Wales Centre for Public Policy
Canolfan Polisi Cyhoeddus Cymru

The effects of Universal Free School Meals

Jonathan James

October 2024

Our Mission

The Wales Centre for Public Policy provides ministers, senior policy makers and public service leaders with authoritative independent evidence and expertise which helps them to identify effective policy responses and practical solutions to some of the biggest policy challenges facing Wales.

The Centre has worked on a wide range of policy challenges and is currently focusing in particular on developing fresh thinking about community wellbeing, the environment and net zero, and inequalities.

It works in partnership with leading researchers and policy experts from around the world and draws on its work with the Welsh Government and public services to advance understanding of evidence-informed policy making and implementation. Through secondments, PhD placements and its Research Apprenticeship programme, it is equipping early career researchers to engage in policy relevant research.

The Centre is a member of the UK's What Works Network and part of the International Public Policy Observatory and connects policy makers and public service leaders in Wales with these additional sources of evidence and expertise.

For further information please visit our website at www.wcpp.org.uk

Core Funders

Cardiff University was founded in 1883. Located in a thriving capital city, Cardiff is an ambitious and innovative university, which is intent on building strong international relationships while demonstrating its commitment to Wales.

Economic and Social Research Council (ESRC) is part of UK Research and Innovation, a new organisation that brings together the UK's seven research councils, Innovate UK and Research England to maximise the contribution of each council and create the best environment for research and innovation to flourish.

Welsh Government is the devolved government of Wales, responsible for key areas of public life, including health, education, local government, and the environment.

Contents

Summary 5

Introduction 6

School meal provision in the UK 7

A brief history of (free) school meals 7

COVID-19 and the provision of (universal) free school meals. 10

Mechanisms 11

National and international UFSM programmes 14

England 14

Scotland 15

United States 15

Sweden 16

Short-term outcomes of UFSM 17

Take-up 18

Health and body size 18

School absenteeism 20

Educational attainment 21

Household budgets 24

Long-term outcomes of UFSM 26

Cost-effectiveness of UFSM programmes 26

England 26

United States 27

Sweden 27

Conclusion 29

Key messages 29

Replicating success factors for UFSM 30

Reflections for Wales 31

References 33

Author Details 37

Summary

- This report synthesises national and international evidence on the short- and long-term effects of providing universal free school meals (UFSM).
- The various channels through which a UFSM programme can impact health, learning and later life outcomes include:
  - Direct impact on health and growth;
  - Formation of human capital;
  - Reduced food insecurity and improvement in classroom behaviour;
  - Reduction in stigma and an improved learning environment;
  - Reduction in administrative costs; and
  - Direct income transfer.
- This report gathers evidence from where UFSM schemes have been implemented worldwide. These include:
  - England, where universal infant free school meals were introduced in September 2014;
  - The United States, where UFSM was adopted by various states and districts as part of the Community Eligibility Program since 2012; and
  - Sweden, which introduced healthy UFSM in 1946, where meals have to follow healthy nutrition guidelines.
- The evidence indicates that UFSM led to more children being at a healthy weight and increased height. The evidence on UFSM's impact on obesity is mixed.
- There is also mixed evidence on absenteeism, with estimates ranging from no effect to UFSM leading to a 3% reduction in absences per year. UFSM has also positively impacted test scores and attainment.
- The evidence clearly shows that UFSM improves household budgets, with UFSM schemes resulting in a reduction in household food expenditure of around 4-5%.
- UFSM schemes have been cost effective. The Swedish UFSM programme had benefits of four times project costs; while the UK scheme, focusing solely on obesity, had benefits of 1.55 times costs.
- Overall, successful schemes have provided nutritious meals and supported schools in meal preparation.
- For Wales, combining the rollout of UFSM with a review of school meal standards would bring the benefits associated with improved nutrition.
- It is important to carefully monitor and evaluate the roll out of the programme to allow adjustments to be made during implementation.

Introduction

The Welsh Government is rolling out free school meals to all primary-age pupils in Wales, initially set out as part of a commitment in the Co-operation Agreement between Welsh Labour and Plaid Cymru (Welsh Government, 2021). This process began in September 2022 for Reception pupils and is planned to be completed for all primary school pupils by December 2024 at the latest.

The Wales Centre for Public Policy (WCPP) was asked to contribute to a review of the 'unit rate' or price per pupil per meal at which local authorities are funded to facilitate the rollout. This review comprises two phases. The first phase involved reviewing the costs faced by local authorities and how these have changed due to recent inflationary pressures. The second phase looks at the wider costs and benefits of universal free school meal (UFSM) provision, including benefits to individuals and wider society, as well as potential opportunities to achieve other policy aims through UFSM provision. This evidence review has been commissioned by WCPP to examine the costs and benefits of UFSM provision, thus it is focused on the second phase of the review.

In particular, the review seeks to understand the lessons learned from UFSM rollouts in the rest of the UK and other countries. The differing cross-UK contexts and rates of advancement in universal meal provision present an opportunity to build on prior experience over the medium term, implementing a funding mechanism that replicates successes and avoids pitfalls experienced elsewhere in the UK. The review also outlines evidence relating to the wider impact of school meal provision, including the extent to which changes to diet, health, attainment, and economic outcomes have been considered.

This report addresses five main questions:

1. What other UFSM programmes have taken place nationally and internationally?
2. What are the effects of UFSM programmes on short-term outcomes for children?
3. What are the effects of UFSM programmes on long-term outcomes for children?
4. How cost-effective have other UFSM programmes been?
5. What features of UFSM programmes have made them successful?

Before addressing the review questions, this report provides background information on the provision of free school meals. This includes a brief history and how they and their standards have evolved; and how school meals were affected by the coronavirus (COVID-19) pandemic and concurrent lockdowns. The report then explores the various potential effects that the UFSM programme has had on the take-up of school meals, health and body size, school absenteeism, educational attainment, and household budgets.

School meal provision in the UK

A brief history of (free) school meals

In 1906, the UK introduced the Education (Provision of Meals) Act, marking the commencement of school food provision. The Act gave Local Education Authorities (LEAs) the ability to provide free meals to primary schoolchildren, addressing the issue of undernourished students. These meals were to be paid for out of local taxes. However, not all LEAs chose to provide the meals.

In 1944, a significant development occurred with the introduction of the National School Meals Policy. The 1944 Education Act mandated LEAs to provide school meals for all students (not just primary), while ensuring that poorer children continued to receive free meals. After the Second World War, specific nutritional guidelines were introduced, with school meals often featuring rationed foods such as canned fish and meats, and tinned desserts like rice pudding.

The 1980s brought about changes that impacted school food provision. The 1980 Education Act in the UK marked a significant shift in school meal policies. It ended fixed pricing for school meals, removed minimum nutritional standards, and altered the obligation of LEAs to provide meals to all pupils. Although schools were still required to offer free lunches to eligible students (based on financial need), they were now permitted to set prices for those not qualifying for free meals. This change notably affected primary schools, where meal prices charged to the students increased (von Hinke Kessler Scholder, 2013). For instance, in 1981, the most common price for a school meal was 50p, with prices ranging between 35p and 60p (Bisset and Coussins, 1982).[1] The 1986 Social Security Act and the 1988 Local Government Act led to many low-income children losing access to free school meals. These Acts withdrew provision of free school meals from families receiving family credit (previously known as the family income supplement) leading to over half a million children from low-income families losing their free school meal entitlement, and introduced Compulsory Competitive Tendering (CCT) as well as withdrawing the right of LEAs to provide meals on a discretionary basis (von Hinke Kessler Scholder, 2013).

Specific nutritional standards for school meals were reintroduced in the UK in 2001. The then Department for Education and Employment (now the Department for Education) reinstated compulsory guidance aimed at ensuring schools provided healthy options each day at lunchtime. The guidelines did not, however, restrict access to less healthy foods (that is,

[1] The price of school meals has therefore risen more than inflation as 50p in 1981 is equivalent to £1.83 in 2023 prices.

those high in fat, sugar, and salt such as crisps, confectionery, or soft drinks) (Adamson et al., 2013). Similarly, in 2001, the Welsh Assembly Government issued regulations on minimum nutritional standards for school lunches, emphasising the availability of a variety of food and drinks. Similar to the legislation in England, it did not limit other food and drink options.

Food standards in schools gained further prominence in the mid-2000s with chef Jamie Oliver's *Feed Me Better* campaign (Belot and James, 2011), which aimed to elevate school food standards and promote healthier eating habits among students. Following Oliver's campaign, Ruth Kelly, the then Secretary of State for Education and Skills, announced the formation of the School Meals Review Panel (SMRP) to review nutritional standards and school meals provision. Compulsory standards were recommended by this review and adopted in 2006. The School Food Trust (later known as the Child Food Trust) was set up as an independent organisation to provide assistance and advice to schools.

In Wales, in July 2005, an independent Food in Schools Working Group was established by the Welsh Assembly Government, releasing the consultation document *Appetite for Life* in June 2006. This document recommended adopting the nutrient standards outlined by the Caroline Walker Trust in 2005 for all food served at lunchtime, as well as implementing standards for food and drinks offered at other times during the school day, such as morning breaks. These were introduced in November 2007, outlining strategic steps to enhance the nutritional standards of food and drinks in schools across Wales.

In 2013, Michael Gove, the then Secretary of State for Education, commissioned John Vincent and Henry Dimbleby to examine school meals and develop recommendations for improvement. As a result, they developed the school food plan.[2]

At the start of 2014, all children in Reception, Year 1, and Year 2 attending state-funded schools in England (including academies, free schools, special schools, and pupil referral units) became eligible for free school meals. This policy extended free school meal entitlement to an additional 1.5 million children, following trials of the scheme. Between 2009 and 2011, the Departments of Education and Health initiated pilot programmes for UFSM in two local authorities, namely Newham and Durham. These pilot assessments unveiled several noteworthy advantages applicable to all pupils, regardless of their previous eligibility status under the existing criteria or their newly acquired eligibility during the pilot phase.

These pilot studies, as extensively documented by Brown et al. (2012), found some key findings detailed below.

---

[2] See link here: **https://www.schoolfoodplan.com/**

Enhanced academic achievement: The UFSM pilot led to a substantial and positive influence on the academic performance of primary school students. Pupils in the pilot regions exhibited progress in English and Mathematics that surpassed their counterparts in non-pilot areas by a margin of four to eight weeks. This improvement was particularly pronounced among students from less privileged backgrounds and those with a history of lower academic attainment. Specifically, for Key Stage 1, there was a 0.131 standard deviation increase in performance (around seven weeks of progress according to Brown et al. (2012)) for those pupils with the lowest prior attainment, but no improvement for those with the highest prior attainment. Pupils who scored in the lowest quartile at Key Stage 1 scored 0.164 standard deviations higher at Key Stage 2 than similar pupils in the comparison groups. For those at the top of the distribution in Key Stage 1, the impact of the meals was lower, at 0.064 standard deviations.

Elevated overall uptake of school lunches: The introduction of UFSM also led to a wider adoption of school lunches, extending beyond children from low-income families. Specifically, for those in Reception to Year 4, there was an increase in school meal uptake from 66% to 94% in one of the pilot areas and from 56% to 89% in another. This increase declined somewhat after two years, but on average, the increase after two years was 28 and 29 percentage points respectively in the pilot areas. This development is significant, as studies had indicated that only 1% of packed lunches brought from home met the School Food Standards (Evans et al., 2020), while the majority of primary meals provided by local authorities adhered to these standards.

Increased uptake among low-income families: The pilots prompted a heightened uptake of school meals even among children from low-income households who were already eligible for free meals but had not taken up this benefit under the previous system. Two years after the pilot, the uptake increased by 16 percentage points. This boost in participation was, in part, attributed to the elimination of the perceived social stigma associated with receiving free school meals.

Social and behavioural gains: Schools in the pilot regions cultivated an environment where students ate meals alongside peers and teachers and other staff within a well-mannered and structured setting. In terms of behavioural improvements the qualitative evidence was mixed, with some teachers indicating that students were better able to concentrate in the afternoons and with others noting that some were tired and lethargic after a large meal (Brown et al., 2012).

The pilots did not find evidence of a reduction in BMI nor was there evidence of an improvement in attendance. However, on the balance of the evidence, the pilots were deemed a success by the UK government and led to the 2014 Universal Infant Free School

Meals (UIFSM) programme being rolled out across England on a large scale. The effects of that rollout are discussed later in this report.

COVID-19 and the provision of (universal) free school meals.

On 20 March 2020, due to COVID-19, schools across the UK closed, except for the children of key workers and vulnerable children. Consequently, those who were previously eligible for free school meals no longer received them. According to the World Food Programme (WFP), during the lockdown, over 1.2 million children in the UK and over 300 million worldwide were affected (WFP, 2024). To mitigate the impact on low-income children, governments introduced alternative methods for providing free school meals. In England, supermarket vouchers with a weekly value of £15 were implemented, while Scotland, Wales, and Northern Ireland addressed the gap by distributing food parcels and conducting bank transfers. However, only children who were eligible for the standard means-tested free school meal programme qualified for these alternative provisions.

The effectiveness of these alternative meal programmes varied, leading to considerable debate. Media reports highlighted instances where families either did not access vouchers or received insufficient food parcels. Notably, footballer Marcus Rashford led a well-publicised campaign advocating for the continuation of free school meals during school holidays. This high-profile effort ultimately prompted a change in government policy, resulting in the provision of free school meals during the Easter and Summer breaks (RSPH, 2023).

Parnham et al. (2020) utilised the first wave of the *Understanding Society COVID-19 Survey*, which inquired about a child's eligibility for free school meals and their ability to access such meals, either through school channels or substitutes, like vouchers. They examined the relationship between characteristics and access to free school meals in April 2020. Additionally, an exploration was undertaken to understand whether accessing free school meals had any connection to a family's reliance on food banks.

They found that:

- In April 2020, half of the children eligible for free school meals could not access the programme;
- Children attending school were nearly six times more likely to receive free school meals compared to non-attendees; and
- Families with children receiving free school meals exhibited a greater propensity to use food banks compared to those without access.

The universal implementation of free school meal programmes remains a contentious issue, stirring debates among policymakers and academics. While some argue that free school meal initiatives may not significantly enhance children's health and could even increase the risk of unhealthy body weight, the central debate revolves around the cost-effectiveness of universal versus means-tested approaches. Additionally, the stigma associated with free school meal status may explain lower uptake rates, even in means-tested programmes. In some cases, expanding free school meals availability can increase participation among both previously ineligible and eligible students. Below, I investigate more thoroughly the potential pathways (mechanisms) and outcomes that might result from the implementation of a universal free school meal programme.

Mechanisms

There are multiple pathways through which nutritious school meals can impact current and future life outcomes, illustrated in Figure 1. While the pathways are not exhaustive, they provide an indication of some potential mechanisms that might be important, described below.

1. Direct impact on health and growth Correct nutrition during childhood is crucial for healthy growth. Nutrition, particularly proteins, minerals (such as calcium, phosphorus, magnesium, zinc, and iron), and vitamins (like A and D), plays a significant role in determining a child's height. Deficiencies in nutrients, such as vitamin D, can affect bone mineralisation. Height is an indicator of dietary and infectious disease history during childhood and has been linked to higher wages and earnings in adulthood.

2. Formation of human capital Inadequate nutritional intake, especially deficiencies in zinc, iodine, iron, and folate, has been associated with poorer cognitive development in school-aged children. School lunches can, therefore, contribute to better cognitive function and attention levels, positively impacting human capital. Meals rich in carbohydrates have been shown to improve test scores (Figlio and Winicki, 2005).

3. Direct income transfer Students who were previously eligible but did not take up the free school meal programme, either due to stigma or lack of information (as noted by James, 2012; Holford, 2015), now gain access to the benefit. Additionally, higher-income students, previously not eligible under the means-tested programme, become eligible for free meals. For both groups, UFSM increase the financial resources available for other food expenditures and consumption goods, potentially benefiting children.

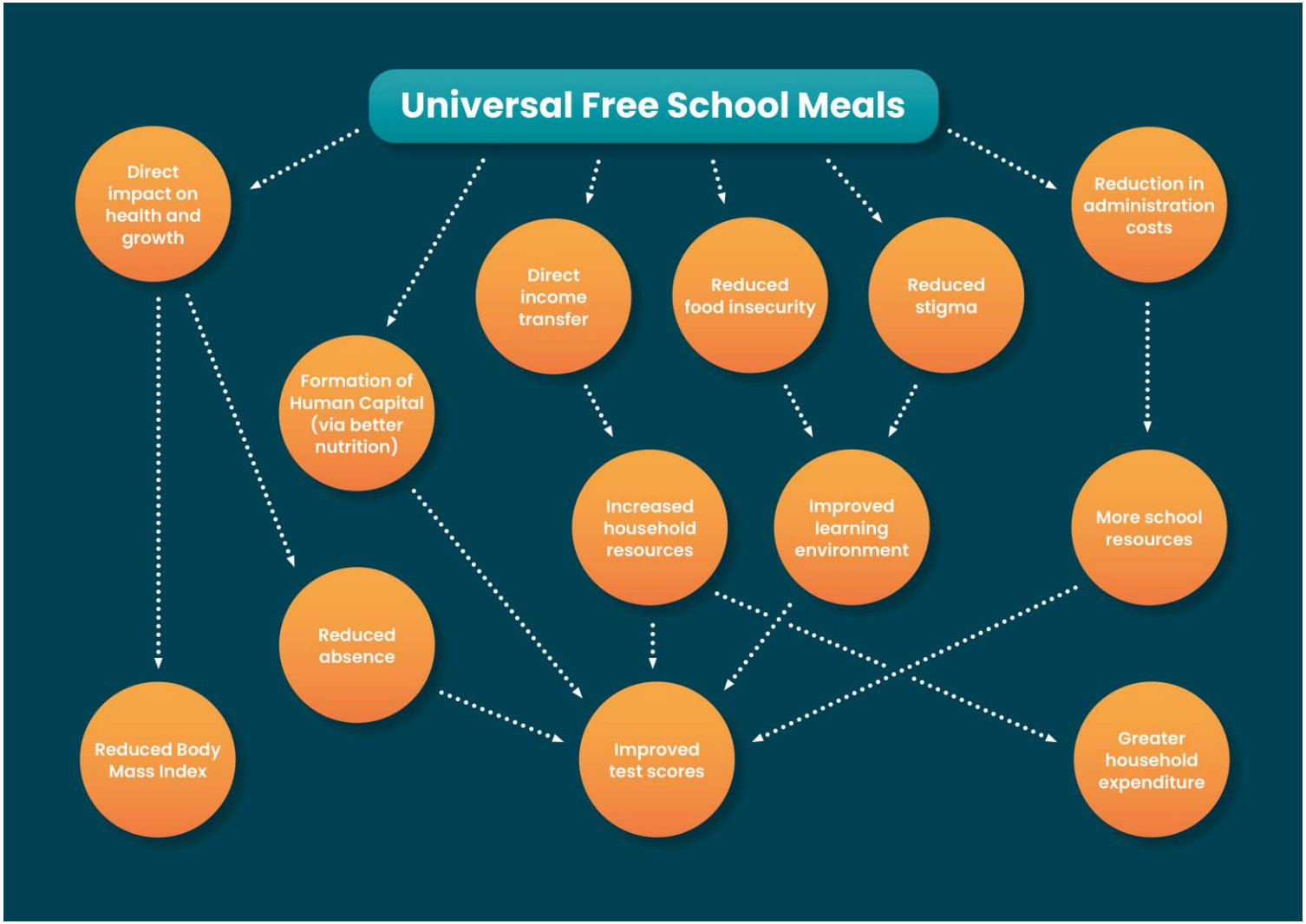
4. Reduced food insecurity and improvement in classroom behaviour Evidence indicates that food insecurity is associated with worse problem behaviours directed towards the external environment (including physical aggression, disobeying rules, cheating, and

stealing) (Alaimo et al., 2001). The potential for peer effects means that what a student experiences at school depends not only on their behaviour but also on those around them. Classroom disruptions reduce learning time for all students (Lazear, 2001), and disruptive peers can worsen labour market outcomes for others (Carrell et al., 2018). Therefore, if UFSM reduces food insecurity, it may improve classroom behaviours, thus increasing effective teaching time and benefiting students, even if nutritional consumption does not change.

5. Reduction in stigma and an improved learning environment Under a UFSM scheme, family income may become less salient, or consuming a free school meal may become less stigmatised. This could lead to a more inclusive learning environment.

6. Reduction in administrative costs By reducing the need to track individual free meal eligibility and participation, schools' administrative costs may be lower. Schools may then reallocate these cost savings to resources that directly improve student performance.

Figure 1: Potential effects of a Universal Free School Meal Programme



National and international UFSM programmes

The emphasis of school meal programmes, in general, is not only to provide free meals but also to ensure that these meals are healthy and nutritious. Some earlier studies on school meal programmes from the US and elsewhere have not found them to be beneficial to health (Schanzenbach, 2009; Hinrichs, 2010). However, most evidence indicates that when meals are backed up by nutritional standards, this has been beneficial to education (Belot and James, 2011; Anderson et al., 2018). Descriptions of different UFSM schemes in England, Scotland, the United States and Sweden are provided below.

England

The Universal Infant Free School Meals (UIFSM) programme commenced in England in the academic year 2014/15. Under this programme, all infants (the first three years at school: Reception, Year 1, and Year 2) – children aged 4–7 – in state-funded schools in England became eligible to receive a free meal at lunchtime. For children in Year 3 and above, the means-tested system for free school meals remained in place.

Eligibility for means-tested free school meals (from Year 3 onwards) applies if the parent receives any of the following:

- Income Support;
- Income-based Jobseeker's Allowance;
- Income-related Employment and Support Allowance;
- Support under Part VI of the Immigration and Asylum Act 1999;
- The guaranteed element of Pension Credit;
- Child Tax Credit (provided you are not also entitled to Working Tax Credit and have an annual gross income of no more than £16,190);
- Working Tax Credit run-on – paid for 4 weeks after you stop qualifying for Working Tax Credit; or
- Universal Credit – if you apply on or after 1 April 2018, your household income must be less than £7,400 a year (after tax and not including any benefits you receive).

To accommodate the increased number of meals required under the UIFSM programme, the government allocated £150 million in capital funding to improve kitchens and dining rooms. In 2014/15, funding of £2.30 per UIFSM served (equivalent to £437 per year) was provided to schools. This funding remained at £2.30 per UIFSM served until 2019/20. In 2020/21, it

increased to £2.34 (Education and Skills Funding Agency, 2021), and then to £2.41 in 2022/23 (Education and Skills Funding Agency, 2023). This figure of £2.41 is equivalent to £1.90 in 2015 prices; conversely, if the original £2.30 allocation had kept pace with inflation, it would be £2.90 in January 2023 prices. It is worth noting that the Welsh universal primary free school meals offer was originally funded at £2.90 per meal in 2022/23 (Miles, 2023).

The total allocation provided to schools is calculated based on take-up on a census day in January each academic year.

The aims of the UIFSM policy align with some of the mechanisms shown in Figure 1. The objectives of UIFSM are to improve educational attainment and classroom behaviour. It also aims to ensure children have access to a healthy meal each day and, given the meals are healthier than the typical lunchbox, to encourage long-term healthy eating habits. Additionally, the policy can assist families with their household finances, whether they are currently eligible and not claiming or are not eligible. Making the policy universal could also remove parental disincentives to work.

Scotland

Soon after England introduced UIFSM, Scotland followed suit. Prior to January 2015, school meals in Scotland were means-tested. Similar to England, free school meals were provided only to children whose parents received certain benefits or child tax credits. In January 2015, Scotland introduced UFSM for children in P1–P3 (equivalent to Reception, Year 1, and Year 2 in the English system). The Scottish Government provided £70.5 million funding to local authorities the over the first two years (Borbely et al., 2022). Entitlement was extended to all pupils in P4 (Year 3) in August 2021 and then to those in P5 (Year 4) in January 2022. The cost in 2022/23 to the Scottish Government of providing the school meals was £3.87 per meal.[3]

United States

Through the National School Lunch Program (NSLP) in the US, students from households with incomes up to 130% of the Federal Poverty Level (FPL) receive a free lunch, while those with incomes up to 185% of the FPL are eligible for lunch at a reduced price. Eligibility is determined either through application review by local authorities or through categorical criteria. This latter category applies to students in specific aid programmes, such as the Supplemental Nutrition Assistance Program (SNAP), or to those identified as disadvantaged, including homeless or foster children.

[3] 2022-23 Local Financial Returns (LFRs): Source Workbooks. LFR01: Education

The Community Eligibility Provision (CEP) operates as a universal free school meal programme but whether a school or district adopts it depends on certain criteria. Under CEP, a school qualifies for funding to provide UFSM if the proportion of students eligible for free lunch through categorical eligibility, known as the Identified Student Percentage (ISP), is at least 40%. Within a district, a subgroup of schools can pool their ISP and elect to receive CEP as a group.

The funding a school receives is determined by the size of its ISP. The subsidy rate is calculated as the ISP multiplied by 1.6. For instance, schools with an ISP rate of 40% would receive 64% of the funding to cover all their meals. Conversely, a school with an ISP rate of 64% or above would receive full funding (100%).

Unlike the English and Scottish cases described earlier, the American CEP programme was gradually rolled out. The rollout was staggered across different states at different times and was determined by the Secretary of Agriculture. The first districts were eligible in 2012 and with more becoming eligible each year until all were eligible in 2015 (Ruffini, 2022).

Sweden

The oldest programme considered in this report is from Sweden. While it may appear historic and less directly applicable to the present day, its significance lies in allowing an examination of the long-term effects of the policy.

The policy began in 1946 when the Swedish Social Democratic government initiated a programme granting state subsidies to municipalities offering free and nutritious school lunches to all primary school pupils. The decision focused on concerns about the nutritional quality of the food consumed rather than its quantity, which was believed to be sufficient. The government stipulated that school meals should consist of a hot, freshly prepared meal. Moreover, the Swedish National Medical Board provided detailed guidelines on the nutrient content of these meals.

Subsidies were awarded to regions that complied with these nutritional standards. Given the strictness of these standards, kitchen staff underwent extensive training programmes, followed by refresher courses later in the year. With this additional support, pupils in all participating schools were provided with nutritious school meals. Lundborg et al. (2022) document significant improvements in the nutritional content of food consumed at school as a result of these meals. Specifically, they compared the nutritional content of lunch meals before and after the reform. Government reports highlighted the poor quality of pre-reform homemade meals and stressed the anticipated health and academic benefits of nutritious school lunches. Surveys indicated that most children consumed cold meals like milk and cheese sandwiches before the reforms. With the introduction of hot, nutritious meals, there

was a notable increase in iron (0.588 mg to 7g per meal), vitamin C (1.2mg to 25mg), and vitamin A content, along with a doubling of protein, phosphorus and vitamin B. However, calcium content remained unchanged.

Similar to the English scheme, which aimed to remove disincentives to work, the Swedish scheme also aimed to reduce the household burden on women. By providing meals at school, mothers or other primary caregivers no longer needed to prepare meals at home, potentially freeing up time for them to enter the labour market.

Table 1: Summary of UFSM programmes

	England	Scotland	United States	Sweden
When was the scheme introduced?	September 2014	January 2015	2012-2015 State dependent	1946
Eligibility	Primary: Reception - Year 2	Primary: Years 1-3	All schools: dependent upon district/school benefit rates	All primary schools

Short-term outcomes of UFSM

In this section, I consider the evidence on the impact of the meals in the short term, where 'short term' is defined as while still in the school system.

Most of the studies reviewed here utilised an econometric method known as difference-in-differences (DiD). DiD evaluates the causal impact of a policy or intervention (in this case, the implementation of UFSM) by comparing changes in outcomes over time between a treatment group that experiences the policy and a control group that does not. DiD is instrumental in isolating the specific impact of the intervention by assessing how the treatment and control groups diverge post-policy implementation, while accounting for their pre-existing differences.

This section focuses on examining the evidence of the impact of UFSM on health, attainment, and household expenditure. Before turning to the key outcomes of the UFSM policy, it is important to determine whether making school meals universally free increases uptake.

Take-up

Holford and Rabe (2022) documented significant increases in take-up of school meals, concentrated in the non-eligible group, as might be expected. Prior to UFSM take-up was around 30% for non-eligible children; this increased to 85% when the policy was implemented. For eligible children, there was a three-percentage point increase in take up, rising to 87%. These results, along with some additional evidence presented by Holford and Rabe (2022), suggest that stigma was not a significant barrier to take-up.

Studies from the US typically show overall school-level increases in school meal take-up. Ruffini (2022) found a 12-13% increase in the number of lunches served, leading to a 9% increase in revenue from the federal government. Gordanier et al. (2020) observed an 8% increase in meals consumed. Schwartz and Rothbart (2020) were able to examine differences by poverty level. They found an increase of 5 percentage points (8% relative to their average lunch participation rate) for poor students and 11 percentage points for non-poor students (24% relative to their average lunch participation rate).

Health and body size

Several papers have examined the impact of UFSM schemes on body weight. The methodologies for measuring body weight and the duration of exposure to UFSM vary across studies, making comparisons challenging. Nonetheless, the majority of studies indicate that UFSM schemes lead to healthier body weight (Davis and Musaddiq, 2019; Holford and Rabe, 2022). However, one study by Schwartz and Rothbart (2020), which examined a UFSM programme in New York City, found no impact on weight.

Healthy weight and obesity

Davis and Musaddiq (2019) discovered that the CEP in Georgia increased the percentage of children with healthy weight by 1.3 to 1.8 percentage points (compared to non-CEP schools). Relative to the mean, this implies a 2.2 to 3% increase in healthy weight children.

Holford and Rabe (2022) found that exposure to UIFSM in England for 190 school days increased the proportion of healthy weight children by 1.1 percentage points (relative to a base mean of 76%), implying a 1.4% increase in the proportion of children at a healthy body weight. This increase was attributed to reductions in weight, as opposed to increases for those who were underweight. They also found a 0.7 percentage point decrease in obesity (relative to a base mean of 10%), implying a 7% reduction in the proportion of obese infants.

Davis and Musaddiq (2019) observed that CEP participation led to a decrease of 0.197 points in school average BMI (a 1% reduction relative to the mean) for full-sample schools,

covering all year groups from primary to high school. When separated by school type, the effect was found to be statistically significant only in primary schools.

Holford and Rabe (2022) noted a reduction in BMI of 4.1% of a standard deviation relative to a child not exposed to UIFSM. This reduction in BMI z-score equates to around 63g of absolute weight change for boys and 73g for girls.

Height

Only one study directly examines height, another component of BMI. Lundborg et al. (2022) investigated height, highlighting its significance as influenced by nutrition. Nutrition's impact on growth is particularly pronounced postnatally, surpassing its influence during prenatal development. Adult height is considered ‘probably the best single indicator of his or her dietary and infectious disease history’ (Elo and Preston, 1992: 202), and has been linked to higher wages and earnings, as shown by studies including Persico et al. (2004), Case and Paxson (2008), and Lundborg et al. (2014).

Lundborg et al. (2022) found that an additional year of exposure to the programme increased male height by 0.07cm, with full exposure (nine school years) increasing height by 0.6cm. For females, a similar impact was observed: 0.05cm for one-year exposure and 0.65cm for full exposure. These effects are statistically significant and based on large samples (over 650,000 observations). The study also notes that the height effect becomes statistically significant with 4 or more years of exposure to the meals. They state that: ‘this is a large effect, corresponding to 6–7 years of secular height growth in Sweden during the 1940s and 1950s (Werner, 2007)’ (Lundborg et al., 2022: 898).

Lundborg et al. (2022) also found an impact of the Swedish UFSM policy on later life income, with a 3% increase associated with full exposure to the programme. Lundborg et al. (2014) identified a height premium in Sweden, where 1 cm of growth in height is associated with a 0.67% higher income. Given that nine years of exposure to the programme led to a 0.6 cm increase in height, this implies a 0.402% increase in income. Thus, the effect of the Swedish school meal programme on height can explain 13% of the income effect.[4]

[4] 0.402% is derived from 0.67% (per 1 cm increase) x 0.6cm (increase from 9 years exposure to the programme). 13% is derived from 0.402% (the income impact via height of the school meals programme) divided by 3% (the overall income increase as a result of the programme).

Table 2: Summary of the impact of UFSM programmes on body size

Study	Context	Outcome	Effect	Sample Size
Davis and Musaddiq (2019)	CEP in Georgia, USA	Healthy weight	+2.2-3%	7,430
		BMI	-1% (relative to the mean)	7,416
Holford and Rabe (2022)	UIFSM in England	Healthy weight	+1.4%	154,169
		Obese	-7%	
		BMI	-4.1% of a standard deviation (63g boys, 73g girls)	
Schwartz and Rothbart (2020)	New York City	Obese	Negative but not statistically significant	121,402
		Overweight		
		BMI		
Lundborg et al. (2022)	Sweden	Height	0.6cm (males) and 0.65cm (females)	625,622

Summary of the range of body size by outcomes

- Healthy weight +1.4% to +3
- BMI: -1% relative to the mean or 4.1% of a standard deviation
- Obese: negative but not significant to -7%
- Height: +0.6cm (males), +0.65cm (females)

School absenteeism

Better nutrition can lead to students being better equipped to fight off infections. Additionally, UFSM can provide incentives for parents to return to the labour market. Making the meal provision not based on benefit criteria removes potential disincentives to work, as moving back into employment or increasing working hours may result in the loss of free school meal status (though this is likely to be a very small effect, if any). Therefore, it is probable that most of the effects on absence rates are due to improved nutrition.

Gordanier et al. (2020) examined the CEP programme in South Carolina, USA. They found a reduction in absenteeism of 0.2 days per year for primary school students, accounting for approximately 3% of the sample mean.

Holford and Rabe (2020) discovered that UIFSM improved absence rates for free school meal registered infants. For all absences, they noted a reduction of 0.23 days per year (a 2.4% reduction relative to the mean). This finding is remarkably close to that of Gordanier et al. (2020). Holford and Rabe (2020) also investigated the impact by free school meal status and found that the effects were much larger for those registered for free school meals, with a point estimate of -0.643, equivalent to 1.2 fewer days over the entire school year. Most of these effects were accounted for by reductions in illness-related absences.

In contrast, Schwartz and Rothbart (2020) found no impact on absence as a result of the UFSM programme in New York City. Similarly, Borbely et al. (2022), who examined UIFSM in Scotland, found no effect on attendance and health-related absence. They did not observe a difference in the effect between groups. The study's zero effect could be due to positive impacts for some groups being negated by negative ones for others, but this was not observed in their overall findings. They noted that rural schools, small schools and those schools that are better resourced displayed marginally larger effects, which while statistically significant, are not large in real terms and are unlikely to have meaningful impacts.

Table 3: Summary of UFSM programmes on absenteeism

Study	Context	Outcome	Effect	Sample size
Holford and Rabe (2020)	UIFSM in England	Absence	-2.4%	1,408,548
Gordanier et al. (2020)	CEP South Carolina, USA	Absence	-3%	670,392
Schwartz and Rothbart (2020)	New York City	Absence	No effect	659,797
Borbely et al (2022)	Scotland	Absence	No effect	17,766

Summary of the range of absence outcomes

- No effect to -3%

Educational attainment

UFSM can impact school attainment in various ways. Comparing studies from the US and UK is challenging due to differences in how test scores are measured.

I begin by summarising evidence from the US (Gordanier et al., 2020; Schwartz and Rothbart, 2020; Ruffini, 2022). The results on test scores are somewhat mixed and vary by age group. Gordanier et al. (2020) found a 0.061 standard deviation increase in maths test scores at the primary school level, but no impact on middle school maths test scores. They also noted positive effects on reading for both primary and middle school students, but these were not statistically significant. Ruffini (2022) expanded on Gordanier et al. (2020) by examining the impact of the CEP programme across the US. Consistent with Gordanier et al. (2020), Ruffini did not find an impact on reading test scores. In contrast, Ruffini did not find an overall impact of the programme on maths test scores either. However, focusing on schools with the largest gains in access to free school meals, Ruffini observed an increase in maths scores by 0.02 standard deviations. This is the intent-to-treat effect, which does not consider actual meal uptake. By adjusting for this and rescaling the maths test score increases by the share of students gaining access to free school meals (32%), Ruffini (2022) determined that access to free school meals improves maths performance by approximately 0.05 standard deviations. CEP improved maths test scores significantly more for Black and Hispanic students in primary schools (Grades 3–5) than for middle school (Grades 6–8) students. However, the effect was similar in urban and rural schools.

Schwartz and Rothbart (2020) also found positive effects in maths for middle school students, with an increase of 0.036 standard deviations, aligning with Ruffini (2022) but slightly lower than Gordanier et al. (2020). The effects were larger for students from poorer backgrounds compared to those from non-poor backgrounds. In English Language Arts (ELA), they observed a 0.03 standard deviation increase, contrary to other US literature findings. As with maths, the effects in ELA were more pronounced for students from poorer backgrounds.

Holford and Rabe (2020) did not present their results in standard deviations. For attainment at age 7 (Key Stage 1), they used ‘average point score’, derived from points assigned to levels of attainment across reading, writing, maths, and science, with an additional level for speaking and listening. They estimated the impact of the UFSM policy to be between 0.1 and 0.2 points, with larger effects for reading (0.18) and writing (0.2), and smaller effects for speaking and listening (0.11), maths (0.10), and science (0.10).

Lundborg et al. (2022) investigated the impact of the Swedish UFSM programme on years of completed education. They found that one additional year of school lunches increased years of schooling by 0.03. Extrapolating this effect for exposure to the entire programme, i.e., nine years of schooling, suggests that the programme led to an education increase of 0.28 years.

They also examined the impact of UFSM on the probability of attending university. The full nine years of exposure to the programme increased the likelihood of attending university by

1.5 percentage points, representing a 4.6% increase (given that the mean attendance rate was 33%).

Lundborg et al. (2022) also had data on cognitive ability for men enlisting in the military.[5] They observed a small positive impact, but this effect was not statistically significant. They proposed a couple of reasons why UFSM might improve attainment while not affecting cognitive ability. Firstly, it could be that UFSM was introduced at ages beyond critical development periods for cognitive skills (Heckman, 2007). Secondly, the nutritious school meals may have increased human capital by enhancing pupils' ability to concentrate and raising their energy levels, thereby facilitating learning even if their cognitive ability per se did not improve.

Overall, the evidence points to a positive impact of UFSM on educational attainment and education. Specifically, there are positive effects for reading, writing, speaking, listening, English language, maths, science. Overall, the evidence has shown an increase in overall years of education as well as university attendance. While some of these effects are not large, and some not statistically significant, the majority of the effects found were positive.

Table 4: Summary of the impact of UFSM on attainment and test scores

Study	Context	Outcome	Effect	Sample Size
Holford and Rabe (2022)	UIFSM in England	Reading	+0.18 points	5,109,144
		Writing	+0.2 points	5,109,166
		Speaking & listening	+0.11 points	5,109,113
		Maths	+0.1	5,109,042
		Science	+0.1	5,107,842
Gordanier et al. (2020)	CEP South Carolina, USA	Maths (Primary)	+0.061 SD	670,392
		Maths (Middle)	No effect	
		Reading (Primary & Middle)	Positive but not statistically significant	

[5] They use data from the military and as such has only been collected for men.

Ruffini (2022)	CEP, All states USA	Maths (All schools)	No effect	65,800
		Maths (For districts that increased meal take up)	+0.02 SD (ITT) +0.05 SD (Scaled)	32,694
Schwartz and Rothbart (2020)	New York City	Maths (Middle)	+0.036 SD	659,797
		English Language Arts (ELA)	+0.03 SD	
Lundborg et al. (2022)	Sweden	Education (years)	0.28 years (full programme exposure)	1,443,114
		University attendance	+4.6%	
		Cognitive ability	Positive but not statistically significant	Not shown

Summary of the range of educational outcomes

- Maths: no effect to 0.061 SD
- English/Reading: positive but not significant to 0.03 SD
- Improvements in early years school performance
- Increases in overall years of education and the probably of attending university
- No impact on cognitive ability

Household budgets

By reducing the price of school meals to zero for families with children in eligible schools, UFSM programmes are likely to significantly impact household budgets and food spending. This applies to those who were previously not eligible, as well as those who were eligible but may have refrained from taking the meals due to concerns, such as stigma. Through its impact on the household budget, UFSM may also alter the composition of food purchases and hence have an impact on the quality of the diet at home.

Marcus and Yewell (2022) investigated the US-based CEP UFSM programme. They found that CEP exposure reduced food spending by about $11 per month (representing a 5% reduction in mean expenditure) compared to those without children and therefore not affected by the programme. They also examined different types of spending, noting an 8%

reduction in lunch food spending and a 9% fall in breakfast food spending. Marcus and Yewell (2022) also considered the food and income security effects of CEP, observing an 11% decline in the proportion of households that ran short of money or tried to make their food money go further. They also found around a 5% decrease in households classified as food insecure. Furthermore, they examined dietary quality, reporting that they 'reject the hypothesis that low-income households' dietary quality worsens and find suggestive evidence of an improvement in their overall dietary quality by about 3 percent after CEP' (p. 17). Therefore, by increasing the budget of low-income households, this may have led to an increase in the purchase of healthy food.

Holford and Rabe (2022) examined supermarket and eating out expenditure for families with children in Reception, Year 1, and Year 2 before and after the UIFSM policy, compared to families with children up to age 11 who were not in those year groups. They found that UIFSM reduced supermarket spending by 4.2% and eating out expenditure by 4.9%. These effects are very similar to the main baseline estimates of Marcus and Yewell (2022).

Table 5: Summary of the impact of UFSM on household budgets

Study	Context	Outcome	Effect	Sample size
Holford and Rabe (2022)	UIFSM in England	Supermarket expenditure on food and groceries	-4.2%	31,999
		Expenditure on eating out	-4.9%	32,010
Marcus and Yewell (2022)	CEP	Food expenditure	-5%	4,498,537
		Food insecurity	-5%	569,293
		Ran short of money/tried to make their food money go further	-11%	577,010

Summary of the range on household expenditure

- Food expenditure: -4.2% to -5%

Long-term outcomes of UFSM

There is a scarcity of evidence regarding the long-term impact of UFSM schemes because most of the schemes have only recently been introduced and as such the long-term outcomes have not had time to materialise. However, Lundborg et al. (2022) have examined the effect on later-life income. They discovered that an additional year of school lunches increases adult income by 0.35%, and that income increased by 3% for those exposed to the full nine years of lunches. No differences were found by gender, but it was noted that children in the bottom quartile of the income distribution benefited the most from UFSM. Being exposed to the meals for nine years increased their later-life income by 5.8%. Half of the income effect is attributed to education and around 10% to height. They did not find that other channels, such as savings on household food expenditures, increased maternal labour supply, or school attendance, could explain any significant part of the impact.

Cost-effectiveness of UFSM programmes

The evidence broadly supports the notion that UFSM is a cost-effective policy. In this section, I summarise the evidence from each of the different schemes.

England

According to Holford and Rabe (2022), the cost of the UIFSM policy over three years is around £1,400 per child. This is broken down as:

Capital Funding		
	£150m	Local Education Authorities (LEAs)
	£15m	Allocated to 233 schools (allocation based on assessed greatest need)
	£10m	Allocated through LEAs for the 2015/16 academic year
Total	**£175m**	

Constant revenue funding		
	£2.30	per pupil per meal
	190	school days
Total	**£437.00**	per pupil per year

Replacing equipment after 10 years increases the average total cost by £8.75 per pupil per year.[6] Adding this to the constant revenue funding results in £445.75 per student per year. Holford and Rabe (2022) observed a reduction in obesity prevalence by 0.7 percentage points at the end of the school year. Assuming this reduction persists over a lifetime (potentially a strong assumption) and that there are no additional effects in later years of exposure to the programme, these cost effects imply a £191,000 saving per person who is no longer obese later in life.[7]

The NHS spends around £377 per obese person per year (Public Health England, 2017). Over an 80-year lifetime, this implies costs to the NHS of £30,160. In addition to medical costs, productivity-related costs have been estimated at £3,708 per obese person per year, or £296,640 over 80 years. Considering these nominal figures, the ratio of costs to benefits is around 1.55, lower than the US or Swedish schemes but with benefits still being greater than costs. However, this calculation only considers the impact on obesity (albeit with some strong assumptions about the long-term effects). The cost-benefit ratio would be higher if other benefits such as reductions in absences and improvements in test scores were also considered.

United States

The CEP policy, as examined across all states by Ruffini (2022), led to a cost-benefit ratio of approximately 5 (although it should be noted that there is limited information about where these numbers are derived from). Ruffini reports that the 'CEP delivered benefits on the order of a $500 family income transfer, for a cost to the federal government of approximately $100 a student' (2022: 817).

Sweden

Lundborg et al. (2022) considered the costs of food, facilities, and equipment. The discounted cost of the programme was a total of SEK 26,900 per pupil. Considering income as the final outcome, and one that the other outcomes contributed to, the nine years of exposure to free school meals increased lifetime income by SEK 102,000 (this uses a 3% discount rate and counts incomes from age 21 to 65). Therefore, the cost-benefit ratio is 3.8. The cost-benefit ratio increases to 7 for children from poorer families (in the bottom quartile of household income).

---

[6] £175m divided by 10 years, divided by 2 million children.

[7] This is calculated by dividing costs of the providing the meals (£1337) by the obesity prevalence reduction of 0.7 percentage points (i.e. 0.007).

Table 6: Summary of the cost effectiveness of UFSM programmes.

Study	Context	Cost-Benefit Ratio
Ruffini (2022)	CEP in US	5
Lundborg et al. (2022)	Sweden	4 (7 for low income)
Holford and Rabe (2022)	UIFSM in England	1.55 (obesity only)

Conclusion

The papers studied in this report represent the best available evidence on the short- and long-term effects of UFSM provision. The evidence suggests that universal provision can support increased attainment at school and can lead to higher earnings later in life. Additionally, there is some evidence indicating that it can reduce food expenditure for families and increase height and healthy weight in students. There is also a suggestion of a small reduction in school absences. Table 7 summarises the main findings from the research.

Table 7: Summary of the effects of UFSM

Outcome	Range/summary of effects
Body Size	
Healthy Weight	+1.4% to +3%
BMI	-1% relative to the mean or 4.1% of a standard deviation
Obese	Negative but not statistically significant to -7%
Height	+0.6cm (males), +0.65cm (females)
Absence	
	No effect to -3%
Education	
Maths	No effect to 0.061 SD
English/Reading	Positive but not significant to 0.03 SD.
Early years	Improvements
Years of education	Increases
University attendance	Increase in the probability
Cognitive ability	No effect
Food expenditure	
	-4.2% to -5%
Later life Income	
	+3%

Key messages

While the findings above indicate that UFSM provision can be beneficial in many ways, the implementation of the policy is crucial. For Wales, maximising the potential benefits of UFSM provision will require careful consideration of schools' and local authorities' ability to deliver

such provision. It will also necessitate ensuring that the factors that have led to significant benefits in other countries are replicated.

This section discusses some of the key factors behind the success of UFSM provision in other countries, before reflecting on some important messages for Wales.

Replicating success factors for UFSM

Nutritional content of meals

The nutritional content of school lunches is crucial because outcomes associated with health, weight, and attainment are likely to be enhanced if school lunches meet good nutritional standards. In Sweden, for example, the school lunch programme included strict nutritional standards for meals, with specific requirements for protein, vitamins, calcium and iron content, as well as a maximum fat content. The health-related effects of free school lunches can explain about half to almost all of the effect of the free school lunches on income later in life (Lundborg et al., 2022). As food shortages were not common in Sweden in the 1950s and 1960s, the programme's aim was to improve nutrition rather than relieve hunger.

Holford and Rabe similarly conclude that ‘eating a nutritious and calorie-constrained school meal instead of a packed lunch provided from home is the main mechanism behind our results’ (2022: 17). Gordanier et al. (2020) also conclude that the consumption of meals is a key factor in the improvement in results seen as a result of the UFSM policy (CEP in the US).

These studies indicate that preparing meals to strict nutritional standards can help realise the potential benefits of UFSM provision. In contrast, Borbely et al. (2022) find that the Scottish UFSM programme did not impact overall absenteeism nor illness-related absenteeism. They suggest, in addition to methodological issues, that if the nutritional content of the meals is low, then the effects of universality may not be realised, as may have been the case with the Scottish UFSM policy.

A key consideration for Wales will, therefore, be aligning UFSM delivery with nutritional standards in meal provision. The planned review of the Healthy Eating in Schools (Wales) regulations presents an opportunity to update existing guidance. The Welsh Government could consider whether this could be strengthened in key areas, particularly ensuring that meals provided are sufficiently nutritious and are offered at appropriate times of the day for all students.

Training of staff

Due to the emphasis on nutrition in the Swedish scheme, there was a significant increase in the nutritional standards, and training of staff was provided accordingly. This training

consisted of week-long courses and spanned up to two months in overall duration (Lundborg et al., 2022). Annually, kitchen staff received visits from the national school board for further training.

Given the high rate of recruitment undertaken by local authorities to deliver the Welsh UFSM programme, consideration should be given to a training programme that assists catering staff in preparing and delivering healthy meals and ensures they are aware of any new nutritional requirements. Initially, these programmes should target those involved in meal planning and preparation.

Capital spending

In the English scheme, capital spending was allocated to schools and areas with the greatest need. This funding was essential for upgrading kitchens and dining facilities (Holford and Rabe, 2022). In Sweden, the lack of facilities was cited as a reason for the slower rollout of meals in some areas. The Welsh UFSM offer includes a capital grant allocation of £60 million, allocated directly to local authorities on a formula basis, which took into account the number of learners and schools within their area. Where this allocation is insufficient to undertake the required works to support the implementation of UFSM, additional capital funding could be requested through the submission of a business case for each additional project.

It will be important to ensure that funding is provided to meet schools' needs. This includes providing adequate space for pupils to eat lunches and expanding preparation spaces and kitchens. The small number of schools with limited or no hot food provision should be prioritised for additional investment.

Reflections for Wales

This review has found that UFSM generally represents good value for money and provides a range of benefits for students. UFSM has been shown to improve test outcomes, reduce absenteeism and decrease obesity. The oldest of these schemes, implemented in Sweden, has demonstrated that UFSM can have long-term effects, including leading to higher income for those exposed to the policy. While there are country-specific factors to consider, evidence from England's UIFSM programme suggests that UFSM can be beneficial in a broad UK context. It is, therefore, likely that the programme in Wales will realise some of the benefits summarised in this report.

Successful implementation of the programme will be crucial, alongside clear policy directives, particularly relating to the nutritional content of UFSM. This is because most evidence points to improvements in nutritional content as the key factor explaining the benefits of UFSM. In some cases, this might be because UFSM is more nutritious than packed lunches, although

improvements to pre-existing school meals could also be a factor. It may also reflect access to meals with better nutrition, particularly for students on the threshold of eligibility-based free school meals or those who may not have accessed free school meals in the past due to stigmatisation. There is less evidence of benefits where meals have not been prepared to higher nutritional standards, suggesting that there would be clear benefits for Wales in combining the rollout of UFSM with the review of school meal standards.

There are additional opportunities to realise policy benefits associated with UFSM delivery that are outside the scope of this review, such as promoting the procurement of locally- or ethically-sourced produce, but these could be considered as part of the overall policy evaluation.

Finally, it is important to ensure that the effects of Wales' UFSM programme are carefully monitored and evaluated to maximise the benefits and make necessary modifications. A rigorous evaluation will also support the development of a strong evidence base for future policy development in this area

References

Adamson, A., Spence, S., Reed, L., Conway, R., Palmer, A., Stewart, E., McBratney, J., Carter, L., Beattie, S. and Nelson, M., (2013). **School food standards in the UK: implementation and evaluation.** Public health nutrition, 16(6), pp.968-981.

Alaimo, K., Olson, C.M. and Frongillo Jr, E.A. (2001) **Food insufficiency and American school-aged children's cognitive, academic, and psychosocial development.** Pediatrics, 108(1), pp.44-53.

Anderson, M.L., Gallagher, J. and Ritchie, E.R. (2018) **School meal quality and academic performance.** Journal of Public Economics, 168, pp.81-93.

Belot, M. and James, J. (2011) **Healthy school meals and educational outcomes.** Journal of health economics, 30(3), pp.489-504.

Bisset, L. and Coussins, J. (1982). **Badge of poverty: a new look at the stigma attached to free school meals.** North Star Press (TU) Ltd., Child Poverty Action Group, London.

Borbely, D., Gehrsitz, M., McIntyre, S. and Rossi, G. (2022). **Does the provision of universal free school meals improve school attendance and behaviour?** University of Strathclyde, Glasgow, Discussion paper (2022) https://strathprints.strath.ac.uk/82461/

Carrell, S.E., Hoekstra, M. and Kuka, E. (2018). **The long-run effects of disruptive peers.** American Economic Review, 108(11), pp.3377-3415.

Case, A. and Paxson, C. (2008). **Stature and status: height, ability, and labor market outcomes.** Journal of Political Economy, 116(3), pp.499-532.

Davis, W. and Musaddiq, T. (2019). **Estimating the effects of universal free school meal enrollment on child health: evidence from the community eligibility provision in Georgia schools.** Available at SSRN 3155354.

Education and Skills Funding Agency. (2021). **Universal infant free school meals (UIFSM): conditions of grant 2020 to 2021 [online].** Available at: https://www.gov.uk/government/publications/universal-infant-free-school-meals-uifsm-2020-to-2021/universal-infant-free-school-meals-uifsm-conditions-of-grant-2020-to-2021 [Accessed: 01/03/24]**.**

Education and Skills Funding Agency. (2023). **Universal infant free school meals (UIFSM): conditions of grant 2022 to 2023 [online].** Available at: https://www.gov.uk/government/publications/universal-infant-free-school-meals-uifsm-2022-to-2023/universal-infant-free-school-meals-uifsm-conditions-of-grant-2022-to-2023 [Accessed: 01/03/24]**.**

Elo, I.T. and Preston, S.H. (1992). **Effects of early-life conditions on adult mortality: a review.** Population index, pp.186-212.

Evans, C.E.L., Melia, K.E., Rippin, H.L., Hancock, N. and Cade, J., 2020. **A repeated cross-sectional survey assessing changes in diet and nutrient quality of English primary school children's packed lunches between 2006 and 2016.** BMJ open, 10(1), p.e029688.

Figlio, D.N. and Winicki, J., 2005. **Food for thought: the effects of school accountability plans on school nutrition.** Journal of Public Economics, 89(2-3), pp.381-394.

Gordanier, J., Ozturk, O., Williams, B. and Zhan, C. (2020). **Free lunch for all! The effect of the community eligibility provision on academic outcomes.** Economics of Education Review, 77(8), p.101999.

Brown, V., Crawford, C., Dearden, L., Greaves, E., Kitchen, S., Payne, C., Purdon, S., and Tanner, E. (2012). **Evaluation of the Free School Meals pilot: impact report.** Department for Education Research Report RR227. Available at: https://ifs.org.uk/publications/evaluation-free-school-meals-pilot-impact-report [Accessed: 01/08/23]

Heckman, J.J., 2007. **The economics, technology, and neuroscience of human capability formation.** Proceedings of the national Academy of Sciences, 104(33), pp.13250-13255.

Hinrichs, P. (2010). **The effects of the National School Lunch Program on education and health.** Journal of Policy Analysis and Management, 29(3), pp.479-505.

Holford, A. (2015). **Take-up of free school meals: price effects and peer effects.** Economica, 82(328), pp.976-993.

Holford, A. and Rabe, B. (2020). **Impact of the universal infant free school meal policy.** Colchester: Institute for Social and Economic Research.

Holford, A. and Rabe, B. (2022). **Going universal. The impact of free school lunches on child body weight outcomes.** Journal of Public Economics Plus, 3, p.100016.

James, J. (2012). **Peer effects in free school meals: information or stigma?** Working Paper no. 11, EUI Max Weber Programme.

Lazear, E.P. (2001). **Educational production.** The Quarterly Journal of Economics, 116(3), pp.777-803.

Lundborg, P., Nystedt, P. and Rooth, D.O. (2014). **Height and earnings: the role of cognitive and noncognitive skills.** Journal of Human Resources, 49(1), pp.141-166.

Lundborg, P., Rooth, D.O. and Alex-Petersen, J. (2022). **Long-term effects of childhood nutrition: evidence from a school lunch reform.** The Review of Economic Studies, 89(2), pp.876-908.

Marcus, M. and Yewell, K.G. (2022). **The effect of free school meals on household food purchases: evidence from the Community Eligibility Provision.** Journal of Health Economics, 84, p.102646.

Miles, J. (2023). **Jeremy Miles to Rhys Owen.** [Letter]. 4 October 2023. Available from: https://senedd.wales/media/olrffvzo/wq89084.pdf [Accessed 26 March 2024].

Parnham, J.C., Laverty, A.A., Majeed, A. and Vamos, E.P. (2020). **Half of children entitled to free school meals did not have access to the scheme during COVID-19 lockdown in the UK.** Public Health, 187, pp.161-164.

Persico, N., Postlewaite, A. and Silverman, D. (2004). **The effect of adolescent experience on labor market outcomes: the case of height.** Journal of Political Economy, 112(5), pp.1019-1053.

Public Health England. (2017). **Health matters: obesity and the food environment [online].** Available at: https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2 [Accessed: 01/03/24]**.**

Royal Society for Public Health. (2023, July 7). **Blog: U-Turns Don’t Happen Overnight: The Campaign that led the Government to change its policy on summer holiday provision.** Available at: https://www.rsph.org.uk/about-us/news/blog-the-campaign-that-led-the-government-to-change-its-policy-on-summer-holiday-

provision.html#:~:text=But%20that%20is%20exactly%20what,meals%20over%20the%20summer%20holidays. Retrieved from [01/08/2023]

Ruffini, K. (2022). **Universal access to free school meals and student achievement: evidence from the Community Eligibility Provision.** Journal of Human Resources, 57(3), pp.776-820.

Schanzenbach, D.W. (2009). **Do school lunches contribute to childhood obesity?** Journal of Human Resources, 44(3), pp.684-709.

Schwartz, A.E. and Rothbart, M.W. (2020). **Let them eat lunch: the impact of universal free meals on student performance.** Journal of Policy Analysis and Management, 39(2), pp.376-410.

von Hinke Kessler Scholder, S. (2013). **School meal crowd out in the 1980s.** Journal of Health Economics, 32(3), pp.538-545A.

Welsh Government. (2021). **The Co-operation Agreement 2021**. [Online] Available at: https://www.gov.wales/sites/default/files/publications/2021-11/cooperation-agreement-2021.pdf [Accessed: 01/08/23]

World Food Programme. (2024). **School Feeding Map**. Retrieved from [https://cdn.wfp.org/2020/school-feeding-map/] [Accessed: 01/02/24]

Author Details

Dr Jonathan James is a senior lecturer in economics at the University of Bath.

For further information please contact:
Jack Price
Wales Centre for Public Policy
+44 (0) 29 2087 5345
info@wcpp.org.uk

Wales Centre for Public Policy
Canolfan Polisi Cyhoeddus Cymru