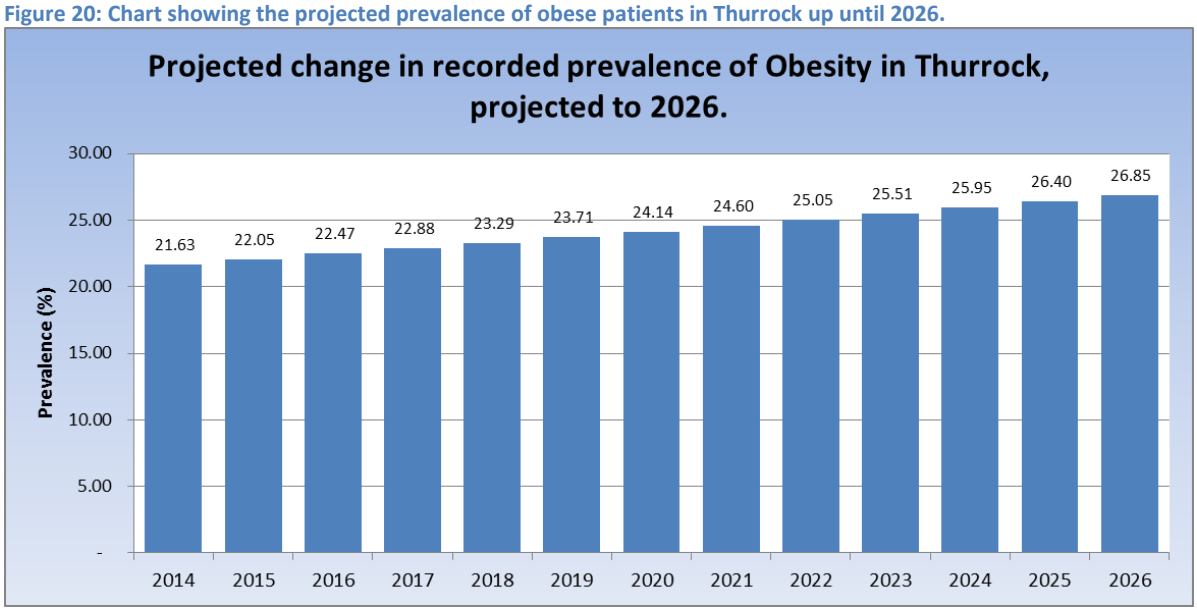
Key Points

- Local modelling predicts that there could be an increase of 33% in obesity numbers by 2026.
- Overall increase in the levels of all clinical long term conditions linked to obesity as a contributing factor.
- Costs for services such as the NHS, Social Care and Primary Care will increase.
- There can be increased employer costs for obese employees; including extra sick days and adjustments to the working environment.

3.1 Population Obesity Projections

Local modelling work undertaken with the support of Norfolk County Council indicates that the number of obese patients is set to increase, not just in line with the population numbers but resulting in an increased prevalence of recorded adult obesity. The graph below shows that prevalence is set to increase to 26.85% by 2026 – equating to an increase of 12,356 more obese patients over 16 years of age in a ten year period.

Figure 20: Chart showing the projected prevalence of obese patients in Thurrock up until 2026.



Source: ONS 2014 Population Projections, NHS Comparators, Foresight Report 2007 and Norfolk County Council

3.2 Obesity and Long-term Conditions

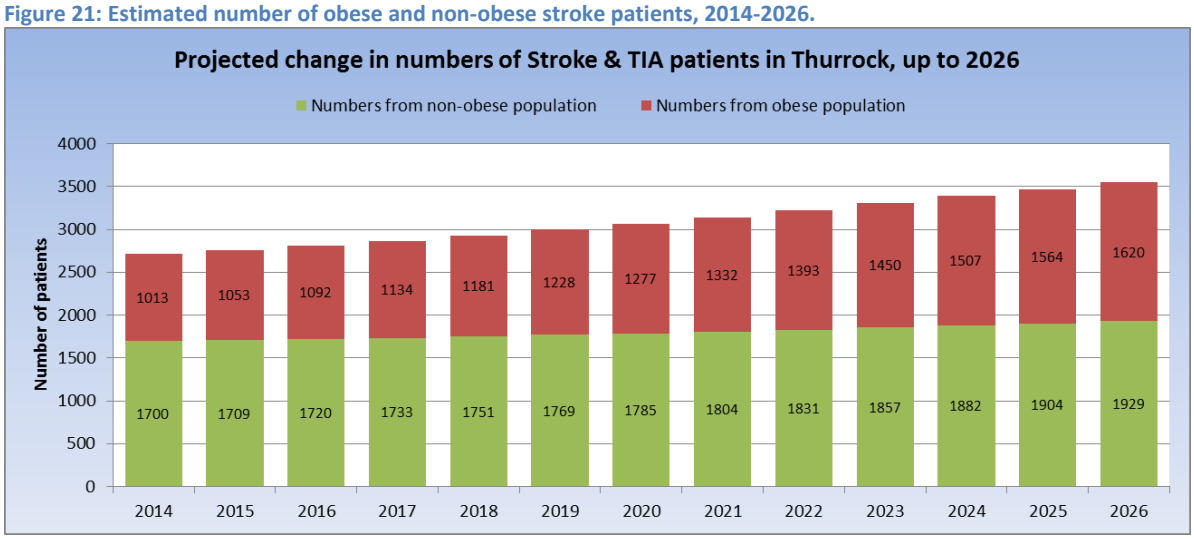
It is well-evidenced that obesity is both a risk factor for development of certain long term conditions, and a contributing factor itself to disease complications and higher service use/cost. For example, an obese woman is 13 times more likely to develop type 2 diabetes than a healthy weight woman [14]. The four figures below (Figure 21, Figure 22, Figure 23 and Figure 24) depict the modelled projected increase in numbers of stroke, CHD, Diabetes and Hypertension patients (estimated based on no

major changes to service provision and population growth) up to 2026, split by those estimated to be obese and non-obese. It can be seen for all four conditions, the steeper increase in patient numbers is in those who are obese.

Stroke

The modelling work estimates that stroke patients are likely to increase by 736 (26.12%) between 2016 and 2026 from 2,812 to 3,548. In 2016, 1,092 stroke patients were estimated to also be obese, which is 39% of all stroke patients. By 2026, 1,620 of the expected 3,548 stroke patients could be obese, which is 46%.

Figure 21: Estimated number of obese and non-obese stroke patients, 2014-2026.

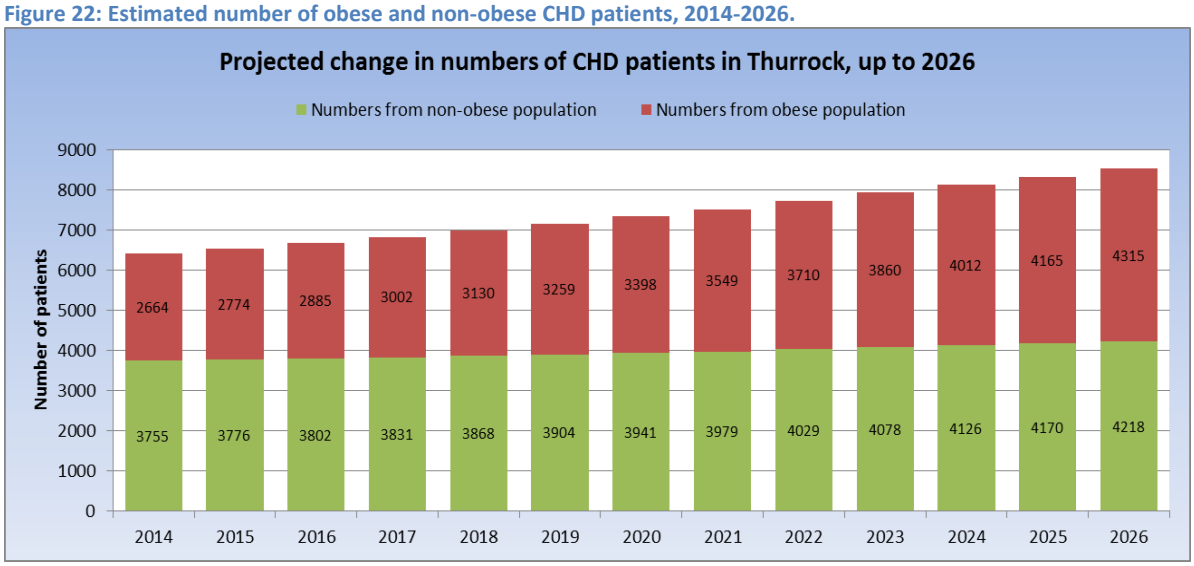


Source: ONS 2014 Population Projections, NHS Comparators, Foresight Report 2007 and Norfolk County Council

CHD

The modelling work estimates that CHD patients are likely to increase by 1,847 (27.6%) between 2016 and 2026 from 6,687 to 8,534. In 2016, 2,885 CHD patients were estimated to also be obese, which is 43% of all CHD patients. By 2026, 4,315 of the expected 8,534 CHD patients could be obese, which is 51%.

Figure 22: Estimated number of obese and non-obese CHD patients, 2014-2026.

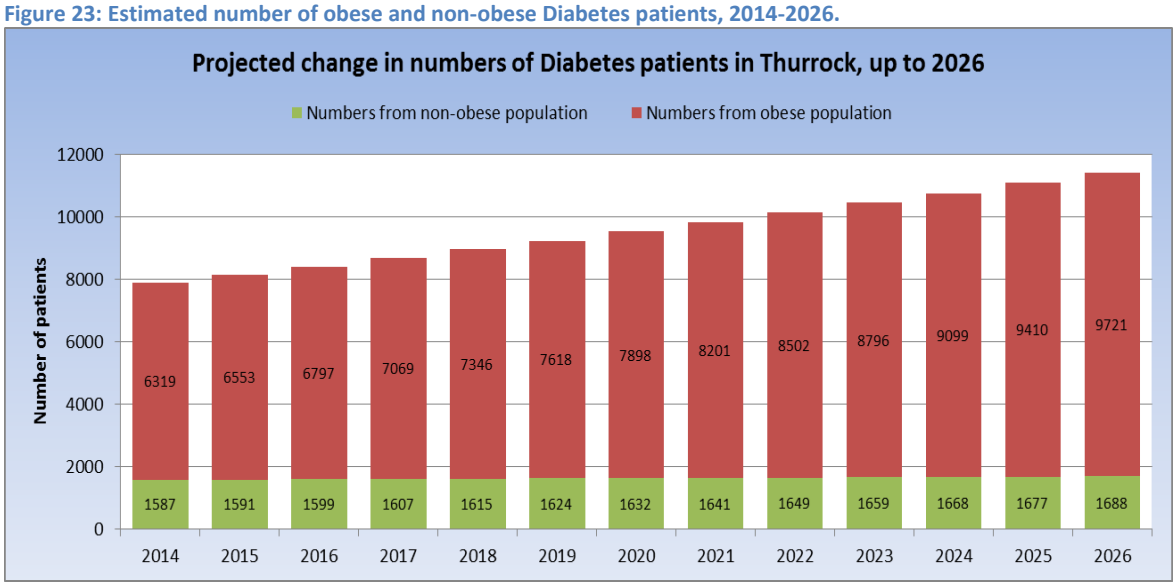


Source: ONS 2014 Population Projections, NHS Comparators, Foresight Report 2007 and Norfolk County Council

Diabetes

The modelling work estimates that Diabetes patients are likely to increase by 3,012 (35.88%) between 2016 and 2026 from 8,396 to 11,408. In 2016, 6,797 Diabetes patients were estimated to also be obese, which is 81% of all Diabetes patients. By 2026, 9,721 of the expected 11,408 Diabetes patients could be obese, which is 85%.

Figure 23: Estimated number of obese and non-obese Diabetes patients, 2014-2026.

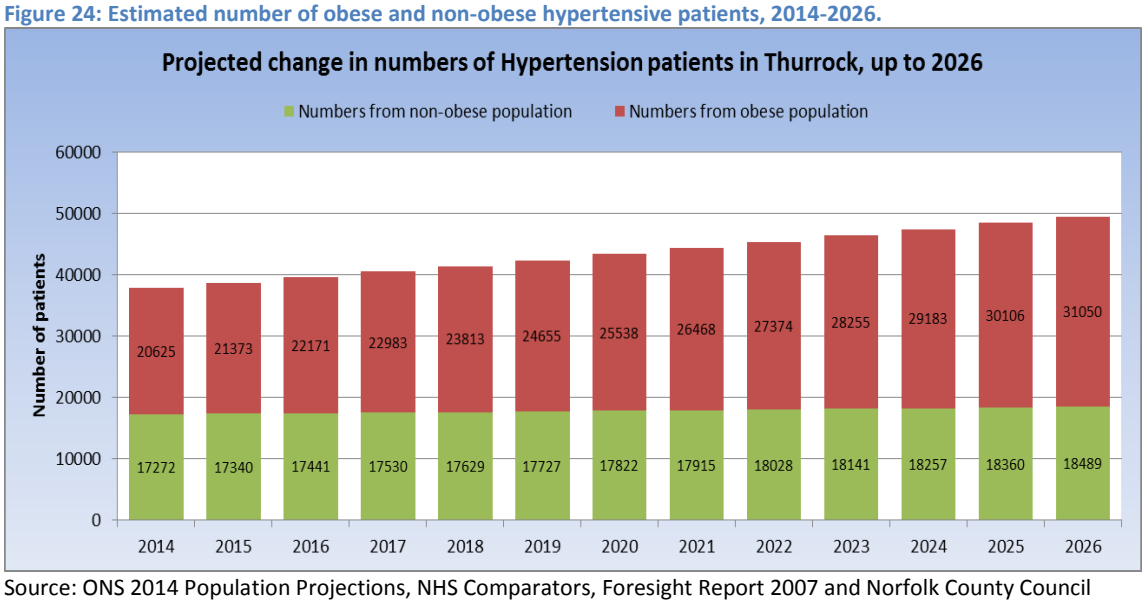


Source: ONS 2014 Population Projections, NHS Comparators, Foresight Report 2007 and Norfolk County Council

Hypertension

The modelling work estimates that hypertension patients are likely to increase by 9,928 (25.06%) between 2016 and 2026 from 39,612 to 49,540. In 2016, 22,171 hypertension patients were estimated to also be obese, which is 56% of all hypertension patients. By 2026, 31,050 of the expected 49,540 hypertension patients could be obese, which is 63%.

Figure 24: Estimated number of obese and non-obese hypertensive patients, 2014-2026.



Source: ONS 2014 Population Projections, NHS Comparators, Foresight Report 2007 and Norfolk County Council

The impact of increased numbers of patients with long term conditions who are also obese will increase the health and social care costs, with obese patients estimated to have approximately 30% higher medical costs than non-obese patients [15]. As the population of obese patient's increases, hospitals need to adapt to accommodate larger patients. Simply providing larger beds and transport devices for use with obese patients is not feasible. Bariatric specialty equipment with high weight capacity and mobility aids are being installed and used for the safety of both patients and healthcare workers. The economic implications of hospitals treating an increasing number of obese patients are extensive. Expanded weight capacity equipment typically costs 25%-100% more than standard items (Hammond, 2013 [16]). In 2015, out of 100 foundation trusts contacted by Sky News under the Freedom of Information Act, around half responded with figures which totalled just under £7m. Reports also showed there were more than 800 ambulances - often costing about £100,000 each - in the UK which have either been designed or adapted to deal with patients weighing more than 50 stone.

Research by Public Health England 2015 [17]also found that severely obese people are over 3 times more likely to require social care than those of a normal weight, with examples of requirements including housing adaptations, carers or provision of appropriate transport and facilities. The same research also cited that obesity reduces life expectancy by an average of 3 years, and severe obesity could reduce life expectancy by an average of 8-10 years.

Using the above assumption that obese patient with a long term condition will have 30% higher medical costs than non-obese LTC patients, applying this to the projected change in obese LTC patients in Thurrock would mean:

Table 3: Estimated additional treatment costs due to obesity in 2021.

Condition	Average treatment cost per person	Average treatment cost per obese person	Additional number of obese patients between 2016 and 2021	Additional projected health costs between 2016 and 2021 due to obesity as a co-morbidity
Stroke	£23,315 (acute & rehab care)	£30,309.50 (acute & rehab care)	240	**£1,678,680** (acute & rehab care)
CHD	£4,956 (Coronary Artery Bypass Graft) £427 (Cardiac Rehab episode) £20 (ACE inhibitors per year)	£6,442.80 (Coronary Artery Bypass Graft) £555.10 (Cardiac Rehab episode) £26 (ACE inhibitors per year)	664	**£987,235.20** (Coronary Artery Bypass Graft) **£85,058.40** (Cardiac Rehab episode) **£3,984** (ACE inhibitors per year)
Diabetes	£1,800-£2,500 per year (inpatient only)	£2,340-£3,250 per year (inpatient only)	1,404	**£758,160-£1,053,000** per year (inpatient only)
Hypertension	£69 per year	£89.70 per year	4,297	£88,947.90 per year

Source: Stroke Association, British Heart Foundation, Diabetes UK, Public Health England and Norfolk County Council methodology

3.3 The Economic Impact of Obesity in Thurrock

In a workplace health briefing for local government (LGB2), NICE [18] reports that for every 1000 employees who work the national average week of 39.1 hours (2011 annual survey of hours and earnings) and are paid the national average hourly wage of £15.52 (NICE business case tool for workplace interventions to promote smoking cessation), obesity in employees equates to more than £126,000 a year in lost productivity. This was on the basis of 26% of adults in England were obese (2010) and the results from the CHAP study which reported that, on average, obese people take 4 extra sick days per year.

Crudely modelling this for Thurrock, using a median hourly wage of £14.28 (NOMIS, 2016) and applying on-costs to the employer at 30%, this could result in up to **£170,343.26 a year in lost productivity** – using a Thurrock adult obesity prevalence of 31%.

The National Obesity Observatory [19] highlights a number of reasons why departments and services involved with workplaces should be concerned about obesity:

- There is significant workplace costs associated with obesity. These could be due to a range of issues including back problems and sleep apnoea
- There may be jobs which obese people find more difficult to do or which are more dangerous due to the associated conditions linked to obesity. For example sleep problems may impact on alertness and may pose a potential danger for employees who drive or operate machinery.
- Individuals may be subject to stigmatisation and discrimination in the workplace – an issue which must be addressed by employers.
- Promoting physical activity and healthy food choices in workplaces helps employees to feel valued.

As well as the direct employment costs there are other wider aspects to consider such as challenging the views held about the lifestyles of residents locally and therefore the productivity and employability of local people, thereby influencing inward investment. Working to tackle the issue of obesity with a wider approach, through the local businesses, may help to help local people fulfil their potential and ensure they are not held back by the consequences of excess weight. NICE guidance demonstrates that the workplace is an effective setting to promoting well-being [20] [21] and local businesses could benefit more widely from improved health and well-being of local employees and residents.

3.4 Recommendations

Recommendations

1. Investment at early stage in prevention which decreases potential long term costs.
2. To work in partnership with local employers to develop a holistic health and wellbeing workplace model.
3. Work with business should be undertaken to understand the links with obesity, mental health and employment.
4. There should be a joined up approach between businesses, healthcare, social care and communities to better understand the opportunities and potential solutions from this approach.

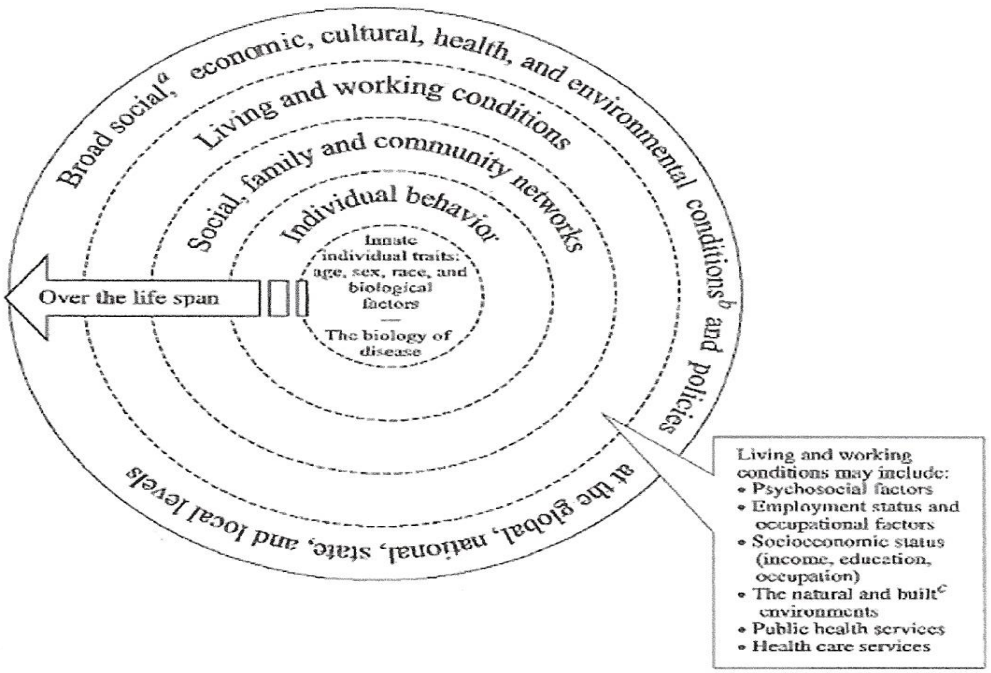
4. Societal and Community Influences on Weight in Thurrock

Key Points

- Socioeconomic factors such as unemployment and perceived status can influence the chances of obesity in individuals.
- Low education attainment and obesity can be linked, with Women more affected than Men
- The NCMP data shows that there is a link between deprivation and childhood obesity; the most deprived 10% of the population being likely to have twice the level of obesity compared to the least.
- There is a correlation between poor housing tenure, environment and obesity through such things as lack of cooking facilities.
- Different cultural and ethnicity factors can influence weight such as, physiological factors and inherited cooking norms
- Family/carer have an influential role in diet and participation in physical activity.
- Media influences can be either positive or negative.
- Social norms can normalise and encourage behaviours that can contribute to obesity

This section discusses the relationship between obesity and health inequalities by exploring the societal and community factors that influence this.

Figure 25: Determinants of Health, 2003.



SOURCE: The Future of the Public's Health (IOM 2003).
NOTES: Adapted from Dahlgren and Whitehead, 1991. The dashed lines between levels of the model denote interaction effects between and among the various levels of health determinants (Worthman, 1999).

The diagram above details how the determinants of health, shown in each circle, can have an influence on an individual's health. An imbalance or absence of these influencing factors can promote the rise in health inequalities. A correlation between an individual's health and their place in society has been proven to affect their wellbeing. This is called the social gradient in health, equating that the less that the individual has of the determinants shown on the model above the worse their health is likely to be. The societal conditions throughout an individual's life including where they are born, early years development, factors such as education opportunities, areas of residence and housing type, employment and the ability to access good health care provision can all have a positive or detrimental effect on an individual's health. These societal and community factors can all have an underlying link to obesity although this is not as easy to establish as the physical reasons for this; an understanding of both the biological and social pathways is needed in order to develop appropriately targeted prevention strategies' [22].

The following sections discuss some of the elements that can have an effect on the rise in obesity in more detail and discusses local data (if available) which might add some insight.

4.1 Parental, Carer and Family Influences

An important risk factor for childhood obesity is having parents who are obese. Children with 2 obese parents are 10 to 12 times more likely to be obese [23] [24]. Weight gain in early childhood (3 to 5 years of age) is also significantly greater among children with overweight or obese parents or among those born of overweight or obese mothers [25]. Also, children of heavier parents have been found to exhibit lower levels of physical activity and have greater preference for high fat foods and lower preference for healthier foods [26] [27].

4.1.1 Parental Influence: Pre-conception and Pregnancy

Poor maternal health, (poor diet and low physical activity levels) have been shown to predispose infants to worse health outcomes in later life. [28]
Nutritional status both before and during pregnancy and early infant feeding have been the subject of a number of recent reviews with a large amount of evidence confirming that obesity is established in the early stages of life, including pre-conception [29].

The mother's obesity before and during pregnancy and fetal exposure to diabetes and hyperglycemia is associated with an increased likelihood of a high birth weight [30] and in turn overweight children are more likely to become overweight or obese adults.

Approximately one in five women present as obese at antenatal booking, with 50% of women at childbearing age who are either overweight or obese. [31]

Interventions should start ideally during pregnancy and continue through infancy and childhood, there is a clear need to target the weight of mothers before pregnancy as this offers the opportunity to not only improve maternal well-being but also a way of tackling childhood obesity levels.

4.1.2 Parent/Family/Carer Influence: Breastfeeding

It is widely known breastfeeding has long term benefits to babies and mothers; low breastfeeding rates are an indicator of health inequality. Research suggests breastfed babies are less likely to be obese in later life. Women who are obese before and during pregnancy are less likely to breastfeed than women of normal weight and the duration will be less. [32]

Improving breastfeeding uptake – results from the evidence review confirm that no one form of intervention has been found to be more effective than another although some reviews suggested peer support was found to be most effective as well as structured support from professionals. There is some evidence that home visiting programmes delivered in the postnatal period can include successful elements to prevent overweight and obesity in children under 3.

The current breastfeeding initiation rate in Thurrock is 71.1%. Table 4 below shows how this compares to national and regional data.

Table 4: Breastfeeding initiation rates 2012/13-2013/14-2014/15.

	Breastfeeding initiation (2012/13)	Breastfeeding initiation (2013/14)	Breastfeeding initiation (2014/15)
Thurrock	69.5	-	71.1
East of England	76	76.7	76.6
England	73.9	73.9	74.3

Source: Department of Health

Table 5 below shows the percentages of babies being breastfed at 6 to 8 weeks in Thurrock, compared to national and regional data.

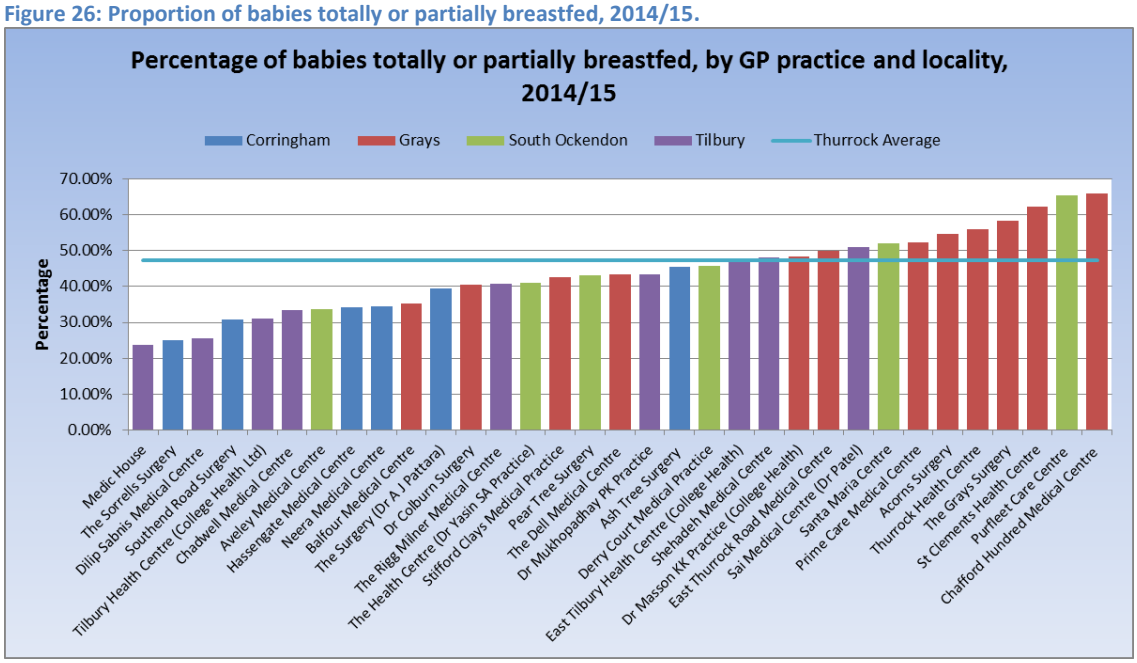
Table 5: Breastfeeding at 6/8 weeks rates, 2012/13-2-13/14-2014/15.

	Breastfeeding prevalence at 6-8 weeks after birth (2012/13)	Breastfeeding prevalence at 6-8 weeks after birth (2013/14)	Breastfeeding prevalence at 6-8 weeks after birth (2014/15)
Thurrock	36.1	49.1	47.3
East of England	46.6	-	-
England	47.2	45.8	43.8

Source: Department of Health

Within Thurrock, we have a level of variation in rates of breastfeeding at 6-8 weeks. This can be seen below at practice level. Note – in order to understand approximate locations of these GP practices, a colour code has been applied to show the Clinical Commissioning Group Locality area of each practice. It can be seen that practice-level breastfeeding prevalence ranges from 23.81% to 65.99%. It appears from Figure 26 below that most of the GP practices with the highest prevalence are within the Grays locality area, and conversely a number of the Tilbury and Corringham locality practices have lower uptake.

Figure 26: Proportion of babies totally or partially breastfed, 2014/15.



Source: NEL CSU

It was hypothesised that deprivation within Thurrock might influence breastfeeding behaviour. Practice-level deprivation was tested against breastfeeding levels within Thurrock; however no association was seen ($R^2 = 0.00003$).

Initiatives to support Breasfeeding should continue to be supported and promoted and health visitors continue to deliver the support needed to encourage breastfeeding and offer infant feeding advice to new parents.

4.1.3 Parent/Family/Carer Influence: Weaning

Evidence reviews suggest further studies are needed to assess the relationship between the types of food given during complementary feeding, timing and childhood BMI to ascertain whether certain foods or nutrients given at certain times have an impact on growth. Given the evidence linking early (<4 months) introduction of complementary feeding and later higher BMI, education intervention initiatives, such as the *Start4Life* initiative [33] , and the role of health visitors can help parents to understand the importance of avoiding inappropriately early introduction of complementary foods.

There is some evidence that early complementary feeding (*i.e.* before 4 months) poses a risk for later high body mass index (BMI), outlined in a recent systematic review of the topic [34].

Work to support parents to correctly feed their infants and children need to be culturally appropriate and offer clear consistent advice. Studies suggest future investment and education in this area is proven to be worthwhile in preventing short-term dietary deficiencies and preventing any future obesity-related ill health.

Closer working with Children's Centres to develop ways they can further impact on good nutrition and obesity is recommended.

4.1.4 Parent/Family/Carer Influence: Food choices/ physical activity in childhood

Children and young people's food choices are greatly influenced by the family and social environment that they live in. It has been identified that, "Obesity in one or both parents probably influences the risk of obesity in their offspring because of shared genes or environmental factors within families", [35]. While schools play a part in influencing behaviour the family setting is where the main food choices will be made and 'Research has shown parents with 'poor eating habits often have children with poor eating habits [36].

The type of foods that are purchased and prepared can be influenced by the socioeconomic status of parents as well as their cultural values and their life skills, time available and knowledge of nutrition and cooking. The portion sizes and how the environment in which the food is eaten is presented are also instigated by the food provider. 'Mealtime structure includes social and physical characteristics of mealtimes including whether families eat together, TV viewing during meals and the source of food (e.g. restaurants, schools), 2005 [37].
Access to shops that sell, reasonably priced, healthy options is often an issue with 'buy one get one free' offers that can lead to less nutritional value meals being provided with substance rather than quality being the offer.

Physical activity can also be below the recommended daily amount. Within a family dynamic where sport and activity are not routinely part of the parent's/ carers activities there will be little inclination to encourage the children to be physically active. The rise in obesity has also been linked to increased online and television usage. 'Studies linking the convergence of these two trends have demonstrated that high levels of TV use are significantly associated with child overweight.' [38].

4.1.5 Family/Parent/Carer Influence on Adolescents

Obesity prevalence in adolescents is increasing. Risk factors include poor diet, physical inactivity and sedentary behaviour. Evidence suggests that parental influences such as parental lifestyle strongly influence behaviours and attitudes within these groups, especially the positive impact of any authoritative parenting style on healthy behaviours (although the evidence is more compelling for diet than for PA and sedentary behaviour).

Adolescence is recognised as an important life stage during which habits formed may shape lifestyles and disease risk in later life.

4.2 Social Norms

4.2.1 Social norms

As described by Higgs in 2015 [39], Social norms are implicit codes of conduct that provide a guide to appropriate action. When in social, community and cultural situations it is easy to adapt behaviour to the relevant norm, this is called the Social Influence Hypothesis [40].
Eating patterns and physical activity levels can be influenced by people we relate to and set the social judgements of the environment we are placed in. This type of social modelling can have a positive or negative effect on obesity dependent on the subconscious messages being received. Social contacts of individuals directly or indirectly influence obesity-related behaviours and the social network structure therefore shapes who becomes obese [41].
All community settings including schools have a big role to play in encouraging a positive health enhancing environment with the opportunity to provide nutrition and physical activity messages

through their school culture and daily activities. Schools cannot solve the obesity epidemic on their own, but it is unlikely to be halted without strong school-based policies and programs [42].

Thurrock has an opportunity through the Whole Systems Obesity approach to work with policy makers and local communities to start to undertake a conscious shift towards a positive healthy eating norm. With more socioeconomically deprived areas also being identified as those with less physically active communities there are opportunities within the development of new and existing communities to ensure that any perceived barriers are eliminated and that being physically active is seen as part of everyday life.

4.2.2 Cultural norms, ethnicity and links to obesity

There are understood to be some links between ethnicity and obesity, although it is also noted that some black and minority ethnic diets are healthier than those of their white counterparts and there is also a variation between and within different ethnics groups as well [43].

Factors that may have an influence on obesity levels within these groups can be associated with socioeconomic status as some minority ethnic groups often have lower education attainment, are more at risk of unemployment or low paid employment and will live in more deprived communities and be living in poverty. Some further factors may be around religious dietary restrictions, health status, food beliefs, cultural patterns and customs [44].

Physical activity can also be restricted for some groups through barriers such as mixed gender facilities, perceived or real fear of accessing physical activity venues safely and also cultural norms to the dis-benefits and unfemininity of exercise. [45] There is also a concern around obesity related stigma combined with other socioeconomic problems that may lead to discrimination [46].

There are also physiological differences between ethnic minority groups such as differences in fat storage which contributes to these. Some of these differences will also be noted dependent on which measure is used to identify obesity e.g. BMI, waist-to-hip ratio or waist circumference. When using a waist measurement, Black African women appear have the highest obesity, but when using a waist to hip ratio it is then seen as Bangladeshi women. Using either measure on Asian men and women indicates that they have the lowest obesity levels. There are also variations in perceptions of body image and self-esteem linked to obesity between cultures with obesity being seen as a sign of affluence for some [47].

Lack of skills around cooking foods other than their cultural dishes, education around healthier ingredients and access to fast foods is also highlighted as factor in rising obesity levels. Age and generation are a factor around diet change [43]. With the diverse population within Thurrock showing a steady increase (please see Demographics 2.2) there will be a need for greater understanding of the obesity challenges within these populations. Preventative and weight management interventions should consider how they can be targeted towards individuals from particular BME groups providing equity of access to these initiatives.
Thurrock's data demonstrates levels of higher obesity as deprivation increases. It is also demonstrated that all ethnic groups show an increase in the proportion of obese children in Year 6, particularly within the black ethnic group which records the highest proportion of obese children.

Public health has previously funded children's healthy weight initiatives aimed specifically at these target groups. Details of these projects are outlined below:

Pro-sports

During 2015-16 a grant funded project was awarded whereby there were 6 weekly multi sports sessions in nurseries, children's centres and community groups, including a range of sports and skills, improving school readiness.

Nutrition Advice for Health

Regular weekly sessions featuring cookery demonstrations and workshops for families, incorporating nutritional education advice and portion control for BME groups. The sessions included a personalised weight loss plan with regular weekly weigh in and support sessions featuring cookery demonstrations and workshops.

Consideration should be given to supporting the development of community healthy weight initiatives going forward.

4.2.3 Alcohol and Obesity

There is a multifaceted association between obesity and alcohol consumption, heavily influenced by individual characteristics including body weight, diet, genetic factors, gender and physical activity levels as well as frequency, pattern, amount of consumption and types of drinks consumed.

A survey carried out by Alcohol Concern found that many people are unaware how many calories they are consuming in the form of alcoholic drinks, and they often fail to include them in their assessment of daily calorie consumption [48]; [49].

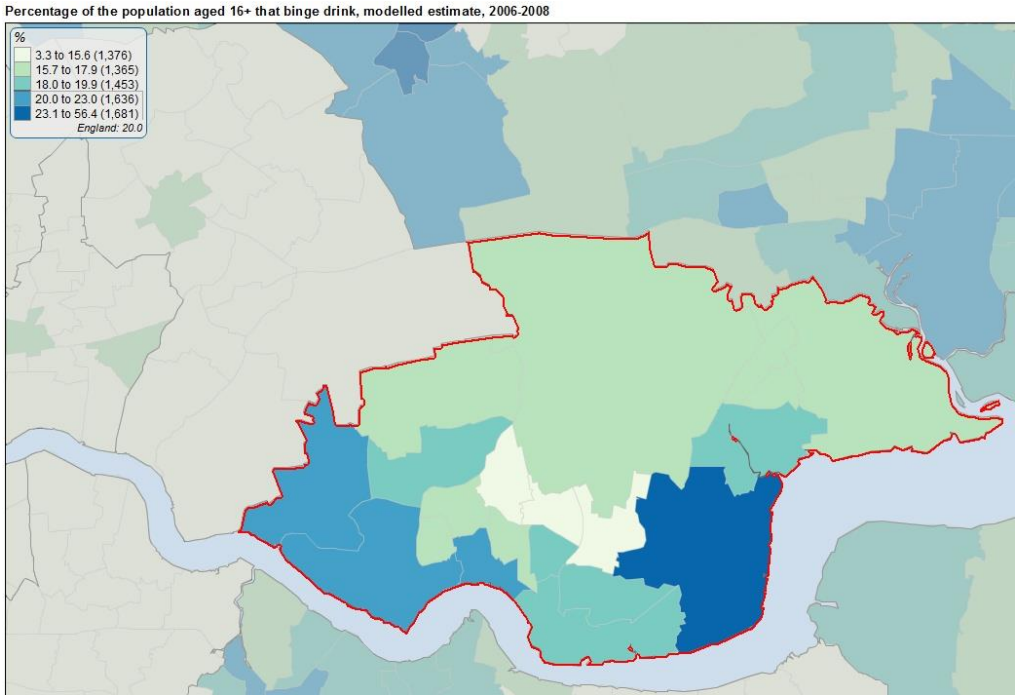
Research studies have shown that heavy drinkers are at higher risk of obesity than moderate drinkers. For example, findings from the British Regional Heart Study, a prospective cohort study of British men, reported that heavy drinkers aged 40–59 had the highest prevalence of weight gain and obesity at five year follow-up [50]. Further results from the same study also found heavy drinking to be associated with increased weight gain in men aged 60–79. Similar results were found following analysis of data from the National Health and Nutrition Examination Survey (NHANES) of adults in the United States. Researchers found that the odds of overweight and obesity were significantly higher among binge drinkers and/or heavy drinkers (consuming four or more drinks per day) than among those who consumed the same amount of alcohol over multiple sessions [51]; [52].

Gender appears to influence the relationship between obesity and alcohol consumption. For example, beer consumption was associated with waist circumference gain in men but not in women in the European Prospective Investigation into Cancer and Nutrition (EPIC) study [53]. Findings from two prospective cohort studies in the US reported an inverse relationship between alcohol intake and BMI in women, compared to no relationship in men [54]. It has been suggested that this difference between sexes may be an indirect consequence of habitual drink choice. Beer may be more favoured by men and the additional energy derived from the carbohydrate in beer may enhance the risk of weight gain. In contrast wine-drinkers would consume less energy overall per unit of alcohol [55].

Overall, the majority of cross-sectional studies since 2005 have demonstrated that frequent light to moderate alcohol intake does not seem to be associated with obesity risk. Heavy drinking and binge drinking, however, are more likely to carry such an association with excess body weight [56]; [52]; [57]; [58]; [59]; [60]. Alcohol intake may also promote overweight and higher body fat percentage in

adolescents or older adults [61]; [62]; [63]. These studies are limited in their ability to demonstrate cause-and-effect relationships or changes in weight status over time.
The map below shows estimates of binge drinking activity within Thurrock, and it can be seen that the highest estimated proportion of binge drinkers is in East Tilbury (24.5%), whilst areas such as Little Thurrock Rectory have the lowest (14.5%).

Figure 27: Binge drinking activity in Thurrock, 2006-2008.



Source: Local Health

In Thurrock, an association was not found between the wards with highest estimates of binge drinking activity, and the wards with highest estimates of adult obesity (R2 = 0.082). This is likely to be due to the methodological constraints in calculating the binge drinking estimates, and the presence of other confounding factor.

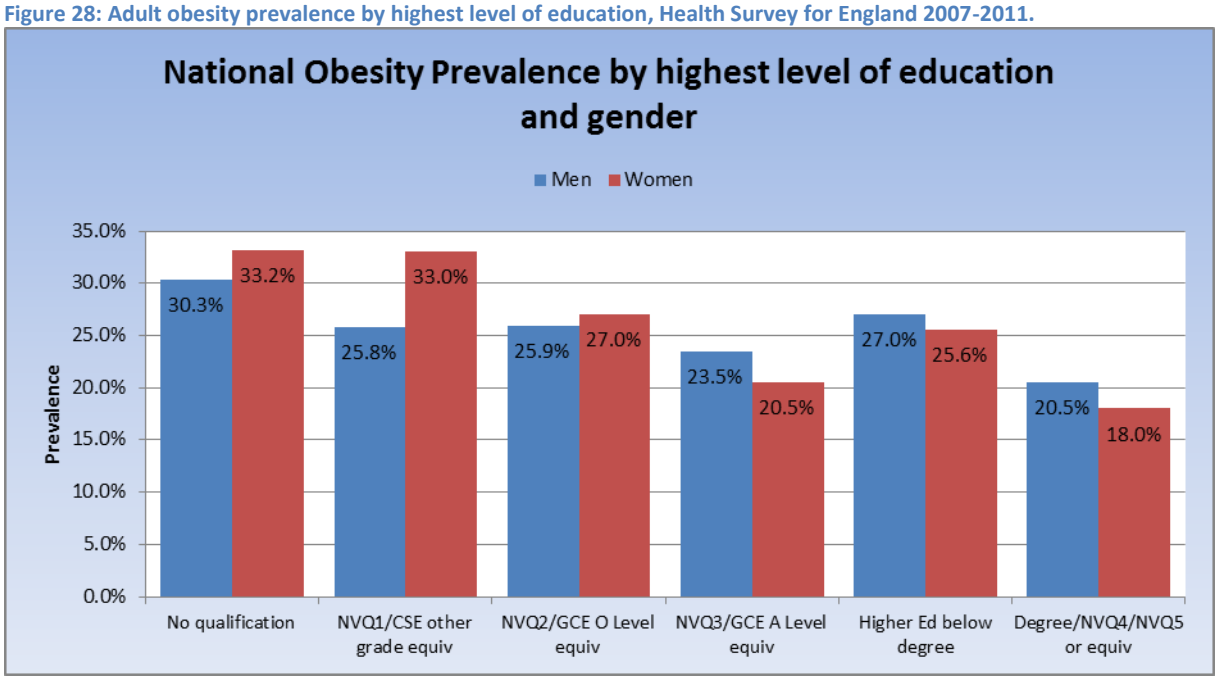
4.3 Education and Obesity

4.3.1 Education Attainment and Obesity

Adults

Education attainment can have an effect on obesity with people who have a higher level of education being seen as less likely to be obese, and those with the lower attainment levels showing as more likely to be obese [64]. Obesity is also found to be disproportionately high in economically disadvantaged women [65].

Figure 28: Adult obesity prevalence by highest level of education, Health Survey for England 2007-2011.



Source: Health Survey for England

We know that there is a correlation between obesity and educational attainment [66] and also discussed in the Foresight report (2007) [2] with obesity prevalence decreasing with increasing levels of educational attainment.

Children

A link between educational attainment and childhood obesity is harder to identify, as educational attainment can be affected by deprivation. The charts in section 2.2.4 show that obesity prevalence is higher amongst children in more deprived areas.

Public Health works with Thurrock schools to support increasing educational attainment through:

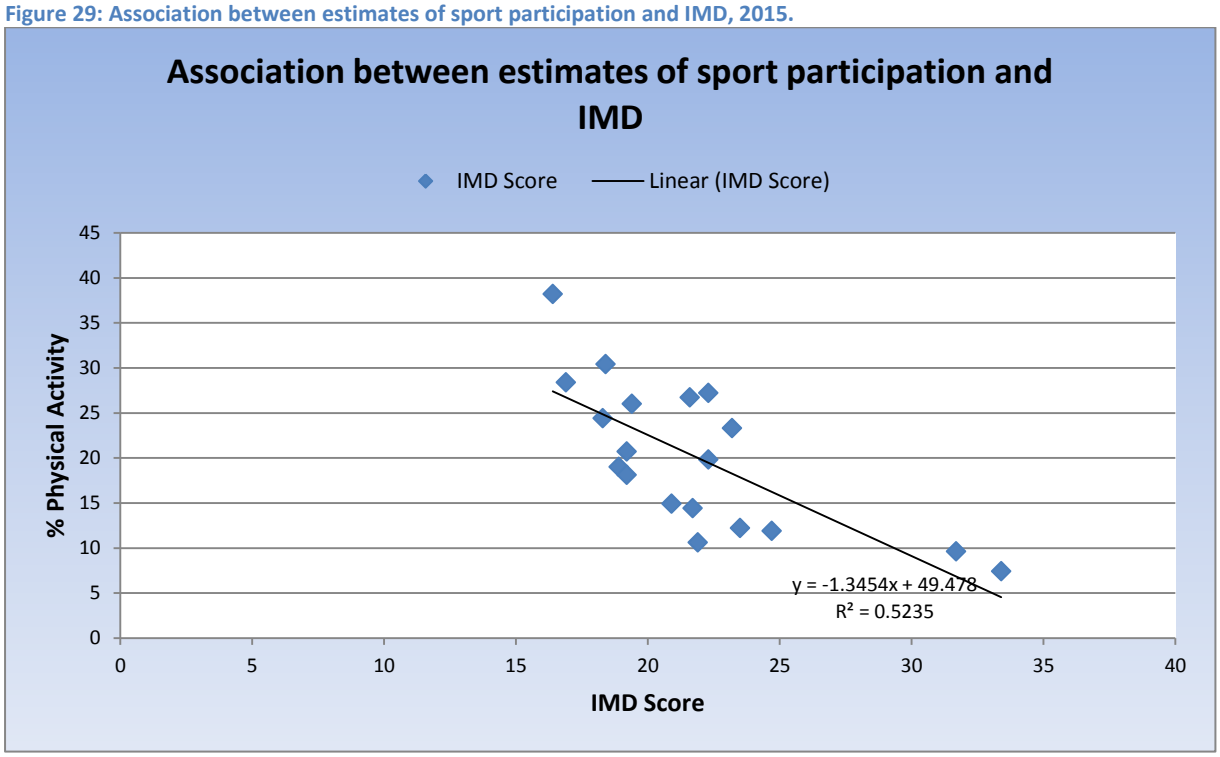
- The National Child Measurement Programme delivered in schools by the school health teams measuring and weighing children to identify those that would potentially benefit from referral to a healthy weight programme.
- The school sports premium allows schools the opportunity to direct funds towards local solution around sport and physical activity.
- Programmes that link schools on an area wide basis such as 'Beat the Street'
- Programmes around healthy eating
- Programmes to engage pupils in activities that promote healthy weight, both physically and educationally.

Consideration should be given by schools working to increase and improve attainment, to focus on and support interventions and programmes to on healthy eating and physical activity, particularly in areas of deprivation and high childhood obesity rates.

4.3.2 Aspirations

Most initiatives or behaviours that promote health involve making choices that do not have benefits until the future, but the factors that predict an individual's investment in future health are not known. Some American studies suggest that perceived life chances by an individual during adolescence can have a significant influence on future health. One of the biggest studies, the US National Longitudinal Study of Adolescent Health 1994, [67]) found adolescents with higher optimism of future life chances exercised more frequently and were less likely to participate in risk taking activity such as smoking. Figure 29 below looks at MSOA-level estimates of sport participation (Sport England data) and deprivation scores, and it can be seen that physical activity appears to decrease in line with increased deprivation scores. The R^2 value is 0.52 – meaning that 52% of the variation can be explained by this single variable.

Figure 29: Association between estimates of sport participation and IMD, 2015.



Source: Sport England and DLCG, 2015

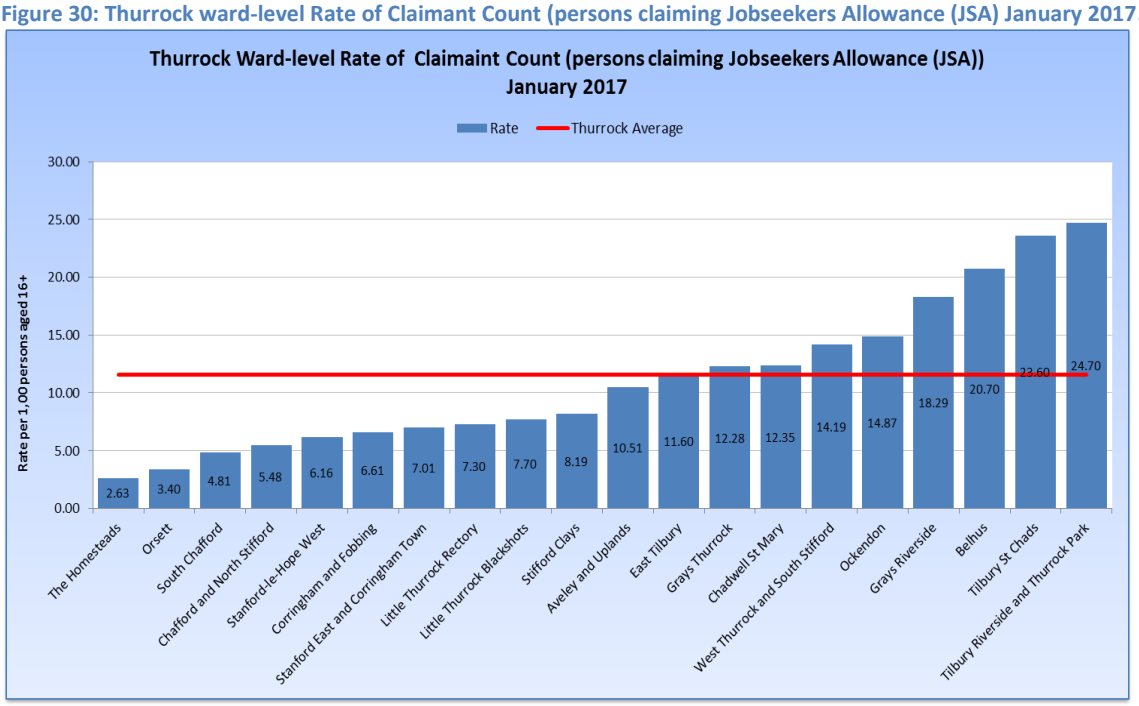
4.4 Employment and Obesity

There is a strong relationship between obesity prevalence and occupation-based social class for women. The prevalence of obesity for women in unskilled occupations is almost twice that of those in professional occupations. The overall pattern is similar for men: those in professional occupations have lower obesity prevalence than any other group. When all manual and non-manual groups are combined, obesity prevalence is significantly higher in the manual group for both men and women. The National Statistics Socio-economic Classification (NS-SEC) shows a similar picture. Obesity prevalence is higher among both men and women in lower classifications, with smaller differences between groups for men. [19].

The ability to observe this link locally is limited. The data below show the variation at ward level between those claiming Job Seekers Allowance (used as a proxy for unemployment), and it can be

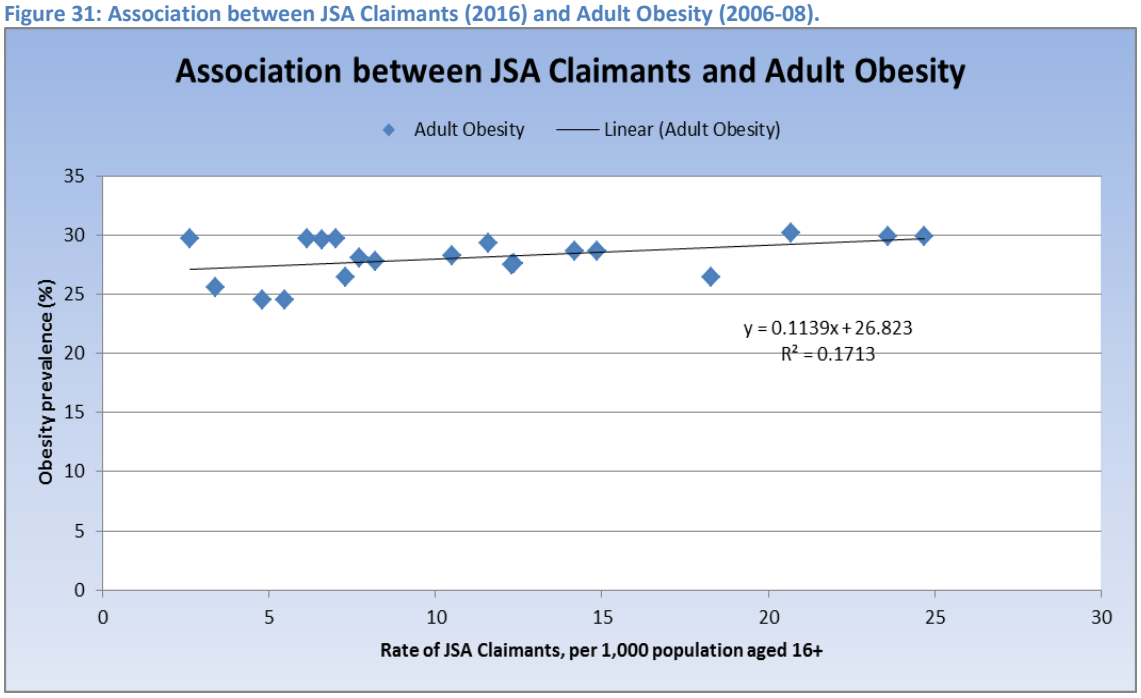
seen that whilst the Thurrock rate per 1,000 aged 16+ is 11.6, this ranges from 2.6 in The Homesteads to 24.7 in Tilbury Riverside and Thurrock Park. However, when investigating a possible association between areas with high unemployment and high obesity in Thurrock, only a limited association was observed (R^2 = 0.17) possibly due to the age of the ward-level obesity data. This can be seen in the second chart below. Although there is a limited association, this may highlight that there is some small interaction in the obesity system that could potentially be highlighting a potential need to look at the impact that employment has on weight status and vice versa.

Figure 30: Thurrock ward-level Rate of Claimant Count (persons claiming Jobseekers Allowance (JSA) January 2017.



Source: NOMIS

Figure 31: Association between JSA Claimants (2016) and Adult Obesity (2006-08).



Source: NOMIS and Local Health

4.5 Housing, Living Environment and Obesity

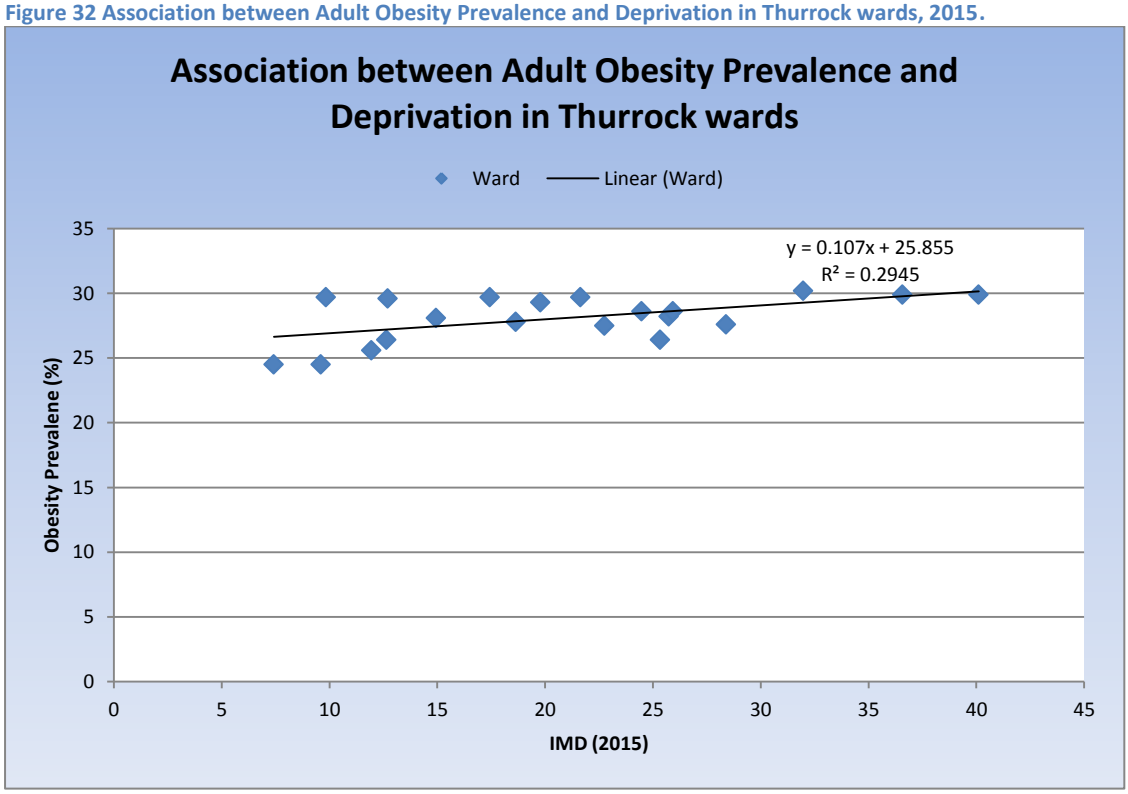
Appropriate housing is important for an individual's health and wellbeing including their physical and psychosocial needs. There is also a wider local environment aspect around feelings of safety, ability to access local services adequately and to have the opportunity to be physically active. A lack of these elements can increase the chances of becoming obese for residents.
Housing and obesity can be linked through deprivation and housing tenure. Residents living within more deprived areas are more likely to be social tenants or private renters. There is a clear correlation of obesity with lower socioeconomic status. Housing in more deprived areas is likely to be denser with less green space and play provision.

The planning of developments in the future needs to consider simple things such as adequate lighting as well as more complex ideals around communal spaces for relaxation, play and physical activity. External spaces should feature elements that encourage walking, cycling and physical activity such as good paving and cycle lanes of good quality.

Within Thurrock there is some evidence to show that obesity levels are higher within the more deprived areas. Marmot's Obesity Review 2010, [68] stated that 'the individual choices that people make are influenced by the social circumstances in which they live'. There has also been an increase in and change in dynamics within some of these communities due to migration of new populations into the area, some of which has been focused in the less affluent areas due to the lower cost of housing and rents there.

The chart below shows the association between areas of high adult obesity and levels of deprivation within wards. Many of these areas have a high level of social housing, rented accommodation and lower cost private housing which could suggest that the type of housing and local environment may have an effect on the levels of obesity, although this will be only one factor in this multifactorial problem.

Figure 32 Association between Adult Obesity Prevalence and Deprivation in Thurrock wards, 2015.



Source: Local Health and DCLG, 2015

Thurrock has a mixed tenure of housing including social, private rented and private. There is an ambitious growth agenda both of housing and industry. This is providing Thurrock with the opportunity to work closely with developers and industry to ensure that public health principles and initiatives are identified within these new structures. We will be using tools such as the Health Impact Assessment process to ensure that such issues as air quality, active by design, active travel principles and community safety are highlighted within these.

4.6 Media Influence

Media can have a great influence on both healthy eating and physical activity. Media influence can be positive with messages providing educational value and signposting to 'healthy activities' such as the Change 4 Life advertising. Negative messaging and story lines within popular programmes and at children's viewing times could lead to unhealthy choices being seen as the most popular choice. Studies that follow children over long periods of time have consistently found that the more TV children watch, the more likely they are to gain excess weight. Children who have TV sets in their bedrooms are also more likely to gain excess weight than children who don't. There is also evidence that early TV habits may have long-lasting effects: Studies that followed children from birth found that TV viewing in childhood could be associated with obesity risk well into adulthood and mid-life [69] [70]. Excess weight can be gained by the addition of only 150 calories a day [71].

Young people are also susceptible to media images and messages at a time in their lives when they are starting to make independent choices around food intake and activity and could contribute to low self- esteem and body images which may result in low nutritional intake and eating disorders.

Media can also increase the possibility of stigma and cyber bullying around fat shaming and weight discrimination which is a worrying trend as identified by David et al 'news reporting on obesity as a public health crisis brought on by bad personal choices can worsen anti-fat prejudice…This is worrisome because there is extensive evidence that weight-based stigma negatively affects health, equal access to employment, earnings, education, and medical care.' [72].

A further factor that influences people to eat healthily or not relates to the health messages from health professionals such as nutritionists and the media around what constitutes a healthy diet. The circulation of conflicting health messages in relation to healthy eating often leads to confusion in the public about what they should be eating, a lack of trust in health professionals who keep on 'changing their minds' and counter-intuitive behaviour in relation to dietary consumption. The Foresight Report [2] highlights the need to reduce conflicting messages received by the public in relation to diet as part of an overall strategy to reduce psychological ambivalence. This is supported by the findings of Suggs et al [73] who found that health messages were complex and led to discord, acrimony and disbelief that could actually lead to the public doubting health recommendations more generally. Nagler [74] made similar findings in their research around these conflicting messages can result in lower intentions to engage with proven health improving activities such as fruit and veg consumption.

Additionally, there are many variations of the 'Eatwell plate', produced by different organisations that send out contradictory information to the public about the types of food and how much of each should be consumed. For example, some include cakes, ketchup and biscuits outside of the plate as part of the 'eat less' food types whilst other exclude these food types completely. Furthermore, clearer definitions are required in relation to the terms used about portion size or regularity of consumption, e.g. eat in 'moderation' as currently this could mean different things to different

people. Based on these findings it will be important to consider as part of an overall obesity strategy, the role of the media, and the content of campaign information in terms of health messages provided to the public in order to reduce ambivalence by providing a consistent health message to the targeted audience.

4.7 Recommendations

Recommendations

1. To keep a watching brief on further national research to develop a better understanding of any association between ethnicity and obesity and how this can influence our action.
2. To undertake a health equity audit on weight management provision to understand if local groups and communities within the Thurrock population are accessing weight management services equitably.
3. To instigate work with communities, including schools and colleges, to identify which behavioural change methods would be successful in creating a cultural shift away from health harming social norms to healthy ones.
4. For housing, planning and environment departments to ensure that there are opportunities for physical activity, for accessible healthy food outlets and suitable food preparation/ storage areas within housing, to include private tenants.
5. To support and assist in the promotion of national campaigns locally, such as Dry January and One You to spread their messages and encourage a greater take up amongst communities through the identification of relevant departments, services and agencies.
6. Children's services and health commissioners should ensure Maternity services, Health Visitors and Children's Centres work to increase healthy weight in pregnancy, increase breast feeding rates and support healthy weaning.
7. Regeneration and public health should work with employers, unemployment agencies and relevant voluntary and public organisations to identify and develop healthy lifestyle opportunities to increase life chances.
8. To support the development of family healthy weight opportunities including nutritional advice, cookery sessions and physical activity, making this a normalised behaviour within communities.
9. Public health and health commissioners should ensure that there is clear connectivity between weight management services and mental health support services.

5. The Food Environment in Thurrock

Key Points

- Thurrock is significantly lower than the regional and national averages for meeting 5-a-day fruit and vegetable consumption.
- Deprivation is associated with obesity and healthy eating with the most deprived eating less healthily.
- The volume rather than the distance of fast food outlets appears to be associated with childhood obesity at year 6 (age 10-11).
- There are few allotment sites within the borough, limiting access for people to grow their own food.
- No associations can be found with access and proximity to food store locations, however this is likely to be supporting the theory that obesity is complex and a multiple approach is required where the sum of the parts are greater than the parts themselves.

5.1 Causes and Effects of the Food Environment

The Obesity Reviews [75] highlighted that there is limited evidence that food retailing in isolation affects diet. Therefore, this is unlikely to have a profound impact on obesity alone [75].

A literature search and review of the evidence-base looking at the causes and effects of the food environment on obesity and healthy eating has shown some moderate associations:

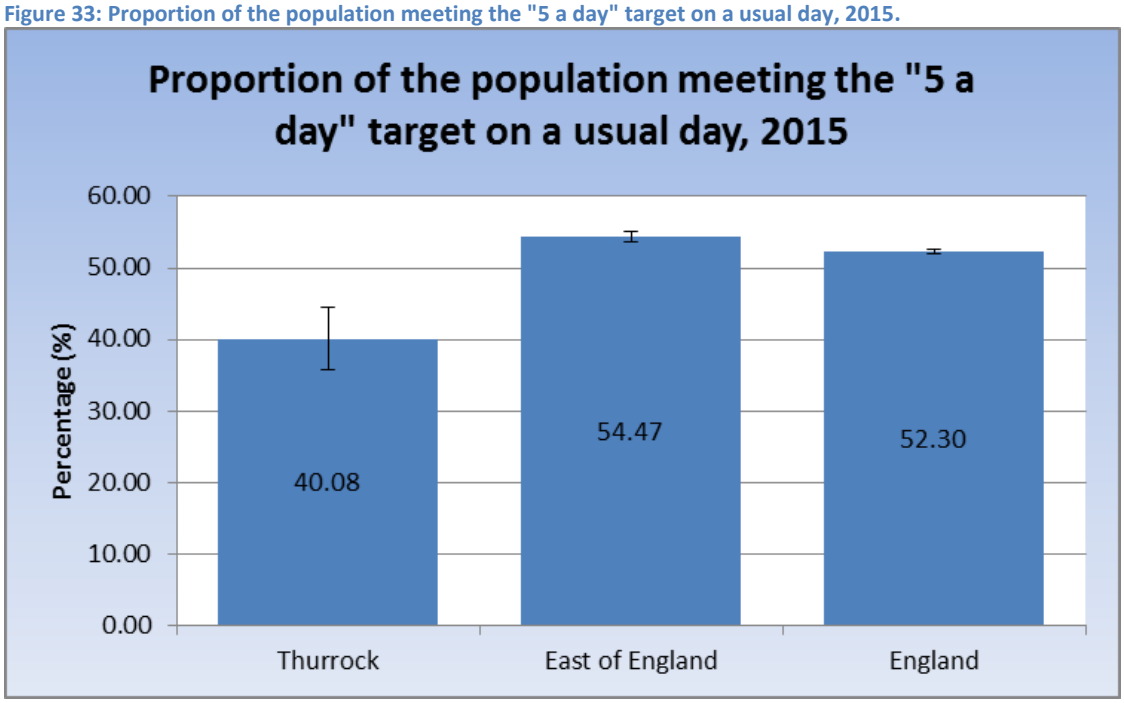
- Urban sprawl and land use mix - a more heterogeneous mix of land uses is thought to enable easier access to services [76].
- Local food environment – a systematic review of this and diet found that GIS-based measures cannot capture the non-geographic dimensions of food access, which includes affordability, food choice, acceptability and store accommodation to local residents. Perceived accessibility is also an issue such as safety of walking routes and reliability of public transportation [77].
- Good local availability of food – A systematic review on the environmental determinants of fruit and vegetable consumption found that access to one's own vegetable garden and having low food insecurity exerted a positive influence on fruit and vegetable intake [78].
- Parental factors – parental intake and education are consistently associated with children's and adolescents fruit and vegetable intake and fat intake [79].This is discussed further in the societal and community influences section.
- Income and deprivation is associated with lower intake of fruit and vegetables and higher intakes of cheaper, energy-dense and nutrient-poor foods.
- Local availability of fresh fruit and vegetables
- Sugar sweetened beverages and soft drinks – a review on sugar-sweetened beverages (SSBs) consumption and the prevalence of obesity and obesity-related diseases presents evidence that decreasing SSBs will decrease the risk of obesity and obesity-related diseases [80].

Environmental factors in research have tended to have a focus at the household level, looking at the sociocultural and economic aspects. Throughout the literature although the evidence suggests the physical environment has a role to play in weight status, there is the recognition that research in this area is in its infancy and needs to be further developed.

5.2 Healthy Eating and diet in Thurrock

The latest data indicates that Thurrock has a significantly lower proportion of its population that eat healthily than the regional and national averages – on a usual day, only 40.08% of the population claim to meet the 5 a day target compared to 52.47% regionally and 52.30% nationally.

Figure 33: Proportion of the population meeting the "5 a day" target on a usual day, 2015.

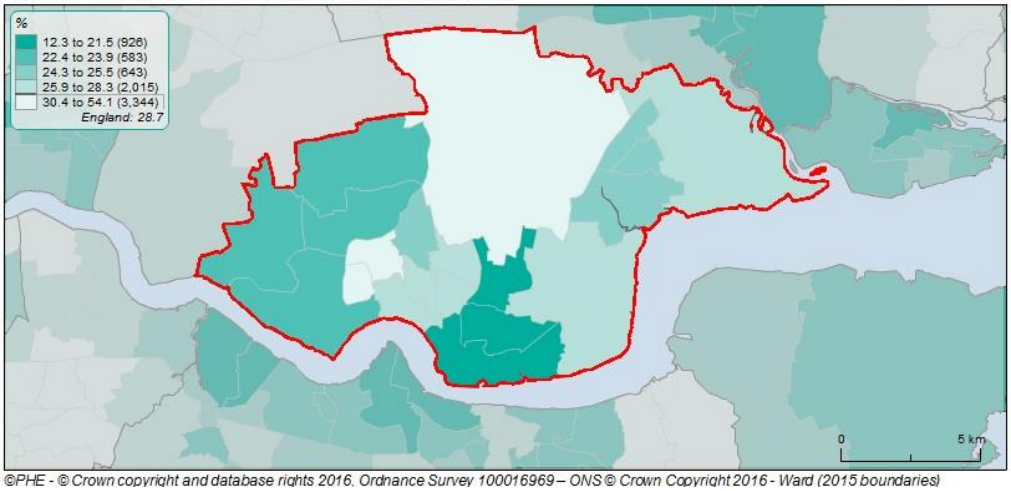


Source: Public Health England

However it is expected that this varies within Thurrock. The map below uses modelled HSE data to estimate the proportion of adults in each ward area that eat healthily – i.e. consume 5 or more fruit and vegetables per day. These estimates are from 2006-08, so are a little out of date, but show the likely variance in eating behaviour in the borough. Estimates range from 32.5% in Orsett to 18.4% in both Tilbury St Chads and Tilbury Riverside and Thurrock Park. Note that these should **not** be directly compared to the more recent Thurrock-level data above.

Figure 34: Percentage of the population aged 16+ that consume 5 or more portions of fruit and veg per day, modelled estimate, 2006-2008.

Percentage of the population aged 16+ that consume 5 or more portions of fruit and veg per day, modelled estimate, 2006-2008 - *source: Public Health England, NHS IC © Copyright 2010*



Source: Local Health

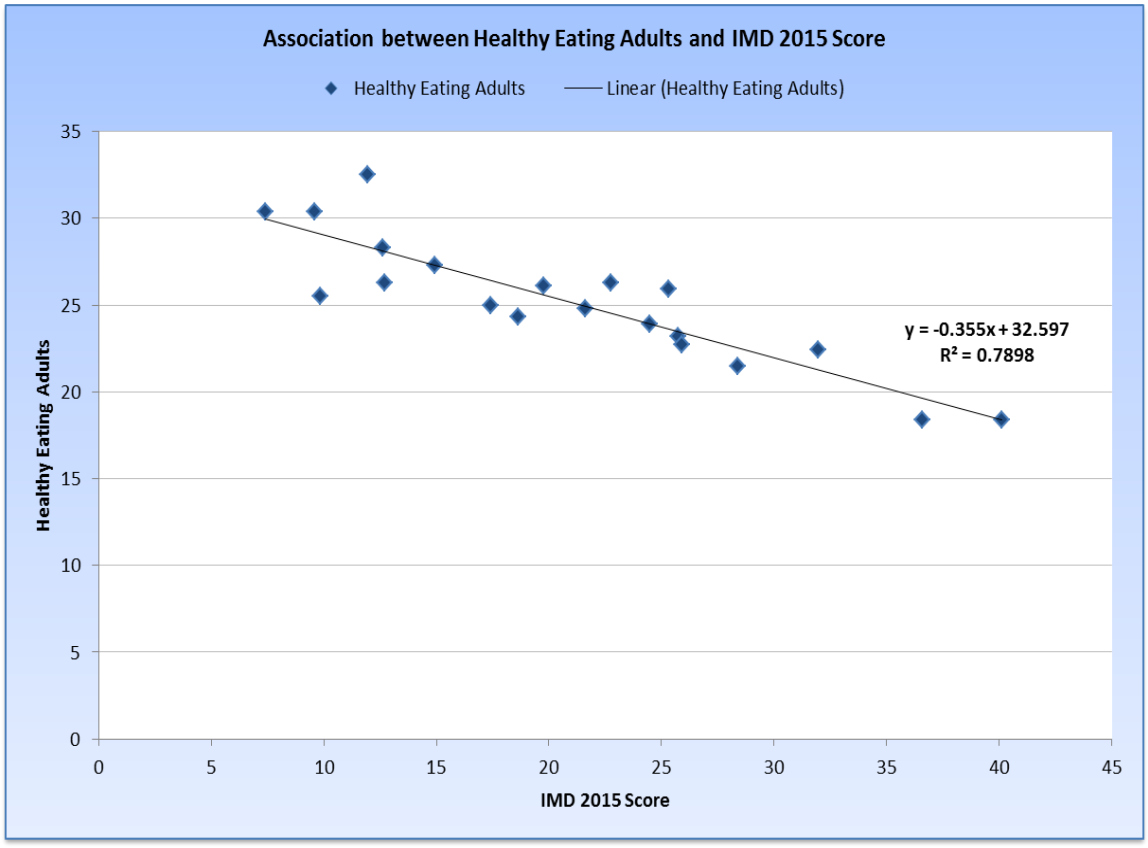
Dietary choices can also have future impacts on oral health. In their evidence review, the Scientific Advisory Committee on Nutrition concluded that higher consumption of free sugars is associated with a greater risk of dental caries, and in children/adolescents, consuming sugar-sweetened drinks was found to lead to increases in body mass index [81].

It is already known there is variation within Thurrock with regard to dental activity – with many of the more deprived wards having higher proportions of dental visits in children resulting in more serious treatment. As per an earlier section of this JSNA, an association is already evident between childhood obesity and deprivation – if healthy eating behaviours are not encouraged, there could be a greater inequality seen within Thurrock in terms of both obesity levels and dental service use/oral health.

5.3 Food affordability in Thurrock

As per the literature findings above, income is expected to contribute towards healthy eating choices. The Index of Multiple Deprivation (2015) score is a measure of how deprived an area is, with household income one of the variables used. When looking at ward-level deprivation against prevalence of healthy eating adults, it can be seen that within Thurrock, there is a strong association between healthy eating adults and deprivation with an R^2 score of 0.79 – indicating that 79% of the variation in healthy eating adults can be attributed towards deprivation. In interpreting Figure 35 below, it should be noted that a higher IMD score denotes an area of higher deprivation, so Figure 35 below shows that as deprivation increases, healthy eating behaviour decreases.

Figure 35: Association between Healthy Eating Adults (2006-08) and IMD Score (2015).



Source: Local Health and DCLG

For children, the dietary patterns follow similar trends to adults, and nationally it has been shown that:

- The majority of children do not eat the recommended minimum of 5 portions of fruit and vegetables per day; among children aged 11-18 years, 10.1% of boys and 7.5% of girls meet the five a day recommendation [82].
- Children living in households with the highest incomes consume the largest number of portions of fruit and vegetables per day (3.9 portions for girls and 3.5 portions for boys) [82].
- Children's consumption of added or processed sugars significantly exceeds the maximum recommended level.
- Children's consumption of saturated fat significantly exceeds the maximum recommended level of 11% of total food energy; younger children aged 4-10 years obtain significantly more of their food energy from saturated fat that older children aged 11-18 years [82].

The strong association at both a national and local level between healthy food consumption and deprivation and income suggests that cost of food and affordability are key issues in achieving a healthy diet.

One of the primary determinants of food choice is the cost of food. Whether cost is prohibitive depends fundamentally on a person's income and socio-economic status. Low-income groups have a greater tendency to consume unbalanced diets and in particular have low intakes of fruit and vegetables [83]. However, access to more money does not automatically equate to a better quality diet but the range of foods from which one can choose should increase.

It is recommended that we think about how we can support local food to be more affordable and accessible to low income groups in the borough.

5.4 Food accessibility and availability in Thurrock

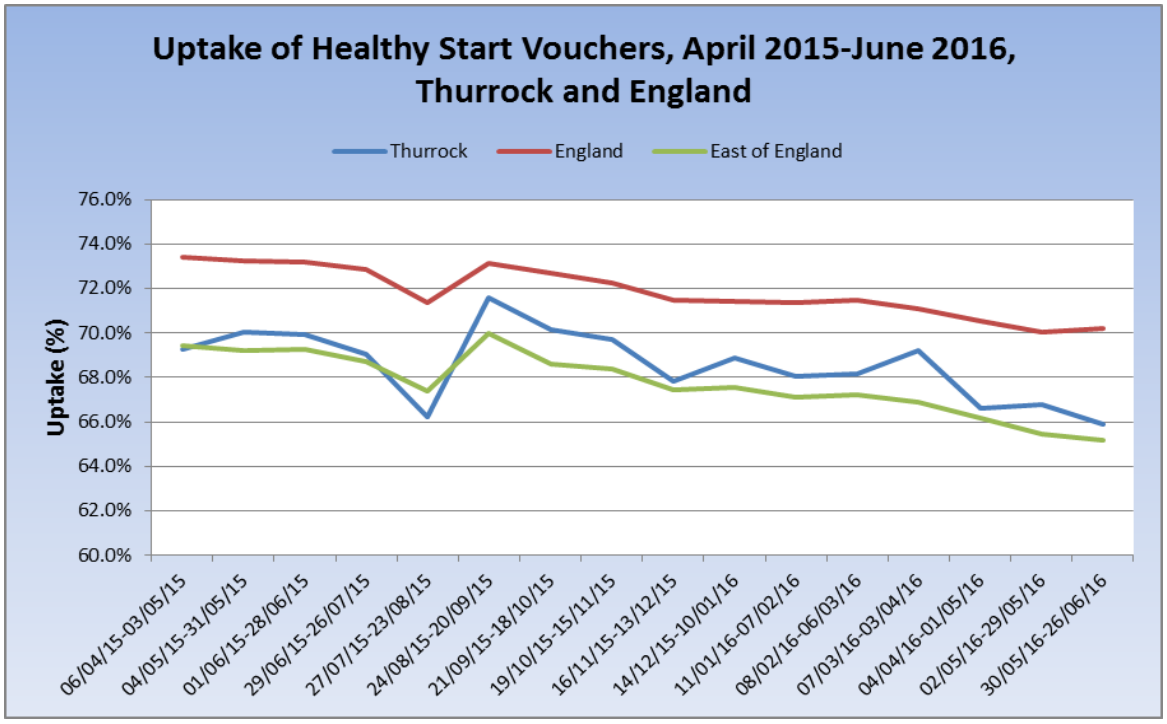
5.4.1 Access to food in early years and childhood

Healthy Start Scheme

The Healthy Start Scheme is a UK-wide scheme to improve the health of low-income pregnant women and families on benefits and tax-credits. Under the healthy start scheme, pregnant women and parents of children under four are entitled to vouchers which can be spent on milk, fresh or frozen fruit and vegetables or infant formula milk. In addition, eligible parents also get green vitamin coupons which can be swapped for Healthy Start vitamins. A qualitative study in 2015 of 107 parents from thirteen areas in England found the vouchers provided a vital source of food at times of crisis and put the purchase of fruit and vegetables within reach for some. Although it was reported that the scheme was easy to use, some vulnerable groups were unable to access the scheme [84]. A multi-method study by McFadden et al [85] found that women reported that Healthy Start vouchers increased the quantity and range of fruit and vegetables they used and improved the quality of family diets, and established good habits for the future. However, it was also found that there were barriers to accessing the programme which included registering for the programme, low awareness among families, access issues for some vulnerable groups, and the provision of registered retailers and recommended addressing these issues could help the implementation of the programme [85].

Looking at data on uptake of Healthy Start Vouchers between April 2015 and June 2016, Thurrock appears to have seen a very slight decrease in take up since September 2015. The most recent value is 65.9% (June 2016) which is above the regional average but remains below the national average (70.2%).

Figure 36: Uptake of Healthy start vouchers, April 2015-June 2016, Thurrock and England.



Source: NHS Business Services Authority

It appears that there is a general downward trend in the uptake of Healthy Start Vouchers, with 34% of eligible beneficiaries not taking them up in Thurrock. It is recommended that a review of the local scheme is undertaken and a recommendation to focus on increasing the uptake of the scheme locally.

Free School Meals

The percentage eligible for and claiming free school meals (FSM) is currently 13.9% which is lower than the England average but higher than the East of England. The number of children eligible and claiming free school meals has fallen since 2013.

Table 6: Eligibility for and uptake of free school lunches, 2011-15.

	Eligible and claiming free school meals (2011)	Eligible and claiming free school meals (2012)	Eligible and claiming free school meals (2013)	Eligible and claiming free school meals (2014)	Eligible and claiming free school meals (2015)
Thurrock	17.3	16.3	16.5	15.5	13.9
East of England	11.8	12.4	12.7	12.1	11.3
England	16.5	16.9	17.1	16	14.9

Source: Department for Education

Interestingly, Thurrock has a higher level of children aged 0-15 living in poverty than the national average, but has a lower uptake of free school meals than the England average.

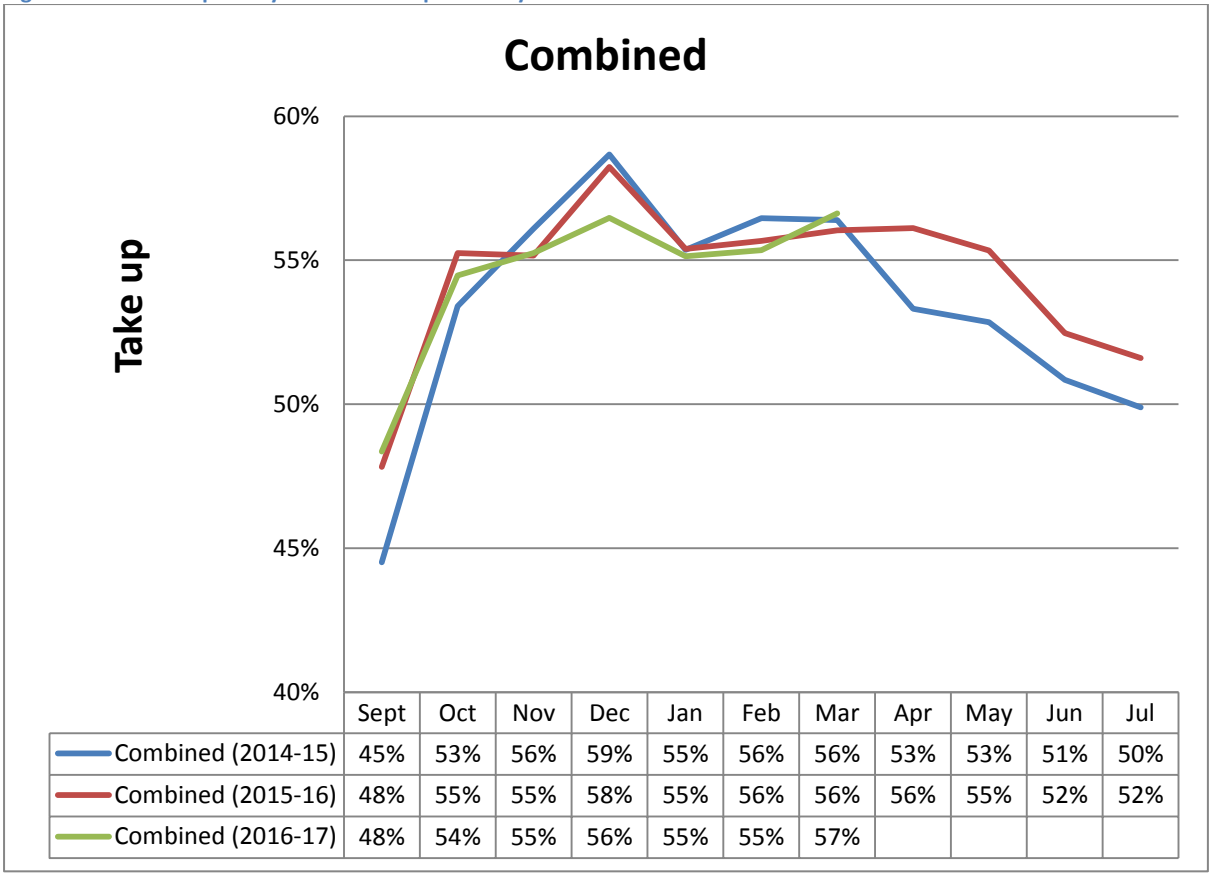
Of the 1.4 million pupils in England estimated to be entitled to FSMs, an estimated 200,000 UK children (14%) do not take the FSMs they are entitled to, with many schools unaware of the issue [86]. Locally it is estimated that 23% or 1200 of eligible pupils are not claiming free-school meals [86]. At the time of reporting, this included both infant, primary and secondary age ranges, however, FSMs are now available to all children in infant schools (reception, year 1 and year 2).

School Meal uptake

Thurrock Catering Services provide school meals to the majority of primary schools and a minority of secondary schools. The service complies with the Gold Food for Life standard. This award is the Soil Association's highest accolade in its accreditation scheme.

Where Thurrock Catering Services do not manage their catering service the school either manages it in-house or has an external catering provider – the latter mainly applies to secondary schools.

Figure 37: Thurrock primary school meal uptake - 3 year combined data 2014-17.



	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Combined (2014-15)	45%	53%	56%	59%	55%	56%	56%	53%	53%	51%	50%
Combined (2015-16)	48%	55%	55%	58%	55%	56%	56%	56%	55%	52%	52%
Combined (2016-17)	48%	54%	55%	56%	55%	55%	57%				

Uptake of free school meals within Thurrock is not linked with deprivation, however, there is a link between higher uptake and schools with head teachers and staff that support the school meals culture, have a close relationship with the Catering Team and in schools where staff sit with the children every day to eat lunch together and has a school lunch themselves. The support and culture this creates is a factor in their high uptake.

The reason for the bottom performing schools was less clear but some of the following reasons were highlighted by the catering service within Thurrock:

- Historical culture of low take up of school meals and sometimes amongst parents this attitude is difficult to change

- Lack of Head Teacher support in believing in the value of school meals and therefore lack of engagement with the service and effort to promote meals
- Deprived areas and parents choosing to provide packed lunches for children rather than receive a free meal
- Poor management of queues and long queuing time which puts children off having a school meal particularly if they are allowed to eat their packed lunch as soon as they enter the dining room
- Dining room management – having a separate area for packed lunches means that these children never get to see a school meal and therefore are not encouraged or enticed to try one.
- Lack of a very strict packed lunch policy which allows parents to pack unhealthy but appealing items in a lunch box which would never be served in a school meal. The catering service cannot compete with these unhealthy snack items. Nationally only a minority of packed lunches meet the nutritional standards set for school lunches.
- In some areas of Thurrock 'cash rich, time poor parents' choose to provide packed lunches that have been chosen by their children and are often expensive items with high sugar content.
- Parents who didn't enjoy school meals perceive them to be the same as when they were at school and therefore provide a packed lunch.

Ensuring households take up their FSM entitlement is therefore important for children's health, it assists poor families financially and helps address dietary inequalities [87]. It also potentially impacts on academic performance - a review concluded that a well-balanced diet enables good cognitive and behaviour performance [88] and a tentative link between an improvement in diet and schoolchildren's academic performance is emerging [89]. The potential benefits of FSMs are not reaching many they are designed to help [87] and this is certainly the case in Thurrock. It is recommended that some focus is given to improving the uptake of free school meals in Thurrock.

Breakfast Clubs

Free breakfast clubs are often a lifeline for busy parents and families. Breakfast clubs have also demonstrated a positive impact across the school day, with pupils more settled and attentive. Improvements in punctuality and attendance are commonly given as positive outcomes of breakfast clubs [90].

The majority of secondary schools and 16 Primary schools in Thurrock provide this facility. As with school lunches all breakfast clubs should meet the new school food standards. The School Food Standards were launched by the Department of Education in 2015 and became mandatory in all maintained schools and new academies and free schools from January 2015. It is recommended that Breakfast club facilities are included in all Thurrock primary schools particularly within areas of high deprivation and all schools are subject to a quality review of food standards.

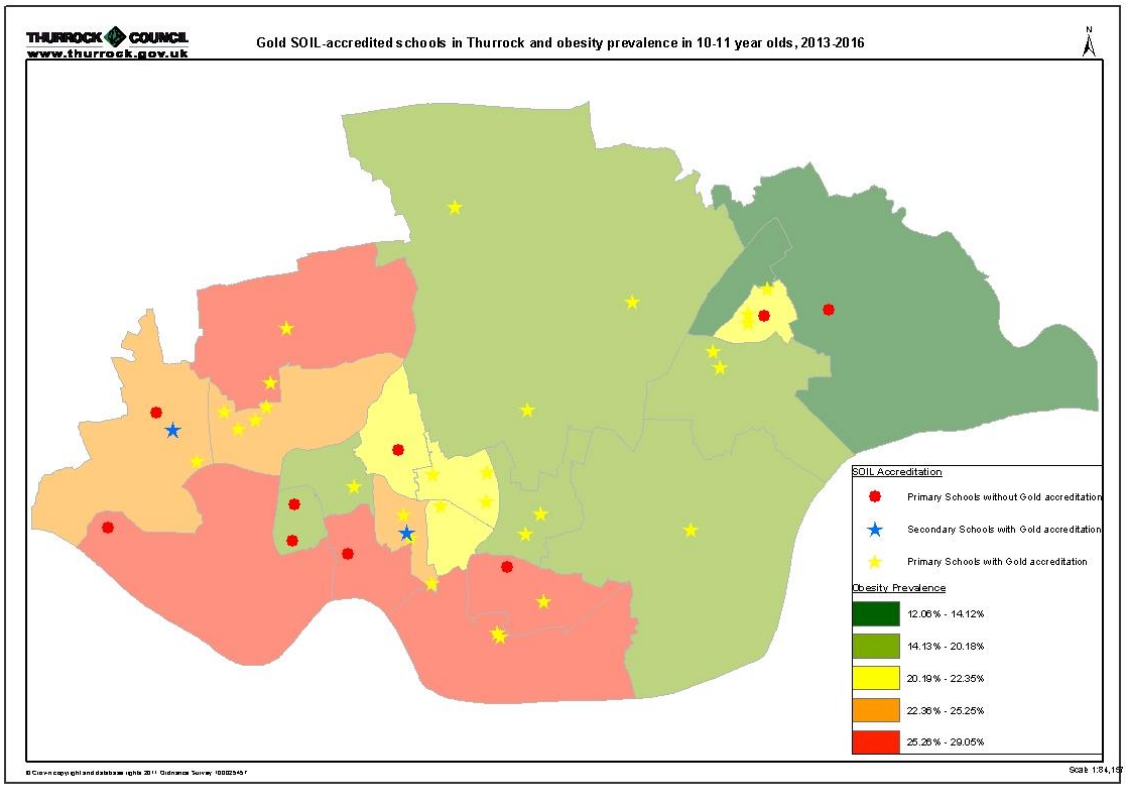
SOIL Association Accreditation of Catering Service

Thurrock Catering Service has been awarded the Soil Association's gold Food for Life Catering Mark for its school meal provision at 31 primary schools in Thurrock. This provides an independent endorsement that Thurrock Catering Services are providing fresh healthy food which promotes the use of seasonal and organic produce, is sustainable, free range, local, traceable and free from trans fats and harmful additives. In order to achieve this accreditation, the service had to show:

- Menus comply with the latest national Food Standards
- At least 75% of dishes are freshly prepared from unprocessed ingredients
- All meat is from farms which satisfy UK animal welfare standards
- Eggs are from Free Range hens
- Milk is organic
- Menus use seasonal and in-season produce is highlighted
- No undesirable additives or artificial trans fats are used
- No genetically modified ingredients are used
- No fish is served from the 'fish to avoid' list stipulated by the MSC (Marine Stewardship Council, who encourage sustainable ***fishing*** practices)
- Information is on display about food provenance
- Catering staff are supported with skills training in fresh food preparation and the Catering Mark
- All suppliers have been verified to ensure they apply appropriate food safety standards
- Menus provide for all dietary and cultural needs

The map below depicts the schools in Thurrock that have Gold accreditation with relation to the Year 6 obesity prevalence. What can be seen is that there are some primary schools within the areas of highest obesity prevalence that are not accredited, and even those within areas such as Chafford Hundred (which has relatively low levels of Year 6 obesity) may have school catchment populations within the wards with higher obesity prevalence (i.e. West Thurrock and South Stifford or Grays Riverside for example). There are also two secondary schools on the list of accredited schools.

Figure 38: SOIL accredited schools, 2017.



Source: Thurrock Council and NCMP

It was not possible to see an association between schools with or without the accreditation and obesity/excess weight, as the majority of schools have this in place. It is also unknown how long each

school has had this in place, thus inhibiting development of a conclusion as to whether this could have an impact on local obesity prevalence or not. However, it is viewed as very positive that a large number of schools are receiving meals within this scheme.

Children's Centres

Healthy weight is also a priority across all 6 **children's centres** in Thurrock, centres offer a range of healthy lifestyle/nutritional advice to parents, supporting school readiness and healthy weight when starting school.

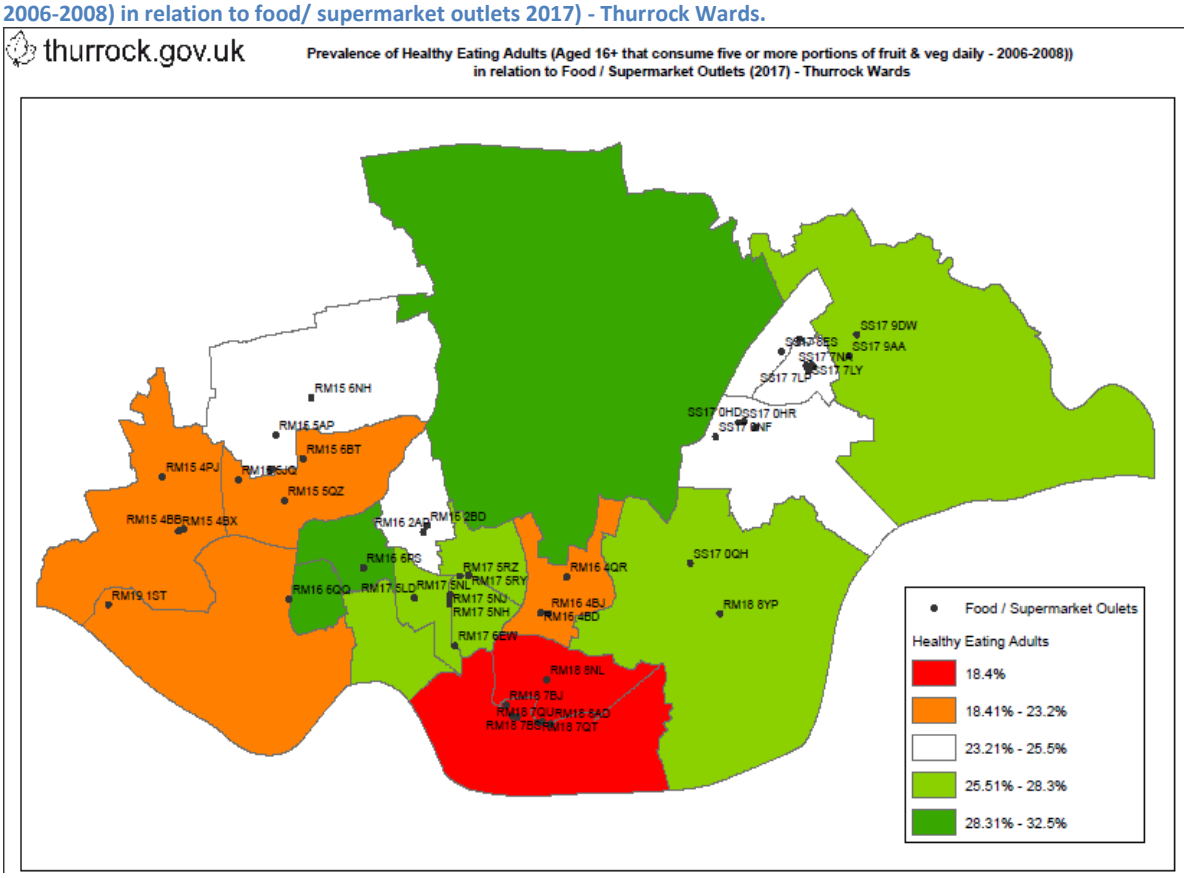
A 6 week block of Healthy Lifestyles sessions – called **Foodie Fun** - including information on healthy eating, nutrition, sugar swaps, food on a budget and physical play. Two blocks have run with excellent outcomes and was run by Children's Centre staff.

5.4.2 Access to food in Thurrock

Food Retailers

It was hypothesised that supermarket locations, or locations of stores supplying healthy options, might impact on the proportions of adults eating healthier diets. The map below depicts the same healthy eating prevalence by ward as in the map above, but with the locations of supermarkets and food outlets plotted over the top. 72 outlets were identified as providing healthy food options. Viewing this information together, it does not appear that location of these food establishments can be the only contributor to healthy eating behaviour, as there are a number of outlets in Tilbury wards which has the lowest estimated prevalence of healthy eating. It is expected that these locations are influenced by land availability, affordability, and population density amongst other things, as well as the fact that many residents travel between wards to visit supermarkets.

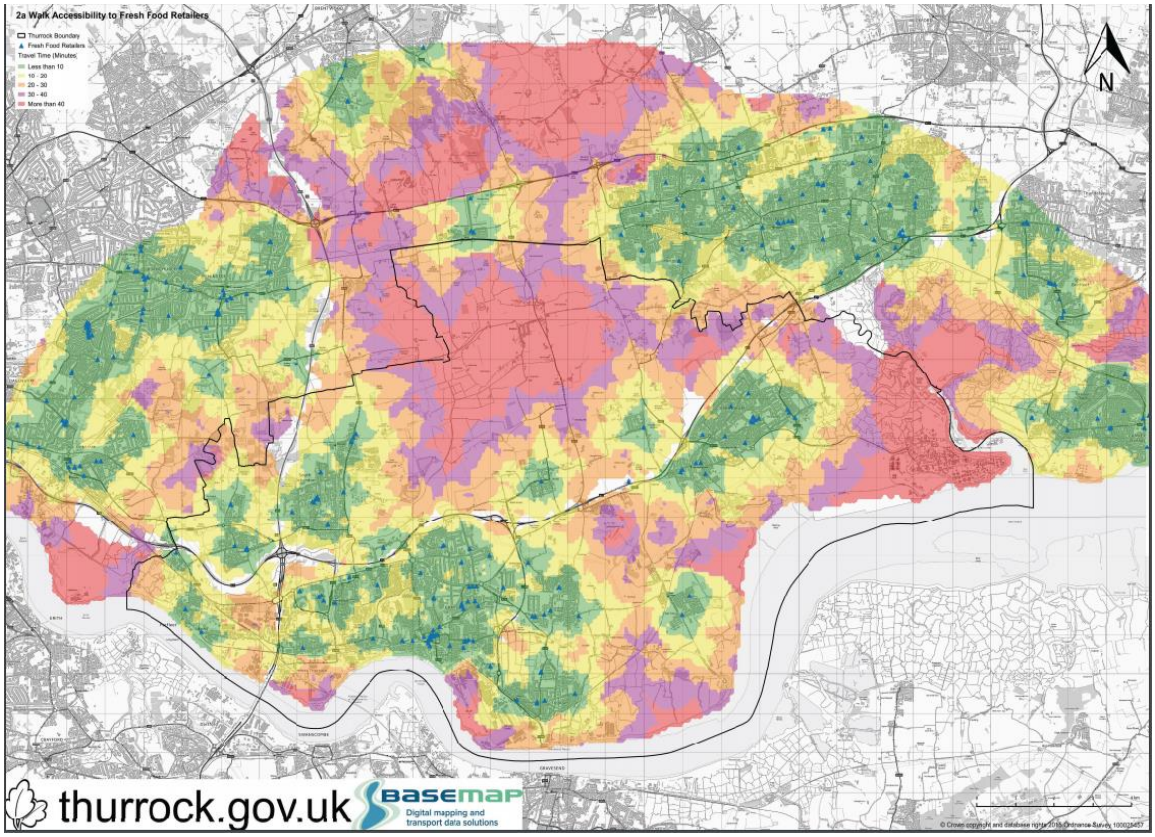
Figure 39: Prevalence of Healthy Eating Adults (Aged 16+ that consume five or more portions of fruit and veg daily - 2006-2008) in relation to food/ supermarket outlets 2017) - Thurrock Wards.



Source: Local Health and Thurrock Council Planning Team

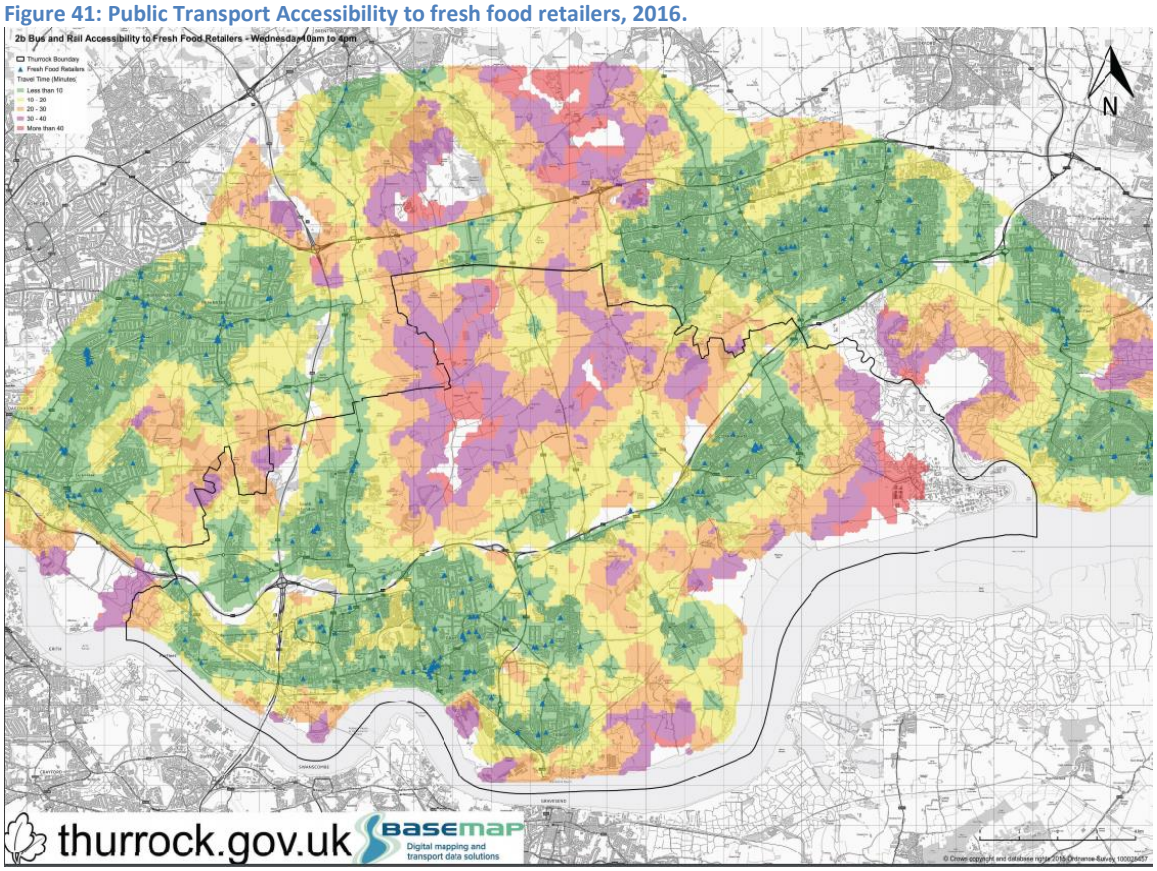
Accessibility to shops is an important physical factor influencing food choice, which is dependent on resources such as transport and geographical location. Healthy food tends to be more expensive when available within towns and cities compared to supermarkets on the outskirts [91] . However, improving access alone does not increase purchase of additional fruit and vegetables, which are still regarded as prohibitively expensive [92]). Thurrock Council's planning team commissioned some accessibility analyses to understand parts of the borough where it is more difficult for residents to walk or take public transport to healthy food retailers. The two maps below reflect that residents in more urban and densely populated areas such as Grays, Stanford, Ockendon and Tilbury have better access to healthier food establishments. However as per the map above showing healthy eating behaviours, this does not always align with accessibility.

Figure 40: Walking accessibility to fresh food retailers, 2016.



Source: Thurrock Council

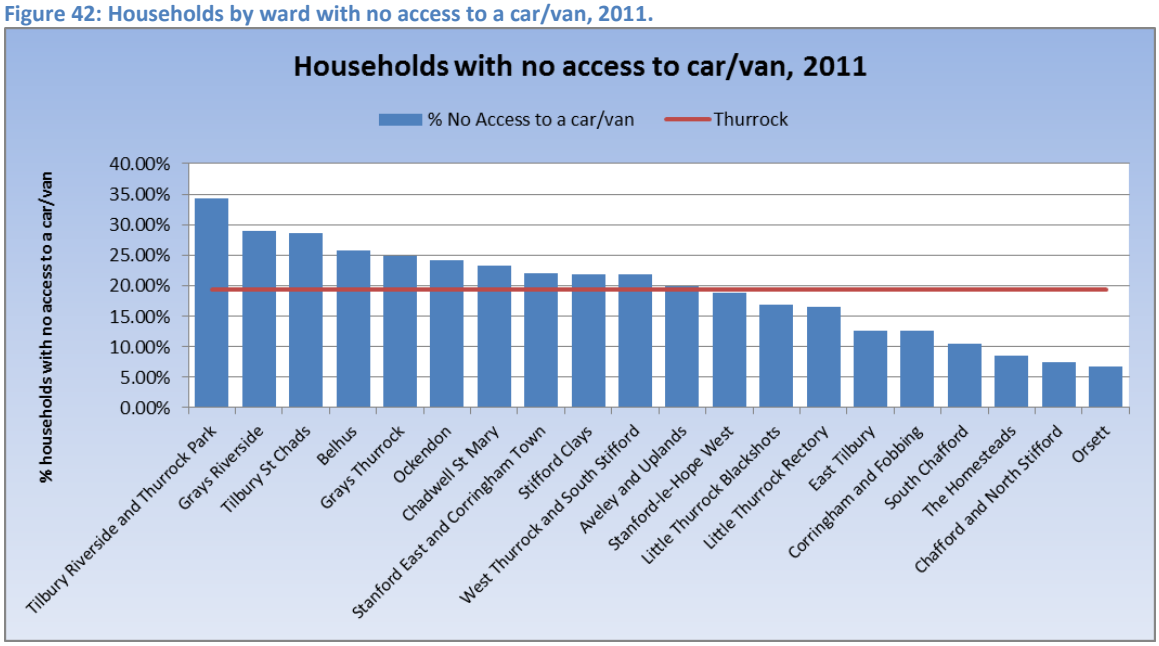
Figure 41: Public Transport Accessibility to fresh food retailers, 2016.



Source: Thurrock Council

Data from the Census can be used to help understand parts of the borough most likely to rely on public transport due to their lack of access to a car or van in their household. The below ward-level data shows urban wards such as Tilbury Riverside and Thurrock Park, Grays Riverside and Tilbury St Chads having higher proportions of households with no access to a car/van (34.24% in Tilbury Riverside and Thurrock Park), whilst The Homesteads, Chafford and North Stifford, and Orsett have the lowest proportions (6.67% in Orsett). Looking at this with relation to the map above, it can be seen that many of the areas with higher proportions of households with no cars/vans have relatively good public transport connectivity, so could hypothetically be accessing these retailers by public transport. Conversely, areas such as Orsett who have limited public transport connectivity have low levels of households with no car, indicating they would be more likely to drive to these locations.

Figure 42: Households by ward with no access to a car/van, 2011.

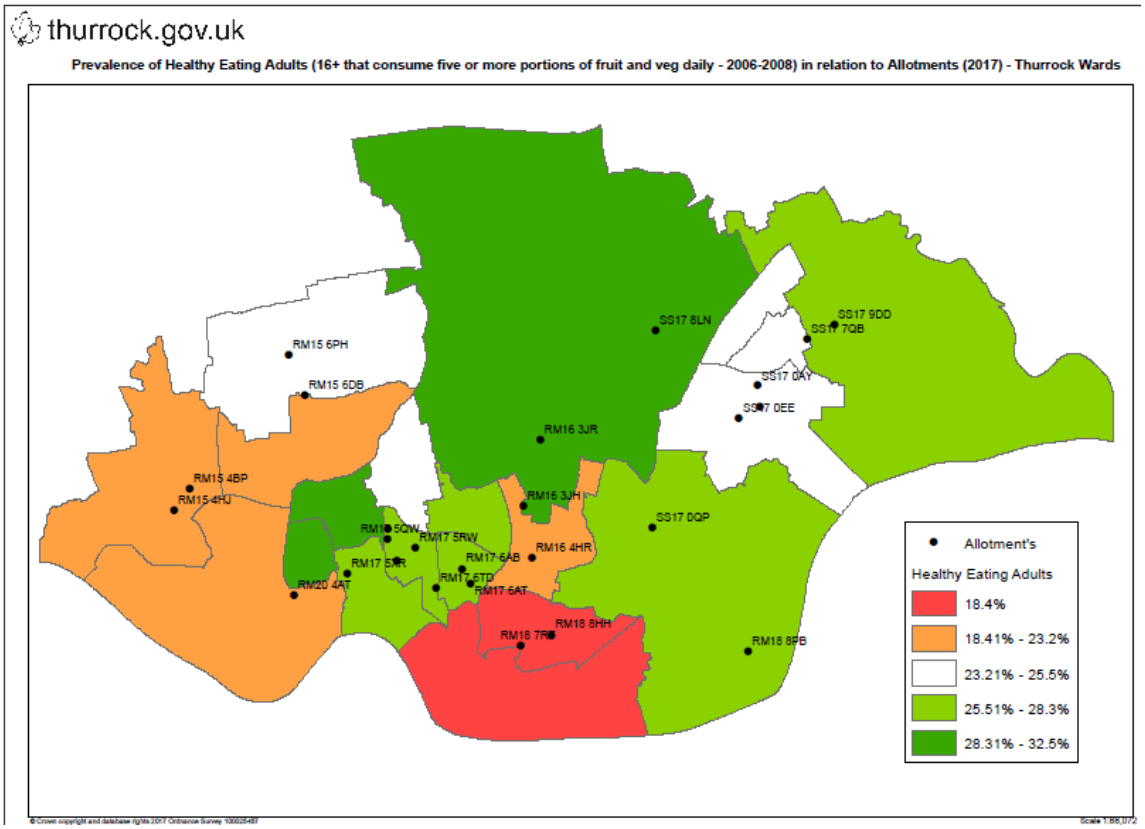


Source: Census 2011

Allotments

It was considered on whether the location of allotments locally in Thurrock might impact on healthy eating behaviours. 27 allotment sites were identified in Thurrock in 2016, with 1011 plots, covering just over 31 hectares of land (0.19 hectares per 1000 population). The map below depicts these plotted against healthy eating behaviour, and again, there appears to be limited association between the locations of allotments and the prevalence of healthy eating behaviour, although this is also confounded by the relatively small number of allotments. Again it is also assumed that residents may travel across wards to allotments.

Figure 43: Prevalence of Healthy Eating Adults (16+ that consumes five or more portions of fruit and veg daily 2006-2008) in relation in to Allotments (2017) - Thurrock Wards.



Source: Local Health and Thurrock Council Planning Team

The National Society of Allotment and Leisure Gardeners (NSALG) suggests a national standard of 20 allotments per 1,000 households (20 per 2,000 people based on two people per house or one per 100 people). This equates to 0.25 hectares per 1,000 populations based on an average plot-size of 250 square metres (0.025 hectares per plot).

Thurrock, as a whole, based on its current population (163,270) does not meet the NSALG standard. Using this suggested standard, the minimum amount of allotment provision for Thurrock is 40.82 hectares. Existing provision of 31.09 hectares therefore does not meet the NSALG standard [93].

In addition to this the open spaces assessment also found that there is a steady demand for the provision of allotment sites and plots across the area and demand outweighs supply. From the perspective of affordability of purchasing food versus growing your own, and supporting people to live a healthy lifestyle, allotments provide the opportunity for physical activity, growing fruit and vegetables for consumption (increasing affordability), and also the social interaction and community benefits that being part of an allotment site provides.

It is recommended that allotment site provision and access to existing sites is increased within the borough. Supporting allotments increased use through raising awareness and supporting community development in this area is also recommended.

5.4.3 Fast food outlets in Thurrock

Fast food outlet data has been collected by PointX and reported by Public Health England (2016) which consists of 3 subsections of data: Fast Food and Takeaway Outlets, Fast Food Delivery Services and Fish and Chip shops. There are limitations on this data to be considered which include a

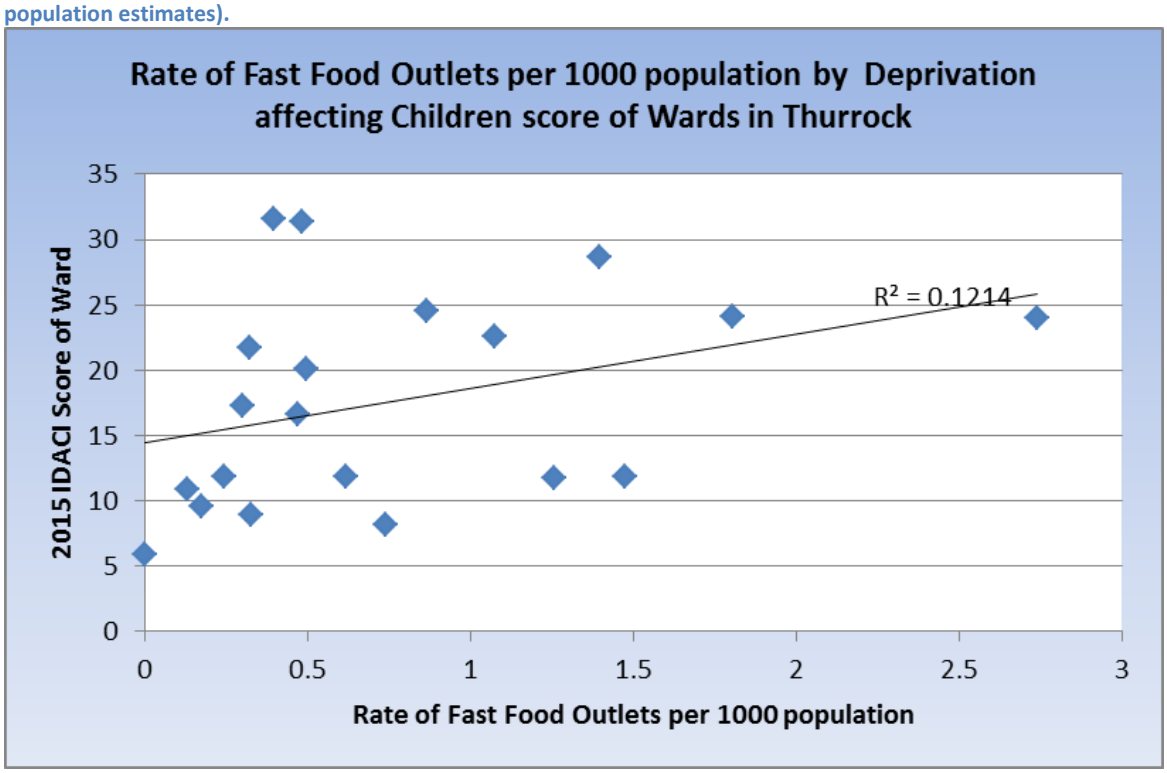
significant pointnoted in the PointX data *"It is likely that the data here does not show the complete picture for fast food outlets. Many of the outlets that could be considered 'fast food' are likely to be multi-functional; sit-down and eat in, takeaway and home delivery. As a result businesses may have been recorded under the category of restaurant or café which would mean they are not considered here despite selling similar types of food to those included in this analysis. Also some outlets that sell baked goods like pasties and sausage rolls may be categorised as bakeries, a category not considered in this analysis; although some of the outlets included in this analysis do sell baked goods."*
The national report from Public Health England [94] reports a growing body of evidence on the association between exposure to fast food outlets and obesity; however some studies show conflicting results. [95], [96], [97].

Data from Public Health England reports that there are 138 fast food outlets in Thurrock Borough, representing a rate of 84.5 per 100,000 population. This is similar to the England Average of 88 per 100,000 population.

There is strong evidence at a national level which links the availability of fast food outlets and increasing level of area deprivation [94], [95].

The relationship with deprivation and rate of fast food outlets in England is strong at R = 0.54. We can look at this data down to ward level and analyse this by both deprivation score (IMD 2015) and by the NCMP data (3 year data 2013-14 to 2015-16). The data shows that, although on a national level there is a strong relationship, when this is diluted at a local level the relationship with IMD Score is weaker (r^2= 0.09). The data shows a stronger relationship when it is correlated with the deprivation score for income deprivation affecting children (using IDACI, 2015) and this can be observed in Figure 44 below.

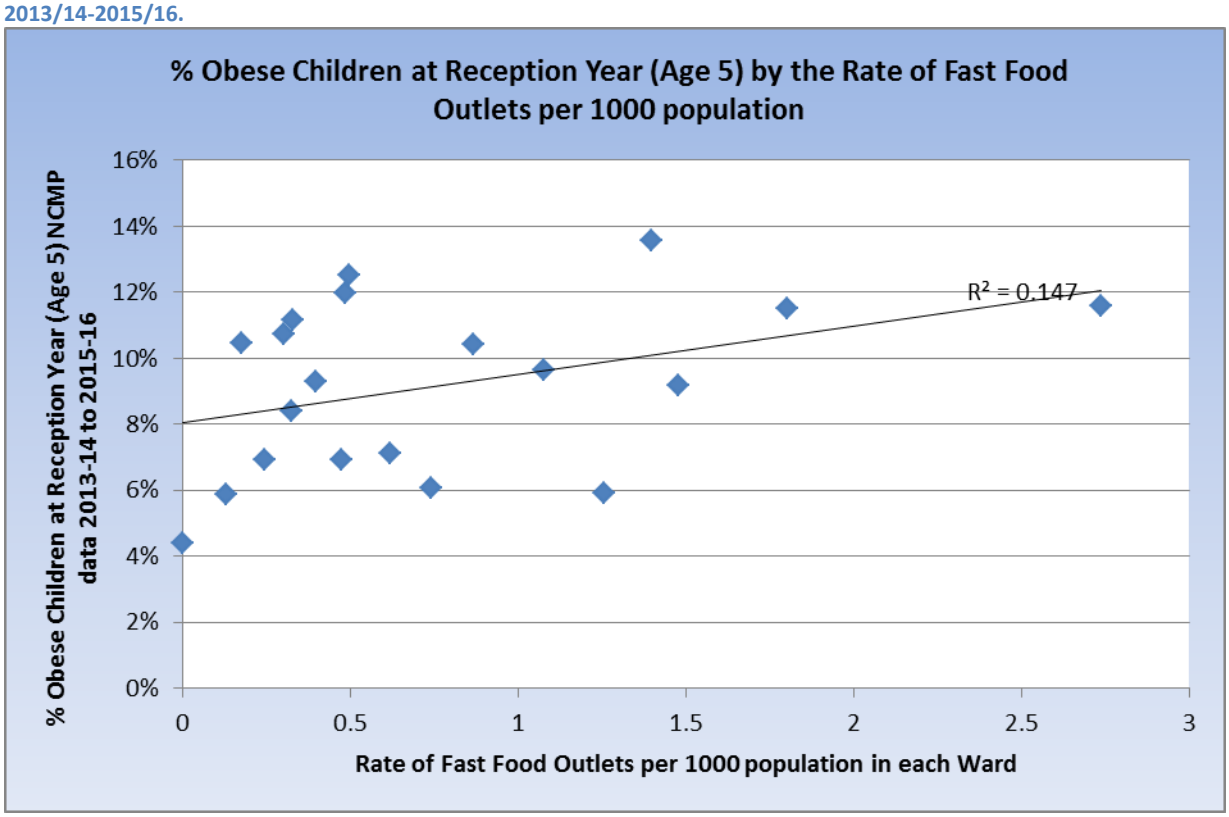
Figure 44: Rate of Fast Food Outlets per 1000 population by Deprivation score of wards in Thurrock ((2014 Mid-year population estimates).



Source: Point X, PHE, ONS

The fast food data has been analysed against 3-year NCMP data (2013-14 to 2015-16). When looking at Reception year data (age 5) the relationship is quite weak (see Figure 45 below). This is possibly because with this age group, parents and carers are largely providing round the clock guardianship, and outside of this, this age group will be in a nursery, pre-school or in reception year at school. As such, this age group will not have the freedom to go outside of these boundaries to make decisions on their own meals.

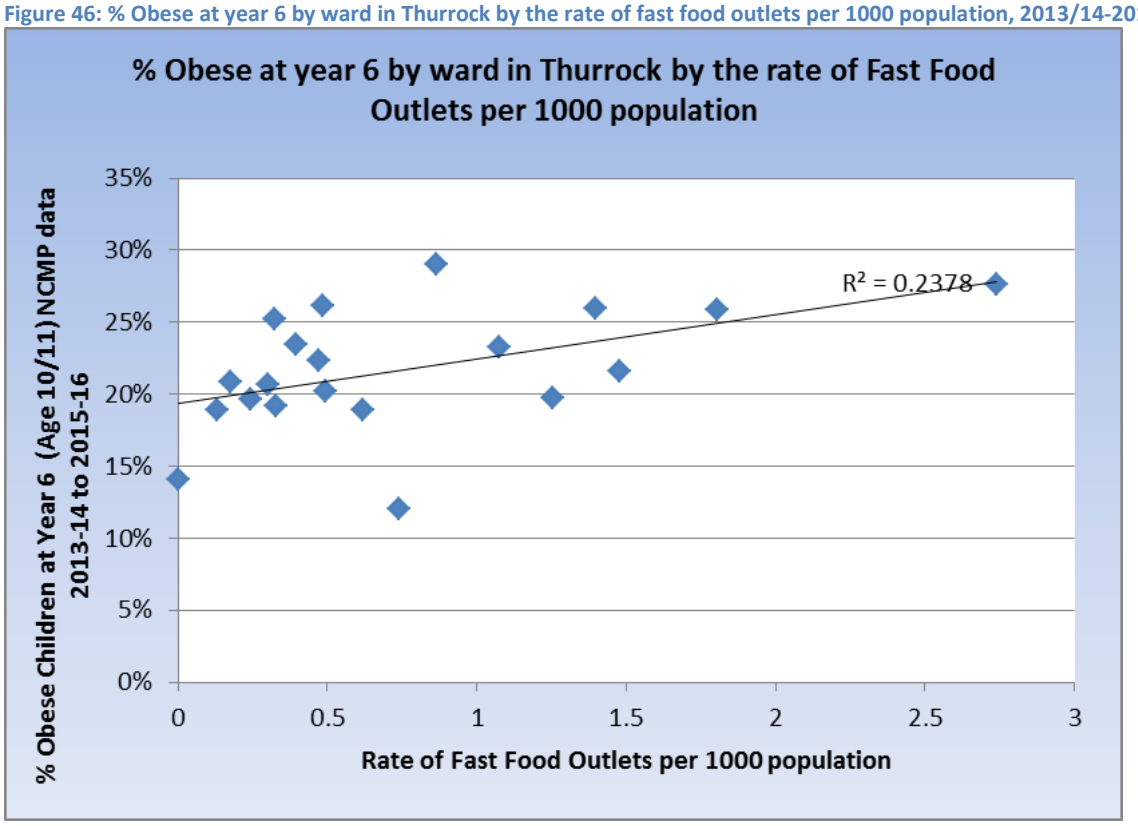
Figure 45: % Obese at Reception Year (age 5) by ward in Thurrock by the rate of fast food outlets per 1000 population, 2013/14-2015/16.



Source: Point X, PHE and NCMP

However, when year 6 data (age 10/11) is analysed with the fast food outlet data, it can be seen that there is a relatively strong relationship with excess weight in children (r = 0.24), when considering all of the factors which cause and contribute to obesity (reference the Foresight report). This may be more apparent since this age group would be becoming more independent from parents and carers with more flexibility to travel to/from school and spend pocket money on food items, in addition to this group expressing more readily their preferences for specific foods and the impact of peer pressure from their social group.

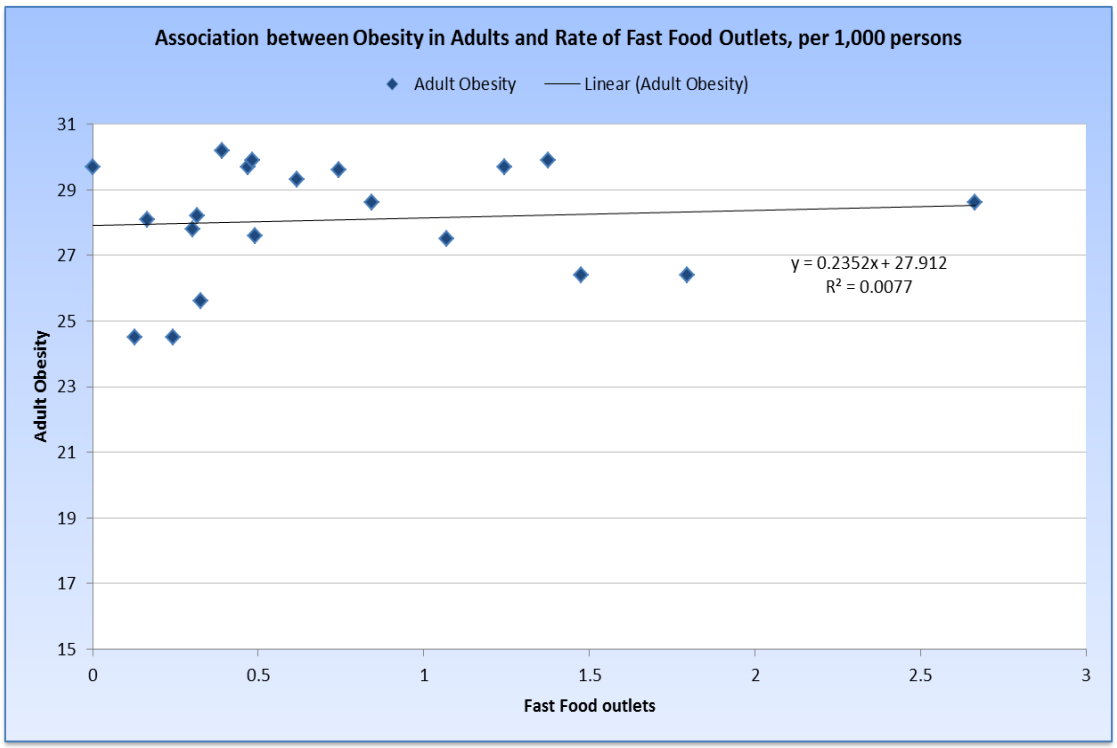
Figure 46: % Obese at year 6 by ward in Thurrock by the rate of fast food outlets per 1000 population, 2013/14-2015/16.



Source: PointX, PHE and NCMP

When looking at this association between fast food outlets and adult obesity, there is no association visible at Thurrock level. This could be affected by the fact that adults often have takeaways delivered to them from outlets in different ward areas to their home residence.

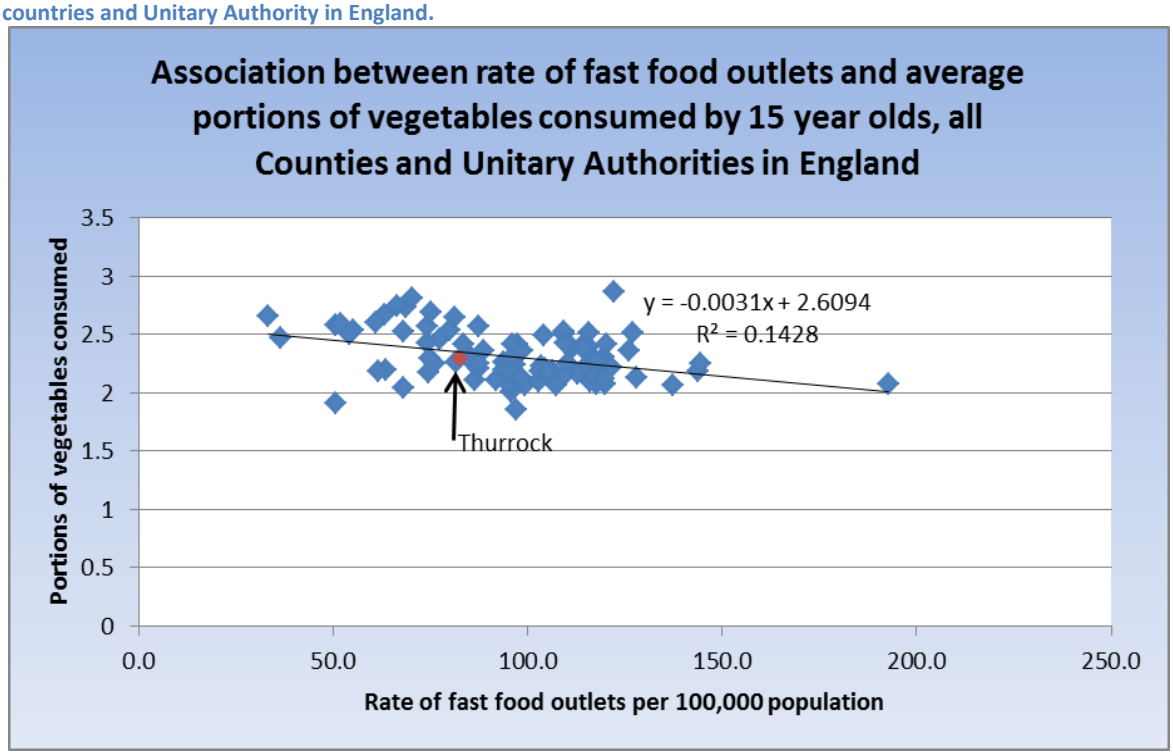
Figure 47: Association between Obesity in Adults (2006-08) and Rate of Fast Food Outlets, per 1,000 persons.



Source: Local Health and Public Health England

The authors investigated whether there appeared to be an association between the rate of fast food outlets and healthy eating behaviours at national level. Whilst no association appeared apparent for adults eating 5 or more fruits and vegetables per day or the average fruit consumption per 15 year old with fast food outlets (R^2 = 0.02 and 0.02 respectively), a slight association was seen between fast food outlets and average vegetable consumption in 15 year olds at County and Unitary Authority level. It can be seen in Figure 48 below that there is an R_2 value of 0.14, which although relatively weak still, indicates some relationship between density of fast food outlets and vegetable intake in 15 year olds.

Figure 48: Association between rate of fast food outlets and average portions of vegetable consumed by 15 year olds, all countries and Unitary Authority in England.



Source: Public Health England and What About YOUth survey data

5.5 Interventions to the food environment

A search of the evidence base focusing on interventions to tackle the food environments to achieve healthier eating was also undertaken. Predominantly, research has tended to have a focus on children, presumably due to the nature of the ability to be able to influence and control school food environments. Some of the key findings of the literature search are as follows:

- EPODE stands for 'Ensemble Prevenons l'Obesite Des Enfants' (EPODE, Together Let's Prevent Childhood Obesity) is a large-scale, coordinated, capacity-building approach for communities to implement effective and sustainable strategies to prevent childhood obesity. The focus is to mobilise stakeholders at all levels across the public and private sectors and this model has now been implemented in more than 500 communities in six countries [98].
- Environment and Policy – a status report [99] on research on physical activity and food environments found that numerous cross-sectional studies have consistently demonstrated that some attributes of built and food environments are associated with physical activity, healthful eating, and obesity. Residents of walkable neighbourhoods who have good access to recreation facilities are more likely to be physically active and less likely to be overweight or obese. Residents of communities with ready access to healthy foods also tend to have

more healthful diets. As a result the review advises that environment, policy, and multilevel strategies for improving diet, physical activity, and obesity control are recommended based on a rapidly growing body of research and the collective wisdom of leading expert organisations [99].

- Price and affordability, subsidising – a systematic review on the evidence relating to this topic found that subsidising foods tends to be effective in modifying dietary behaviour, but there is a need to examine the long-term effectiveness and cost-effectiveness at a population level [100].
- School setting based interventions – in a synthesis research report of studies to reduce obesity and related chronic disease risk in children and youth, it was found that schools were a critical setting for programming where health status indicators, such as body composition, chronic disease risk factors and fitness, can all be positively impacted [101].
- Cooking skills based programmes can help to increase confidence in cooking and can contribute to a healthier diet by supporting skills to cook from basic ingredients and increasing daily vegetable intake [102].
- Point of sale - there is a need for more well designed studies on the effectiveness of a range of point-of-sale interventions to encourage healthier eating and improve health outcomes, and of the mediating factors that might impact these interventions. One systematic review of the evidence highlighted this focussed on a range of intervention types have been used at point-of-sale to encourage healthy purchasing and/or intake of healthier food options and to improve health outcomes through this review. The review found that it was monetary incentives offered to customers for a short-term that looked promising in increasing purchase of healthier food options when the intervention is applied by itself in stores or supermarkets. There was a lack of good quality studies addressing all other types of relevant point-of-sale interventions examining change in purchase and/or intake of healthier food options [103].
- Small lifestyle changes – an article in the Obesity Reviews suggests that in order to have a population level impact, approaches might need to shift from treating individuals affected, to promoting small lifestyle changes to prevent the gradual increase in the body weight of populations [1]
- Healthy eating zones – one journal article argues that we should not be overly focussing on the school environment alone and we should be addressing the broader issue of the overall food environment, ensuring involvement with families, supermarkets and corner stores, with the potential to develop healthy eating zones around schools as a potential tool [104].
- Social and cultural aspects of eating – these are discussed further in section 4.

Recent Cochrane Review results of effective interventions for childhood obesity [105] found strong evidence to support beneficial effects of child obesity prevention programmes on BMI, particularly for programmes targeted to children aged 6 to 12 years, of which the following were found to be promising policies and strategies:

- School curriculum that includes healthy eating, physical activity and body image
- Improvements in nutritional quality of the food supply in schools
- Environments and cultural practices that support children eating healthier foods and being active throughout each day
- Support for teachers and other staff to implement health promotion strategies and activities (e.g. professional development, capacity building activities).
- Parent support and home activities that encourage children to be more active eat more nutritious foods and spend less time in screen based activities.

The broad range of research and studies indicates the multi-layered approach which needs to be undertaken to have an impact on improving population dietary intake. Once again, throughout the literature although the evidence suggests the physical environment has a role to play in weight status, there is the recognition that research in this area is in its infancy and needs to be further developed.

5.6 Recommendations

Recommendations

1. A detailed review of the local Healthy Start scheme is undertaken by public health and children's services and a recommendation to understand the effectiveness of the scheme and to focus on increasing the uptake of the scheme locally.
2. Children's services to conduct a review of early years, childcare and school settings to understand the provision of healthy food environments locally.
3. Ensure the nutritional quality of food supplied in early year and school settings.
4. Develop an understanding of why eligible children and families in Thurrock do not take up free school meals. There should be a concentrated effort to increase the uptake of Free School Meals in primary and secondary schools in Thurrock.
5. School catering should work with schools to change and shift the culture of packed lunches to school meals or to encourage more nutritionally balanced packed lunch contents.
6. School is a critical setting for a positive impact on reducing obesity and chronic related disease risk, and school environment and curriculum should deliver consistent messages on food and diet.
7. There should be a demonstrable shift of strategic focus to promoting small lifestyle changes to prevent gradual increases in body weight, impacting at a population level.
8. Planning policy should consider the options around the restriction of the proliferation of fast food outlets in Thurrock, in particular in the areas of highest childhood obesity at year 6.
9. Explore opportunities to influence the built environment through planning and regeneration to enable better access to affordable healthy food.
10. To work with environmental health around existing fast food outlets to review the provision and offer alternative options and healthier food or healthier ways of cooking food.
11. Work with planning to increase allotment availability and accessibility and link them to community growing schemes and release excess food grown to communities.
12. Work with local supermarkets on healthy food promotion and marketing schemes and areas of food waste.
13. Ensure issues relating to food storage and cooking skills are identified and addressed in populations and groups where this is a highlighted barrier to eating a healthy and balanced diet.
14. Consider the potential to pilot of a healthy eating zone to test whether this is something which might have an impact on a food system.
15. To work with the Food Bank and other community initiatives to identify healthy eating/ preparation ideas for their users.

6. Physical Activity and the Physical activity environment

Key Points

- 52.8% of adults in Thurrock reported to meet the physical activity guidelines, which is statistically similar to regional and national averages.
- Thurrock has statistically higher percentage of young people age 15 that are sedentary for more than 7 hours per day.
- Thurrock has statistically less adults who do any cycling, three times per week.
- Across Essex, the following groups have lower levels of physical activity:
    - Females
    - Adults, especially older adults
    - People with a limiting illness or disability
    - People with lower social gradient NS-SEC
    - Part-time employees
    - People with higher BMI levels
- Participation in Physical Activity is not uniform across Thurrock.
- In childhood, time spent being sedentary increases with age.

Around one in two women and a third of men in England are damaging their health through lack of physical activity [106]. Physical inactivity is the fourth largest cause of disease and disability in the UK [107] and directly contributes to one in six deaths in the UK – the same number as smoking [108].

The HSCIC in 2015 found that both men and women who were overweight (BMI 25 Kg/m2 to less than 30 Kg/m2) or obese (BMI 30Kg/m2 or more) were less likely to meet physical activity recommendations compared with men and women who were not overweight or obese [109].

There is also a link between deprivation and lower levels of physical activity. People living in the least prosperous areas are twice as likely to be inactive than those living in more prosperous areas [110].

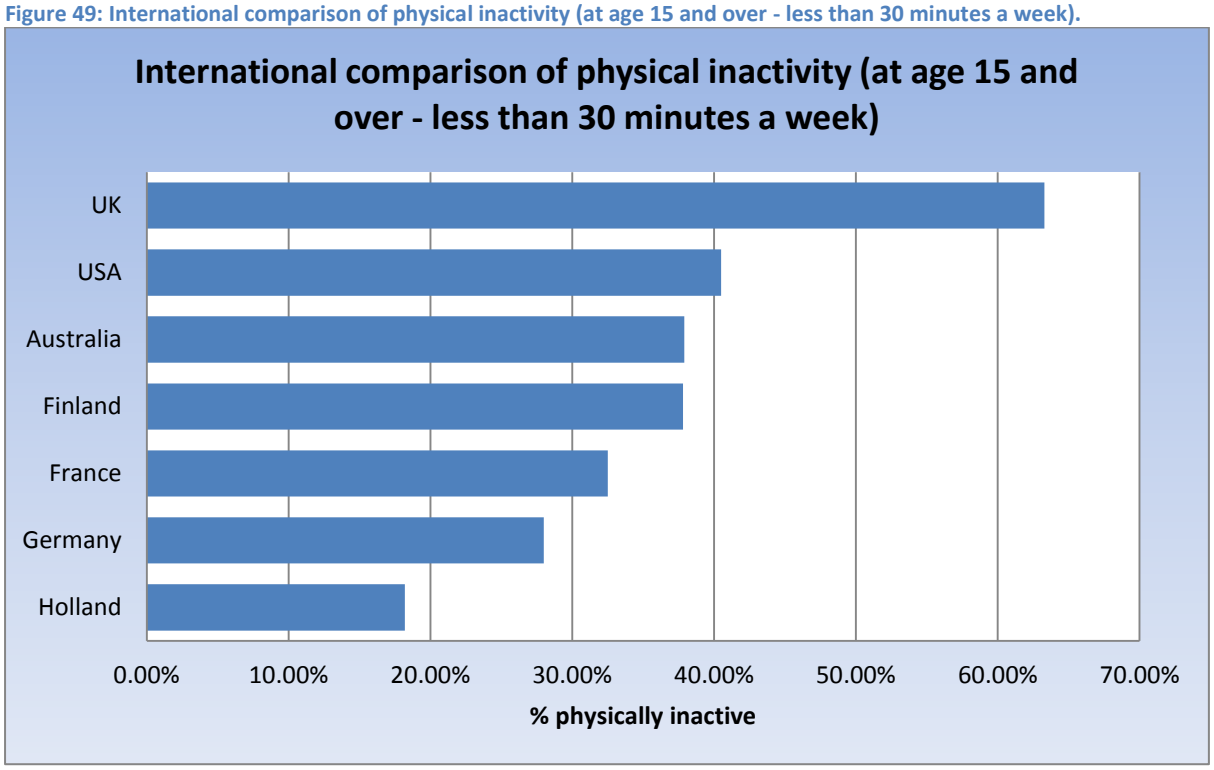
6.1 Causes and effects of the physical activity environment

Neighbourhood environment and the design of the physical environment are recognised as one of the main determinants of health behaviour and lifestyle among the general population.

Linking physical activity into other strands such as planning, transport infrastructure and housing opens up opportunities for long term environmental change. Holland are leading the way in spatial planning, greenness and alternative transport and in this regard the UK has some way to go in acknowledging physical activity as a relevant policy theme.

International comparison of physical inactivity (at ages 15 and over):

Figure 49: International comparison of physical inactivity (at age 15 and over - less than 30 minutes a week).



Source: from 122 World Health Organisation member states with specific criteria for inactivity

Studies suggested the three most reported environmental attributes associated with BMI levels:

- Safety from traffic was the most correlated, which suggests that creating safe routes for walking/cycling will have the most positive impact upon weight status.
- Having numerous shops and services within walking distance was associated with lower BMI.
- Poor perceived crime safety was related to higher BMI.

Primary action should be focussed on building environments that will nurture and encourage physical activity, discourage sedentary behaviour and promote easy access to unhealthy food choices. The main objective should be ensuring the built environment promotes ease of access to healthier options which will in turn foster healthier lifestyles. Thurrock council could employ the use of various legislative and policy controls at its disposal, combining them with other influences of healthy lifestyle, which can help to build/improve places where residents are supported and encouraged to live healthier lives.

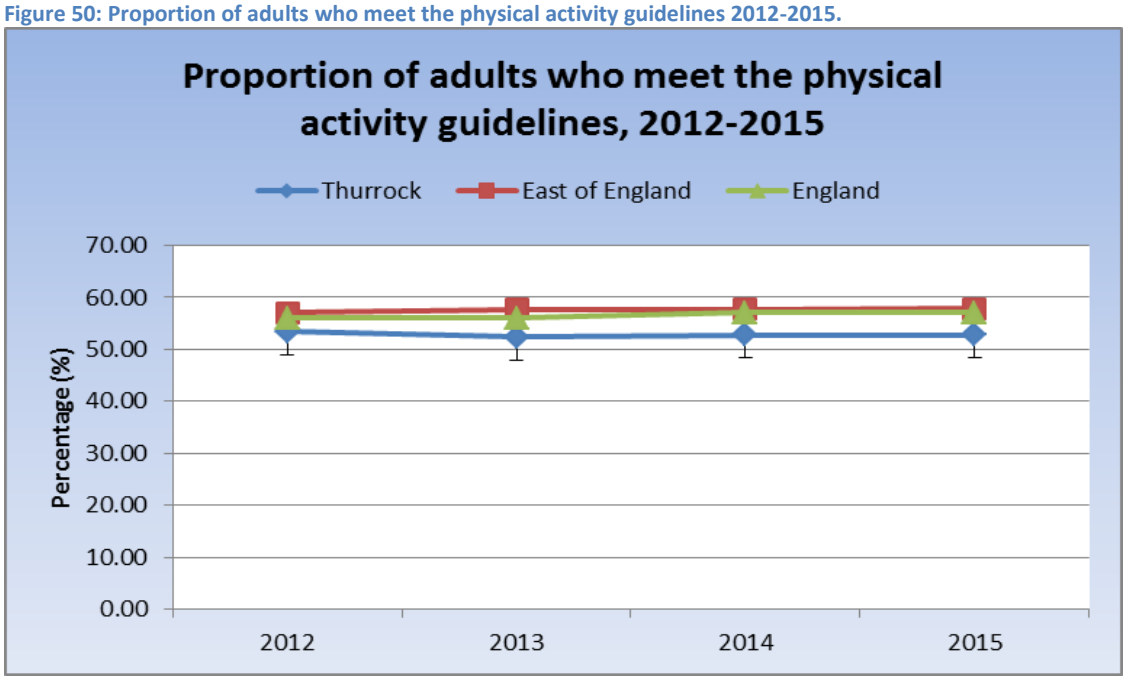
There is growing evidence that greater availability of green space in an urban environment is associated with health benefits for the local population. Studies that consistently demonstrate a significant positive relationship between green space and physical activity tend to be ones that take the aesthetic attributes of the environment into consideration. For example, a study by Sugiyama et al [111] found that **attractive** green spaces were positively associated with increased walking while the number of green space was not. This was evidenced even further by Giles-Corti et al [112] who also found a positive relationship between the attractiveness and presence of natural features and walking behaviour. These results suggest that the aesthetic attributes of the environment may be key in any relationship between green space and physical activity. Strong consideration should be given to this aspect when planning future green space within Thurrock.

6.2 Physical Activity in Thurrock

6.2.1 Levels of physical activity in adults

The level of physical activity undertaken by a population can be measured by the proportion that meets the recommendation of 150 minutes per week. In Thurrock, 52.8% of adults reported to meet the physical activity guidelines in 2015, which was statistically similar to regional and national averages. The values for Thurrock have remained fairly consistent over the last four years, starting at 53.39% in 2012 and remaining stable in line with the regional and national averages. This can be seen in the chart below.

Figure 50: Proportion of adults who meet the physical activity guidelines 2012-2015.



Source: Active People Survey

The chart below details Thurrock's physical activity behaviour compared to Regional and National averages:

Figure 51: Thurrock's physical activity behaviour compared to Regional and National Averages, 2014-16.

Compared with benchmark Better Similar Worse | Lower Similar Higher Not Compared

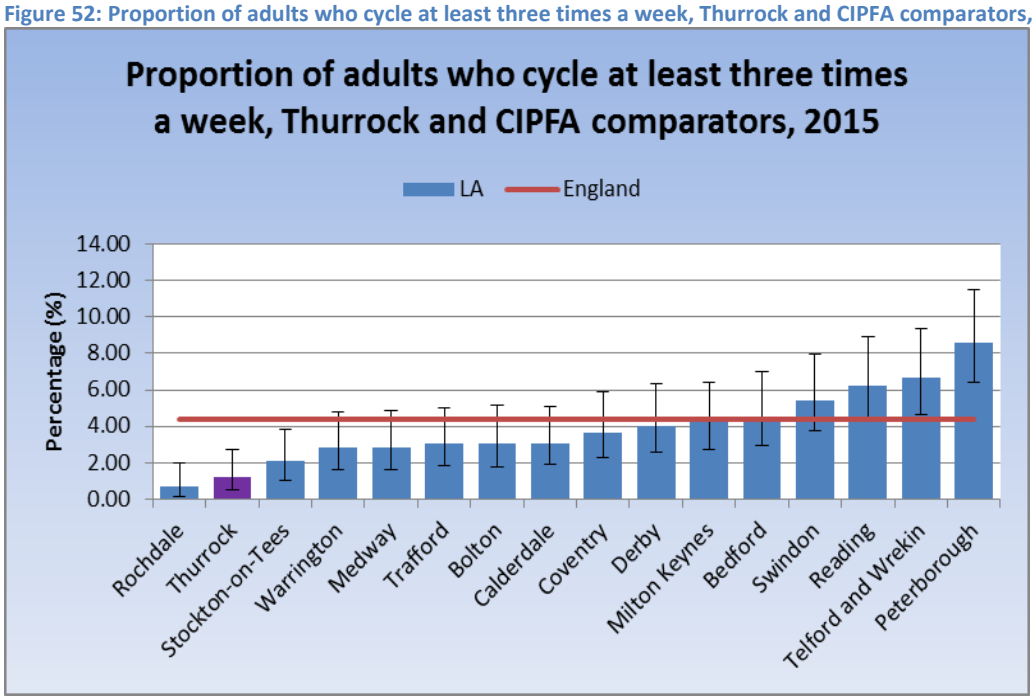
Benchmark Value: Worst/Lowest | 25th Percentile | 75th Percentile | Best/Highest

Indicator	Period	Thurrock		Region	England	England		
		Count	Value	Value	Value	Worst/ Lowest	Range	Best/ Highest
Percentage of adults doing 150+ minutes physical activity per week	2015	-	52.8%	57.8%	57.0%	44.8%		69.8%
Percentage of adults achieving less than 30 minutes of physical activity per week	2015	-	29.6%	27.6%	28.7%	43.7%		17.5%
Percentage of adults doing 30-149 minutes physical activity per week	2015	-	17.6%	14.5%	14.3%	9.4%		19.5%
Percentage of 15 year olds physically active for at least one hour per day seven days a week	2014/15	-	13.7%	13.3%	13.9%	8.3%		18.8%
Percentage of 15 year olds with a mean daily sedentary time in the last week over 7 hours per day	2014/15	-	76.0%	71.0%	70.1%	81.0%		58.7%
Percentage of adults who do any walking, at least five times per week	2014/15	-	48.8%	49.1%	50.6%	39.9%		68.1%
Percentage of adults who do any walking, at least once per week	2014/15	-	77.5	80.2	80.6	70.4		91.3
Percentage of adults who do any cycling, at least three times per week.	2014/15	-	1.2%	5.4%	4.4%	0.7%		15.0%
Percentage of adults who do any cycling, at least once per month	2014/15	-	13.0%	16.9%	14.7%	5.6%		34.2%
Utilisation of outdoor space for exercise/health reasons	Mar 2015 - Feb 2016	-	36.9%*	18.7%	17.9%	5.1%		36.9%

Source: PHE fingertips profile 2015

However whilst Thurrock has similar levels of adults meeting the physical activity guidelines to the national average, one type of physical activity it has particularly low uptake of is cycling. The Active People Survey asked respondents to record how often they cycled (for any reason) per week, and the data below shows that only 1.24% of adults in Thurrock said they had cycled at least three times a week. This is significantly below the national average of 4.40% and when ranked amongst its CIPFA comparator group, it can be seen that there is only one local authority (Rochdale) with a lower proportion.

Figure 52: Proportion of adults who cycle at least three times a week, Thurrock and CIPFA comparators, 2015.



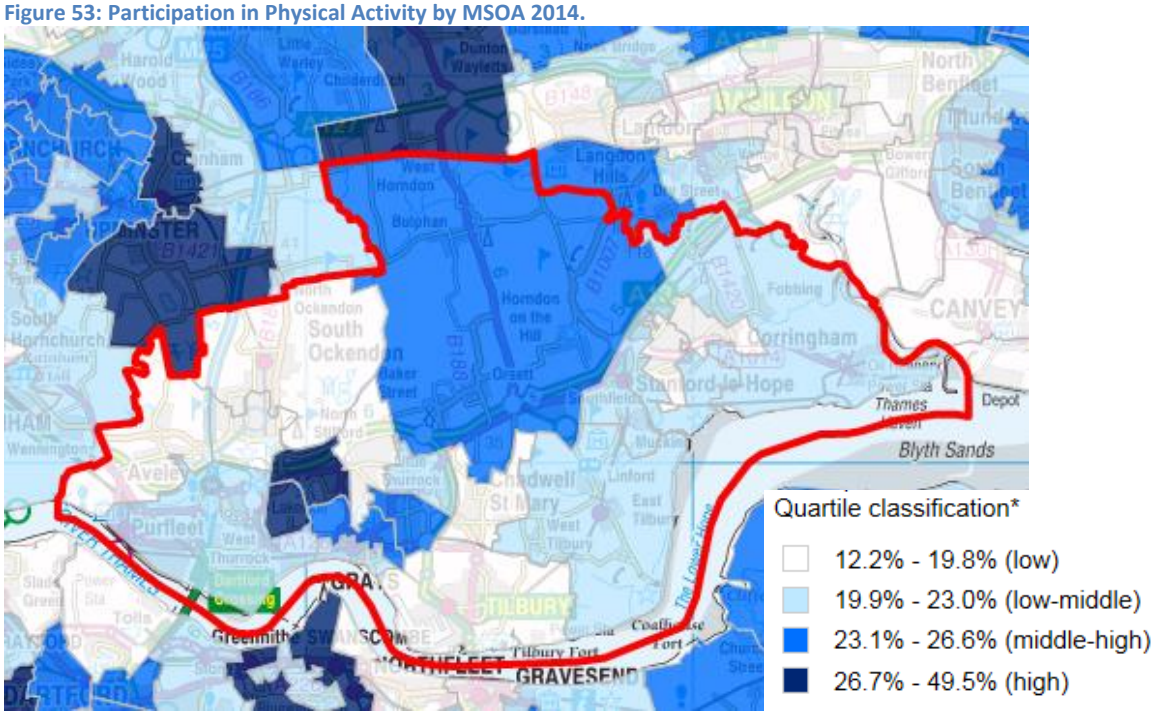
Source: Active People Survey

Research undertaken as part of Essex County Council's Sports and Physical Activity Needs Assessment looking at the demographic breakdown of participation data suggests clear differences in physical activity levels according to gender, age, disability and socio economic status. Within Essex the following groups were identified as having lower levels of physical activity:

- Females
- Adults, especially older adults
- People with a limiting illness or disability
- People with lower social gradient NS-SEC
- Part-time employees
- People with higher BMI levels

There is also a link between levels of physical activity and deprivation. Participation in physical activity and sport is not uniform across the borough. Small area estimates published by Sport England indicate that the areas of Thurrock with the highest likely proportion of adults participating in 3 x 30 minutes sessions of sport per week are Chafford Hundred and South Chafford, with over 30% of adults in those areas undertaking this, whilst areas such as Tilbury have nearer to 16% of adults participating at this level.

Figure 53: Participation in Physical Activity by MSOA 2014.



Source: Sport England

6.2.2 Levels of Physical Activity in Children

Guidelines on the amount of activity recommended for health were published by the Chief Medical Officer for England and recommend that children should:

- Be at least moderately active for 60 minutes every day (this is a minimum and states that children should ideally engage in several hours each day).
- Undertake vigorous intensity activity, including muscle and bone-strengthening activities, at least three days each week.

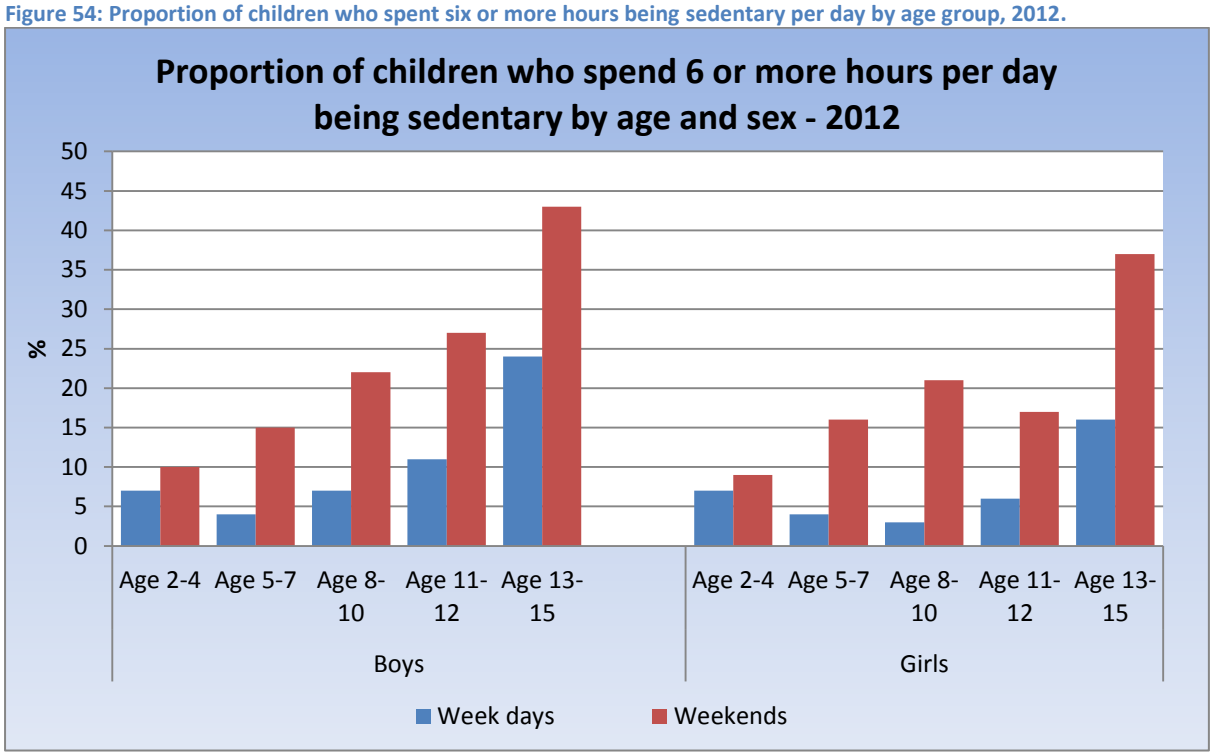
Findings from the national statistics HSE:

- Excluding school-based activities, 22% of children aged between 5 and 15 met the physical activity guidelines of being at least moderately active for at least 60 minutes every day (23% of boys, 20% of girls).
- The proportion of both boys and girls aged 5 to 15 meeting current recommendations was lower in the higher quintiles than in the lower quintiles of equivalised household income.
- Four in five children (79%) participated in activities such as walking and sports in the last week while in a lesson at school.
- Time spent being sedentary (excluding time at school) during the week and at weekends increased with age.

It is well evidenced that a decline in physical activity among all age groups has significantly contributed to rising rates of obesity. Studies have demonstrated that behaviours such as watching television and playing computer games are associated with obesity and generally parents report a preference to this type of activity rather than unattended outside play for safety reasons. In addition children today are more likely to be driven to school than in previous generations and low participation rates in sports and PE, particularly amongst adolescent girls are all associated with increasing obesity [113].

Levels of sedentary behaviour increase throughout a child's school life, and this is demonstrated by Figure 54 below which shows the time spent sedentary during leisure time in children aged 2 – 15 years.

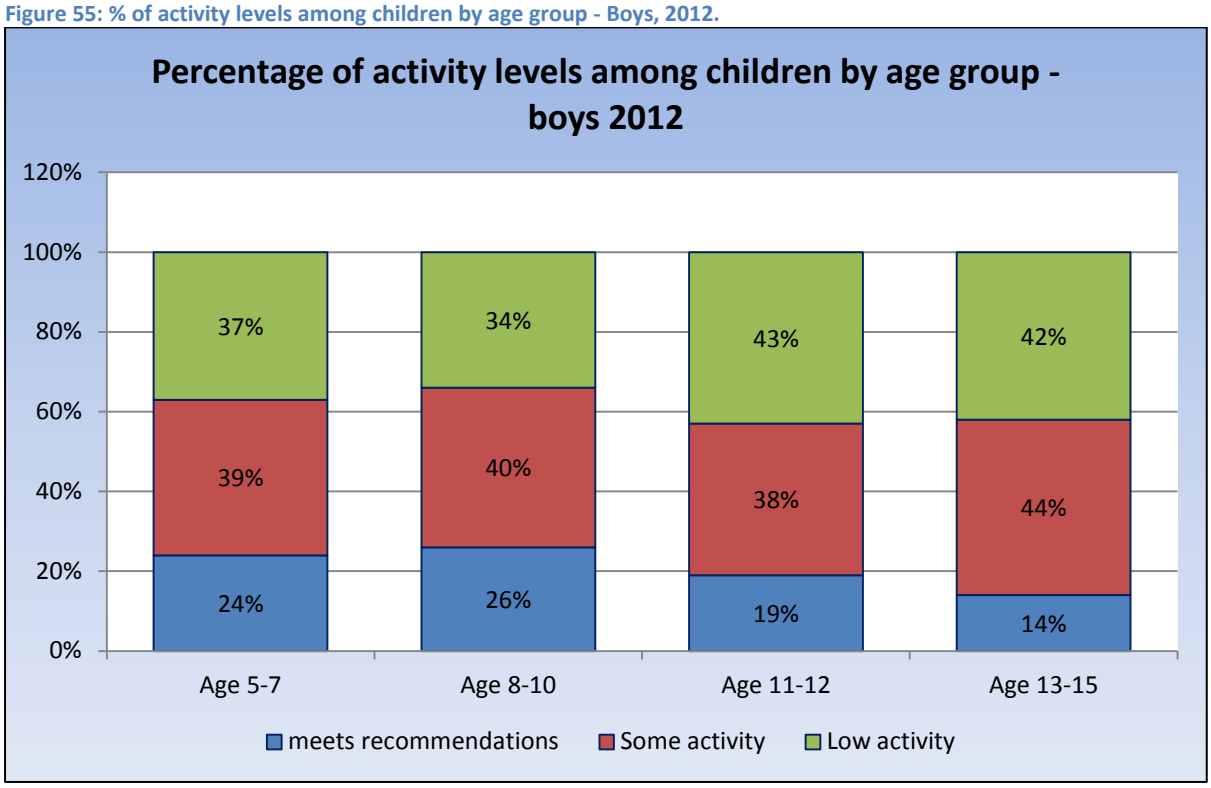
Figure 54: Proportion of children who spent six or more hours being sedentary per day by age group, 2012.



Source Health Survey for England 2012

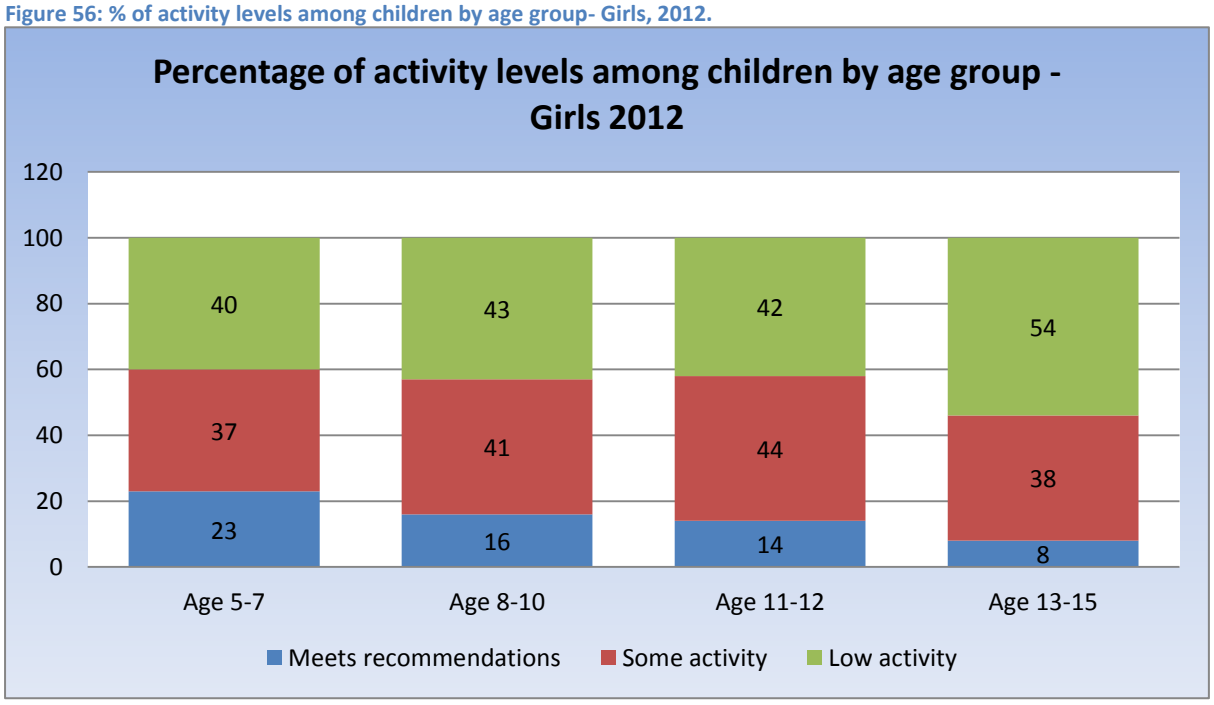
Figure 56 shows the proportion of children meeting government recommendations for physical activity, 2012 (aged 5-15 years). This shows that in each age group only a small proportion of children are meeting physical activity recommendations with the majority doing only some activity or low activity.

Figure 55: % of activity levels among children by age group - Boys, 2012.



Source: Health survey for England 2012 Report (excludes walking and cycling to/from school)

Figure 56: % of activity levels among children by age group- Girls, 2012.

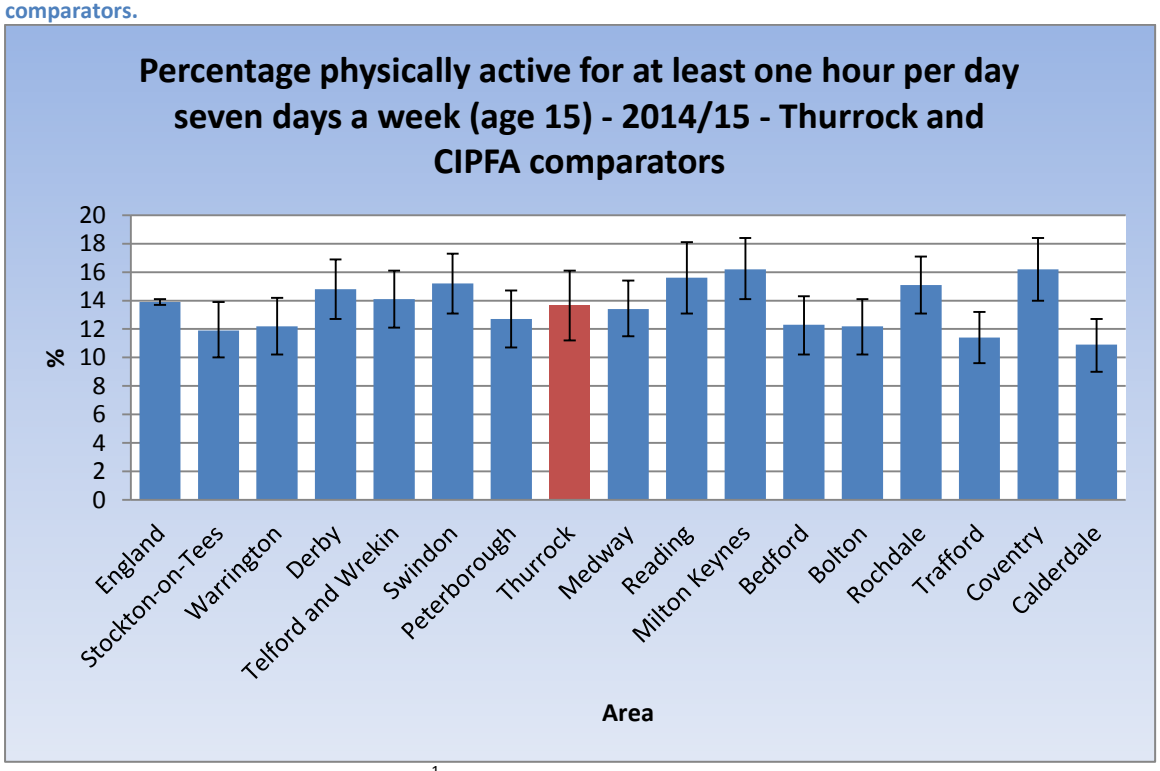


Source: Health Survey for England 2012 Report (excludes walking and cycling to/from school)

Good physical activity habits in childhood and adolescence are likely to be carried into adulthood, while lower levels of activity are associated with obesity.

The only available comparative data recently recorded for Thurrock is detailed in the 'What about You survey 2015' where physical activity levels in Thurrock's young people are reported as being statistically similar to national and regional averages. This can be seen in Figure 57.

Figure 57: % of physically active for at least one hour per day, seven days a week (age 15) - 2014-15 - Thurrock and CIPFA comparators.



Source: What About You Youth survey 2015[1]

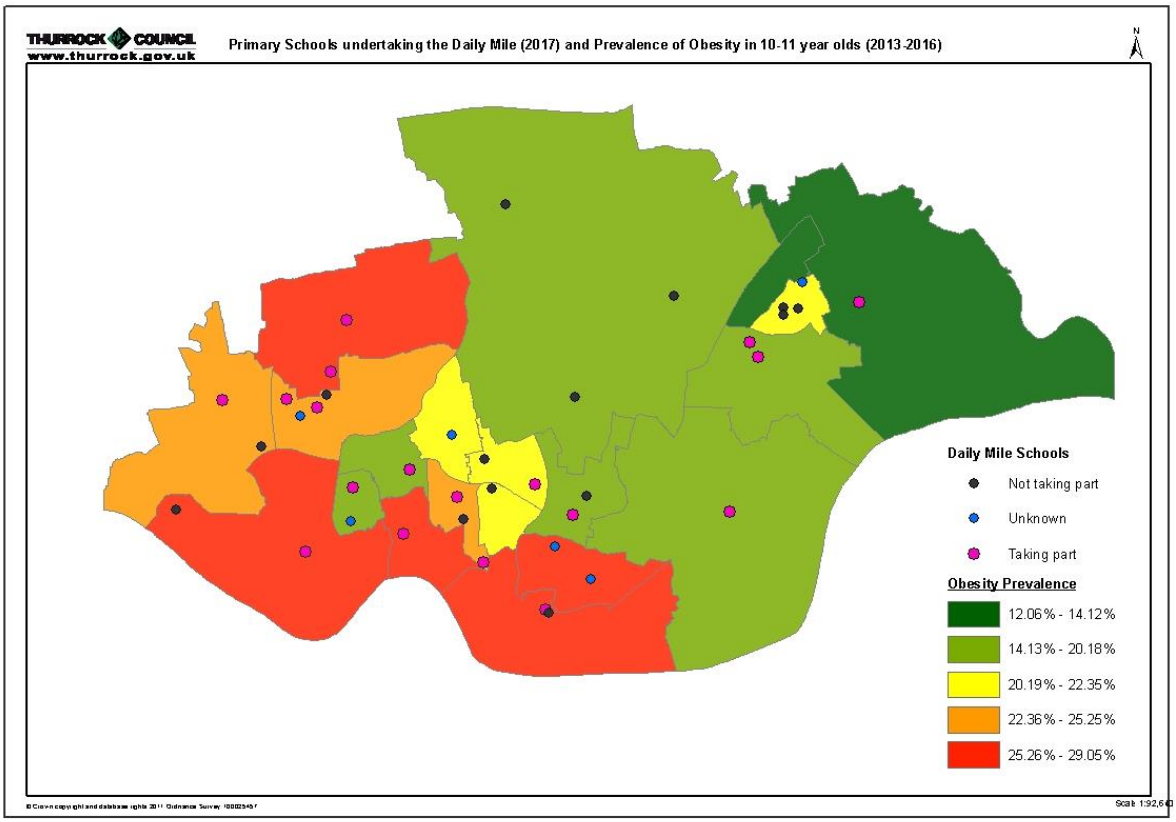
Physical activity in school in Thurrock

Growing evidence suggests that doing The Daily Mile is a simple, fun and effective way to improve children's wider health and wellbeing, in addition to their physical fitness. [114]. Thurrock public health is currently undergoing a local evaluation and although the initial feedback is positive it is too early in the programme to evaluate conclusively.

During 2015/16, Thurrock Council has been promoting the uptake of the Daily Mile in schools and As of May 2017, 42% of primary schools are signed up to and delivering the Daily Mile. Locally there is a target to achieve 60% by the end of March 2018. Figure 58 below shows the current schools participation in the Daily Mile overlaid with the NCMP data for year 6 (age 10/11) in Thurrock. Whilst there is a good geographical spread of schools undertaking this, it would be beneficial to promote this, particularly in areas of high obesity prevalence. It should be noted that there were 6 schools for which it has not yet been possible to clarify whether they are undertaking the Daily Mile or not.

[1] The What About Youth (WAY) survey is a lifestyle study of 15 year olds in England. The survey was produced by the HSCIC with an accompanying profile published on PHE's fingertips platform.

Figure 58: Schools undertaking the Daily Mile and Obesity prevalence in Year 6, 2013-16.



Source: Thurrock Council and NCMP

6.3 Access to Leisure and sport in Thurrock

The current leisure facility provision in Thurrock Borough includes 4 Leisure Centres (Blackshots Leisure Centre, Belhus Park Golf and Country Club, Corringham Leisure Centre, Palmers Sports and fitness Centre) and 9 Schools offering community sports and fitness centres. In addition there are numerous sports pitches and 7 bowling greens.

Thurrock borough has a range of countryside and heritage sites which include

- Bata Reminiscence and Resource Centre
- Coalhouse Fort Project
- Coalhouse Park
- Essex Wildlife Trust,
- Chafford Hundred Gorges and
- Thurrock Thameside Nature Park
- Langdon Hills Country Park
- RSPB Rainham Marshes
- Thames Chase Country Park
- Tilbury Fort

Other Facilities/developments in the borough include the Grangewaters Outdoor education and leisure centre and over 100 miles of public footpaths and bridleways.

The development of the Thames Estuary Coastal pathway is currently being assessed in Thurrock in partnership with Natural England.

Thurrock Sports Council is managed by Thurrock CVS and supports and develops the work already being done locally.

Thurrock Council has recently commissioned an Active Place Strategy (see section 6.4.3) and the work to inform this strategy looked at indoor and outdoor provision throughout the whole of the borough. The work identified the current status of provision and also calculated the need for envisioned future population growth. The information will influence the implementation of the Health and Wellbeing agenda through the identification of leisure demand and increasing the opportunities for physical activity within indoor and outdoor venues that are fit for purpose and of a high quality.

The Active Places Indoor Sports and Leisure Facilities Assessment research that will feed into this strategy has identified that many of Thurrock's existing sports facilities are in need of significant investment to either improve or renew. The area would also benefit from increased provision to meet the needs of the existing and growing population.

It is also relevant to point out that in addition to the key driver of addressing health inequalities, Thurrock also needs to make itself an attractive place for families and companies to locate, in order that new jobs are created and new houses sold. Therefore, the network of community sport and physical activity facilities contributes to the overall quality of life of residents and attractiveness of Thurrock to potential residents and employers.

6.4 Access to open spaces in Thurrock

The core message running through local strategic documentation is the requirement to ensure adequate, affordable opportunities for Thurrock residents to take part in physical activity and to reduce health inequalities in the Borough. It is therefore essential that open spaces are fit for purpose, accessible and available to the community and that the 'offer' is developed based on local communities' needs. Further to this green open space should be viewed as an important tool in helping to improve mental well-being and to support in combatting pollution and improve air quality throughout Thurrock.

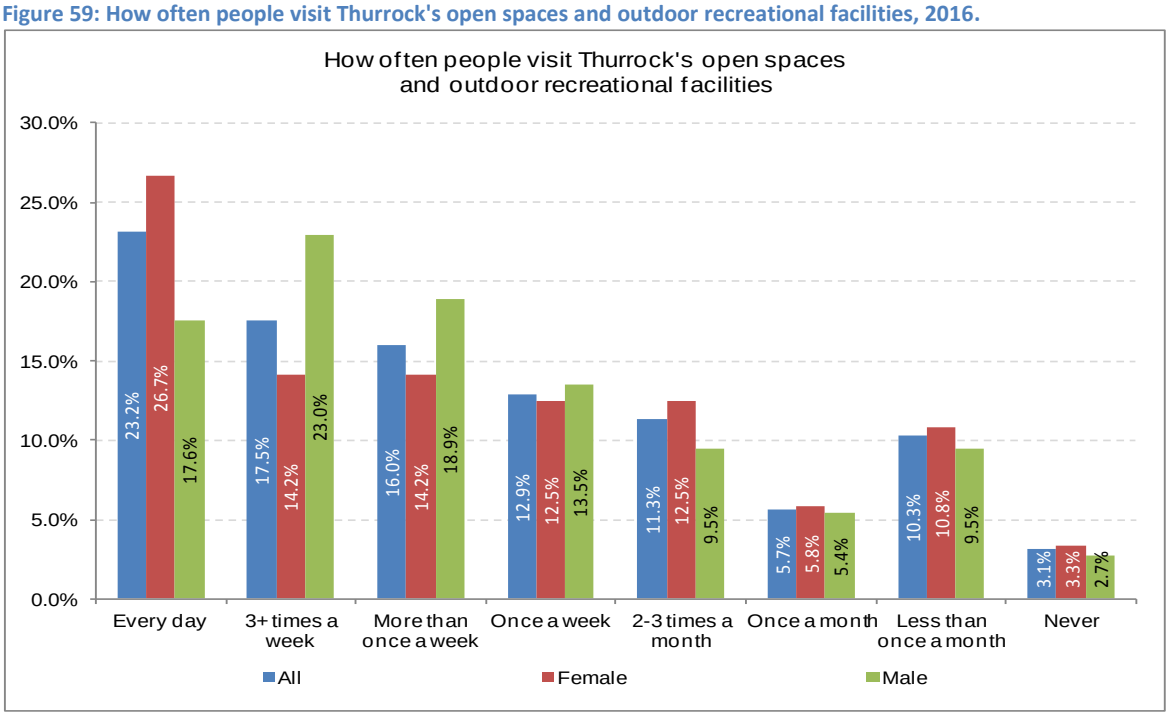
As part of the Active place Strategy (see section 6.4.3) an assessment of open space sites (including provision for children and young people) was undertaken. This included mapping and assessing each sites value and quality. Only sites publically accessible were included (i.e. private sites or land, which people cannot access, were not included). Each site was classified based on its primary open space purpose, so that each type of space was counted only once. The audit, and the report, utilise the following typologies in accordance with best practice:

1. Parks and gardens
2. Natural and semi-natural green space
3. Amenity green space
4. Provision for children and young people
5. Allotments
6. Cemeteries/churchyards
7. Civic space

Parks were the most frequently visited type of green space - representing 90% of overall green space use. Good quality and well maintained parks are more likely to be used and local residents report higher 'neighborhood satisfaction' and better health as a result.

Nationally it was noted that there were stark differences in the provision and accessibility of green space between and within local authorities. Provision of high quality green space is often worse in more deprived areas than in affluent areas. People in more deprived areas may live close to green spaces but they are infrequently used due to concerns about crime and safety. Research has shown that over half of people living in deprived areas would take more exercise if green spaces were improved [115].
The survey that was undertaken showed that there were a high number of people who identified themselves as visiting their local open space daily.

Figure 59: How often people visit Thurrock's open spaces and outdoor recreational facilities, 2016.

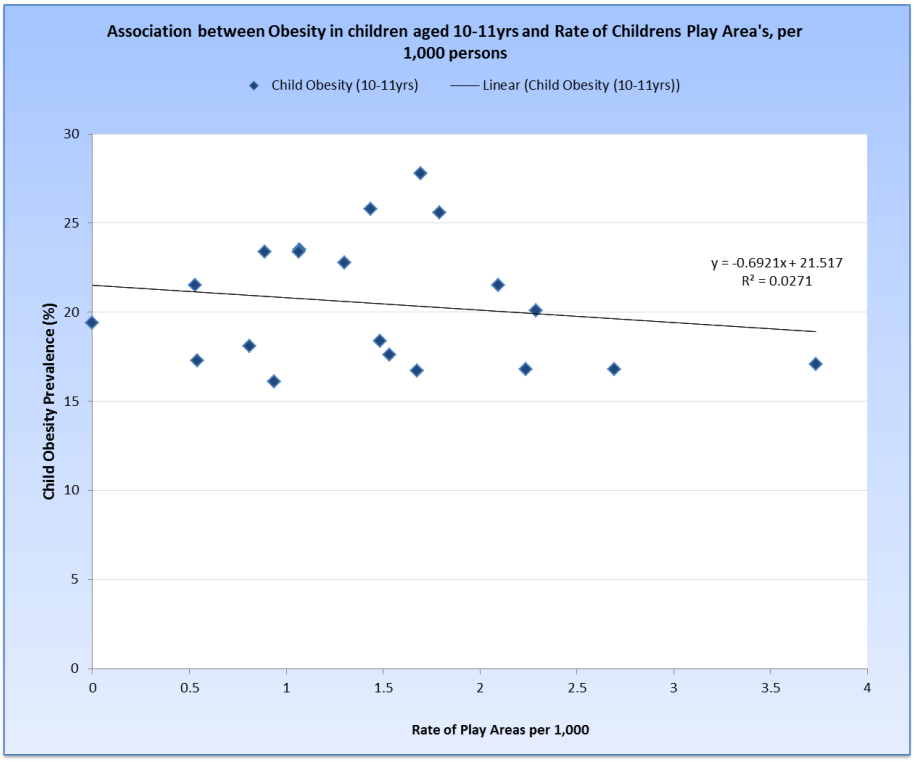


Source Draft open space assessment June 2016 KKP

6.4.1. Play Areas

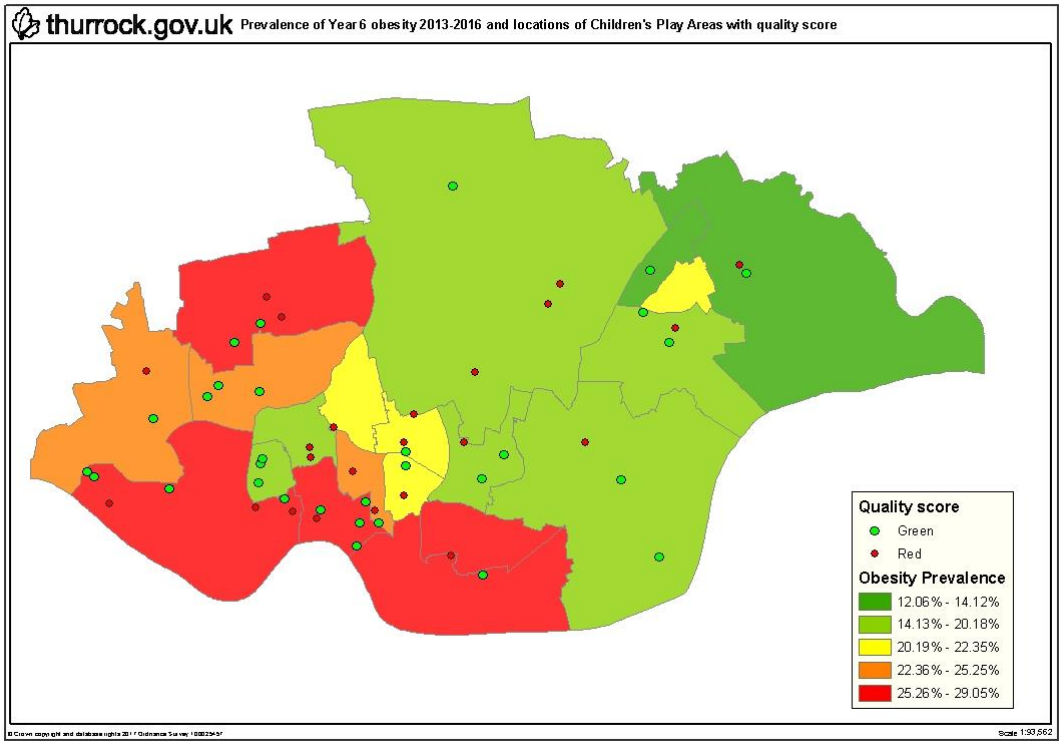
Local data obtained from the Council's Planning team found that there are 62 play areas in the borough (2016). Considering them against the areas of high childhood obesity, it does not appear that there is a very strong association between the two. This can be seen as a scatter chart for Reception year obesity, and a map for Year 6 obesity in the two figures below (Figure 60 and Figure 61).

Figure 60: Association between Obesity in children aged 10-11yrs (2013/14-2015/16) and Rate of Children's Play Areas (2017), per 1,000 persons.



Source: National Child Measurement Programme and Thurrock Council Planning Team

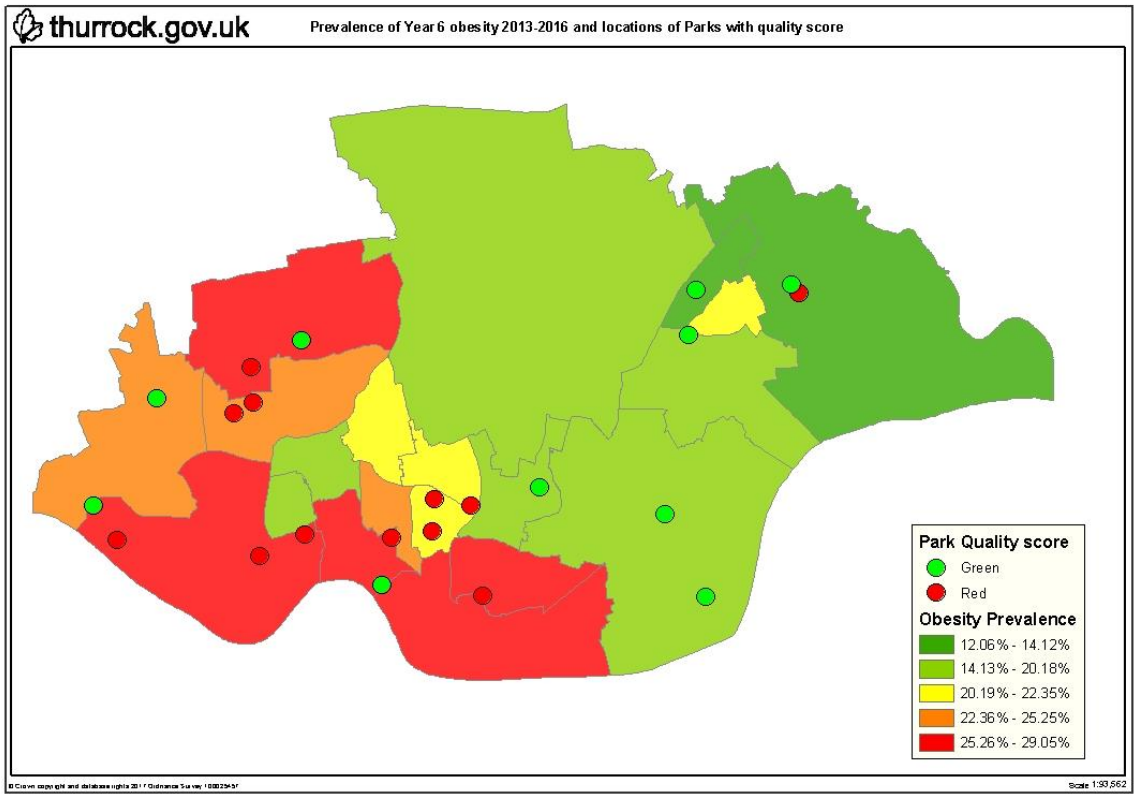
Figure 61: Prevalence of Year 6 Child Obesity 2012/13-2014/15) in relation to Children's Play Areas (2017).



Source: National Child Measurement Programme and Thurrock Council Planning Team

When we overlay the parks and gardens quality information with the NCMP data for childhood obesity at year 6 (age 10-11), there starts to emerge a picture which appears to show that those parks and gardens which are under the threshold for quality are in the areas of higher rates of childhood obesity. If available, it is recommended to obtain the scores and investigate if there is a correlation between the scores for the park and the NCMP data for the surrounding areas to test the strength of the relationship.

Figure 62: Quality scores of Thurrock Parks and Gardens (2017) with NCMP Year 6 (age 10/11) data.

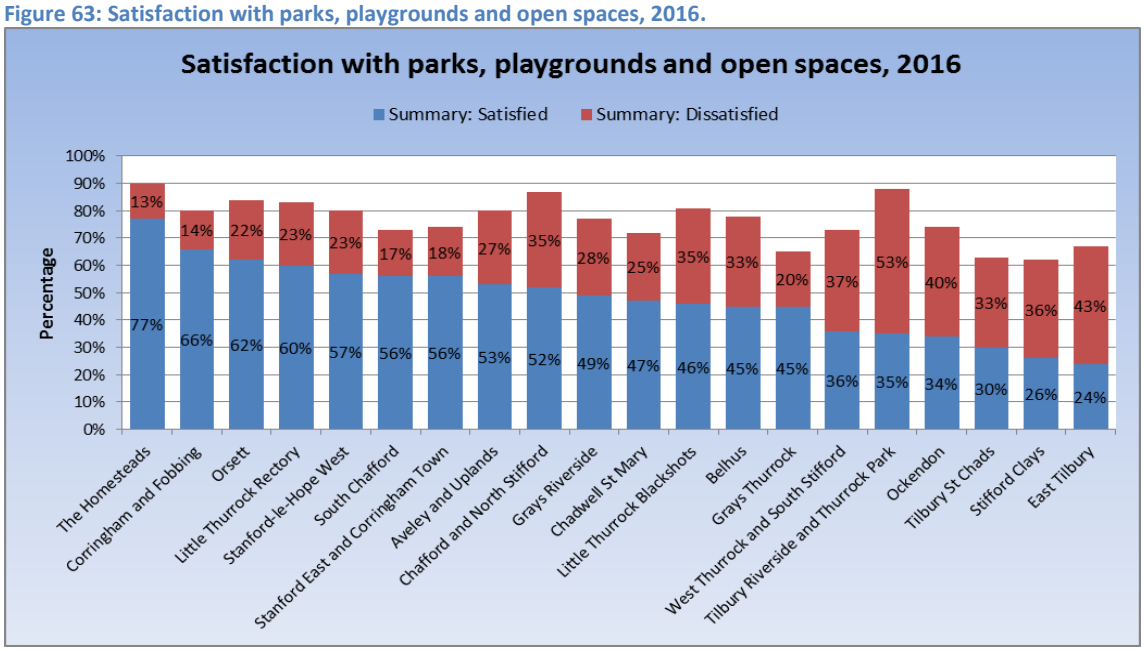


Source: National Child Measurement Programme and Thurrock Council Planning Team

6.4.2 What we know – Residents Views

Residents in Thurrock have varying levels of satisfaction with local parks, playgrounds and open spaces in their area. Data from the latest residents survey 2016 [116]) indicates that whilst satisfaction in areas such as The Homesteads and Corringham and Fobbing is relatively high (77% and 66% respectively), satisfaction in areas such as Stifford Clays and East Tilbury is much lower (26% and 24% respectively).

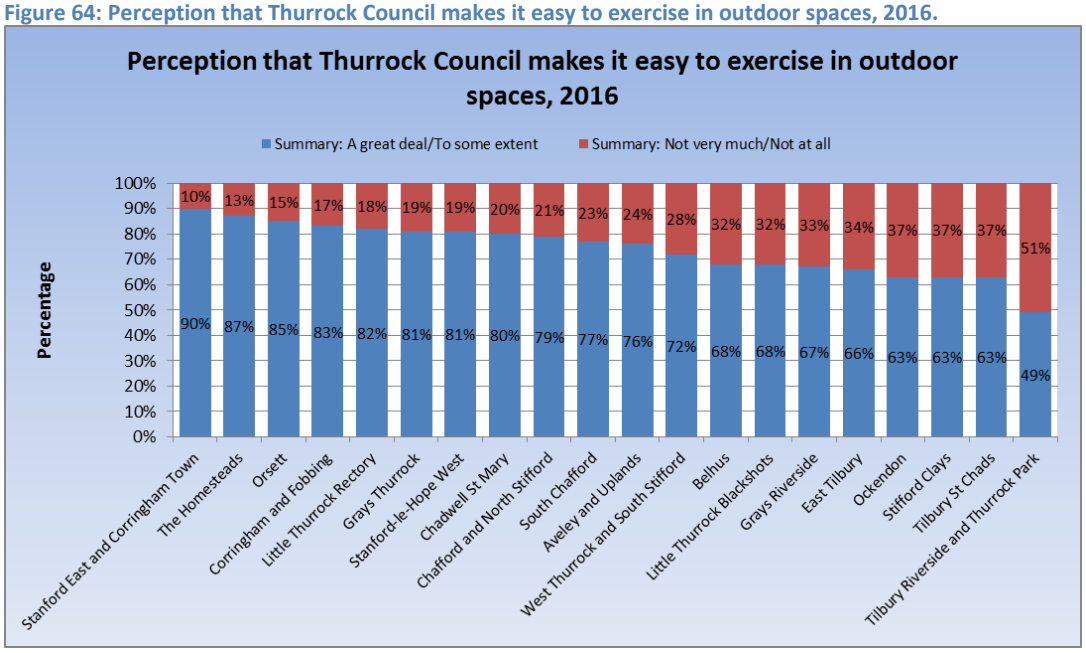
Figure 63: Satisfaction with parks, playgrounds and open spaces, 2016.



Source: Thurrock Council Residents Survey 2016

There is also local variation in residents' perception of the role of Thurrock Council in terms of making it easy to use outdoor spaces for exercise and physical activity, with high proportions of residents in some of the Eastern areas agreeing that it is easy (Stanford East and Corringham Town, The Homesteads and Orsett having 90%, 87% and 85% respectively) whilst Tilbury St Chads and Tilbury Riverside and Thurrock Park have the lowest proportions of residents feeling it is easy to exercise outside.

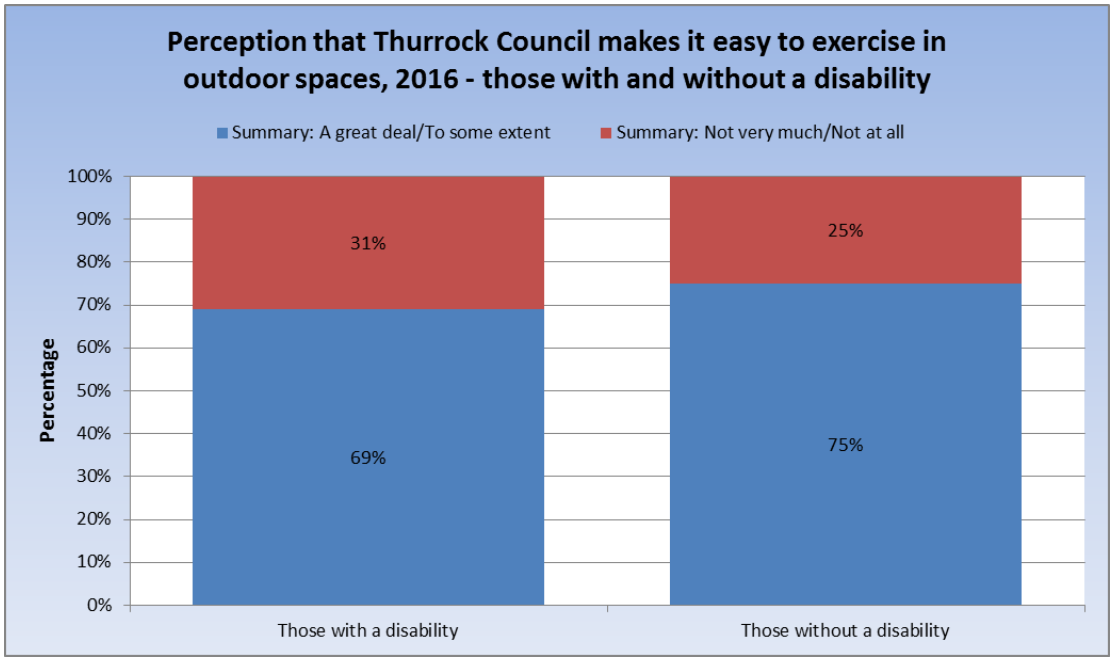
Figure 64: Perception that Thurrock Council makes it easy to exercise in outdoor spaces, 2016.



Source: Thurrock Council Residents Survey 2016

It is interesting to note that there is also variation in this perception between those with and without a disability (75% of those without a disability feel it is easy to exercise compared to 69% of those with a disability). This indicates that perhaps accessibility needs to be considered.

Figure 65: Perception that Thurrock Council makes it easy to exercise in outdoor spaces, 2016 - those with and without a disability.



Source: Thurrock Council Residents Survey 2016

6.4.3 Active Places Strategy

Active Place Strategy Development- Knight Kavanagh and Page (KKP) (2016/17)

It has become increasingly evident that Local Authorities need to provide easy access to leisure and sport because of associated health and social benefits which could include improved self-esteem, better community cohesion, and development of social capital and provide ways to reduce crime and anti- social behaviour. Furthermore, one of the primary benefits is the reduction of obesity, tackling obesity through leisure and culture supports the aims of 'Creating a Sporting Habit for Life' [b], Sport England's 2012-17 Youth and Community Strategy. The strategy will describe how sport can make a vital contribution to improving health and increasing participation.

Thurrock has commissioned an Active Place Strategy which will be integrated into the Local Plan and transport work that is currently being undertaken. Four elements were researched within this work;

- Indoor Sports and Leisure Facilities Assessment Report
- Open space Assessment Report
- Playing Pitch Strategy
- Active Travel Strategy

The Draft Indoor Sports and Leisure Facilities Assessment Report – improvements and /or provision, which looked at existing facilities and modelling of predicted population increases, suggested future provision is needed. Suggestions of ideas that might enhance the local offer were identified within this work and included: suggestions of

- Increased swimming and fitness provision,
- Integration of indoor and outdoor facilities
- Development of a dedicated gymnastic facility

It was also suggested that sports halls would benefit from investment, as of the eleven halls currently assessed (some of these are within school facilities) four were below average and one was noted as poor. Of the ten changing facilities assessed five were below average. It was also suggested that there would be added value from working with schools, existing and new, to develop a community use agreement for their facilities.

Community halls are noted as a positive asset, playing a large part in their community's provision through opportunities for physical activity and social encounters. A need for indoor cricket nets for out of season use was identified. There was no current identified lack of capacity for other indoor sports apart from Gymnastics, although this may change with population growth.

Of the ten swimming pools within the borough the three public pools are shown as below average or poor and are beyond life expectancy. Other pool facilities which are either private or within schools are good or average but it is noted that the capacity of all these pools to provide for future growth is limited and there will need to be significant investment within existing and new facilities.

Purfleet, Tilbury and East Tilbury were noted as having the least access to indoor sports and leisure facilities and this corresponds with high deprivation and obesity levels.

Health and fitness studios are noted as being of mixed quality with the public studios being good. There is no local provision for indoor cycling activities; however, there are a number of equestrian centres. Lakeside has a water sports facility, there are karting and raceway facilities, and Thurrock's Athletic Stadium is well used but requires investment to the running track. Bowls, tennis and squash are popular and there is sufficient provision for this at the moment. Gymnastics is a popular sport in Thurrock and the framework suggest a dedicated venue for this would be an advantage.

The Draft Open Space Assessment Report - The need to create more good quality open space to help tackle health inequalities was stressed in the Marmot Review [68]. People from Indian, Bangladeshi and Pakistani ethnic groups are more likely than white people to report visiting urban green space for exercise - an important factor for overall health.
Working to reduce obesity through the provision of green space can help to make progress towards outcomes identified in the Public Health Outcomes Framework including Indicator 1.16: utilisation of green space for exercise/health.
This assessment looked at the open spaces within Thurrock and applied a quality and value threshold on these sites.

Table 7: Quality and value thresholds by typology.

Typology	Quality threshold	Value threshold
Parks and gardens	50%	20%
Natural and semi-natural greenspace	40%	20%
Amenity greenspace	45%	20%
Provision for children and young people	50%	20%
Allotments	50%	20%
Cemeteries/churchyards	50%	20%
Civic space	40%	20%

Source; Draft open space Assessment Report, KKP (2016) Pg 12

Other indicators used were;

- Identifying local need (demand)
- Accessibility standards.

A survey and face to face consultation were undertaken and the following highlights from these were recorded;

One in four (23.3%) of people visit open spaces and facilities every day with 7 in 10 doing so at least once a week. Women are more likely to visit than men each day.

65.8% of men visit to take part in sport or exercise and 36.2% of people to dog walk.

The top three main reasons for visiting open spaces are informal sport and exercise, followed by looking at the views and then dog walking. The two top reasons for visiting a play area are to allow children to play and meet friends and socialise. Country parks, nature reserves, woodland and heritage sites were visited for the views. Teenage venues were used to meet friends and allotments etc. used for events.

The main deterrents for visits were noted as the standard of the facility, feeling unsafe and lack of information.

The most popular methods of travel to different venues were by;

- Footpath for local parks
- Public Transport for Sports pitches
- Private car for country parks
- Cycles for networks
- Other for allotments.

15 minutes was the peak time that would be travelled to any activity.

Importance of open spaces – local parks are the seen as most important, with maintenance and cleanliness as high factors.

Satisfaction was highest with local parks and play areas and lowest for allotments and teenage provision. Space in parks was seen as good but quality was noted as poor.

The majority of sites were assessed as being over the threshold of value.

Although the amount of space was noted as satisfactory (1 in 4 people) with play areas scoring the highest and the value of space recorded as high, only 1 in 9 people were satisfied with the quality of the spaces.

There were 64 areas identified within the report for children and young people to play and have social interaction opportunities. Areas in the Central and East of the borough scored highest for value and for their local popular role and use. These sites were seen as providing good quality equipment and sports provision for all users. Quality scores were only just above half (53%) mainly due to equipment but also identifying lack of such features as bins, lighting and benches. The central and west areas scored highest for quality.

Natural and semi natural green spaces rated as 85% for value with Langdon Hills Country Park scoring the highest. Many of these sites have not only a local and regional role but also a national role with visitors travelling from afar to access the amenities.

There are 27 allotments sites identified with over a 1,000 plots. It is suggested that more sites are required, in accordance with government guidelines (there is a waiting list at present) and this need will increase with population rises. All allotments were seen as high value and quality was adequate.

There are 12 cemetery/ churchyard sites with nearly all of these rated as above the threshold for quality and all as high value.

Draft Playing and Pitch Assessment Report- Evidence show a strong correlation between physical inactivity and health and wellbeing challenges in Thurrock which makes it imperative for residents to be able to gain access to high quality places to participate in sports and get physically active. These places must provide memorable and enjoyable experiences for residents which will in turn encourage continuity. The area also needs an increased network of facilities in order to meet the needs of the existing and a substantially growing population.

The report was developed through evidence research, and an audit of facilities and consultations. The report looked at current facilities against known population figures and also modelled needs in relation to hypothesised potential population growth.

Football Pitches –122 grass football pitches within 46 sites were identified. Only 32 of these sites were available for community use with the others being in schools. The East area has the highest number of pitches and Central areas the least. Recently some pitches have come out of use which reduced the offer. Of the pitches in use 2 were assessed as good quality with 55 reported as standard and 45 as poor. 33 sites were also identified as being overplayed. There are aspirations in a number of local schools and clubs to develop new 3G pitches and 7 sites have been identified. There are 2 full sized and 1 smaller size AGPS (artificial grass pitches) pitches in Thurrock, 2 of these are nearing the end of their life span (10 years). There is a shortfall of 7 3G size pitches at present in Thurrock; future need could indicate that 10 pitches would be required.

74 teams were identified as playing within 91 clubs. The highest decrease in playing was seen in adults and the highest increase in mini football. Availability and quality of pitches is noted as the cause of some of the decline in numbers alongside a change in trend towards small sided matches, rather than full matches. Eight teams from within Thurrock access pitches outside of the area.

Rugby – there are no World Rugby compliant pitches within Thurrock although there is a demand for this. 9 sites were identified with 19 pitches in all, 14 of these were available for community use which included two mini pitches. None were assessed as of good quality, 10 as standard and 2 as poor. Overplay is evident on four pitches.

4 rugby union clubs exist within Thurrock consisting of 39 teams. Predicted growth in teams is estimated at 6 teams with all clubs reporting growth in members.

Cricket – there are 4 cricket clubs in Thurrock. 11 cricket squares over 9 sites were identified, all of these are available for community use. Non turf wickets/ pitches were available at 7 sites. The central area contained most of these (6). 3 pitches were assessed as of good quality, 5 standard and 3 poor.

The cricket clubs in Thurrock are large and there is a steady increase in participation. There are 28 men's and 22 junior teams.

Hockey – 3 sand based pitches are available in Thurrock with availability to the community; only one club is active at this moment.

The hockey club has 58 senior and 38 junior members. A new pitch is suggested to meet current and future demand.

Tennis – there are 34 courts across 15 sites within Thurrock with 25 of these available for community use. There are 5 courts recorded as of good quality, six as standard and 14 as poor with only one site having flood lights.

Thurrock Tennis club is the only club in the area and has 106 members. Capacity is not an issue but quality needs addressing.

Bowls – there are 12 bowling greens across 10 sites available in Thurrock. Of these 9 are recorded as of good quality and 2 are standard.

There are 14 Bowls Clubs accessing sites in Thurrock, 11 of which have 433 members. There is a desire to increase membership within these clubs and current facilities are sufficient.

Athletics – there is one track and one club within Thurrock. The track is assessed as of good quality but will require replacement in the near future.

Park run takes place every Saturday and there are 3 Run England groups.

Netball – there are 24 courts identified within Thurrock, most of these are available for community use except 2 school sites. There are 4 courts that are floodlit. 12 courts are assessed as being of standard quality and 12 as poor.

Strategy - The strategy, when adopted, will set out these findings in detail and modelling against potential future population growth will predict need. Overall from these assessments reports there seems to be a need to improve the quality of some of the existing sites and increase the number of sites in others such as swimming facilities. There are good membership levels for these activities which can be built on to encourage the inactive population to be active in the future.

Further information will be available when the Active Place strategy is published in early 2018

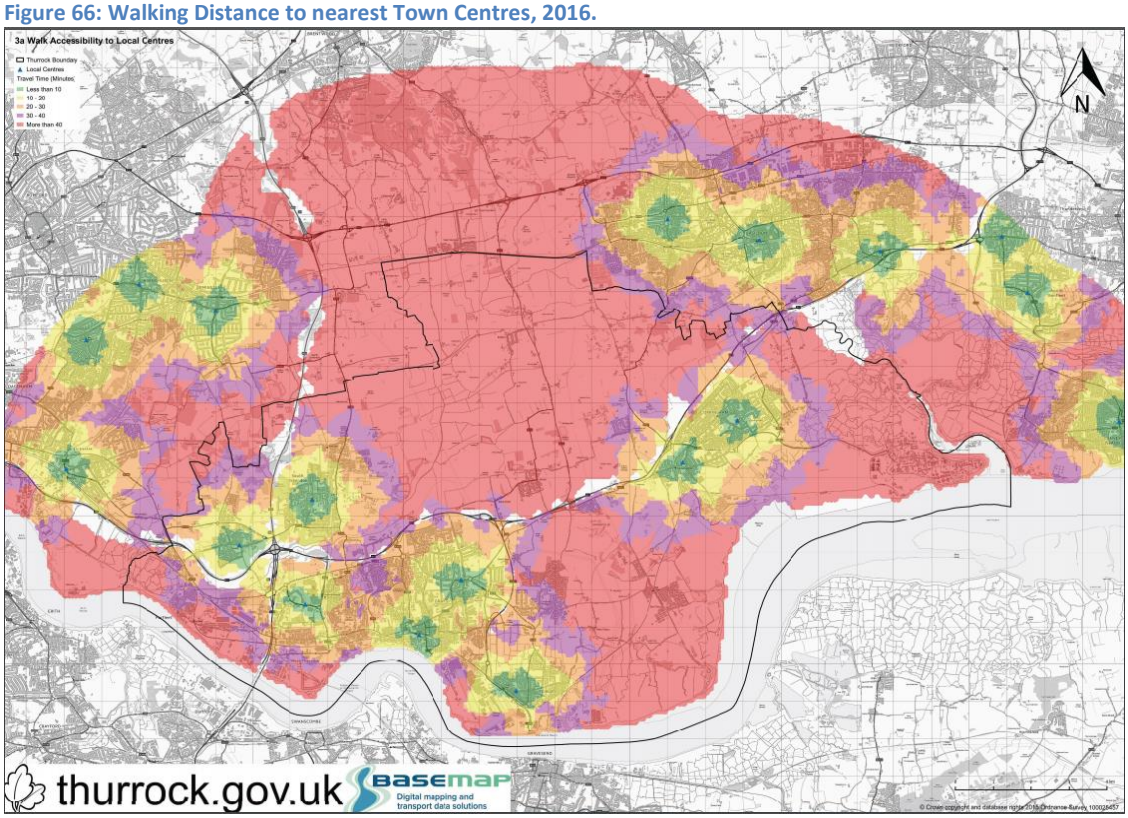
6.5 Active Travel in Thurrock

As part of the holistic approach for tackling obesity, making the case for active travel remains a focal point for local authorities

Accessibility Calculations on active travel opportunities within Thurrock

The map below shows walking distances from local centres, and it can be seen that whilst residents around the south and west of the borough can generally walk to town centres relatively quickly, residents in more rural areas such as Orsett and East Tilbury experience longer distances. Taking this, in conjunction with the information above on sport participation, it can be seen that the areas do not necessarily match up, meaning that there are likely to be a large number of variables impacting on activity participation.

Figure 66: Walking Distance to nearest Town Centres, 2016.



Source: Thurrock Council

Modelled Opportunities from the Propensity to Cycle Tool

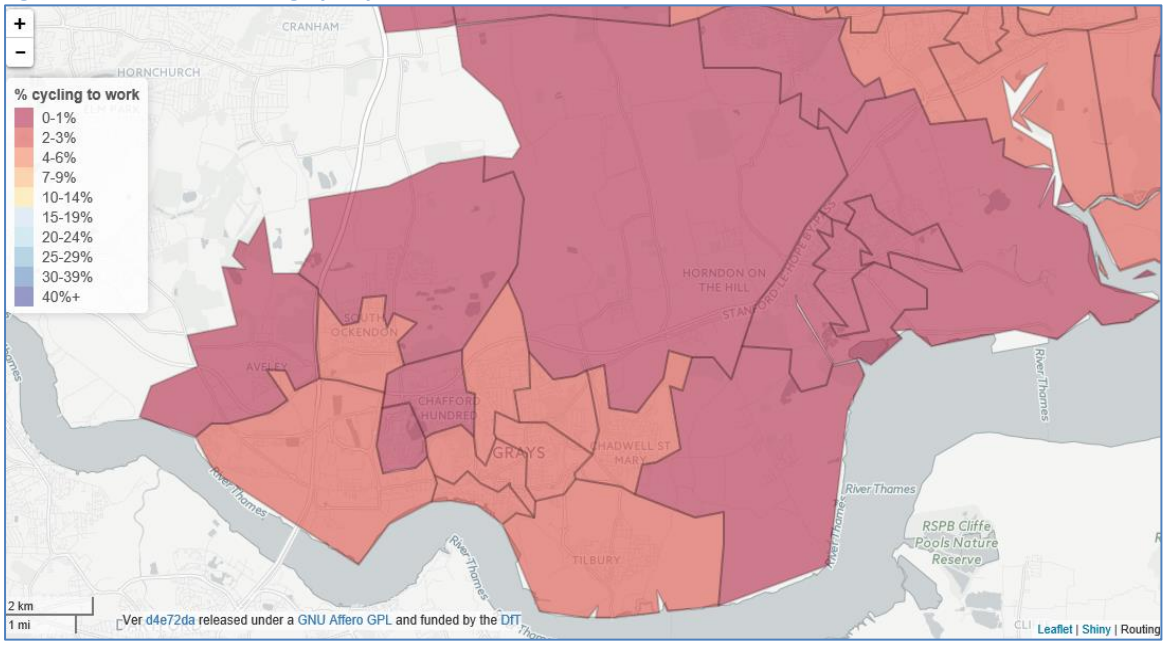
The Propensity to Cycle tool models the potential impacts of four different scenarios which may increase cycling journeys to work from the current baseline. It enables approximation at MSOA level in terms of how many additional journeys may take place if targets in each scenario are met, adjusting for population and geographical factors. The four scenarios are:

- **The Government Target** – in general, this looks to double the rate of cycling by commuters from 3% to 6% by 2025. Whilst a substantial target in relative terms, this is still comparatively low when compared with countries such as the Netherlands and Denmark. The doubling will not be seen uniformly across the country, with areas with already-lower rates of cycling and a number of short, flat trips are projected to increase at a higher rate.
- **Gender Equality** – setting the proportion of female cycle commuters to increase to the same proportion of males. A greater impact will be seen in areas where the rate of cycling is unequal between genders.
- **Go Dutch** – this models the rate of cycling if English people were as likely as the Dutch to cycle if the same infrastructure and cycling culture existed.
- **E-bikes** – this models an increase from the current baseline that could be achieved through the widespread uptake of electric cycles (e-bikes) as an extension of the Go Dutch scenario.

Implications for Thurrock

The map below depicts the baseline proportion of commuter journeys that are undertaken by cycling by Thurrock MSOA. The Thurrock total proportion is 1.5%, with lower level proportions varying between 0.53% (areas such as Chafford and North Stifford) and 2.49% (areas such as West Thurrock and Tilbury Riverside).

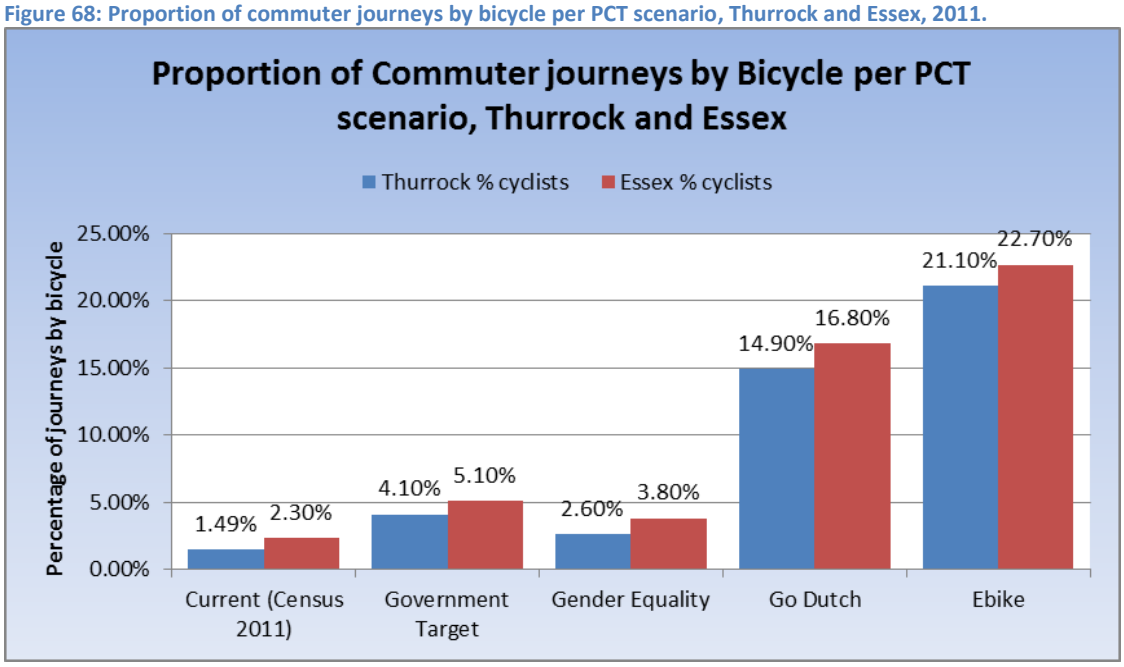
Figure 67: Current commuting by bicycle, MSOA-level, 2011.



Source: Census 2011 and Propensity to Cycle Tool

Figure 68 below shows the proportion of commuter journeys by bicycle for Thurrock and for Essex as a whole per scenario, and it can be see that the projected increase for each scenario is higher pan-Essex than Thurrock – partly due to the existing higher cycling activity and the different infrastructure in place. However, it is still a rather high projection to estimate that over one in five commuters would commute by bicycle if the infrastructure and culture change were implemented to enable eBikes.

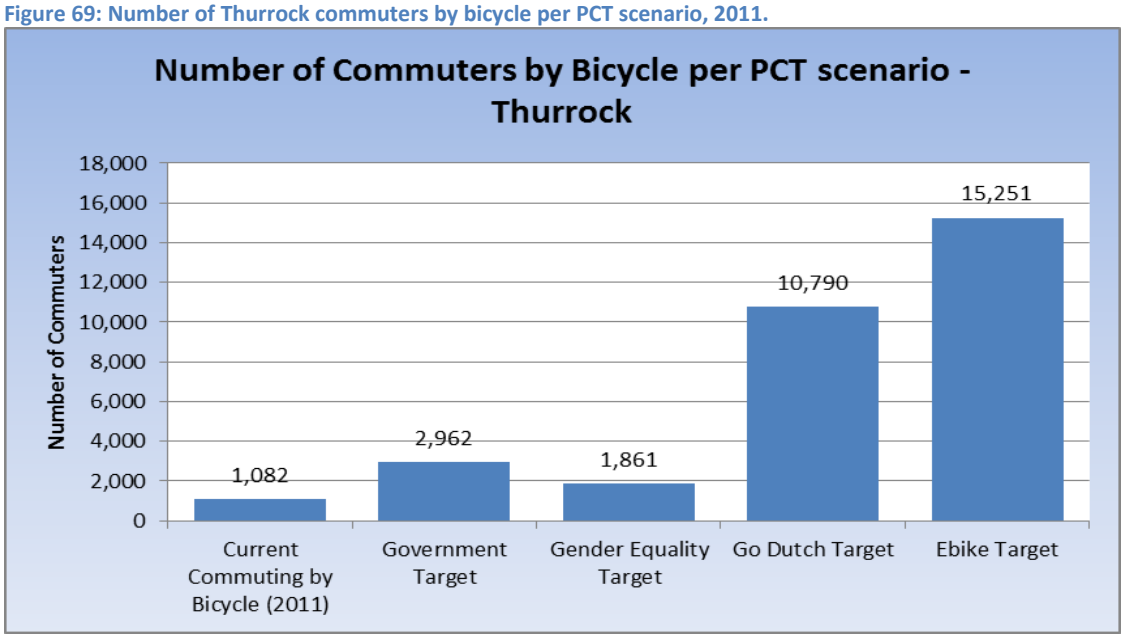
Figure 68: Proportion of commuter journeys by bicycle per PCT scenario, Thurrock and Essex, 2011.



Source: Census 2011 and Propensity to Cycle Tool

In Thurrock there are currently 1,082 commuters by bicycle. Applying the assumptions for each of the four scenarios above would give large increases to this baseline figure, which can be seen in figure 69 below.

Figure 69: Number of Thurrock commuters by bicycle per PCT scenario, 2011.



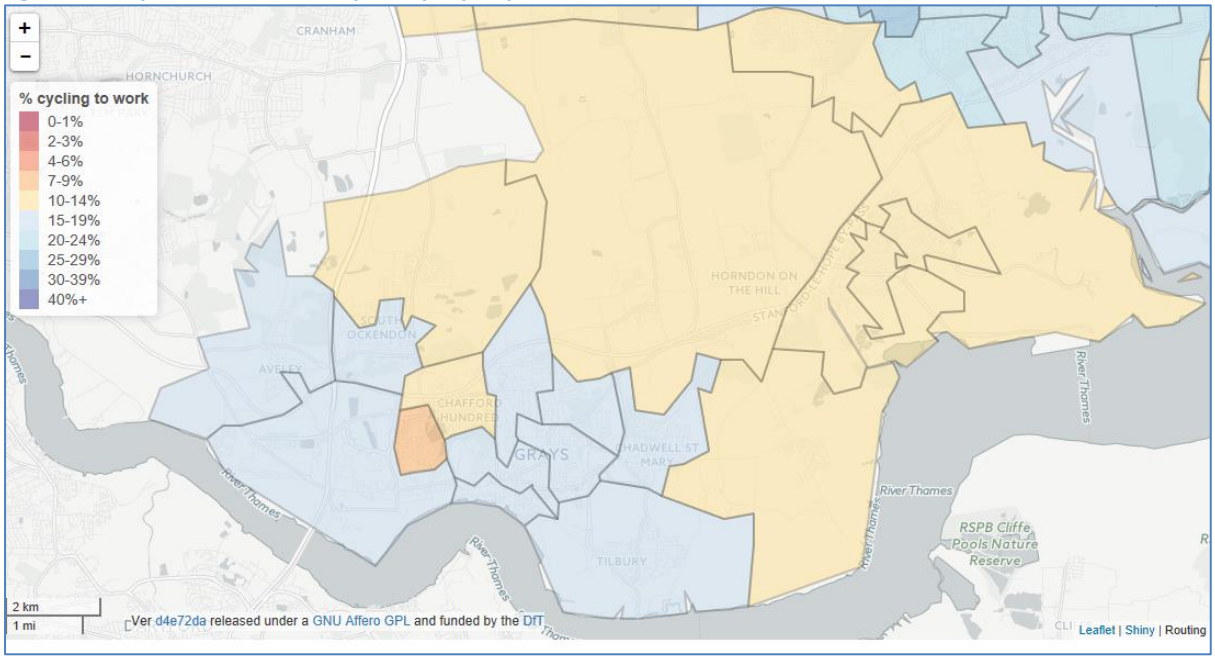
Source: Census 2011 and Propensity to Cycle Tool

In terms of a proportional increase to the current position:

- Government Target – would result in a 173.73% increase
- Gender Equality Target - would result in a 71.97% increase
- Go Dutch Target – would result in a 897.23% increase
- E-bike Target – would result in a 1309.52% increase

As described in the summary text above, the above proportional increases would not likely be seen uniformly across the borough. The MSOA-level estimates show that Orsett is likely to see the highest proportional increase in cycling activity in all scenarios except the gender equality scenario, which is likely to have the greatest impact in Corringham [119.3% increase from baseline; Orsett is modelled to see a 392.5% increase in the Government scenario, 1950% increase in the Go Dutch scenario and 3069% increase in the e-Bike scenario].
The proportion by bicycle can be seen at MSOA-level below if the Go Dutch estimates were applied – it can be seen that bicycle journeys now account for between 8.76% [South Chafford] and 19.33% [Grays Thurrock/Stifford Clays] of commutes.

Figure 70: Proportion of commuter journeys by bicycle in the Go Dutch scenario - MSOA-level, 2011.



Source: Census 2011 and Propensity to Cycle Tool

Travel Thurrock

Central government funding was awarded to Thurrock to deliver a sustainable transport project, Travel Thurrock. The funding was available until March 2015 and which aimed to engage with residents, businesses and communities to promote travelling by sustainable and active modes, namely walking and cycling. Support is given to individuals, workplaces and schools to improve their health by removing the barriers to walking and cycling.

South Essex Active Travel

Department for Transport Access Fund

In early 2017, Thurrock Council, alongside Southend Council and Essex County Council, were awarded a sum of £3.3million from the Department for Transport's Access Fund to support a 3 year programme to implement travel behaviour change across South Essex. The South Essex Active Travel bid (SEAT) has a range of measures to increase the uptake of active and sustainable travel, but its central focus is early behavioural intervention for people who are at a transitional stage in their lives.

The SEAT programme will target job seekers, new employees at key workplace destinations, school and college leavers to inform them of the transport options available to them to travel to and from their homes to their expected place of work, training or employment without the need for a car. Using a range of tools and face to face discussions with a travel advisor, the targeted audience member is able to receive information relevant to themselves on how to make their journey by foot, bicycle, or public transport prior to commencement of their journey. This will assist in making an informed choice on how to travel, prior to the automatic behaviour of car travel is ingrained.

This programme will provide significant benefits across the South Essex Area, aiming to reduce congestion on roads, increase the uptake of public transport, and specifically active travel options such as walking and cycling to improve physical health of staff, and the impact on air quality. Details of the Personalised Journey Plan are emailed to the targeted audience member so that they are able to refer to the options, including detailed cycling and walking directions.

The SEAT programme also includes a range of measures such as providing workplaces and individuals adult cycle training to help overcome barriers to cycling, providing low cost cycles or the loaning of a bicycle to job seekers or those unable to afford a new cycle, and a cycle hub programme across the three authorities. A cycle hub for Thurrock is proposed in Tilbury, where cycling levels are low. The hub will focus on providing a community training facility to up-skill local volunteers with cycle maintenance training, and to enable them to access jobs using these skills. The Cycle hub will allow for the local community to donate unwanted cycles, so that these can be recycled and refreshed to be sold on at a low cost, or as part of a cycle exchange, where children growing up can swap an older bicycle which is no longer suitable for their needs to a new cycle. This intervention will provide increased opportunities for cycling in the Tilbury area and beyond. The SEAT project will also bring together a single travel brand across the South Essex region, using the successful and award winning Idea's in Motion brand implemented by Southend. The brand utilised intelligent but easy to understand messages to engage with the public and promote active and sustainable travel options.

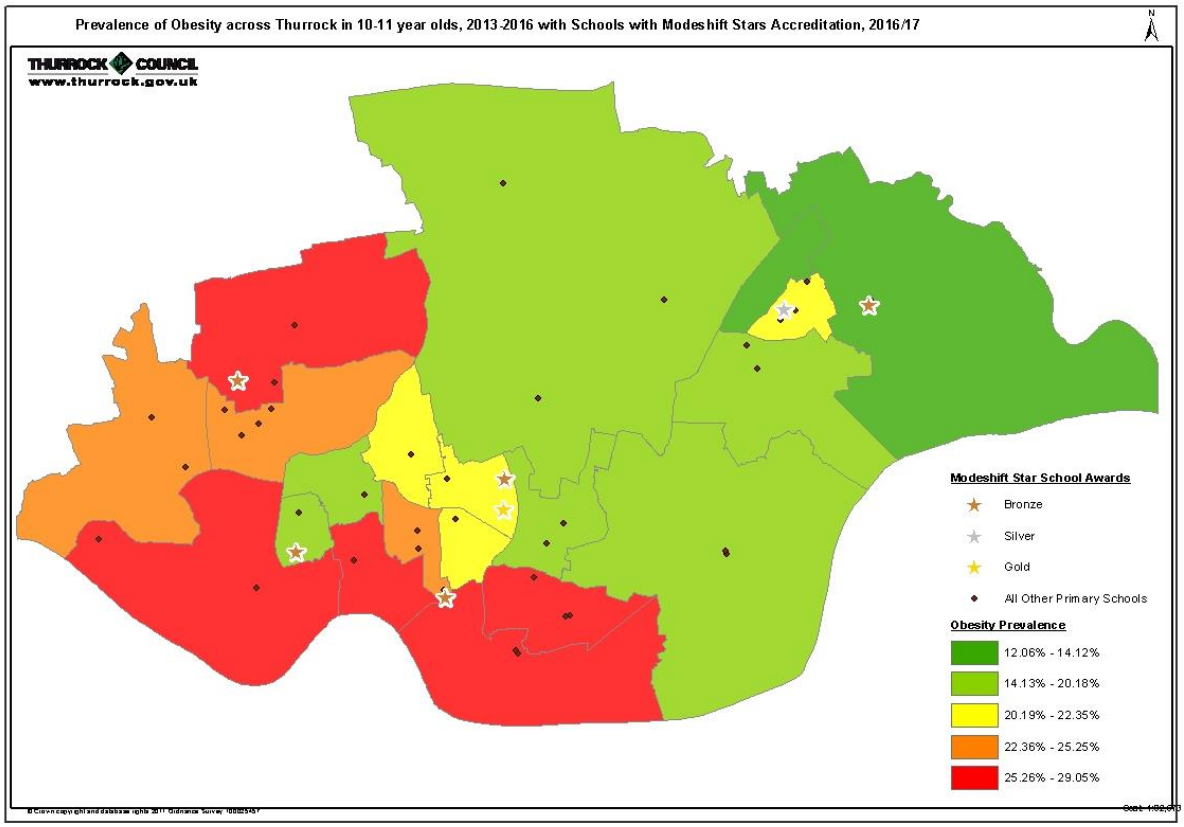
Travel to School

Modeshift STARS is the national schools awards scheme that has been established to recognise schools that have demonstrated excellence in supporting cycling, walking and other forms of sustainable travel. The scheme encourages schools across the country to join in a major effort to increase levels of sustainable and active travel in order to improve the health and well-being of children and young people.

Every school in England can participate in Modeshift STARS for free. On completion of an application for Modeshift STARS, schools will automatically have a brand new national standard School Travel Plan.

There are 8 Thurrock schools currently accredited with this scheme, and their distribution can be seen in the map below. It should be noted that it is not presumed that these are the only schools that have active travel plans, but schools with this accreditation have met certain standards to gain either Bronze, Silver or Gold level.

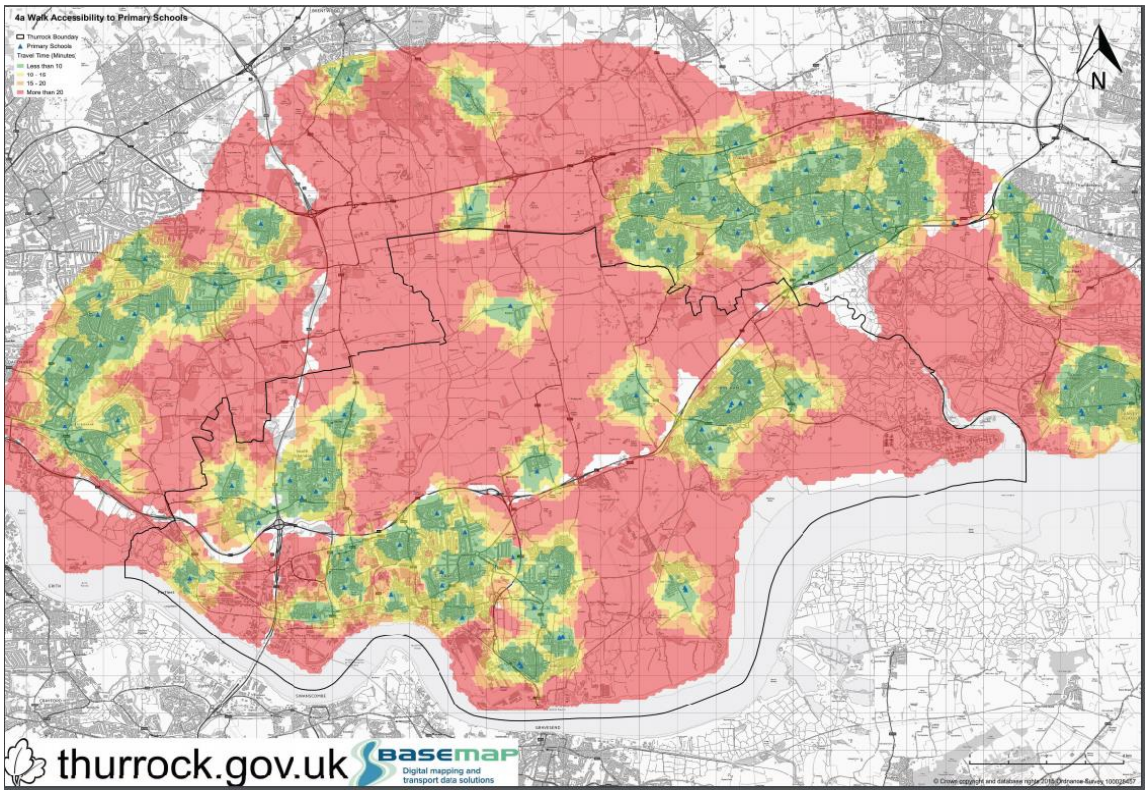
Figure 71: Year 6 obesity prevalence and schools with Modeshift STARS accreditation, 2016-17.



Source: Thurrock Council

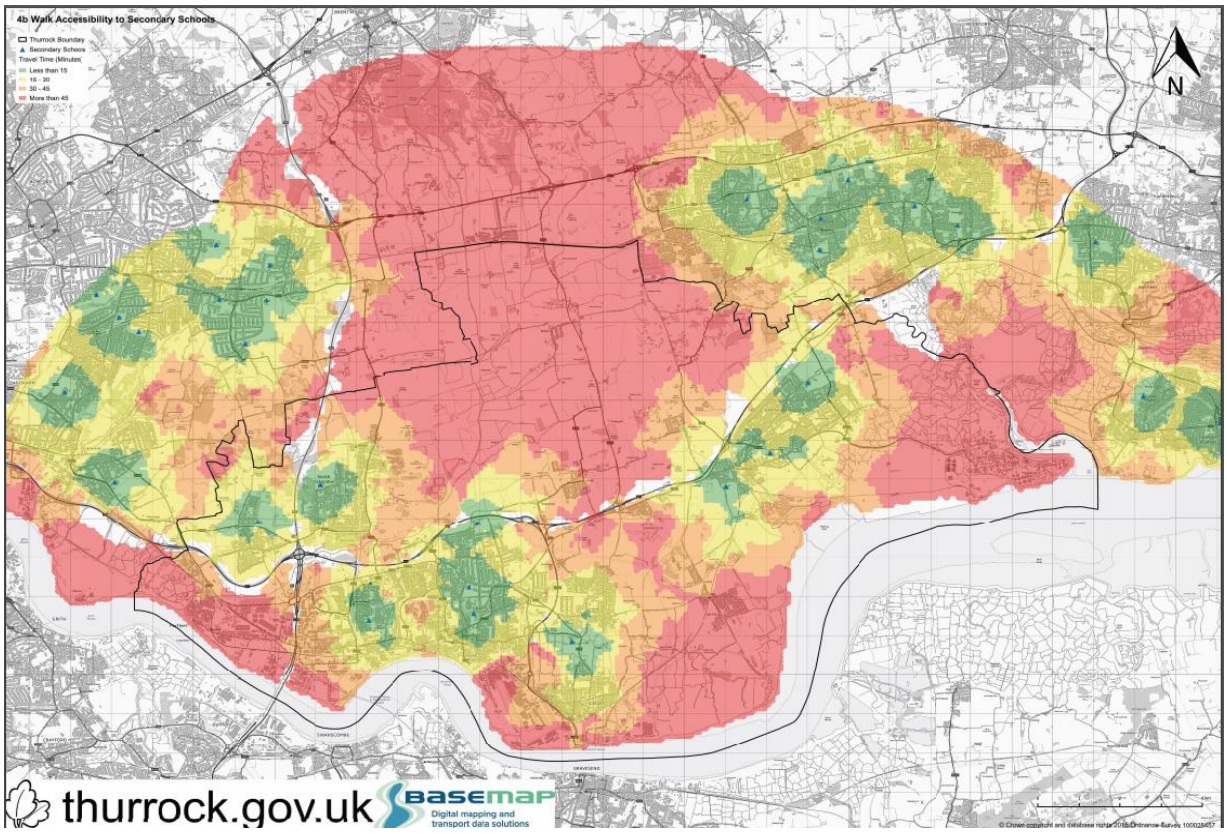
The Transport team in the Council commissioned some accessibility studies in 2016. Whilst the maps below do not quantify numbers of pupils walking to school, they give an overview of variation in walking times to local schools, therefore identifying likely areas where walking to school may be less common. The first map shows accessibility to primary schools, and the second to secondary schools.

Figure 72: Variation in walking times to local schools - Primary, 2016.



Source: Thurrock Council

Figure 73: Variation in walking times to local schools - Secondary, 2016.



Source: Thurrock Council

6.6 Physical Activity Environment Interventions

Studies suggest successful obesity interventions are focused around shaping the environment to support healthful decisions and to provide opportunities that encourage healthy lifestyles. NICE undertook a review of the evidence and made recommendations that interventions should be multi-component, ensuring:

- Planning applications for new developments always prioritise the need for people to be physically active as a routine part of their life.
- Pedestrians, cyclists and users of other modes of transport that involve physical activity are given the highest priority when developing or maintaining streets and roads.
- Plan and provide a comprehensive network of routes for walking, cycling and using other modes of transport involving physical activity.
- Ensure public open spaces and public paths can be reached by foot, bicycle or by using other modes of transport that involves physical activity. [117]

Research suggests that interventions aimed at weight control and obesity reduction must address people and places to be most effective.

Thurrock has an ambitious growth agenda and is already recognising these opportunities in the development of a new local plan. Thurrock's development plan lays out future ambitions for its physical environment with a person focused ethos and a strong emphasis on protection and enhancement of the natural environment. Future plans for urban renewal and regeneration that reflect healthy environment principles are already in the forefront of planning with Thurrock's Active Travel and Active Place strategies and the Health and Wellbeing strategy already making progress in these areas.

For childhood obesity, in addition to those areas highlighted in the section 5. Recent review results of effective interventions for childhood obesity [118] found promising policies and strategies also included school curriculum that includes physical activity and increased sessions for physical activity and the development of fundamental movement skills throughout the school week. Therefore promoting links with Active Essex and continuing to promote activities such as the daily mile will be supportive to tackling childhood obesity locally.

6.7 Recommendations

Recommendations

- Continue to influence future planning to prioritise the need for communities to be physically active as a routine part of their life, with strong consideration for Active Design Principles (SportEngland) and Healthy Weight environments (TCPA).
- Environment department to seek to improve the quality and quantity of local sports facilities, green spaces and pitch and play provision in response to local need and population growth as evidenced by the Active Place Strategy.
- The quality rather than the quantity of parks and gardens is more important in terms of impact on obesity. Improve the quality of parks, gardens and play areas across Thurrock, prioritising according to those areas with highest childhood obesity at year 6 and resident survey feedback.
- Using the Active Place Strategy findings as a benchmark, undertake further evaluation around sport and physical activity levels to identify any specific demand for additional services/club and obtain a clearer understanding of local demand for sport and PA to help shape future vision.
- Focus provision and commissioning on localities with lower levels of physical activity and the least active groups to address Thurrock's health inequalities.
- Develop consultation activities to try and identify perceived barriers to physical activity within different communities.
- Thurrock Council should consider the development and enhancement of new and existing relationships and partnership working with Active Essex, Sports England and other external organisations.
- To work with funding agencies to identify opportunities for increasing provision.
- Greater strategic focus on promoting physical activity in order to increase the amount of adults meeting government activity recommendations, and more importantly, reduce the number of people who are inactive in the borough.
- Regeneration to seek to integrate future development of further sports facility infrastructure with prospective integrated medical centres/ educational facilities where possible.
- Active travel should be enshrined in transport policies. Planning and transport policy should encourage new developments to maximise opportunities for active travel with appropriate infrastructure (e.g. cycle lanes, cycle parking) and ensure these are prioritised over car transport as part of designing safe and attractive neighbourhoods.
- Work together to improve the provision of high quality, local, accessible and safe green space in line with recommendations by organisations including the Design Council CABE.
- Improve the aesthetics of green space, alongside appropriate safety and crime prevention initiatives to encourage people to use their local green space.
- Collective action should be undertaken to promote, encourage and support the community to get active and travel actively via walking and cycling. Collective action should be undertaken to inspire the community to use their parks, gardens and open spaces more. Further work is needed to seek to understand why they are not used and what they are wanted to be used for.
- Schools, particularly in neighbourhoods of high childhood obesity, should consider taking up the Modeshift STARs scheme to promote active travel methods into school. How this links into the built environment in Thurrock and perceived safety should be considered.

Recommendations continued…

- It should be sought to understand what options in schools would encourage children to be more active. Schools, particularly in neighbourhoods of high childhood obesity, should use this understanding to work to encourage children to take part in daily physical activity.
- A review of how the PE and School Sport premium is being spent by schools across Thurrock, with a view to understanding impact, sharing best practice and to understand opportunities to increase physical activity in children across the borough through this route.

7. Thurrock's Health and Treatment

Key Points

- There is widespread variation at GP practice level of identification of obesity in adults
- The tier 2 treatment options available in 2016/17 appeared to support participants to achieve the 5-10% weight loss in line with NICE guidance
- Almost two thirds of those referred to the tier 3 treatment offer had at least one other long term condition
- The number of patients having bariatric procedures has increased since the previous year; however the complexity was greatest in 2014/15, indicating that there is a greater volume requiring a lower-level procedure.
- It is estimated that approximately 28.4% of patients with diagnosed depression in Thurrock are also obese. This is expected to increase in the future, with around 33.7% of future depression patients likely to be obese if the current trends continue.

7.1 Effective weight management interventions

NICE Guideline CG189 [119] states the following with regard to effective weight management interventions:

- *"1.4.1 Multicomponent [lifestyle] interventions are the treatment of choice. Ensure weight management programmes include behaviour change strategies to increase people's physical activity levels or decrease inactivity, improve eating behaviour and the quality of the person's diet, and reduce energy intake."*
- *"1.7.5 Diets that have a 600 kcal/day deficit (that is, they contain 600 kcal less than the person needs to stay the same weight) or that reduce calories by lowering the fat content (low-fat diets), in combination with expert support and intensive follow-up, are recommended for sustainable weight loss."*
- *"1.8.1 Consider pharmacological treatment only after dietary, exercise and behavioural approaches have been started and evaluated."*
- *"1.9.1 Pharmacological treatment may be used to maintain weight loss rather than to continue to lose weight."*

The above statements were echoed within a review of the wider literature, which supported the premise that lifestyle interventions were more effective at achieving and maintaining weight loss than other forms of support such as 1:1 primary care-led support. Literature indicated that pharmacotherapy and counselling did produce modest weight loss, but were not favoured over a combined diet and exercise programme. There is some evidence to support the use of eHealth (electronic health) interventions as a treatment option for obesity, but there is insufficient evidence for the effectiveness of eHealth interventions for weight loss maintenance or weight gain prevention [120].

The majority of studies appear to recommend a 5-10% weight loss for a health benefit and view this to be 'clinically important', although there is some evidence to indicate that severely obese patients would require a weight loss of more than 10% to observe a clinically-important improvement in

health-related quality of life [121]. The evidence base also indicates that this minimum threshold of 5% weight loss is required in order to view other benefits in patients with long-term conditions – for example, one research paper showed that a 5.1% reduction in weight was associated with a significant improvement in disability in obese patients diagnosed with knee osteoarthritis [122]. There are also positive effects for obese adults with type 2 diabetes – this study showed that a weight loss of >5% appears necessary for beneficial effects on HbA1c, lipids and blood pressure [122]; and for obese patients with asthma – participants in this study lost a mean of 14.5% in weight and saw benefits to lung function, asthma symptoms, morbidity and health status [123].

The latest NICE guidelines covers a range of approaches aimed at preventing children and young people from becoming overweight or obese. The guidance includes a review of the evidence and key priorities and makes recommendations on the prevention and management of obesity in childen. These recommendations include:

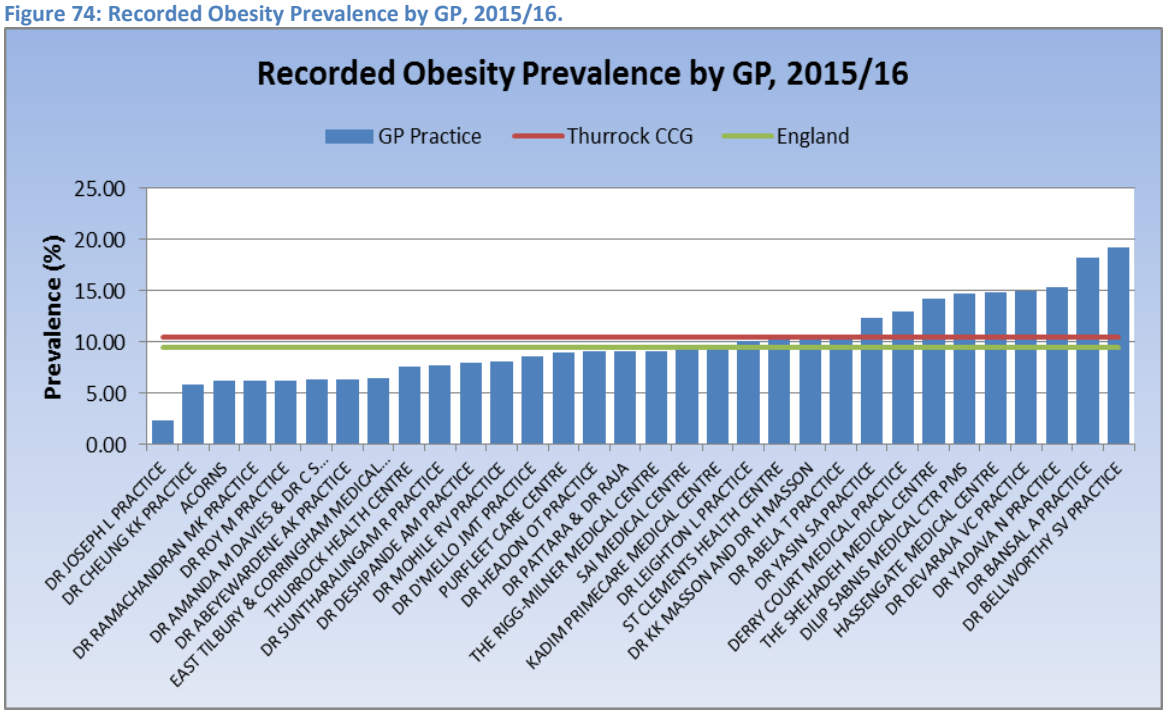
- That interventions should be multi-component and should include behavour change strategies to increase physical activity and improve eating behaviour and quality of diet.
- Interventions should also be delivered by healthcare professionals whe have relevant competencies and specific training. Parents of overweight children being encouraged to lose weight if they are too overweight or obese. NICE recommends to focus services on the family not the individual.

7.2 Identification of Obesity in Thurrock

The Quality and Outcomes Framework (QOF) for GPs provides incentives for assessing BMI and associated risk factors, and providing appropriate advice and treatment. This should encourage identification of overweight and obesity in primary care and increase activity at tier 2 rather than tiers 3 and 4. However, evidence suggests that there is widespread variation in GP identification of weight status across all weight ranges. A study by Robinson *et al* [124] found that GPs were likely to underestimate the true BMI classification of patients when relying on visual identification alone, and whilst formal recording would be done following measurements, a GP may be less likely to start a dialogue about weight if they did not identify it as a concern. Research has also suggested that GP attitudes towards their role in supporting patients with weight management [i.e. how much they consider it to be their responsibility versus that of the patient themselves] and the GP's own weight status could be factors in how likely it is they will offer weight loss support.

In Thurrock, there were 13,621 patients aged 18+ recorded as obese in 2015/16 – equating to a prevalence of 10.51%. This was above the national prevalence of 9.45%. There is considerable variation across Thurrock – looking at each practice register, it can be seen that recorded prevalence varies from 2.36% (Dr Joseph) to 19.2% (Dr Bellworthy). The number of recorded obese patients shown here is below those used in the modelled projections of obesity in section 3.1 above, as these are for patients aged 18+ whereas the models used patients aged 16+. This prevalence is also below our estimated actual prevalence of obesity.

Figure 74: Recorded Obesity Prevalence by GP, 2015/16.



Source: QOF 2015/16.

7.3 Effective delivery of weight management services across the pathway

As overweight and obesity are largely preventable through lifestyle changes, the best long-term approach to tackling overweight and obesity is prevention from childhood. The two broad approaches to tackling overweight and obesity are through:

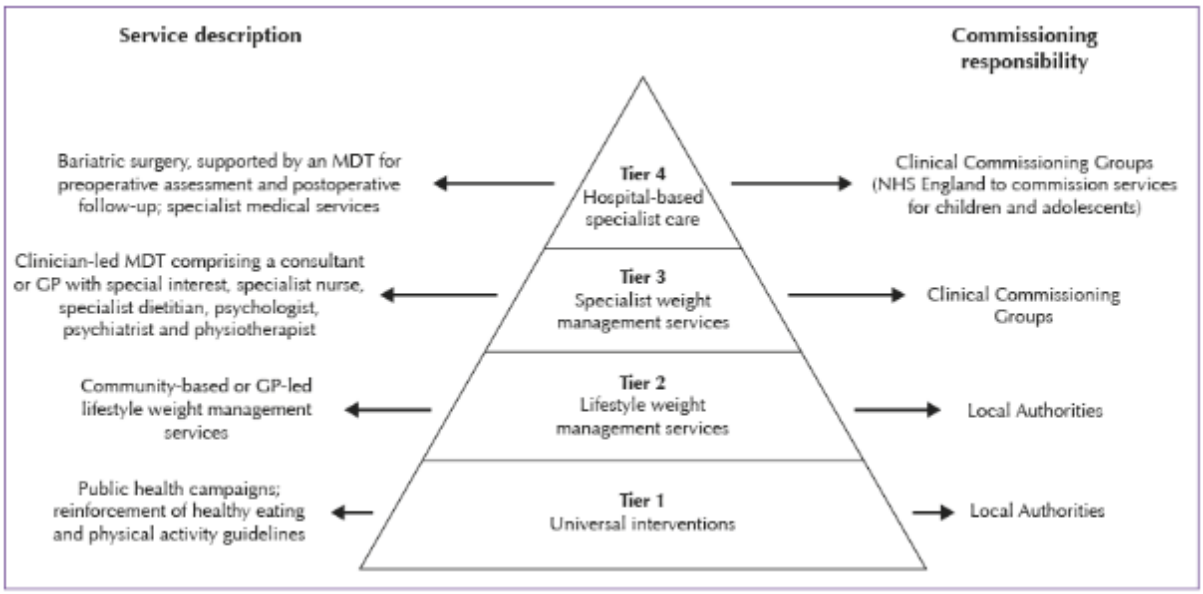
• **Prevention** – interventions aimed at preventing overweight developing in the first place, from childhood onwards, and
• **Weight management** – interventions aimed at weight reduction or weight control in people who have become overweight or obese.

At a population level, the intervention strategies required to prevent overweight and obesity involve broad strategies to:
• improve the nutritional balance of the average diet, with an emphasis on lower-calorie alternatives, and
• increase community-wide levels of physical activity

Although population level interventions are likely to be the most cost-effective way to supporting people to achieve a healthy weight, there will still remain a requirement to support those who are already overweight and obese. The rise in numbers of children and adults who are overweight or obese will inevitably have an impact on the development and management of long-term conditions, and so the provision of weight management for primary, secondary and tertiary prevention remains an area of investment.

Obesity services are delivered in the following tiers:

Figure 75: Obesity Tiers, 2015.



Source: Barth (2015) British Journal of Obesity [125]

Economic analyses indicate that preventing overweight and obesity at an earlier stage – i.e. at tier 1 or in childhood, can generate larger returns on investment than relying on treatment (tiers 3 and 4) alone. Some examples include:

- Birmingham's 'Be Active' programme returned up to £23 in benefits for every £1 spent in terms of quality of life, reduced NHS use, productivity and other gains to the local authority.
- Getting one more person to walk to school could pay back £768 and getting one more person to cycle to work rather than by car between £539 and £641 in terms of NHS savings, productivity improvements and reductions in air pollution and congestion.
- In 2011–2012, the Glasgow Health Walks project led to a return on investment of £8 for every £1 spent.
- Modelled estimates of a 12 week commercial weight loss programme showed potential savings of £230 health care costs per participant over a lifetime. [126], [127], [128]

The NICE guidance CG189 costing report [129] has identified some recommendations that have been evidenced to have the greatest potential for savings generation and effectiveness in those who are obese:

- *"Provide a long-term multicomponent strategy to help the person maintain their weight after the use of a very-low-calorie diet. [Recommendation 1.7.10]. "*
- *"Offer an expedited assessment for bariatric surgery to people with a BMI of 35 or over who have recent-onset type 2 diabetes as long as they are also receiving or will receive assessment in a tier 3 service (or equivalent). [Recommendation 1.11.1]"*
- *"Consider an assessment for bariatric surgery for people with a BMI of 30–34.9 who have recent-onset type 2 diabetes as long as they are also receiving or will receive assessment in a tier 3 service (or equivalent). [Recommendation 1.11.2]"*
- *"Consider an assessment for bariatric surgery for people of Asian family origin who have recent-onset type 2 diabetes2 at a lower BMI than other populations (see recommendation 1.2.8) as long as they are also receiving or will receive assessment in a tier 3 service (or equivalent) [Recommendation 1.11.3]"*

- *"After discharge from bariatric surgery service follow-up, ensure that all people are offered at least annual monitoring of nutritional status and appropriate supplementation according to need following bariatric surgery, as part of a shared care model of chronic disease management. [Recommendation 1.12.2]"*

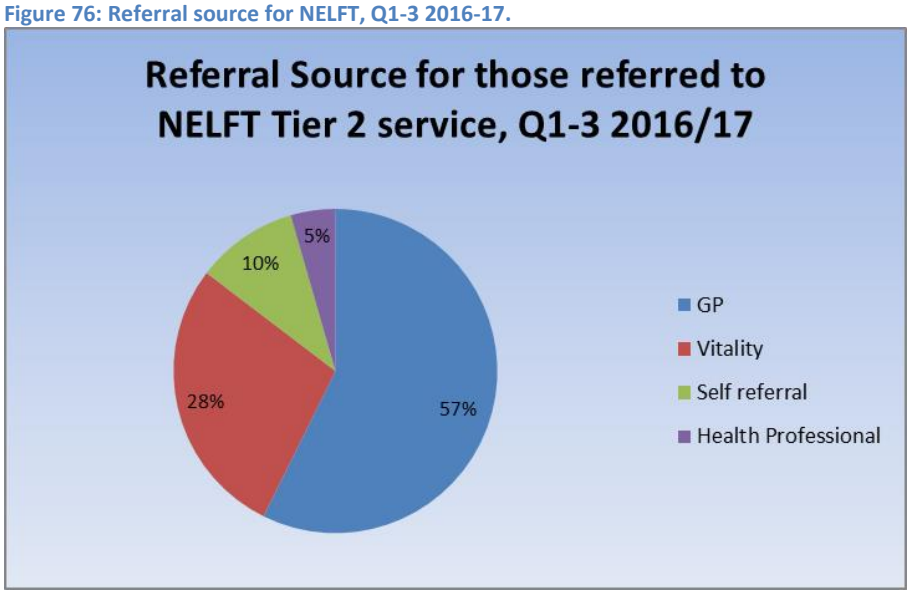
7.4 Healthcare and treatment of Obesity in Thurrock

7.4.1 Tier 2 Services

In 2016/17, Tier 2 adult weight management services were provided by four providers in Thurrock: North East London Foundation Trust (NELFT), KSL, Tai Chi 4 Health, and NAF Health. The latter three were commissioned via community grant agreement processes. Each of the four providers provided a slightly different support offer, with the intention that across Thurrock, there would be various options to target different parts of the community.

NELFT
Data from April-December 2016 showed that 471 patients had been referred for support to NELFT in this time period. 270 of these (57%) came from GPs, whilst the rest came from Vitality, self-referrals or other health professionals. The breakdown can be seen in the chart below.

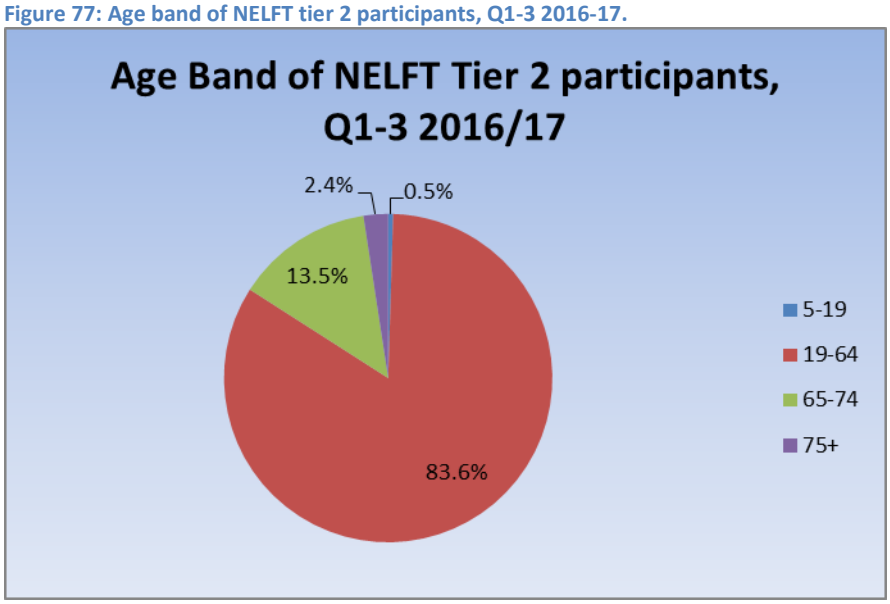
Figure 76: Referral source for NELFT, Q1-3 2016-17.



Source: Thurrock Council

Of the 471 referrals, 207 began a programme. The majority of these were aged between 19-64 years (83.6%).

Figure 77: Age band of NELFT tier 2 participants, Q1-3 2016-17.



Source: Thurrock Council

92 out of the 271 participants were living in the most deprived parts of the borough (equating to 44%). The Public Health team had stipulated that at least 35% of participants must come from the most deprived LSOAs (Lower Super Output Areas) in order that the service was targeted appropriately.

Performance reporting on the service indicates that 98% of participants in Q1-3 were signposted on to healthy lifestyle interventions during the programme. In terms of sustained behaviour change (this would vary per participant goal, but could be weight loss, exercise or sustained weight), 78% of programme completers were found to have sustained their behaviour change at 3 months, and 73% at 6 months.

Community Grant Providers
The level of detail on participants in these programmes is more limited than the detail from NELFT. Table 8 below shows the data consistently captured across each of the three programmes for the full year 2016/17.

Table 8: Data from Community Weight Management Providers, 2016-17.

	Performance Target	KSL (Q2-4 only)	Tai Chi 4 Health	NAF Health
Number of referrals		109	245	81
Percentage of participants who successfully completed the programme	60%	77%	60%	95%
Percentage of participants from the 40% most deprived LSOAs	>35%	55%	43%	80%
Percentage of participants with 5-10% body weight loss post-completion	>40%	54%	57%	55%
Percentage of participants maintaining 5–10% body weight loss at 3 months post programme.	>35%	37%	87%	54%
Percentage of participants maintaining 5–10% body weight loss at 6 months post	>30%	35%	87%	25%

programme.				
Percentage of participants signposted onto healthy lifestyle services/ targeted interventions.	>40%	52%	59 %	97%
Percentage of participants that are male.	>15%	16%	29%	8%

Source: Thurrock Council

So what does this mean?
The data from the tier 2 programmes indicates that there is good participation in these programmes from those in more deprived areas. The data from NELFT suggests that GPs are good at referring into the service, although not enough is known about which GPs are most likely to refer. This would be useful to know, to compare to GP obesity registers to see if those with highest referrals are those with the most obese patients.
The performance data indicates that all four programmes have had success in enabling patients to maintain their weight loss or behaviour change post-completion, and that a large proportion of patients are appropriately signposted onto healthy lifestyle services.

Whilst not a performance measure, all three community providers have reported a large number of compliments received about their services, and only 1 complaint throughout the whole year, indicating participants are happy with the community services.

Tier2 Child Obesity Services

In 2016/17 tier 2 services for children's weight management were provided by North East London Foundation Trust (NELFT). A service was commissioned for school aged children, with a BMI centile at 91 or above to reach or maintain a healthier BMI. The intervention points were linked to the National Childhood Measurement Programme (NCMP) and the parents/carers of children that measured as having a BMI centile in the overweight or obese categories were contacted by the service and invited to attend an intervention. Following NICE guidance PH47, sessions were delivered to families incorporating diet and nutrition advice, practical sessions on cooking healthy alternatives, portion sizes and food labelling and practical exercise sessions. The sessions were named 'Little dudes' (5-8 years) and then for the older primary age group 'Fresh' (9-12 years). As the uptake of these two programmes was low, NELFT devised a new programme 'Weight Management Programme' which has been run since September 2016. This programme was similar to the previous programmes but more flexible and incorporating the whole family. The uptake was initially low but has increased throughout the year. Outcomes measured included satisfaction with the programme, reduction in BMI, increased fruit and vegetable consumption, increased physical activity and reduced sedentary behaviour.

There was also a preventative element to the services offered, delivered in schools by the school health team. Each term there was a focus on a different area including reduction of fizzy drinks, physical activity and reducing sedentary behaviour and increasing fruit and vegetable consumption. Social media was incorporated, information provided and sessions delivered to share key messages in relation to these areas, outcomes were measured through baseline and end of term surveys to assess the impact.

The programmes are responsive to feedback and evaluation to update and amend the contents and respond to updates in guidance and evidence.

Tier 2 services will continue to be provided in 2017/18 school year through the new 'Healthy families' service provided in schools through the delivery of the 0-19 Healthy Child Programme.

The following data for the tier 2 programmes relates to the time between September 2016 and July 2017.

Table 9: Tier 2 programme data.

	Number of families	**% reducing their BMI z score at completion**	**% maintenance of BMI reduction at 3 months follow up**	**% of children from a BME group**
'Little Dudes' (5-8 years)				
Starting an intervention	91			Not available
Completing an intervention	17	82	43	66.4
'Fresh' (10-12 years)				
Starting an intervention	90			
Completing an intervention	21			69.7

The main observation for this data is that the numbers of families starting the programme is very low and the numbers of those completing is also proportionately very low when compared with the known rates of children in reception in year 6 to be overweight or obese from the NCMP data. The provider have targeted those in BME groups effectively as we are aware from the NCMP data and the evidence base that excess weight is more prevalent in these groups.

Feedback from families is being used to ensure that the intervention programmes offered are as accessible as possible to increase those able to take up the offer of a programme.

Prevention programmes for 2015/16 school year with year 6 pupils

The prevention programme is delivered in schools with a 'campaign' like approach with a topic taken termly. The topic area is addressed through social media postings, in school demonstrations and displays, assembly delivery etc. to share information on the topic area. An example could be a display showing the cubes of sugar in different soft drinks as a visual representation. Across the year a baseline questionnaire was delivered at the start of the year and a follow up was completed with 65% of pupils at the end of the year. The following percentages were reported.

Table 10: Prevention Programmes for year six pupils.

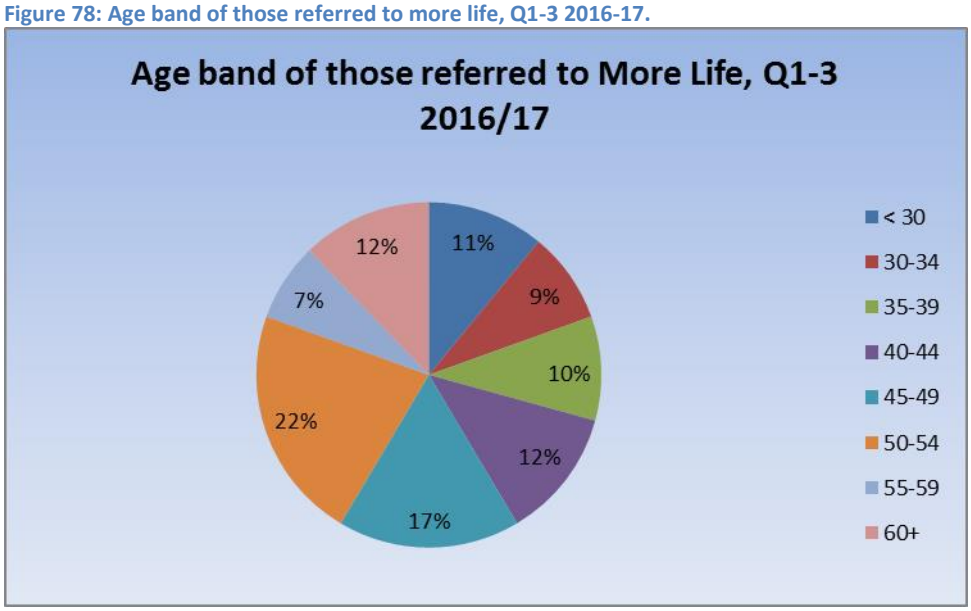
Health behaviour	Proportion
Reduction in sugary drinks consumption	62%
Increase in fruit and vegetable intake	68%
Reduction in sedentary behaviour	44%
Increase in physical activity	79%

This shows a positive increase in desirable behaviours and a reduction in undesirable behaviours which appears to support the interventions as being successful. This needs to interpreted with a note of caution however as it is limited to the truthfulness of the responses in the questionnaire and it is possible that these responses show a certain level of optimistic bias by the school children in reporting their behaviour change.

7.4.2 Tier 3 Services

The CCG commission More Life to provide tier 3 weight management support. The latest data received [covering April – December 2016] found that 82 patients had been referred for support in this time period. Of these, 64 were female (78%) and 18 male (22%). below depicts the age breakdown of those referred for a service:

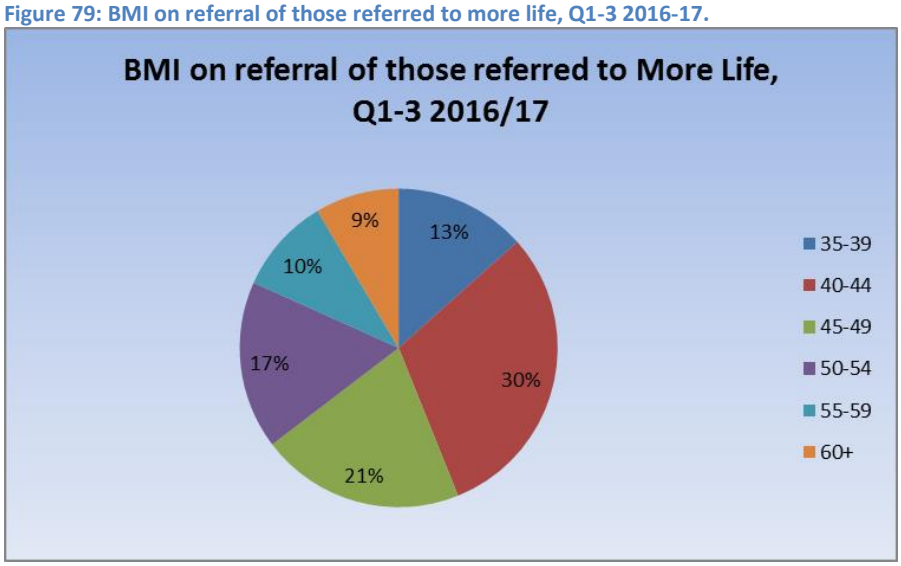
Figure 78: Age band of those referred to more life, Q1-3 2016-17.



Source: Thurrock CCG

The BMI on referral ranged from 35 up to 73, with the average BMI approximately 48. The breakdown can be seen below:

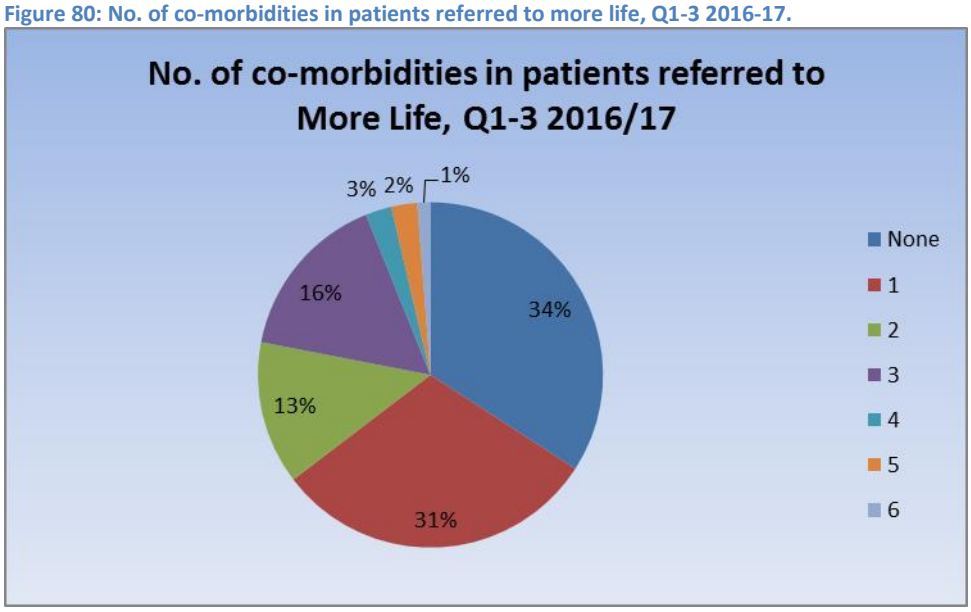
Figure 79: BMI on referral of those referred to more life, Q1-3 2016-17.



Source: Thurrock CCG

Data was also available on the number of referred patients who had one or more co-morbidities at the time of referral, as there is evidence to indicate that obese patients are more likely to have another long term condition [see section 3.2]. It can be seen that almost two thirds of referred patients had one or more long term condition, with 22% having three or more.

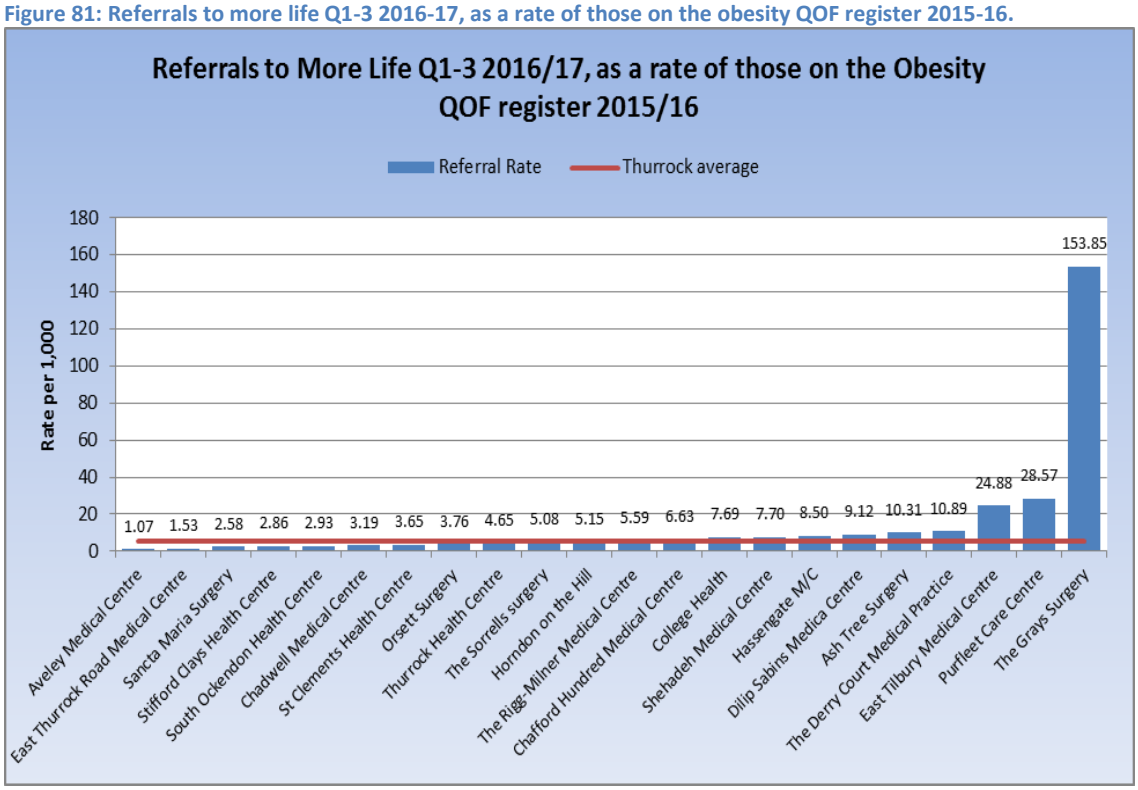
Figure 80: No. of co-morbidities in patients referred to more life, Q1-3 2016-17.



Source: Thurrock CCG

The GPs with the highest numbers of referred patients were Hassengate Medical Centre (13) and Purfleet Care Centre (10). However these are large practices and therefore there would likely be increased numbers of eligible patients. Viewing referred numbers as a rate of those on the QOF Obesity register [note this is not an exact match of all those eligible because 1) different years are being used, and 2) not all those on the QOF register would be eligible for tier 3, some may access tier 2], it can be seen that the referral rate across GPs in Thurrock is generally quite low, with the average rate per 1000 obese patients of 5.65. The Grays Surgery had a much higher rate of patients referred to More Life than the other GPs, with 153.85 per 1,000 obese patients. However, the numbers involved are small – this equates to 6 patients for this GP in total.

Figure 81: Referrals to more life Q1-3 2016-17, as a rate of those on the obesity QOF register 2015-16.



Source: Thurrock CCG

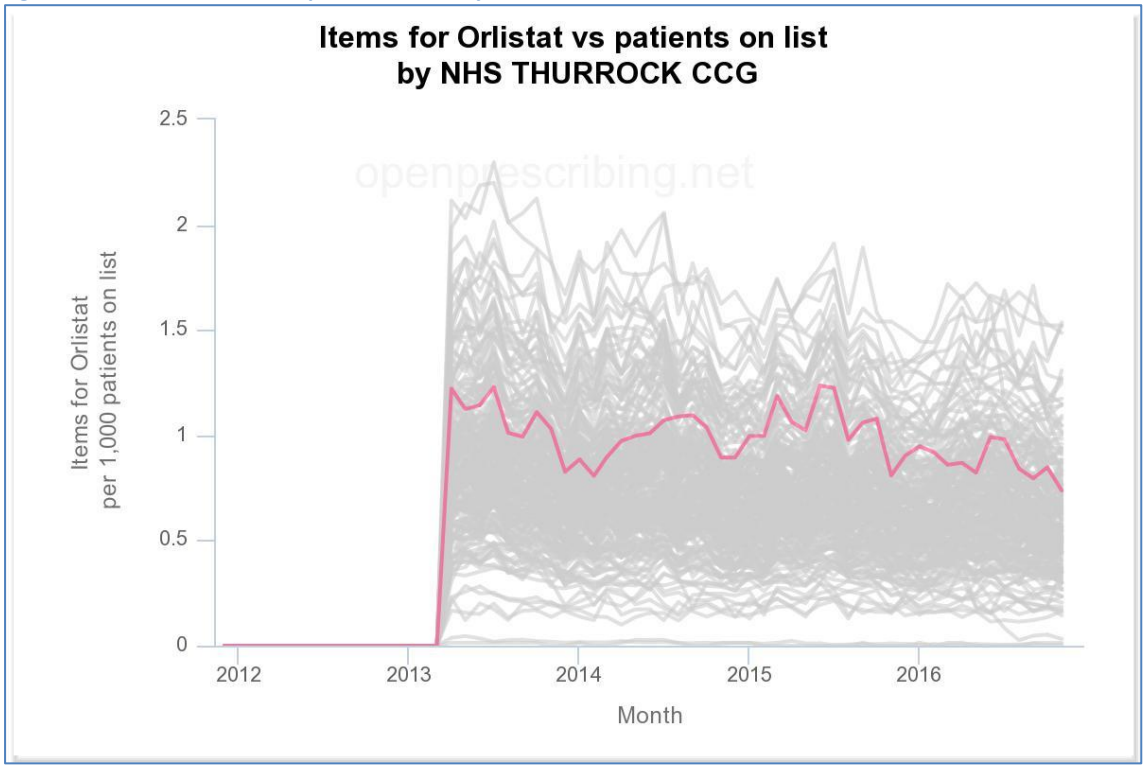
Reasons were given in the dataset for dropouts or non-attenders from the program for 11 starters. Of these:

- 6 cited personal circumstances
- 2 missed sessions due to surgery and were returned to the waiting list
- 2 cited they were too unwell to complete the program
- 1 said it was too far to travel
- 1 simply stated they could not attend the sessions

Obesity Prescribing

The most common item prescribed for obesity is Orlistat, which prevents the body from absorbing fat from food. The latest prescribing data indicates that Thurrock CCG's prescribing rate for Orlistat has been generally decreasing, which is in line with national trends. The CCG trend can be seen in the figure below as a rate per 1,000 patient populations (Thurrock line in pink).

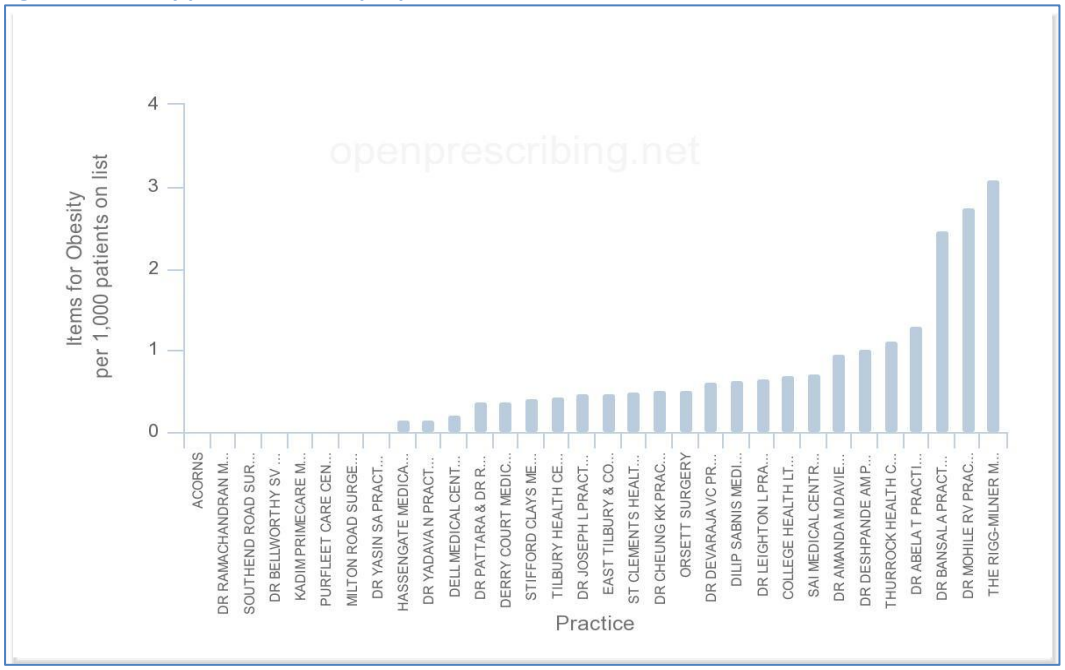
Figure 82: Items for Orlistat vs patients on list by NHS Thurrock CCG, 2012-16.



Source: Open Prescribing

Figure 83 below shows, for each Thurrock practice, the prescribing rate for all drugs under the BNF category of Obesity in November 2016 – calculated as a rate per 1,000 patient population. The practices with the highest prescribing rates are the Rigg Milner Medical Centre (3.09 per 1,000) and Dr Mohile (2.75 per 1,000). There were 8 practices who do not have any patients prescribed drugs for obesity. The variation shown by practice below does not necessarily correspond to the recorded obesity prevalence data seen in fig 81 above in that the practices with highest recorded obesity prevalence do not appear to have higher prescribing activity.

Figure 83: Obesity prescribed items per practice, November 2016.

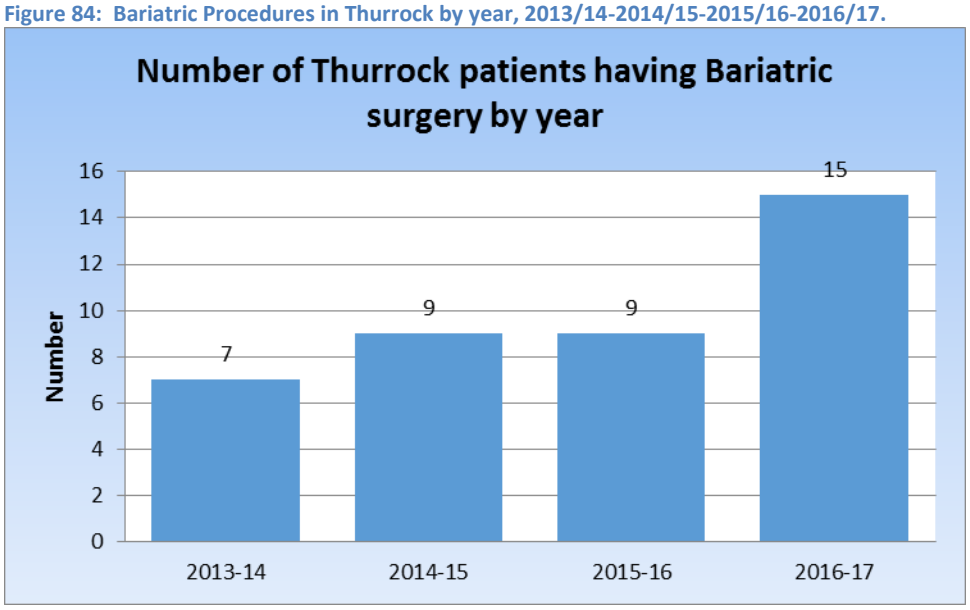


Source: Open Prescribing

7.4.3 Tier 4 Services - Bariatric Surgery

40 Thurrock patients had a bariatric surgical procedure between April 2013 and January 2016. It should be noted that these include both insertion of new gastric bands, adjustments to existing bands and removals – however, all were included in this analysis as the requirement for them is a reflection of the existing obesity issue in Thurrock. The most common hospitals that these procedures were performed at were Broomfield in Chelmsford (14) and Homerton in London (15). The number of procedures has increased per year, with months 1-10 of 2016/17 having seen 15 compared to 7 in the full year 2013/14.

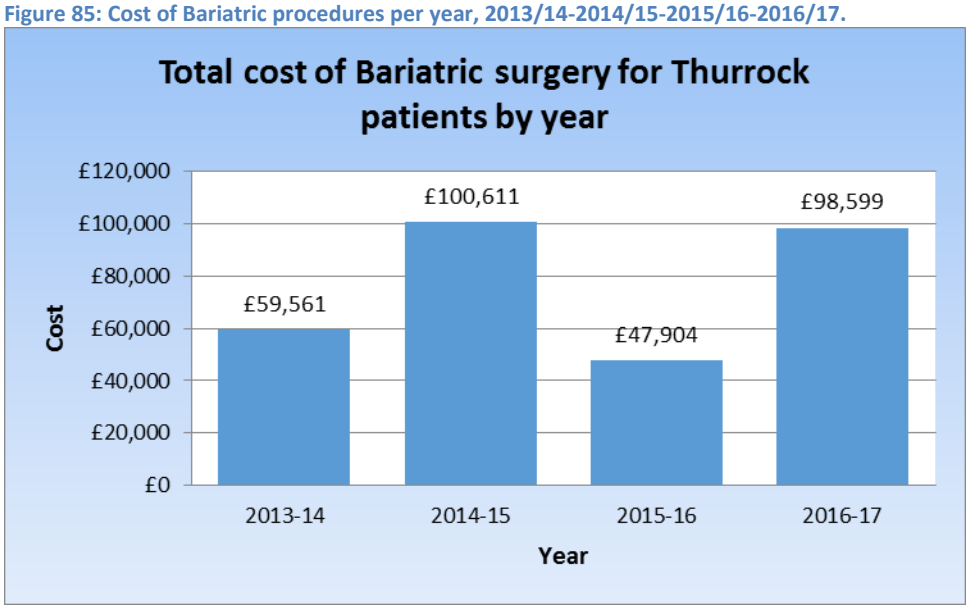
Figure 84: Bariatric Procedures in Thurrock by year, 2013/14-2014/15-2015/16-2016/17.



Source: NEL CSU

Interestingly when considering the cost of these procedures, whilst the largest number were undertaken in 2016/17, the total cost was actually highest in 2014/15, indicating that the procedures done in that year were more complex [average cost was £11,179 in 2014/15 per procedure compared to £6,573.27 in 2016/17].

Figure 85: Cost of Bariatric procedures per year, 2013/14-2014/15-2015/16-2016/17.

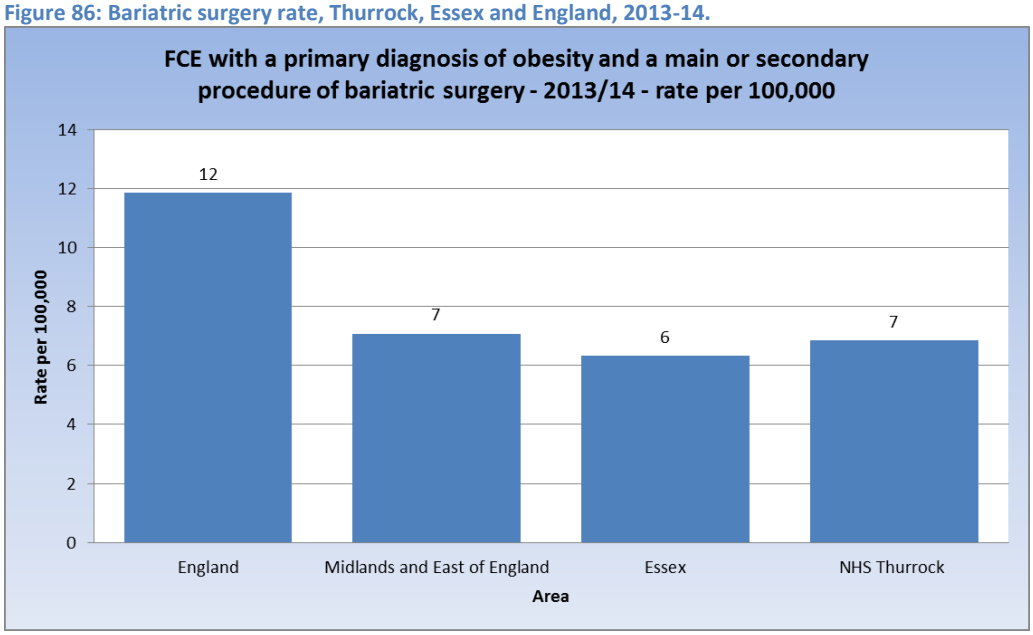


Source: NEL CSU

Due to the low numbers seen per practice, it was not possible to conclude any findings regarding practice-level variation.

The only available comparable data indicates that Thurrock has a similar rate of finished consultant episodes (FCEs) to both Essex and the Midlands and East of England area. It appears to have a lower rate than the national average although significance was not calculated.

Figure 86: Bariatric surgery rate, Thurrock, Essex and England, 2013-14.



Source: NHS Digital

7.5 Mental Health and Obesity

The connection between obesity and common mental health disorders (CMHDs) is an important public health issue. CMHDs are defined as neurotic disorders which affect day-to-day functioning, but which do not usually impede on cognition [130]. There are various CMHDs in the UK, including: depression, generalised anxiety disorder, mixed depression and anxiety, panic disorder, obsessive-compulsive disorder, phobias including social anxiety disorder (social phobia) and post-traumatic stress disorder (PTSD). Current research suggests that obesity is more prevalent among adults with serious mental illnesses than those in the general population [131] [132]. Both these conditions have major implications for the UK health care system and account for a significant proportion of the global burden of disease [133]. Individuals who suffer from both obesity and common mental health disorders may also face particular risks to health and well-being, as people with mental disorders are more vulnerable to the health risks associated with obesity such as type 2 diabetes, heart disease, stroke, high blood pressure, high cholesterol, and premature death [134] [135].

Research studies around the world are providing evidence of the bi-directional associations between depression and obesity. Luppino et al [136] concluded that 'obese persons had a 55% increased risk of developing depression over time, whereas depressed persons had a 58% increased risk of becoming obese'. It has been suggested that poor mental health can lead to unhealthy lifestyle choices and increased appetite. There are also some medications (such as anti-psychotic drugs) which for some people can have the side-effect of increased appetite. A combination of the biological effect of increased stress alongside poor adherence to weight loss programmes, binge eating, negative thoughts and reduced social support, may make it difficult for a depressed person to avoid weight gain [135]. There is also evidence that people with chronic or repeated episodes of depression are a particular risk of subsequent obesity [137].

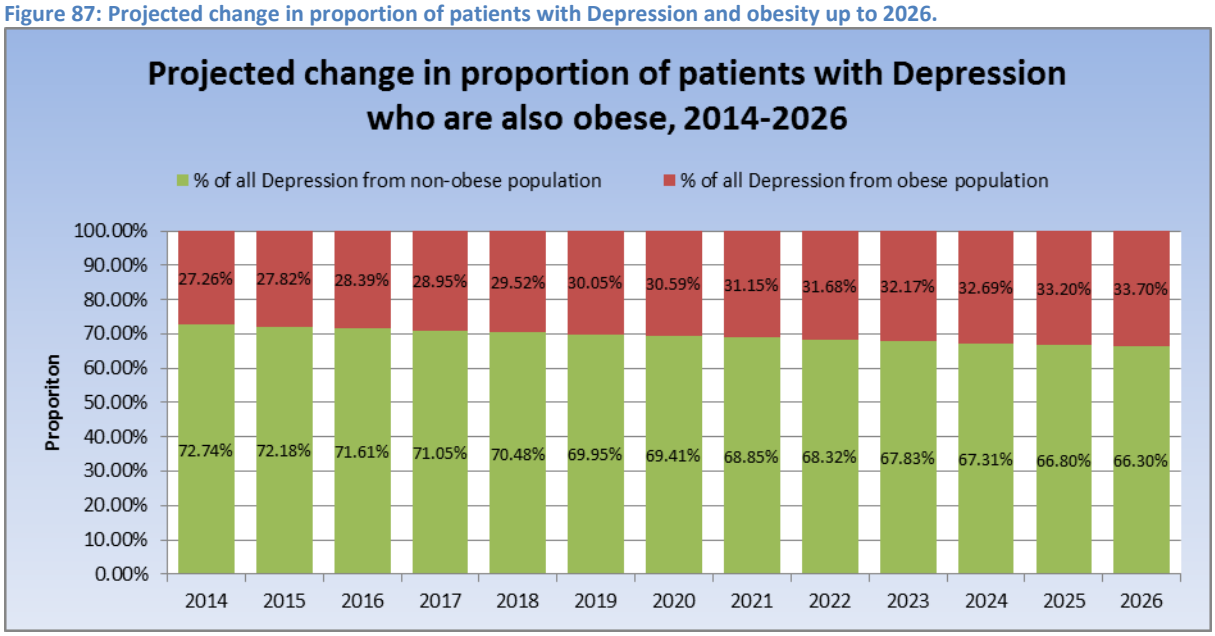
The bi-directional association between obesity and common mental health disorders is complex and multi-factorial. Gender, severity of obesity, socioeconomic status and level of education, age and ethnicity have all been suggested as potentially important risk factors that could affect the direction and/or strength of the association between the two conditions. There is also a wide range of behavioural, biological, social and psychological moderating factors that could help explain the relationship [138].

It has been recommended that the risk for co-morbidity should be considered in the treatment of the obese and/or depressed, with care providers made aware that in depressive patients, weight should be monitored and in overweight or obese patients, mood should be monitored [139] [136]. Also strategies to enhance self-worth and develop self-efficacy can help overweight patients to take control of their well-being [138].

What is happening locally?

Although there are no published local estimates of those with poor mental health and obesity, some modelled estimates have been produced with the support of Norfolk County Council. This estimates that as of 2016, approximately 28.39% of those on the depression register are also likely to be obese. Projecting this forward, it is likely that, if the current obesity trends continue, the proportion of patients with depression and obesity will increase, with an estimated 33.70% of them by 2026. This can be seen in Figure 87 below.

Figure 87: Projected change in proportion of patients with Depression and obesity up to 2026.



Source: ONS, Foresight report, and Norfolk County Council

Estimates are also available for other mental health conditions and obesity. These can be seen in Table 11 below, along with the estimated additional number of mental health patients with obesity over the 10 year period.

Table 11: Estimated prevalence of patients with mental health conditions and obesity up to 2026.

	% patients also estimated to be obese in 2016	% patients also estimated to be obese in 2026	Additional Number of Obese patients
Neurotic Disorder	28.34%	33.58%	2000
Personality Disorder	28.58%	34.15%	555
Psychotic Disorder	28.50%	33.96%	69
Dementia	28.00%	32.73%	211

Source: ONS, Foresight report, and Norfolk County Council

7.6 Recommendations

Recommendations

- CCG to encourage GPs to identify and refer more obese patients for weight management support.
- Practice-level variation to be supported through the work of the Healthcare PH Improvement Managers
- Future weight management provision to continue to target patients in more deprived areas as well as males.
- Tier 2 support to provide a varied range of options, including physical activity options, to ensure it reaches all sectors of the community.
- Review and consider the provision for tier 2 childhood weight management and its impact on population childhood obesity outcomes.
- Public Health and NHS Commissioners should ensure that there is clear connectivity between weight management and mental health support services.
- Analysis of the tier 3 data indicates that a large proportion of patients have more than one long term condition. In order to prevent development of further ill-health, tier 3 obesity support and long term condition support should be delivered in an integrated way.

8. Conclusions

Tackling obesity across the borough is complex and requires action at every level, from the individual to all aspects of society, and across all sectors. Obesity cannot be tackled effectively by one area alone and local authorities, led by public health, are ideally placed to develop a coordinated approach to tackle obesity across its various departments, services and partner organisations.

Within the local authority itself this would include the following departments and service areas:

- Planning
- Transport
- Regeneration
- Environment, leisure and culture
- Parks and green spaces
- Education and learning
- Health and social care
- Housing

In addition to this we need to also engage with the wider community and Third sector organisations, with recognition to the role that the individual and community must play in developing its own solutions.

In order to tackle obesity and achieve healthy weight in Thurrock across the population, a whole systems thinking and a whole systems approach is required to both understanding and tackling it.

This Joint Strategic Needs Assessment goes some way to helping us understand a proportion of the system which is operating on a local level in Thurrock, which is resulting in a year on year increase in childhood and adult overweight and obesity.

This report has looked at some of the evidence base and has analysed data within the scope of the Foresight report [2] Whole Systems Map. This is the first step to helping us to understand the local issues and interactions, but is by no means the end of the story.

In order for Thurrock to have a noticeable and lasting impact, recommendations should be actioned with a view to ensuring that we implement a *comprehensive portfolio of interventions.*

More important than this, the interactions between them need to be defined and linked, and “the whole is greater than the sum of its parts”. Further work may need to be done to identify where these interactions might be and how they might influence one another, particularly in Thurrock, and particularly where they might be cross-departmental or span a number of partners. There is much more intelligence from key stakeholders and the community to be gathered to further support this.

The specific context, the assets and the opportunities that are provided in Thurrock, of which there are many, should be looked at to lever an impact on the system, which is currently operating in favour of population weight gain.

Further detailed analysis is likely follow to look at some areas in more depth and as new data becomes available. New and emerging evidence may also need to be reviewed ongoing. Any response in relation to a strategy and framework for delivery should be dynamic and reactive to this.

Next steps

This report should be promoted and shared for further discussion, to test out the recommendations made in this JSNA and to identify opportunities for action and implement joint solutions.

Stakeholder engagement will be undertaken to collect further local intelligence, understand the opportunities and to gain commitment to tackling this as a system wide approach.

A clear and overarching strategy will be developed, which will give a steer to the direction of travel in Thurrock for the obesity system for key stakeholders, the community and individuals to work towards.

A delivery framework will be developed as a collaborative partnership of core stakeholders to support in the implementation of the strategy, and this will link directly as an action plan to the Thurrock Health and Well-being Board. Short and longer term outcomes will be monitored and evaluated to measure success.

There will be continued learning from this approach that will evidence success and steer future development. This will include national learning from the WSO pilot areas through Public Health England and Leeds Beckett University.

As this whole system approach is developed this can be used to influence further areas such as physical activity and mental health.

References

[1] J. Hill, "International Strategies to address obesity," *Obesity Reviews,* vol. 9, no. 1, pp. 41-47, 2008.

[2] Government Office for Science, "Foresight. Tackling Obesities: Future Choices - Project Report," 2007.

[3] C. Moell, S. Garwicz, E. Cavallin-Stahl, J. Bjork, U. Thilen, B. Ahren and E. Erfurth, "Growth hormone deficiency predicts cardiovascular risk in young adults treated for acute lymphoblastic leukemia in childhood," *J Clin Endocrinal Metab,* vol. 89, pp. 5003-5012, 2004.

[4] Leeds Beckett University, "Whole Systems Appraoch to Tackle Obesity," Leeds Beckett University, 2016. [Online]. Available: http://www.leedsbeckett.ac.uk/wholesystemsobesity/. [Accessed January 2017].

[5] HM Government, "Childhood Obesity: A Plan for Action," Crown Copyright, London, 2016.

[6] Thurrock Council, "Health and Well-being Strategy," 2016. [Online]. Available: https://www.thurrock.gov.uk/strategies/health-and-well-being-strategy. [Accessed January 2016].

[7] Diabetes UK, "Developing Type 2 Diabeties," [Online]. Available: www.diabeties.org.uk. [Accessed May 2017].

[8] J. Logue and N. Satter, "Childhhod Obesity: A Ticking Time bomb for Cardiovascular Disease?," *Clinical Pharmacology & Therapeutics,* vol. 90, pp. 174-178, 2011.

[9] P. Bromfield, "Childhood obesity: psychosocial outcomes and the role of weight bias and stigma," *Educational Psychology in Practice,* vol. 25, no. 3, 2009.

[10] E. Perez-Pastor, B. Metcalf, J. Hosking, A. Jeffery, L. Voss and T. Wilkin, "Assortative weight gain in mother-daughter and father-son pairs: an emerging source of childhood obesity. Longitudinal study of trios," *International Journal of Obesity,* vol. 33, no. 7, pp. 727-35, 2009.

[11] M. Gatineau and S. Mathrani, "National Obesity Observatory, Obesity and Ethnicity January 2011," National Obesity Observatory, Oxford, January 2011.

[12] H. Rutter and H. Dinsdale, "National Child Measurement programme: detailed analysis of the 2006/07 dataset : National Obesity Observatory," London School of hygiene and Tropical Medicine, London, 2008.

[13] Public Health England, *National Child and Maternal Health Intelligence Network.*

[14] Local Government Assosciation; Public Health England, "Social Care and Obesity – A

Discussion Paper," London, 2013.

[15] Obesity, The State of, "The State of Obesity:The Healthcare Costs of Obesity," Trust for America's Health, September 2016. [Online]. Available: http://stateofobesity.org/healthcare-costs-obesity/. [Accessed May 2017].

[16] K. L. Hammond, Practical issues in the Surgical CAre of the Obese Patient, Charleston, South Carolina, USA: Medical University of South Carolina, 2013.

[17] Public Health England, "Making the Case for Tackling Obesity – why invest.," Public Health England, United Kingdom, 2015.

[18] NICE, "Workplace Health. Costs and Savings. Advice.," July 2012. [Online]. Available: https://www.nice.org.uk/advice/lgb2/chapter/Costs-and-savings. [Accessed January 2017].

[19] Public Health England, "Public Health England Obesity: Workplaces," Public Health England, [Online]. Available: https://www.noo.org.uk/LA/tackling/workplaces. [Accessed December 2016].

[20] National Institute of Health and Clinical Excellence, "Healthy workplaces: improving empoyee mental and physical health and wellbeing. Quality Standard QS147.," NICE, 2017.

[21] National Institute of Health and Clinical Excellence, "Workplace health. Local Government Briefing LGB2," NICE, 2012.

[22] M. Campbell, "Biological, environmental and social influences on childhood obesity," The university of Western Ontario, Canada, Ontario, Canada, 2016.

[23] J. Reilly, J. Armstrong, A. Dorosty, P. Emmett, A. Ness and I. Rogers, "Early life risk factors for obesity in childhoos: cohort study," *BMJ,* vol. 330, no. 7504, p. 1357, 2005.

[24] K. Whitaker, M. Jarvis, R. Beeken, D. Boniface and J. Wardle, "Comparing maternal and paternal intergenerational transmission of obesity risk in a large population based sample," *American Journal of Clinical Nutrition,* 2010.

[25] L. Griffiths, S. Hawkins, T. Cole and C. Dezateux, "Risk factors for rapid weight gain in pre school children: findings from a UK wise prospective study," *International Journal of Obesity,* vol. 34, pp. 624-632, 2010.

[26] P. Morgan, A. Okely, D. Cliff, R. Jones and L. Baur, "Correlates od objectiveley measured physical activity in obese children," *Obesity,* vol. 16, no. 12, pp. 2634-2641, 2008.

[27] J. Wardle, C. Guthrie, S. Sanderson, L. Birch and R. Plomin, "Food and activity preferences in children of lean and obese parents," *International Journal of Obesity and Related Metabolic Disorders,* vol. 25, no. 7, pp. 971-977, 2001.

[28] K. Morgan, M. Rahman, R. Hill, A. Khanom, R. Lyons and S. Brophy, "Obesity in Pregnancy: Infant health service utilisation and costs on the NHS," *British Medical Journal Open,* October 2015.

[29] B. N. F. -. N. a. D. Taskforce, "Nutrition and Development: Short and Long Term Consequences for Health," in *BNF (British Nutrition Foundation)*, London, British Nutrition Foundation, May 2013.

[30] S. Stanner and E. Papadopoulou, "Early Growth & Obesity Risk - what should health professionals be advising," *Nutrition Bulletin,* vol. 39, no. 2, pp. 195-212, 2014.

[31] K. Lamb and R. Sanders, "Nutrition in pregnancy and breastfeeding: A public health issue," *Journal of Health Visiting,* vol. 3, no. 10, 2015.

[32] L. Ruowei, S. Jewell and L. Grummer-Strawn, "Maternal obeisty and breastfeeding practices," *The american journal of childhood nutrition,* vol. 77, no. 4, pp. 77 931-6, 2003.

[33] N. Start4Life, "NHS Start 4 Life," Public Health England, [Online]. Available: https://www.nhs.uk/start4life/. [Accessed January 2017].

[34] J. Pearce, M. Taylor and S. Langley-Evans, "Timing of the introduction of complimentary feeding & risk of childhood obesity," *International Journal of Obesity ,* no. iso.2013.99, p. doi: 10.1038, 2013.

[35] R. Whitaker, J. Wright, M. Pepe, K. Seidel and W. Dietz, "Predicting obesity in young adulthood from childhood and parental obesity," *The New England Journal of Medicine,* pp. 337, 869-873, 1997.

[36] K. Campbell, D. Crawford, J. Salamon, A. Carver, S. Garnett and L. Baur, "Associations between the home food environment and obesity promoting eating behaviours in adolescence," *Obesity,* no. 15, pp. 719-730, 2007.

[37] H. Patrick, "Journal of the American College of Nutrition," *Journal of the American College of Nutrition,* no. 24, pp. 83-92, 2005.

[38] I. J. o. Obesity, "Children with a TV in their bedroom at higher risk for being overweight," *International Journal of Obesity,* vol. 31, no. 34, pp. 644-651, 2007.

[39] S. Higgs, "Social norms and their influence on eating behaviours," University of Birmingham UK, Birmingham, 2015.

[40] D. Shoham, R. Hammond, H. Rahmandad, Y. Wang and P. Hovmand, "Modeling social norms and the social influence in obesity," Curr Epidemiol, 2015.

[41] N. A. Christakis and J. H. Fowler, "The spread of obesity in a large social network over 32 years," *The New England Journal of Medicine,* pp. 357:370-379, 2007.

[42] P. Howell, S. Davies, J. Bartip and L. Wormald, "Effectivenes of frequency shifted feedback at reducing disfluency for linguistically easy, and difficult, sections of speech," University College London, London, 2004.

[43] N. Gilbert, Researching social life, United Kingdom: SAGE Publications, 2008.

[44] N. JY, "The Health of Britains Ethnic Minorities: Findings from a National Survey," London: Policy Studies Institute, London, 1997.

[45] J. Long, K. Hylton, K. Spraklen, A. Ratna and S. Bailey, "Sporting Equals. A Systemic Review of the literature on Black and Minority Ethnic Communities on Sport and Recreation," Leeds Carnegie Institute, Leeds, 2009.

[46] L. MacLean, N. Edwards, M. Garrard, N. Sims-Jones, K. Clinton and L. Ashley, "Obesity, stigma and public health planning," *Health promotion International,* vol. 24, no. 1, pp. 88-93, 2009.

[47] N. O. Observatory, "Obesity and Ethnicity," NOO, Oxford, 2011.

[48] E. Dennis, K. D. Flack and B. M. Davy, "Beverage consumption and adult weight management: A review," *Eating behaviours,* no. 10, pp. 237-46, 2009.

[49] Alcohol Concern, "Alcohol Concern Cymru Briefing: Alcohol and Calories," Alcohol Concern, Cardiff, 2010.

[50] S. G. Wannamethee and A. G. Shaper, "Alcohol, body weight and weight gain in middle-aged men," *American Journal of Clinical Nutrition,* vol. 77, no. 5, pp. 1312-1317, 2003.

[51] S. G. Wannamethee, A. G. Shaper and P. H. Whincup, "Alcohol and adiposity: effects of qyantity and type of drink in relation with meals," *International Journal of Obesity,* vol. 29, no. 12, pp. 1436-1444, 2005.

[52] A. A. Arif and J. E. Rohrer, "Patterns of alcoholic drinking and it's association with obesity: data from the Third National health and Nutrition Examination Survey," *BMC Public Health,* vol. 5, p. 126, 2005.

[53] M. Schutze, M. Schulz, A. Steffen, M. M. Bergmann, A. Kroke and L. Lissner, "Beer consumption and the 'beer belly': scientific basis or common belief?," *European Journal of Clinical Nutrition,* vol. 63, no. 9, pp. 1143-1149, 2009.

[54] G. Colditz, E. Giovannucci, E. Rimm, M. Stampfer, B. Rosner and F. Speizer, "Alcohol intake in relation to diet and obesity in women and men," *The American Journal of Clinical Nutrition,* vol. 54, no. 1, pp. 49-55, 1991.

[55] M. R. Yeomans, "Alcohol, appetite and energy balance: is alcohol a risk factor for obesity?," *Phsiology & Behaviour,* vol. 100, no. 1, pp. 82-89, 2010.

[56] J. S. Tolstrup, B. L. Heitmann, A. M. Tjønneland, O. K. Overvad, T. I. Sørensen and M. N. Grønbaek, "The relation between drinking pattern and body mass index and waist and hip circumference," *International Journal of Obesity,* vol. 29, no. 5, pp. 490-497, 2005.

[57] E. Lukasiewicz, L. I. Mennen, S. Bertrais, N. Arnault, P. Preziosi, P. Galan and S. Hercberg, "Alcohol intake in relation to body mass index and waist to hip ratio: the importance of type of alcoholic beverage," *Public Health Nutrition,* vol. 8, no. 3, pp. 315-320, 2005.

[58] I. Wakabayashi, "Corss sectional relationship between alcohol consumption and prevelance of metabolic syndrome in japanese men and women," *Journal of Atherosclerosis and Thrombosis,* vol. 17, no. 1, pp. 695-704, 2010.

[59] L. K, "Gender-specific relationships between alcohol drinking patterns and metabolic syndrome: the Korea National Health and Nutrition Examination Survey 2008," *Public Health Nutrition,* vol. 15, no. 10, pp. 1917-1924, 2012.

[60] N. J. Shelton and C. S. Knott, "Association between alcohol, calorie intake and overweight and obesity in English adults," *American Journal of Public Health,* pp. 104: 629-631, 2014.

[61] K. Vågstrand, B. Barkeling, H. B. Forslund, K. Elfhag, Y. Linné, S. Rössner and A. K. Lindroos, "Eating habits in relation to body fatness and gener in adolescents - results from the SWEDES study," *European Journal of Clinical Nutrition,* vol. 61, no. 4, pp. 517-525, 2007.

[62] M. A. Alcácera, I. Marques-Lopes, M. Fajó-Pascual, J. Puzo, J. Blas Pérez, M. Bes-Rastrollo and M. A. Martínez-González, "Lifestyle factors associated with BMI in a spanish graduate population: the SUN study," *Obesity facts,* vol. 1, no. 2, pp. 80-87, 2008.

[63] S. Croezen, T. L. Visscher, N. C. Ter Bogt, M. L. Veling and A. Haveman-Nies, "Skipping breakfast and alcohol consumption and physical inactivity as risk factors for overweight and obesity in adolescents: results of the E-MOVO project," *European Journal of Clinical Nutrition,* vol. 63, no. 3, pp. 405-412, 2009.

[64] J. Costa-Font and J. Gil, "What lies behind Socio-Economic Inequalities in Obesity in Spain? A Decomposition Approach.," *Food Policy,* vol. 33, pp. 61-73, 2008.

[65] S. Brennan, M. Henry, G. Nicholson, M. Kotowicz and J. Pasco, "Socio-economic status and risk factors for obesity and metabolic disorders in a population-based sample of adult females.," *Prev Med.,* vol. 49, pp. 165-171, 2009.

[66] M. Devaux, F.Sassi, J.Church, M.Cecchini and F.Borgonovi, "Devaux, Marion , et al. (2011), “Exploring the Relationship Between," *OECD Journal: Economic Studies,* vol. 1, pp. 121-129, 2011.

[67] E. K. Adam, L. Chu, L. D. Doane, J. Boisjoly, G. J. Duncan, P. L. Chase-Lansdale and T. W. McDade, "Adverse adolescent relationship histories and young adult health: cumulative effects of lonliness, low parental support, relationship instability, intimate partner violence

and loss," The Centre on Social Disparities and Health, Institute for Policy Research, Northwestern University, Evanston, Illinois, illinois, 2011.

[68] M. Marmot, "Fair Society, Healthy Lives: The marmot Review: Strategic Review of Health Inequalities in England post 2010.," 2010..

[69] C. Landhuis, R. Poulton, D. Welch and R. Hancox, "Programming obesity and poor fitness: the long-term impact of childhood television.," *Obesity (Silver Spring),* vol. 16, pp. 1457-9, 2008.

[70] T. Parsons, O. Manor and C. Power, "Television viewing and obesity: a prospective study in the 1958 British birth cohort," *European Journal of Clinical Nutrition,* vol. 62, pp. 1355-63, 2008.

[71] A. P. A. n. Web, "The impact of food advertising on childhood obesity," 13 March 2013. [Online]. Available: <http://www.apa.org/topics/kids-media/food.aspx?item=3.

[72] A. David, A. C. Frederick and K. G. Saguy, "Culture, health and Bigatory: how exposure to cultural accounts of fatness shapes attitudes about health risk, health policies and weight based prejudice," *Social Science & Medicine,* 2015.

[73] L. S. Suggs, C. McIntyre, W. Warburton, S. Henderson and P. Howitt, "Communicating Health Messages - Aframework to increase the effectiveness of health communication globally," WISH Communicating Complex Health messages Forum, 2015.

[74] R. H. Nagler, "Adverse outcomes associated with media exposure to contradictory nutrition messages.," Journal of Health Communication, 2014.

[75] M. White, "Food access and obesity," *Obesity Reviews,* vol. 8, no. Suppl. 1, pp. 99-107, 2007.

[76] J. D. Mackenbach, H. Rutter, S. Compernolle, K. Glonti, J.-M. Oppert, H. Charreire, I. De Bourdeaudhuij, J. Brug, G. Nijpels and J. Lakerveld, "Obesogenic environments: a systematic review of the association between the physical environment and adult weight status, the SPOTLIGHT project," *BMC Public Health,* 2014.

[77] C. E. Caspi, G. Sorensen, S. V. Subramanian and I. Kawachi, "The local food environment and diet: a systematic review," *Health Place,* vol. 18, no. 5, pp. 1172-1187, 2012.

[78] C. B. M. Kamphuis, K. Giskes, G.-J. de Bruijn, W. Wendel-Vos, J. Brug and F. J. van Lenthe, "Environmental determinants of fruit and vegetable consumption among adults: a systematic review.," *The British Journal of Nutrition,* 2006.

[79] K. van der Horst, A. Oenema, I. Ferreira, W. Wendel-Vos, K. Giskes, F. van Lenthe and J. Brug, "A systematic review of environmental correlates of obesity-related dietary behaviors in youth.," *Health Education Research,* 2007.

[80] H. F. B, "Resolved: there is sufficient scientific evidence that decreasing sugar-sweetened beverage consumption will reduce the prevalence of obesity and obesity-related diseases.,"

Obesity Reviews, vol. 14, no. 8, pp. 606-619, 2013.

[81] P. H. England, "The relationship between dental caries and obesity in children: an evidence summary," Crown Copyright, London, 2015.

[82] Health and Social Care Information Centre, "Health Survey for England 2014," Health and Social Care Information Centre, 2015.

[83] M. G. De Irala-Estevez, L. Johansson, U. Oltersdorf, R. Prattala and M. A. Martinez-Gonzalez, "A systemeatic review of socio-economic differences in food habits in Europe: consumption of fruit and vegetables," Department of Epidermiology and Public Health, University of Navarra, Pamplona, Spain, Pamplona, Spain, 2000.

[84] P. Lucas, T. Jessiman and A. Cameron, "Healthy Start: The Use of Welfare Food Vouchers by Low-Income Parents in England," *Social Policy and Society,* vol. 14, no. 3, pp. 457-469, 2015.

[85] A. McFadden, J. Green, V. Williams, J. McLeish, F. McCormick, J. Fox-Rushby and M. Renfew, "Can food vouchers improve nutrition and reduce health inequalities in low-income mothers and young children: a multi-method evaluation of the experiences of beneficiaries and practitioners of the Healthy Start programme in England," *BMC Public Health,* vol. 14, no. 148, 2014.

[86] A. Iniesta-Martinez and H. Evans, "Pupils not claiming free school meals," Department for Education, 2012.

[87] J. Woodward, P. Sahota, J. Pike and R. Molinari, "Interventions to increase free school meal take-up," *Health Education,* vol. 115, no. 2, pp. 197-213, 2015.

[88] L. A. Sorhaindo and Feinstein., "What is the relationship between child nutrition and school outcomes?," Centre for Research on the Wider Benefits of Learning, London, 2006.

[89] M. Belot and J. James, "Healthy school meals and educational outcomes," *Journal of Health Economics,* vol. 30, no. 3, pp. 489-504, 2011.

[90] J. Dimbleby and J. Vincent, "The School Food Plan," *The Independant School Food Plan,* 2013.

[91] A. Donkin, E. Dowler, S. Stevenson and S. Turner, "Mapping access to food in a deprived area: The development of price and availability indices.," *Public Health Nutrition.,* vol. 3, no. 1, pp. 31-38, 2000.

[92] L. A. Dibsdall, N. Lambert, R. F. Bobbin and L. J. Frewer, "Low income consumers attitudes and behaviour towards access, availability and motivation to eat fruit and vegetables," Institute of Food Research, Norwich Research Park, Colney NR47UA, Norwich, 2003.

[93] Thurrock Council, "Active Places: Parks and Open Spaces Assessment," Thurrock Council, 2016.

[94] Public Health England, "Obesity and the environment. Density of Fast Food Outlets.," 2016. [Online]. Available: https://www.noo.org.uk/securefiles/161026_1050//FastFoodmap_FINAL.pdf. [Accessed December 2016].

[95] L. K. Fraser, K. L. Edwards, J. Cade and G. P. Clarke, "The Geography of Fast Food Outlets: A Review," *Int. J. Environ. Res. Public Health,* vol. 7, pp. 2290-2308, 2010.

[96] T. Burgoine, N. G. Forouhi, S. J. Griffin, N. J. Wareham and P. Monsivais, "Associations between exposure to takeaway food outlets, takeaway food consumption, and body weight in Cambridgeshire, UK: population based, cross sectional study.," *BMJ,* vol. 348, no. 1464, 2014.

[97] T. Burgoine, N. G. Forouhi, S. J. Griffin, N. J. Wareham and P. Monsivais, "The American Journal of Clinical Nutrition. 2016;103(6):1540-1547. doi:10.3945," vol. 6, no. 103, pp. 1540-1547, 2016.

[98] M. J. Borys, "EPODE approach for childhood obesity prevention: methods, progress and international development.," *Obesity Reviews,* vol. 13, no. 4, pp. 299-315, 2012.

[99] F. J. Sallis, "Physical activity and food environments: solutions to the obesity epidemic," *The Milbank quarterly,* vol. 87, no. 1, pp. 123-154, 2009.

[100] A. Ruopeng, "Effectiveness of subsidies in promoting healthy food purchases and consumption: a review of field experiments.," *Public Health Nutrition,* vol. 16, no. 7, pp. 1215-1228, 2013.

[101] T. M. A. Flynn, "Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with 'best practice' recommendations.," *Obesity Reviews,* vol. 7, no. 1, pp. 7-66, 2006.

[102] A. Flego, E. Herbet, L. Walters, B. Gibbs, R. Swinburn and M. Moodie, "Jamie's Ministry of Food: quasi-experimental evaluation of immediate and sustained impacts of a cookin skills program in Australia.," *PLoS one,* vol. 9, no. 12, 2014.

[103] C. S. Liberato, "Nutrition interventions at point-of-sale to encourage healthier food purchasing: a systematic review.," *BMC Public Health,* vol. 14, pp. 919-919, 2014.

[104] J. Gittelsoh, "Preventing childhood obesity and diabetes: is it time to move out of the school?," *Pediatric diabetes,* vol. 8, no. 9, pp. 55-69, 2007.

[105] E. waters, A. de Silva-Sanigorstki, B. Hall, T. Brown, K. Campbell, Y. Gao, R. Armstrong, L. Prosser and C. Summerbell, "Interventions for preventing obesity in children," *Primary review group - public health group,* 2011.

[106] Health and Social Care Information Centre, "Health Survey for England 2012. Volume 1: Chapter 2 Physical Activity in Adults," Health and Social Care Information Centre, Leeds, 2013.

[107] e. a. Murrey, "UK Health Performance: findings of the Global Burden of Disease Study 2010.," *The Lancet,* vol. 381, pp. 997-1020, 2013.

[108] C. Wen and X. Wu, "Stressing harms of physical inactivity to promote exercise.," *The Lancet Online,* vol. 380, no. 9838, pp. 192-193, 2012.

[109] Health and Social Care Information Centre, "Statistics on Obesity, Physical Activity and Diet in England.," Health and Social Care Information Centre, 2015.

[110] SportEngland, "Active People Survey.," 2014.

[111] T. Sugiyama, C. Pachet, N. Howard, N. Coffee, A. Taylor, R. Adams and M. Daniel, "Public open spaces and walking for recreation: Moderation by attributes of pedestrian environments," *Preventative Medicine,* vol. 62, pp. 25-29, 2002.

[112] B. Giles-Corti, M. Broomhall, M. Knuiman, C. Collins, K. Douglas, K. Ng, A. Lange and R. Donovan, "Increasing walking: how important is distance to, attractiveness, and size of public open space?," *Prev Med.,* pp. 28(2 Suppl 2):169-76., 2005 Feb.

[113] M. Tremblay, A. LeBlanc, M. Kho, T. Saunders, R. Larouche, R. Colley, G. Goldfield and S. Gorber, "Systematic review of sedentary behaviour and health indicators in school-aged children and youth," *International Journal of Behavioral Nutrition and Physical Activity,* vol. 8, no. 98, 2011.

[114] "http://thedailymile.co.uk/resources," 2017.

[115] "Parks and Green Spaces," Public health England, 2016.

[116] Council, Thurrock, "Residents Survey," Thurrock Council, Thurrock, Essex, 2016.

[117] "Nice Guidance Physical activity and the environment," 2006 - Currently under review for republication March 2017.

[118] E. Waters, A. de Silva-Sanigorski, B. Hall, T. Brown, K. Campbell, Y. Gao, R. Armstrong, L. Prosser and T. Brown, "Interventions for preventing obesity in children," 2011.

[119] National Institute for Health and Care Excellence, "Obesity. Identification, assessment and management of overweight an obesity in children, young people and adults," National Clinical Guideline Centre, 2014.

[120] M. Hutchesson, M. Rollo, R. Krukowski, L. Ells, J. Harvey and P. Morgan, "eHealth interventions for the prevention and treatment of overweight and obesity in adults: a systematic review with meta-analysis," *Obesity Reviews,* vol. 16, no. 5, pp. 376-392, 2015.

[121] L. Warkentin, S. Majumdar, J. Johnson, C. Agborsangaya, C. Rueda-Clausen, A. Sharma, S. Klarenbach, S. Karmali, D. Birch and R. Padwal, "Weight loss required by the severely obese to achieve clinically important differences in health-related quality of life: two-year prospective

cohort study," *BMC Medicine,* vol. 12, no. 175, 2014.

[122] R. Christensen, E. Bartels, A. Astrup and H. Bliddal, "Effect of weight reduction in obese patients diagnosed with knee osteoarthritis: a systematic review and meta-analysis," *Annals of the Rheumatic Diseases,* vol. 66, pp. 433-439, 2007.

[123] B. Stenius-Aarniala, T. Poussa, J. Kvarnstrom, E. Gronlund, M. Ylikahri and P. Mustajoki, "Immediate and long term effects of weight reduction in obese people with asthma: randomised controlled study," *BMJ,* vol. 320, no. 827, 2000.

[124] E. Robinson, H. Parretti and P. Aveyard, "Visual identification of obesity by healthcare professionals: an experimental study of trainee and qualified GPs," *British Journal of General Practice,* vol. 64, no. 628, pp. e703-e708, 2014.

[125] J. Barth, "How should we deliver obesity services?," *British Journal of Obesity,* vol. 1, no. 4, pp. 124-167, 2015.

[126] P. H. England, "Local Action on health inequalities: Understanding the economics of investments in the social determinants of health.," UCL Institute of Health Equity, London, 2014.

[127] H. E. Briefing, "Computer Modelling of the health and economic outcomes of the Weight Watchers Gp referral scheme.," 2014.

[128] M. Brown and K. Mcpherson, "Obesity Facts.," *The European Journal of Obesity.,* vol. 115, 2009.

[129] National Institute for Health and Care Excellence, "Costing report: Obesity. Implementing the NICE guideline on obesity (CG189)," National Institute for Health and Care Excellence, Manchester, 2014.

[130] S. McManus, P. Bebbington, R. Jenkins, Y. Brugha and (eds), "Mental Health and Wellbeing in England: Adult Psychiatric Morbidity Survey 2014," NHS Digital, Leeds, 2016.

[131] T. Bradshaw and H. Mairs, "Obesity and serious mental ill health: A critical review of the literature.," *Healthcare,* vol. 2, pp. 166-182, 2014.

[132] M. Compton, G. Daumit and B. Druss, "Cigarette smoking and overweight/obesity among individuals with serious mental illnesses: A preventative perspective.," *Harvard Review of Psychiatry,* vol. 14, no. 4, pp. 212-222, 2006.

[133] World Federation for Mental Health, "Mental Health and chronic physical illnesses: The need for continued and integrated care.," 2010.

[134] M. De Hert, C. Correll and J. Bobes, "World Psychiatry," *Physical illness in patients with severe mental disorders. Prevalence, impact of medications and disparities in healthcare.,* vol. 10, pp.

52-77, 2011.

[135] S. Markowitz, M. Friedman and S. Arent, "Understanding the relation between obesity and depression: Causal mechanisms and implications for treatment, and research.," *Clinical Psychology: Science and Practice,* vol. 15, no. 1, pp. 21-27, 2008.

[136] F. Luppino, L. de Wit, P. Bouvy, P. Stijnin, P. Cuijpers and B. Penninx, "Overweight, Obesity, and depression: a systematic review and meta-analysis of longitudinal studies.," *Archives of General Psychiatry,* vol. 67, no. 3, pp. 220-9, 2010.

[137] M. Kivimaki, D. Lawlor, A. Singh-Manoux, G. Batty, J. Ferrie, M. Shiply and e. al, "Common mental disorder and obesity: insight from four repeat measures over 19 years: Prospective Whitehall II cohort study.," *British Medical Journal,* vol. 339, no. 7726, 2009.

[138] M. Gatineau and M. Dent, Obesity and Mental Health, Oxford: National Obesity Observatory, 2011.

[139] L. de Wit, F. Luppino, A. van Straten, B. Penninx, F. Zitman and P. Cuikpers, "Depression and obesity: a meta-analysis of community-based studies.," *Psychiatry Res.,* vol. 178, no. 2, pp. 230-5, 2010.

[140] "https://www.noo.org.uk/LA/tackling/leisure," [Online].

[141] "http://www.noo.org.uk/LA/tackling/greenspace," [Online].

[142] "http://www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review," [Online].

[143] "http://www.noo.org.uk/LA/tackling," [Online].

[144] "https://www.gov.uk/government/news/new-funding-to-boost-schools-facilities-and-healthy-lifestyles?utm_campaign=282951_February%20childhood%20obesity%20update&utm_medium=email&utm_source=Department%20of%20Health&dm_i=3ZQO,62BR,26E0G7,KUP8,1," [Online].

[145] H. N. E, "Effectiveness of subsidies in promoting healthy food purchases and consumption: a review of field experiments.," *American Journal of Preventative Medicine,* vol. 16, no. 7, pp. 1215-1228, 2013.

[146] l. Annalijin, N. G. Conklin, P. S. Forouhi, K.-T. Khaw, J. Nicholas and P. M. Wareham, "Social relationships and healthy dietary behaviour: Evidence from over 50's in the EPIC co-hort, UK," Medical Research Council Epidemiology Unit, Institute of Metabolic Science, Cambridge UK, Cambridge, 2014.

Thurrock Joint Needs Assessment

Whole Systems Obesity

thurrock.gov.uk