

## School for Public Health Research

1.	<b>Project reference:</b>	<b>Final report date:</b>	
	SPHR-FUS-PH1-FOS	7th June 2017	
2.	<b>Project title:</b>		
	<p>Transforming the 'foodscape': development and feasibility testing of interventions to promote healthier take-away, pub or restaurant food</p> <p>Project 'brief' to follow Fuse website project page <a href="http://fuse.ac.uk/nihrsp/hr/cross-centre/collaboration/">http://fuse.ac.uk/nihrsp/hr/cross-centre/collaboration/</a></p>		
3.	<b>Lead investigators on project:</b>		
	Prof Ashley Adamson, Fuse (Prof of Public Health Nutrition and NIHR Research Professor, Newcastle University)		
	<b>Other NIHR School collaborators (name, School for Primary Care/Social Care Research) on project:</b>		
	N/A		
	<b>Names and roles of others involved in project (e.g. include fixed term contract researchers and external collaborators / partners):</b>		
	<p>Prof Charles Abraham, (Exeter Medical School)            Dr Jean Adams, Fuse (previously Fuse Newcastle, now Cambridge)            Dr Vera Araujo-Soares, Fuse (Newcastle)            Dr Amelia Lake, Fuse (Durham)            Dr Helen Moore, Fuse (Durham)            Prof Carolyn Summerbell, Fuse (Durham)            Prof Martin White, Fuse (previously Fuse Newcastle, now Cambridge)</p>		
4.	<b>Project start date:</b>	<b>Project end date:</b>	<b>Duration:</b>
	1 <sup>st</sup> October 2013	31 <sup>st</sup> March 2017	42
5.	<b>Project objectives originally outlined in proposal:</b>		
<p>Tackling obesity is one of today's foremost public health challenges in the UK, and many other high and middle income countries. Changing eating behaviours is central to this endeavour. The proposed research will contribute to the NIHR SPHR aim to increase the evidence base for effective public health practice, with a focus on population level interventions to promote a healthier diet. A range of interventions attempting to change the out of home 'foodscape' (ready-to-eat food provision in out of home food outlets (OHFOs), including restaurants or take-away facilities) have been developed, but none have been rigorously evaluated. Qualitative research has also been commissioned by the Department of Health (DH) to develop an understanding of issues relevant to this proposal across a range of OHFO types. Although this work is not in the public domain, we were granted access to reports on this research by DH. Working closely with relevant commercial and public sector partners, the research aimed to identify potentially effective interventions or intervention components, based on current theory and evidence, and test them for feasibility and acceptability, leading to pilot testing of effectiveness and, ultimately, the development of protocols for definitive outcome evaluations. The work was undertaken in</p>			



six work packages (WPs):

- WP1: Systematic review, collating published evidence of effectiveness and cost-effectiveness of interventions targeting OHFOs, as well as observational studies of relevant interventions, including process evaluations
- WP2: Systematic assessment of candidate interventions, identified from WP1 and searches of publicly accessible information, to determine their methods, components and content, basis in theory and evidence, and costs and benefits (where available)
- WP3: Analysis of the latest data from the National Diet and Nutrition Survey (NDNS) to determine key target groups using different types of OHFOs.
- WP4: Qualitative research to further develop understanding of food preparation and production processes, including business models used in key OHFO types, as well as in-principle feasibility and acceptability of a range of intervention approaches to relevant stakeholders (including proprietors, managers, food service and other staff, and the public). Small scale quantitative assessments of knowledge, skills and attitudes in relation to healthy eating.
- WP5: Evidence and theory based development of a limited number of interventions with high potential for impact on population diet, tailored to specific OHFO types and population groups.
- WP6: Pragmatic pilot evaluation of chosen interventions to determine feasibility, acceptability, suitable outcome and process measures, study designs and likely effect sizes. Development of protocols for definitive outcome evaluations.

**6. Briefly describe and explain the reason(s) for any changes to the project originally outlined in proposal:**

There were no major changes to the project from the original outline. Project extension was granted due to some delay in implementation of interventions that was largely outside of the research team's control; this facilitated completion of data collection and allowed staff resource for completion of publications. Further time extension has allowed production of some short films describing the interventions developed through Foodscape.

**7. Brief summary of methods, findings against objectives, and conclusions (2-4 pages max):**

**WP1 was a systematic review of the effectiveness of interventions targeting specific out-of-home food outlets.**

Methods: Nine databases were searched (1993 to 2013) for relevant studies of any design that included a measure of change (pre to post) for a relevant outcome (e.g. consumer or retail level data for dietary fat intake or sales figures of certain items). The protocol was registered with PROSPERO (registration no. CRD42013006931) and published (Hillier-Brown et al. Systematic Reviews 2014, 3:17).

Results: 23 studies were included; 13 repeat cross-sectional, 5 cohort, 2 controlled before and after, and 3 controlled clinical trials. Six types of interventions/policies were identified: nutrient labelling (12), trans-fat legislation (1), multicomponent multilevel (6), personalised receipts (1), price promotion (1) and telemarketing (2). Nutrient labelling only reduces calories purchased in specific fast food chains and for those who use labels. No data on cost implications were identified. Nutrient labelling does not appear to increase inequalities.

Conclusion: Calorie labelling legislation does not appear to be associated with a significant decrease in the amount of calories purchased across all fast-food chain restaurants. Further robust research is required, particularly in young people and in European populations. The review was published Hillier-Brown et al Systematic Reviews 2014 (see section 10).

**WP2 involved a systematic assessment of candidate interventions**, identified from WP1 and searches of publicly accessible information, to determine their methods, components and content, basis in theory and evidence, and costs and benefits (where available).

Methods: We completed a systematic mapping and evidence synthesis of interventions promoting healthier ready-to-eat meals (to eat in, to take away, or to be delivered) sold by specific food outlets in England. The aim was to systematically identify interventions to promote healthier ready-to-eat meals (eat in, take away, or delivered) sold by food outlets in England that

were accessible to the general public and, as their main business, sold ready-to-eat meals. Results: Of 102 interventions identified, award-type were the most popular. Businesses were generally positive about the interventions, particularly when these were cost neutral and resulted in imperceptible changes to price, palatability and portion size for the customer. However, although this health by stealth approach was favoured, few of the interventions found involved working upstream with suppliers or the generation of customer demand.

Conclusion: We concluded that little robust evidence was available on the effectiveness of these approaches and further research was needed to generate this evidence. Opportunities for working upstream with suppliers, and in co-participation with consumers, when developing interventions should be explored. This work led to one publication Hillier-Brown et al BMC Public Health 2017 and contributed to a further publication Adams et al Systematic Reviews 2016 (see section 10).

**WP3 involved an Analysis of the latest data from the National Diet and Nutrition Survey (NDNS) to determine key target groups using different types of OHFOs.** We know that food prepared out-of-home tends to be less healthful than food prepared at home, with a positive association between frequency of consumption and both fat intake and body fatness, however there was little current data on who eats out-of-home food.

Methods: We explored frequency and socio-demographic correlates of eating meals out and take-away meals at home, using data from waves 1–4 of the UK National Diet and Nutrition Survey (2008–12) a large, UK, population representative study. Socio-demographic variables of interest were gender, age group, and socio-economic position. Self-reported frequency of consuming meals out and take-away meals at home was categorised as: less than once per week and once per week or more. Analyses were performed separately for adults (aged 18 years or older) and children.

Results: Data from 2001 adults and 1963 children were included. More than one quarter (27.1%) of adults and one fifth (19.0%) of children ate meals out once per week or more. One fifth of adults (21.1%) and children (21.0%) ate take-away meals at home once per week or more. There were no gender differences in consumption of meals out, but more boys than girls ate take-away meals at home at least weekly. The proportion of participants eating both meals out and take-away meals at home at least weekly peaked in young adults aged 19–29 years. Adults living in more affluent households were more likely to eat meals out at least once per week, but children living in less affluent households were more likely to eat take-away meals at home at least once per week. There was no relationship between socio-economic position and consumption of take-away meals at home in adults.

Conclusions: One-fifth to one-quarter of individuals eat meals prepared out-of-home weekly. Interventions seeking to improve dietary intake by reducing consumption of out-of-home food may be more effective if tailored to and targeted at adults aged less than 30 years. It may also be important to develop interventions to help children and adolescents avoid becoming frequent consumers of out-of-home food. This work led to one publication Adams et al International Journal of Behavioural Nutritional and Physical Activity 2015 with a further under review with Goffe et al. submitted to International Journal of Behavioral Nutrition and Physical Activity (see section 10).

**In WP4** we aimed to learn from the experiences of people delivering interventions in independent food outlets in England to identify the operational challenges and their suggestions for best practice. Additionally, we sought the perceptions of OHFO business owners/ operators and their customers.

Methods: Intervention deliverers: We used semi-structured interviews to explore the views and experiences of people who were either employees of, or contracted by, a local authority to deliver interventions to increase the provision of healthier food choices in independent food outlets. Purposive sampling was used to recruit a sample which included men and women, from a range of professional roles, across different areas of England. Interviews were informed by a topic guide, and proceeded until no new themes emerged. Interviews were recorded, transcribed verbatim and analysed using the Framework method. Businesses and customers: In collaboration with two local-authorities in the North East of England, we sought to recruit a range of OHFO businesses. This was challenging. Forty-two businesses were contacted by letter in the first wave of recruitment with an opt-out clause. Two fish and chip shops were recruited using this method, but it was largely unsuccessful. The second wave of recruitment involved a door-to-door approach, visiting approximately ten multi-cuisine outlets, in a multi-ethnic area of a

North East English city during hours of service. We spoke with staff working on the counter and delivered a study introduction letter, but failed to recruit any OHFOs. A third wave of recruitment managed to recruit three OHFOs and two sandwich shops were successfully recruited in the centre of a North East city using a door-to-door approach. Eight interviews were conducted with business owners or managers and kitchen observations conducted. From these outlets, customers were recruited and brief interviews were conducted.

**Results: Intervention deliverers:** We conducted 11 interviews. Participants focussed on take-aways and their unhealthy food offerings, and highlighted the advantages and disadvantages of intervention delivery methods, their evaluation and impact. The main barriers to implementation of interventions in take-aways were identified as limited funding and the difficulties of engaging the food outlet owner/manager. Engagement was thought to be facilitated by delivering intensive, interactive and tailored interventions, clear and specific information, and incentives, whilst accounting for practical, primarily financial, constraints of food businesses. Alternative intervention approaches, targeting suppliers or customers, were suggested.

**Businesses and customers:** In total eight businesses were recruited and six kitchen observations were completed. OHFOs face a challenge to accommodate all kinds of customers. They feel particularly under pressure to provide value-for-money in addition to a quality product. Some businesses stated that they were not interested in overtly advertising 'healthy options', as they felt it was associated with a 'fad diet' and they felt that their menu as a whole was healthy and did not want to give the impression that those options not identified as 'healthy' were conversely 'unhealthy' (particularly in the sandwich shops).

Twelve customers were recruited from the 8 OHFOs. To the customers, takeaway food was more than sustenance and they made the decision to purchase the food with the acknowledgement that it was not necessarily the healthiest option, as they liked the taste. Some customers were clearly interested in healthy take-away food, however this was not universal.

**Conclusions:** Intervention deliverers emphasised take-aways as particularly challenging, but worthwhile intervention targets. Participants perceived that interventions should be tailored to specific take-away types, interactive and account for operational challenges, including the primacy of the profit motive. Upstream interventions, engaging suppliers, as well as those that drive consumer demand, may be worth exploring. Rigorous, evidence-informed development and evaluation of such interventions is needed. A paper from this work is under review Goffe et al BMC Public Health. Recruitment of businesses was challenging; they work under tight margins in a highly competitive market. Customers have a range of perceptions around take-away food. There is a clear preference, both from the intervention deliverers and businesses for covert interventions. The salt shaker example (see WP5) was particularly effective as there was no financial implication to the business, it was not identified by the customer and resulted in significant decreases in salt consumption.

**In WP5** we sought to develop evidence and theory base interventions with high potential for impact on population diet, tailored to specific OHFO types and population groups.

Four interventions were identified with high potential for impact on population diet, tailored to specific OHFO types and population groups. Of these three were further developed and taken forward to WP6 (portion size, masterclass and flagship); a further potential intervention approach identified in WP2 generation of customer demand was beyond the capacity of this project and is being developed as part of PhD study funded by EPSRC (DTC in Digital Civics <https://digitalcivics.io/>). One intervention 'salt shaker' was tested further in WP5 as detailed below.

Standard portions of take-away fish & chips contain around half the recommended maximum daily intake of salt for adults. One method to reduce this, encouraged by many English local authorities, is using salt shakers with five, instead of the standard 17, holes. The efficacy and effectiveness of these was not known. We sought to determine if: the amount of salt delivered by 5-holed salt shakers (5HSS) and 17-holed salt shakers (17HSS) differs under controlled conditions; if any differences are robust to variations in: amount of baseline salt in the shaker, time spent shaking, and the person serving; and if any differences translate into practice.

**Methods:** Four experiments were conducted comparing the amount of salt delivered by shakers. Independent variables were: type of shaker (5HSS, 17HSS), amount of baseline salt in the shaker (full, half full, nearly empty), time spent shaking (3s, 5s, 10s), and individual serving. Servers were a convenience sample (n=10). In each trial, participants performed ten repeats of

each condition, alternating between 5HSS and 17HSS. Data were analysed using repeated-measures ANOVA in Stata v14.0. One standard portion of fish & chips, with server-added salt, was purchased from all Fish & Chip Shops in Gateshead and Stockton-on-Tees (n=63) and shaker used noted. Meals were laboratory analysed to determine salt content. Data were analysed using a t-test.

Results: Across all trials, the 17HSS delivered a mean (SD) of 7.86g (4.54) per trial, whilst the 5HSS delivered 2.65g (1.22) – a 66.3% reduction. There was a significant difference in salt delivered between shakers when other independent variables were kept constant ( $F(1,9)=30.79$ ,  $p<0.001$ ). This difference was robust to variations in other independent variables ( $p<0.001$ ). Thirty (47.6%) shops used the 5HSS and 33 the 17HSS. Mean (SD) salt content of meals from shops using the 17HSS was 2.94g (1.30), and 2.63g (0.83) from shops using the 5HSS – a 10.8% reduction. There was no difference in salt content of meals from shops using different shakers ( $t=1.12$ ,  $df=61$ ,  $p=0.266$ ). However, using reduced-holed salt shakers in Fish & Chip Shops was significantly associated with lower relative sodium content of fish and chip meals (mean = 142.5mg/100g [equivalent to 0.4g salt/100g]; SD = 39.0mg/100g) versus standard shakers (mean = 182.0g/100g; [equivalent to 0.5g salt/100g]; SD = 68.3mg/100g;  $p = 0.008$ ). This was driven by differences in the sodium content of chips and was extinguished by adjustment for purchase price and area. Price was inversely associated with relative sodium content ( $p < 0.05$ ).

Conclusions: The differences in salt content we identified appeared to be particularly driven by differences in the sodium content of chips. This makes the findings of relevance to a wide range of independent takeaways in the UK that serve chips. Differences in relative sodium content were extinguished by adjustment for meal price and area, and there was an inverse association between meal price and relative sodium content. This may reflect and contribute to socio-economic inequalities in diet. Whilst reduced-holed salt shakers may help reduce 'discretionary' salt added after food preparation by servers and consumers, takeaway food appears to be high in salt even before the addition of this discretionary salt. Additional efforts, focusing on salt added during cooking, may be required to substantially reduce the salt content of food served by Fish & Chip Shops and takeaway food more generally. This work led to two publications Goffe et al PLoS ONE 2016 and Goffe et al International Journal of Behavioral Nutrition and Physical Activity published 2016 (see section 10).

**In WP6** we aimed to conduct pragmatic pilot evaluations of chosen interventions to determine feasibility, acceptability, suitable outcome and process measures, study designs and likely effect sizes: three interventions were developed; take-away masterclass, portion size and flagship business.

#### **Take-away Masterclass (Kirklees/Redcar & Cleveland public health team)**

We aimed to evaluate the feasibility and acceptability of the Healthy Take-away Masterclass and the behaviours promoted during the training. Two half-day training sessions (the Healthy Take-away Masterclass) were delivered by Redcar and Cleveland public health team to business owners and staff of take-away food outlets located in a local authority district in the north east of England, known for high deprivation and poor health. The Healthy Take-away Masterclass consisted of nutrition and cooking skills education; taste tasting and nutrition estimation activities; and action planning and goal (pledge) setting. Self-reported data were requested six weeks post intervention from all businesses. Assessment visits were conducted by a researcher in a sub-sample of businesses before the training and at six-week follow-up.

Results: Staff from 18 (10% of invited) take-away businesses attended the training, and all made at least one 'pledge' to improve the healthiness of their cooking practices or menu options. Staff from 15 of the businesses were contactable at follow-up. All reported achieving at least one of their pledges, with many making additional changes. Changes requiring minimal effort and cost to the business were the most popular (e.g. reducing sugar or salt, or using semi-skimmed instead of whole milk). Using products that were difficult to source without increased costs (e.g. reduced salt and sugar tomato ketchup) or perceived to be unpopular with customers (e.g. wholemeal bread) were unlikely to be tried or sustained. Assessment visits were conducted in seven businesses in which reported changes included reduced salt (n=5) and sugar (n=2) in cooking, improved oil management (n=4) and increased vegetable portions (n=2). Some changes were observed, including stocking lower fat ingredients and reduced sugar drinks, use of oil management equipment and menu changes.

Conclusion: The Healthy Take-away Masterclass appears to be a feasible and acceptable

intervention for improving cooking practices and menu options for food outlets that agreed to take part. However, uptake was low and participants are unlikely to be representative of the whole target population. Food outlets self-reported making a number of 'healthy' changes, but there was minimal objective evidence of change. This will be taken forward in further training planned by the public health team with opportunities for evaluation building on the findings of this feasibility study. This work was presented (poster presentation) at the European Congress on Obesity, Porto, May 2017, and a paper is in preparation.

### **Portion control in fish and chip shops**

Independent take-away outlets are much more common than chain outlets and it is estimated that there are around 10,500 fish & chip shops in the UK. The total energy content of take-away meals is high when compared to guidance regarding daily intake for adult males and females; a standard portion of fish and chips can contain around 2000 kcals. Our aim was to work with Fish and Chip shops to offer smaller portion meals available to all customers throughout all opening hours with a secondary aim of improving portion control. We worked with Henry Colbeck Ltd - a major wholesaler to fish and chip shops in the North of England and across Scotland. We developed a feasibility study around the aim of getting shops to improve portion control and provide the opportunity for all customers to buy small portion meals at all times; this involved a 'team spirit' event for business owners led by Colbeck with presentation of the economic case for providing small portions 'lite bite' and provision of marketing material designed by Colbeck. Data collection included customer interviews and secret shopper at baseline, 2 and 6 weeks' post-intervention.

Results: From 8 shops mean weight of regular portions at baseline, 2 and 6 weeks were 662g, 700g and 640g and for 'lite bites' were baseline 449g, 389g and 421g (n = 8). We estimate that regular portions contained approx. 1600 Kcal while 'lite bite' portions contained approx. 770 Kcal. As of March 2017 5000 cases (50000 boxes) for 'lite bite' portions have been distributed to 250 shops (2.5 % of all shops).

Conclusion: We found that this supplier-lead intervention is feasible and traders and customers are accepting of the intervention. A paper is in preparation.

### **Flagship business**

There is high market saturation of traditional food offerings (e.g. fish & chips, burgers, donner kebab, pizza, Indian and Chinese cuisines) in the independent take-away sector in urban conurbations in the North East with few 'healthier' alternatives. While the opportunity exists to explore the potential to make existing food offers in such establishments healthier, an alternative approach with the potential to promote healthier take-away food consumption, and perhaps healthier diets, would be the development of take-away outlets selling distinctively healthier food, in competition with the current offer. Such take-aways have started to appear in other parts of the country with apparent business success. A well-known example is the 'Leon' mini-chain in London (<http://leonrestaurants.co.uk/>) and increasingly elsewhere, selling predominantly Mediterranean style food, high in vegetables, whole grains and lean meat, and low in fat. Leon sells 'naturally healthy food', with an emphasis on fresh, raw ingredients. An independent take-away with a similar, Mediterranean-style menu opened in March 2015 in Middlesbrough (called NOSH Healthy Kitchen <http://www.noshhealthykitchen.com/>). In London (Newham) a mobile outlet was developed as an experiment to promote healthier eating to school children (called 'Box Chicken' <http://www.shiftdesign.org.uk/products/healthy-fast-food/>). It is being further developed and evaluated with the local public health team. Although there is as yet no definition of such healthier take away offerings, and as yet little evidence that they are in fact healthier, we can identify their characteristics as: alternative to existing offers (which often involve deep fried foods), focussed on fresh, raw ingredients, especially vegetables and whole grains, often using Mediterranean style recipes. The impact of a 'novel' food offering on the existing more traditional take-aways is in not known.

The social enterprise known as Food Nation in Newcastle (<http://www.foodnation.org/>) also proposed opening a similar venture in Newcastle (Harissa). The opening of Harissa and NOSH Healthy Kitchen in the North East presents opportunities for initial evaluation of this type of intervention. The intention was that while Harissa would begin initially as a sit-in restaurant, a take-away offer would be added soon after. The business owner of Harissa was willing to work with the team and to share business plans, menus and recipes etc.

In the first instance it is important to recognise that such an intervention has rarely been tried before, and to our knowledge there are no definitive evaluations. Thus a definitive outcome

evaluation is probably not warranted until some level of proof of viability of the interventions and their evaluability is available. To address these issues, a key first step is therefore to undertake desk-based research to assess evaluability, as well as limited field research to support this. This included a survey of the surrounding take-away outlets; food offered, menus, opening times and price. Further data was to include sales and demographics (post-code, age and gender) of take-away customers as well interviews with business owners and customers. While originally planning to open in 2015 this was delayed until Feb 2016; initial challenges in establishing the business brought challenges to communication between owner and research team. Interviews were conducted with owners of NOSH and Harissa in summer 2016.

At original project end (June 2016, extended to Dec 2016) the Harissa take-away had not been established. As of May 2017 limited take-away is available: collection only, two nights' mid-week until 8pm.

**Conclusions:** It has not been possible to complete this as proposed within the timescale of the Foodscape study. Baseline data have been collected and strong links with the business owner are maintained it is anticipated that this work can be completed in the future. This highlights some of the challenges of conducting research in real life settings and evaluation of natural experiments.

**8. Plain English Summary (400 words max)**

**Please provide a summary of the project, including background, findings and conclusions:**

Reducing obesity requires a change in what we eat and how we eat. The 'Foodscape' study aimed to identify effective interventions to change the meals offered by takeaways, test them in the real world and evaluate their potential for improving diets and /or reducing obesity. A review of the limited information available found that calorie labelling and rewarding food-outlets with healthy eating accreditation were two of the most common interventions tested. Businesses were positive about interventions when they came at no extra cost and did not change perceived value taste and portion size for the customer. People who delivered interventions to increase healthier food choices in independent food outlets told us that: takeaways were particularly challenging but worthwhile targets; interventions should be tailored to takeaway types; and appreciate the need to maintain profit. Engaging suppliers, as well as those that drive consumer demand was also worth exploring. Using the UK National Diet and Nutrition Survey we found that about a fifth of people ate takeaway meals at home once a week or more and this was most common in those aged 19–29 years, therefore interventions may be more effective if tailored to and targeted at those aged under 30. Building on this work we identified, developed and sought to test small scale interventions: 1) We found that 5 hole compared to 17 hole shakers delivered 66% less salt in the laboratory and there was a small difference in the salt content of meals from shops using the different shakers when similar portion sizes were compared. Additional work will be required to substantially reduce the salt content of takeaway food. 2) We worked with a Local Authority who delivered a "Healthy Takeaway Masterclass" with staff from 18 takeaways. Each takeaway made at least one 'pledge' and 15 businesses reported achieving at least one pledge. Changes requiring minimal effort and cost were most popular (e.g. reducing sugar or salt, or using semi-skimmed instead of whole milk). We concluded that this intervention was feasible but uptake was low (about 10%). Further training is planned by the Local Authority with opportunities for building on these findings. 3) We found that a supplier-led intervention to promote smaller portion sizes (approximately half the weight of standard) was acceptable to traders and customers and by March 2017 5,000 cases (50,000 boxes) for 'lite bite' portions had been distributed to 250 shops (2.5 % of all UK shops).

**9. Keywords**

**Please provide up to 8 keywords that relate to the research undertaken in this study:**

Take-away, portion size, salt intake, Fish and Chips, masterclass, obesity, obesogenic food environment, Intervention development.

**10 . Dissemination – please detail planned or published articles in peer-reviewed journals (including web links):**

Hillier-Brown, F.C., Moore H. J., Lake, A.A., Adamson, A J., White, M., Adams, J., Araujo-

Soares, V., Abraham, C., Summerbell, C.D. [The effectiveness of interventions targeting specific out-of-home food outlets: protocol for a systematic review.](#) *Systematic Reviews* 2014, 3:17 <http://www.systematicreviewsjournal.com/content/3/1/17>

Adams, J., Hillier-Brown, F.C., Moore, H.J., Lake, A.A., Araujo-Soares, V., White, M. & Summerbell, C.D. [Searching and synthesising 'grey literature' and 'grey information' in public health: reflections on three case studies](#) *Systematic Reviews* 2016 **5**:164 DOI:10.1186/s13643-016-0337-y

Hillier-Brown, F.C., Summerbell, C.D., Moore, H.J., Routen, A.C., Lake, A.A., Adams, J., White, M., Araujo-Soares, V., Abraham, C., Adamson, A.J. & Brown, T. [The impact of interventions to promote healthier ready-to-eat meals \(to eat in, to take away, or to be delivered\) sold by specific food outlets open to the general public: a systematic review.](#) *Obesity Reviews* 2017 **18**:2 DOI:10.1111/obr.12479

Hillier-Brown, F.C., Summerbell, C.D., Moore, H.J., Wrieden, W.L., Adams, J., Abraham, C., Adamson, A.J., Araujo-Soares, V., White, M. & Lake, A.A. [A description of interventions promoting healthier ready-to-eat meals \(to eat in, to take away, or to be delivered\) sold by specific food outlets in England: a systematic mapping and evidence synthesis.](#) *BMC Public Health* published 2017 **17**:93 DOI: 10.1186/s12889-016-3980-2

Adams, J., Goffe, L., Brown, T., Lake, A.A., Summerbell, C.D., White, M., Wrieden, W.L. & Adamson, A.A. [Frequency and socio-demographic correlates of eating meals out and take-away meals at home: cross-sectional analysis of the UK National Diet and Nutrition Survey.](#) *International Journal of Behavioral Nutrition and Physical Activity* 2015 **12**:51 DOI: 10.1186/s12966-015-0210-8

Goffe, L., Wrieden, W.L., Penn, L., Hillier-Brown, F.C., Lake, A.A., Araujo-Soares, V., Summerbell, C.D., White, M., Adamson, A.J. & Adams, J. Reducing the salt added to take-away food: within-subjects' comparison of salt delivered by five and 17 holed salt shakers in controlled conditions *PLoS ONE* published 26 Sep 2016 <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0163093>

Goffe, L., Hillier-Brown, F.C., Doherty, A., Wrieden, W.L., Lake, A.A., Araujo-Soares, V., Summerbell, C.D., White, M., Adamson, A.J. & Adams, J. Comparison of sodium content of meals served by independent take-aways using standard versus reduced holed salt shakers: cross-sectional study. *International Journal of Behavioral Nutrition and Physical Activity* 2016 **13**:102 DOI: 10.1186/s12966-016-0429-z <https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-016-0429-z>

### **Under review**

Goffe, L., Rushton, S.P., White, M., Adamson, A.J., & Adams, J. Relationship between total dietary energy intake and frequency of consumption of out-of-home meals in the UK National Diet and Nutrition Survey. Submitted to *International Journal of Behavioral Nutrition and Physical Activity*.

Goffe, L., Penn, L., Abraham, C., Adams, J., Adamson, A.J., Araujo-Soares, V., Summerbell, C.D., White, M. & Lake, A.A. Interventions to promote healthier food in take-aways in England: qualitative study of intervention deliverers' views. Submitted to *BMC Public Health* Jan 2017

### **Oral presentations**

Amelia Lake "Interventions in out-of-home food outlets in England" Transforming the 'foodscape': development and feasibility testing of interventions to promote healthier take-away, pub or restaurant food. *Invited presentation at Local Government Association Conference in London, June 2014.*

Hillier-Brown, F.C., Moore, H.J., Summerbell, C.D., Wrieden, W.L., Abraham, C., Adams, J., Adamson, A.J., Araujo-Soares, V., White, M. & Lake, A.A. (2015) Transforming the 'foodscape': a systematic assessment of out of home food outlet (OHFO) interventions in England. *Oral presentation for the 14<sup>th</sup> Meeting of the International Society for Behavioral Nutrition and Physical Activity 3<sup>rd</sup> - 6<sup>th</sup> June 2015.*

Louis Goffe. "Take-aways are not the enemy": A qualitative study of intervention deliverers'

experience with out-of-home food outlets. *Human Nutrition Research Centre seminar series, Newcastle University.*

Louis Goffe. "Take-away engagement: Ways to bait the vendor". *North East Obesity Forum, Autumn meeting 2015.*

Louis Goffe "Assessing the feasibility of delivering and evaluating an intervention to improve portion control and increase small portion availability in traditional British fish and chip shops: a natural experiment." *HNRC Research Day 26 October 2016, Research Beehive, Newcastle University.*

North East Obesity Forum autumn meeting October 2015 '[Is fast-food the fast track to obesity?](#)'  
[Goffe, L. "Take-away engagement: Ways to bait the vendor"](#)

[Frances Hillier-Brown "Transforming the 'foodscape': development and feasibility testing of interventions to promote healthier take-away, pub or restaurant food" NIHR SPHR Annual Scientific Meeting 23 March 2017](#)

### **Poster presentations**

Hillier-Brown, F.C., Brown, T., Routen, A.C., Moore, H.J., Lake, A.A., Araujo-Soares, V., Adamson, A.J., White, M., Adams, J., Abraham, C., & Summerbell, C.D. (2014). A systematic review of the effectiveness of interventions targeting specific out-of-home food outlets. *Poster presentation for the NIHR SPHR Annual Scientific Meeting 21<sup>st</sup> October 2014.*

Goffe, L.A., Penn, L., Adamson, A.A., & Lake, A.A. (2014). "Take-aways are not the enemy": intervention deliverers' experience with take-aways. *Poster presentation for the NIHR SPHR Annual Scientific Meeting 21<sup>st</sup> October 2014.*

Hillier-Brown, Brown, Moore, Routen, Lake, Adamson, White, Summerbell. A systematic review of the effectiveness of intervention targeting specific out-of-home outlets (Foodscape study). Wolfson Research Institute for Health and Wellbeing (WRIHW) Research Colloquium April 15th 2015 Queens Campus, Durham University.

Frances Hillier-Brown, Helen J Moore, Carolyn D Summerbell, Jean Adams, Ashley Adamson, Martin White, Charles Abraham, Amelia A Lake. Transforming the 'Foodscape': A systematic assessment of out-of-home food outlet (OHFO) interventions in England. WRIHW Research Colloquium April 15th 2015 Queens Campus, Durham University.

Brown, T., Hillier-Brown, F.C., Moore, H.J., Routen, A.C., Lake, A.A., Adamson, A.J., White, M. & Summerbell, C.D. (2015) A systematic review of the effectiveness of interventions targeting specific out-of-home food outlets (Foodscape study). *Poster presentation for the 22<sup>nd</sup> European Congress on Obesity 6<sup>th</sup> – 9<sup>th</sup> May 2015.*

Brown, T., Hillier-Brown, F.C., Moore, H.J., Routen, A.C., Lake, A.A., Adamson, A.J., White, M. & Summerbell, C.D. (2015) A systematic review of the effectiveness of interventions targeting specific out-of-home food outlets (Foodscape study). *Poster presentation for the 14<sup>th</sup> Meeting of the International Society for Behavioral Nutrition and Physical Activity 3<sup>rd</sup> - 6<sup>th</sup> June 2015.*

Adams, J., Goffe, L., Brown, T., Lake, A.A., Summerbell, C.D., White, M., Wrieden, W.L. & Adamson, A.J. (2015) Frequency and socio-demographic correlates of eating meals out and take-away meals at home: Cross-sectional analysis of the UK National Diet and Nutrition Survey, waves 1-4. *Poster presentation for the 14<sup>th</sup> Meeting of the International Society for Behavioral Nutrition and Physical Activity 3<sup>rd</sup> - 6<sup>th</sup> June 2015.*

Goffe, L., Penn, L., Adams, J., Adamson, A.J., Araujo-Soares, V., White, M., Wrieden, W. & Lake, A.A. (2015) "Take-aways are not the enemy": A qualitative study of intervention deliverers' experience with out-of-home food outlets (transforming the Foodscape study). *Poster presentation for the 14<sup>th</sup> Meeting of the International Society for Behavioral Nutrition and Physical Activity 3<sup>rd</sup> - 6<sup>th</sup> June 2015.*

Hillier-Brown, F.C., Moore, H.J., Summerbell, C.D., Wrieden, W.L., Abraham, C., Adams, J., Adamson, A.J., Araujo-Soares, V., White, M. & Lake, A.A. (2015) Transforming the 'foodscape': a systematic assessment of out of home food outlet (OHFO) interventions in England. *Poster presentation for the Faculty of Public Health Annual Public Health Conference 23<sup>rd</sup> – 24<sup>th</sup> June 2015.*

Adams, J., Goffe, L., Brown, T., Lake, A.A., Summerbell, C.D., White, M., Wrieden, W.L. & Adamson, A.J. (2016) Frequency and socio-demographic correlates of eating meals out and take-away meals at home: Cross-sectional analysis of the UK National Diet and Nutrition Survey *Poster presentation for the NIHR SPHR Annual Scientific Meeting 10 March 2016*

Hillier-Brown, F.C., Moore, H.J., Summerbell, C.D., Wrieden, W.L., Abraham, C., Adams, J., Adamson, A.J., Araujo-Soares, V., White, M. & Lake, A.A. (2016) Transforming the 'foodscape': a systematic assessment of out of home food outlet (OHFO) interventions in England. *Poster presentation for the NIHR SPHR Annual Scientific Meeting 10 March 2016*

Adams, J. et al. The efficacy and effectiveness of 5-holed salt shakers for reducing salt dispensed by fish and chip shops. *Poster presentation for the Society for Social Medicine 60th Annual Scientific Meeting, University of York, UK, 14 – 16 September 2016*

Hillier-Brown, F., Adamson, A., Goffe, L., Hildred, N., Adams, J., Penn, L., Wrieden, W., Summerbell, C., White, M., Lake, A., Moore, H., Abraham, C. and Araújo-Soares, V. Feasibility and acceptability of a Healthy Take-away Masterclass aimed at improving cooking practices and menu options in take-away food outlets, T2P67, 24<sup>th</sup> European Congress on Obesity, Porto, Portugal, May 17-20 2017 Published as *Obes Facts* **10** (suppl 1); 123

### **Workshops**

ISBPNA, Victoria, Canada, 31 May – 3 June 2017 Led by Dr Jean Adams

<https://www.isbnpa.org/index.php?r=annualMeeting/index&year=2017>

- Symposium: *Documenting and improving the nutritional quality of food served by, and purchased from, fast-food and take-away outlets*
- Abstract: *The efficacy & effectiveness of 5-holed salt shakers for reducing salt dispensed by fish and chip shops.*

Fuse Quarterly Research Meeting 30 April 2015, *More than enough on our plates: tackling the take-away food diet at source*

<http://www.fuse.ac.uk/events/fusequarterlyresearchmeetings/morethanenoughonourplatestacklingthetake-awayfooddietatsource.html>

***We have ways of making you change.*** Making population health interventions work, what can theoretical frameworks and practical commitments tell us? Joint Fuse (Knowledge Exchange Seminar) and Institute for Health & Society seminar 13<sup>th</sup> January 2015. Included contribution from Professor Charles Abraham, University of Exeter and Sue Bagwell, from the London Metropolitan University.

### Blogs

A fuseblog broadly about the research will be published. The timing will align with the launch of our films (see below). This will also be widely disseminated on twitter, facebook and Instagram.

<http://fuseopenscienceblog.blogspot.co.uk/>

### Foodscape film in production

**Process** Amelia Lake, Fuse Assistant Professor in Knowledge Exchange in Public Health, Durham University, and Mark Welford, Fuse Communications Officer, Teesside University led in the development of a film about the Foodscape research project. Several options were costed and the Digital Media Services team at Newcastle University was chosen to produce the film. The leads worked closely with the team in the planning and editing process. Filming was done in the studio at Newcastle University and on two locations in North East England: Tynemouth Longsands, North Shields and Guisborough, Redcar and Cleveland.

**Content/format** Three separate films cover the different elements of the project: reducing portion size in take-aways, the Healthy Take-away Masterclass, and reducing the salt added to take-away food. These have been combined to create an overall film of around 8 minutes. Short 'talking heads' interviews were filmed with some of those involved in the research, including the academics, owners of two local food shops, a representative from Henry Colbeck – suppliers to fish and chip shops, and practice and policy partners from two local authorities. The cooking and serving of food was filmed to add colour.

**Intended use** The film is intended to be used as an entertaining and accessible way in which to communicate the key messages from the research. We envisage it being used as an aid to presentations, on the Fuse and SPHR websites, and on social media such as Twitter, Facebook, Instagram and Youtube. We also plan to submit the short film on reducing the salt added to take-away food into The NIHR Let's Get Digital Competition (<https://www.nihr.ac.uk/news-and-events/support-our-campaigns/lets-get-digital.htm>).

**Completion date**

We expect the project to be completed by the end of June 2017.

**11 . Public and participant involvement**

**Please provide comment on your experiences, any changes made and lessons drawn:**

This project has engaged with practice throughout; this has included public health teams in Redcar and Cleveland, Gateshead and elsewhere and with Environmental Health teams in Gateshead. Other practitioners were involved as interviewees and respondents in early stage of the project (WP2 and WP4).

The interventions in WP6 involved direct partnership with local authority public health teams (Masterclass), business (Henry Colbeck Ltd in portion size control) and third sector/business in Flagship business.

Three key lessons learned were:

1. The time and investment required to foster links and developed good working relationships and shared understanding. For some partners (Gateshead and Redcar & Cleveland Council) we had existing relationships through Fuse for others, like Henry Colbeck, these were new and required investment. In order to build these relationships shared understanding and vision cannot be assumed and the demands of business and speed of progress can conflict with the requirements of research and compromise is needed
2. When working with business partners, even with shared understanding and agreement, much is outside the control or influence of researchers. This is evidenced by challenges in timescale in establishing a new take-away business which meant that the proposed research could not be completed with the timescale of the Foodscape project.
3. Despite these challenges in working with practice and business the potential to achieve change goes far beyond what might be achieved without this. The investment needed to develop clear shared understanding and establishing 'rules of engagement' should not be underestimated.

**12 . What impact has the research already achieved or what might it achieve? (i.e. policy, practice, academic):**

***Portion control in fish and chip shops***

Following on from the feasibility study that we co-designed Henry Colbeck Ltd have developed new box packaging to accommodate these small meal portions. With their partner suppliers (Q-Partnership) they cover all fish and chips shops in the UK, and as of March 2017 they have sold over 5,000 cases (100 boxes per case) to over 250 different shops, representing approximately 2.5% of all shops nationwide.

***Public Health England Encouraging healthier 'out of home' food provision***

Following an original request from DH and subsequent telephone conference with PHE (Adamson) the Foodscape team was invited to participate in expert panel: to help inform the development of a new toolkit to improve the healthiness of the food and drink offer from independent "out of home" businesses to support local authorities and partners working to improve the local out of home food environment. This was work commissioned by Public Health England (PHE) and led by The Chartered Institute of Environmental Health (CIEH), the Cities Institute at London Metropolitan University, and the Children's Food Trust. Louis Goffe project

research associate led on this on behalf of the study team, this included a series of email communications and telephone interview, where he provided details of Foodscape research findings, expert advice, advance copies of manuscripts of research articles and suggested additional contacts to the authors compiling the toolkit to consult with. The Foodscape team provided comment and additional feedback on an advance copy of the draft toolkit prior to publication.

<https://www.gov.uk/government/publications/encouraging-healthier-out-of-home-food-provision>

***TakeOFF! Building a Community Research & Innovation Infrastructure: Healthy Eating and Food Take-aways***

A research team from Open Lab and the Institute of Health and Society at Newcastle University, in partnership with Newcastle and Gateshead councils, Northumbria University and Newcastle College plan to create a community Food Hub in the West End of Newcastle that will provide the physical and digital infrastructure for take-away-related research in obesogenic environment interventions and serve as a platform for business innovation. This work will be funded as part of the Digital Economy Research Centre (DERC) at Newcastle and will provide opportunities for PhD students with the Newcastle Doctoral Training Centre (DTC) in Digital Civics - both funded by EPSRC. This new project builds directly on the findings and networks of researchers, local officials, industrial, community and third sector organisations that were established in the Foodscape project. It aims to provide an appropriate platform to deliver novel research that was not previously possible. It will explore one of the key themes for future research, which was identified in work package four of the Foodscape project, of a 'bottom-up' approach of harnessing a community's desire for increased provisions of healthier take-away hot food.

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**Department of Health Disclaimer:**

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