Introduction

The height and weight of children in Reception (Year R: 4 – 5 year olds) and Year 6 (10 - 11 year olds) are measured annually through the Jersey Child Measurement Programme (JCMP). The total number of children measured in 2018/19 was 2,079 (97% of all eligible children).

Body Mass Index (BMI) can be calculated for each pupil from their height and weight measurements, and individuals are categorised into 'underweight', 'healthy weight', 'overweight', 'obese' and 'severely obese' categories. As BMI does not measure body fat directly, it cannot be used as a diagnostic tool, but can be used as a measure to track weight status in populations and as a screening tool to identify *potential* weight problems in individuals. The proportions of Jersey's population that are of healthy weight or exceeding healthy weight and therefore at increased health risk are calculated – see Notes for further information.

In this report, the phrase 'prevalence of obesity' is equivalent to the proportion of children classified as 'obese' and 'severely obese'.

Summary

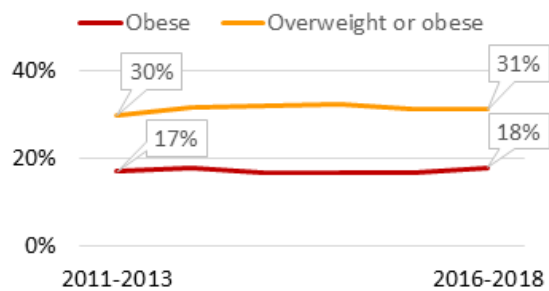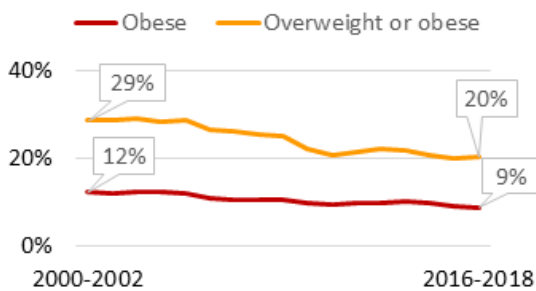In the academic year 2018/2019:

- two in ten children in Year R (21%) and around three in ten children in Year 6 (30%) were overweight or obese
- the proportion of children categorised as overweight or obese in Year R were similar for females and males; for those in Year 6, the prevalence of obesity was slightly higher for males (21%) than for females (14%)
- the proportion of Year R children classified as overweight or obese has remained at around 20% since 2009-2011, and has continued to be lower than seen in 2004-2006 (29%)
- the prevalence of children classified as overweight or obese in Year 6 (31%) has remained unchanged since 2011-2013
- most children who were a healthy weight six years previously remained a healthy weight at Year 6 (83%); one in ten (11%) of this healthy weight group had become overweight, and one in twenty (5%) had become obese
- three in ten (30%) children who were overweight six years previously were measured as still overweight; around three in ten (31%) had returned to a healthy weight, and four in ten (39%) of this group had become obese over the previous six years
- around three in four children (71%) who were obese or severely obese six years previously remained obese or severely obese in Year 6
- children in Year 6 living in rural areas (24%) were less likely to be overweight or obese than those living in semi-urban (33%) or urban areas (38%)
- 22% of children who attended non fee-paying schools in Year R were overweight or obese, a higher proportion than those who attended fee-paying schools (15%)
- a higher proportion of children who attended non fee-paying schools in Year 6 were overweight or obese (35%) compared to those who attended fee-paying schools (23%)
- the proportion of children in Year 6 categorised as overweight or obese was lower in Jersey (30%) than in England (34%)
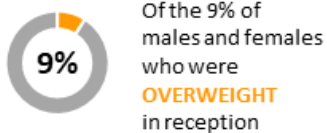
Jersey Child Measurement Programme 2018/2019

Statistics Jersey

Year R (4-5 year olds)

21%

22%

Similar proportion of males & females **obese** or **overweight**

— Obese — Overweight or obese

40%
29%
20%
12%
20%
9%
0%
2000-2002   2016-2018

Year 6 (10-11 year olds)

27%

33%

Similar proportion of males & females **obese** or **overweight**

— Obese — Overweight or obese

40%
30%
31%
20%
17%
18%
0%
2011-2013   2016-2018

24% of children in Year 6 living in **rural** parishes were **overweight** or **obese** compared to **33%** in **semi-urban** and **38%** in **urban** parishes

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86%

Of the 86% of males and females who were **HEALTHY WEIGHT** in reception

Most remained a **healthy weight** by Year 6

9%

Of the 9% of males and females who were **OVERWEIGHT** in reception

3 in ten became **healthy weight**; 3 in 10 remained **overweight**; a further 4 in 10 became **obese**

6%

Of the 6% of males and females who were **OBESE** in reception
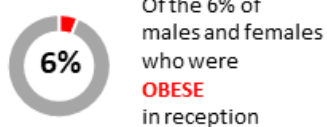
1 in 10 reduced their status to **healthy weight**; 2 in 10 to **overweight**; most remained **obese**

By age

- more than three-quarters (78%) of Year R children had height and weight measurements that classified them as having a healthy BMI, whilst in Year 6 over two-thirds (69%) were of 'healthy weight'
- obesity prevalence (including severe obesity) was 8% in Year R, half of that in Year 6 (17%), see Table 1 and Figure 1
- two in ten Year R children (21%) were overweight or obese, compared to around three in ten children in Year 6 (30%) (see Table 1 and Figure 2)

Table 1: BMI classifications, percentages, 2018/19

	Year R	Year 6
Underweight	<1	1
Healthy weight	78	69
Overweight	13	13
Obese	6	13
Severely Obese	3	4
Combined Obese & Overweight	*21*	*30*

Note: percentages rounded to the nearest integer

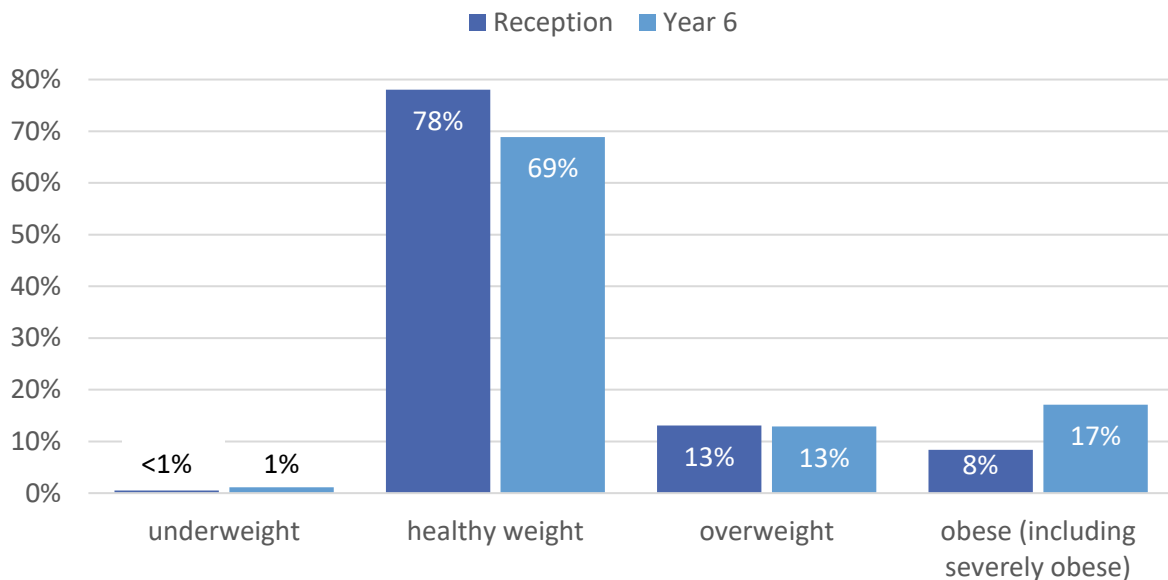**Figure 1: BMI categories by year group, 2018/19**

Figure 2: Prevalence of combined overweight and obesity by year group, 2018/19

By age and sex

- in Year R, the proportion of females categorised as overweight or obese (22%) was similar to males (21%), see Table 2 and Figure 3

Table 2: BMI classifications by sex, percentages, 2018/19

|	Year R		Year 6	
	Males	Females	Males	Females
Underweight	<1	<1	<1	2
Healthy weight	78	78	67	70
Overweight	13	14	12	13
Obese	6	5	14	12
Severely Obese	2	3	6	2
Combined Obese & Overweight	*21*	*22*	*33*	*27*

Note: percentages rounded to the nearest integer

Figure 3: Proportion of Year R children classified as underweight, overweight and obese by sex, 2018/19
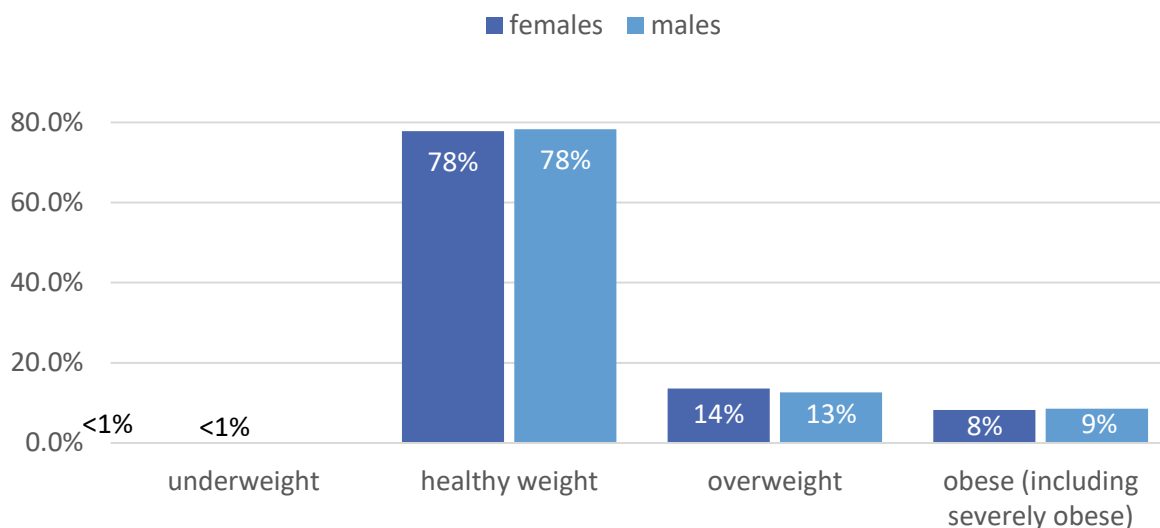
in Year 6, the prevalence of obesity in Year 6 was slightly higher for males (21%) than for females (14%), see Figure 4

Figure 4: Proportion of Year 6 children classified as underweight, overweight and obese by sex, 2018/19
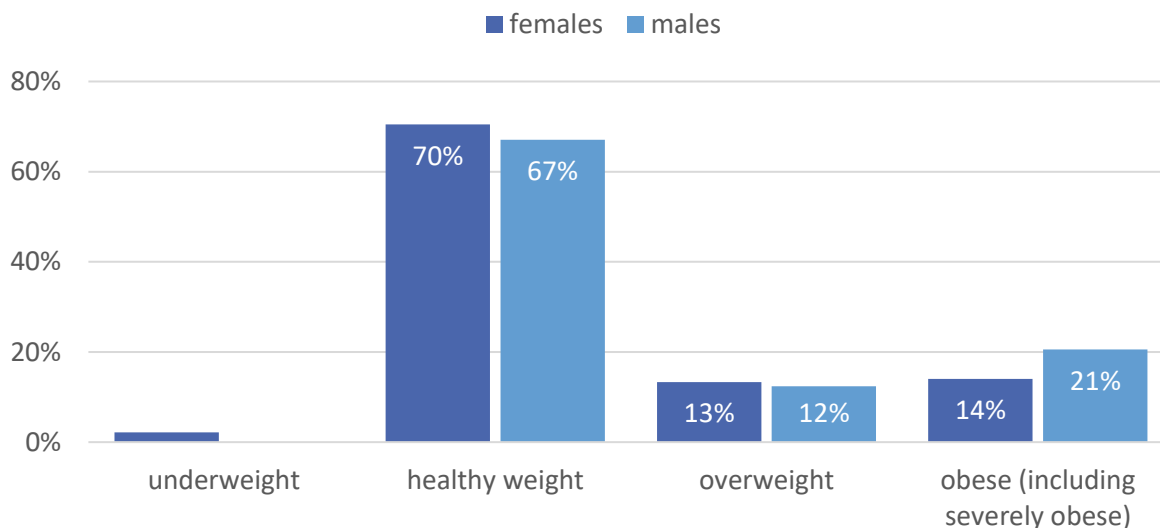
Changes over time – Year R

- the proportion of Year R children classified as overweight or obese has not changed significantly (around 20%) since 2009-2011, and continues to be lower than in the period between 2000 and 2006 (29%)
- the proportion of children classified as obese in Year R has decreased marginally from 12% in 2000-2002 to 9% in 2016-2018

Figure 5: BMI classifications for Year R, three-year averages
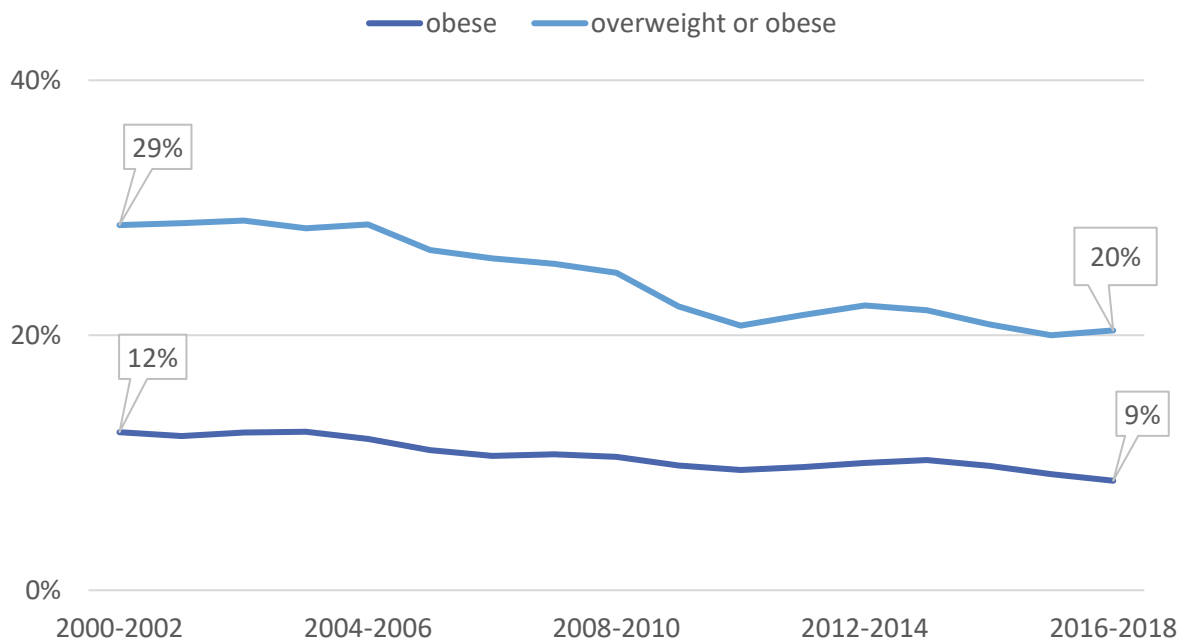
Changes over time – Year 6

- since the Jersey Child Measurement Programme was expanded to include measurement of Year 6 children in 2011, the proportion of overweight or obese children has remained at around one in three (31%)
- the prevalence of obesity in Year 6 has not changed significantly since 2011-2013, remaining at around one in six (18%), see Figure 6

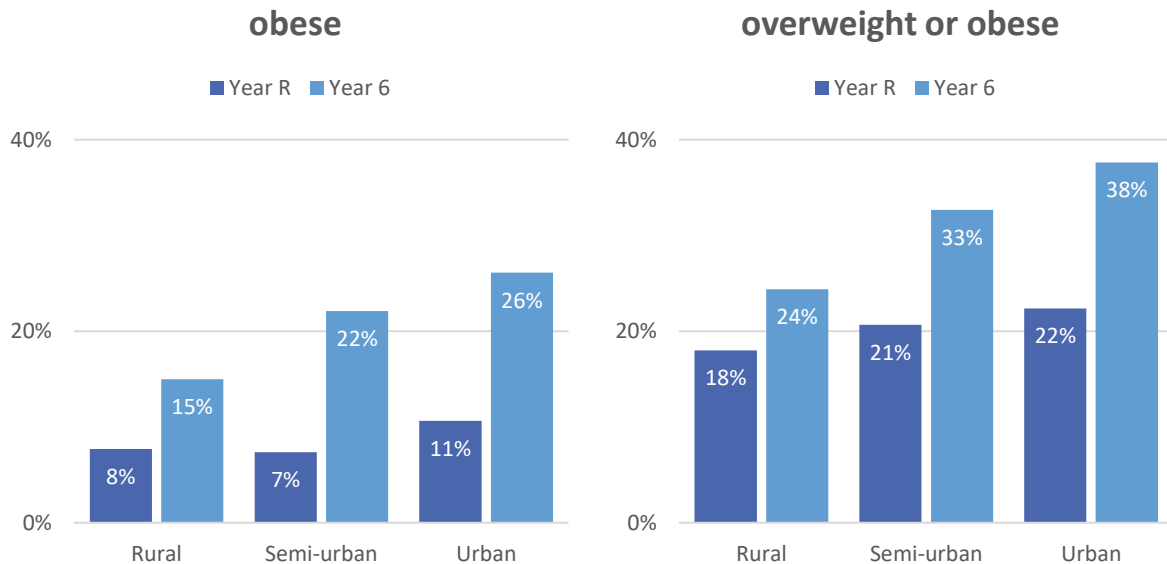**Figure 6: BMI classifications for Year 6, three-year averages**
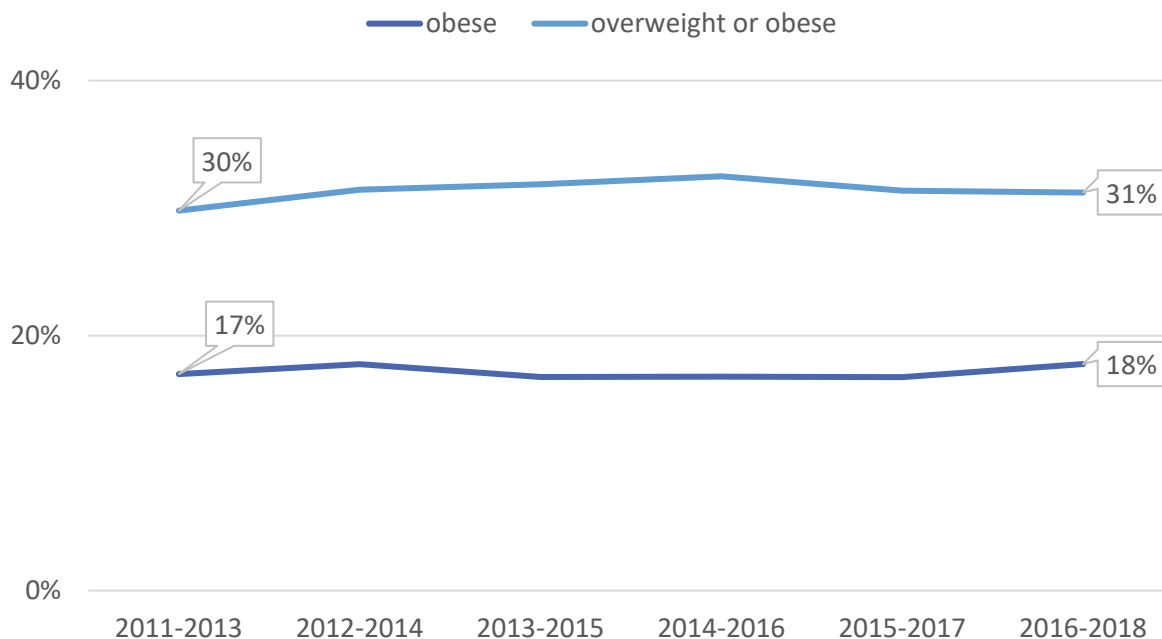
By parish of residence[1]

For this section, data from the previous three years has been combined.

- a similar proportion of children living in 'urban' parishes in Year R were overweight or obese (22%) compared to those living in 'rural' and 'semi-urban' areas (18% and 21% respectively)
- the proportion of children classified as overweight or obese in 'rural' parishes (24%) in Year 6 was lower than the proportion in 'semi-urban' (33%) and 'urban' areas (38%)

Figure 7: BMI classifications by parish type, 2016/17 to 2018/19 (three-year average)

By type of school attended[2]

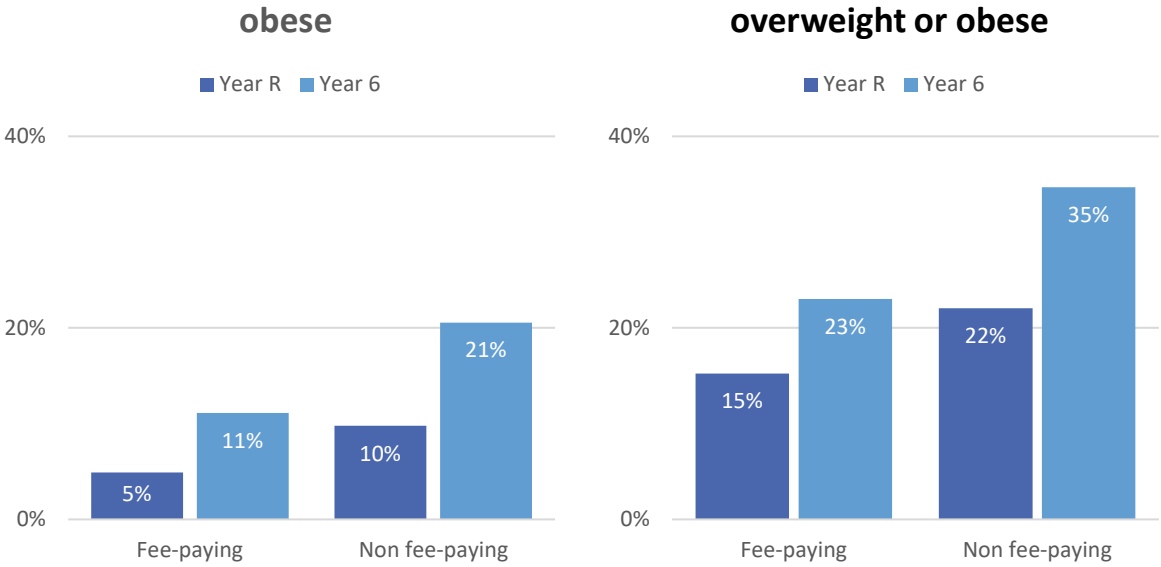For this section, data from the previous three years has been combined.

- in both Year R and Year 6, a higher proportion of children who attended non fee-paying schools were overweight or obese (22% in Year R and 35% in Year 6), compared to children who attended fee-paying schools (15% and 23%, respectively) see Figure 8

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[1] The parish of residence of each child was classified into:
- *Urban* – St Helier
- *Semi-urban* – St Brelade, St Clement, St Saviour
- *Rural* – Grouville, St John, St Lawrence, St Martin, St Mary, St Ouen, St Peter, Trinity

[2] School attended by each child were classified into: *Fee-paying* – Beaulieu, De La Salle, FCJ, Helvetia House, JCG Preparatory, St. George's, St. Michael's, Victoria College Preparatory;
Non fee-paying – Bel Royal, D'Auvergne, First Tower, Grands Vaux, Grouville, Janvrin, La Moye, Les Landes, Mont Nicolle, Plat Douet, Rouge Bouillon, Samares, Springfield, St. Clement, St. John, St. Lawrence, St. Luke, St. Martin, St. Mary, St. Peter, St. Saviour, Trinity

Figure 8: BMI classifications by school type, 2016/17 to 2018/19 (three-year average)

obese

Year R ■ Year 6

	Fee-paying	Non fee-paying
Year R	5%	10%
Year 6	11%	21%

overweight or obese

Year R ■ Year 6

	Fee-paying	Non fee-paying
Year R	15%	22%
Year 6	23%	35%

- in Year R the prevalence of overweight or obese children has remained at similar proportions in both fee-paying and non fee-paying schools since 2009-2011 and continues to be lower than in the period 2007-2009 (see Figure 9)
- in Year 6 the prevalence of overweight or obese children has remained at similar proportions in both fee-paying and non fee-paying schools since 2011-2013

Figure 9: Proportion of children who were overweight or obese, by school type, 2016/17 to 2018/19 (three-year averages)

Year R

Fee-paying — Non fee-paying

27% (2007-2009) → 22% (2016-2018) Non fee-paying
21% (2007-2009) → 15% (2016-2018) Fee-paying

Year 6

Fee-paying — Non fee-paying

33% (2011-2013) → 35% (2016-2018) Non fee-paying
22% (2011-2013) → 23% (2016-2018) Fee-paying
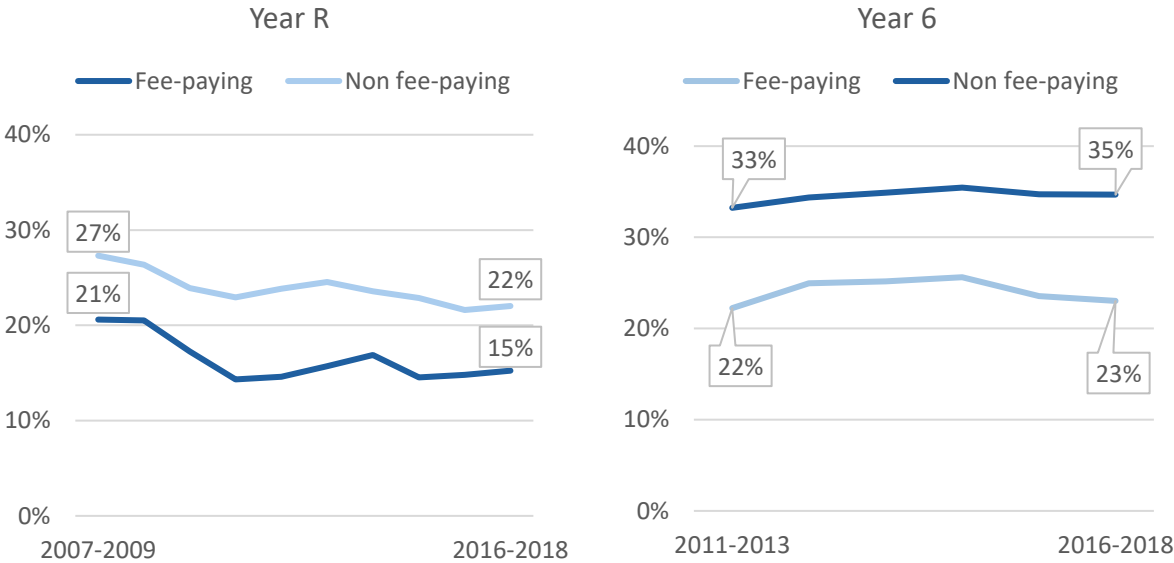
Group changes

Children in Year 6 in 2018/2019 were previously in Year R in 2012/2013. Table 3 compares the BMI classifications for those children measured in Year R in 2012/2013 in Jersey, with those measured in Year 6 in 2018/19 in Jersey. Due to inward and outward migration between the two time points, not all of the same children in Year 6 will be included in the Year R data, and vice versa.

- a similar proportion of the Year R group in 2012/2013 (12%) were overweight compared to the Year 6 group in 2018/19 (13%)
- the prevalence of obesity was higher in the Year 6 group in 2018/19 (17%) compared to the Year R group in 2012/13 (9%)

Table 3: BMI classifications, percentages

	2012/13 Year R	*2018/19 Year 6*
Underweight	<1	1
Healthy weight	78	69
Overweight	12	13
Obese	7	13
Severely Obese	2	4
Combined Overweight & Obese	21	30

Note: percentages rounded to the nearest integer

Individuals' changes

The change in weight status for specific individuals from Year R in 2012/13 to Year 6 in 2018/19 can also be analysed. **For this individual level analysis, BMI categories were defined using clinical rather than epidemiological boundaries** (see Annex), as the clinical boundaries are child-orientated and considered more appropriate when exploring individual movements.

To ensure sufficiently robust data, the measurements from children in three cohorts were included (those in Year R in 2010/11; 2011/12; 2012/13), with their corresponding measurements from Year 6 (in 2016/17; 2017/18; 2018/19).

Table 4 gives the proportion of children in each category for Year R and Year 6:
- nearly three-quarters (72%) of children were healthy or underweight in Year 6 *and* six years previously in Year R
- 4% of children were obese both when they were in Year R and Year 6

Table 4: BMI classifications, for three-year cohort of children over time (both sexes), percentages

		Year R in 2010/11; 2011/12; 2012/13			
		Healthy weight & underweight	Overweight	Obese	**All weight categories**
Year 6 in 2016/17; 2017/18; 2018/19	Healthy weight & underweight	72	3	1	**76**
	Overweight	9	3	1	**13**
	Obese	4	3	4	**11**
	All weight categories	**86**	**9**	**6**	**100**

Individuals' changes by Year R grouping

Looking in particular at each group according to their weight status in Year R (see Table 5):
- most children who were healthy weight in Year R remained a healthy weight six years later in Year 6 (84%); 11% of this group became overweight, and an additional 5% became obese or severely obese
- for children who were overweight in Year R six years previously, 30% remained overweight by Year 6, 32% of this group had become obese or severely obese, and around two in five (38%) had become a healthy weight
- three-quarters (77%) of children who were obese or severely obese six years previously in Year R remained obese or severely obese by Year 6; 14% of these children became overweight and around one in ten (9%) had moved to a healthy weight by Year 6

Table 5: BMI classifications, for three-year cohort of children over time (both sexes), percentages

		Year R in 2010/11; 2011/12; 2012/13		
		Healthy weight & Underweight	Overweight	Obese
Year 6 in 2016/17; 2017/18; 2018/19	Healthy weight & Underweight	84	38	9
	Overweight	11	30	14
	Obese	5	32	77
	Total	100	100	100

See Tables 6 and 7 for further detail by sex. A slight difference between the sexes was noted whereby 81% of obese males in Year R remained obese by Year 6, whereas this was true for 72% of obese females – a higher proportion of obese females in Year R moved to the 'overweight' category by Year 6 (20%) than obese males (9%).

Table 6: BMI classifications, for a three-year cohort of children over time (females only), percentages

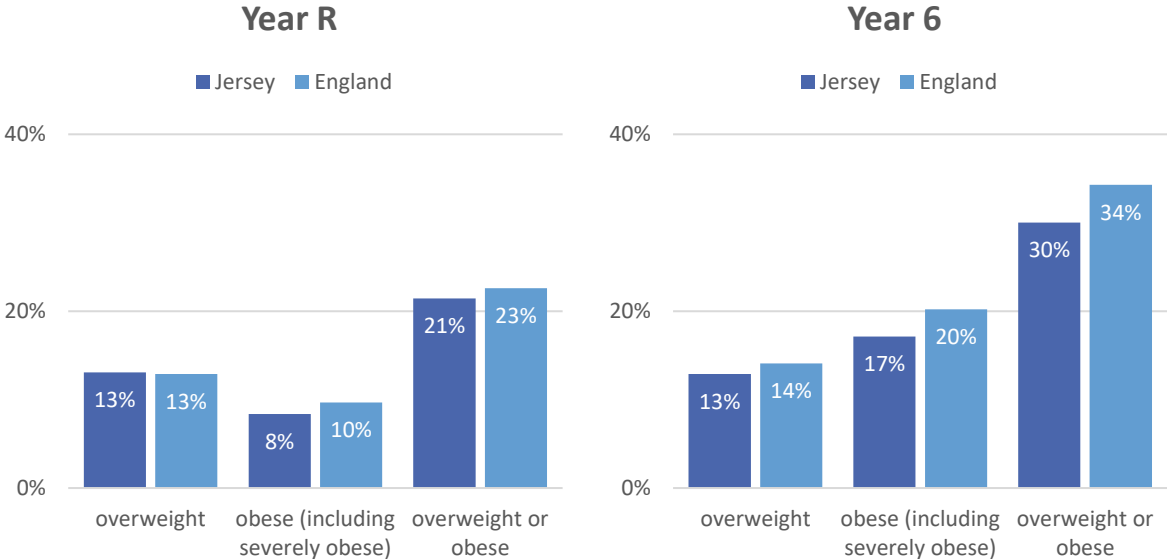|		Year R in 2010/11; 2011/12; 2012/13		
	FEMALES	Healthy weight & underweight	Overweight	Obese
Year 6 in 2016/17; 2017/18; 2018/19	Healthy weight & underweight	85	40	8
	Overweight	11	27	20
	Obese	3	34	72
	Total	100	100	100

Table 7: BMI classifications, for a three-year cohort of children over time (males only), percentages

		Year R in 2010/11; 2011/12; 2012/13		
	MALES	Healthy weight & underweight	Overweight	Obese
Year 6 in 2016/17; 2017/18; 2018/19	Healthy weight & underweight	83	36	10
	Overweight	11	33	9
	Obese	6	31	81
	Total	100	100	100

Comparison to England

- in Year 6 the proportion of overweight and obese children was lower in Jersey (30%) than in England (34%), see Figure 10

Figure 10: Prevalence of overweight and obesity, comparison to England, 2018/19

Year R

■ Jersey ■ England

	overweight	obese (including severely obese)	overweight or obese
Jersey	13%	8%	21%
England	13%	10%	23%

Year 6

■ Jersey ■ England

	overweight	obese (including severely obese)	overweight or obese
Jersey	13%	17%	30%
England	14%	20%	34%

Notes

The Jersey Child Measurement Programme began in 1995, measuring the heights and weights of children attending Jersey schools in Year R. It was extended in the 2011/12 academic year to include measuring the heights and weights of Year 6 children.

BMI categories

The height and weight measurements of children are used to calculate their Body Mass Index (BMI)

$$\mathrm{BMI} = \frac{\text{weight (kg)}}{\text{height (m)} \ \times \text{height (m)}}$$

The BMI is then converted into a centile, which can be used to classify each child into **underweight, healthy weight, overweight, obese or severely obese**.

There are two classification systems (clinical and epidemiological) which use slightly different BMI boundaries during the classification. The **epidemiological** definition, which uses the British 1990 growth reference (UK90)[3] to determine weight status according to a child's age and sex, is used for the majority of this report for summaries of whole cohort and population groups.

The section of the report which focuses on individual movements of children in terms of their BMI category from Year R to Year 6 uses the clinical boundaries for classification. The clinical boundaries are child-orientated and more appropriate when exploring individual movements. See Figures 12 and 13 for the relevant centile boundaries.

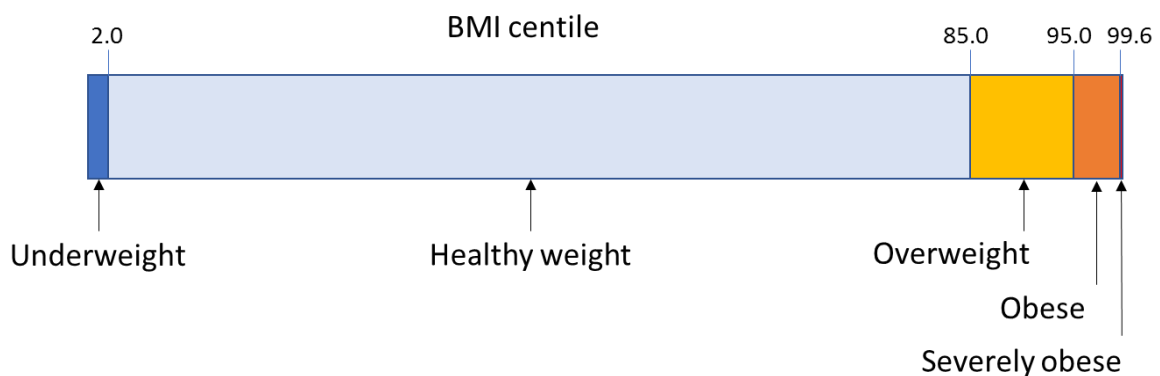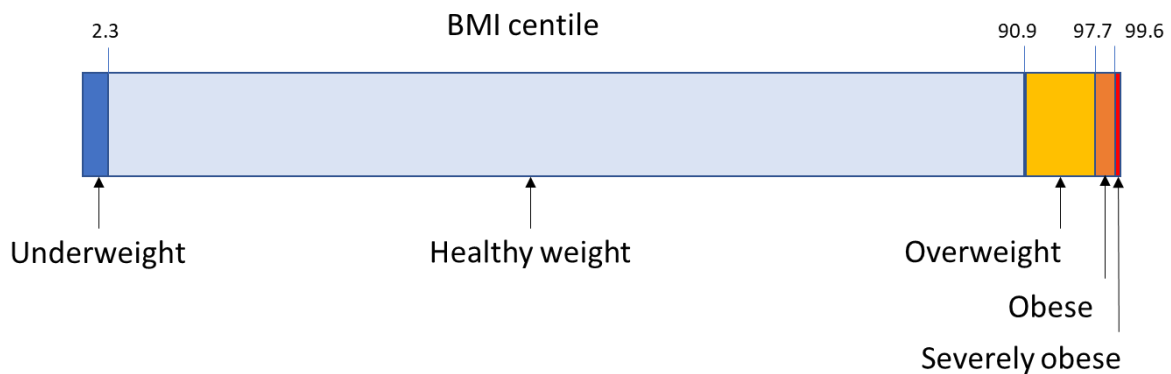**Figure 12: Centile boundaries for each weight category – epidemiological**

Figure 13: Centile boundaries for each weight category – clinical

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[3] 'Growth monitoring with the British 1990 growth reference'. Cole *Arch Dis Child*.1997; 76: 47-49 as used by ONS in the National Child Measurement Programme.

Participation

Participation in the JCMP is not compulsory and each year a small number of parents choose not to take part on behalf of their children. Additionally, children absent from school on the day of measurement may not be included. A total of 2,079 children were measured in 2018/19 (97% of all eligible children), across Year R and Year 6.

Potential bias due to non-participation was investigated for the English National Child Measurement Programme by NHS Digital, who found that obesity prevalence was underestimated by around 1 percentage point. This bias was found to decrease as the participation rate increased[4]. Any potential effect from non-response bias in the JCMP is anticipated to be of a similar magnitude given the high participation rates observed.

The number of children for whom weight status was available for the section on individuals' changes were:
- 3,020 children in Year R in 2010/11, 2011/12 and 2012/13
- 3,039 children in Year 6 in 2016/17, 2017/18 and 2018/19

Of these, 2,591 children could be matched as having been measured in *both* Year R and Year 6, and were included in the change analysis at an individual level.

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[4] For a participation rate of 80 per cent in 2006/7, it was estimated that the obesity prevalence was underestimated by 1.3 percentage points (pp); and for a participation rate of 88 per cent in 2007/08, the underestimate of obesity prevalence reduced to 0.8 pp