

# Adult Lifestyle Weight Management

June 2017



---

## Produced by

Val Miller: Public Health Specialist ([Val.Miller@Kent.gov.uk](mailto:Val.Miller@Kent.gov.uk))

Victoria Tovey: Commissioning Manager ([Victoria.Tovey@Kent.gov.uk](mailto:Victoria.Tovey@Kent.gov.uk))

Alexander Emby: Project Officer ([Alexander.Emby@Kent.gov.uk](mailto:Alexander.Emby@Kent.gov.uk))

Gerrard Abi-Aad: Head of Health Intelligence ([Gerrard.Abi-Aad@kent.gov.uk](mailto:Gerrard.Abi-Aad@kent.gov.uk))

Zara Cuccu: Public Health Analyst ([Zara.Cuccu@Kent.gov.uk](mailto:Zara.Cuccu@Kent.gov.uk))

Correspondence to: Zara Cuccu

## Contents

<b>1. Executive Summary .....</b>	<b>4</b>
1.1 Key Observations & Next Steps .....	7
<b>2. Background &amp; Purpose .....</b>	<b>8</b>
2.1 Introduction .....	8
2.2 Aims.....	9
2.3 Approach.....	10
2.4 What does the evidence say? .....	11
<b>3. Public Health Need .....</b>	<b>12</b>
3.1 National & Local Prevalence .....	13
3.1.1 National Prevalence .....	13
3.1.1 Local Prevalence .....	16
<b>4. Adult Lifestyle Weight Management Service .....</b>	<b>19</b>
4.1 Referral & Initial Assessment .....	20
4.1.1 Referral & Initial Assessment: by Sex & Age .....	20
4.1.2 Referral & Initial Assessment: by Ethnicity & Deprivation .....	21
4.1.3 Referral & Initial Assessment: by Acorn & Start BMI.....	22
4.1.4 Referral & Initial Assessment: Need Matrix.....	23
4.1.5 Referral & Initial Assessment: by District of Residence .....	24
4.2 Securing Good Outcomes .....	25
4.2.1 Securing Good Outcomes: by Age .....	27
4.2.2 Securing Good Outcomes: by Sex .....	29
4.2.3 Securing Good Outcomes: by Ethnicity .....	31
4.2.4 Securing Good Outcomes: by Deprivation.....	33
4.2.5 Securing Good Outcomes: by Acorn category .....	35
4.2.6 Securing Good Outcomes: by start Body Mass Index .....	37

**5. Conclusions .....39**

**Appendix A: Programme Characteristics .....40**

**Appendix B: File development.....44**

**Appendix C: Notes on statistical methodology.....45**

C.1.1	Confidence intervals .....	45
C.1.2	Statistical significance .....	45
C.1.3	Trend analysis .....	45
C.1.4	Median .....	45
C.1.4	Interquartile Range .....	45
C.1.5	Baseline Observation Carried Forward .....	45
C.1.6	Multinomial Logistic Regression .....	46
C.1.7	Odds Ratio.....	46
C.1.8	Confounding.....	46

**Appendix D: Acorn categories .....47**

D.1.1	Affluent Achievers.....	47
D.1.2	Rising Prosperity .....	47
D.1.3	Comfortable Communities.....	47
D.1.4	Financially Stretched.....	47
D.1.5	Urban Adversity .....	47

# 1. Executive Summary

This report presents an analysis of a sample of referrals and initial assessments between 1st April 2015 and 30th September 2016 to adult lifestyle weight management services across Kent. This includes the following services; Why Weight, Gravesham Adult Healthy Weight, Maidstone Adult Weight Management, Counterweight, Weight for It and the Fresh Start Groups & Pharmacies.

- The Department of Health's '*Best practice guidance for weight management services*'<sup>1</sup> recommends that outcome evaluation include metrics on; engagement, completion, as well as, over 3% and over 5% weight loss using baseline observation carried forward.

This executive summary presents the key findings. In addition, an infographic summary has been produced to present a descriptive overview.

## Key Findings

- Nationally the prevalence of overweight and obesity is stable at a high level. There is some evidence for greater public health need within; males, those aged 35 and over, women resident in deprived areas, as well as, Black and Asian ethnic minority groups.
- Across Kent it is estimated that 65.5% of those aged 16 and over are overweight or obese, equating to around 800,000 persons. Overweight & obesity is high across the majority of Kent districts.
- The majority of referrals to services and initial assessments were for; females, 45 to 64 years and White groups. There was not a pattern across deprivation decile, suggesting consistent levels of referral & initial assessment.
  - The groups with higher public health need, but lower service access were; males and persons aged 75 and over.
- Analysis for securing good outcomes identified;
  - Lower engagement and completion in younger and more deprived groups.
  - Lower weight loss success despite good levels of engagement within; persons ages 35 to 64 years and ethnic minority groups
  - There was some evidence for higher levels of weight loss success in men.

# Key Findings

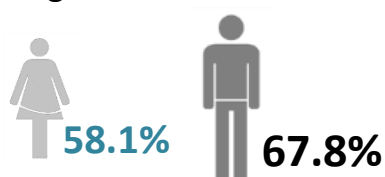
The key indicators to understand overweight and obesity prevalence by age, gender, ethnicity and deprivation are **only available at a national level**. But prevalence estimates are available for Kent and Districts.

**Nationally 62.9% of adults are overweight or obese; the trend is stable at a high level.**

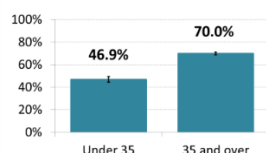
**Across Kent more than 800,000 adults are estimated to be overweight or obese.**

## Nationally overweight and obesity prevalence is highest in...

- men



- ages 35+

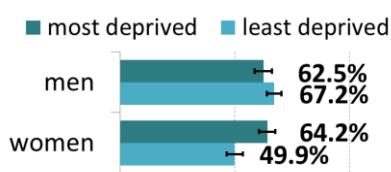


- Black & Asian groups

**70-85%**

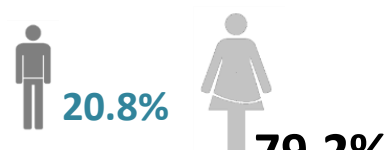
had BMIs at high risk compared to 62% in White groups

- women living in deprivation

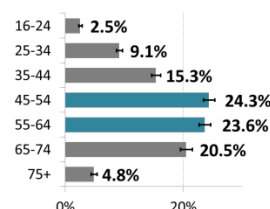


## Across Kent referrals to services and initial assessments were highest in...

- women



- ages 45-64

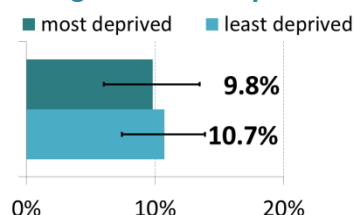


- White groups

**77%**

were White  
7% were from an Ethnic Minority

- all areas regardless of deprivation



**The groups with higher public health need, but lower service access were**

- males & ages 75+.

# Key Findings

## Engagers

**1,381 or 71.0%**  
of the original 1,946

## Completers

**1,123**  
**57.7%** of the original 1,946  
**81.3%** of engagers

## Weight Loss

**306 or 15.7%**  
achieved a  
≥ 5% weight loss

using the original 1,946

median **1.5%** weight loss  
the middle 50% of data  
was between **(-3.7%, 0%)**

## Weight Loss

**617 or 44.7%**  
achieved a  
≥ 3% weight loss

using the 1,381 engagers

median **2.6%** weight loss  
the middle 50% of data  
was between **(-4.7%, -1.0%)**

## Less likely to engage and complete ...

- ages **16-34**
- residents in areas of **deprivation**
- **urban adversity** Acorn category

## Less likely to achieve weight loss success ...

- ages **35-64**
- **ethnic minority** groups

<sup>1</sup> The following metrics have been outlined as realistic and achievable outcomes:

- 80% of participants engaging
- 60% of engaged participants completing
- 30% of participants achieving a ≥ 5% weight loss
- average weight loss of 3%

Department of Health (2013) Best practice guidance for weight management services. <http://bit.ly/20qSBZS>

## 1.1 Key Observations & Next Steps

**To enable learning and sharing of best practise the results of this analysis were presented to providers of current services in June 2017.**

The key observations from the data were noted and as a result of this workshop and discussions the following next steps were agreed:

### Data

- Review and refine data collection by the 1st October 2017, ensuring information collected (including protected characteristics).
- Work towards flowing data into the KID in the future, to help measure long term outcomes.

### Target groups

- Review health promotion literature and use national resources to ensure materials are suitable for all groups (including BME).
- Mapping of acorn types around GP clusters to support effective targeting.
- Share case studies of what is working locally with all Kent providers
- Further work with partners to help motivate people in target groups.
- Explore ideas to encourage uptake in men.

### Response

- Review previous local and national insight work to help shape future services.
- Provide a flexible response and one that is not just focused on a service. Including, exploration of alternative support methods; internet or phone.

## 2. Background & Purpose

### 2.1 Introduction

The adult lifestyle weight management services (Tier 2) are commissioned by Kent County Council and provide support to help adults to achieve long term weight loss and behavioural change.

A range of different multi-component programmes are delivered across Kent; that address dietary intake, physical activity levels and behaviour change. The programmes deliver between 10-12 weekly or fortnightly group sessions over a period of at least 3 months. Further programme characteristics are included in [Appendix A](#). The Kent programmes are broadly similar to the range of services across England mapped by Public Health England.<sup>2</sup>

The following adult lifestyle weight management services established across Kent have been included in this analysis:

Region	Provider	Programme
North	Dartford Borough Council	Why Weight
Kent	Gravesham Borough Council	Adult Healthy Weight
West Kent	Maidstone Borough Council	Adult Weight Management
		Counterweight
	Sevenoaks District Council	Why Weight
	Tonbridge & Malling Borough Council	Counterweight
	Tunbridge Wells Borough Council	Weight for It
East Kent	Kent Community Health NHS	Fresh Start Groups &
	Foundation Trust	Pharmacies

There are some additional programmes which achieve weight loss outcomes that have been excluded from this analysis, see [Appendix A](#).

<sup>2</sup> Public Health England (2015) National mapping of weight management services: provision of tier 2 and tier 3 services in England. <http://bit.ly/2s1Yc1>



## 2.2 Aims

This report provides the national and local context in terms of the public health need for overweight and obesity, as well as, data from an analysis of the established adult lifestyle weight management services across Kent. The aims from analysis were to:

- review the key population groups
  - referred to services and attending initial assessment
  - participating in sessions, from engagement and completion metrics
- describe the combined weight loss outcomes for key population groups across Kent
- provide intelligence to providers to support service delivery and enable refinement of programmes to improve outcomes

## 2.3 Approach

The original sample contained 2,344 records, steps were taken to clean the dataset for analysis ([Appendix B](#)) and the following aspects of data quality were identified on key variables.

- 6.1% ( $n=143$ ) of the original sample did not have age and sex recorded
- 6.9% ( $n=161$ ) of the original sample were recorded to have a body mass index  $\leq 25\text{kg/m}^2$  and so would not be eligible for weight loss intervention<sup>3</sup>

After excluding records affected by data quality on key variables, there were 1,946 remaining records that were referred and seen for initial assessment; the following aspects of data quality were identified for participation and outcome metrics (see Table 1):

- 23.3% ( $n=453$ ) of the remaining records did not have end of assessment weight or this was implausible
- 5.8% ( $n=112$ ) of the remaining records did not have an engager or completer flag

Baseline observation carried forward analysis was applied for the 1,946 persons referred and seen for initial assessment. Participation and outcome metrics are aligned to the National Institute for Health & Care Excellence<sup>4</sup> and the Department of Health:<sup>5</sup>

**Table 1: Participation and outcome metrics**

Metric	Definition
Engager	Participants who have attended at least two sessions
Completer	Participants who have attended at least 60% of sessions and have attended at least one of the last three sessions. <sup>6</sup>
Weight loss	Average weight loss of at least 3%, with at least 30% of participants losing at least 5% of their initial weight.

<sup>3</sup> note this rule excludes Asian & Black groups whereby lower BMI thresholds trigger action

<sup>4</sup> NICE (2014) Weight management: lifestyle services for overweight or obese adults. Guidance PH53 <http://bit.ly/2qBRjgP>

<sup>5</sup> Department of Health (2013) Best practice guidance for weight management services. <http://bit.ly/20qSBZS>

<sup>6</sup> Note local definitions of this metric vary by commissioned programme. The requested dataset did not include a 'number of sessions attended' or 'attendance at final session(s)' indicator for all providers.

## 2.4 What does the evidence say?

Service provision for adult lifestyle weight management service (Tier 2) has been mapped across England.<sup>7</sup>

The National Institute for Health & Care Excellence has provided recommendations for lifestyle services for overweight or obese adults.<sup>8</sup> They recommend that effective programmes for weight loss are;

- multicomponent to address behaviour change in terms of diet and physical activity,
- developed by a multidisciplinary team and delivered by trained staff,
- weekly or fortnightly sessions lasting at least 3 months,
- incorporate self-monitoring, behaviour change methods using specific, measureable and achievable goal setting

An evidence review<sup>9</sup> by the National Institute for Health & Care Excellence agreed the following statements for evidence for effectiveness by population group;

- **inconsistent evidence** that men achieve slightly more weight loss than women,
- **moderate evidence** that older groups lose more weight than younger groups,
- **inconsistent evidence** that European Americans lose more weight than African Americans,
- **no evidence** to suggest that the effectiveness of behavioural weight management programmes vary by place of residence or socio-economic group

---

<sup>7</sup> Public Health England (2015) National mapping of weight management services: provision of tier 2 and tier 3 services in England. <http://bit.ly/2s1lYc1>

<sup>8</sup> NICE (2014) Weight management: lifestyle services for overweight or obese adults. Guidance PH53 <http://bit.ly/2qBRigP>

<sup>9</sup> NICE & University of Oxford (2013) Managing overweight and obese adults: update review <http://bit.ly/2r780UF>

### 3. Public Health Need

This chapter provides a summary of key national and local indicators for overweight and obesity prevalence. For further details on statistical methodologies, see [Appendix C](#).

#### Key Findings

##### *National Prevalence*

Nationally the prevalence of overweight and obesity;

- remains stable at a high level
- was higher for men than women
- and was highest in those aged 35 years and over.

Women living in the most deprived areas are more likely to be overweight or obese than those living in the least deprived areas. The same pattern by deprivation is not observed for men.

Black and Asian adults are more likely to have body mass index classifications that put them at increased or high risk of diabetes.

##### *Local Prevalence*

The prevalence of overweight and obesity was higher than the Kent average within;

- Dartford, Gravesham, Swale and Thanet using the Public Health Outcomes Framework indicator for both categories,
- Ashford, Dover, Shepway, Swale and Thanet using the Quality & Outcomes Framework indicator for recorded obesity in general practice,

The Acorn comfortable communities category contributes the greatest numbers of obese persons across Kent. Although, the Acorn category financially stretched and urban adversity have the highest levels of obesity prevalence.

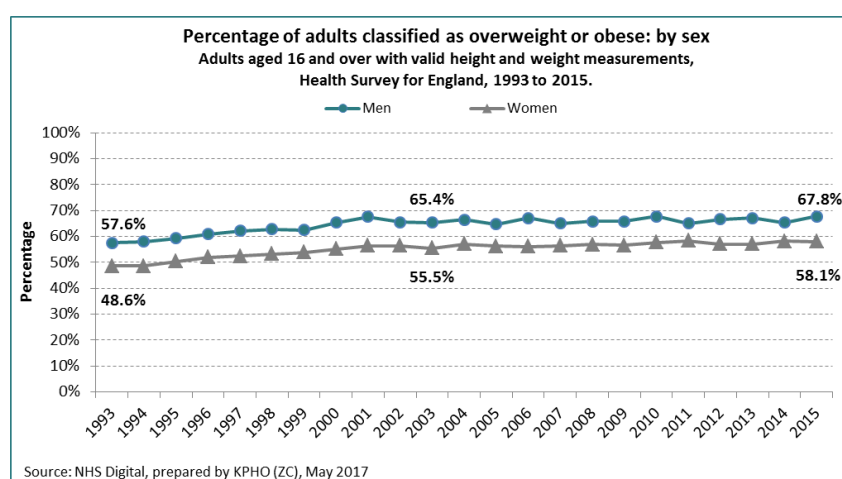
## 3.1 National & Local Prevalence

The key indicators to understand overweight and obesity prevalence by age, gender, ethnicity and deprivation are only available at a national level. But prevalence estimates are available for Kent and Districts.

### 3.1.1 National Prevalence

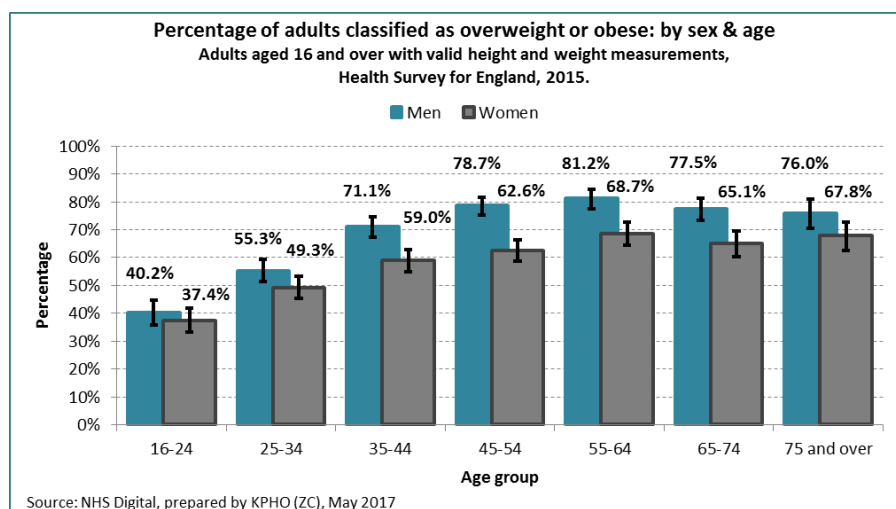
The Health Survey for England<sup>10</sup> reports an estimate for the percentage of adults (aged  $\geq 16$ ) who are overweight and obese (body mass index  $\geq 25 \text{ kg/m}^2$ ) nationally, using height and weight measurements.

- In 2015, 36.1% of adults were overweight and 26.9% of adults were obese, with a combined prevalence of 62.9%. The trend has remained stable in the more recent years between 2010 and 2015.
- Overweight and obesity is higher in men than women; 67.8% versus 58.1% respectively.

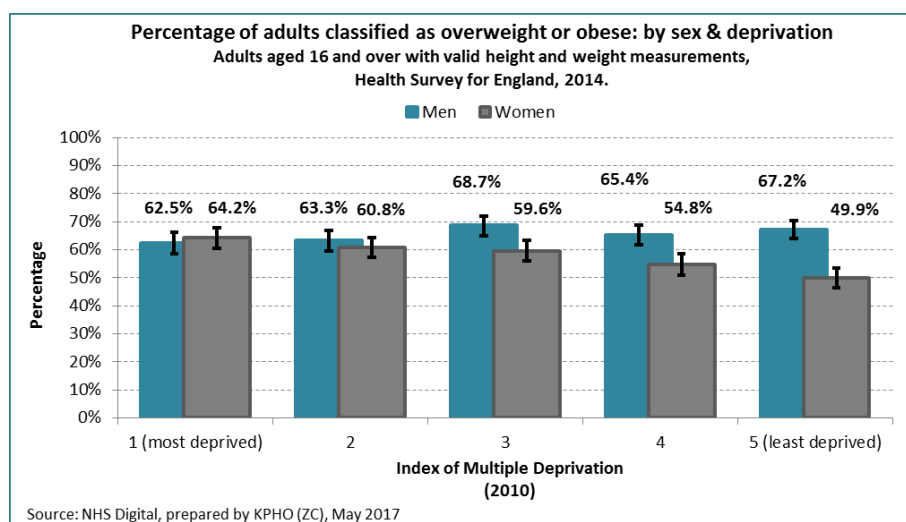


<sup>10</sup> NHS Digital (2016) Health Survey for England, 2015: trend tables.  
<http://bit.ly/2huriME>

- Overweight and obesity prevalence is similar across those aged 35 years and over. The lowest prevalence was within those aged 16-24 years.



- Overweight and obesity prevalence was greater within women living in the most deprived quintile in comparison to the least deprived quintile.<sup>11</sup> However, the same pattern was not seen in men.



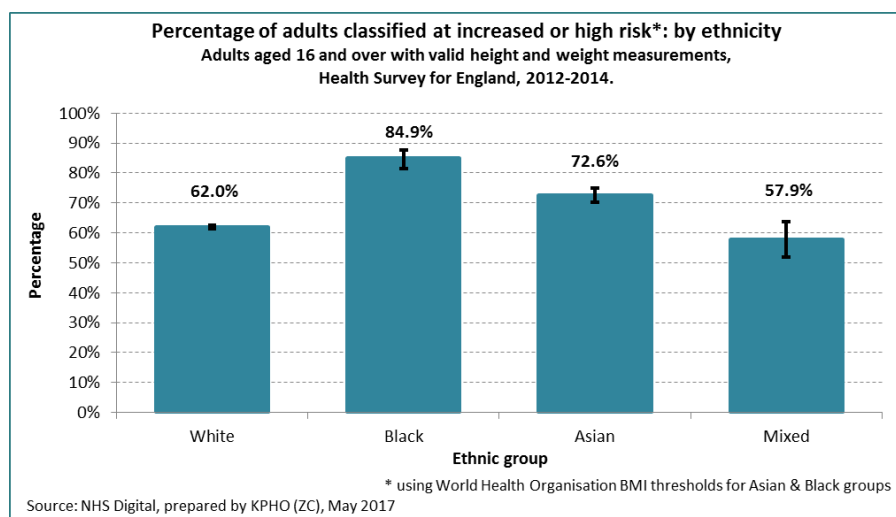
- Furthermore, there are clear socioeconomic inequalities in overweight and obesity prevalence, using occupational social class, income and education.<sup>12</sup>

<sup>11</sup> NHS Digital (2015) Health Survey for England, 2014 <http://bit.ly/2r71eOU>

(Note: deprivation not available within latest publication)

<sup>12</sup> El-Sayed et al. (2012) Unevenly distributed: a systematic review of the health literature about socioeconomic inequalities in adult obesity in the United Kingdom. BMC Public Health, 12(18) 1471-2458

- Analysis by ethnicity are often subject to uncertainty due to small sample sizes, there were a greater percentage of Black and Asian adults with body mass index classifications at increased or high risk of diabetes.<sup>13</sup>

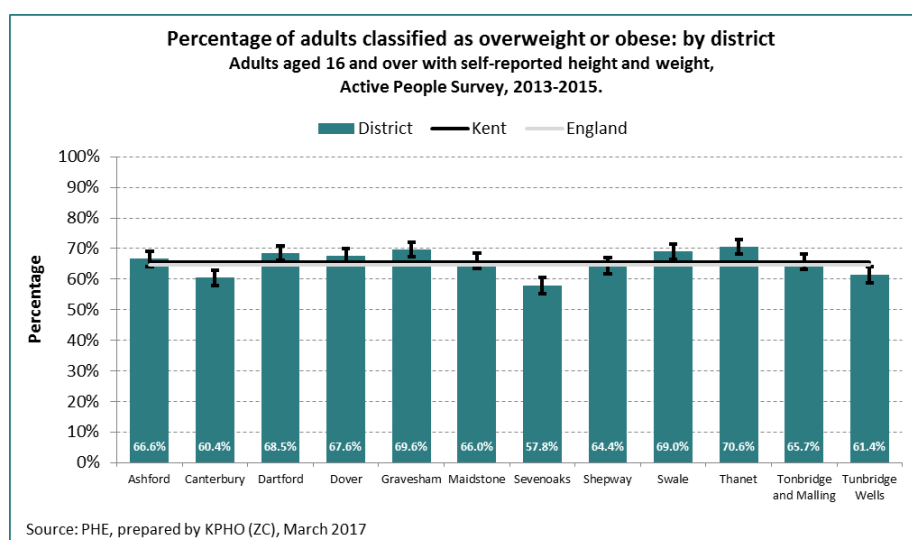


<sup>13</sup> Note: lower BMI thresholds trigger action within Asian & Black groups

### 3.1.1 Local Prevalence

The Public Health Outcomes Framework<sup>14</sup> includes an indicator for overweight and obesity at a local level using self-reported height and weight in those aged 16 and over, this is derived from the Active People Survey.

- In Kent, 65.5% of those aged 16 and over were overweight and obese, higher in comparison to 64.8% in England within 2013-2015.
- In general, overweight & obesity is high across the majority of Kent districts. However, prevalence was lower than Kent and England in Canterbury, Sevenoaks & Tunbridge Wells.



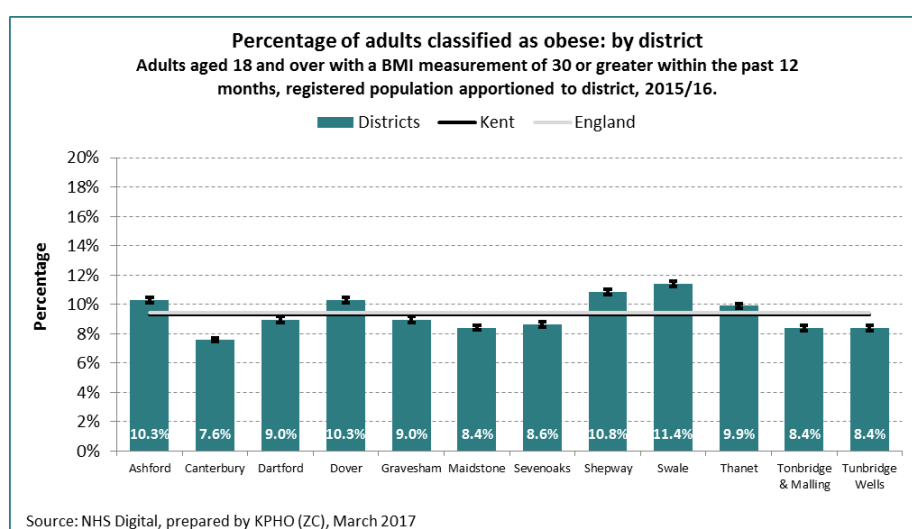
The Active People Survey estimates are based on samples of the population, using self-reported height and weight. We know that the estimates are weighted to include an adjustment factor for self-report by age and sex.

<sup>14</sup> Public Health England (2017) Public Health Outcomes Framework  
<http://bit.ly/1fQnu2e>



The Quality & Outcomes Framework includes an indicator for obesity recorded in general practice in those aged 18 and over; data was aggregated using patient distribution by geography.<sup>15</sup>

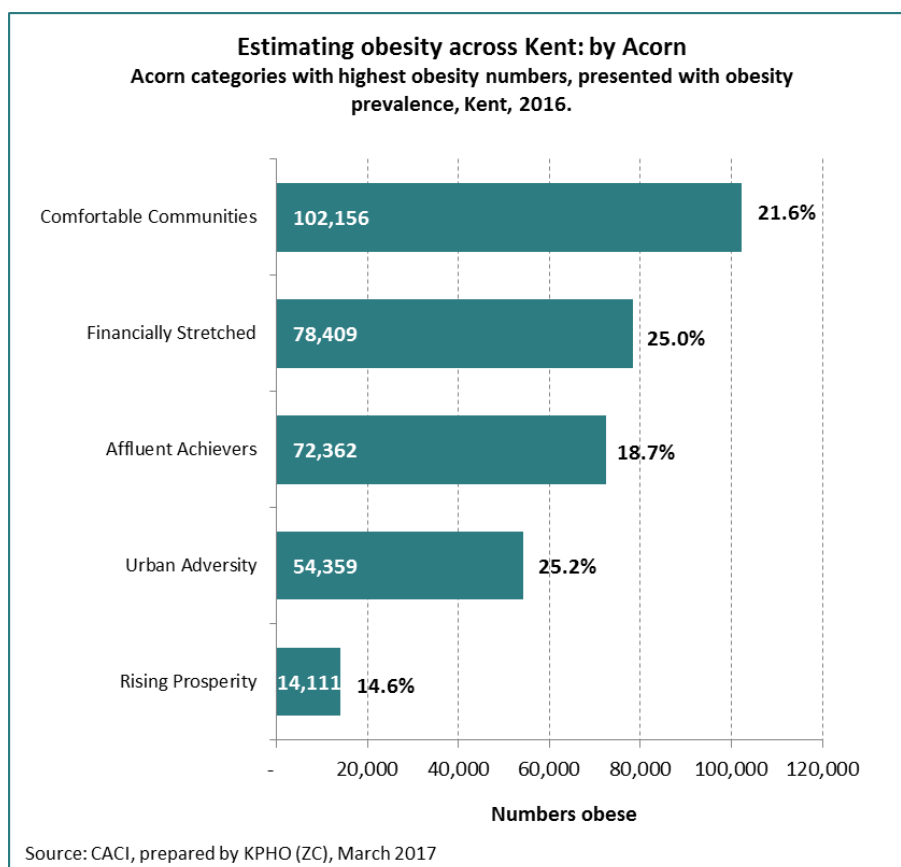
- Within the Kent registered population, there were 112,222 persons recorded as obese (9.3%) lower in comparison to 9.5% in England in 2015/16.
- In comparison to Kent:
  - Obesity recorded prevalence was higher in Ashford, Dover, Shepway, Swale and Thanet than Kent.
  - Obesity recorded prevalence was lower in Canterbury, Dartford, Gravesham, Maidstone, Sevenoaks, Tonbridge & Malling and Tunbridge Wells.



The Quality & Outcomes Framework estimates are based on general practice identification and diagnosis of individuals, therefore, may underestimate true prevalence.

<sup>15</sup> Prior to 2015/16 this indicator represented those aged 16 and over with a body mass index  $\geq 30$  kg/m<sup>2</sup> in the previous 12 months.

Certain Acorn categories contribute greater numbers to the Kent population. Therefore, the Acorn categories with the highest obesity prevalence do not necessarily contribute the greatest numbers of obese persons in Kent. The Acorn types contributing the largest numbers of obese persons have been presented below, predominantly from the Comfortable Communities category.



See [Appendix D](#) for further information on the Acorn categories.

## 4. Adult Lifestyle Weight Management Service

This chapter provides a summary of key participation and outcome metrics for Adult Lifestyle Weight Management Services across Kent.

### Key Findings

#### *Referral to Services & Initial Assessment*

Overall, there were greater referrals to services and initial assessments for;

- females
- those aged between 45 and 64 years
- those of White ethnicity
- those within the comfortable communities Acorn category

The levels of referral to services and initial assessment were generally consistent across the deprivation deciles.

Overall, the groups with higher need, but lower service access were males and those aged 75 and over.

#### *Securing Good Outcomes*

There was evidence for lower levels of engagement and completion within the younger, more deprived groups, the financially stretched and urban adversity Acorn categories.

There was evidence for lower success for weight loss despite good levels of engagement and completion within;

- those aged 35 to 64 years,
- those within ethnic minority groups,

There was some evidence for greater success for 5% weight loss within males. Overall, the levels of success were consistent regardless of start body mass index.

## 4.1 Referral & Initial Assessment

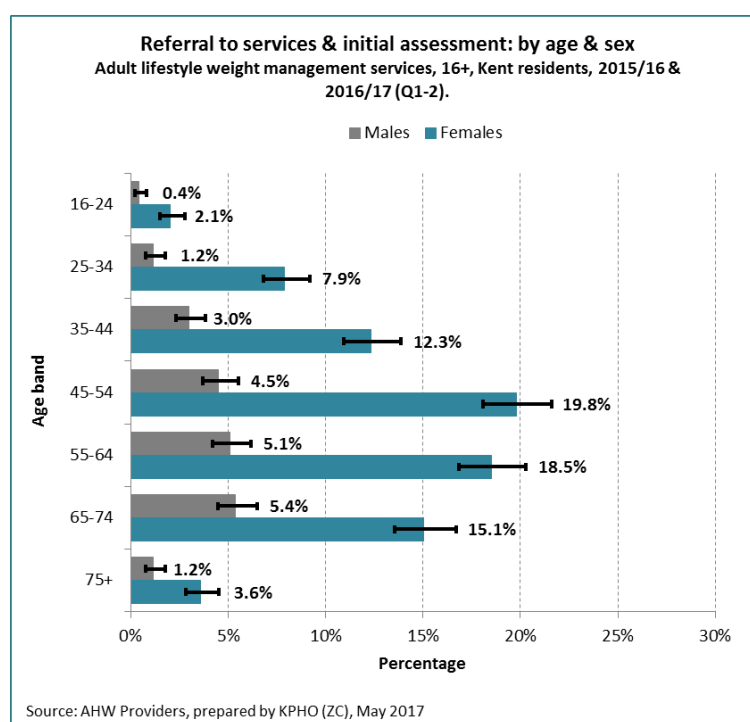
This chapter will analyse referrals and initial assessments by key variables; by age, sex, ethnicity, deprivation, acorn and start body mass index. Analysis will identify the groups with lower access to adult lifestyle weight management services in relation to need.

A total of 1,946 participants were referred and seen for initial assessment for the period analysed.

### 4.1.1 Referral & Initial Assessment: by Sex & Age

Of those referred and seen for initial assessment 404 were men and 1,542 women. There was a greater percentage of referrals for females than males; 79.2% versus 20.8% respectively. Of those referred and seen for initial assessment 225 were aged under 35, 1,230 were aged 35-64 and 491 aged 65 and over.

- Referrals and initial assessments were also consistently higher for females across all age bands.
- Those aged between 45 and 64 were the most frequent age group referred to services in both males and females.
  - The median age for referral and initial assessment was 53 years for females and 58 years for males.



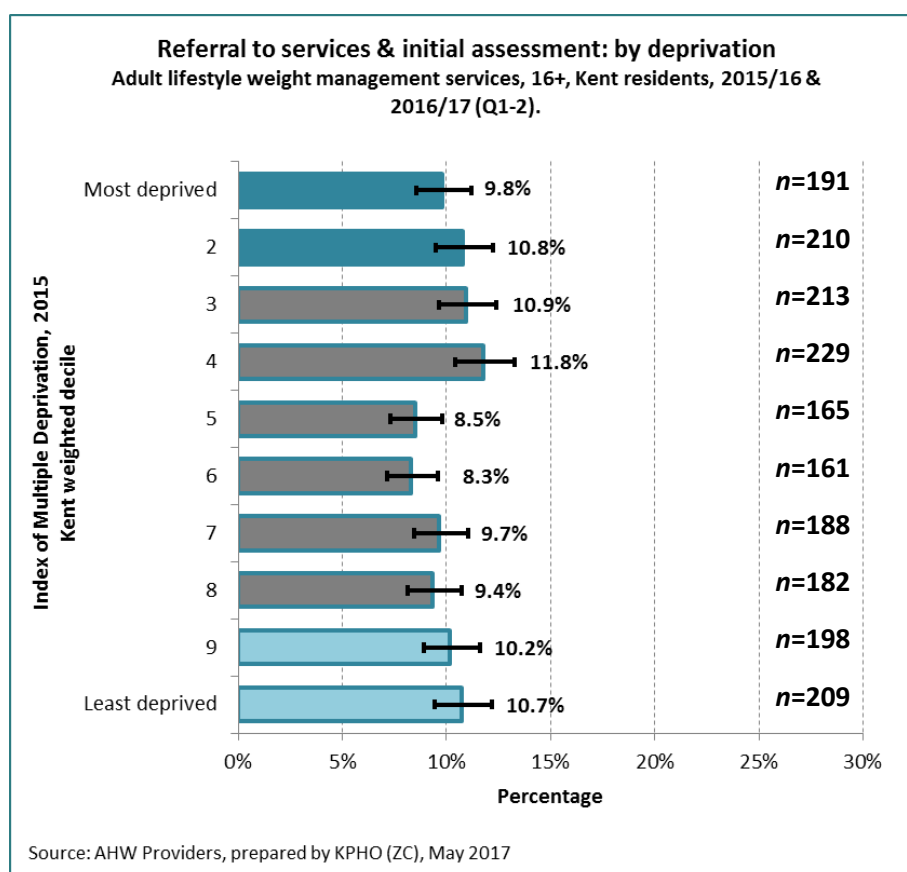
#### 4.1.2 Referral & Initial Assessment: by Ethnicity & Deprivation

- The White ethnic group had the highest referrals and initial assessment. But, greater than 15% of the sample did not have an ethnic group stated, suggesting poor data quality.
- There were similar percentages of referrals across the deprivation deciles.

**Table 2: Referral to services & initial assessment: by ethnic group.**

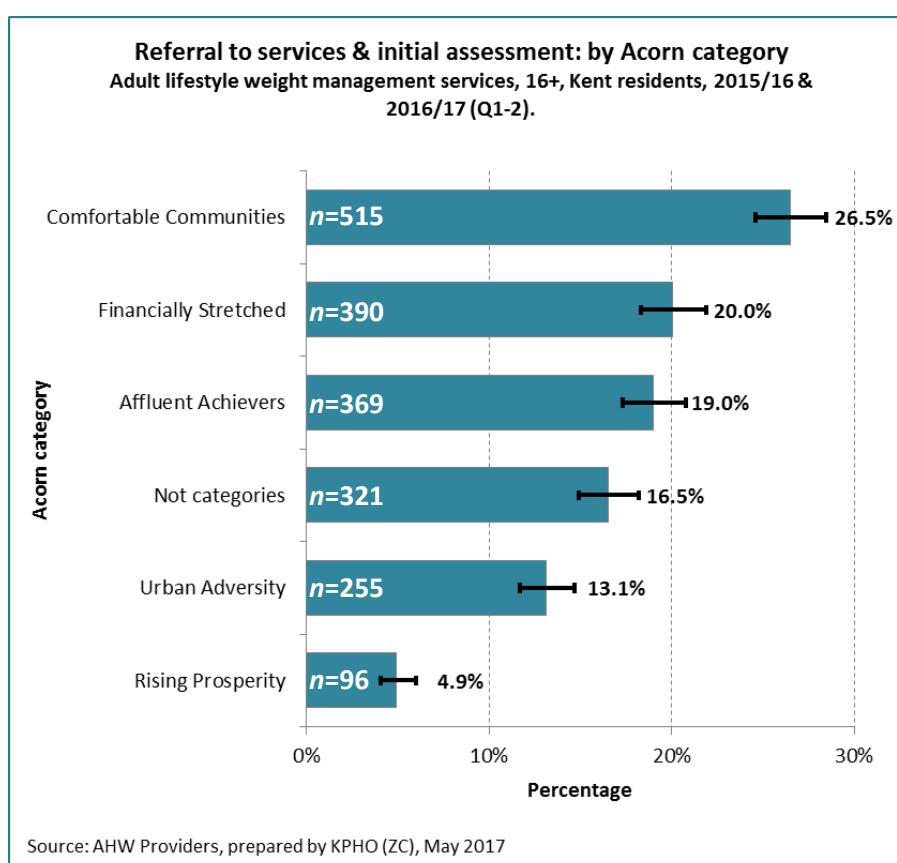
Ethnic group	Kent <i>n</i>	%
White	1,492	76.6%
Not stated	312	16.0%
Asian	78	4.0%
Black	34	1.7%
Mixed & Other	31	1.6%
<b>Total</b>	<b>1,946</b>	

Source: AHW Providers, prepared by KPHO (ZC), May 2017



#### 4.1.3 Referral & Initial Assessment: by Acorn & Start BMI

- Comfortable communities had the highest referrals and initial assessment. But, 16.5% of the sample could not be categorised using Acorn.
- Referral and initial assessment was highest for those obese at initial assessment. The median start body mass index (BMI) was 33.2 kg/m<sup>2</sup> (interquartile range 30.4, 37.0).



**Table 3: Referral to services & initial assessment: by start BMI.**

Initial BMI		n	Kent %
Overweight	25.0 – 29.9	428	22.0%
Obese	≥ 30.0	1,518	78.0%
Class I	30.0 – 34.9	824	42.3%
Class II	35.0 – 39.9	390	20.0%
Class III	≥ 40.0	304	15.6%
Total		1,946	

Source: AHW Providers, prepared by KPHO (ZC), May 2017

Note: percentages may not sum due to rounding.

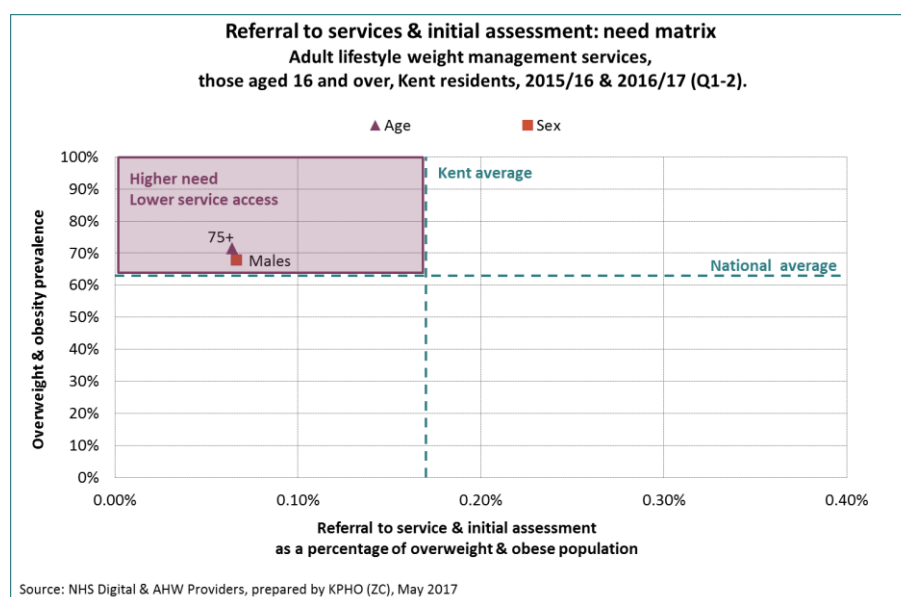
#### 4.1.4 Referral & Initial Assessment: Need Matrix

The quadrant chart shows how referral to services and initial assessment performs against need.

Need has been represented by national overweight and obesity prevalence - on the vertical axis. Referral to services and initial assessment has been represented as a percentage of the estimated overweight and obese population - on the horizontal axis. This has been explored by age, gender, ethnicity and deprivation by area of residence.

Groups with higher need, but lower referral to service, include;

- males
- those aged 75 years and over



#### 4.1.5 Referral & Initial Assessment: by District of Residence

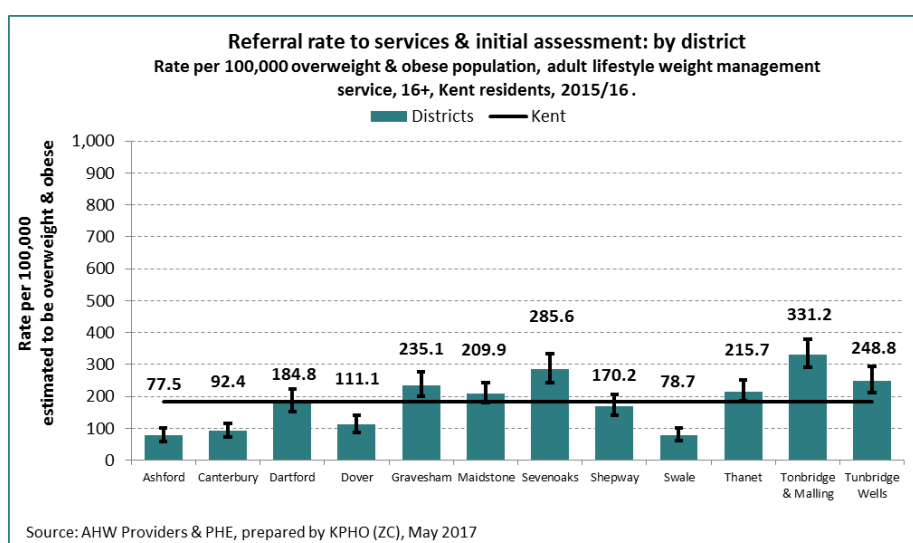
The chart below presents referrals and initial assessments as a rate per 100,000 population estimated to be overweight or obese. The time period presented has been restricted to the full contract year 2015/16. The estimated overweight and obese population has been calculated by applying the local overweight and obesity prevalence estimates to the mid-year population estimates for 2015.

In comparison to the Kent average, referrals and initial assessments were:

- Lower within Ashford, Canterbury, Dover and Swale.
- Higher within Gravesham, Sevenoaks, Thanet, Tonbridge & Malling and Tunbridge Wells.

Caution must be taken when interpreting the chart below. Historic contracting arrangements for providers have resulted in the different levels of funding being allocated to each area and this would influence the service capacity available for the area.

- In Deal ( Dover) there is an additional service running in a GP surgery which has been excluded from the analysis
- In Swale there is a tier 3 service which is delivered by the tier 2 provider and a number of clients with a higher BMI would have accessed this service
- The delivery model in East Kent has changes to a group model which has enabled more people to be seen within the past 6 months of 2016/17.





## 4.2 Securing Good Outcomes

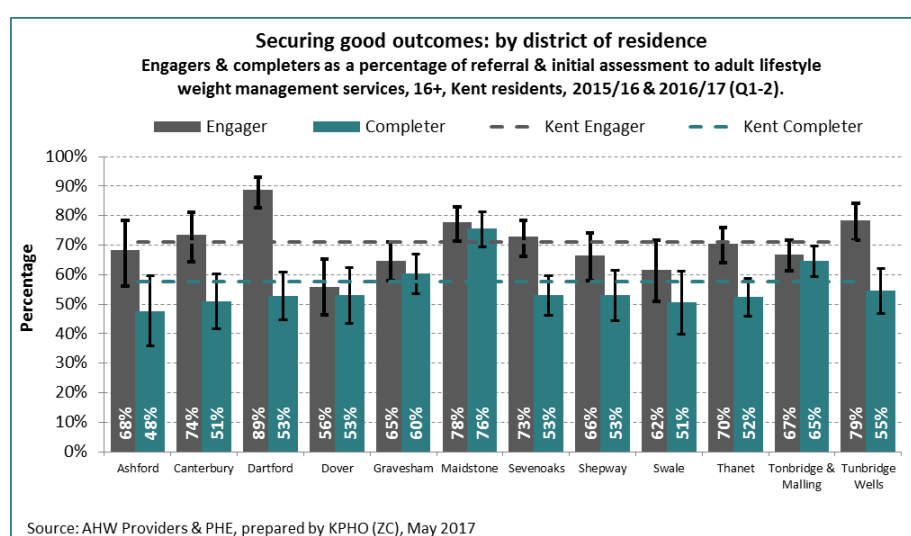
This chapter will analyse weight loss outcomes by key variables; by age, sex, ethnicity, deprivation, Acorn and start body mass index. For more details on statistical methodology, see [Appendix B](#). However, note that start body mass index category was not included in the final adjusted model, due to non-significance in univariate analysis.

From the 1,946 participants referred and seen for initial assessment:

- 71.0% ( $n=1,381$ ) of participants engaged and 57.7% ( $n=1,123$ ) completed
- 15.7% ( $n=306$ ) of participants achieved a 5% or greater weight loss
- 32.8% ( $n=639$ ) of participants achieved a 3% or greater weight loss
  - with 17.1% ( $n=333$ ) achieving a 3-4.9% weight loss
- the median weight loss was 1.5% with an interquartile range of (-3.7%, 0%)

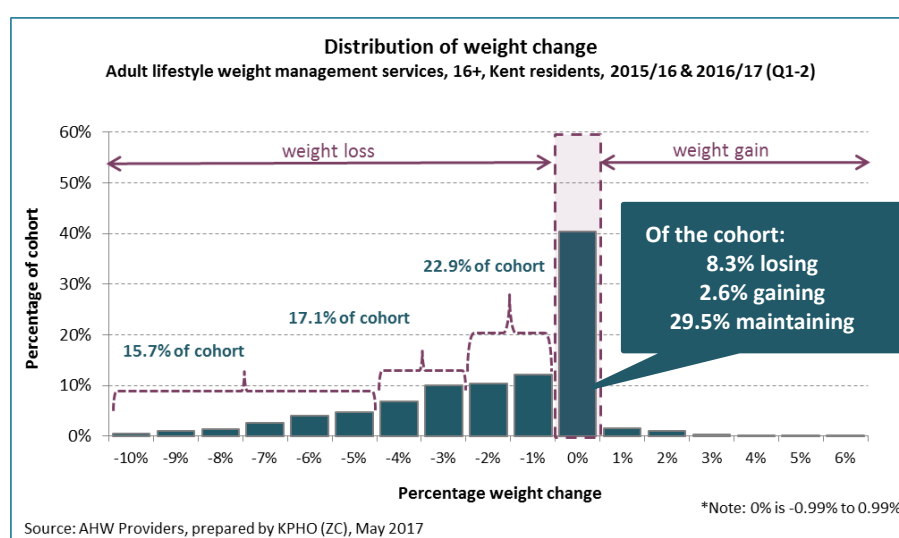
Those engaging and completing has been analysed by district of residence. The chart below presents the percentages engaging and completing. In comparison to the Kent average:

- Engagement was lower within Dover and Swale.
- Engagement was higher within Dartford, Maidstone and Tunbridge Wells.
- Completion was higher in Maidstone and Tonbridge & Malling.



From the 1,381 participants engaging:

- 21.7% ( $n=300$ ) of participants achieved a 5% or greater weight loss
  - Generally districts performed similar to the Kent average, but levels were higher in Maidstone and lower in Gravesham and Tunbridge Wells.
- 44.7% ( $n=617$ ) of participants achieved a 3% or greater weight loss
  - Generally districts performed similar to the Kent average, but levels were higher in Maidstone and lower in Tunbridge Wells.
  - with 17.1% ( $n=317$ ) achieving a 3-4.9% weight loss
- the median weight loss was 1.5% with an interquartile range of (-3.7%, 0%)



All analyses presented subsequent to here use baseline observation carried forward for the 1,946 participants referred and seen for initial assessment. *It is important to recognise case mix as an important factor contributing to outcomes, rather than district weight loss as an indicator of service success.*

### 4.2.1 Securing Good Outcomes: by Age

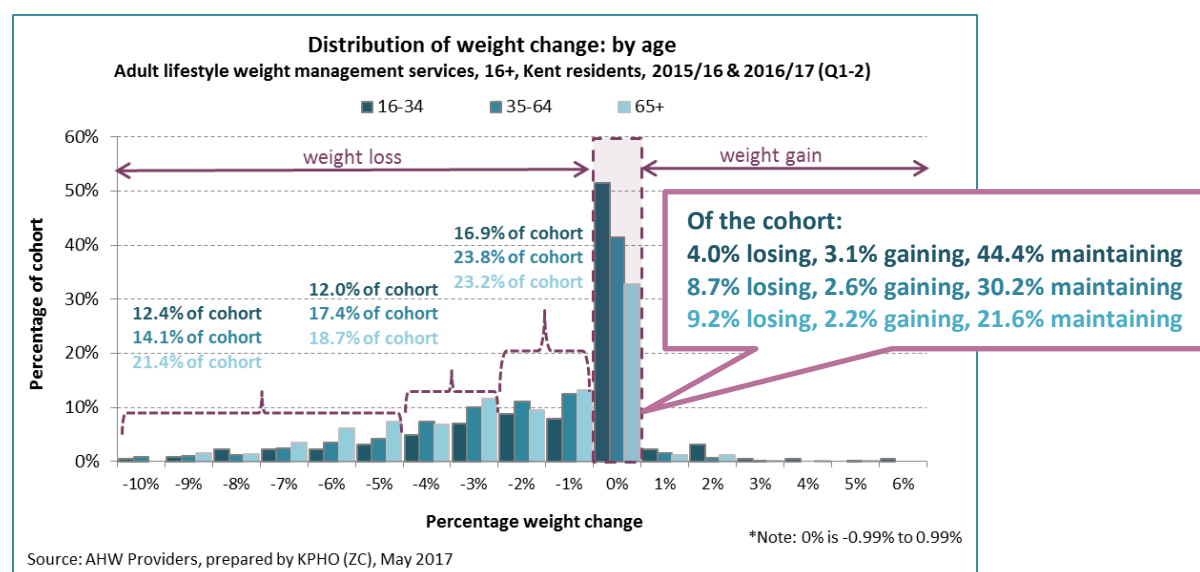
Engagement and completion varied by age (see below table) and in comparison to Kent was;

- lower within those aged 16-34 years,
- higher within those aged 65 and over.

Statistic	Age group		
	16-34	35-64	65+
Referred & seen for initial assessment (n)	225	1,230	491
Percentage engaging (Kent, 71.0%)	56.9%** n=128	70.5% n=867	78.6%** n=386
Percentage completing (Kent, 57.7%)	42.2%** n=95	56.7% n=697	67.4%** n=331

**Note:** n – number, \*\*significantly different to Kent average,

Weight loss outcomes varied by age;

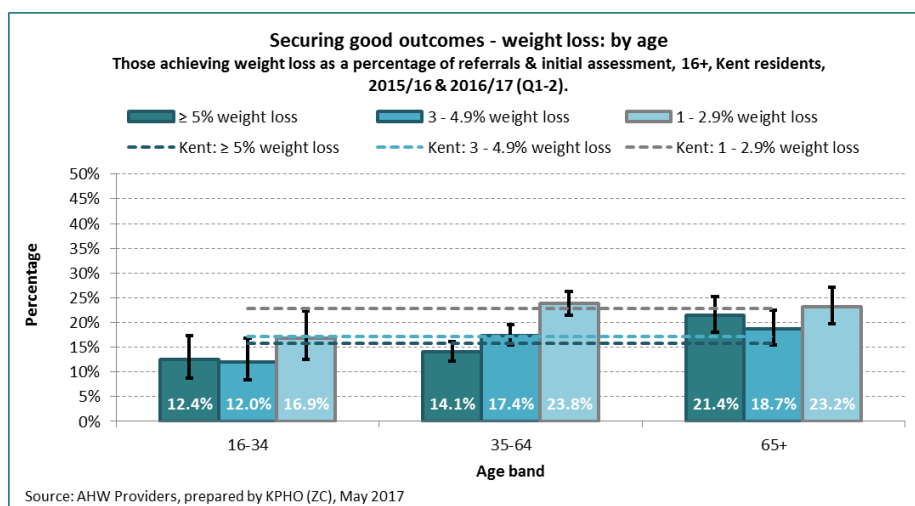


Those aged 65 and over were more likely to achieve a 5% weight loss or greater in comparison to the Kent average.

- Those aged under 65 were less likely to achieve the weight loss outcomes in comparison to those aged 65 and over.<sup>16</sup>
  - Lower completion in those aged 16-34 affected outcome analysis.

<sup>16</sup> Note: the above finding is also significant for the 3% or greater weight loss outcome. Suggesting a key relationship with age for any level of weight loss outcome.

- The lower success in those aged 35-64 remained significant after adjustment for completion, suggesting this group were less successful despite good levels of engagement and completion.



The median (or middle percentage weight change) showed greater weight loss for those aged 65 and over (-2.0%). The interquartile range (or the middle 50% of the weight loss distribution) also included greater percentage weight losses (-4.5%, 0.0%) in those aged 65 and over.

Statistic	Age group		
	16-34	35-64	65+
Median percentage weight change (IQR)	0.0% (-2.9%, 0.0%)	-1.5% (-3.6%, 0.0%)	-2.0% (-4.5%, 0.0%)
Odds for <b>achieving</b> 3 - 4.9 % weight loss (CI)	0.51 (0.32, 0.81) <i>p</i> value <0.05	0.81 (0.61, 1.07) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss (CI)	0.46 (0.29, 0.73) <i>p</i> value <0.001	0.58 (0.44, 0.76) <i>p</i> value <0.001	REF
Odds for <b>achieving</b> 3 - 4.9 % weight loss <sup>a</sup> (CI)	0.72 (0.44, 1.18) <i>p</i> value >0.05	0.95 (0.71, 1.27) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss <sup>a</sup> (CI)	0.72 (0.44, 1.18) <i>p</i> value >0.05	0.70 (0.52, 0.94) <i>p</i> value <0.05	REF

**Note:** baseline observation carried forward, IQR – interquartile range, CI – 95% confidence interval, REF – reference category, <sup>a</sup> adjusted for completion, shaded cells indicate statistical significance

## 4.2.2 Securing Good Outcomes: by Sex

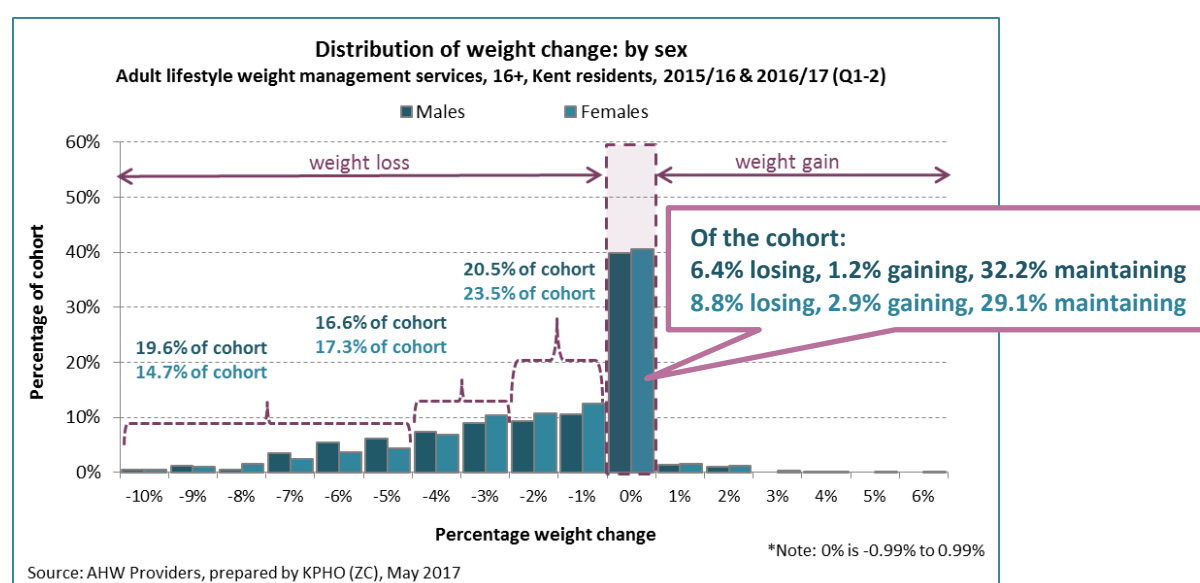
Those engaging, completing and achieving weight loss outcomes has been analysed by sex.

- Engagement and completion did not vary by sex (see below table).
- Both males and females were similar to Kent.

Statistic	Sex	
	Males	Females
Referred & seen for initial assessment (n)	404	1,542
Percentage engaging (Kent, 71.0%)	69.3% n=280	71.4% n=1,101
Percentage completing (Kent, 57.7%)	59.4% n=240	57.3% n=883

**Note:** n – number, \*\*significantly different to Kent average,

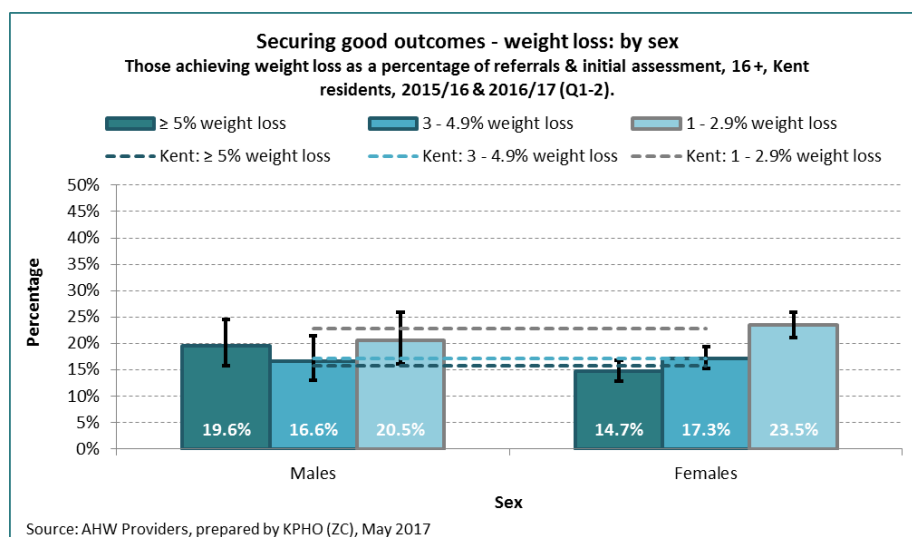
Weight loss outcomes varied by sex;



Males were more likely to achieve the higher weight loss outcomes in comparison to females.<sup>17</sup>

<sup>17</sup> Note: the above finding was not significant for the 3% or greater weight loss outcome. Suggesting a key relationship with sex for the greater weight loss outcome.

- The higher success in males remained significant after adjustment for completion, suggesting that the outcomes for this group were not affected by levels of engagement and completion.



The median (or middle percentage weight change) was -1.7% for males and -1.4% for females. The interquartile range (or the middle 50% of the weight loss distribution) included greater percentage weight losses (-4.3%, 0.0%) for males.

Statistic	Sex	
	Males	Females
Median percentage weight change (IQR)	-1.7% (-4.3%, 0.0%)	-1.4% (-3.6%, 0.0%)
Odds for <b>achieving</b> 3 - 4.9 % weight loss (CI)	1.02 (0.76, 1.38) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss (CI)	1.42 (1.06, 1.89) <i>p</i> value <0.05	REF
Odds for <b>achieving</b> 3 - 4.9 % weight loss <sup>a</sup> (CI)	1.02 (0.75, 1.41) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss <sup>a</sup> (CI)	1.42 (1.04, 1.95) <i>p</i> value <0.05	REF

**Note:** baseline observation carried forward, IQR – interquartile range, CI – 95% confidence interval, REF – reference category, <sup>a</sup> adjusted for completion, shaded cells indicate statistical significance

### 4.2.3 Securing Good Outcomes: by Ethnicity

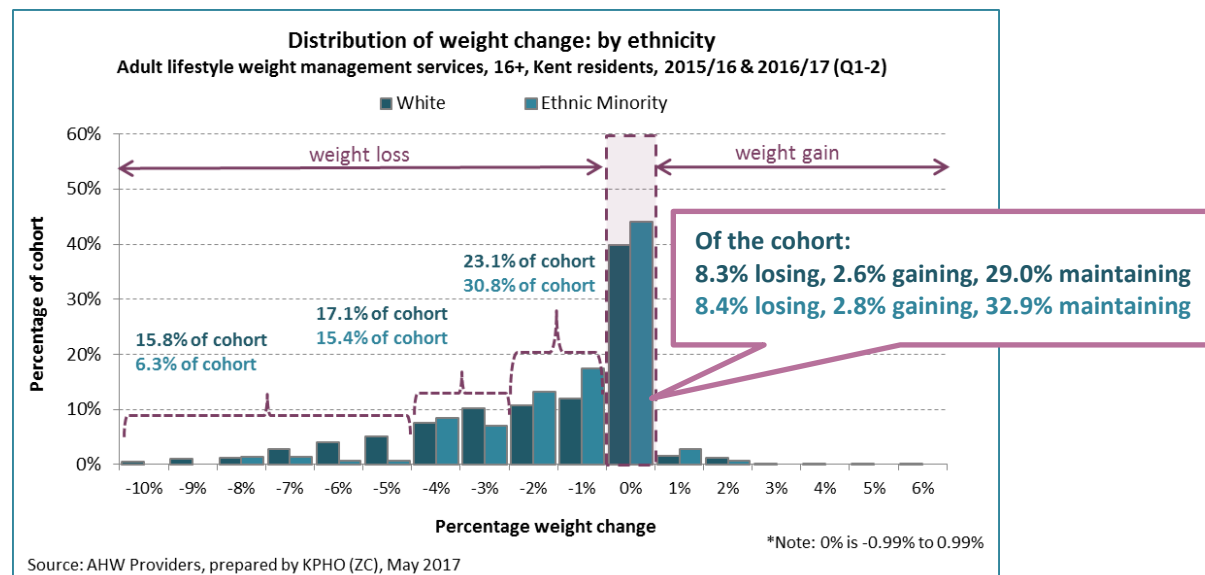
Those engaging, completing and achieving weight loss outcomes has been analysed by ethnicity. Wide confidence intervals from small sample sizes prevented analysis by detailed ethnic group.

- Engagement and completion did not vary by ethnicity (see below table).
- Both White and Ethnic Minority groups were similar to Kent.

Statistic	Ethnicity	
	Ethnic Minority	White
Referred & seen for initial assessment (n)	143	1,491
Percentage engaging (Kent, 71.0%)	64.3% n=92	68.6% n=1,075
Percentage completing (Kent, 57.7%)	50.3% n=72	66.3% n=844

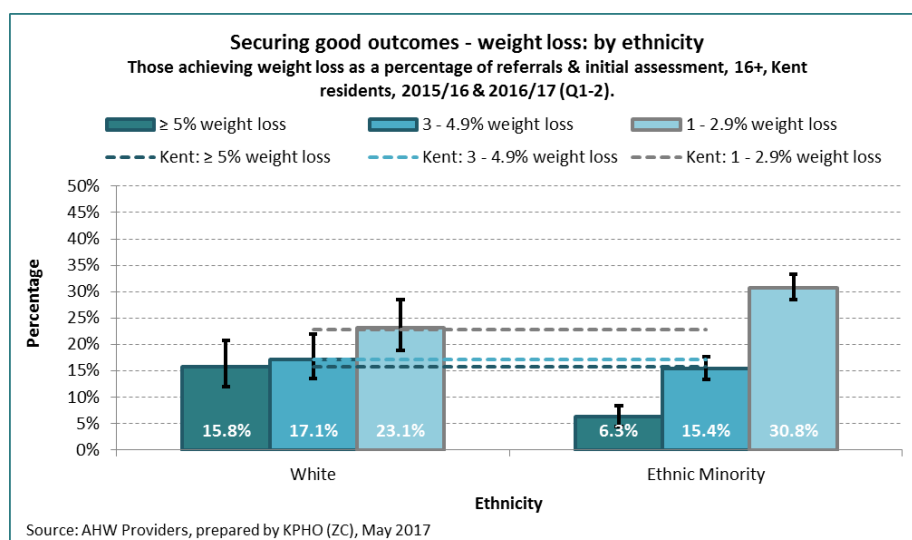
**Note:** n – number, \*\*significantly different to Kent average,

Weight loss outcomes did vary by ethnicity;



- Ethnic minority groups were less likely to achieve a 5% weight loss or greater in comparison to the Kent average.

- Ethnic minority groups were also less likely to achieve a 5% or greater weight loss outcome in comparison to the White ethnic group.<sup>18</sup>
- The lower success in the ethnic minority group remained significant after adjustment for completion, suggesting this group were less successful despite good levels of engagement and completion.



The median (or middle percentage weight change) was -1.1% for ethnic minority and -1.5% for white groups. The interquartile range (or the middle 50% of the weight loss distribution) included greater percentage weight losses (-3.7%, 0.0%) for white groups.

Statistic	Ethnicity	
	Ethnic Minority	White
Median percentage weight change (IQR)	-1.1% (-2.6%, 0.0%)	-1.5% (-3.7%, 0.0%)
Odds for <b>achieving</b> 3 - 4.9 % weight loss (CI)	0.77 (0.48, 1.24) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss (CI)	0.34 (0.17, 0.69) <i>p</i> value <0.05	REF
Odds for <b>achieving</b> 3 - 4.9 % weight loss <sup>a</sup> (CI)	0.78 (0.47, 1.29) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss <sup>a</sup> (CI)	0.35 (0.17, 0.72) <i>p</i> value <0.05	REF

**Note:** baseline observation carried forward, IQR – interquartile range, CI – 95% confidence interval, REF – reference category, <sup>a</sup> adjusted for completion, shaded cells indicate statistical significance

<sup>18</sup> Note: the above finding is also significant for the 3% or greater weight loss outcome. Suggesting a key relationship with ethnicity for any level of weight loss outcome.



#### 4.2.4 Securing Good Outcomes: by Deprivation

Those engaging, completing and achieving weight loss outcomes has been analysed by deprivation.

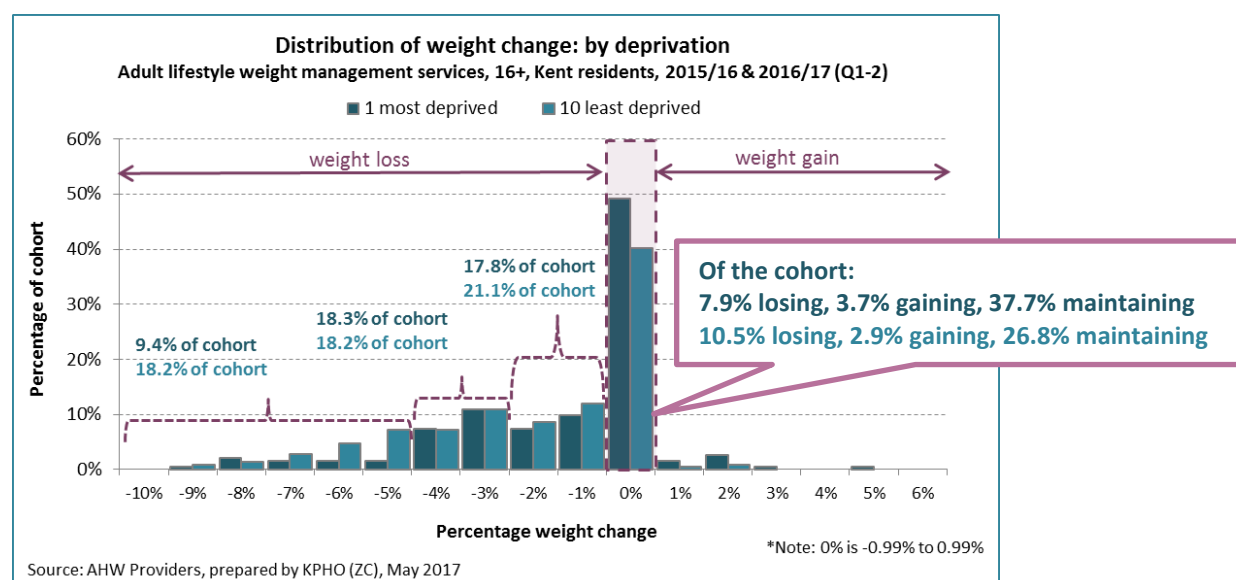
Engagement and completion varied by deprivation (see below table) and in comparison to Kent was;

- lower within the most deprived decile,

Statistic	IMD 2015 Kent Weighted Decile	
	1 most deprived	10 least deprived
Referred & seen for initial assessment (n)	191	209
Percentage engaging (Kent, 71.0%)	63.9%** n=122	76.1% n=159
Percentage completing (Kent, 57.7%)	49.2%** n=94	64.1% n=134

**Note:** n – number, \*\*significantly different to Kent average,

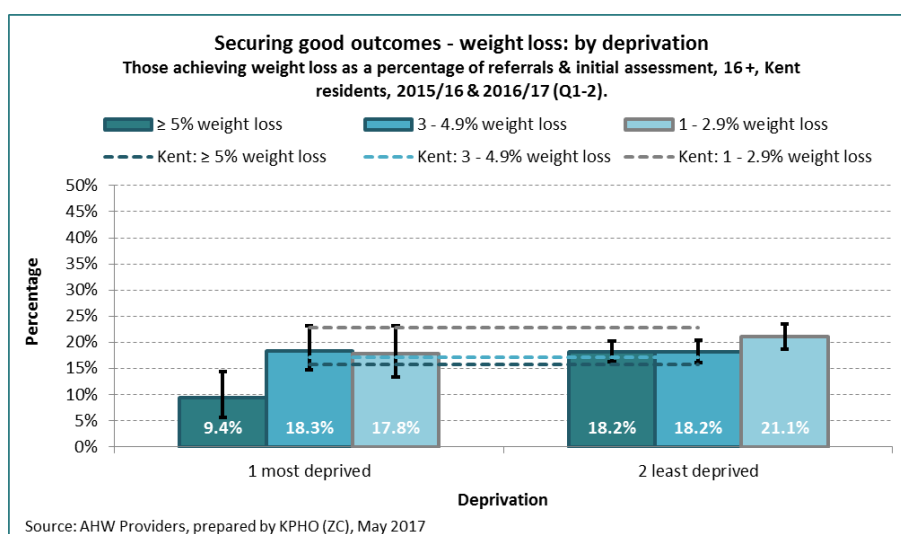
Weight loss outcomes did vary by deprivation;



Those resident within the most deprived decile were also less likely to achieve a 5% or greater weight loss outcome in comparison to the least deprived decile and the Kent average.<sup>19</sup>

<sup>19</sup> Note: the above finding was not significant for the 3% or greater weight loss outcome. Suggesting a key relationship with deprivation for the greater weight loss outcome.

- Lower completion in the most deprived decile affected outcome analysis.



The median (or middle percentage weight change) was -0.3% for those resident within the most deprived areas and -1.5% for the least deprived areas. The interquartile range (or the middle 50% of the weight loss distribution) included greater percentage weight losses (-4.1%, 0.0%) for the least deprived groups.

IMD 2015 Kent Weighted Decile		
Statistic	1 most deprived	10 least deprived
Median percentage weight change (IQR)	-0.3% (-3.3%, 0.0%)	-1.5% (-4.1%, 0.0%)
Odds for <b>achieving</b> 3 - 4.9 % weight loss (CI)	0.89 (0.53, 1.49) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss (CI)	0.46 (0.25, 0.84) <i>p</i> value <0.05	REF
Odds for <b>achieving</b> 3 - 4.9 % weight loss <sup>a</sup> (CI)	1.05 (0.61, 1.81) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss <sup>a</sup> (CI)	0.56 (0.29, 1.07) <i>p</i> value >0.05	REF

**Note:** baseline observation carried forward, IQR – interquartile range, CI – 95% confidence interval, REF – reference category, <sup>a</sup> adjusted for completion, shaded cells indicate statistical significance

#### 4.2.5 Securing Good Outcomes: by Acorn category

Those engaging, completing and achieving weight loss outcomes has been analysed by Acorn.

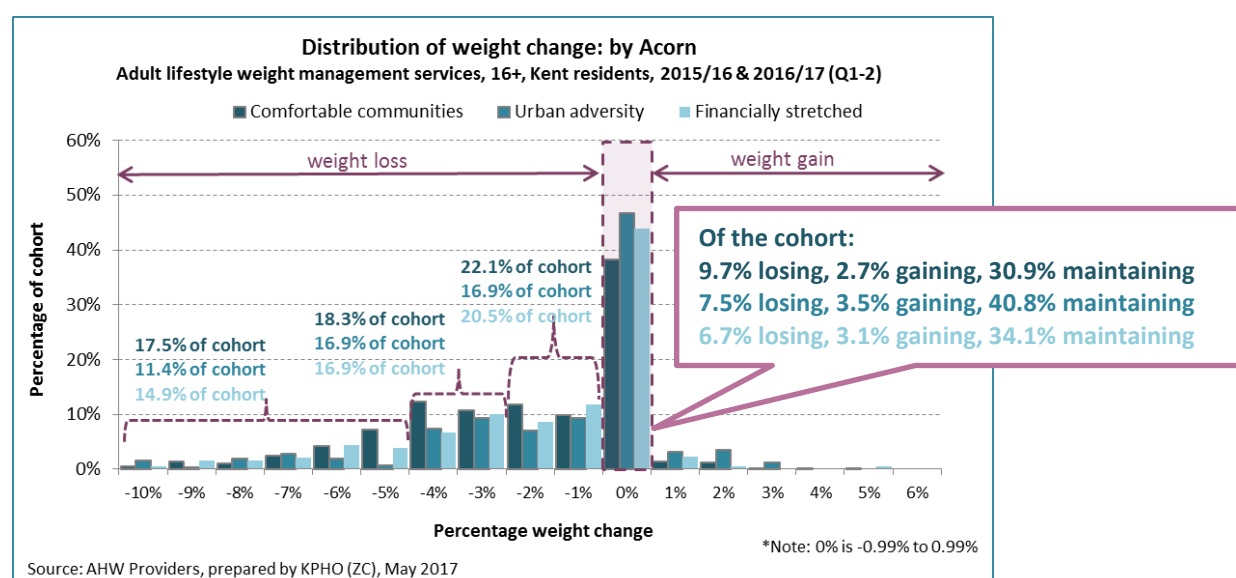
Engagement and completion varied by Acorn category (see below table) and in comparison to Kent was;

- lower within the urban adversity and financially stretched categories,

Statistic	Acorn		
	Comfortable communities	Financially stretched	Urban adversity
Referred & seen for initial assessment (n)	515	390	255
Percentage engaging (Kent, 71.0%)	73.4% n=378	65.4%** n=255	64.3%** n=164
Percentage completing (Kent, 57.7%)	58.4% n=301	51.3%** n=200	47.8%** n=122

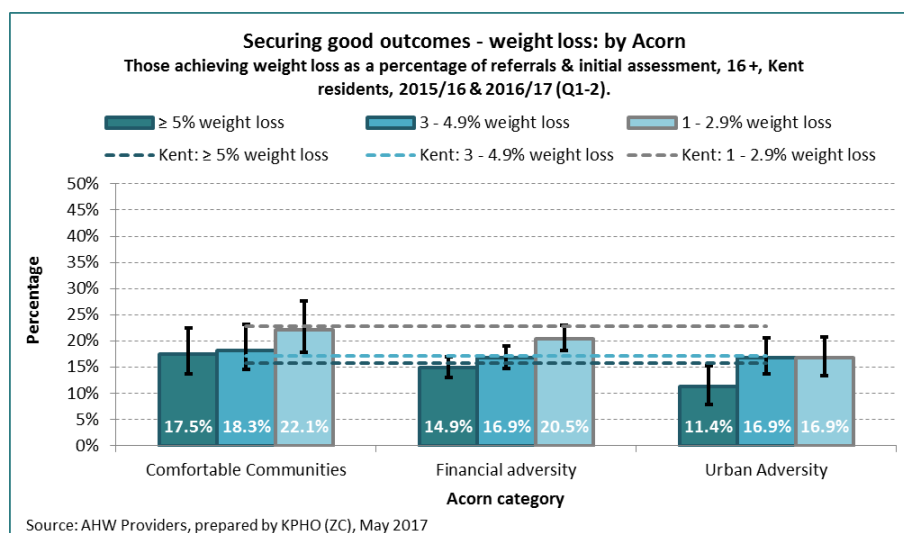
**Note:** n – number, \*\*significantly different to Kent average,

Weight loss outcomes did vary by Acorn category;



The comfortable communities Acorn category were more likely to achieve a 5% or greater weight loss outcome in comparison to the urban adversity category.<sup>20</sup>

- Lower completion in the urban adversity category affected outcome analysis.



The median (or middle percentage weight change) was -0.4% for urban adversity category and -1.8% for comfortable communities. The interquartile range (or the middle 50% of the weight loss distribution) included greater percentage weight losses (-4.0%, 0.0%) for the comfortable communities category.

Statistic	Acorn		
	Comfortable communities	Financially stretched	Urban adversity
Median percentage weight change (IQR)	-1.8% (-4.0%, 0.0%)	-1.2% (-3.7%, 0.0%)	-0.4% (-3.4%, 0.0%)
Odds for <b>achieving</b> 3 - 4.9 % weight loss (CI)	1.21 (0.81, 1.81) <i>p</i> value >0.05	1.06 (0.69, 1.62) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss (CI)	1.72 (1.09, 2.71) <i>p</i> value <0.05	1.37 (1.09, 2.71) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> 3 - 4.9 % weight loss <sup>a</sup> (CI)	1.08 (0.70, 1.66) <i>p</i> value >0.05	1.05 (0.67, 1.66) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss <sup>a</sup> (CI)	1.49 (0.91, 2.44) <i>p</i> value >0.05	1.37 (0.81, 2.32) <i>p</i> value >0.05	REF

**Note:** baseline observation carried forward, IQR – interquartile range, CI – 95% confidence interval, REF – reference category, <sup>a</sup> adjusted for completion, shaded cells indicate statistical significance

<sup>20</sup> Note: the above finding is also significant for the 3% or greater weight loss outcome. Suggesting a key relationship for any level of weight loss outcome.

#### 4.2.6 Securing Good Outcomes: by start Body Mass Index

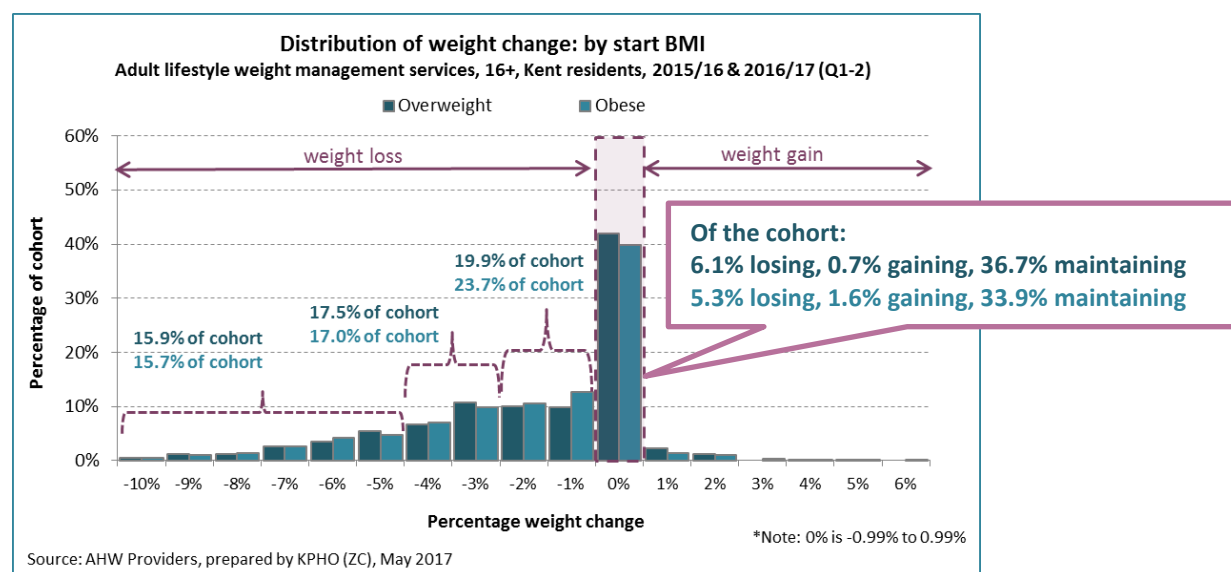
Those engaging, completing and achieving weight loss outcomes has been analysed by start body mass index.

- Engagement and completion did not vary by start BMI (see below table)
- Both overweight and obese groups were similar to Kent.

Statistic	Start BMI	
	Overweight	Obese
Referred & seen for initial assessment (n)	428	1,518
Percentage engaging (Kent, 71.0%)	70.6% n=302	71.1% n=1,079
Percentage completing (Kent, 57.7%)	54.9% n=235	48.5% n=888

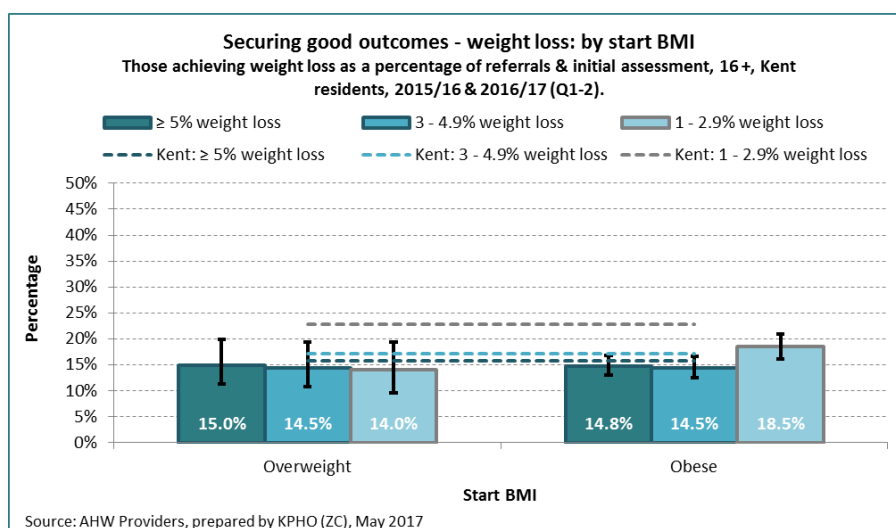
**Note:** n – number, \*\*significantly different to Kent average,

There was limited evidence for evidence of variation in weight loss outcomes by start BMI;



Whilst there was a lower percentage of those with an obese start body mass index achieving a greater than 3% weight loss in comparison to the Kent average, the odds for weight loss outcomes in comparison to the overweight group was not significant.

- Due to non-significance, analysis was not adjusted for completion.



The median (or middle percentage weight change) and interquartile range (or the middle 50% of the weight loss distribution) was similar across overweight and obese categories for start body mass index.

Statistic	Start BMI	
	Overweight	Obese
Median percentage weight change (IQR)	-3.2% (-5.1, -1.4%)	-3.0% (-5.0, -1.4%)
Odds for <b>achieving</b> 3 - 4.9 % weight loss (CI)	1.04 (0.78, 1.39) <i>p</i> value >0.05	REF
Odds for <b>achieving</b> ≥ 5% weight loss (CI)	1.03 (0.76, 1.38) <i>p</i> value >0.05	REF

**Note:** baseline observation carried forward, IQR – interquartile range, CI – 95% confidence interval, REF – reference category, <sup>a</sup> adjusted for completion, shaded cells indicate statistical significance

## 5. Conclusions

The majority of referrals and initial assessments were for females, those aged 45 to 64 years and the White ethnic group. At a Kent level referral to services and initial assessments were consistent across the deprivation deciles. However, greater need but lower service access from higher overweight and obesity prevalence coupled with lower referrals and initial assessments were identified for males and those aged 75 and over.

Lower levels of engagement and completion were identified within the younger and more deprived groups. There was lower success despite good levels of engagement and completion in those aged between 45 and 64 years (compared to 65 and over) and within ethnic minority groups (compared to White groups). There was also some evidence for higher levels of weight loss outcomes in men.

Our findings show some similarity to the evidence review by National Institute for Health & Care Excellence, particularly in relation to our findings by age and gender.<sup>21</sup> Whereby the National Institute for Health & Care Excellence evidence statements report:

- **inconsistent** evidence that men achieve slightly more weight loss than women,
- **moderate** evidence that older groups lose more weight than younger groups,

---

<sup>21</sup> NICE & University of Oxford (2013) Managing overweight and obese adults: update review  
<http://bit.ly/2r780UF>

## Appendix A: Programme Characteristics

The following tables present a summary of the adult lifestyle weight management programme characteristics.

Dartford Borough Council	
Why Weight	
core staff	delivered by trained nutritionists and exercise specialists
locations & setting	delivered across Dartford Borough
programme characteristics	<p>Each week is comprised of an hour's group discussion around a specific topic (food labelling, food content etc.) and an hour's gentle exercise class.</p> <p>The aim of the adult weight management service specification is to sustain a long term movement towards and maintenance of a 3% body weight loss amongst overweight or obese adults from age 18 (BMI <math>\geq 28</math>).</p> <p>12 week rolling programme with 2 hour sessions</p> <p>maximum 15 people per session</p> <p>15 groups per year</p>

Gravesham Borough Council	
Adult Healthy Weight	
core staff	delivered via Healthy Living centre staff ( The Grand)
locations & setting	delivered at 5 venues across Gravesham Borough
programme characteristics	<p>12 week programme with 90 minute sessions</p> <p>maximum 15 people per session</p> <p>14 groups per year</p>



Maidstone Borough Council		
	Adult Weight Management	Counterweight
<b>core staff</b>	subcontracted to Tonbridge and Malling Borough Council and Maidstone Leisure centre	
<b>locations &amp; setting</b>	delivered at Maidstone Leisure Centre	delivered at a variety of community centres, pharmacies and GP surgeries across the borough.
<b>programme characteristics</b>	20 week programme 60 minute sessions plus 1:1s and gym/swim time maximum 25 people per session 8 groups per year	10 week programme 90 minute sessions maximum 15 people per session 13 groups per year

Sevenoaks District Council	
	Why Weight
<b>core staff</b>	delivered by Sevenoaks District Council staff
<b>locations &amp; setting</b>	delivered at a variety of community centres
<b>programme characteristics</b>	Designed for people who are over 18 and have at least two stone to lose. Helps people to understand the relationship between food, exercise and weight control. Each weekly session focuses on a particular healthy eating subject and a 30 minute reintroduction to exercise class. 12 week programme 90 minute sessions maximum 15 people per session 12 groups per year

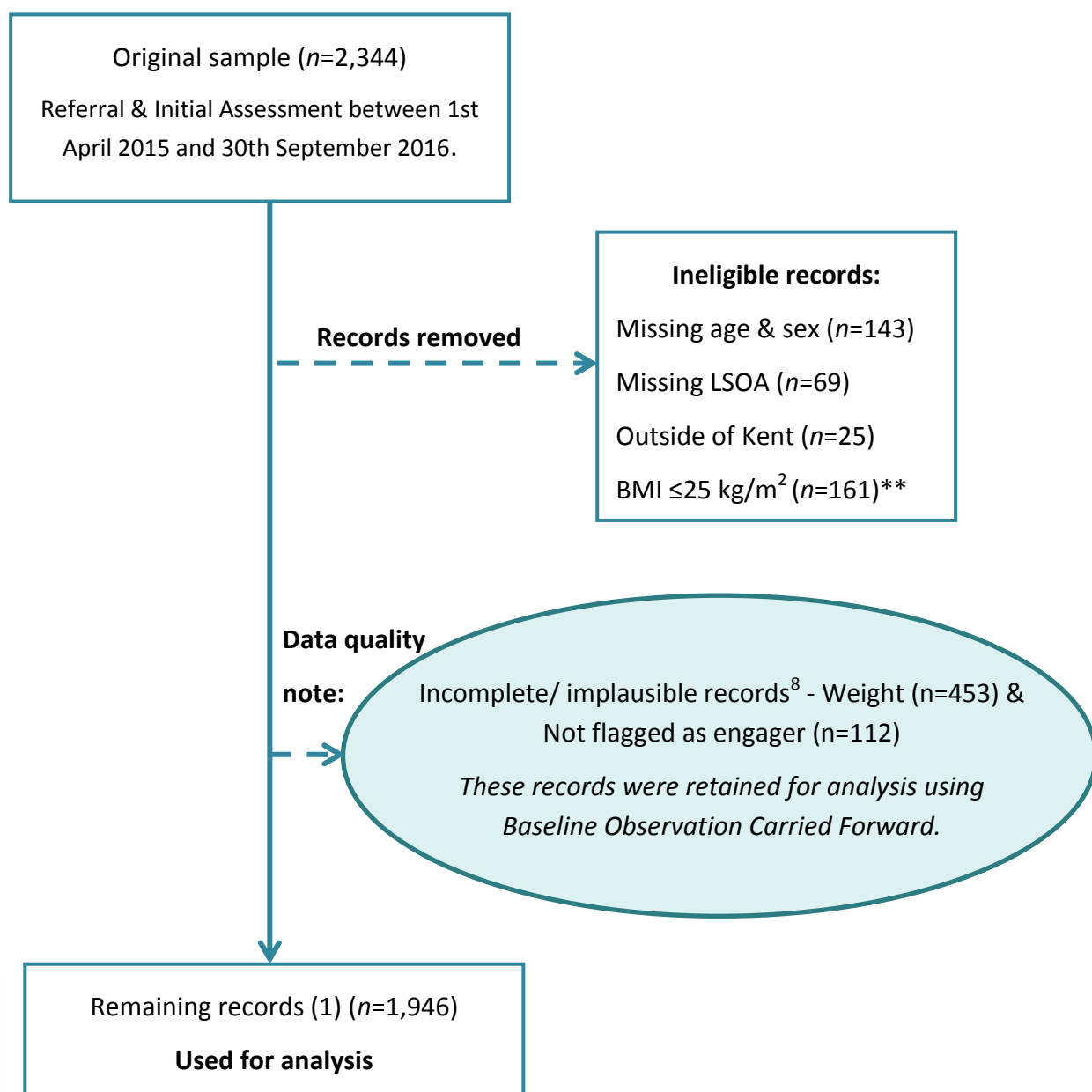
Tonbridge & Malling Borough Council	
Counterweight	
core staff	delivered by Tonbridge & Malling Borough Council staff
locations & setting	delivered by Tonbridge & Malling Borough Council, at community venues including the Angel Centre and Larkfield Leisure Centre
programme characteristics	<p>11 week programme</p> <p>90 minute sessions (plus 3 follow-up sessions)</p> <p>maximum 18 people per session</p> <p>27 groups per year</p> <p>8 × 1:1 programmes</p>

Tonbridge Wells Borough Council	
Weight for It	
core staff	delivered by Tunbridge Wells Borough Council staff
locations & setting	<p>delivered at community venues including the Gateway, Goudhurst Village Hall and St Matthews Church</p> <p>Additional 30 minute 1:1 sessions offered at Kingswood Surgery, Waterfield House Surgery and Wish Valley Surgery</p>
programme characteristics	<p>10 week programme</p> <p>90 minute sessions</p> <p>maximum 15 people per session</p> <p>14 groups per year</p>

Kent Community Health NHS Foundation Trust		
	Fresh Start Groups	Fresh Start Pharmacies
core staff	delivered by trained nutritionists exercise specialists, pharmacy and health trainers	
locations & setting	delivered in 7 localities across East Kent on a weekly basis max 20 per session	delivered at 58 pharmacy provider sites, 7 leisure centres and 1 general practice
programme characteristics	12 week flexible, rolling programme targeted to those with more complex needs and BMIs over 25 kg/m <sup>2</sup>  1:1 sessions at weeks 1 and 12	12 week structured 1:1 service to meet the needs of those clients with BMI 25-35 kg/m <sup>2</sup>

## Appendix B: File development

The dataset was prepared using the steps detailed below and is understood to represent; unique individuals accessing adult lifestyle weight management services across Kent between 1st April 2015 and 30th September 2016. Exercise referral and physical activity programmes have been excluded due to small numbers.<sup>22</sup>



<sup>22</sup> Implausible records defined as: weight <30kg or >400kg OR missing data for these indicators  
\*\*note this rule excludes Asian & Black groups whereby lower BMI thresholds trigger action

## **| Appendix C: Notes on statistical methodology**

### **C.1.1 Confidence intervals**

Confidence intervals have been presented throughout this report. For percentages the Wilson & Newcombe method was used, whereas, for rates the Byar's method was used. For survey figures presented confidence intervals were calculated using the weighted bases.

### **C.1.2 Statistical significance**

Statistical significance has been referred to throughout this report. The Altman method was used to explore statistical significance for percentages, as overlapping confidence intervals do not necessarily indicate no significant difference.

### **C.1.3 Trend analysis**

Trend analysis has been referred to throughout this report. Simple linear regression was used to calculate slope, to explore rate of change of indicators over time. Visual inspection of the data determined whether the trend was stable and this method appropriate.

### **C.1.4 Median**

The middle point of a set of values and a measure of the central tendency from the distribution of data. The median is used in preference to the mean when the data are not normally distributed.

### **C.1.5 Interquartile Range**

The limits within which the middle 50% of values fall and a measure of dispersion.

### **C.1.6 Baseline Observation Carried Forward**

It is well known that evaluation of overweight and obesity interventions are complicated by missing data from attrition. Rather than analyse data for completers only and ignore important data for non-completers, the following methods have been suggested; baseline observation carried forward, last observation carried forward and imputation strategies.<sup>23</sup> For this analysis, baseline observation carried forward has been used for records not flagged as an engager or completer and without outcome measures at end of assessment.

---

<sup>23</sup> Gadbury et al (2003) Modern statistical methods for handling missing data. *Obesity Reviews*, 4 175-184

Therefore, this imputes anyone who did not complete with a 0kg weight loss. The last observation carried forward approach was not available for non-completers.

### C.1.7 Multinomial Logistic Regression

A methodology used to predict the probability of an outcome based on one or more predictor variables of interest. As the outcome variable has more than two categories, this is described as multinomial.

*We used this method to understand the probability of adult lifestyle weight management service users achieving a 3-4.9% or ≥5% weight loss.<sup>24</sup> Univariate associations were examined for age, sex, ethnicity, deprivation, acorn category and start body mass index. Multivariate analyses were then explored using adjustment for completion. Start body mass index was not included in the final adjusted model, due to non-significance in univariate analysis.*

### C.1.8 Odds Ratio

Odds describe the probability of an event occurring divided by the probability of an event not occurring. An odds ratio is the ratio of odds in one group in comparison to another group.

		Outcome		
		≥ 3% weight loss	< 3% weight loss	Total
Predictor variable of interest	Male	a	b	a + b
	Female	c	d	c + d
	Total	a + c	b + d	

$$\text{Odds ratio} = \frac{(a \times d)}{(b \times c)}$$

### C.1.9 Confounding

A variable that is correlated to both the outcome and predictor variables.

<sup>24</sup> Note: this was also replicated for the binary ≥ 3% weight loss outcome.

## | Appendix D: Acorn categories

The following paragraphs provide a description to the Acorn segmentation tool used to categorise the sample used within analysis.

### **D.1.1 Affluent Achievers**

This category is described as financially successful, resident in large houses in rural and semi-rural locations. This category is also predominantly middle aged or older. They are also described as well-educated and employed in managerial and professional occupations.

### **D.1.2 Rising Prosperity**

This category is described as prosperous, resident in modern flats or terraced houses in major towns and cities. This category is also predominantly younger professionals. They are also described as well-educated, financially confident and early adopters of new technology.

### **D.1.3 Comfortable Communities**

This category is described as middle-of-the-road Britain, resident in semi-detached or detached houses in the suburbs and smaller towns. This category represents all life stages; younger couples, stable families, empty nesters and pensioners. They are also described to be educated in line with average and comfortably off.

### **D.1.4 Financially Stretched**

This category is described as traditional Britain, resident in terraced or semi-detached houses and social housing. This category represents fewer married couples and more single parents, single, separated and divorced people. They are also described to have incomes below average, unemployment above average and are less likely to engage with financial services. A minority experience financial pressure.

### **D.1.5 Urban Adversity**

This category is described as the people who are finding life the hardest and experiencing difficult social and financial conditions. They are resident in deprived areas of large and small towns and cities. This category represents all life stages in single adult households. They are also described to have higher levels of health problems.

The segmentation tool can also be used to understand the preferred communication strategies by each Acorn category.

		1 Category 1 Affluent Achievers	2 Category 2 Rising Prosperity	3 Category 3 Comfortable Communities	4 Category 4 Financially Stretched	5 Category 5 Urban Adversity
Email	5.5	11.1	2.8	5.7	2.4	2.9
Phone or SMS	34.7	26.5	5.8	38.9	46.3	38.0
Mail	58.4	61.4	90.6	54.4	49.8	56.2
Visit	1.4	1.1	0.8	1.0	1.5	2.9

Source: <http://acorn.caci.co.uk/downloads/Acorn-Knowledge-sheet.xls> (ACORN-CACI)¶