



## Child obesity international comparisons data factsheet

### Key points:

- Worldwide, the proportion of children and young people classified as overweight or obese has increased since 1980. In developed countries prevalence has risen during this period from 16.9% of boys and 16.2% of girls to 23.8% of boys and 22.6% of girls
- The UK ranks 9th for overweight prevalence (including obesity) in children (aged 2 to 19 years) out of the 34 Organisation for Economic Cooperation and Development (OECD) countries when International Obesity Task Force (IOTF) body mass index (BMI) thresholds are applied (Figure 1)
- When boys and girls are considered separately, the proportion of overweight or obese boys in the UK is 15th highest (26.1%) and for girls is 4th highest (29.2%) out of the 34 OECD countries (Table 3)
- When looking at obesity alone, of the 34 OECD countries, Israel has the highest proportion of obese boys (13.9%) and Luxembourg the highest proportion of obese girls (13.5%) (Table 4)
- For girls in the UK, there has been a 39% rise in prevalence of overweight (including obesity) since 1980, similar to Canada and Denmark. For boys the rise has been 48%, similar to Turkey and the US. The largest estimated percentage rise in overweight (including obesity) since 1980 was in Israel with a 83% increase in boys and 100% in girls (Figures 2 and 3)
- Compared with England and Scotland, boys in Wales aged 2 to 15 years have the highest prevalence of overweight (including obesity) at 35.3%. Girls in Scotland have the highest prevalence of overweight (including obesity) at 34.1% (Table 1)
- Compared with England and Scotland, Wales has the highest prevalence of overweight and obese children aged 4 to 5 years: 26.9% in boys and 25.4% in girls (Table 2)

## Introduction

Child obesity is common, especially in developed countries (as defined in Global Burden of Disease Study).<sup>1</sup> In 2013, 23.8% (95% uncertainty intervals 22.9 to 24.7) of boys and 22.6% (21.7 to 23.6) of girls aged 2 to 19 years in developed countries were estimated to be overweight or obese. This has increased from 16.9% (16.1 to 17.7) of boys and 16.2% (15.5 to 17.1) of girls in 1980.<sup>1</sup>

Worldwide, in 2013 an estimated 42 million children under the age of five years were estimated to be overweight or obese.<sup>2</sup> Prevalence rates vary considerably between different regions and countries.

## Issues to consider when comparing child obesity data internationally

Child body mass index (BMI) is classified differently from BMI for adults; for more information on the classification of child BMI see our [web page on measuring and interpreting BMI in children](#) and the briefing paper: [A simple guide to classifying body mass index in children](#).

Descriptions of the child BMI classifications used in this factsheet are provided in the Definitions section on page 10.

International estimates of overweight and obesity prevalence are mainly based on national surveys of measured height and weight among children at various ages. Caution is needed when comparing rates across countries as national prevalence estimates vary in their timing and frequency, the method used to classify BMI into categories such as overweight or obese and the age of the children included.

We know that overweight and obesity prevalence has increased over time, so older survey data is likely to show a lower prevalence than data from more recent surveys. The use of different growth references to categorise children's BMI as overweight or obese results in different prevalence rates for the same samples of children. For example, obesity prevalence calculated using the British 1990 growth reference for BMI (UK90)<sup>3</sup> would be higher than obesity prevalence calculated using the International Obesity Task Force (IOTF)<sup>4</sup> BMI cut-offs. Furthermore, obesity prevalence calculated using the UK90 results in a higher rate among boys whereas the IOTF cut-offs show a higher rate among girls. Additionally, evidence shows that obesity prevalence increases with age. Therefore, samples from younger age groups are likely to show a lower prevalence compared to samples of older children.

## Current figures

No globally agreed standard exists for classifying child BMI. However, the IOTF BMI cut-offs are most commonly used for international comparisons of overweight and obesity in children under 18 years. Many countries have their own population-specific thresholds for assessing BMI in children.

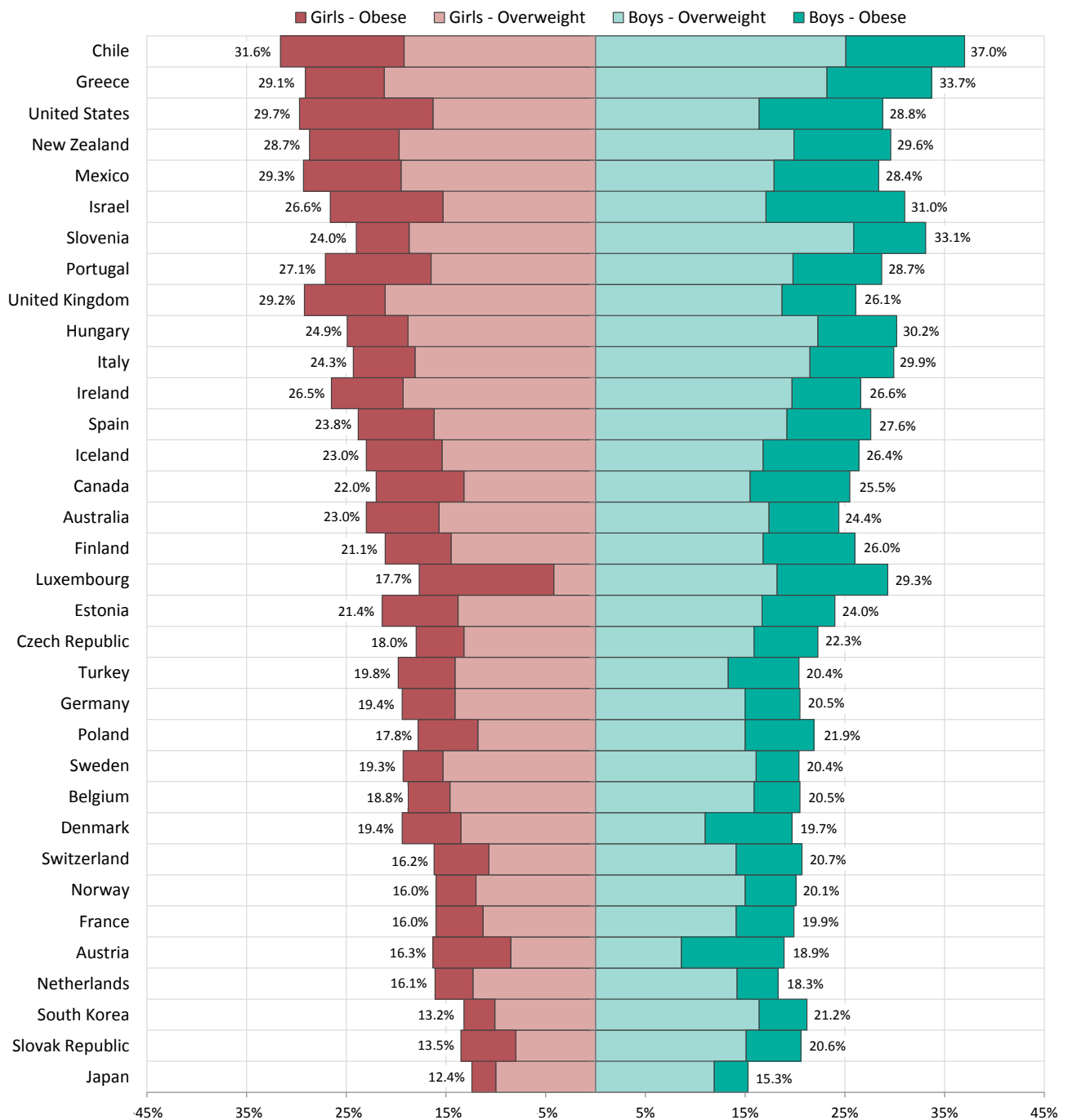
A paper in *The Lancet* in 2014 (Global, regional and national prevalence of overweight and obesity in children and adults 1980-2013: A systematic analysis)<sup>1</sup> analysed data from a series of surveys, reports and published studies for countries around the world. The IOTF thresholds were used to determine overweight and obesity for children under the age of 18 years. Statistical models were used to synthesise gaps in timeline data and adjust data for self-report. Data was weighted according to the level of uncertainty to estimate prevalence of obesity and overweight for age, sex, country and year. Age-standardised prevalence rates for 2 to 19 year olds were calculated and presented with 95% uncertainty intervals. Limitations exist with using modelled data, and are outlined in the *Lancet* paper.<sup>1</sup> The benefits of using modelled data include the ability to make direct comparisons to be made between countries which otherwise would not be possible.

Among children (aged 2 to 19 years), the prevalence of overweight and obesity has increased worldwide.<sup>1</sup> Data from *The Lancet* for countries in the OECD is presented in Figure 1, Table 3, Table 4 and described below.

The UK is ranked 9th out of the 34 OECD countries for prevalence of overweight (including obesity) for boys and girls combined. The proportion of overweight or obese boys in the UK is 15th highest at 26.1% (95% uncertainty intervals 23.8% to 28.5%) and for girls is 4<sup>th</sup> highest at 29.2% (26.8% to 31.9%).

Of the 34 OECD countries, Israel has the highest proportion of obese boys at 13.9% (95% uncertainty intervals 11.4% to 16.7%) and Luxembourg the highest proportion of obese girls at 13.5% (10.9% to 16.4%). Chile has the highest proportion of overweight (including obesity) in children: 37.0% (32.6% to 41.6%) for boys and 31.6% (27.3% to 36.3%) for girls.

**Figure 1: International overweight and obesity prevalence in children (aged 2–19 years) by OECD country using the IOTF cut-offs**



Data source: The Lancet, Systematic analysis for the Global Burden of Disease Study 2013<sup>1</sup>

The data in the chart is ordered based on the prevalence of overweight (including obesity) for boys and girls combined

Percentages given on the chart show the proportion of boys and girls that are overweight (including obese)

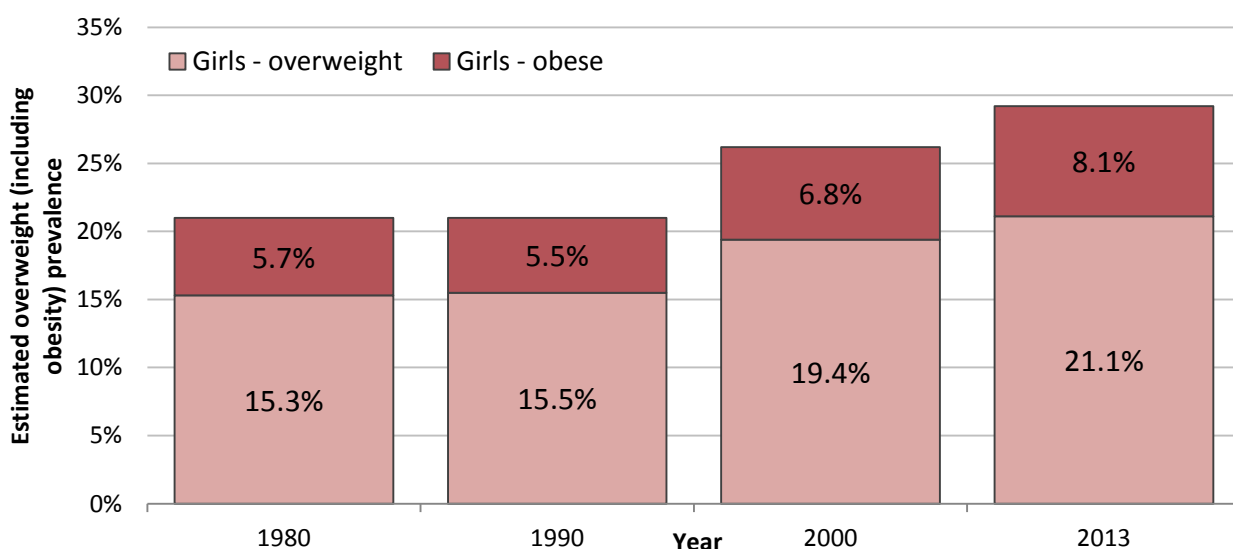
## Trends in child overweight and obesity prevalence

Figures 2 and 3 present the estimated overweight (including obese) prevalence for the UK over time. Estimated prevalence of overweight and obesity in children has increased in most of the OECD countries since 1980 with the exception of girls in the Czech Republic whose overweight (including obesity) prevalence has remained reasonably constant over time, decreasing slightly from 18.2% (95% uncertainty intervals 15.2% to 21.6%) in 1980 to 18.0% (15.0% to 21.0%) in 2013.

The largest estimated percentage rise in overweight (including obese) over time was in Israel; 83% increase in boys and 100% in girls (increasing from 16.9% in 1980 to 31.0% in 2013 in boys and from 13.3% to 26.6% in girls). In girls in the UK, estimated proportions of overweight (including obese) have increased from 21.0% (17.8% to 24.7%) to 29.2% (26.8% to 31.9%) (Figure 3), a percentage rise of 39%. Similar percentage increases were estimated for Canada (39%), Japan (39%), Chile (35%) and Denmark (42%).

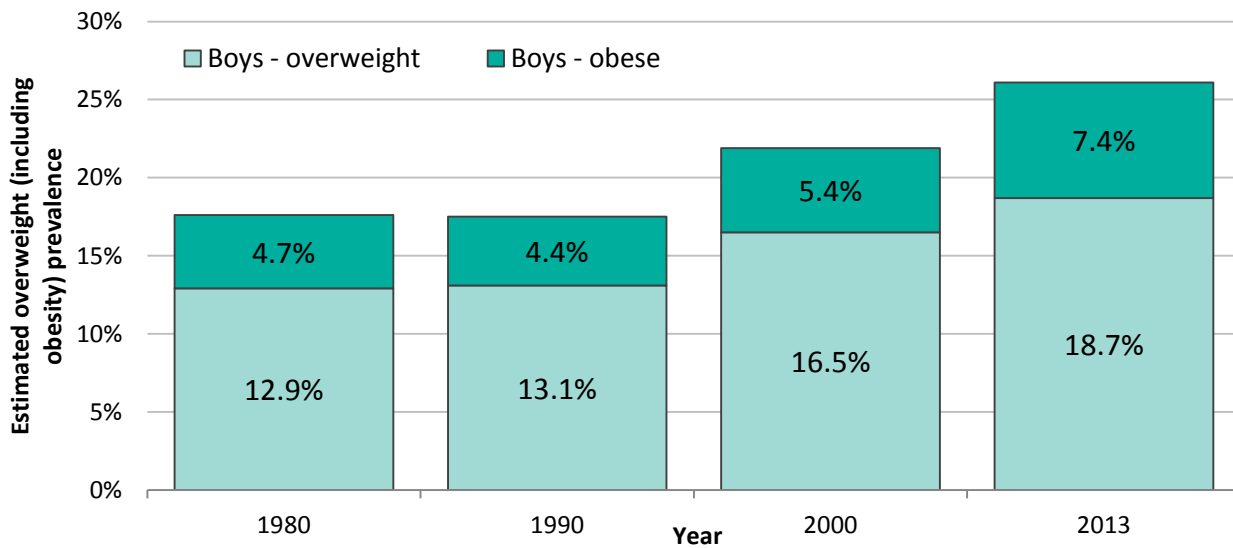
In boys in the UK, the combined proportion of overweight and obesity has increased from 17.6% (95% uncertainty intervals 14.8% to 20.7%) in 1980 to 26.1% (23.8% to 28.5%) in 2013 (Figure 2), a percentage rise of 48%. Similar percentage increases were estimated for Slovakia (45%), Turkey (45%) and the US (52%). Data for different time points for all of the OECD countries is available in the Lancet paper.<sup>1</sup>

**Figure 2: Percentage of girls (aged 2-19 years) in the UK classified as overweight (including obese) using the IOTF cut-offs**



Data source: The Lancet, Systematic analysis for the Global Burden of Disease Study 2013<sup>1</sup>

**Figure 3: Percentage of boys (aged 2-19 years) in the UK classified as overweight (including obese) using the IOTF cut-offs**



Data source: The Lancet, Systematic analysis for the Global Burden of Disease Study 2013<sup>1</sup>

## Data for countries of the UK

In the UK, the British 1990 growth reference (UK90) population monitoring BMI thresholds are commonly used to classify the weight status of children. In the national health surveys for England,<sup>5</sup> Scotland,<sup>6</sup> and Wales,<sup>7</sup> UK90 BMI thresholds were applied. However, for Northern Ireland<sup>8</sup> IOTF cut-offs were used. Therefore the data is not presented here as it is not directly comparable (Table 1).

Compared with other countries of the UK, boys in Wales (aged 2 to 15 years) had the highest prevalence of overweight (including obesity) at 35.3% in 2012. The figure for England was 31.7% in 2014 and for Scotland 28.4%. Wales also had the highest prevalence of obesity among boys (19.7%). Prevalence of overweight and obese was consistently higher in boys and girls in Wales compared with their counterparts in England and Scotland between 2009 and 2012.

Girls in Scotland had the highest prevalence of overweight (including obesity) at 34.1% compared with 30.7% in England and 33.3% in Wales, though these differences are not statistically significant. The proportion of girls who were obese was highest in Wales (18.7%).

**Table 1: Percentage of children (aged 2-15 years) classified as overweight or obese in England, Scotland and Wales based on BMI from measured height and weight using UK90 population monitoring BMI thresholds**

	Survey year	Boys			Girls		
		% obese	% overweight	% overweight (including obese)	% obese	% overweight	% overweight (including obese)
<b>England</b>	2014	18.6	13.2	31.7	15.6	15.1	30.7
<b>Scotland</b>	2014	16.0	12.4	28.4	18.1	16.0	34.1
<b>Wales</b>	2012*	19.7	15.6	35.3	18.7	14.6	33.3

\*The Welsh Health Survey stopped collecting the height and weight of children after 2012. Data is now collected through the Child Measurement Programme for Wales for 4–5 year olds.

Table 2 presents prevalence of overweight and obesity for children aged 4 to 5 years in their first year of primary school, in England,<sup>9</sup> Scotland<sup>10</sup> and Wales.<sup>11</sup> Children in Wales have the highest prevalence of overweight (including obesity) in the academic year 2014/15; 26.9% in boys and 25.4% in girls, significantly higher than for boys and girls in England and Scotland. The proportion of boys who are overweight (including obese) is lowest in Scotland (22.1%) and, in girls, it is lowest in England (21.2%), though the proportion of boys and girls who are overweight or obese is not significantly different between Scotland and England.

**Table 2: Percentage of children (aged 4-5 years) classified as overweight or obese in England, Scotland and Wales based on BMI from measured height and weight using UK90 population monitoring BMI thresholds, 2014/15**

	Boys			Girls		
	% obese	% overweight	% overweight (including obese)	% obese	% overweight	% overweight (including obese)
<b>England</b>	9.5	13.1	22.6	8.7	12.5	21.2
<b>Scotland</b>	10.0	12.1	22.1	9.5	12.0	21.4
<b>Wales</b>	12.2	14.7	26.9	11.0	14.3	25.4

**Table 3: Percentage of children (aged 2-19 years) classified as overweight (including obese) by OECD country using the IOTF cut-offs**

	<b>% Boys overweight</b>	<b>Boys 95% uncertainty intervals</b>		<b>% Girls overweight</b>	<b>Girls 95% uncertainty intervals</b>	
Australia	24.4	21.4	28.0	23.0	19.9	26.5
Austria	18.9	15.9	22.1	16.3	13.5	19.4
Belgium	20.5	17.7	23.6	18.8	16.0	21.8
Canada	25.5	22.4	28.7	22.0	19.1	25.5
Chile	37.0	32.6	41.6	31.6	27.3	36.3
Czech Republic	22.3	19.1	26.3	18.0	15.0	21.0
Denmark	19.7	16.8	23.1	19.4	15.8	23.2
Estonia	24.0	20.2	27.8	21.4	18.0	25.2
Finland	26.0	22.3	29.8	21.1	17.7	25.0
France	19.9	16.8	23.3	16.0	13.3	18.7
Germany	20.5	17.4	23.8	19.4	16.3	22.5
Greece	33.7	29.6	37.7	29.1	25.3	33.1
Hungary	30.2	26.3	34.4	24.9	21.3	28.6
Iceland	26.4	22.7	30.2	23.0	19.7	26.6
Ireland	26.6	23.2	30.8	26.5	22.9	30.5
Israel	31.0	27.0	35.6	26.6	22.6	31.1
Italy	29.9	26.4	33.9	24.3	21.0	27.9
Japan	15.3	13.2	17.6	12.4	10.2	14.6
Luxembourg	29.3	25.3	33.4	17.7	14.5	21.1
Mexico	28.4	25.3	31.6	29.3	25.8	32.5
Netherlands	18.3	15.7	21.3	16.1	13.4	18.9
New Zealand	29.6	26.0	33.3	28.7	25.3	32.6
Norway	20.1	17.2	23.0	16.0	13.4	18.7
Poland	21.9	18.6	25.7	17.8	14.7	21.3
Portugal	28.7	24.9	32.8	27.1	23.4	31.4
Slovak Republic	20.6	17.5	23.8	13.5	11.0	16.4
Slovenia	33.1	29.4	36.9	24.0	20.7	27.3
South Korea	21.2	17.9	24.5	13.2	10.9	15.7
Spain	27.6	23.9	31.2	23.8	20.2	27.4
Sweden	20.4	17.5	23.4	19.3	16.5	22.5
Switzerland	20.7	17.4	24.4	16.2	13.4	19.4
Turkey	20.4	17.5	23.6	19.8	16.6	23.0
United Kingdom	26.1	23.8	28.5	29.2	26.8	31.9
United States	28.8	26.4	31.4	29.7	27.2	32.5

Data source: The Lancet, Systematic analysis for the Global Burden of Disease Study 2013<sup>1</sup>



**Table 4: Percentage of children (aged 2-19 years) classified as obese by OECD country using the IOTF cut-offs**

	<b>% Boys obese</b>	<b>Boys 95% uncertainty intervals</b>		<b>% Girls obese</b>	<b>Girls 95% uncertainty intervals</b>	
Australia	7.0	5.8	8.2	7.3	5.9	8.9
Austria	10.3	8.4	12.5	7.8	6.3	9.7
Belgium	4.6	3.7	5.5	4.2	3.3	5.1
Canada	10.0	8.4	11.6	8.8	7.2	10.7
Chile	11.9	9.6	14.3	12.4	10.0	15.1
Czech Republic	6.4	5.2	7.7	4.8	3.8	6.1
Denmark	8.7	7.1	10.7	5.9	4.7	7.5
Estonia	7.3	5.9	9.0	7.6	6.1	9.4
Finland	9.2	7.5	11.2	6.6	5.2	8.1
France	5.8	4.7	7.0	4.7	3.8	5.9
Germany	5.5	4.5	6.7	5.3	4.2	6.5
Greece	10.5	8.7	12.3	7.9	6.5	9.6
Hungary	7.9	6.5	9.6	6.1	4.9	7.5
Iceland	9.6	7.9	11.6	7.6	6.1	9.4
Ireland	6.9	5.7	8.3	7.2	5.8	8.8
Israel	13.9	11.4	16.7	11.3	9.1	13.8
Italy	8.4	7.0	10.0	6.2	5.0	7.6
Japan	3.4	2.8	4.0	2.4	2.0	3.0
Luxembourg	11.1	9.2	13.5	13.5	10.9	16.4
Mexico	10.5	8.8	12.4	9.8	8.1	11.4
Netherlands	4.1	3.4	5.0	3.8	3.0	4.7
New Zealand	9.7	8.4	11.4	9.0	7.6	10.6
Norway	5.1	4.1	6.3	4.0	3.1	5.0
Poland	6.9	5.6	8.4	6.0	4.7	7.4
Portugal	8.9	7.4	10.9	10.6	8.5	12.9
Slovak Republic	5.5	4.5	6.7	5.5	4.3	6.9
Slovenia	7.2	5.9	8.6	5.3	4.3	6.4
South Korea	4.8	3.9	5.9	3.1	2.4	3.9
Spain	8.4	6.7	10.2	7.6	6.0	9.3
Sweden	4.3	3.6	5.3	4.0	3.2	5.0
Switzerland	6.6	5.4	7.9	5.5	4.3	6.8
Turkey	7.1	5.7	8.7	5.7	4.5	7.0
United Kingdom	7.4	6.5	8.5	8.1	7.0	9.3
United States	12.4	10.8	14.0	13.4	11.7	15.3

Data source: The Lancet, Systematic analysis for the Global Burden of Disease Study 2013<sup>1</sup>

## Definitions

### Body mass index classification in children

Body mass index (BMI) is a measure of weight status that adjusts for height. BMI is a person's weight in kilograms divided by the square of their height in metres. In children and adolescents, BMI varies with age and sex so a growth reference must be used.

The British 1990 growth reference (UK90) for BMI<sup>3</sup> is used to determine weight status according to a child's age and sex. Children whose BMI is between the 85th and less than the 95th centile are classified as overweight and those at or above the 95th centile are classified as obese. This definition is commonly used in the UK for population monitoring rather than for clinical purposes. For clinical (individual) assessment children whose BMI is between the 91st and less than the 98th centile are classified as overweight and those at or above the 98th centile are classified as obese.

The International Obesity Task Force (IOTF)<sup>4</sup> thresholds for overweight and obesity are derived from body mass index data from six large, nationally representative, cross-sectional surveys from Brazil, Great Britain, Hong Kong, the Netherlands, Singapore and the US. BMI age and sex specific cut-off points for children were extrapolated from the adult BMI cut-offs of 25kg/m<sup>2</sup> and 30kg/m<sup>2</sup> for overweight and obesity respectively. The IOTF thresholds are widely used for international comparison of data.

### Uncertainty intervals

Uncertainty intervals are included for overweight and obesity prevalence in this factsheet. Like confidence intervals, they provide a margin of error around the data points. The 95% uncertainty intervals were calculated by Ng M, Fleming T, Robinson M, Thomson B et al. (2013) and published with the prevalence data alongside a detailed description of how they were calculated. The uncertainty intervals reflect multiple sources of uncertainty including sampling uncertainty and uncertainty arising from the empirical adjustment of self-report data.<sup>1</sup>

## References

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(Web links accessed 26/08/2016)

## Further reading and resources

World Health Organization. Global status report on non-communicable diseases 2014. WHO Geneva, 2015. [www.who.int/nmh/publications/ncd-status-report-2014/en](http://www.who.int/nmh/publications/ncd-status-report-2014/en)

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