

Fast food takeaways and health & wellbeing in Camden: a review of availability and health impacts

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Purpose of this report

This evidence base document on the impact of fast food takeaways on overweight and obesity levels in Camden has been produced by the Council's Health and Wellbeing Department to inform the review of Camden's Local Plan in 2023.

The document is primarily for Planning Policy officers to support the drafting of robust planning policies that contribute to tackling high levels of overweight and obesity in Camden as part of a whole system approach that the Council is taking with partners. It is also aimed at those who approve Council policies, including Members of the Council and planning inspectors to support their decision making.

Finally it is also aimed at anyone with an interest in the evidence behind Local Plan policies that tackle overweight and obesity.

Statement of the issue

Being overweight can have a profound impact on mental and physical health at any stage of life. In common with the national situation, levels of overweight and obesity in Camden are high and increasing. In 2021/22, half (50%) of Camden adult residents were overweight, up from 44% in 2015/16. Among children aged 5 in reception year, one in five (20%) were overweight or obese, rising to one in three in some areas (2019/20 - 2021/22 data). Levels rose further to one in three (34%) children aged 11 across Camden (46% of children in one area)

The increasing prevalence of obesity in the UK population is associated with a changing environment that includes greater availability of energy-dense food poor in micronutrients and low in fibre. Increased availability of fast food near the home or school is associated with higher prevalence of overweight and obesity. The density of fast food takeaways is greater in more deprived areas, and the prevalence of overweight and obesity is also higher in more deprived areas.

Supporting more residents to have and maintain a healthy weight depends on a range of effective actions, including monitoring the concentration and location of fast food takeaways.

Key points

- Childhood obesity has been identified as a “public health crisis” and a “ticking time bomb” in national reports, research journals and policy commentary. Childhood overweight and obesity are associated with physical and mental health conditions. Children who are overweight or obese are more likely to remain so in adulthood, with a greater risk of poor health and wellbeing as a result.
- Half of all adults in Camden are overweight or obese. One in three Camden children in year 6 are overweight or obese, but this varies from one in five to nearly half across areas of the borough. Children living in more deprived circumstances are also more likely to be overweight or obese.
- The increasing prevalence of obesity in the UK population is associated with a changing environment that includes greater availability of energy-dense food that is poor in micronutrients and low in fibre. Increased availability of fast food near the home or school is associated with higher prevalence of overweight and obesity. The density of fast food takeaways is greater in more deprived areas, and the prevalence of overweight and obesity is also higher in more deprived areas. Pester Power has been identified as a factor that gives even small children influence over their food choices.
- Camden has been pursuing a whole systems approach to obesity where a range of effective actions are taken with the aim of halting and reversing growing trends. Planning policies that seek to resist new fast food takeaways in inappropriate locations are one of these important and effective actions in Camden’s whole system approach to tackling overweight and obesity. It is important to note that currently Camden primary schools have a median of 3 take aways within 400 meters of the school gates, with one school having 24.
- National and London planning policies allow local authorities to have greater control over applications for new fast food takeaways through the planning application process. They are able to place the onus on the applicant to demonstrate through a health impact assessment that their proposed new venue will not impact on existing health needs and levels of obesity and overweight in an area.
- The evidence base concludes that planning policies approaches that would that support the whole system approach to tackling overweight and obesity include
 - resisting the opening of new fast food takeaways within 400m of schools;
 - tackling overconcentration of fast food takeaways by resisting new premises in areas of overconcentration; and
 - requiring robust health impact assessments for applications of fast food takeaways near to sensitive facilities such as youth clubs.

Introduction

This paper sets out the evidence base on fast food takeaways and overweight and obesity in Camden, with the purpose of informing and underpinning policies in the Camden Local Plan.

It summarises the national and regional planning policy context with which the Local Plan must be in accordance. It then sets out the evidence on the causes of obesity and national, regional and local policies responding to those causes. It summarises the role of physical activity in maintaining weight.

The evidence on the links between fast food availability nears schools and the density of fast food takeaways, as well as the role of physical activity in maintaining healthy weight is summarised.

This paper then reviews the prevalence and trends in adult and childhood overweight in obesity and locations/densities of fast food takeaways in the borough.

Camden's whole system approach to tackling overweight and obesity is summarised to provide a balanced view of the wide range of actions and interventions in place locally.

Based on the evidence, policies that resist the opening of new fast food takeaways within 400m of schools (a distance considered to be equivalent to a five-minute walk), tackling overconcentration of fast food takeaways, and requiring robust health impact assessments for applications of fast food takeaways near to schools and youth facilities would ensure planning policy fully contributes to population wide approaches to tackling overweight and obesity in Camden.

National. London and Camden planning policy on fast food takeaways.

The National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system to the extent that it is relevant, proportionate and necessary.

The NPPF states that planning policies and decisions should aim to achieve healthy, inclusive and safe places which enable and support healthy lifestyles, especially where this would address identified local health and well-being needs – for example through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling.¹

To provide the social, recreational and cultural facilities and services the community needs, the NPPF states that planning policies and decisions should take into

account and support the delivery of local strategies to improve health, social and cultural well-being for all sections of the community²

The London Plan

The London Plan states that to improve Londoners' health and reduce health inequalities, those involved in planning and development must ensure that the wider determinants of health are addressed in an integrated and co-ordinated way. They should take a systematic approach to improving the mental and physical health of all Londoners and reducing health inequalities. This includes seeking to create a healthy food environment, increasing the availability of healthy food and restricting unhealthy options.³

Under the London Plan, boroughs should manage clusters of retail having regard to their positive and negative impacts on the objectives, policies and priorities of the London Plan, including mental and physical health and wellbeing.

The London Plan states that development proposals containing fast food takeaways should not be permitted where these are within 400 metres walking distance from the entrances and exits of an existing or proposed primary or secondary schools. Boroughs that wish to set a locally determined boundary from schools must ensure this is sufficiently justified. Boroughs should also carefully manage the over-concentration of fast food takeaways within town centres and other areas using locally defined thresholds in Development Plans.

Where development proposals involving fast food takeaways are permitted, boroughs should encourage operators to comply with the Healthier Catering Commitment standards.

The Camden Local Plan 2017

Camden's current Local Plan, adopted in 2017, states:

"In line with the National Planning Policy Framework the Council believes that the planning system can play an important role in facilitating healthy communities. One issue of particular importance in the borough is childhood obesity. The Council seeks to tackle this issue and encourage healthy eating habits. The Council is undertaking a range of programmes aimed at improving the food environment in the borough. While the causes of obesity are complex there is evidence to support that energy dense fast food is one of several contributing factors to obesity. The Council will therefore consider the health impacts of the development of new fast food take aways in the borough."

Overweight, obesity and the environment: UK policy

The *Marmot Review* was a government-commissioned strategic review of health inequalities in England in 2010.⁴ It identified that a lack of attention paid to health and health inequalities in the planning process could lead to unintended negative consequences. If no action were taken, the cost of treating the various illnesses that result from inequalities in the level of obesity alone would rise from £2 billion per year in 2010 to nearly £5 billion per year by 2025. **The report recommended prioritising**

policies and interventions that reduce health inequalities such as improving the food environment in local areas.

In a follow-up report in 2020, one aspect of unhealthy high streets cited was fast food outlets, with the poorest areas in England having five times more fast food outlets than the most affluent areas, and the number of fast food shops increasing between 2014 and 2017 by eight percent.⁵

The National Institute for Health and Care Excellence issued its evidence-based public health guidelines on preventing cardiovascular disease in 2010.⁶ It recommended that local authorities should be encouraged to restrict planning permission for fast food takeaways and other food retail outlets in specific areas (for example, within walking distance of schools). It also recommended implementing existing planning policy guidance in line with public health objectives. The approach taken in the Camden Local Plan is consistent with this recommendation.

Healthy Lives, Healthy People was the government's response to the Marmot review. It recognised that access to good-quality food is one of many factors that influence the health and wellbeing of the local population. The strategy recognised that "health considerations are an important part of planning policy".⁷

A 2014 Public Health England briefing written with the Local Government Association and the Chartered Institute of Environmental Health highlighted that:

*"One of the dietary trends in recent years has been an increase in the proportion of food eaten outside the home, which is more likely to be high in calories. Of particular concern are fast food takeaways, which tend to sell food that is high in fat and salt, and low in fibre, fruit and vegetables."*⁸

Obesity strategies were published by the Government in both 2016 and 2018; The latter strategy included a Government ambition to halve childhood obesity and significantly reduce the gap in obesity between children from the most and least deprived areas by 2030, both of which remain government policy.

The Government's current obesity strategy, published in 2020, aims to tackle childhood obesity and encourage adults to "take stock of how they live their lives".⁹ The strategy included plans to include calorie information on food from restaurants, cafes and takeaways, which was implemented in April 2022. Any restaurants, cafes or takeaways with more than 250 staff now must show how many calories are in meals on their menus and websites, however this is unlikely to affect many fast food takeaways as many are unlikely to have more than a small number of staff.

Chapter 2 of the Government's obesity strategy recognises that challenges vary across local areas but that many local authorities face common issues, including a proliferation of fast food outlets on high streets and near schools. It recognised that local authorities have the power to develop planning policies to limit the opening of additional fast food outlets close to schools and in areas of over-concentration.¹⁰

Promotions of food and drinks high in fat, sugar and salt (HFSS) in retailers have been restricted by location in-store since October 2022. Under regulations that

require medium and large businesses (those with 50 or more employees), to phase out their offering of multibuy promotions such as ‘buy one get one free’ or ‘3 for 2’ offers on HFSS products will come into force on 1 October 2023.¹¹ Again, this will not apply to the majority of fast food takeaways as many will have fewer than 50 staff.

A 9pm watershed for TV and on-demand programme service advertising of HFSS goods has been postponed until 2024, and these restrictions will not apply to online advertising.¹²

The government has a suite of guidance, “All Our Health”.¹³ This is a framework of evidence to guide healthcare professionals in preventing illness, protecting health and promoting wellbeing, including guidance on childhood and adult obesity and physical activity.

London policy on tackling obesity

The Greater London Authority’s Takeaways Toolkit helps local authorities develop their responses to the health impacts of fast food takeaways.¹⁴ The toolkit has three main recommendations for boroughs:

- **making food healthier** – working with takeaway businesses and the food industry to make healthier fast food.
- **starting them young** – schools should have strategies to reduce the amount of unhealthy food children eat at lunch and on their journey to and from school.
- **planning for health** – use regulatory and planning measures to address the spread of fast food takeaway outlets.

The London Health Commission’s Better Health for London report in 2014 favoured a strong approach to reduce the availability of fast food to London’s schoolchildren, as 73 percent of people surveyed thought that the number of fast food outlets near schools should be limited.¹⁵

The Mayor’s Advisory Group on Child Healthy Weight was brought together in December 2022 to provide the Mayor of London with expert advice on action needed to support the health and weight of London’s children. The Advisory Group seeks to halve the percentage of London’s children who are affected by unhealthy weight at the start of primary school and halve the number of those affected by obesity at the end of primary school. It also seeks to reduce the gap in childhood obesity rates between the richest and poorest areas in London by 2030. Key actions include stopping unhealthy marketing that influences what children eat and transforming fast food businesses so they become Healthier Catering Commitment accredited.¹⁶

Box 1: The Healthy Catering Commitment

When choosing what food to buy, 83 percent of people are most likely to say that healthiness matters to them a 'great deal' or 'quite a lot'.¹⁷

The **Healthy Catering Commitment** is a voluntary scheme to recognise food outlets which offer healthier food options and make simple affordable changes to the food that they sell to make it healthier for their customers.

To achieve the award, takeaway stores need to show a range of healthier practices such as using healthier oils (rapeseed, sunflower, corn oil) instead of lard or palm oil, limit salt usage, promote water and low sugar drinks, and consider healthier sides such as salad, sweetcorn or jacket potatoes as an alternative to chips.



The Healthy Catering Commitment is not currently active in Camden, as the Food Safety team have needed to focus on a backlog of inspections arising during COVID, and a range of challenges arising from different business practices that can lead to lower quality standards, as well as staffing impacts linked to the impact of leaving the EU on staffing. The team recommend that businesses should be required to achieve a Food Hygiene rating of 3 or above (the minimum for being Broadly Compliant with food hygiene standards).

In 2019 the Mayor and Transport for London (TfL) introduced restrictions on advertising HFSS food and drink on all TfL sites to help tackle child obesity. Research indicates that after restrictions were introduced, households purchased 1,000 fewer calories from HFSS products per week, a reduction of 6.7 per cent, compared to a control area.¹⁸

Camden policy on tackling obesity

Camden's Health and Wellbeing Strategy is a call to action to all residents, community groups and local organisations to make Camden the very best place to start well, live well and age well. This strategy sets out the shared principles, long-term ambitions and short-term priorities of the Health and Wellbeing Board for improving health and wellbeing and reducing health inequalities in Camden. **The Strategy recognises that everyone is entitled to a healthy life through access to nutritious food.**¹⁹

Camden Missions are the long-term goals for the future of the borough that were developed in collaboration with people across Camden from the work of Camden's Renewal Commission. The Council is progressing these Missions so they remain at

the heart of the Council's work. The missions are long-term goals which help to break down and tackle major complex issues across Camden. Camden's food mission is that *by 2030, everyone eats well every day with nutritious, affordable, sustainable food*. Camden's food mission is one of the four missions the Council is undertaking to formulate the Borough's long term strategic framework that sets ambitions and directions to tackle and address complex, systemic problems such as food insecurity. Working in a mission-oriented approach is a way to encourage working across teams and sectors, align organisation's people, finances time, effort, skills and expertise to realise the vision set out in the corporate plan, *We Make Camden*.²⁰

Evidence review

The causes of overweight and obesity

A growing body of evidence suggests that some frequently consumed fast foods may contribute to a variety of long-term health conditions, including cardiovascular disease, insulin resistance, type 2 diabetes, and obesity.²¹ At the same time, analysis shows that food prepared outside of the home is making up an increasing portion of the Western diet.²¹

The causes of obesity are complex, but it is now generally accepted that the current prevalence of obesity in the UK population is primarily caused by a changing environment that includes food with a higher energy density, less fibre and fewer micronutrients, and less physical activity. In their Lancet article, Roberto and colleagues describe this as an interaction between two truths: individuals' personal responsibility for their health and environmental factors that exploit biological, psychological, social, and economic vulnerabilities that promote overconsumption of unhealthy foods. Preferences and demand for unhealthy products are not only shaped by the environment, but also sustain existing environments that encourage consumption of unhealthy foods. This cycle makes it difficult for people to act in their self-interest, but can be changed with regulatory actions from governments and efforts from industry and civil society.²²

The complexity is captured in the Government's Foresight report obesity system map (

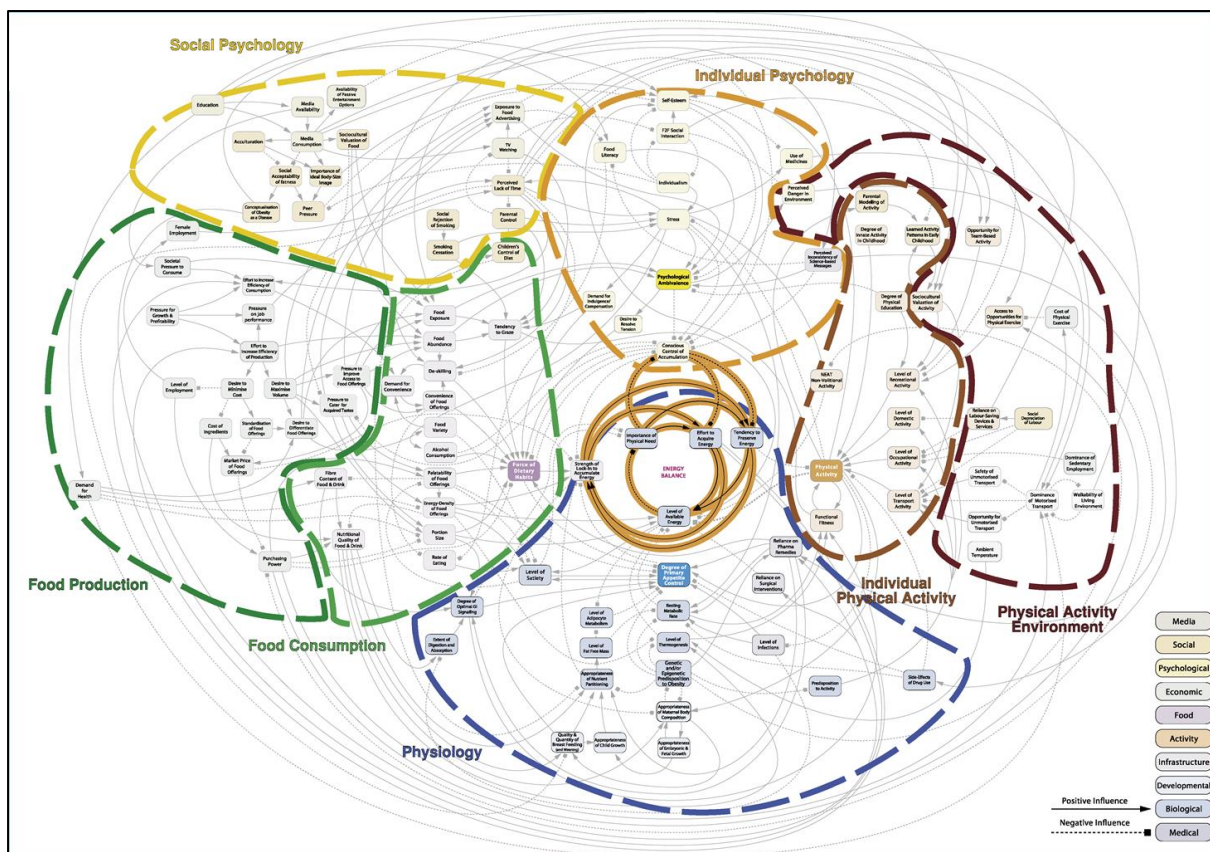
Figure 1 below). The map's "food consumption cluster" includes many characteristics of the food market such as abundance and variety, nutritional quality, energy density, and portion size of food. Pressure for growth and profitability, the cost of ingredients and efforts to increase efficiency of production are characteristics of the map's "food production cluster". Both clusters are relevant to the availability of fast food. Although representing just two aspects of this complex map, the report states that it is important to remember that the system is highly interconnected, for example intervening in 'food consumption' will have an impact on physical activity and individual psychology.²³

Childhood obesity can have a harmful effect on the body in a variety of ways. Obese children are more likely to have high blood pressure and high cholesterol, which are risk factors for cardiovascular disease. They also have an increased risk of impaired

glucose tolerance, insulin resistance and type 2 diabetes, breathing problems such as sleep apnoea and asthma, joint problems and musculoskeletal discomfort, and fatty liver disease, gallstones, and heartburn. Obese children and adolescents also have a greater risk of social and psychological problems, such as discrimination and poor self-esteem, which can continue into adulthood.²⁴

There has been consistent strong evidence that childhood overweight and obesity are maintained into adulthood.²⁵ Adult obesity is associated with several many serious health conditions including heart disease, diabetes, and some cancers.²⁴

Figure 1: The Foresight Obesity Map



Source: Foresight. Tackling Obesities: Future Choices, 2007

Malhotra and colleagues point out that up to 40 percent of people with normal body mass index may have health conditions, such as high blood pressure, non-alcoholic fatty liver disease and cardiovascular disease because of an unhealthy diet.²⁶

Fast food takeaways and proximity to schools

Three systematic reviews^{27,28,29} and one review³⁰ that assessed access to fast food takeaways and their proximity to schools were found. Systematic reviews are considered the most reliable source of evidence. The purpose of a systematic review is to sum up the best available research on a specific question. Systematic reviews are particularly useful in bringing together several separately conducted studies, sometimes with conflicting findings, and synthesising their results.

The reviews identified several limitations in the evidence:

- Most studies included in all three reviews were cross-sectional, a type of study that can find an association between a risk factor and an outcome, but which cannot establish whether the outcome was caused by the risk factor.
- The reviews found considerable differences in how access and proximity were defined and measured between studies, which made it difficult to draw firm conclusions.
- A third area of concern was the definition of a fast food takeaway. Studies tended to use either a broad measure that included all “limited service restaurants” or use trade names to identify fast food chains derived from various sources. Both are problematic: the former cannot distinguish adequately between fast food outlets and other food outlets that may serve healthier food, whilst the second omits independent outlets which, in 2009, formed 47 percent of the market in the UK.³¹

Findings from a 2011 systematic review of 40 studies on access to fast food demonstrated that fast food restaurants were more prevalent in low-income and ethnic minority areas and around schools.³²

In 2022 researchers from the University College London Centre for Longitudinal Studies analysed data on weight and location from the Millennium Cohort Study. They linked this with food outlet data to measure the availability of fast foods around children’s homes and schools from ages 7 to 14. They concluded that increased concentration of fast food outlets near homes and schools were associated with increased levels of obesity in children.³³

Seliske et al. found that by using a focused measure of where students eat their lunch, they were able to demonstrate that the food retail environment surrounding schools is strongly related to student’s eating behaviours during the school day. However, whilst they measured where students typically ate their lunch during the school day, they did not consider students’ use of fast food takeaways after school, which is a major limitation. **Error! Bookmark not defined.**

A study of 3,620 children aged 13 in a UK birth cohort study showed that increased exposure to fast food increased the frequency of visits to fast food outlets, which in turn was associated with higher body mass index standard deviation score (BMISDS, the recommended measure of body mass for children). Deprivation was the largest contributing variable to the exposure.³⁴ A subsequent analysis of the 4,827 participants aged 13 to 15 years from the birth cohort confirmed that the consumption of fast food was associated with a higher body mass index, higher body fat percentage, and increased odds of being obese, although this was not consistent across geographical areas.³⁵

An observational study³⁶ of 33,500 children aged 3–14 years who lived in Leeds used individual level height/weight data and geographic information systems. It found a significant positive correlation between the density of fast food outlets and higher deprivation. A higher density of fast food outlets was also significantly associated with the child being obese (or overweight/obese) taking into account sex, age and deprivation.

In Newcastle, Gallo et al. found that there were more food outlets within 400 metre buffers of schools which had obesity prevalence rates above the national and local average compared to those areas which had lower prevalence rates. Convenience stores and takeaways represented the greatest proportion of food outlets across all school fringes.³⁷

In their report *The School Fringe*, Sinclair and Winkler found that local independent fast food shops offered “child-size portions at child-size prices”. These shops organised fast service in busy periods, and even took on extra staff. Their food was fattier, on average 45 percent of calories from fat, versus 32 percent from other fringe shops.³⁸

A report on fast food outlets in Tower Hamlets, London, found that school pupils formed a large proportion of customers of fast food. Fast food outlets were offering special deals for children which were often made and stacked up in advance to ensure school children are served quickly during lunchtime or on their way home from school. The report also found that small business advisors often encouraged prospective owners to either open or purchase fast food outlets near schools and colleges because of the significant sales potential offered by schoolchildren and young adults.³⁹ This report also noted that competition from overprovision was problematic for many business owners, who felt that they had to sell cheaper unhealthier products because of the higher profit margins on this type of food.

The London Borough of Brent undertook research⁴⁰ in 2014 among 2,418 secondary school pupils in seven schools, four of which had a fast food takeaway within 400m of the school and three did not. Findings included:

- 50 percent of students visit a fast food takeaway after school at least once in an average week; students from schools with no nearby takeaways are less likely do so (43 percent) than students from schools with nearby takeaways (62 percent).
- 20 percent of students would walk 4 minutes, and 17 percent of students would walk up to 10 minutes for fast food takeaways at lunch time
- 27 percent of students said they would not bother going out at lunch if they had to walk more than 8 minutes
- Of students who do not visit takeaways, 48 percent said the main reason they don't is because they are unhealthy, 52 percent from outside the buffer zone compared to only 38 percent inside, and 38 percent don't go as it takes too long, 43 percent of these from outside and only 29 percent from inside the zone thought this.
- The most popular reason for visiting were the taste (62 percent), and that it's cheap (39 percent), and easy (37 percent).

The Camden School Health-Related Behaviour Questionnaire in 2021 found that 10 percent of primary school children ate take-away/fast food and 16 percent ate chips on most days or every day over the previous seven days. In Camden secondary schools, 11 percent of children ate take-away/fast food (fried chicken, kebab,

burgers etc.) and 13 percent ate chips on most days or every day over the previous seven days.⁴¹

Pearce and colleagues undertook a longitudinal study of proximity to fast food outlets using data on 1,577 children from the National Child Measurement Programme in 2006/7 (reception year) and 2012/13 (year 6). A moderate association was found between deprivation score and accessibility to fast food. Children who had greater access to fast food outlets were nearly twice as likely to gain significant weight compared to children who had no access to fast food outlets.⁴²

Pester Power

'Pester Power', is marketing strategy used by some advertisers to encourage children to frequently request marketed products from caregivers. Strategies may be active, for example branding with characters appealing to children or giving away free toys with meals, or passive where children talk to their friends in the playground about a brand.

'Pester Power' involves children persistently asking for a certain product alongside strategies such as relentlessly requesting the advertised item, wearing down the caregiver's resistance.

Industry data show that 29 percent of family visits to fast food outlets are influenced by children's choices in what has been described as the "Dine out pester power scorecard".⁴³

Research by Onefamily found that half of parents had experienced pester power from their child in the previous month, with 45 percent of requests being for meals out or fast food.⁴⁴

When pester power is used to market unhealthy food, it can undermine parent's desires and intentions to provide their children with healthy nutritious food.⁴⁵ This may include, for example, succumbing to their child's requests for a fast food even though they would prefer to provide a meal at home. It may involve changing from a more nutritious choice to an unhealthy option for all or part of a meal, for example feeling pressured to buy a fizzy drink instead of water or juice

Whilst a large proportion of visits to fast food outlets are promoted through television and other advertising, they are often supported by promotions such as free toys sold in packaging attractive to young children or branded with names or characters appealing to young children.

Pester Power demonstrates that whilst parents or carers of primary school children are largely responsible for what their children eat, children have significant influence on the choices made by their parents or carers.

Fast food outlet density

In a systematic review of 12 fast food access studies, ten found fast food restaurants were more prevalent in areas with higher concentrations of ethnic minority groups. Six adult studies found higher body mass index was associated with

living in areas with increased exposure to fast food; although four studies did not find associations.⁴⁶

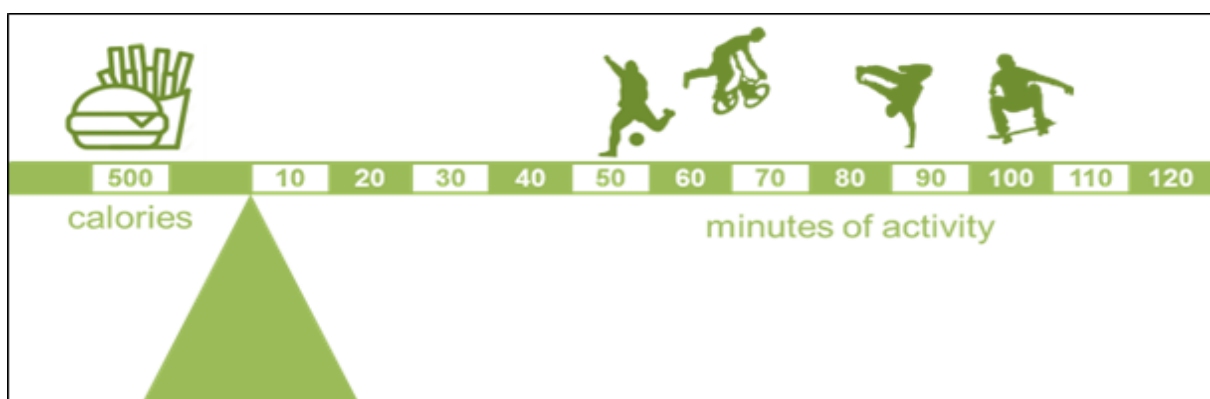
In their review, Fraser and colleagues found that 14 of 16 studies reported a positive correlation between fast food outlet density and area deprivation. The authors found mixed results for the association between fast food availability and weight status, but some evidence that greater exposure to fast food is associated with a lower fruit and vegetable intake. In the review, six out of nine studies which looked at food consumption in relation to the availability/location of fast food outlets found that increased availability of fast food outlets was associated with unhealthy food choices.⁴⁷

Burgoine and colleagues examined the association between environmental exposure to takeaway food outlets, takeaway food consumption, and body weight, in the home, workplace, and commuting route environments among 5,442 adults aged 29 to 62 years in Cambridgeshire. The researchers found that exposure to takeaway food outlets in home, work, and commuting environments combined was associated with marginally higher consumption of takeaway food, greater body mass index, and greater odds of obesity.⁴⁸

Physical activity and weight

The “energy balance equation”, matches the amount of energy (calories) consumed and the amount of energy burnt. It is an important concept in preventing overweight and obesity. As an example, the energy expenditure required by a 50kg teenager (the average weight for a 14-year old) to burn off 500 calories (roughly a burger and small chips), would be 50 minutes of competitive football or running at 6mph, 60 minutes of BMX biking, 85 minutes of dancing, or 100 minutes of skateboarding (Figure 2).⁴⁹

Figure 2: The energy equation: comparison of calories in a typical fast food meal and activity needed to burn the same number of calories



Source: Calorie information from popular fast food chain websites, energy expenditure from Forbes Health

The benefits of physical activity on health and wellbeing are clear and compelling, but its role as an individual key strategy on achieving and maintaining a healthy weight is less clear. Trials have indicated that exercise plus calorie restriction

achieves virtually the same result in weight loss as calorie restriction alone.⁵⁰ In a systematic review and meta-analysis, Johns and colleagues found that programs based on physical activity alone were less effective than programs combining diet and physical in both the short- and long-term.⁵¹

Overweight and obesity in Camden

Adult overweight and obesity

The proportion of adults who are overweight or obese is derived from the Active Lives Adult Survey, Sport England, and published on the Office for Health Inequalities and Disparities *Fingertips* portal.⁵²

Box 2: Defining overweight and obesity in adults

Adult overweight and obesity is based on Body Mass Index (BMI). BMI is calculated by dividing a person's weight in kilograms by the square of their height in metres.

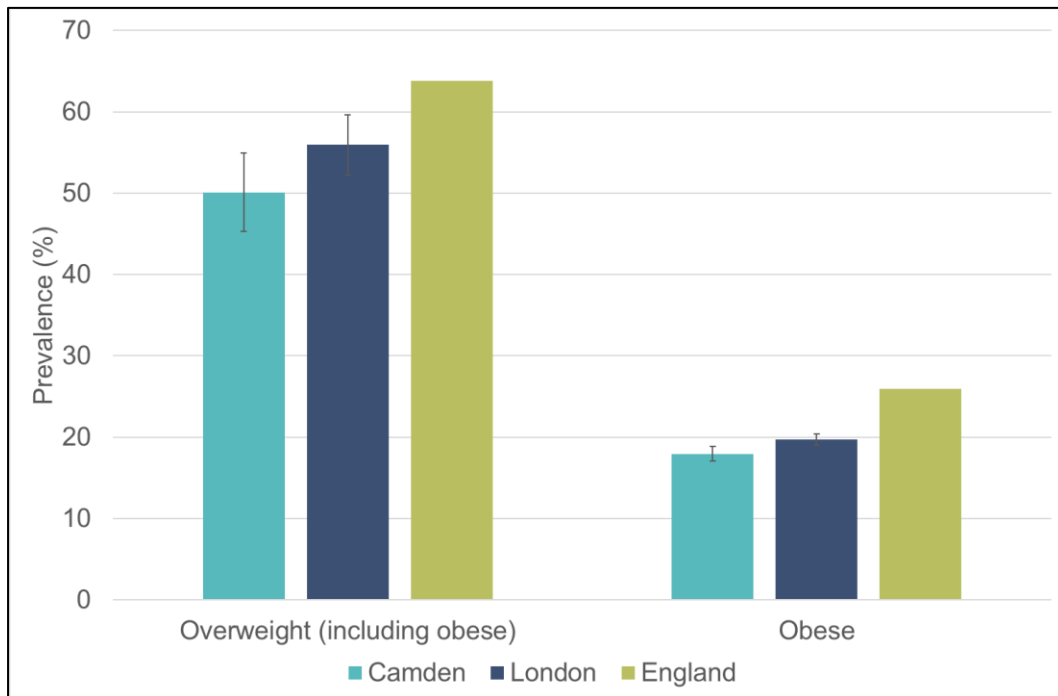
- overweight is a BMI greater than or equal to 25; and
- obesity is a BMI greater than or equal to 30.

The proportion of Camden residents aged 18 years and over who were overweight (including obese) in 2021/22 was 50 percent, statistically lower than London (56 percent) and England (64 percent). The proportion of Camden residents who were obese in the same year was 18 percent, statistically similar to London (20 percent) but lower than England (26 percent) (**Figure 3** below),

There has been a rise in the proportion of Camden adults who are overweight or obese, from 44 percent in 2015/16 to 50 percent in 2021/22. Due to the small sample size the increase is not statistically significant. The trend in adult obesity among Camden adults increased over the same period, but not at statistically significant levels (from 16 percent to 18 percent over the same period (Figure 4 below).

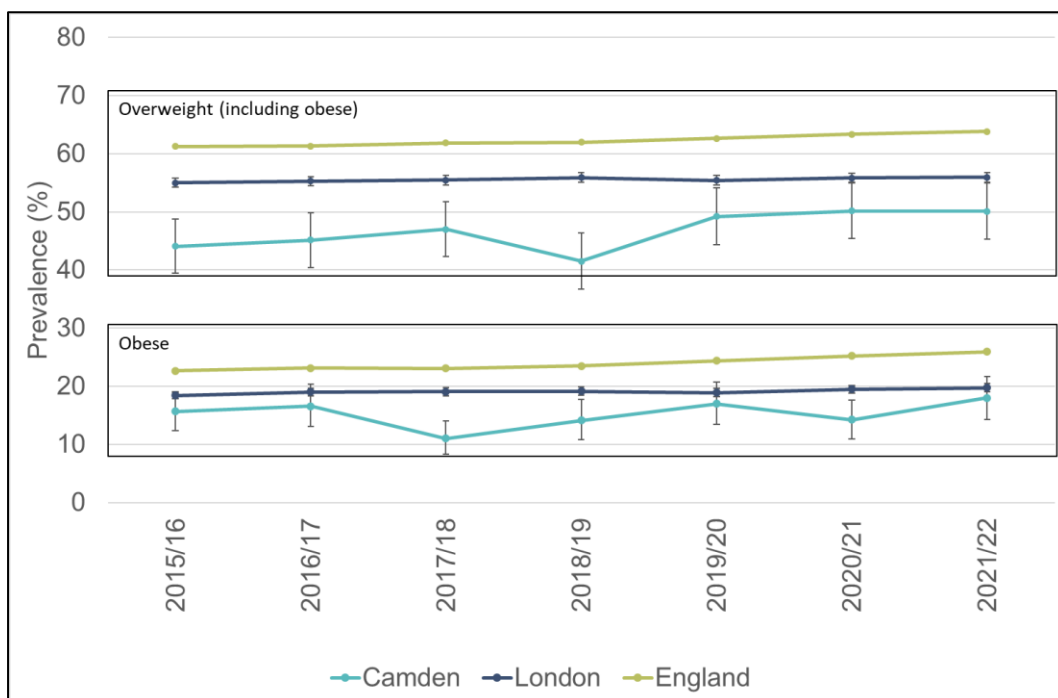
Whilst the proportion of Camden residents who are overweight or obese remains significantly lower than the proportion of London and England residents, the trend suggests that the gap may be narrowing.

Figure 3 Proportion of adults who were overweight (including obese) and obese, Camden, London and England, 2021/22



Source: Office for Health Improvement and Disparities (based on the Active Lives Adult Survey, Sport England) 2023

Figure 4 Trend in adults who were overweight (including obese) and obese, Camden, London and England, 2015/16 to 2021/11 (right).



Source: Office for Health Improvement and Disparities (based on the Active Lives Adult Survey, Sport England) 2023.

Childhood overweight and obesity

The National Child Measurement Programme (NCMP) measures the height and weight of all school children in reception (aged 4 to 5) and year 6 (aged 10 to 11) each year. Data is published on the Office for Health Inequalities and Disparities (OHID) *Fingertips* portal.⁵²

Box 3: Defining childhood overweight and obesity

A child's BMI is calculated in the same way as an adult's, i.e. their weight in kilograms divided by the height in metres squared. However, to take into account growth patterns by age and gender, a child's BMI is compared with BMI centiles on published growth charts.

- Childhood overweight is classed as a BMI above the 95th centile on the growth chart
- Childhood obesity is classed as a BMI above the 98th centile on the growth chart

For more information on UK child growth charts see the Royal College of Paediatrics and Child Health information:

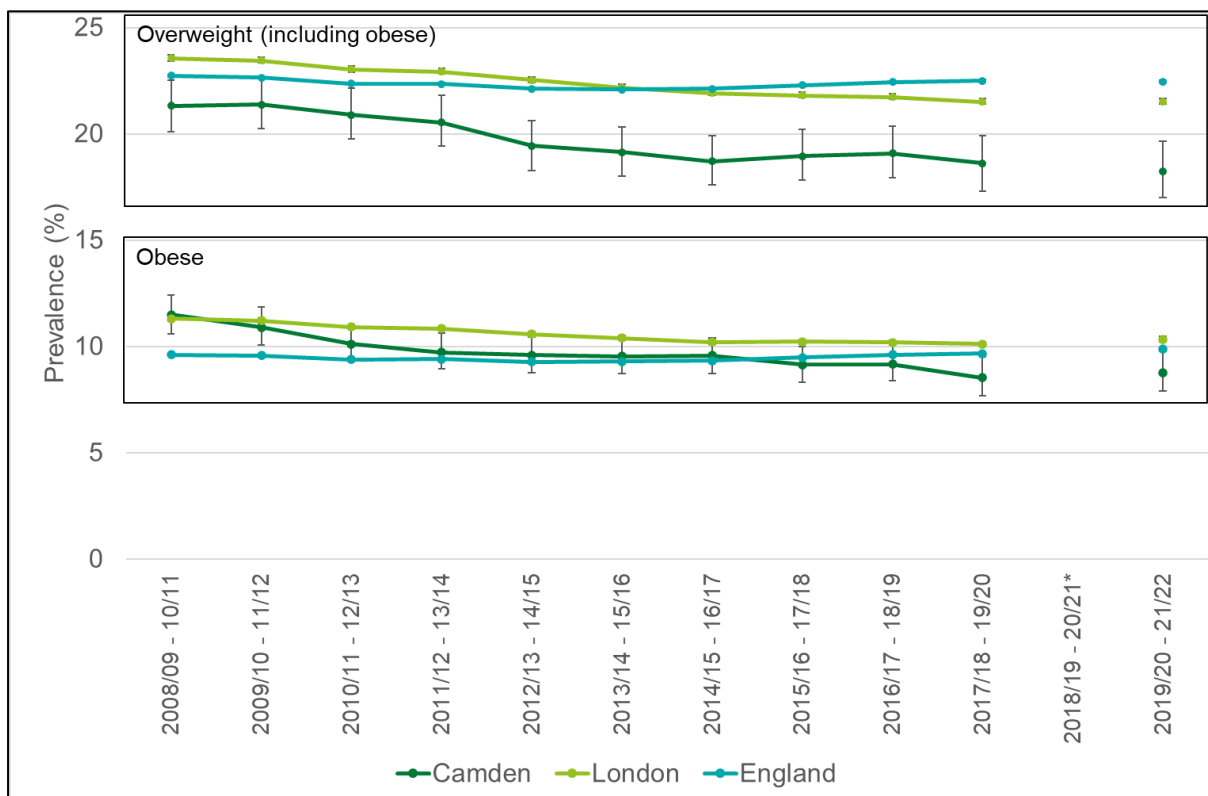
<https://www.rcpch.ac.uk/resources/uk-who-growth-charts-2-18-years>

Reception Year

The proportion of overweight (including obese) Camden children in Reception year declined from 23 percent to 20 percent between 2008/09 - 10/11 and 2019/20 - 21/22, with the decrease statistically significant (Figure 5 below). This was a greater reduction than in London, which also saw a significant decrease, whilst the proportion in England remained flat.

The proportion of obese Camden children in reception year also decreased across the same period, from 12 percent to 9 percent, which was statistically significant. London also saw a decrease, which was smaller but also statistically significant, whilst England saw a small but statistically significant rise.

Figure 5 Prevalence of overweight and obesity in Reception year children, Camden, London and England, 2008/09 – 2019/21

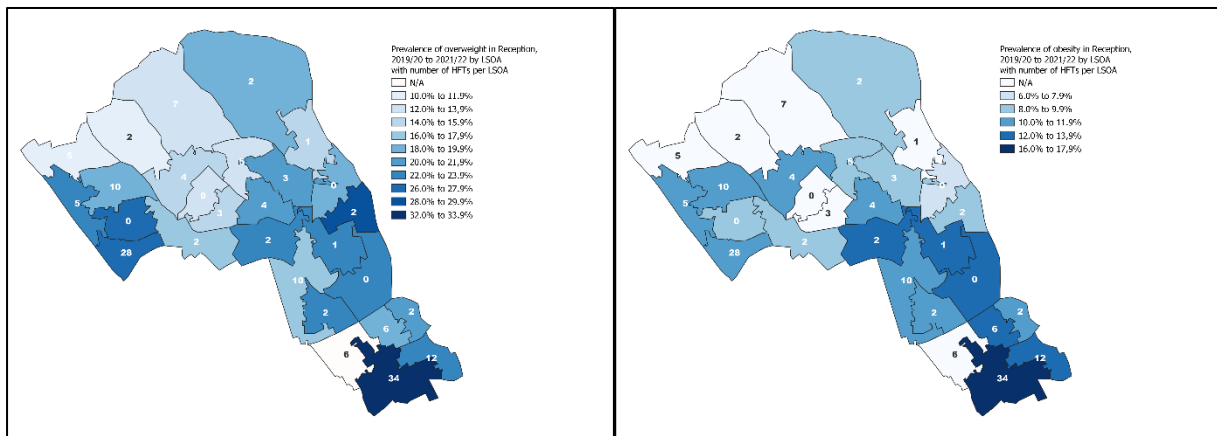


Source: OHID, using National Child Measurement Programme, NHS Digital. 2023. Note that 3-year prevalence was not calculated in 2018/19 to 2020/21 due to the Covid pandemic. <https://fingertips.phe.org.uk/profile/national-child-measurement-programme/data#page/1> accessed 21/7/2023

Prevalence of overweight and obesity among Camden children in Reception Year varied by Middle Layer Super Output Area (MSOA),^a ranging from 10 percent to 33 percent for overweight (including obese) and from 6 percent to 17 percent for obese (3 years' combined data, 2019/20 to 1021/22) (**Figure 6** below).

^a Middle Layer Super Output Areas MSOAs are small geographical areas with an average population of 7500 residents or 4000 households As MSOAs have similar population sizes, comparison between MSOAs is more consistent.

Figure 6: Prevalence of overweight (including obesity) (left) and obesity (right) at Reception year, Camden MSOAs, 2019/20 - 21/22, with number of fast food takeaways in MSOAs



Source: OHID, using National Child Measurement Programme, NHS Digital. 2023 Contains National Statistics data © Crown copyright and database right. Contains Ordnance Survey data © Crown copyright and database right. <https://www.gov.uk/government/statistics/national-child-measurement-programme-ncmp-data-for-the-2020-to-2021-academic-year-by-local-authority> accessed 21/7/2023

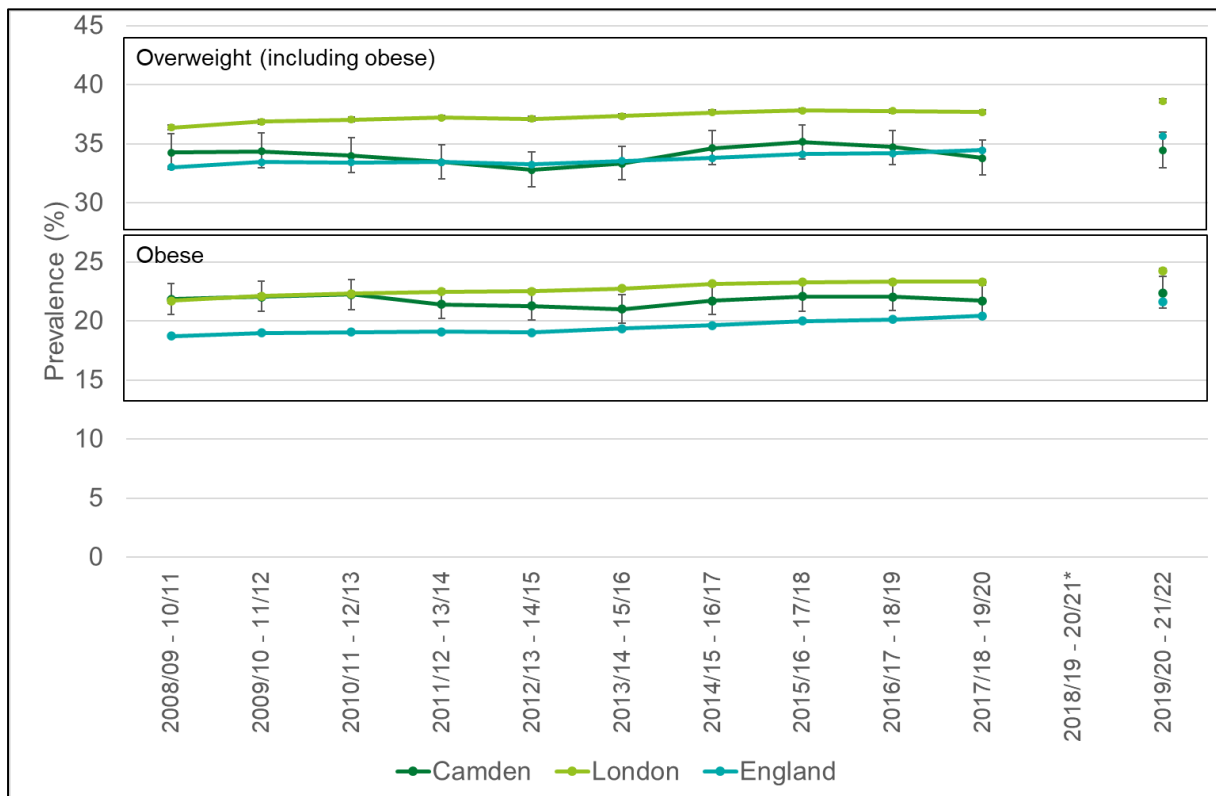
Year 6

The proportion of overweight (including obese) Camden children in year 6 remained flat at 34 percent between 2008/09 - 10/11 and 2019/20 - 21/22, compared to an increase from 36 percent to 39 percent in London and an increase from 33 percent to 34 percent in England (Figure 7 below).

The proportion of obese Camden children in year 6 also remained flat across the same period, at 22 percent compared to an increase in London from 22 percent to 24 percent and an increase in England from 19 percent to 22 percent.

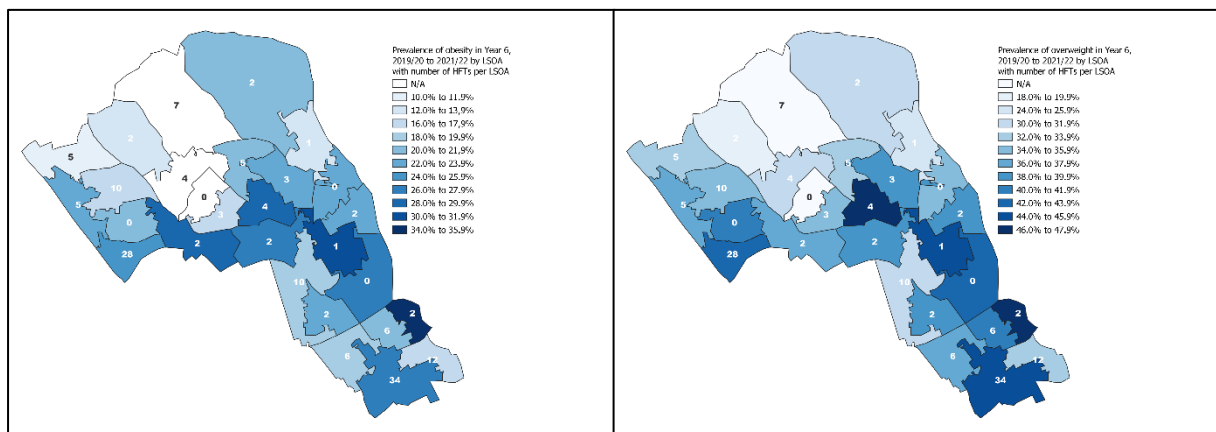
Prevalence of overweight and obesity among Camden children in year 6 varied by Middle Layer Super Output Area, ranging from one in five (19 percent) to nearly half (46 percent) for overweight (including obese) and from one in ten (11 percent) to one on three (35 percent) for obese (3 years' combined data, 2019/20 to 1021/22) (Figure 8 below).

Figure 7 Prevalence of overweight and obesity in year 6 children, Camden, London and England, 2008/09 – 2019/21



Source: OHID, using National Child Measurement Programme, NHS Digital. 2023. Note that 3-year prevalence was not calculated in 2018/19 to 2020/21 due to the Covid pandemic <https://fingertips.phe.org.uk/profile/national-child-measurement-programme/data#page/1> accessed 21/7/2023

Figure 8: Prevalence of overweight (including obesity) (left) and obesity (right) at year 6, Camden MSOAs, 2019/20 - 21/22, with number of fast food takeaways in MSOAs



Source: OHID, using National Child Measurement Programme, NHS Digital. 2023 Contains National Statistics data © Crown copyright and database right. Contains Ordnance Survey data © Crown copyright and database right. <https://www.gov.uk/government/statistics/national-child-measurement-programme-ncmp-data-for-the-2020-to-2021-academic-year-by-local-authority> accessed 21/7/2023

Nationally, year 6 children living in the most deprived areas were more than twice as likely to be living with obesity (31.3 percent) than those living in the least deprived

areas (13.5 percent). The gap between children living in the most and least deprived areas nationally increased by 4.9 percentage points between 2013/14 and 2021/22 due to the prevalence of children living with obesity increasing more in the most deprived areas.⁵³

Direct comparisons between Reception year and year 6 six years later cannot be made as cohorts are likely to differ due to migration in and out of the borough. However, data from of a small sample of 4 local authorities was analysed longitudinally by NHS Digital to examine how weight status tracks between reception and year 6,⁵⁴ finding:

- for the 9 percent of all children who were overweight in reception, approximately 30 percent remained overweight, while almost 30 percent became obese and a further 13 percent became severely obese. Around 27 percent of these children returned to a healthy weight
- for those children who were obese, but not severely obese, just over a third remained obese and around a third developed severe obesity by the time they reached year 6 – the percentage of obese reception children who become overweight or healthy weight were around 20 percent and 10 percent, respectively
- among the children who were severely obese in reception, most remained severely obese with a further 29 percent of boys and 27 percent of girls becoming obese, and the remaining small proportion transitioned to overweight (under 10 percent) or healthy weight (under 5 percent)

This analysis demonstrates that primary school years present a key opportunity to reduce the prevalence and growth in prevalence of childhood overweight and obesity.

Fast food takeaways and schools in Camden

In Camden, one in 5 (19 percent) of school sites have no fast food takeaways within 400 metres, whilst more than half (56 percent) have three or more fast food takeaways within 400 metres. Nine percent of school sites have ten or more fast food takeaways within 400 metres (Table 1: concentrations of fast food takeaways within 400 metres of schools located in Camden. Table 1 below).

At secondary school level, children are more likely to be able to leave the school premises at lunch time, and more likely to visit a fast food takeaway independent of their parents on their journey home. In Camden there is an average of 3 fast food takeaways within 400m of a secondary school, with one school having 9 and three schools having 8 fast food takeaways within 400m (Table 1 below).

Table 1: concentrations of fast food takeaways within 400 metres of schools located in Camden.

No. of fast food takeaways within 400m	Primary - state	Primary - independent	Primary – other*	Secondary - state	Secondary - independent	Secondary – other*	6th Form - state	6th Form - Independent	Any site - state	Any site - Independent	Any site – other*
1	8	2	2	4	1	1	4		12	3	2
2	4	3	1	4		1	4		8	3	2
3	4	3	1	1			1	1	5	4	1
4	3	3			2		2	1	5	4	
5	2	2			1	1		1	2	2	1
6	3	1							3	1	
7	1	2		1			1		2	2	
8	1	1			2			1	1	3	
9	2	1	1		1	1			2	1	1
10	3	1			1			1	3	1	
11 to 14	1								1		
15 to 19	1	1				1		1	1	2	
20 to 24	2								2	1	1
	3	1							3	1	
Total	38	21	5	10	8	5	12	6	50	28	8

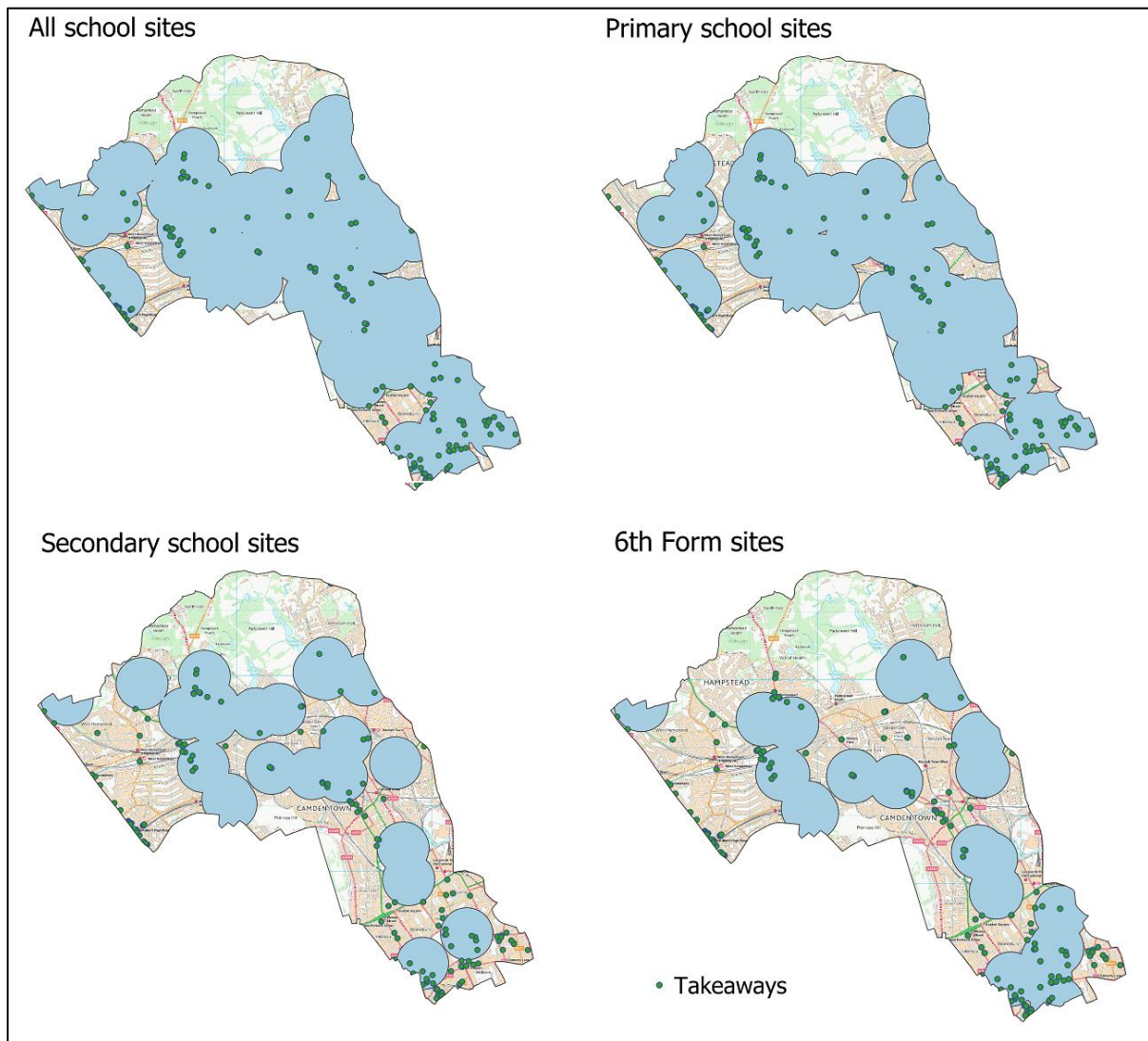
* Other schools include Special Schools, Pupil Referral Units, and Hospital Schools

Independent schools tend to have both primary and secondary age children, and most state secondary schools have co-located sixth forms, so differentiating schools by size is difficult. In general, State primaries have between 102 and 644 pupils (average 284), whilst independents have 14 to 694 (average 255), excluding UCL Academy (primary, secondary and 6th form) which has 1282. State secondaries/6th forms have 811 to 1311 students (average 1,054) whilst independents have 167 to 941 (average 466) excluding all-through UCL Academy. Other schools tend to have low pupil numbers except Swiss Cottage school with 260 pupils.

Source: DfE <https://www.gov.uk/guidance/get-information-about-schools> (accessed 21/7/2023); Camden Council Retail Survey (unpublished) 20

Figure 9 (below) shows 400 metre buffers around all Camden schools, Camden primary schools, Camden secondary schools, and Camden 6th forms, with fast food takeaways.

Figure 9: Fast food takeaways and 400 metre buffers around all schools (top left, primary schools (top right), secondary schools (bottom left) and 6th Forms (bottom right).

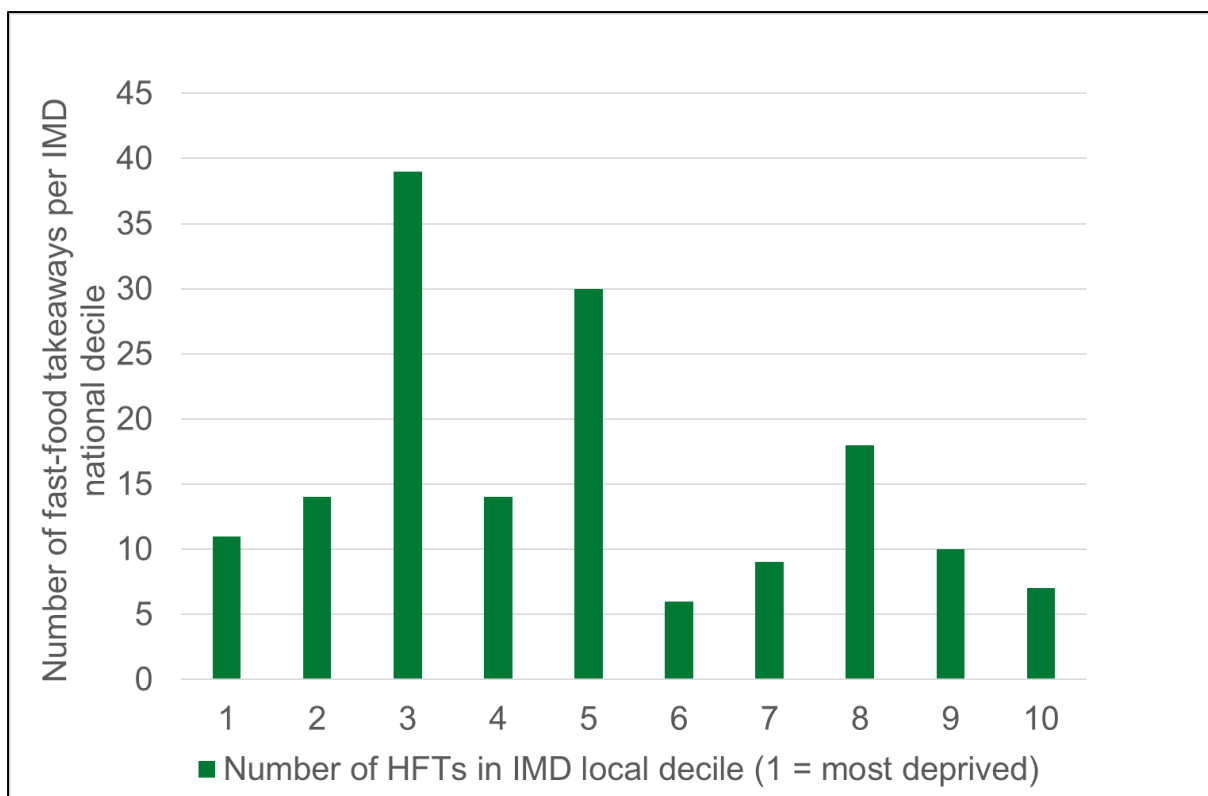


Source: DfE 2023 <https://www.gov.uk/guidance/get-information-about-schools> (accessed 21/7/2023); Camden Council Retail Survey, 2022 (unpublished). Contains National Statistics data © Crown copyright and database right. Contains Ordnance Survey data © Crown copyright and database right.

Fast food takeaways and deprivation in Camden

In line with the national picture, there are more fast food takeaways in the more deprived areas of Camden compared to less deprived areas. Figure 10 below shows that the local of fast food takeaways in Camden are in the most deprived areas based on national Index of Multiple Deprivation (IMD 2019) deciles.

Figure 10: Number of fast food takeaways per IMD local decile, Camden, 2022



Source: Camden Council Retail Survey 2022 (unpublished)

Camden’s whole system approach to healthy childhood weight

Camden has been pursuing a whole systems approach to obesity where a range of effective actions are being taken with the aim of halting and reversing growing trends. These approaches have been piloted nationally in a range of local authorities, with lessons learnt contributing to resources and guidance in *Health matters: whole systems approach to obesity*.⁵⁵ The approach brings together local areas to consider and work together on the range of health enhancing assets and interventions relevant to addressing population overweight and obesity levels. Illustrative examples are included in the text below.

Universal interventions

Camden Learning is a local partnership created for the benefit of children and schools. It is a joint enterprise between Camden schools and Camden council, bringing together teachers, headteachers and other education practitioners together, to share expertise, drive improvement and achieve excellent practice.

The Health and Wellbeing Team, part of Camden Learning, supports a range of activities across Camden’s schools. These activities include:

- The school curriculum: staff training and curriculum guidance on Physical Education (including swimming), Design and Technology (cooking and nutrition), and Health Education.

- Whole school approaches: support to achieve the Healthy Early Years Award, Healthy Schools Award and Water Only schools.
- Peer Support programmes i.e. Mini Health Champions (MHCs)- a structured, peer-led programme where pupils participate training to gain the skills and knowledge to promote healthy eating and physical activity.
- Physical activity initiatives: promoting The Daily Mile, running the Race to Health project, participation in School Games, promoting active travel.
- Food provision and projects: supporting breakfast clubs, lunches and snacks, food growing projects, school market takeover.
- Families for life and Family Kitchen family healthy lifestyle and cooking programmes are free universal healthy lifestyle programmes for families with children aged between 2-11yrs old to support them to cook, eat healthily, increase physical activity and make positive behaviour changes.

Targeted interventions

Tier 2: Healthy Living Practitioners is the 1-1 child weight management service and is part of the school nursing contract. The service supports children, young people and their families to lose or maintain a healthy weight. The practitioners respond to direct referrals from health professionals and provide follow-up to children who have been identified as being overweight through the National Child Measurement Programme.

Tier 3: The Enhanced Healthy Living Practitioner Service works with children and families who are overweight and who have complex needs or co-morbidities. This service offers group-based parenting courses and training and consultation to Council staff and health professionals. It also provides a limited amount of 1-1 support to families through student Psychologists on placement.

Tier 4: UCLH Obesity Service for children aged 0-18 with a high cardio-metabolic risk (e.g. high blood pressure or type 2 diabetes), an obesity-complicating health condition, or severe obesity/rapidly increasing BMI.

Interventions in the community

Camden Council and its partners offer a range of services and opportunities that promote physical activity and/or healthy eating.

Parks and open spaces – Camden has over 76 parks and more than 300 green spaces and has created a Parks for Health vision and strategy to ensure that public parks and green spaces are used, enjoyed and maintained as health assets for the whole community.

Play is promoted through playgrounds, adventure playgrounds and play streets.

The **Holiday Activity and Food** (HAF) Programme provides a targeted offer for children and young people to access free activities and a healthy hot meal during school holidays.

Camden has a diverse range of **community and voluntary sector organisations** providing food support, cooking opportunities, and physical activity sessions.

Active travel is a key aspect of the Camden Transport Strategy, with infrastructure projects and support available to encourage residents to walk and cycle.

Schools are encouraged to become accredited under Transport for London's STARS (Sustainable Travel: Active, Responsible, Safe) programme. This programme champions walking, scooting and cycling to and from school via active travel plans.

Food growing is supported through community gardens, organisations, estates and allotments.

Families for Life Community Champion programme trained volunteers to help engage families in healthy lifestyle programmes and promote healthy eating and physical activity messages

Conclusions

This document reviews the national and regional policy context, levels of overweight and obesity in Camden, the links between obesity and poor health, the links between physical activity and weight, and reviews the evidence base on takeaway fast food outlets and their impact on health.

The national and regional policy supports tackling overweight and obesity through planning policy. Levels of overweight and obesity among Camden's children are similar to levels in England, levels which nationally are considered to be too high. There is evidence that overweight and obesity in childhood increases the risk of overweight and obesity in adulthood. There is also evidence that overweight and obesity are detrimental to health and wellbeing.

The evidence highlights the need for local planning authorities to manage the proliferation of fast food outlets as a means of combating their adverse impact on public health. In particular, such management should be scaled up around schools as evidence shows that an increasing number of fast food takeaway shops are operating within easy walking distance to schools. Overall there is evidence that, although availability of high density, high fat and high sugar food is not the only factor that influences diet and obesity, it is a significant contributing factor which needs to be part of an integrated approach to managing and preventing overweight and obesity.

Whilst issues around pricing and competition are not planning considerations, the proximity of fast food takeaways, which may be considered as inappropriately sited near to youth establishments, is a planning consideration.

Recommendations

Based on the evidence, policies that resist the opening of new fast food takeaways in certain locations would ensure planning policy fully contributes to population wide approaches to tackling overweight and obesity in Camden.

It is recommended that where new fast food takeaways are proposed in the following areas, a robust health impact assessment demonstrating how adverse health impacts will be mitigated should be required. Areas include:

- within 400m (a distance considered to be equivalent to a five-minute walk) of schools and locations where children and young people congregate such as community centres and playgrounds;
- areas with high levels of obesity, deprivation and general poor health; and
- areas with an existing over-concentration or clustering of fast food outlets, or where an additional outlet would lead to overconcentration of clustering.

References

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- ¹ MHCLG, National Planning Policy Framework 2021, paragraph 92 c). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf
- ² MHCLG, National Planning Policy Framework 2021, paragraph 93 b). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf
- ³ Greater London Authority. The London Plan - The Spatial Development Strategy For Greater London. 2021. [the london plan 2021.pdf](#)
- ⁴ Fair Society, Health Lives. Strategic review of health inequalities in England post-2010. The Marmot Review, 2010.
- ⁵ Marmot, M., Allen, J., Boyce, T., Goldblatt, P. and Morrison, J. Health Equity in England: The Marmot Review 10 Years On. Institute of Health Equity, 2020
- ⁶ NICE public health guidance 25. Prevention of cardiovascular disease. June 2010.
- ⁷ HM Government. Healthy Places, Healthy People. July 2011. Cm 8134.
- ⁸ Healthy people, healthy places briefing Obesity and the environment: regulating the growth of fast food outlets. Public Health England, March 2014
- ⁹ DHSC. Tackling obesity: empowering adults and children to live healthier lives. July 2020. <https://www.gov.uk/government/publications/tackling-obesity-government-strategy/tackling-obesity-empowering-adults-and-children-to-live-healthier-lives>
- ¹⁰ HM Government. Childhood obesity: a plan for action Chapter 2. 2016. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718903/childhood-obesity-a-plan-for-action-chapter-2.pdf
- ¹¹ DHSC. Restricting promotions of products high in fat, sugar or salt by location and by volume price: implementation guidance Updated 1 June 2023. [Restricting promotions of products high in fat, sugar or salt by location and by volume price: implementation guidance - GOV.UK \(www.gov.uk\)](#)
- ¹² HM Government Press Release Government delays restrictions on multibuy deals and advertising on TV and online. May 2022. <https://www.gov.uk/government/news/government-delays-restrictions-on-multibuy-deals-and-advertising-on-tv-and-online>
- ¹³ OHID. All Our Health: personalised care and population health. Last updated January 2023. <https://www.gov.uk/government/collections/all-our-health-personalised-care-and-population-health#improving-the-wider-determinants-of-health>
- ¹⁴ Mayor of London. Takeaways Toolkit. Greater London Authority, 2012.
- ¹⁵ Better Health for London. London Health Commission, 2014
- ¹⁶ London's Child Obesity Taskforce. Every Child A Healthy Weight: still a critical priority for London. September 2022. <https://www.london.gov.uk/programmes-strategies/health-and-wellbeing/mayors-advisory-group-child-healthy-weight#the-role-of-the-mayors-advisory-group-on-child-healthy-weight-magchw-50420-title>
- ¹⁷ Natcen, 2015, British Social Attitudes Report 33. <http://www.bsa.natcen.ac.uk/latest-report/british-social-attitudes-33/food.aspx>
- ¹⁸ Thomas, C., Breeze, P., Cummins, S. et al. The health, cost and equity impacts of restrictions on the advertisement of high fat, salt and sugar products across the transport for London network: a health economic modelling study. *Int J Behav Nutr Phys Act.* 2022 Jul 27;19(1):93. doi: 10.1186/s12966-022-01331-y.
- ¹⁹ Camden Council. Camden Health and Wellbeing Strategy 2022-30. <https://www.camden.gov.uk/documents/20142/1195356/Camden+HWB+Strategy+UPDATE.pdf/cf95958f-79ed-11c6-3152-a174c858edb3?t=1664273257629>.
- ²⁰ Camden Council. We Make Camden. <https://www.wemakecamden.org.uk/wp-content/uploads/2022/04/We-Make-Camden-Vision.pdf>
- ²¹ Jaworowska, A., Blackham, T., Davies, IG. and Stevenson L. Nutritional challenges and health implications of takeaway and fast food *Nutrition Reviews*, Volume 71, Issue 5, 1 May 2013, Pages 310–318
- ²² Roberto CA, Swinburn B, Hawkes C, Huang TTK, Costa, SA, Ashe, M, Zwicker, L, Cawley, JH, Brownell, KD. (2015) Patchy progress on obesity prevention: emerging examples, entrenched barriers, and new thinking. *The Lancet*, 385 (9985), 2400–2409.
- ²³ Foresight. Tackling Obesities: Future Choices. Government Office for Science, 2007

-
- ²⁴ US Centers for disease control and prevention. <http://www.cdc.gov/obesity/childhood/basics.html>. (Accessed 17th June 2015)
- ²⁵ Singh AS, Mulder C, Twisk JWR, van Mechelen W, and Chinapaw MJM. Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity Reviews* (2008) 9, 474–488
- ²⁶ Malhotra A, Noakes T, and Phinney S. It is time to bust the myth of physical activity and obesity: you cannot outrun a bad diet.
- ²⁷ Fleischhacker SE, Evenson KR, Rodriguez DA, and Ammerman AS. A systematic review of fast food access studies. *Obesity Reviews* 2011;12(5):e460–e471.
- ²⁸ Williams J, Scarborough P, Matthews A, Cowburn G, Foster C, Roberts N, and Rayner M. A systematic review of the influence of the retail food environment around schools on obesity-related outcomes. *Obesity Reviews* 2014 15, 359–374.
- ²⁹ Engler-Stringer R., Le H., Gerrard A, and Muhajarine N. The community and consumer food environment and children's diet: a systematic review. *BMC Public Health* 2014, 14:522
- ³⁰ Fraser LK, Edwards KL, Cade J, and Clarke GP. The Geography of Fast food Outlets: A Review, *Int. J. Environ. Res. Public Health* 2010, 7(5), 2290-2308.
- ³¹ LDC (2009). Food for thought! A review of fast food outlets. The Local Data Company. London. In Bagwell S, The Role of Independent Fast food Outlets in Obesogenic Environments: A Case Study of East London in the UK. *Environment and Planning A*, 2013;45:142-158
- ³² Fleischhacker SE, Evenson KR, Rodriguez DA, and Ammerman AS. A systematic review of fast food access studies. *Obesity Reviews* 2011;12(5):e460–e471.
- ³³ Libuy, N., Church, D., Ploubidis, G. B., Fitzsimons, E. (2022) Fast food and Childhood Obesity: Evidence from Great Britain. CLS Working Paper 2022/1. London: UCL Centre for Longitudinal Studies.
- ³⁴ Fraser LK, Edwards KL, Cade JE and Clarke GP. Fast food, other food choices and body mass index in teenagers in the United Kingdom (ALSPAC): a structural equation modelling approach. *International Journal of Obesity* (2011) 35, 1325–1330
- ³⁵ Fraser LK, Clarke GP, Cade JE and Edwards KL. Fast food and Obesity. A Spatial Analysis in a Large United Kingdom Population of Children Aged 13–15. *Am J Prev Med* 2012;42(5):e77–e85
- ³⁶ Fraser LK. and Edwards KL The association between the geography of fast food outlets and childhood obesity rates in Leeds, UK. *Health & Place* 2010;16(6): 1124-1128
- ³⁷ Gallo RG, Barrett L, and Lake AA. The food environment within the primary school fringe. *British Food Journal* 2014;116(8):1259-1275.
- ³⁸ Sinclair S and Winkler J (2008) The School Fringe: What pupils buy and eat from shops surrounding secondary schools. Nutrition Policy Unit. London Metropolitan University
- ³⁹ Bagwell, S and Doff, S. (2009) Fast food Outlets in Tower Hamlets and the Provision of Healthier Food Choices, London Metropolitan University
- ⁴⁰ London Borough of Brent (2014) Takeaway use among Brent's school students. <https://www.brent.gov.uk/media/16403699/d26-takeaway-use-brent-school-students.pdf> [accessed 27 February 2018]
- ⁴¹ Camden Council. Health Related Behaviour Questionnaire, 2021 (unpublished).
- ⁴² Pearce M., Bray I. and Horswell M. Weight gain in mid-childhood and its relationship with the fast food environment. *Public Health (Oxf)*. 2017 Sep 10:1-8.
- ⁴³ NDC Group (December 2014). Pester power drives 763 million family eat-out visits per year in Britain. <https://www.npdgroup.co.uk/wps/portal/npd/uk/news/press-releases/pester-power-drives-763-million-family-eat-out-visits-per-year-in-britain/> (accessed 16th June 2015)
- ⁴⁴ Onefamily. Pester Power. 2019 <https://www.onefamily.com/our-story/media-centre/2019/1700-a-year-the-cost-of-pester-power/>
- ⁴⁵ Driessen, C., Kelly, B., Sing, F. et al. Parents' Perceptions of Children's Exposure to Unhealthy Food Marketing: a Narrative Review of the Literature. *Curr Nutr Rep* 11, 9–18 (2022). <https://doi.org/10.1007/s13668-021-00390-0>
- ⁴⁶ Fleischhacker SE., Evenson KR., Rodriguez DA. and Ammerman AS. A systematic review of fast food access studies. *obesity reviews* (2011) 12, e460–e471
- ⁴⁷ Fraser LK., Edwards KL., Cade J and Clarke GP. The Geography of Fast food Outlets: A Review. *Int. J. Environ. Res. Public Health* 2010, 7(5), 2290-2308

-
- ⁴⁸ Burgoine, T., Forouhi, NG., Griffin, SJ., Wareham, NJ. and Monsivais, P. Associations between exposure to takeaway food outlets, takeaway food consumption, and body weight in Cambridgeshire, UK: population based, cross sectional study. *BMJ* 2014;348:g1464
- ⁴⁹ Calories data averaged from popular fast food chains, energy expenditure data from Forbes Health <https://www.forbes.com/health/body/calories-burned-calculator/>
- ⁵⁰ Luke A and Cooper RS. Physical activity does not influence obesity risk: time to clarify the public health message. *International Journal of Epidemiology* 2013;42:1831–1836
- ⁵¹ Johns DJ., Hartmann-Boyce J., Jebb SA and Aveyard, P. Diet or Exercise Interventions vs Combined Behavioral Weight Management Programs: A Systematic Review and Meta-Analysis of Direct Comparisons. *J Acad Nutr Diet.* 2014;114:1557-1568.
- ⁵² OHID. Fingertips Public Health Data. <https://fingertips.phe.org.uk/>
- ⁵³ NHS Digital. National Child Measurement Programme, England, 2021/22 school year. <https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/2021-22-school-year/deprivation>
- ⁵⁴ OHID. National Child Measurement Programme 2022: information for schools. Updated 6 February 2023. <https://www.gov.uk/government/publications/national-child-measurement-programme-operational-guidance/national-child-measurement-programme-2022-information-for-schools>
- ⁵⁵ PHE. Health matters: whole systems approach to obesity. 2019. <https://www.gov.uk/government/publications/health-matters-whole-systems-approach-to-obesity/health-matters-whole-systems-approach-to-obesity>