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HEALTH BEHAVIOUR IN  
SCHOOL-AGED CHILDREN  
LËTZEBUERG / LUXEMBOURG

# Trends from 2006 - 2018 in Health Behaviour, Health Outcomes and Social Context of Adolescents in Luxembourg

HBSC LUXEMBOURG TRENDS REPORT

**HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN:**  
WORLD HEALTH ORGANIZATION COLLABORATIVE  
CROSS-NATIONAL STUDY (HBSC)



LE GOUVERNEMENT  
DU GRAND-DUCHÉ DE LUXEMBOURG  
Ministère de l'Éducation nationale,  
de l'Enfance et de la Jeunesse



LE GOUVERNEMENT  
DU GRAND-DUCHÉ DE LUXEMBOURG  
Ministère de la Santé



□ FACULTY OF HUMANITIES,  
EDUCATION AND  
SOCIAL SCIENCES



Trends from 2006 - 2018 in Health Behaviour,  
Health Outcomes and Social Context of  
Adolescents in Luxembourg

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# PREFACE

One central objective of the University of Luxembourg is to contribute to the development of Luxembourg society by doing research on Luxembourg society and by making this data available to stakeholders in Luxembourg. FHSE contributes to this objective, among other things, by promoting the international project on Health Behaviour in School-aged Children (HBSC), which has been conducted and further developed since 2016 by the Youth Research Group of our Faculty in close cooperation with the *Ministère de l'Éducation nationale, de l'Enfance et de la Jeunesse*, the *Script* and the *Ministère de la Santé*.

The most recent product of this cooperation is the present Luxembourgish Trend Report HBSC 2006-2018, which shows how important indicators of the well-being of adolescents have developed over time. This makes it possible to identify problematic trends at an early stage so that actors in the school and health sectors can intervene in good time.

With the HBSC project, however, the FHSE is not only fulfilling its task of conducting applied research for the country. Cooperation with the international HBSC networks also provides the opportunity to conduct research in the fields of education and health, which are official focus areas of the University of Luxembourg – fields of excellence where the University is recognized as an international leader. HBSC is thus an example of how applied research and basic research are not mutually exclusive, and the publications of the HBSC team to date show impressively that both can be combined. Moreover, the study combines sociological, psychological, educational and behavioural science perspectives and can thus be considered an example of the Faculty's interdisciplinary approach.

In this context, I would like to thank the HBSC team for their hard work in preparing the existing HBSC data for the trend report and collecting the new data. I would also like to thank the ministries involved for their good cooperation and the trust they have placed in the university. In particular, the years of excellent cooperation with the *Ministère de l'Éducation nationale, de l'Enfance et de la Jeunesse* and the *Ministère de la Santé* must be emphasised here. I am convinced that the HBSC Trend Report will set many important impulses for science and health policy and wish all interested parties an informative reading.

**Prof. Dr. Georg Mein**

*Dean of the Faculty of Humanities, Education and Social Sciences (FHSE) of the University of Luxembourg*



# FOREWORD

Luxembourg is one of now 50 countries participating in the international Health Behaviour in School-aged Children (HBSC) study, initiated in 1982 and carried out every four years since then. HBSC is a study that helps us better understand the health status of children and adolescents. Reliable knowledge is, in turn, the basis for improving their health and thus indirectly their well-being. The collection and comparison of data over many years generate a wealth of data that is important for decision-makers, teachers, students, parents and all others interested in the health of the adolescent generation to help them make informed decisions.

Following a pilot survey in 1999, Luxembourg participated fully in the 2006, 2010, 2014 and 2018 surveys. This means that four regular waves of HBSC surveys have now been completed in Luxembourg and for the first time it is possible to describe the development of key health indicators for a longer period of time.

The data allows us to investigate in which domains health and well-being have improved and where they have deteriorated. This first longitudinal assessment is an important step both for Luxembourg as partner in the international HBSC consortium and to inform future health policies in Luxembourg. The data show specific health outcomes for Luxembourg school-aged children, highlight areas where more research is needed and guides future actions in terms of health policies. For the period under review we can observe several improvements in terms of pupils' health behaviour, which is encouraging. These include for example a decline in alcohol and tobacco consumption. However, developments in the area of mental health are worrying, as we observe a rise in feeling of stress by schoolwork and a rise in psychosomatic complaints. Another cause for concern are an increase in overweight pupils and the fact that pupils appear to exercise less.

These epidemiological developments are similar in other countries so that cooperation in the international HBSC network also offers the opportunity to exchange best practices in prevention with these countries.

We would like to thank the pupils in Luxembourg for their cooperation in completing the surveys and the schools and teachers for accommodating the surveys. Our thanks extend to all members of the HBSC team for gathering and compiling these data and transforming them into a helpful message.

**Helmut Willems and Bechara Georges Ziadé**

*Principal Investigators HBSC Luxembourg*



# EXECUTIVE SUMMARY

This report is based on HBSC surveys conducted in 2006, 2010, 2014 and 2018. In each wave more than 7000 pupils aged 11-18 years completed a survey on a wide range of health related indicators. This report presents the trends for the period from 2006 to 2018 for 30 key indicators broken down by gender, wealth, school type, nationality and age. The report shows both improvements in health related behaviours as well as deteriorations over the time period.

## **IMPROVEMENTS 2006-2018**

Improvements incurred mainly in the area of health behaviour: fewer pupils reported smoking, having ever been drunk and having drunk alcohol in the past month. Improvements are also noted regarding nutrition, with more pupils reporting that they eat fruit every day and consume fewer soft drinks. More pupils brush their teeth twice a day. They also report less aggressive behaviours, both bullying perpetration and bullying victimisation have decreased. Another improvement concerns the social context, more pupils say that they can easily talk to their parents about things that worry them.

## **DETERIORATION 2006-2018**

Within the school context we observed two areas of deterioration: More pupils feel stressed by their schoolwork and the experience of support by their classmates declined. In terms of health-related behaviours we also noted declines in two areas: the frequency of exercising in free time has declined and fewer pupils report to have breakfast every day. In this context it should also be noted that more pupils reported to be overweight and the number of pupils who had injuries in the past 12 months that needed medical attention also increased. Furthermore, the number of pupils with multiple health complaints (e.g. headaches, abdominal pain, back pain, dizziness...) has also increased.

## **MIXED FINDINGS**

For a few indicators, there were improvements in some groups and deteriorations in others. For example, the proportion of pupils who rate their health as excellent has increased among girls and decreased among boys. Such disparities were also found in sweets consumption, the proportion of pupils who feel that their teachers care about them as a person and the proportion of pupils who were involved in fights.

For other indicators, a clear assessment as deterioration or improvement is not possible. For example, the proportion of pupils who consider themselves too thin has increased (although the proportion of pupils who are actually underweight has remained stable). At the same time, the number of pupils who consider themselves too fat has decreased (although the proportion of overweight pupils has increased). Since the perception of being too fat or too thin can either reflect the actual weight status or a distorted body image (e.g. feeling too fat despite having normal weight), these trends cannot yet be assessed without in-depth analysis. Similarly, the finding that fewer pupils reported to having had sexual intercourse is not so easily assessed as good or bad.

The results are also mixed regarding the use of cannabis. Overall, the proportion of pupils who claim to have used cannabis at least once in their lives has not changed. However, the proportion of pupils who used cannabis in the

past month has increased overall. But, there has been a shift in age: use has decreased among younger pupils and increased among older ones.

## **HEALTH INEQUALITIES**

Girls feel more pressured by schoolwork than boys and this gap has widened over time. Several health-related behavioural differences in terms of gender were observed. Boys are more often physically active than girls and this difference has remained stable over time. Girls eat fruit every day more often, boys drink soft drinks every day more often and brush their teeth less often. Boys are also more likely to be involved in fights. There were hardly any gender differences in the use of alcohol and tobacco. Feeling too thin is more common among boys, whereas feeling too fat is more common among girls. However, the actual weight status shows the opposite, i.e. boys are more likely to be overweight and girls are more likely to be underweight. Boys are more likely to have injuries and girls are more likely to have multiple health complaints. Boys report higher life satisfaction and more often consider their state of health to be excellent.

Regarding socio-economic status, most indicators show that adolescents who perceive their families to be wealthy report better health than pupils who rate their family as not well-off. Only a few indicators did not confirm this correlation, or at least not in all surveys (consumption of sweets and soft drinks, the lifetime prevalence of cannabis consumption, feeling too thin and injuries). Being underweight is the only indicator where wealth has become a risk factor, i.e. the higher the wealth of the family, the more likely a child is underweight.

For most health indicators, the results for the youngest age group are the most positive. These age differences are reflected in differences between primary school (*Fondamental*) and secondary school (ESC and ESG), with pupils in the *Fondamental* generally showing more beneficial results (except for bullying, physical fights and being underweight, which are more frequent among pupils of the *Fondamental*). At secondary school level, ESC pupils were usually healthier with the following exceptions: Pupils at the ESC feel more pressured by schoolwork and they think more often that teachers do not care about them. In addition, being underweight is somewhat more prevalent among them.

Compared to health-related differences by gender, perceived wealth, school type and age, the differences by nationality appear marginal.

## **INTERNATIONAL PERSPECTIVE**

The majority of the trends over time and other health-related differences driven by gender, wealth and age are also found in other HBSC countries. The data do not point to any Luxembourg-specific exceptions in terms of health trends and socio-demographic differences.



# ABBREVIATIONS

BMI	Body Mass Index
CNER	<i>Comité National d’Ethique de Recherche</i>
CNPD	<i>Commission nationale pour la protection des données</i>
ESC	<i>Enseignement Secondaire Classique</i>
ESG	<i>Enseignement Secondaire Général</i>
ESPAD	European School Survey Project on Alcohol and Other Drugs
HBSC	Health Behaviour in School-aged Children (study/survey)
IOTF	International Obesity Task Force
WHO	World Health Organization



# ACKNOWLEDGEMENTS

To write a report like this requires the work of many people, whom we would like to thank on this occasion.

HBSC is an international survey carried out in collaboration with the World Health Organisation Europe (WHO Europe). The International Coordinator of the 2005-2006, 2009-2010 and 2013-2014 surveys was Professor Candace Currie from the University of St. Andrews, the United Kingdom. The International Coordinator of the 2017-2018 survey is Dr Joanna Inchley from the University of Glasgow, the United Kingdom. The International Databank Manager of the 2005-2006 to 2017-2018 surveys is Professor Oddrun Samdal from Bergen University, Norway.

In Luxembourg, the HBSC study is a collaboration between the University of Luxembourg, the *Ministère de la Santé* and the *Ministère de l'Éducation nationale, de l'Enfance et de la Jeunesse* since 2016. Dr Yolande Wagener was the Principal Investigator of the HBSC study in Luxembourg prior to the 2018 survey. 2006, 2010 and 2014 data were gathered by the *Ministère de la Santé* in cooperation with the Luxembourg Institute of Health (the then CRP-Santé) and the *Ministère de l'Éducation Nationale*. We would like to take this opportunity to thank Dritan Bejko, Chantal Brochmann, Sophie Couffignal, Louise Crosby, Serge Krippner, Marie-Lise Lair, Christelle Roth, Michel Vaillant, Astrid Schorn, Ralph Schroeder, Yolande Wagener and Guy Weber for their work and cooperation.

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The idea to write this report was inspired by the trend report of the HBSC Country Team Ireland, written by Eimear Keane, Aoife Gavin, Catherine Perry, Michal Molcho, Colette Kelly and Saoirse Nic Gabhainn [1]. Torbjørn Torsheim from the Data Management Centre in Bergen provided us with helpful information for the statistical analysis of the trend data. Joe Hancock from the International Coordinating Centre in Glasgow developed the template for this report.

Last, but not least we would like to acknowledge and give our thanks to all the children and adolescents who consented and participated in the HBSC Luxembourg study throughout the years, as well as their parents. Additionally, we want to thank all principals and teachers whose cooperation made this study possible.

**For the HBSC Luxembourg Team:**

Helmut Willems and Bechara Georges Ziadé (Principal Investigators)



# 1. INTRODUCTION AND METHODS

# INTRODUCTION

## **ADOLESCENCE AND HEALTH**

Adolescence is a phase that is not usually associated with illness. Although most adolescents are indeed healthy, there are still considerable rates of illness, injury and premature death among adolescents globally. Examples of important health issues that adolescents face are mental health disorders, alcohol and drug use, infectious diseases and violence [2].

Adolescence is a key phase of human development with many rapid biological, psychosocial and behavioural changes affecting every area of life. Additionally, many risk factors for non-communicable diseases and health-compromising behaviours are initiated during adolescence. Examples of such risk factors and behaviours are tobacco use, alcohol use, physical inactivity, nutrition patterns, overweight and obesity. These factors have a serious impact on the health and physical and cognitive development of adolescents. Moreover, and in accordance with the life-course perspective, the risk factors and health-compromising behaviours that are initiated or reinforced during adolescence have a long-term effect on health and behaviour in adulthood, the further life-course, and the health of the next generation. As such, adolescence is an important time to lay the foundation for good health and behaviour in adulthood [3–5].

Adolescent health is not just influenced by factors at the individual level. Factors at the interpersonal level (e.g. support from peers, families and schools), community level (e.g. community values and norms), organisational level (e.g. availability of health facilities), environment level (e.g. physical environment and media), structural level (e.g. policies and laws) and the macro-level (e.g. income disparities) can also have a protective or detrimental effect on adolescents' health. As such, in order to have a significant positive impact on adolescent health and development, the collaboration between many sectors is essential [5].

## **HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN: A WHO COLLABORATIVE CROSS-NATIONAL STUDY (HBSC)**

To understand the health and well-being of adolescents, HBSC was launched in the 1980s. HBSC is a cross-national survey study that collects data on the health and well-being, social environments and health behaviours of adolescents. To this end, the study carries out a survey every four years in more than 45 countries and regions across Europe, Asia and North America using a standardised questionnaire. This allows for the comparability of data across countries, as well as over time.

Luxembourg has been a member of the HBSC study since 1999 when a pilot study was conducted. Since then, surveys were undertaken in the years 2006, 2010, 2014 and 2018, with a participation of up to almost 10000 pupils aged 11 to 18 years old per cycle. With the completion of the fourth survey in 2018, sufficient data are available to examine the trends of key health indicators over a longer period, which is the purpose of this report.

## **THE REPORT**

This report explores the trends between the years of 2006 and 2018 in the health, health behaviour and well-being of adolescents in Luxembourg. To provide a comprehensive overview over trends in this time period we grouped 30 key health indicators into three categories: social context (chapter 2), health behaviours (chapter 3) and health

outcomes (chapter 4). Each health indicator is first explained followed by a breakdown in terms of gender, perceived wealth of the family, school type and nationality for each HBSC survey cycle. All trends are summarised in a single table (chapter 5) to provide an overview of improvements and deteriorations at a single glance. A discussion on the potential relationships between the trends and the extent to which trends in Luxembourg differ from those in other countries follows.

The aim of this report is to inform the public, stakeholders and health policy-makers how key health indicators have changed over time so that they can respond adequately and in a timely manner to potentially problematic trends.

## METHODS AND DATA

### HBSC IN LUXEMBOURG 2006-2018

Luxembourg participated in the HBSC study in the survey rounds 2006, 2010, 2014 and 2018. For each round, the study was approved by the *Comité National d’Ethique de Recherche* (CNER). In 2018, the study was approved by the Ethics Review Panel of the University of Luxembourg as well as the CNER. Furthermore, the *Commission nationale pour la protection des données* (CNPD) was informed about the carrying out of the surveys.

Parents of pupils who were invited to partake were provided with an information letter regarding the survey. Included was a form on which the parents could indicate whether they allowed their child to participate in the study. Teachers from included school classes administered the survey during class and instructed their pupils to respond with sincerity. Additionally, the teachers reinsured the pupils of their right to refuse participation in the study at any time. The collection of the data is anonymous, i.e. the pupils' data is never linked to their identity. To ensure the anonymity of the pupils, teachers were not allowed to read the questionnaires. Pupils put the completed questionnaires in an envelope and sealed it. Then the envelopes were collected by the teacher and returned in a box for data entry.

The sampling has always been based on a random selection from the register of school classes, thus making it a one-stage cluster sample. However, the inclusion criteria have changed over time. In 2006, school classes from private and international schools were included. From 2010 onwards, classes from international schools were no longer included and from 2014 onwards, classes from private schools were no longer included. Classes of *éducation différenciée* (special needs) were excluded from all HBSC surveys.

In order to make the data comparable over time, pupils from private and international schools had to be excluded from this report retrospectively. In other words, this report refers to pupils in schools that teach according to the national curriculum. It cannot make any statements about pupils taught abroad, pupils from international and private schools and pupils with special needs.

The questions, originally in English, are translated to each country's language(s) by one person. After that, another person translates the questions back to English and then a reviewer compares that translation with the original to ensure that the meaning of the questions did not change during the translation process. In the case of Luxembourg, the questionnaire is translated into both French and German, as these are the main written languages in schools in multilingual Luxembourg and are understood by most pupils [6].

<b>Table 1: Methods of the HBSC Luxembourg study 2006-2018</b>				
	<b>2006</b>	<b>2010</b>	<b>2014</b>	<b>2018</b>
<b>Ethics approval by</b>	<i>Comité d’Ethique de Recherche.</i>	<i>Comité d’Ethique de Recherche.</i>	<i>Comité d’Ethique de Recherche.</i>	Ethics Review Panel of the University of Luxembourg and <i>Comité d’Ethique de Recherche.</i>
<b>Sampling frame</b>	A list of school classes from the whole country.			
<b>Sample</b>	A representative sample of classes including private and international schools.	A representative sample of classes including private schools.	A representative sample of school classes taught according to the national curriculum.	A representative sample of school classes taught according to the national curriculum.
<b>Exclusion of</b>	Special needs schools	Special needs schools, international schools	Special needs schools, international and private schools	Special needs schools, international and private schools
<b>Target population of this report</b>	11-18-year-old pupils attending schools in Luxembourg that teach according to the national curriculum.			
<b>This report does not refer to...</b>	pupils who are taught abroad; pupils at private and international schools; pupils of <i>éducation différenciée</i> (special needs); pupils younger than 11 years or older than 18 years.			
<b>Survey mode</b>	Self-completed paper and pencil questionnaire (German and French) administered in the classroom. Questionnaires were returned in sealed envelopes to the teacher.			
<b>Data entry</b>	Manual entry; 10% of the data have been double entered by a different person.	Manual entry; 100% of the data have been double entered by a different person.	Manual entry; 10% of the data have been double entered by a different person.	Data were entered through scanning software. 5% of the questionnaires were scanned twice and checked.
<b>Weighting</b>	Data were weighted by the distribution of pupils across school grades, i.e. the distribution of pupils across school grades in the weighted samples is the same as in the target population.			

Between 2006 and 2014, the data were entered manually. In order to detect and correct coding errors, a certain number of questionnaires were double entered and compared. In 2018, the data were scanned to save time. Again, some of the questionnaires were double entered to check the quality of the data collection.



Since the response rates in the respective school grades varied, the data were weighted according to school grades. Underrepresented grades were assigned a higher weight and overrepresented grades were assigned a lower weight. This ensures that the distribution of the school grades in the sample is in line with their distribution in the population as a whole.

## RESPONSE RATES

In 2006, private and international schools, as well as public schools, were included in the sample. However, in order to ensure comparability of the data, this report only analyses data from pupils attending public schools in Luxembourg. Accordingly, the following response rates are based only on public schools. Table 2 shows that the HBCS survey in Luxembourg had very high participation rates at school and class level. For the 2018 survey, 820 classes in 153 schools were selected, of which 758 classes in 147 schools actually participated. At the school level, the participation rate was 96.1% and at class level 92.4%. In the 820 selected classes, 13001 pupils were registered, of whom 9738 took part, which corresponds to a participation rate of 74.9%. The report is based on pupils aged between 11 and 18, which was the case for 8732 pupils in 2018. In 2014, 2010 and 2006, the response rates were largely the same as in the most recent survey.

Table 2: Response rates 2006-2018 (unweighted)			
	Invitation	Participation	Response Rate
<b>2018</b>			
Schools	153	147	96.1%
Classes	820	758	92.4%
Pupils	13001	9738	74.9%
Pupils 11-18		8732	
<b>2014</b>			
Schools	150	146	97.3%
Classes	590	554	93.9%
Pupils	9648	7757	80.4%
Pupils 11-18		7233	
<b>2010</b>			
Schools	158	146	92.4%
Classes	950	740	77.9%
Pupils	15299	10128	66.2%
Pupils 11-18		9292	
<b>2006</b>			
Schools	157	139	88.5%
Classes	834	656	78.7%
Pupils	13508	10629	78.7%
Pupils 11-18		8798	

## PRESENTATION OF TRENDS AND STATISTICAL ANALYSIS

In this report, trends are presented graphically using line and bar charts. These charts are presented for the entire sample as well as for subgroups, i.e. by gender, perceived wealth of the family, nationality, type of school, as well as by age and gender in the appendix. Since sample results are always subject to a certain degree of inaccuracy, trends found in the sample may not be present in the population of all pupils. In order to decide whether a trend in the sample is likely to be found in the population as well and can be generalised, or whether the trend in the sample is more likely to be based on sampling errors, we have carried out binary logistic regressions. The year of the survey was regarded as a continuous predictor. Accordingly, a significant effect testifies to an overall trend in one direction over all four survey years.

Trends were regarded as significant if the associated p-value was smaller than 5%. The calculations were performed for all indicators and all subgroups. In the graphs, (+) indicates that the percentage of the respective indicator has increased significantly over time. Similarly, (-) indicates a significant decrease. If a group is not marked, this indicates that the differences in the sample are not statistically significant, i.e. the percentage is more or less stable over time. It should be noted here that the larger the group under consideration, the easier it is to identify an actual change over time. This is, for example, relevant when comparing the pupils by "perceived wealth". Rather few pupils consider their families "not well off" compared to other two groups ("average" and "well off"), making it more difficult to detect actual changes as such in this group.

## SUBGROUPS AND PRECISION OF ESTIMATES

This report presents the trends for sub-groups of different sizes, which means that the percentages presented in this report are of different precision. The HBSC study protocol states that the number of pupils in the relevant age groups to be surveyed (i.e. 11, 13 and 15-year-olds) should be such that the confidence interval is  $\pm 3$  percentage points around an estimate of 50% (taking into account, among other things, the clustering of the data). In Luxembourg, the required precision is achieved with a group size of 1114 persons. Table 3 shows that most of the groups in this report are considerably larger so that the estimates are more accurate than  $\pm 3$  percentage points. However, the estimates for girls and boys aged 17-18 and those of the "low perceived wealth" group are somewhat less accurate.

Health research very often shows a social gradient, i.e. persons with a high level of wealth are generally healthier than persons with a low level of wealth [7]. To measure wealth, pupils were asked: "How well off do you think your family is?" with answers ranging from 1 "not at all well-off" to 5 "very well off". For the report, the answers 1 to 2 were combined to "not well off" and 4 to 5 were combined to "well off". The neutral category in the middle was retained and labelled "average". Regarding perceived wealth, it is noticeable that more than half of the pupils rate their family's wealth as above average, whereas comparatively few pupils rate their family's wealth as below average.

Another distinction concerns the school types. In Luxembourg, primary school (*Fondamental*) lasts until the age of 12, but some pupils repeat classes so that some older pupils still attend primary school. After primary school, pupils attend either the *Enseignement secondaire classique* (ESC) or the *Enseignement secondaire général* (ESG). While the ESC mainly prepares pupils for university, the ESG is more geared towards later vocational training [8]. The distribution of pupils across the school types roughly corresponds to their share in the population as a whole.

As far as nationalities are concerned, it should be noted that there might be overlaps, as some pupils may have more than one nationality and thus appear in more than one bar chart.

For some indicators, in addition to gender, school type and nationality, the simultaneous differentiation by gender and age is also relevant. However, to avoid overloading the presentation in chapters 2 to 4, the corresponding bar charts by age and gender are presented in the appendix.

If the group sizes in Table 3 do not add up to the same number, this is due to missing information (on gender or perceived wealth) as well as pupils who have more than one nationality.

<b>Table 3: Size of subgroups examined in this report (unweighted)</b>				
	<b>2006</b>	<b>2010</b>	<b>2014</b>	<b>2018</b>
<b>Gender</b>				
Boy	4452	4778	3489	4291
Girl	4337	4729	3726	4343
<b>Perceived wealth</b>				
not well off	595	714	683	588
average	2709	3317	2820	3515
well off	5177	4904	3357	4302
<b>School type</b>				
Fondamental	2023	2324	1967	2028
ESC	2847	2610	1959	2412
ESG	3928	4582	3307	4247
<b>Nationality</b>				
Luxembourgish	6092	6156	4662	5658
Portuguese	1491	2158	1768	2478
Neighbouring countries	754	1668	748	1374
Other countries	1369	1130	1253	1754
<b>Age and gender</b>				
Boys 11-12	1115	1114	932	1173
Boys 13-14	1316	1406	879	1072
Boys 15-16	1283	1267	914	1169
Boys 17-18	738	991	764	877
Girls 11-12	1144	1103	955	1102
Girls 13-14	1265	1378	999	1133
Girls 15-16	1236	1222	1000	1224
Girls 17-18	692	1026	772	884
<b>Total</b>	<b>8798</b>	<b>9292</b>	<b>7233</b>	<b>8732</b>



## 2. SOCIAL CONTEXT

- The proportion of pupils who feel pressured by schoolwork has increased over time. This increase particularly affects girls and pupils of the *ESC*.
- At the same time, the proportion of pupils who rate the class climate as good has decreased. Here, girls and pupils of the *Fondamental* and the *ESG* were particularly affected.
- The percentage of pupils who like school is high (65% in 2018) and has not changed overall. Only in the *Fondamental*, it increased slightly.
- Similarly, the proportion of pupils who think that teachers care about them as a person has not changed overall. Slight declines were only observed in the *Fondamental* and among pupils of Portuguese nationality.
- There is a strong significant decrease in both bullying perpetration and bullying victimisation.
- More pupils say that they can easily talk to both their mother and father about things that bother them.

## LIKING SCHOOL

### QUESTION

Adolescents were asked how they feel about school at present on a four-point scale. Answer categories ranged from 1 “I like it a lot” to 4 “I don’t like it at all”. The findings below present the proportion of adolescents who like school a lot, or like school a little bit, i.e. answer categories 1 and 2.

### HBSC FINDINGS

The proportion of pupils who like school is around two thirds and this has remained stable over time. Boys and girls hardly differ in this aspect; both genders like school almost equally. However, there are differences depending on the perceived wealth of the family. The higher the perceived wealth, the more adolescents like school. This pattern has remained stable over time.

The bar charts in the appendix show that 11-12-year-olds like school the most, followed by the 13-14-year-olds. In 15-16 and 17-18-year-olds, this value is the lowest (see Figure 121 and Figure 122). Accordingly, the younger pupils of the *Fondamental* like school better than the pupils of secondary schools. There are only minor differences between the *ESG* and *ESC* in terms of liking school. In the *Fondamental*, the proportion of pupils who like school has increased slightly over time, while in the two secondary school types the proportion has remained stable.

Nationality plays only a minor role in liking school and over time, the percentages of the various nationality groups remained stable.

Figure 1: Adolescents who like school, by gender

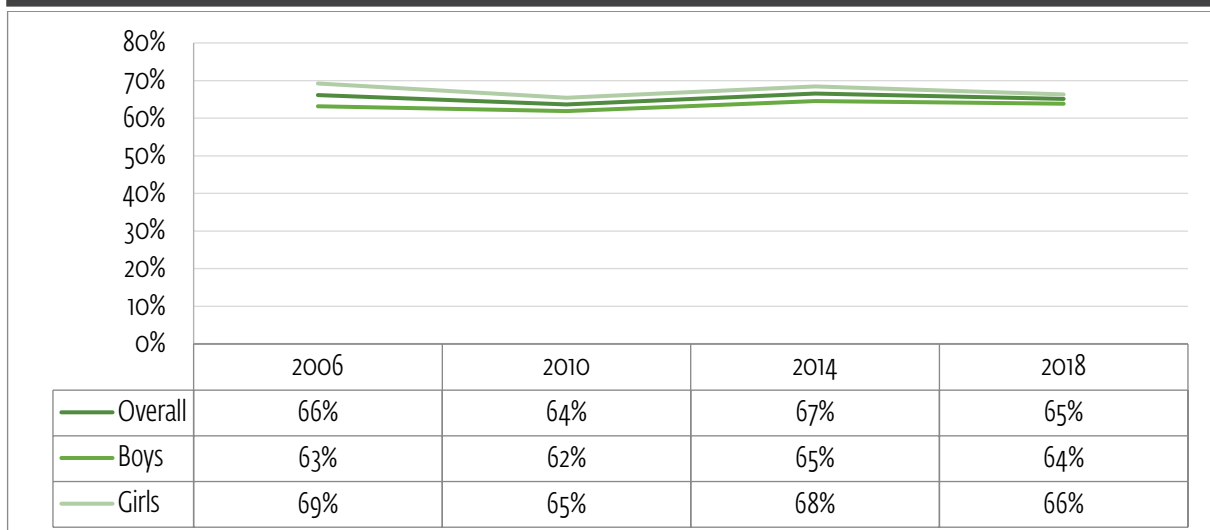


Figure 2: Adolescents who like school, by perceived wealth

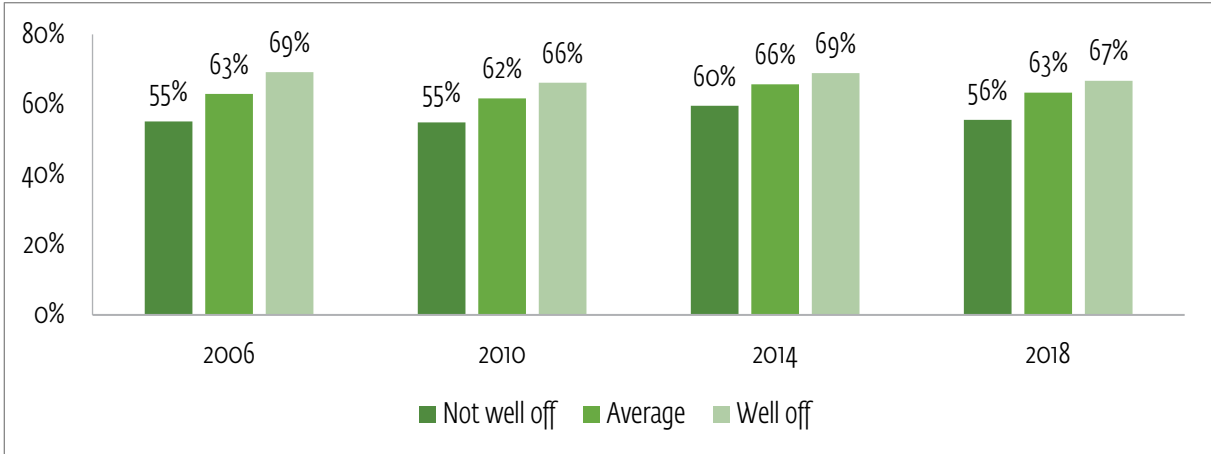


Figure 3: Adolescents who like school, by school type

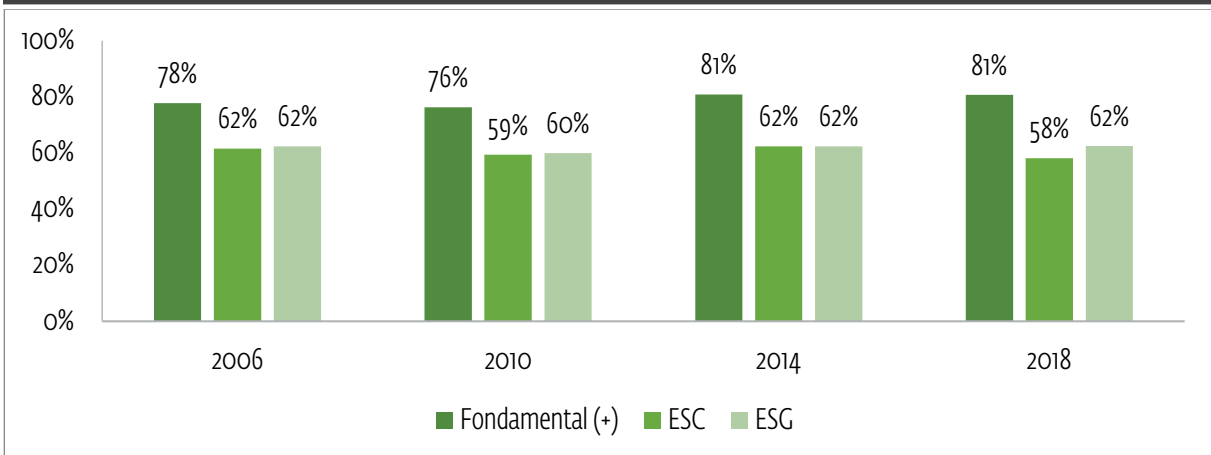
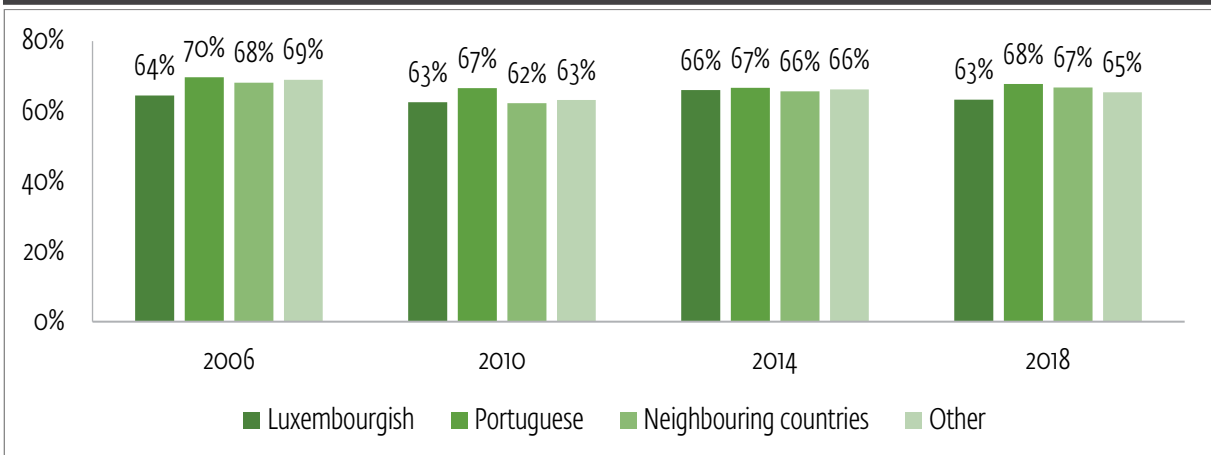


Figure 4: Adolescents who like school, by nationality



# SCHOOL PRESSURE

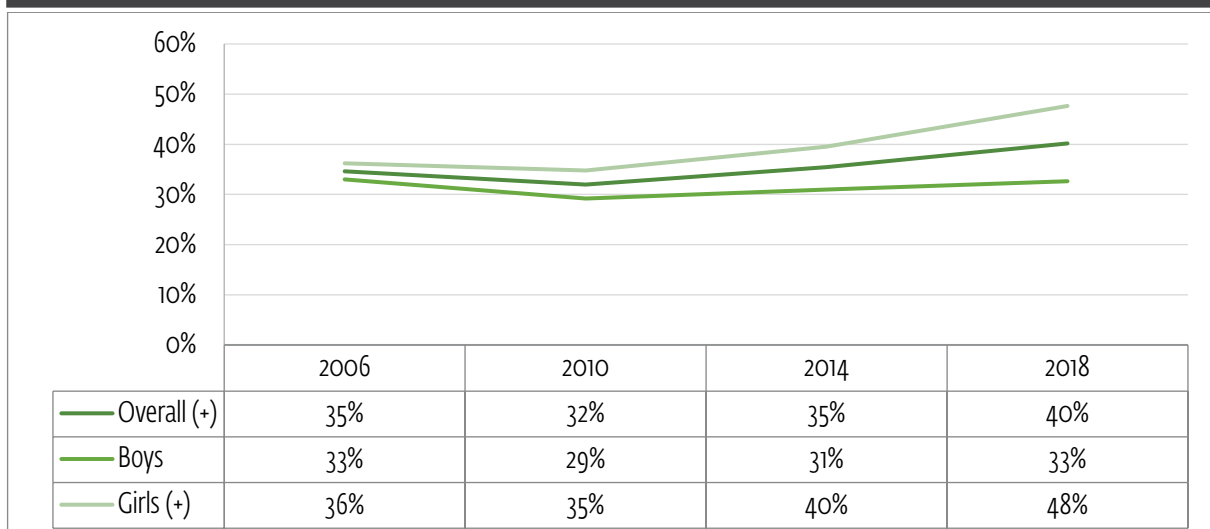
## QUESTION

Adolescents were asked how pressured they feel by the schoolwork they have to do on a four-point scale. Answer categories ranged from 1 "not at all" to 4 "a lot". The findings below present the proportion of adolescents who feel a lot or some pressure by their schoolwork, i.e. categories 3 and 4.

## HBSC FINDINGS

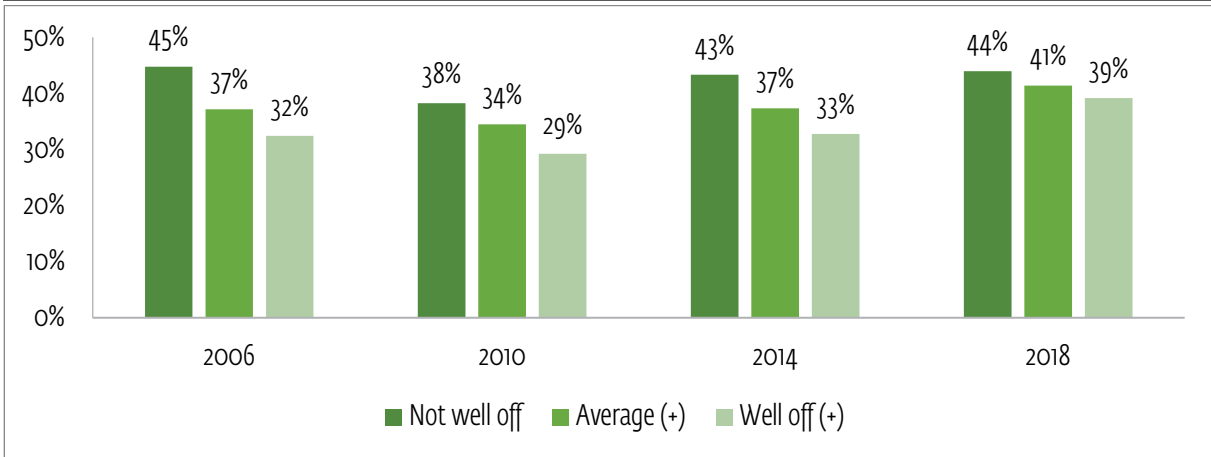
Overall, the proportion of pupils who feel pressured by schoolwork has increased over time. This rise is largely due to increased pressure felt by girls. In 2006, differences between girls and boys were small, with 33% of boys and 36% of girls stating that they felt pressured by schoolwork. Boys reported a slight decrease in pressure in 2010 and 2014 before reaching the same level as in 2006 in 2018. But, for girls there was a significant increase to 48% in 2018. Accordingly, girls currently feel more pressured by schoolwork than boys. In 2006, there were also significant differences in pressure by schoolwork depending on the perceived wealth of the family. The better off the family in terms of wealth, the lower was the reported school pressure. In the course of time, however, perceived pressure by schoolwork in the groups "average" and "high perceived wealth" increased, whereas there was no significant change in the "low perceived wealth" group. As a result, the differences in pressure by perceived wealth have become smaller over time. Perceived pressure by schoolwork increases strongly with age, with the increase being larger among girls than among boys (see Figure 123 and Figure 124). Accordingly, pupils of the *Fondamental* feel less pressure than pupils attending secondary schools. Regarding the secondary schools, perceived pressure has increased at the ESC (from 42% in 2006 to 54% in 2018), whereas there was no significant increase at the ESG. The small difference regarding pressure by schoolwork between the ESC and ESG has increased significantly from 2 percentage points in 2006 to 14 percentage points in 2018. When categorized by nationality, adolescents from all categories indicated a slight increase in pressure over the years.

Figure 5: Adolescents who feel pressured by schoolwork, by gender

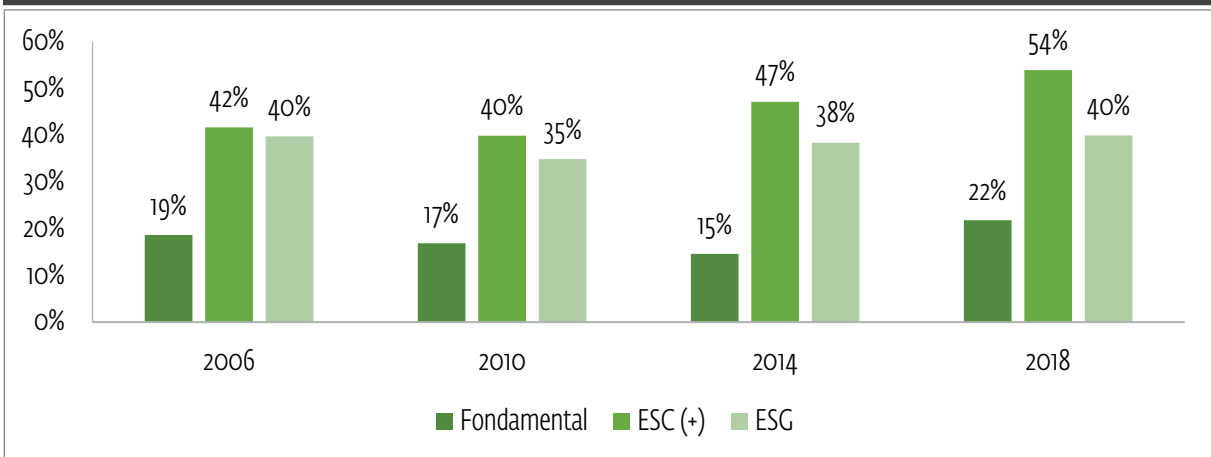




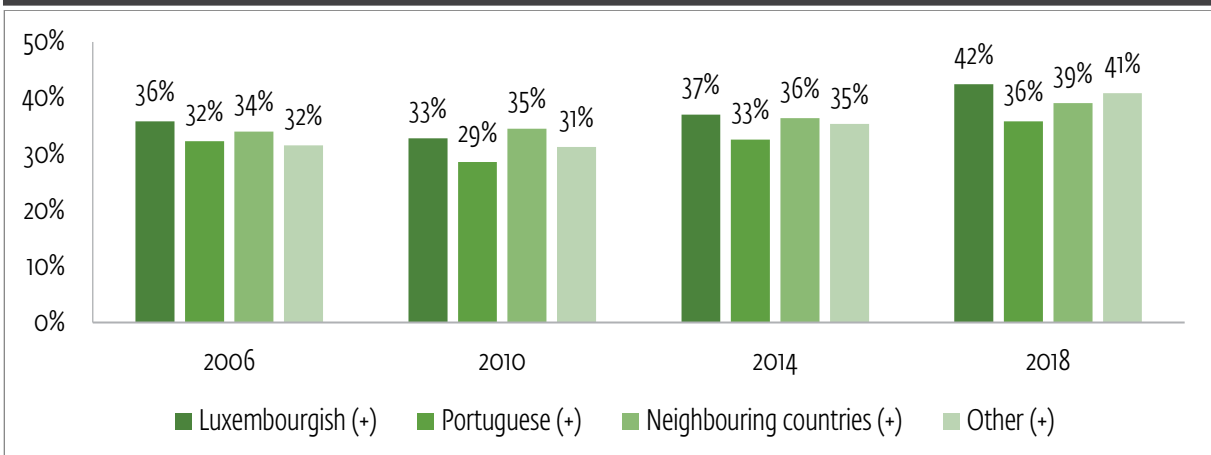
**Figure 6: Adolescents who feel pressured by schoolwork, by perceived wealth**



**Figure 7: Adolescents who feel pressured by schoolwork, by school type**



**Figure 8: Adolescents who feel pressured by schoolwork, by nationality**



## CLASS CLIMATE

### QUESTION

Adolescents were asked three questions related to classmate support on a five-point Likert scale (do pupils in their class enjoy being together; are they kind and helpful; do they accept the adolescent as they are). The answers to these questions were combined into one scale representing the level of classmate support. To be more precise, the mean of the three questions has been calculated and the findings below present the proportion of adolescents who indicate a good class climate (i.e. a mean of 4 or better).

### HBSC FINDINGS

The proportion of pupils who rate the class climate as good has decreased slightly over time, from just over two-thirds to just under two-thirds. For girls, this decrease was slightly stronger and statistically significant, whereas for boys there was no significant change. As such, while there was no difference between girls and boys in 2006 (68% of all pupils rated the class climate as good), the difference in 2018 was 4 percentage points.

Regarding perceived wealth, we observe a relationship between perceived wealth and class climate: The higher the wealth, the better the perceived class climate. However, the proportion of adolescents who report a good class climate in the "high perceived wealth" group decreased significantly over time.

Broken down by school type, we observe a gap between *Fondamental* and *ESC* on the one hand and *ESG* on the other. Whereas the assessments of the class climate in the *ESC* remained largely stable, both the *Fondamental* and the *ESG* experienced a drop between 2006 and 2018. With regard to nationality, the percentage of good class climate has remained rather stable over the years for adolescents of Luxembourgish, "neighbouring countries" and "other" nationality. The percentage has slightly decreased over time for adolescents of Portuguese nationality.

Figure 9: Adolescents who report a good class climate, by gender

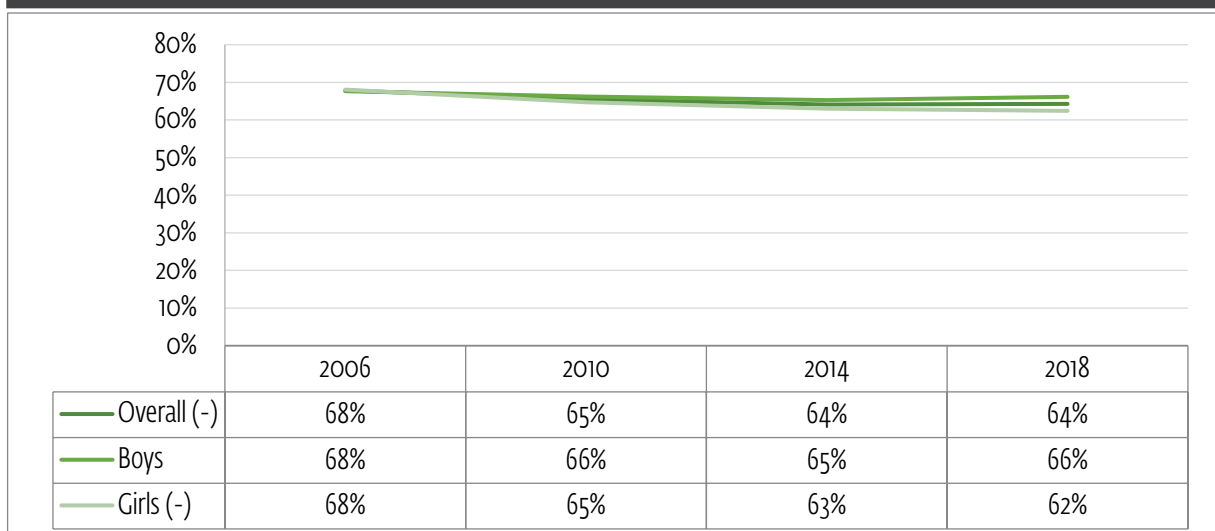


Figure 10: Adolescents who report a good class climate, by perceived wealth

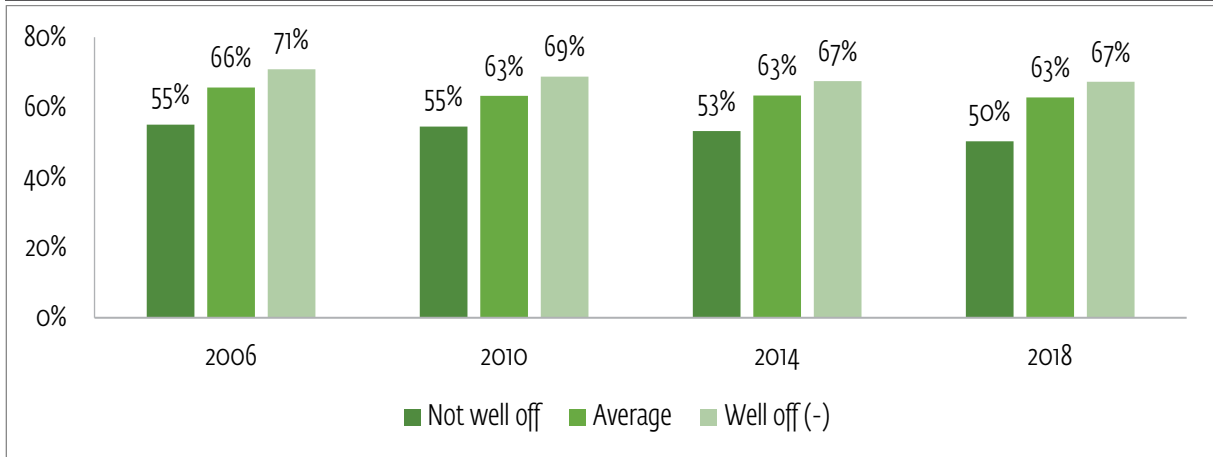


Figure 11: Adolescents who report a good class climate, by school type

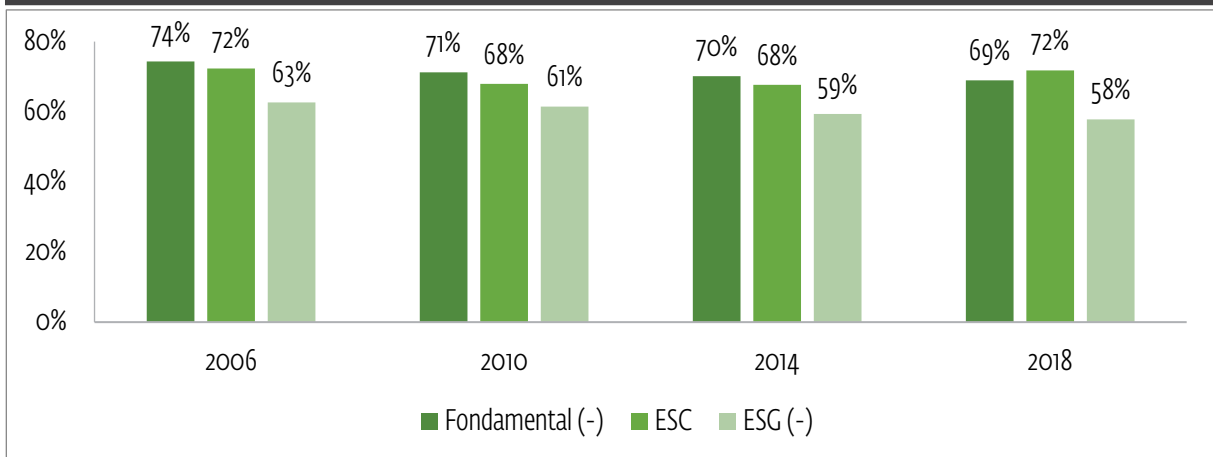
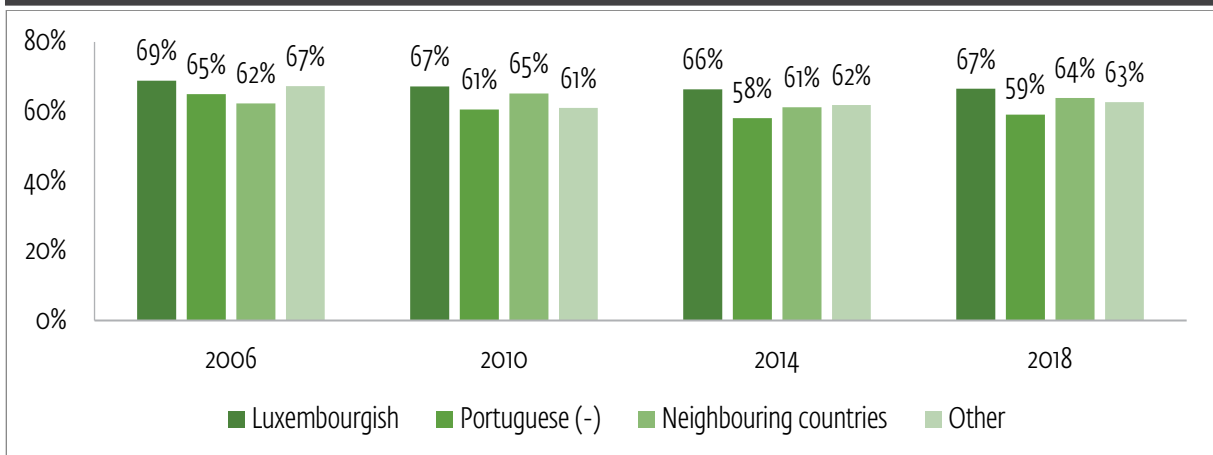


Figure 12: Adolescents who report a good class climate, by nationality



# TEACHER SUPPORT

## QUESTION

In all HBSC surveys, several questions were asked about the relationship between teachers and students. However, except for one question, the questions have changed over time. The figures below are based on the question whether the adolescents feel that their teachers care about them as a person on a five-point Likert scale. Answer categories ranged from 1 "strongly agree" to 5 "strongly disagree". The findings below present the proportion of adolescents who agree that their teachers care about them, i.e. categories 1 and 2.

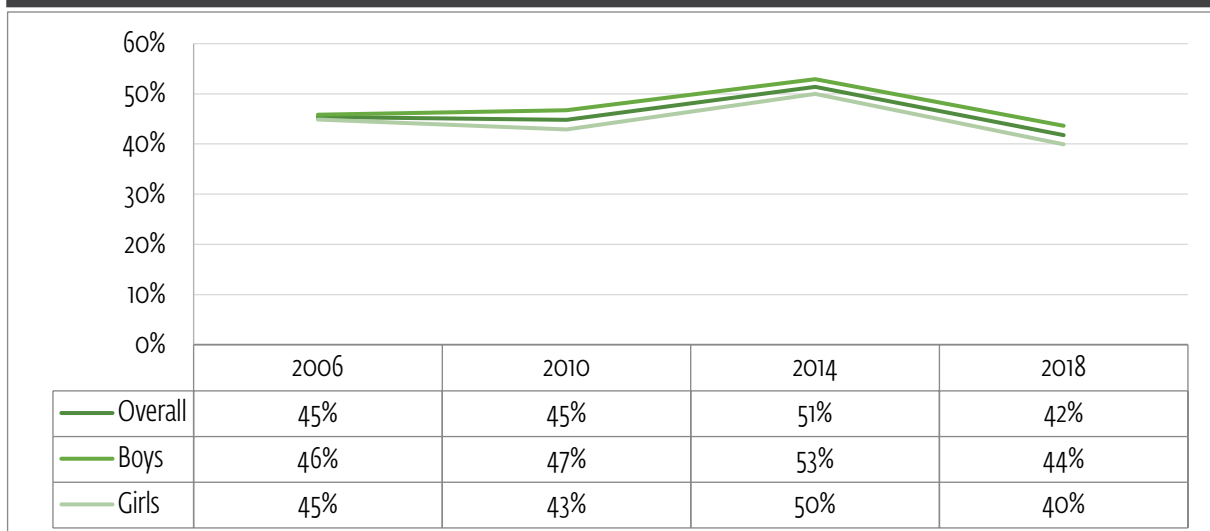
## HBSC FINDINGS

The percentage of adolescents who indicate a high level of teacher support has remained rather stable over time, with a peak in the year 2014. When categorized by gender, it is noticeable that boys report slightly higher levels of teacher support compared to girls in all years. The percentage of adolescents that feel that their teachers care about them is higher among adolescents that report a high level of perceived family wealth than among adolescents that report an average or low level of perceived family wealth. Over time, this pattern has remained stable and there has been no statistically significant change in any family wealth group.

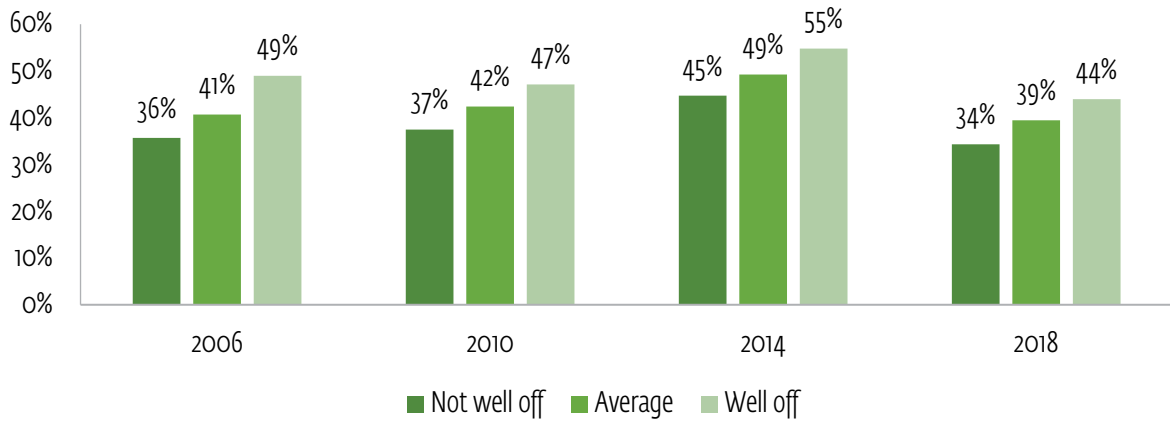
As pupils get older, a smaller percentage indicates that their teachers care about them (see Figure 127 and Figure 128). Accordingly, pupils in the *Fondamental* are more likely to agree that their teachers care about them than pupils in secondary schools. However, the proportion of *Fondamental* pupils who indicate a high level of teacher support has decreased over time. Within the secondary schools, more *ESG* pupils than *ESC* pupils feel that their teachers care about them. These percentages remained stable over time.

Nationality hardly plays a role in this indicator. In 2006, students of Portuguese nationality rated teacher support slightly higher. However, there was a slight decrease in this group, resulting in very small differences between nationalities in 2018.

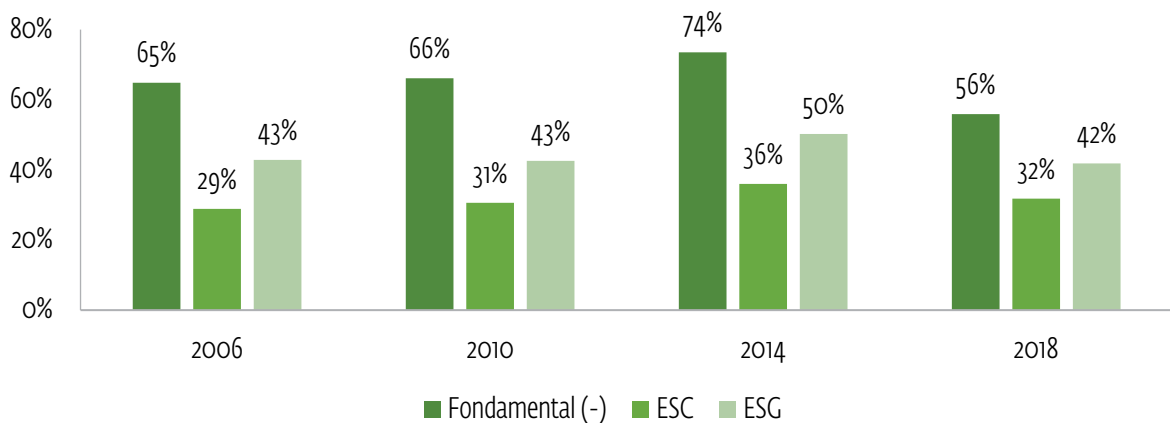
**Figure 13: Adolescents who feel that teachers care about them, by gender**



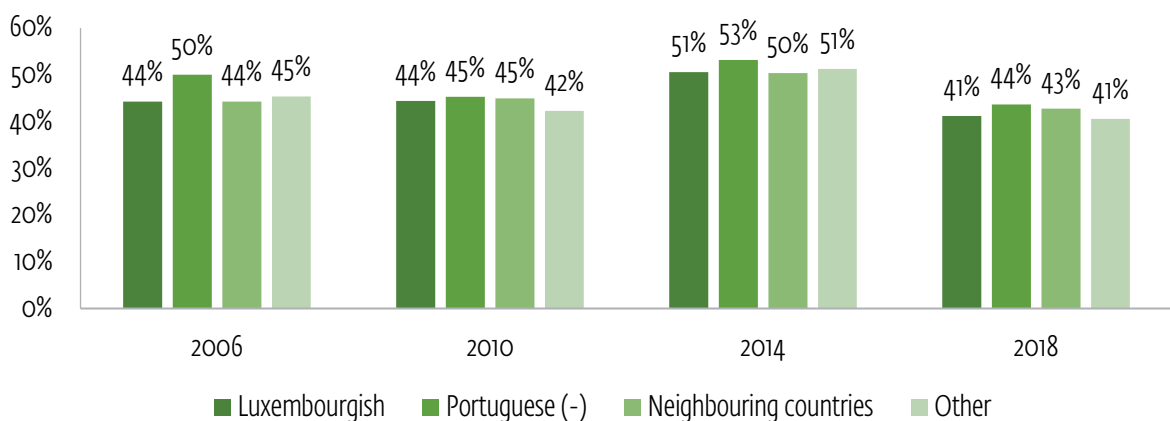
**Figure 14: Adolescents who feel that teachers care about them, by perceived wealth**



**Figure 15: Adolescents who feel that teachers care about them, by school type**



**Figure 16: Adolescents who feel that teachers care about them, by nationality**



# BULLYING PERPETRATION

## QUESTION

Adolescents were asked how often they have taken part in bullying another person in their school in the past months on a five-point scale. Answer categories ranged from 1 “I have not bullied another person at school in the past couple of months” to 5 “several times a week”. The findings below present the proportion of adolescents who bullied another person 2 or 3 times a month or more often (i.e. categories 3 – 5). Cyberbullying perpetration is not included in the results as the respective questions have changed over time and are therefore not comparable.

## HBSC FINDINGS

The evolution of bullying over time is clear: between 2006 and 2018, significantly fewer pupils bullied their classmates, with the exception of a small increase in 2010. This decrease is found in all groups, i.e. regardless of gender, school type, perceived wealth and nationality. However, there are differences within the groups. Boys are more often bully perpetrators than girls. Adolescents from “low perceived wealth” families are more likely to be perpetrators than adolescents from “moderate or high perceived wealth” families.

The prevalence of bullying has changed considerably depending on the type of school. In 2006, 8% of pupils in the *Fondamental* stated that they had bullied others. The percentage of bullying perpetration was higher at ESC secondary schools with 11%, and more than twice as high at ESG secondary schools with 17%. In 2018, the *Fondamental* and ESG had equal percentages of bullying perpetration, and the ESC had the lowest percentage.

When looking at the nationality, the most obvious pattern is the decrease in bullying perpetration for each nationality.

**Figure 17: Adolescents who bullied others, by gender**

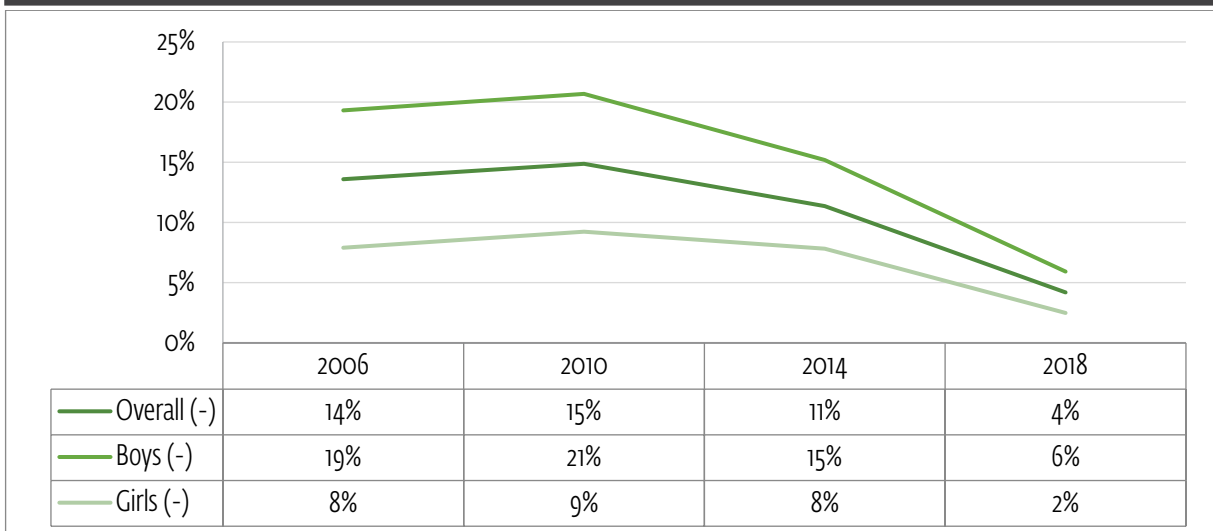


Figure 18: Adolescents who bullied others, by perceived wealth

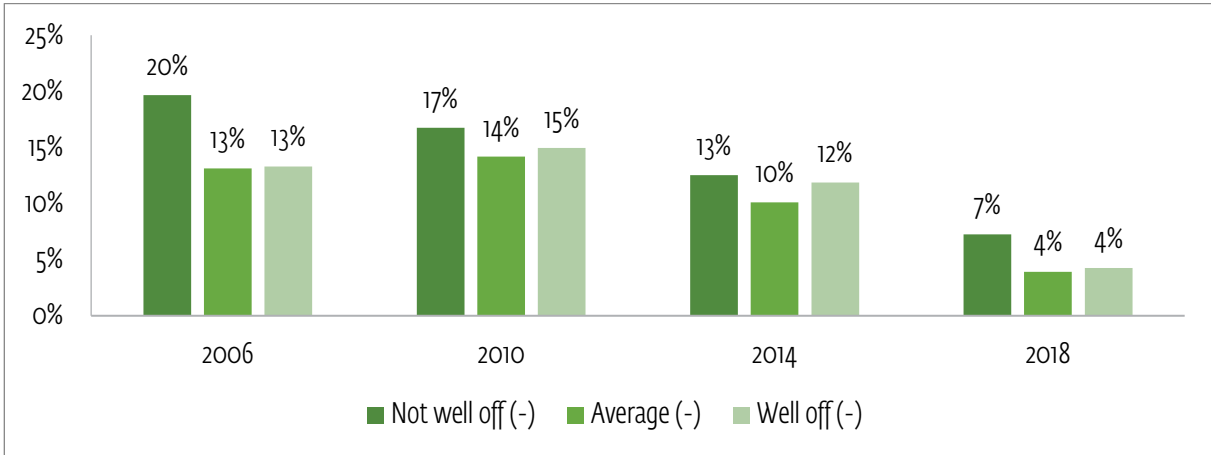


Figure 19: Adolescents who bullied others, by school type

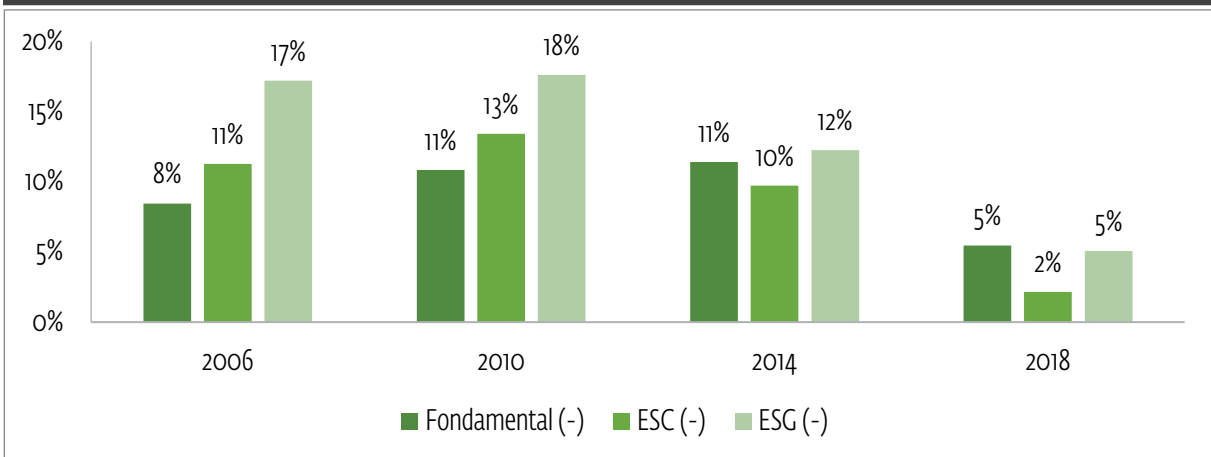
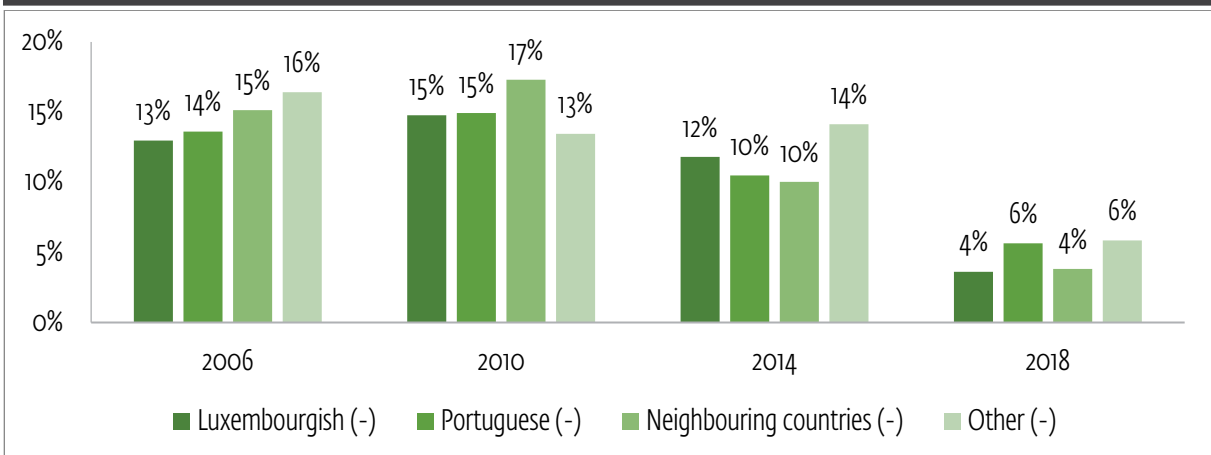


Figure 20: Adolescents who bullied others, by nationality



# BULLYING VICTIMISATION

## QUESTION

Adolescents were asked if they had been bullied at school in the past months on a five-point scale. Answer categories ranged from 1 “I have not been bullied at school in the past couple of months” to 5 “several times a week”. The findings below present the proportion of adolescents who were bullied 2 or 3 times a month or more often (i.e. categories 3 to 5). Cyberbullying victimisation is not included in the result as the respective questions have changed over time and are therefore not comparable.

## HBSC FINDINGS

In line with the significant decrease in bullying perpetration, bullying victimisation has also decreased significantly. As with perpetrators, this decrease applies to all groups of potential victims, regardless of gender, the perceived wealth of the family, type of school and nationality.

However, there are patterns that have remained relatively stable over time. Adolescents who do not consider their family wealthy, for example, report bullying victimisation more often than their wealthier peers do. As younger pupils are more often victims of bullying than older pupils (see Figure 131 and Figure 132), the proportion of victims in the *Fondamental* is higher than in secondary schools. Within secondary schools, ESG pupils are more affected by bullying victimisation than ESC pupils.

Bullying victimisation has decreased among adolescents from all nationality categories.

Figure 21: Adolescents who were bullied, by gender

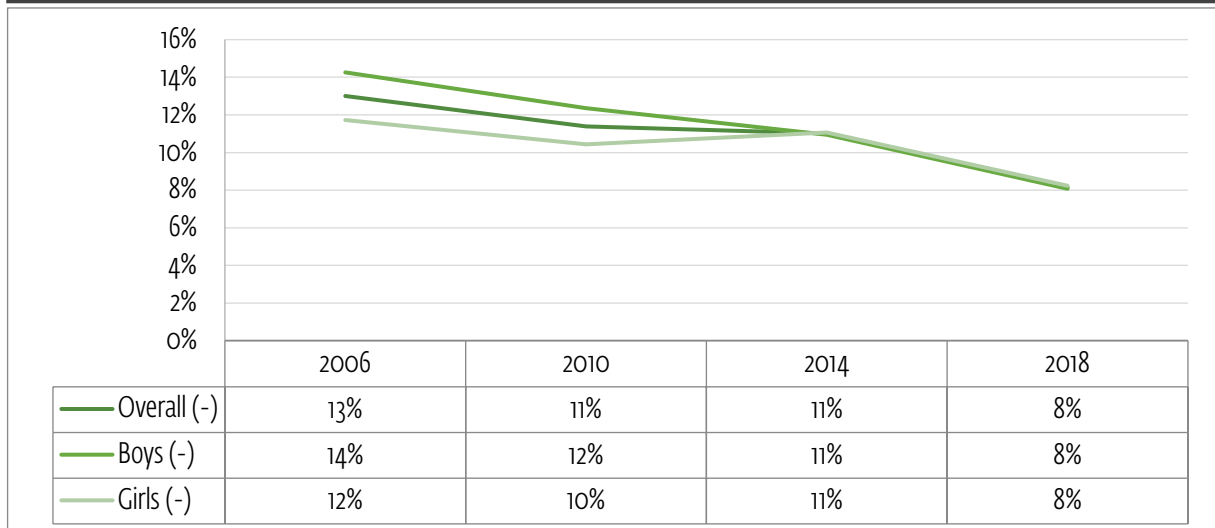




Figure 22: Adolescents who were bullied, by perceived wealth

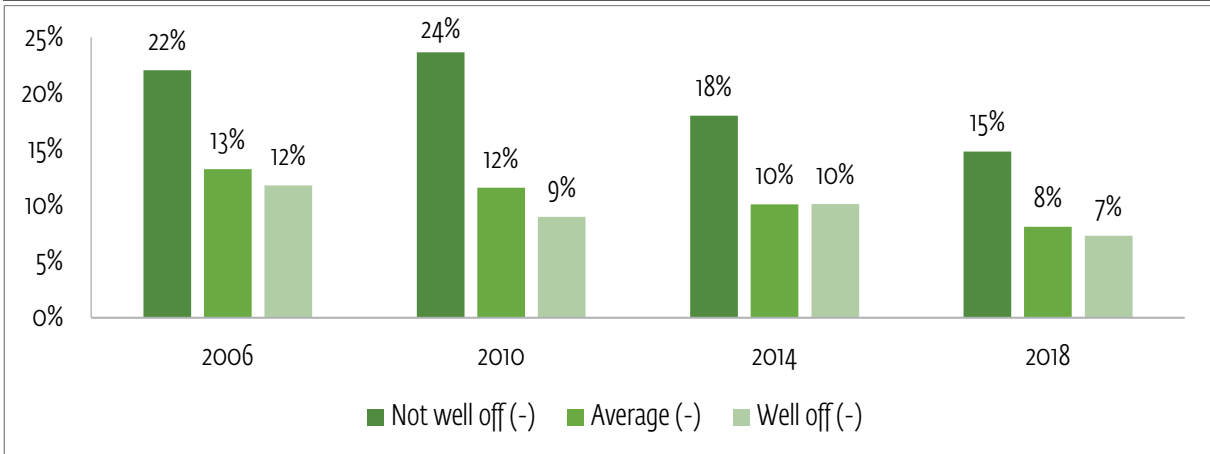


Figure 23: Adolescents who were bullied, by school type

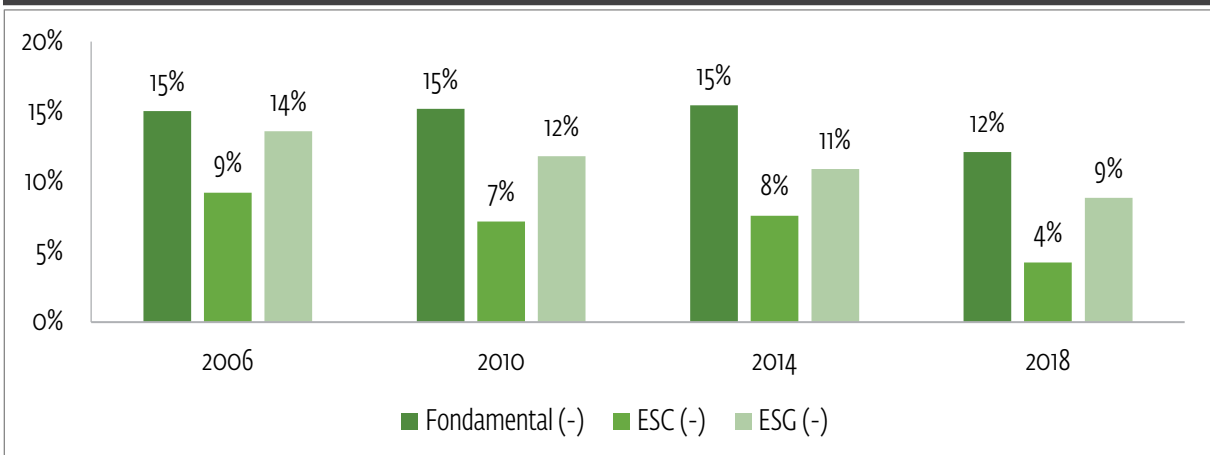
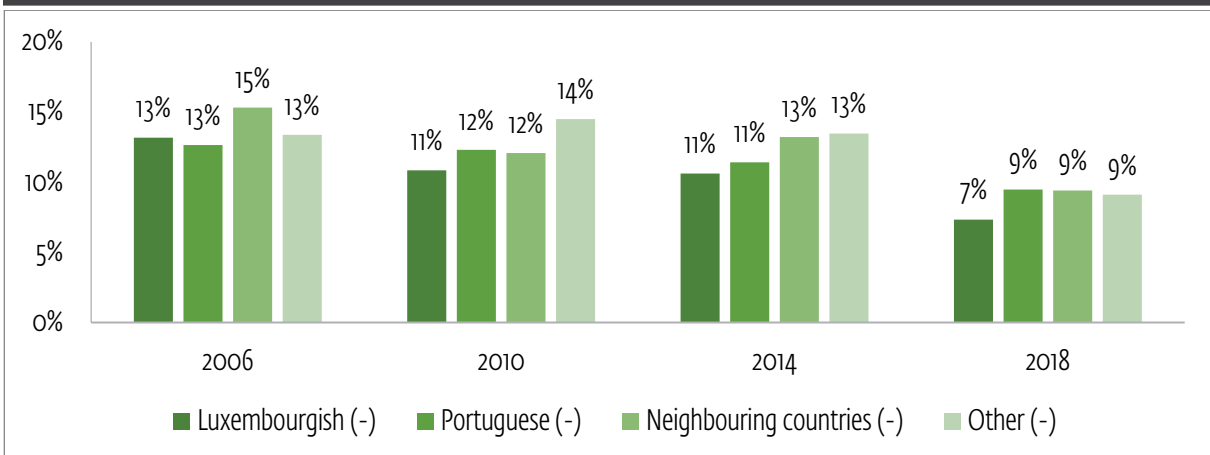


Figure 24: Adolescents who were bullied, by nationality



## TALKING WITH MOTHER

### QUESTION

Adolescents were asked how easy it is for them to talk to their mother about “things that really bother you” on a five-point scale. Answer categories ranged from 1 “very easy” to 5 “very difficult”. The answer “I don’t have or see this person” was excluded for the purpose of this report. The findings below present the proportion of adolescents who find it easy to communicate with their mother (i.e. categories 1 and 2).

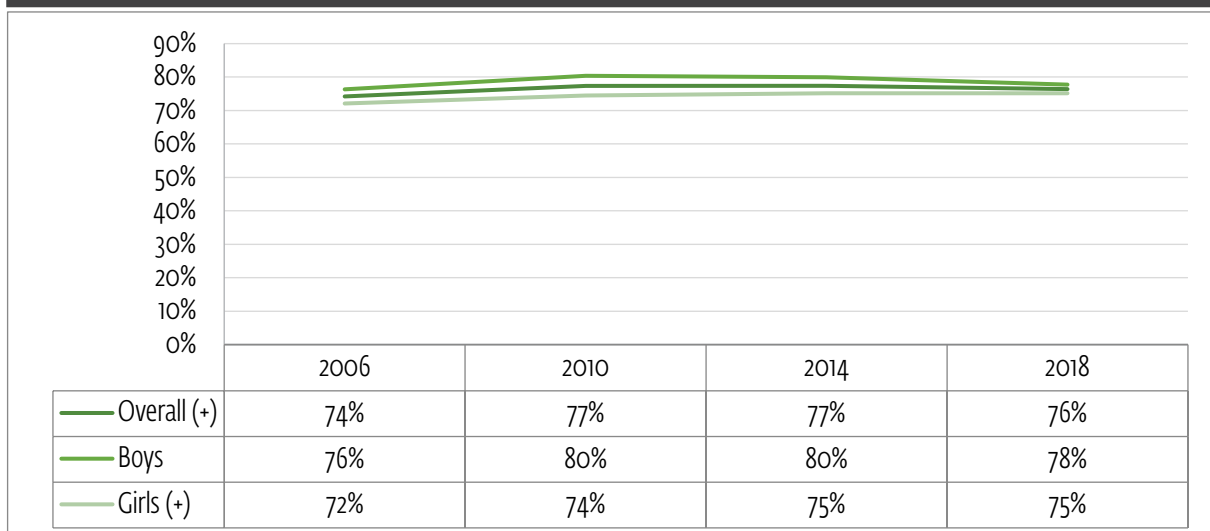
### HBSC FINDINGS

The proportion of pupils who find it easy to talk to their mother about things that bother them increased slightly over time from 74% to 76% in 2018. For girls, this increase was slightly stronger and statistically significant, which was not the case for boys. In contrast to communication with the father, the differences in communication with the mother between boys and girls are very small. There are, however, clear differences with regard to wealth: the higher the self-assessed wealth of the family, the more pupils indicate that communication with the mother is easy.

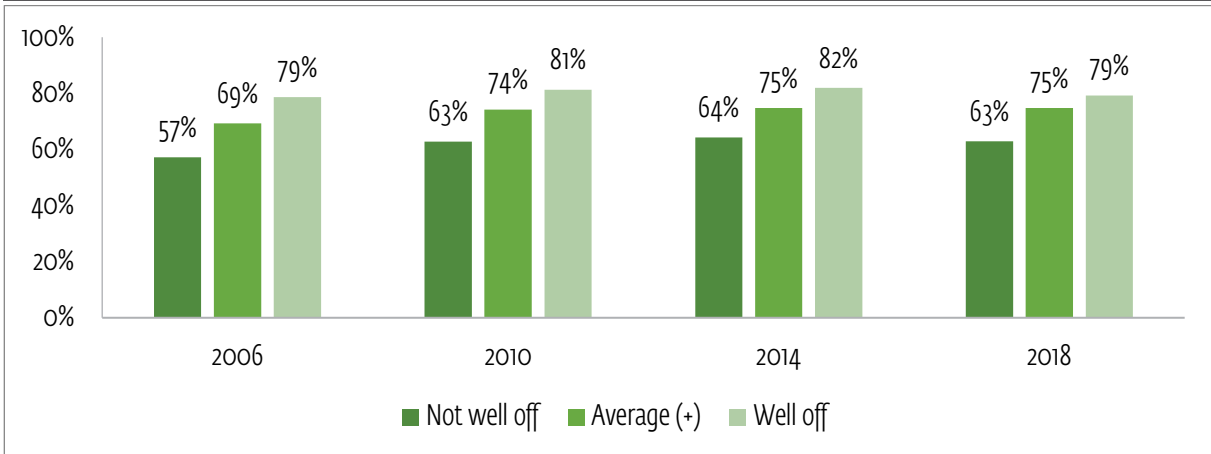
As older pupils are less likely to report easy communication with their mother than younger pupils (see Figure 133 and Figure 134), the proportion is higher in the *Fondamental* than in secondary schools. ESG and ESC do not differ much in this aspect. The increase of ESG pupils who report easy communication with their mother was statistically significant.

The differences between the nationalities are marginal. The only significant increase in ease of communication with the mother was found for pupils of Luxembourgish nationality. Again, it should be remembered that this group is significantly larger than the other groups, so it is more likely to detect an actual change.

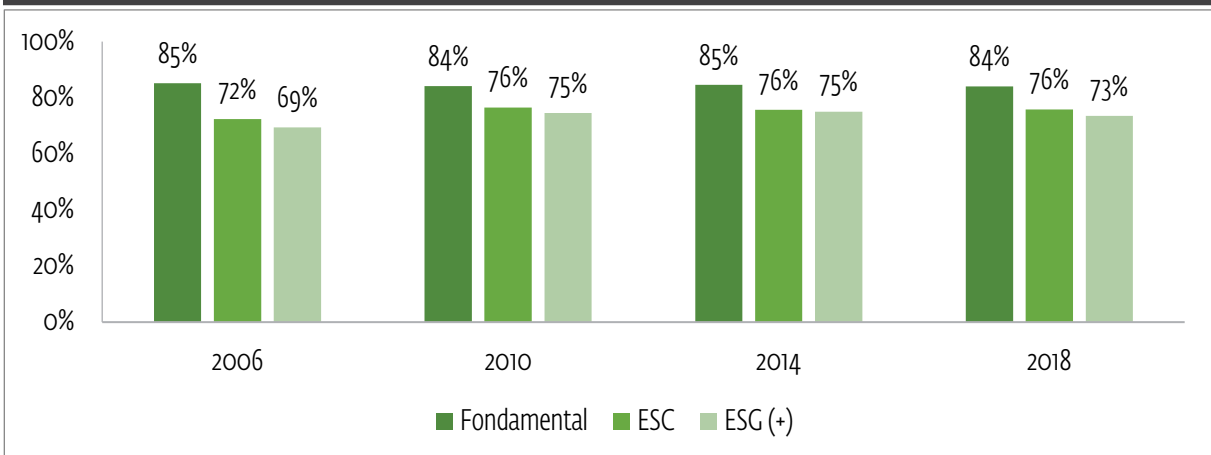
Figure 25: Adolescents who report easy communication with mother, by gender



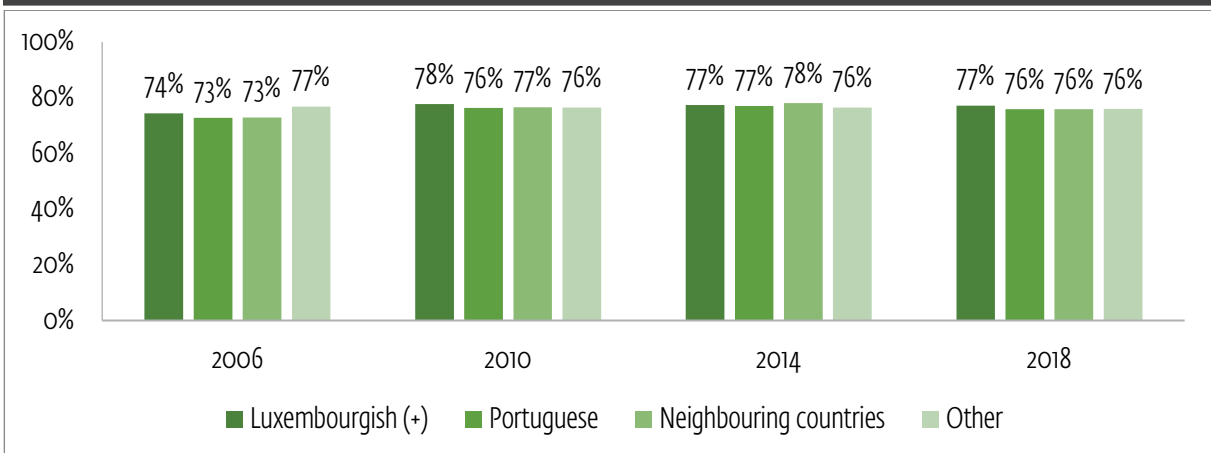
**Figure 26: Adolescents who report easy communication with mother, by perceived wealth**



**Figure 27: Adolescents who report easy communication with mother, by school type**



**Figure 28: Adolescents who report easy communication with mother, by nationality**



# TALKING WITH FATHER

## QUESTION

Adolescents were asked how easy it is for them to talk to their father about “things that really bother you” on a five-point scale. Answer categories ranged from 1 “very easy” to 5 “very difficult”. The answer “I don’t have or see this person” was excluded for the purpose of this report. The findings below present the proportion of adolescents who find it easy to communicate with their father (i.e. categories 1 and 2).

## HBSC FINDINGS

As with communication with the mother, more adolescents reported that it is easy to talk to their father over time. Again, this increase was significant for girls but not for boys. However, while communication with the mother was assessed almost identically by boys and girls, communication with the father was assessed significantly better by boys than by girls.

The lower the perceived wealth, the lower the percentage of adolescents who indicate they find it easy to talk to their father. However, there has been a significant increase in this percentage over time for each perceived wealth group.

As the percentage of adolescents who find it easy to talk to their father decreases with age (see Figure 135 and Figure 136), pupils of the *Fondamental* rate communication with the father better than pupils of secondary schools do. However, the percentage in secondary schools has increased significantly, whereas the increase among *Fondamental* pupils was not significant. There was a slight increase of adolescents who find it easy to talk to their father among adolescents with nationalities of the neighbouring countries as well as adolescents of Luxembourgish nationality.

**Figure 29: Adolescents who report easy communication with father, by gender**

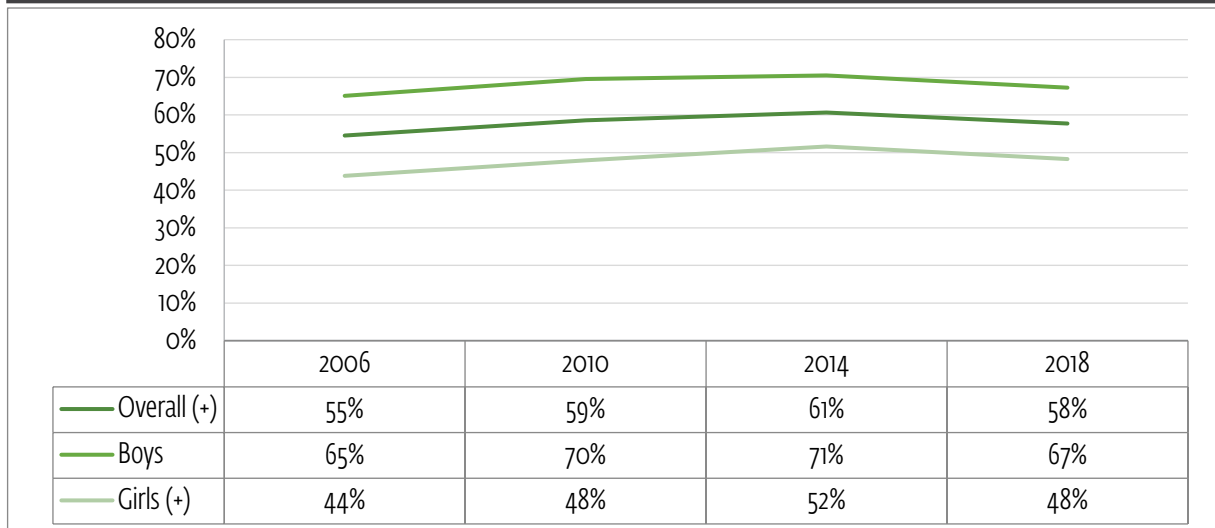


Figure 30: Adolescents who report easy communication with father, by perceived wealth

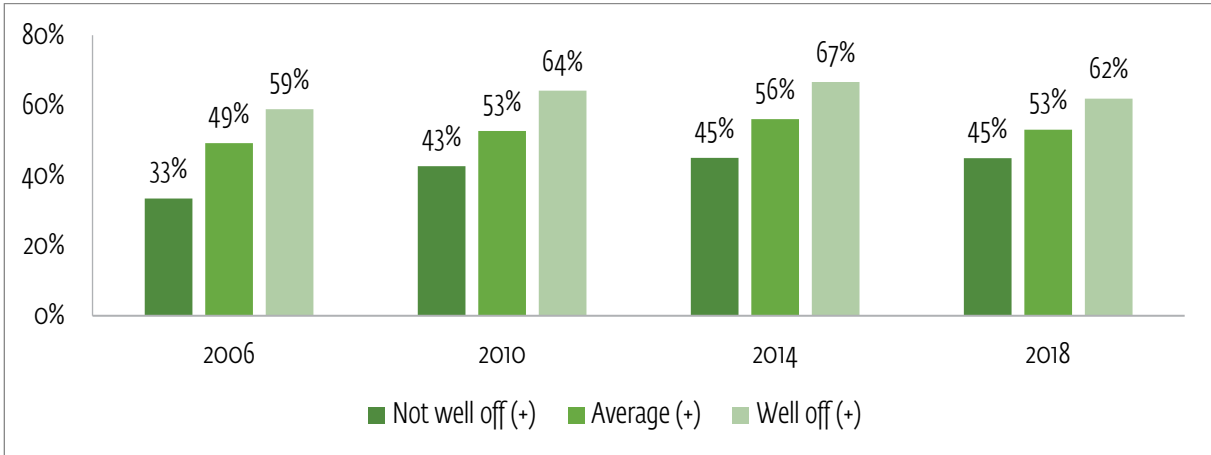


Figure 31: Adolescents who report easy communication with father, by school type

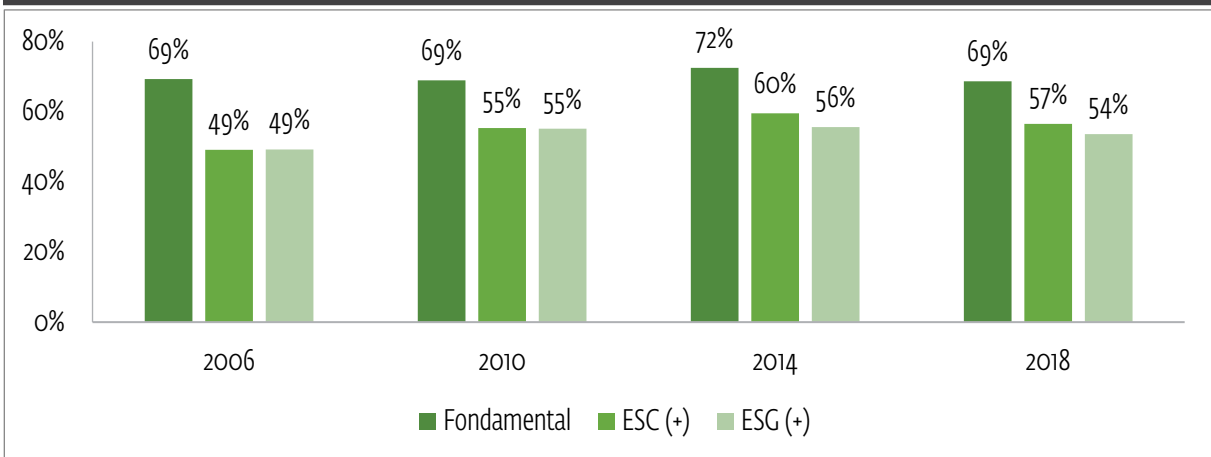
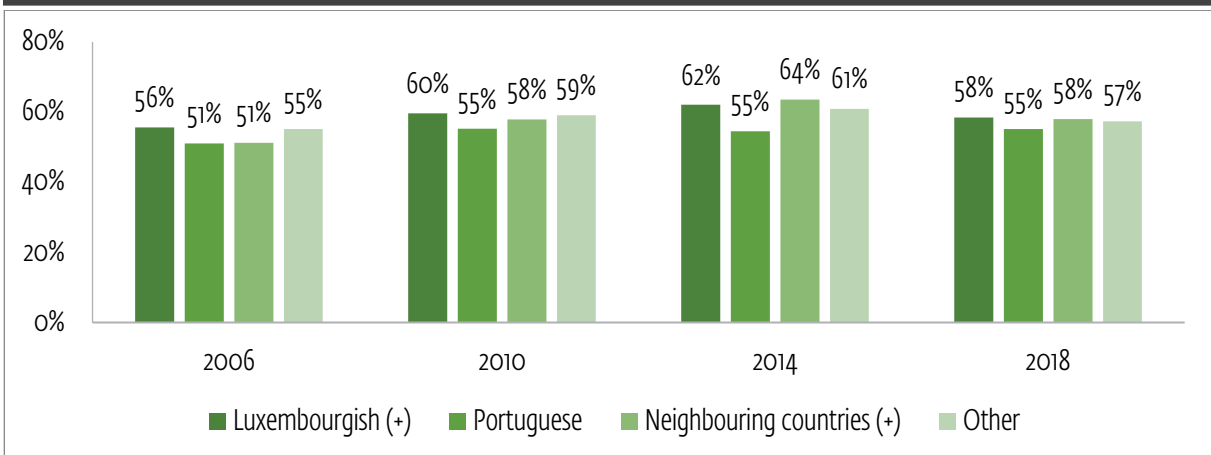


Figure 32: Adolescents who report easy communication with father, by nationality





# 3. HEALTH BEHAVIOURS

- Improvements over time are noted regarding nutrition. The proportion of adolescents who eat fruit daily has increased, while fewer adolescents consume soft drinks and sweets on a daily basis. Progress is also made regarding looking after teeth with the number of adolescents stating that they brush their teeth twice a day, rising. However, the number of adolescents eating breakfast every weekday has decreased.
- There has been great progress as regards the consumption of alcohol and tobacco: Over time, fewer and fewer pupils indicated that they had ever smoked or been drunk. In addition, fewer and fewer pupils reported having smoked or drunk alcohol in the last month.
- The proportion of pupils who have had sexual intercourse has decreased.
- The proportion of pupils who do sports at least 4 times a week has decreased.

# PHYSICAL ACTIVITY

## QUESTION

Adolescents were asked how often they exercise so much that they sweat or get out of breath outside of school hours. This question was asked on a seven-point scale. Answer categories ranged from 1 “every day” to 7 “never”. The findings below present the proportion of adolescents who exercise at least four times per week (i.e. categories 1 and 2).

## HBSC FINDINGS

A slightly reversed U-shaped curve can be observed in the figures below, meaning that the percentage of adolescents who were physically active was higher in 2010 and 2014 than in 2006 and 2018. Overall, there has been a decrease in physical activity over the period 2006-2018. The percentage of boys that were physically active is higher than the percentage of girls for all years; however, there has been a decline for both genders.

Adolescents, who reported that their family was well off, were more physically active compared to adolescents from families that were less well off in all years. The decrease is significant only in the “moderate perceived wealth” group.

Since physical activity decreases with age (see Figure 137 and Figure 138), pupils of the *Fondamental* are more often physically active than pupils of secondary schools are. While the difference between ESC and ESG was only 2 percentage points in 2006, it was already 6 percentage points in 2018 to the detriment of ESG.

Statistically significant decreases in physical activity were found in three of the four nationality groups (Luxembourgish, Portuguese and 'others').

**Figure 33: Adolescents who report regular physical activity, by gender**

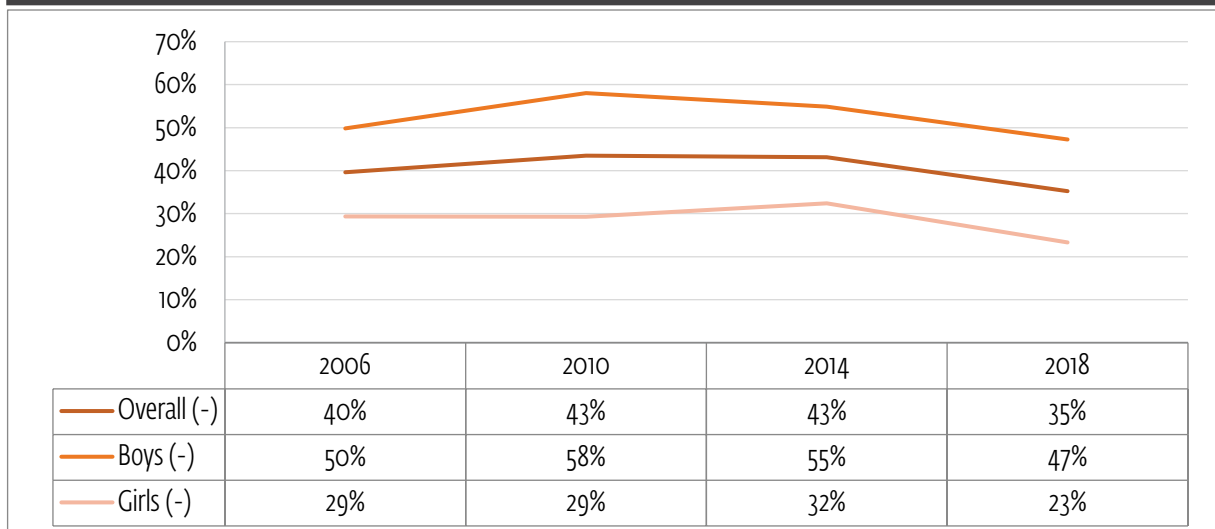




Figure 34: Adolescents who report regular physical activity, by perceived wealth

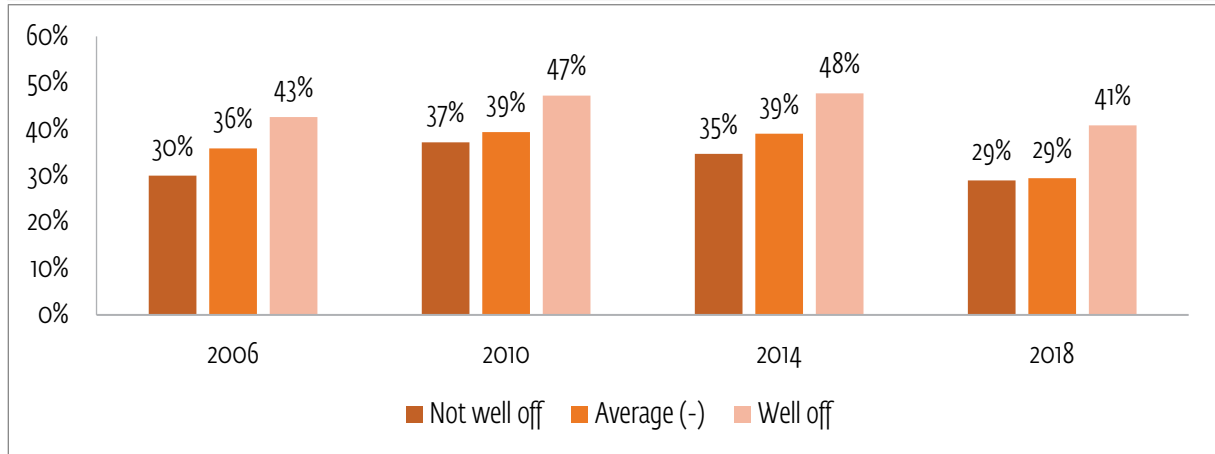


Figure 35: Adolescents who report regular physical activity, by school type

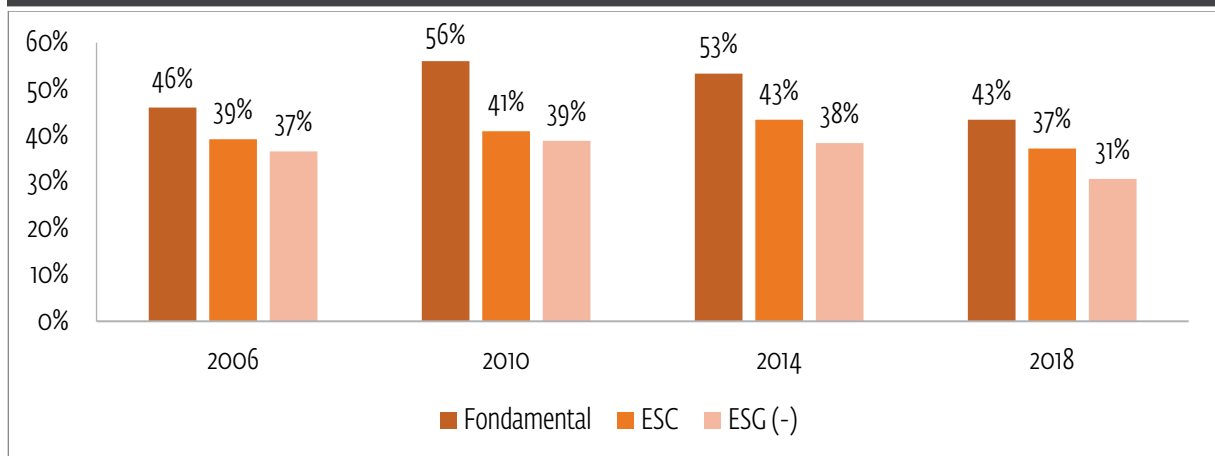
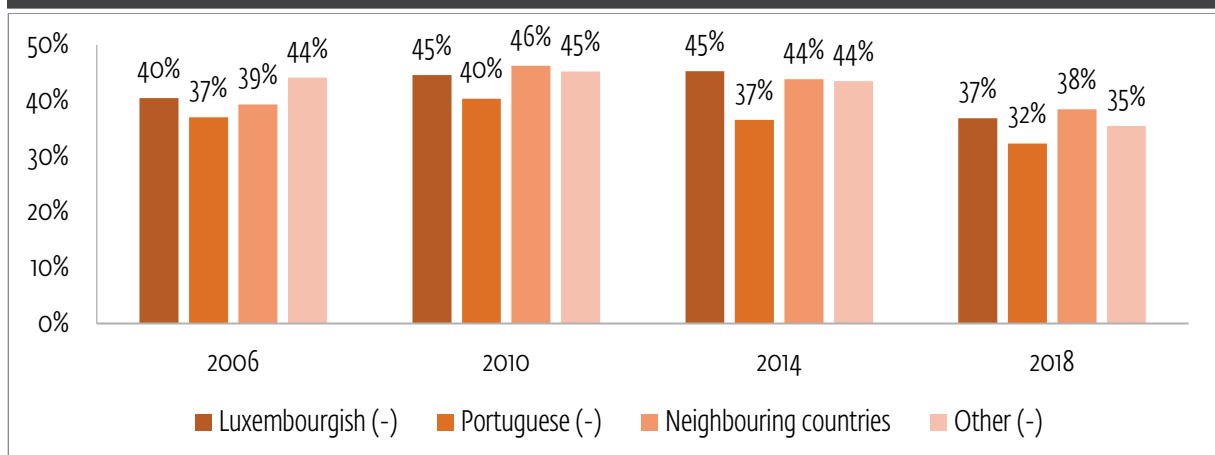


Figure 36: Adolescents who report regular physical activity, by nationality



## BREAKFAST WEEKDAYS

### QUESTION

Adolescents were asked on how many days during school weeks they eat breakfast (more than a glass of milk or fruit juice) on a six-point scale. Answer categories ranged from 1 “never” to 6 “five days a week”. The findings below present the proportion of adolescents who eat breakfast every day during school weeks.

### HBSC FINDINGS

Over the years, the rate of adolescents that eat breakfast on weekdays decreased from 55% in 2006 to 49% in 2018. The decrease in breakfast consumption is similar for boys and girls. Breakfast consumption has decreased among adolescents from all socioeconomic backgrounds. Throughout all the years, adolescents from “high perceived wealth” families more often eat breakfast on weekdays than adolescents from “moderate or low perceived wealth” families.

Breakfast consumption has decreased among pupils from all school types. Pupils from the *Fondamental* more often have breakfast on weekdays than pupils from the *ESC* and the *ESG*, because breakfast consumption decreases with age (see Figure 139 and Figure 140). In each survey year, pupils of the *ESG* stated to have breakfast on every weekday less often than pupils of the *ESC* did. However, the proportion has decreased in both school types.

For pupils of all nationality groups, the proportion was higher in 2006 than in 2018, but the differences were statistically significant only in the groups 'Luxembourgish' and 'other'.

Figure 37: Adolescents who have daily breakfast on weekdays, by gender

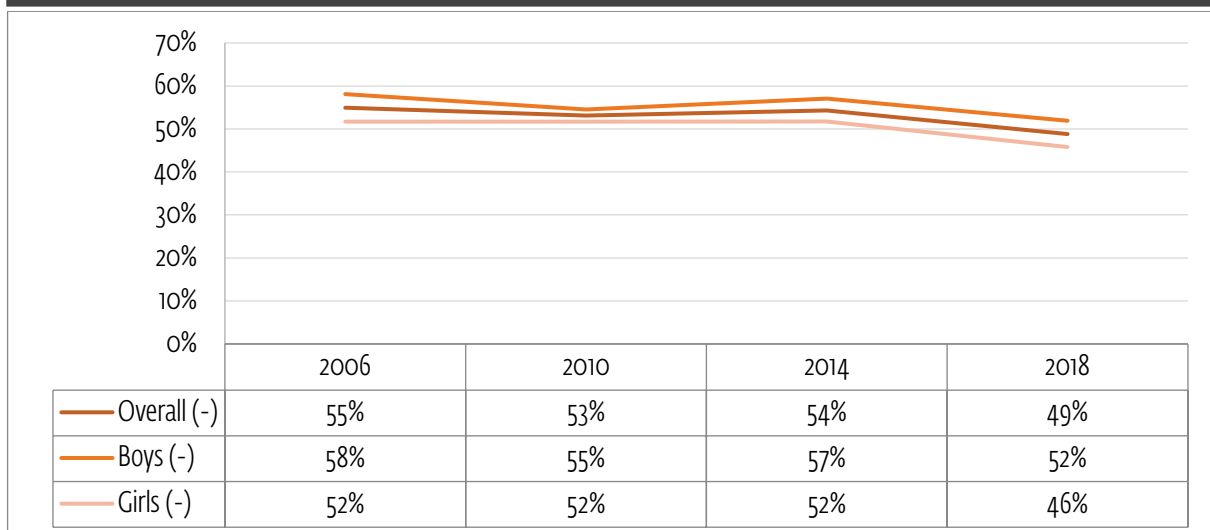


Figure 38: Adolescents who have daily breakfast on weekdays, by perceived wealth

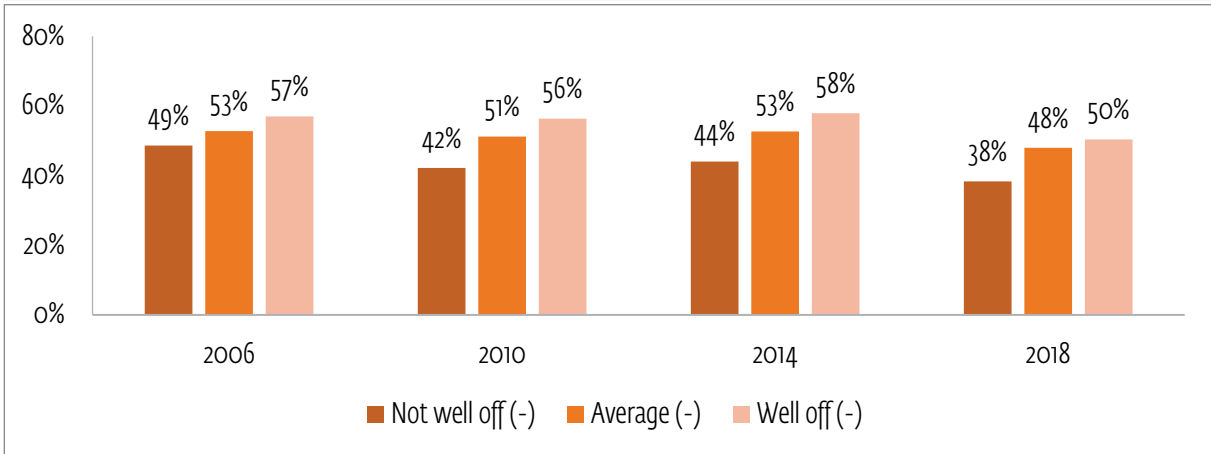


Figure 39: Adolescents who have daily breakfast on weekdays, by school type

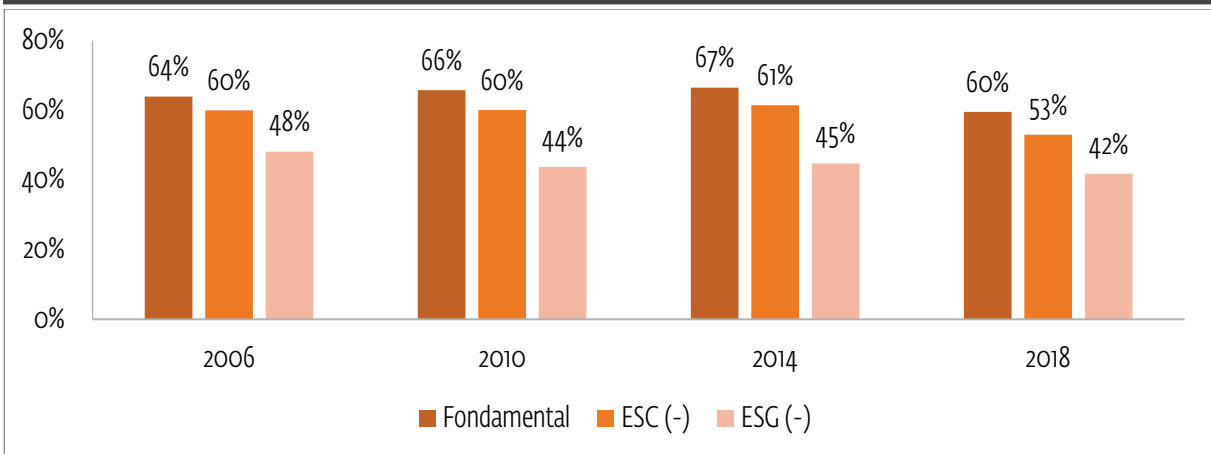
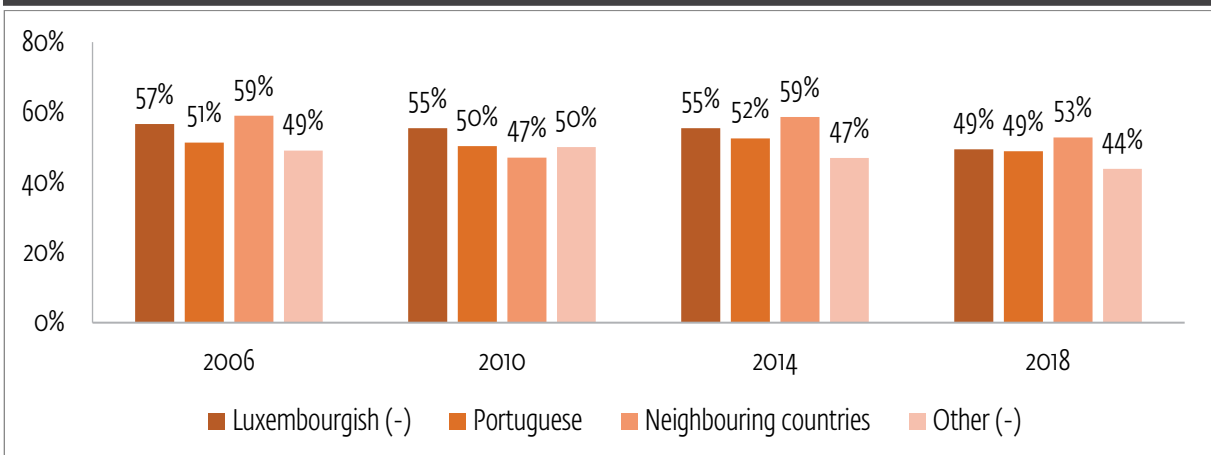


Figure 40: Adolescents who have daily breakfast on weekdays, by nationality



# FRUIT CONSUMPTION

## QUESTION

Adolescents were asked how many times a week they usually eat fruit on a seven-point scale. Answer categories ranged from 1 "never" to 7 "more than once a day". The findings below present the proportion of adolescents who eat fruit daily (i.e. categories 6 and 7).

## HBSC FINDINGS

The percentage of adolescents who eat fruit daily has increased over the years. The breakdown by gender shows that this increase is due to the higher daily consumption of fruit among boys, whereas there was no increase among girls. However, daily consumption is still higher among girls than among boys.

Adolescents, who perceive their families to be well off, eat more fruit than adolescents from families that are less well off. This pattern is the same for all years. There is an increase in daily consumption of fruit in the "moderate perceived wealth" and "high perceived wealth" groups, but not in the "low perceived wealth" group.

Since daily consumption of fruit is most frequent in the age group 11-12 (see Figure 141 and Figure 142), the corresponding proportion is higher in the *Fondamental* than in secondary schools. In addition, among pupils of the *Fondamental*, the proportion has increased over time, whereas there have been no significant changes in secondary schools. Within secondary schools, ESC pupils eat more fruit than ESG pupils.

In 2006, pupils of an "other nationality" were the most likely to eat fruit every day (40%). The groups of Luxembourgish, Portuguese and neighbouring countries' nationalities were almost equal in 2006. However, daily fruit consumption of pupils of Luxembourgish and neighbouring countries' nationality increased over time, which was not the case for pupils of Portuguese nationality.

**Figure 41: Adolescents who eat fruit daily, by gender**

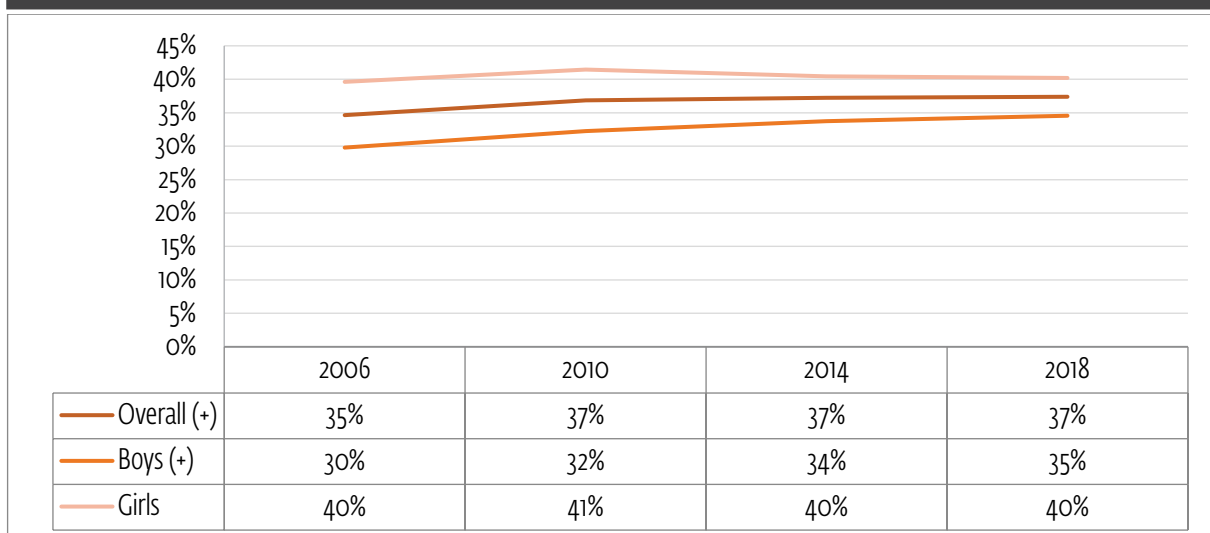


Figure 42: Adolescents who eat fruit daily, by perceived wealth

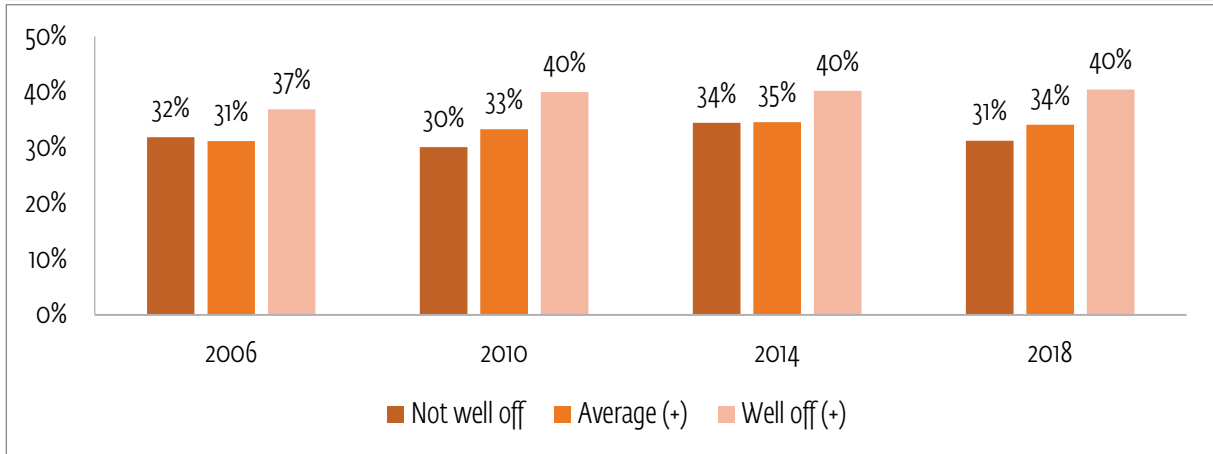


Figure 43: Adolescents who eat fruit daily, by school type

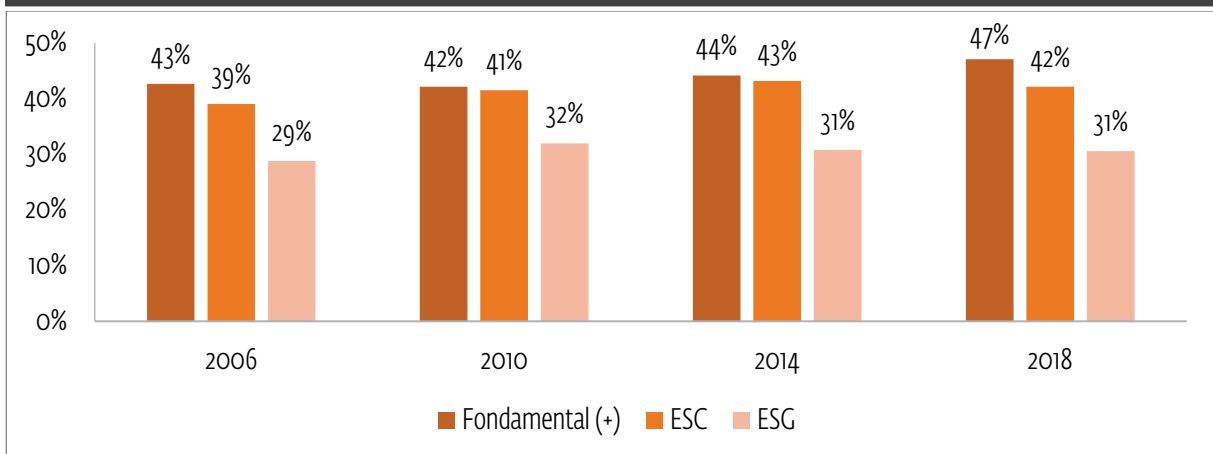
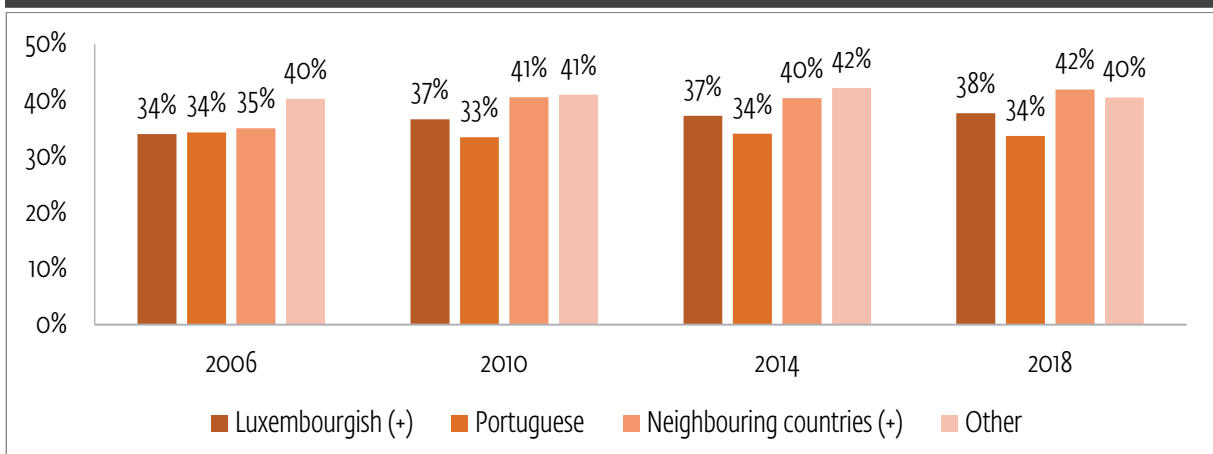


Figure 44: Adolescents who eat fruit daily, by nationality



## SWEETS CONSUMPTION

### QUESTION

Adolescents were asked how many times a week they eat sweets on a seven-point scale. Answer categories ranged from 1 “never” to 7 “more than once a day”. The findings below present the proportion of adolescents who eat sweets daily (i.e. categories 6 and 7).

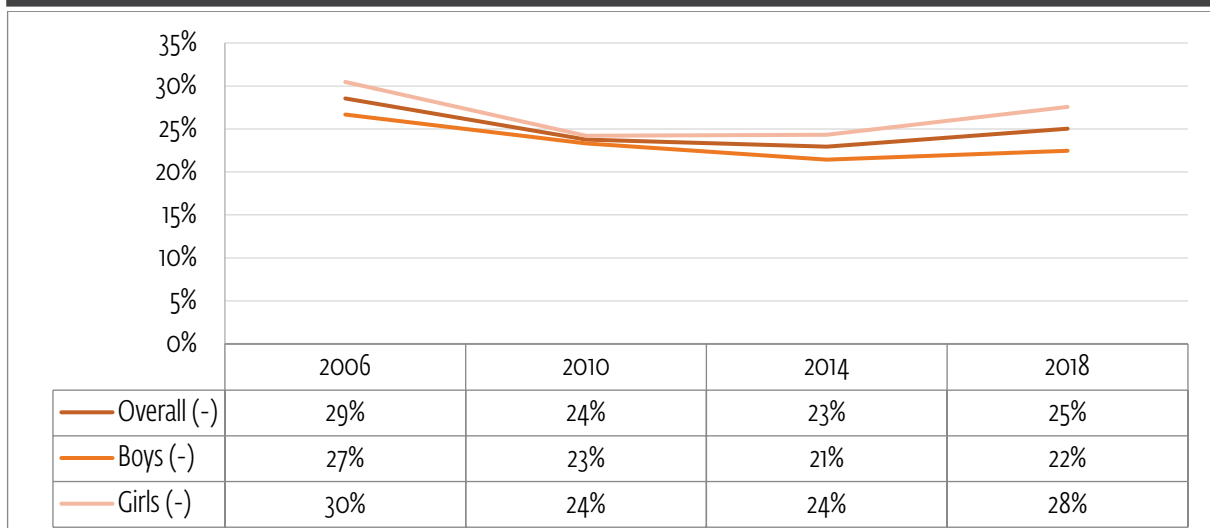
### HBSC FINDINGS

The daily consumption of sweets shows a u-shaped curve. In 2006, 29% of adolescents reported eating sweets every day. By 2014, this proportion had fallen to 23%, but by 2018, it had risen slightly to 25%. Overall, however, there was a significant decrease in daily sweets consumption, for both girls and boys.

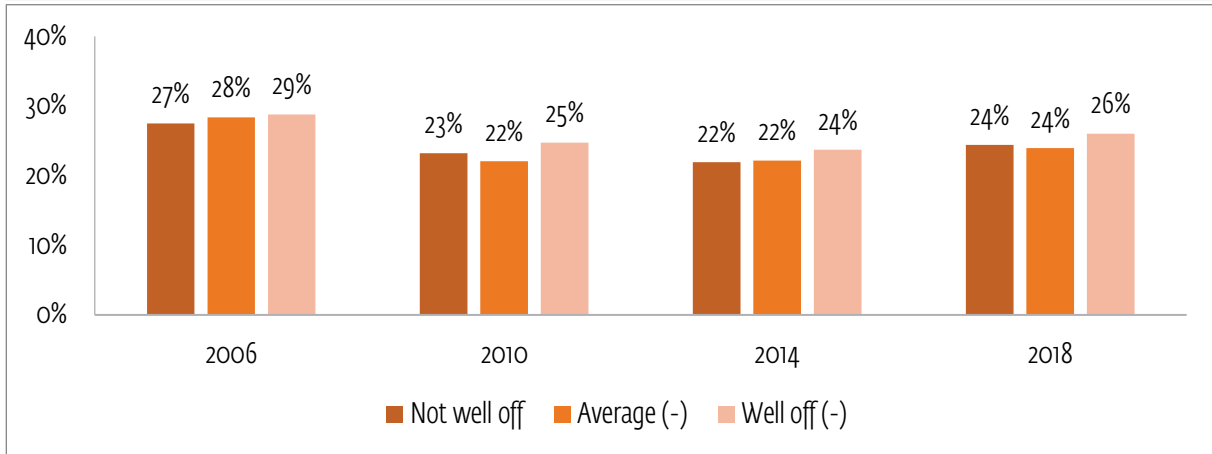
When categorizing the adolescents by perceived wealth, it is noticeable that sweets consumption is similar across the groups. Each group follows a similar U-shaped curve for sweets consumption.

The bar charts in the appendix (see Figure 143 and Figure 144) show that the decrease is due to older pupils (15-18 years) indicating less daily sweets consumption, whereas there was no decrease among younger pupils. In 11-12-year-old girls, the percentage even increased. Accordingly, the daily consumption of sweets decreased among secondary school pupils (ESG and ESC), whereas there was a slight increase in the *Fondamental*. Pupils of Portuguese nationality were the least likely to eat sweets every day in each survey, but there were also significant declines over time among pupils of Luxembourgish and pupils of 'other' nationality.

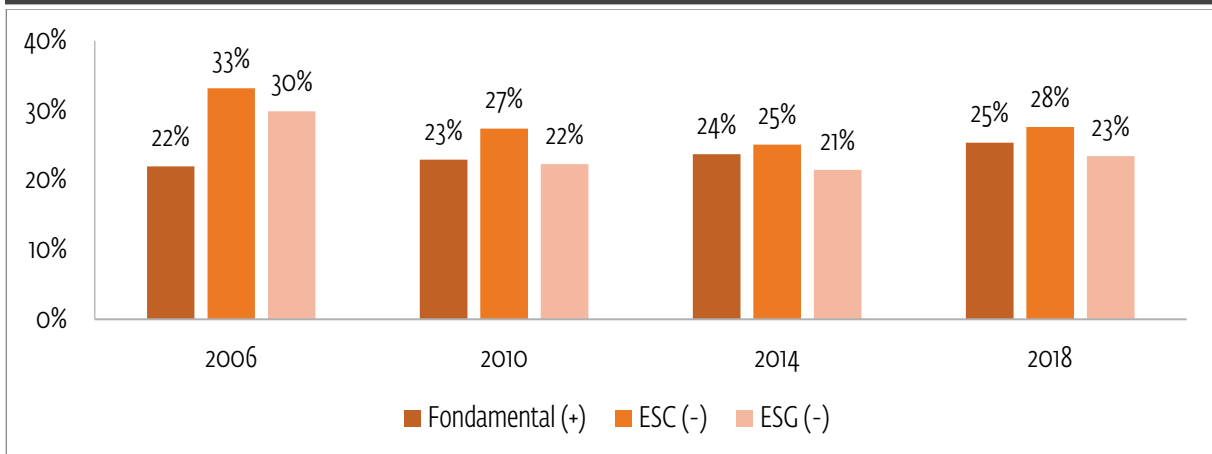
Figure 45: Adolescents who eat sweets daily, by gender



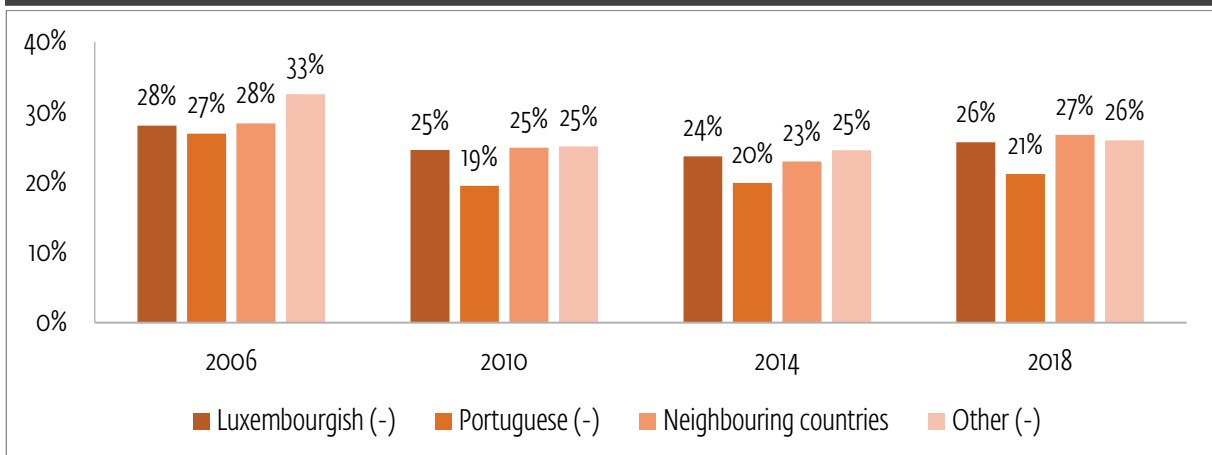
**Figure 46: Adolescents who eat sweets daily, by perceived wealth**



**Figure 47: Adolescents who eat sweets daily, by school type**



**Figure 48: Adolescents who eat sweets daily, by nationality**



## SOFT DRINK CONSUMPTION

### QUESTION

Adolescents were asked how many times a week they consume soft drinks on a seven-point scale. Answer categories ranged from 1 "never" to 7 "more than once a day". The findings present the proportion of adolescents who consume soft drinks every day (i.e. categories 6 and 7).

### HBSC FINDINGS

The proportion of pupils who drink soft drinks every day has decreased from around one third in 2006 to around one quarter in 2018. This decrease was present for both genders; however, boys still drink more soft drinks daily than girls do.

From 2010 to 2018, it could be observed that adolescents consumed soft drinks daily less often the more affluent they considered their families to be. In 2006, this clear pattern was not yet visible. There were significant declines in consumption between 2006 and 2018 in the "moderate" and "high perceived wealth" groups.

Separated by age group, each survey year showed that daily consumption initially increased with age and usually peaked in the age group 15-16 and then declined slightly (see Figure 145 and Figure 146). Accordingly, daily consumption of soft drinks in *Fondamental* is less frequent than in secondary schools as a whole, but there are large differences between the two types of secondary schools. Compared to ESG, significantly fewer pupils at the ESC drink soft drinks every day. However, consumption decreased between 2006 and 2018 in all school types.

In each survey, pupils of Portuguese nationality reported a slightly higher daily consumption of soft drinks than other pupils did. However, there were declines in every group, regardless of nationality.

Figure 49: Adolescents who consume soft drinks daily, by gender

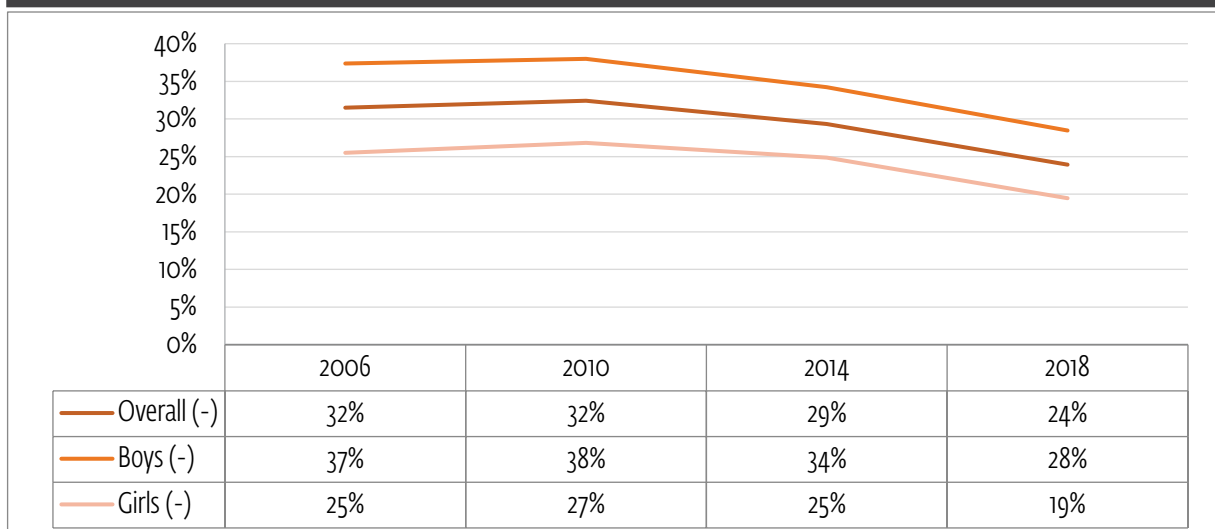




Figure 50: Adolescents who consume soft drinks daily, by perceived wealth

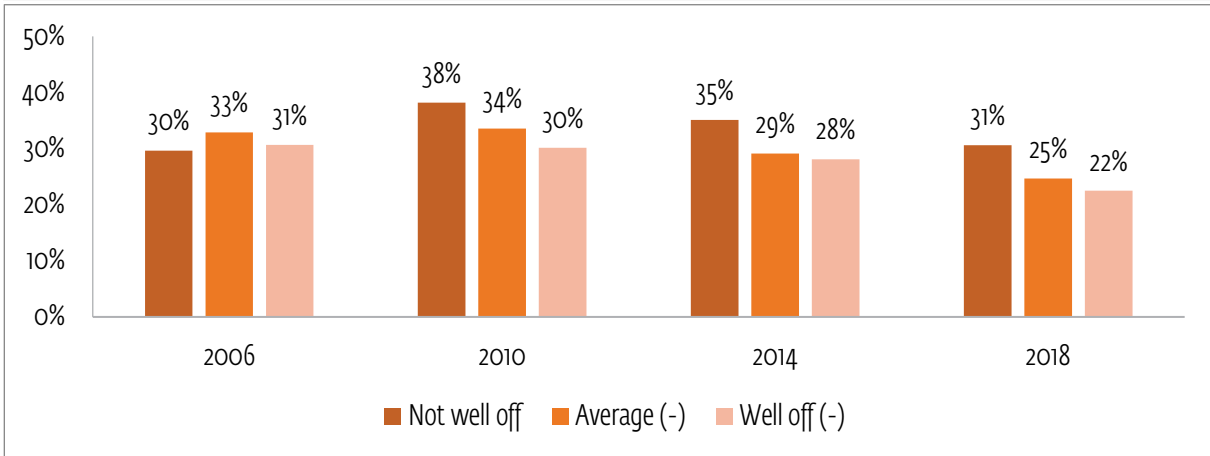


Figure 51: Adolescents who consume soft drinks daily, by school type

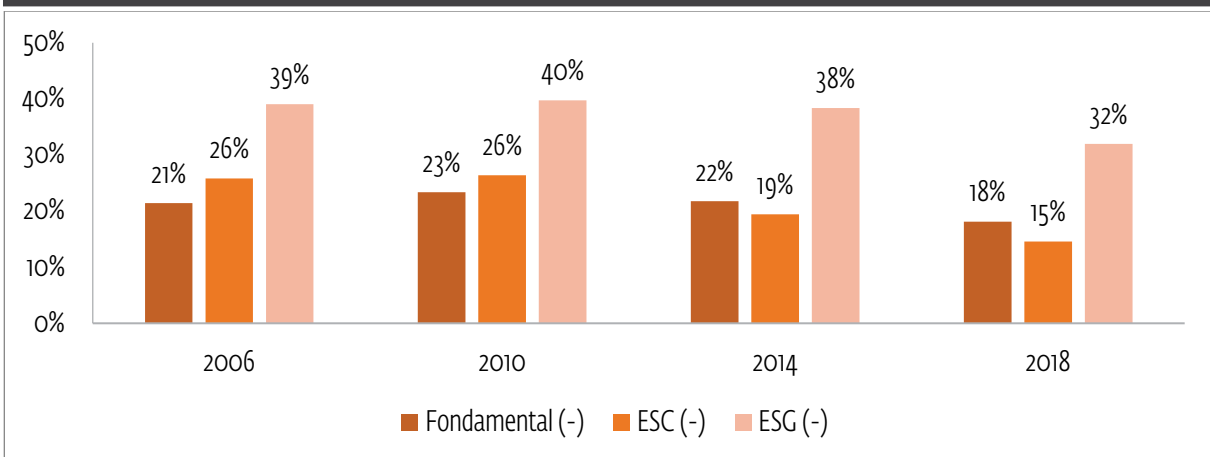
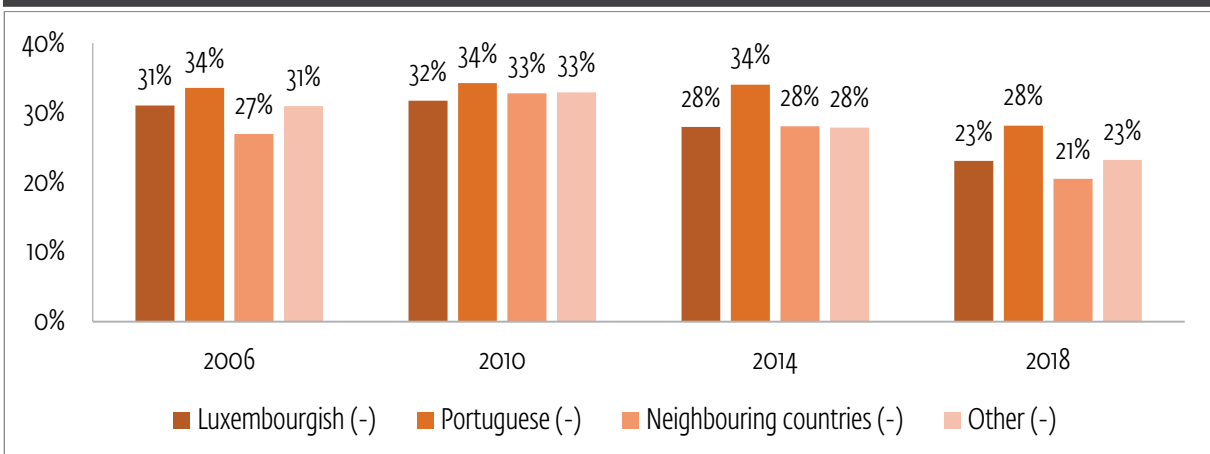


Figure 52: Adolescents who consume soft drinks daily, by nationality



# TOOTH BRUSHING

## QUESTION

Adolescents were asked how often they brush their teeth on a five-point scale. Answer categories ranged from 1 "less than once a week" to 5 "more than once a day". The findings below present the proportion of adolescents who brush their teeth at least twice a day (i.e. category 5).

## HBSC FINDINGS

The proportion of adolescents who brush their teeth at least twice a day was more than two thirds in each survey year and increased slightly over time. Separated by gender, boys were less likely to brush their teeth twice a day than girls were. However, boys showed a significant increase over time, while girls remained almost constant. Separated by age and gender, boys brush their teeth less often the older they are, which is not the case for girls (see Figure 147 and Figure 148).

Each survey year showed the pattern that the more affluent the pupils consider their families to be, the more often they brush their teeth at least twice a day. In addition, there was a significant increase in the "moderate" and "high perceived wealth" groups.

The proportion of those who brush their teeth at least twice a day was highest among ESC pupils and lowest among ESG pupils in each survey. The pupils of the *Fondamental* were in between and indicated a statistically significant increase in tooth brushing over time.

Both pupils of Luxembourgish and Portuguese nationality brushed their teeth at least twice a day more often in 2018 than in 2006, and the more pronounced differences between nationalities that were present in 2006 have diminished accordingly over time.

**Figure 53: Adolescents who brush their teeth twice a day, by gender**

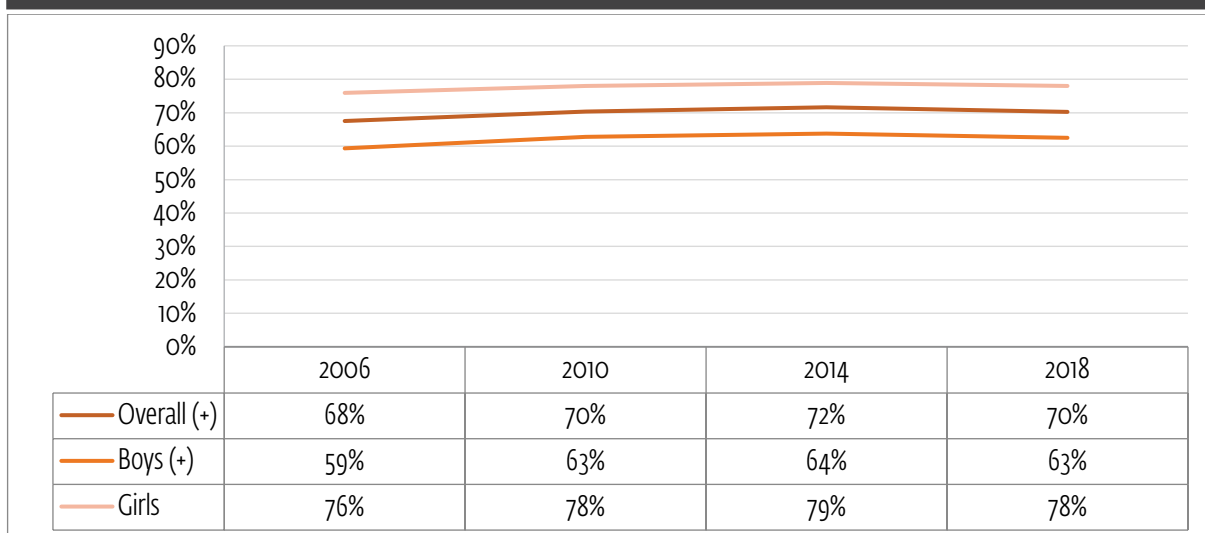


Figure 54: Adolescents who brush their teeth twice a day, by perceived wealth

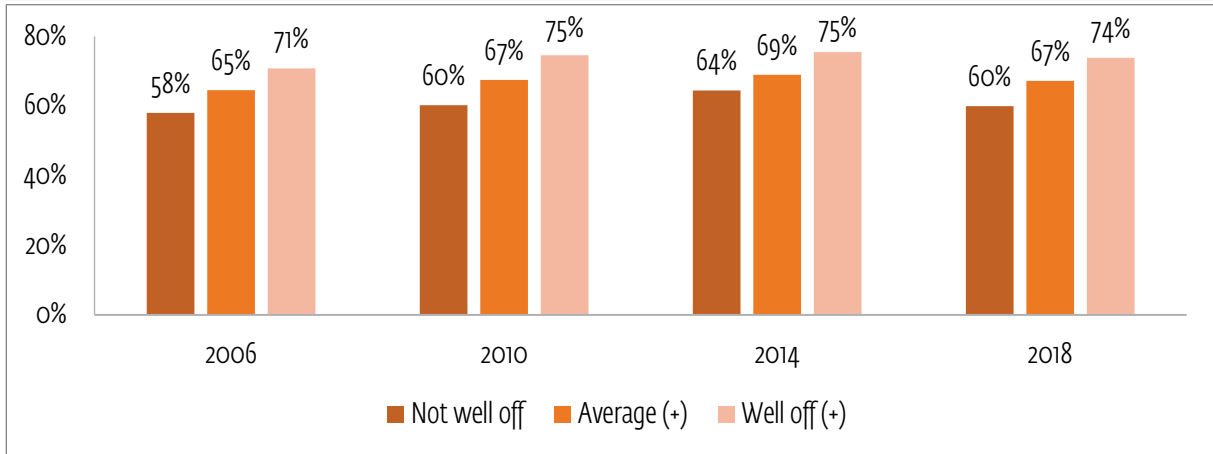


Figure 55: Adolescents who brush their teeth twice a day, by school type

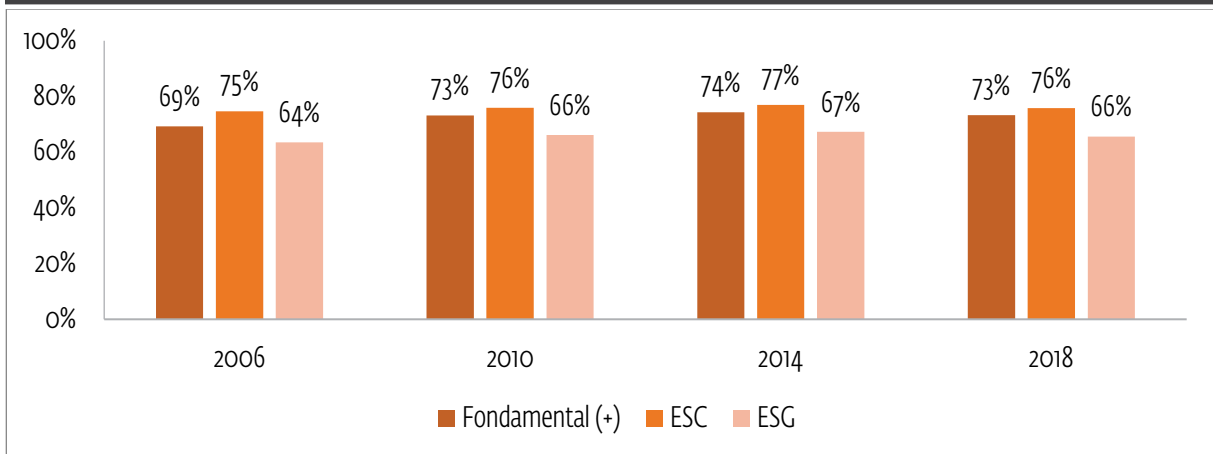
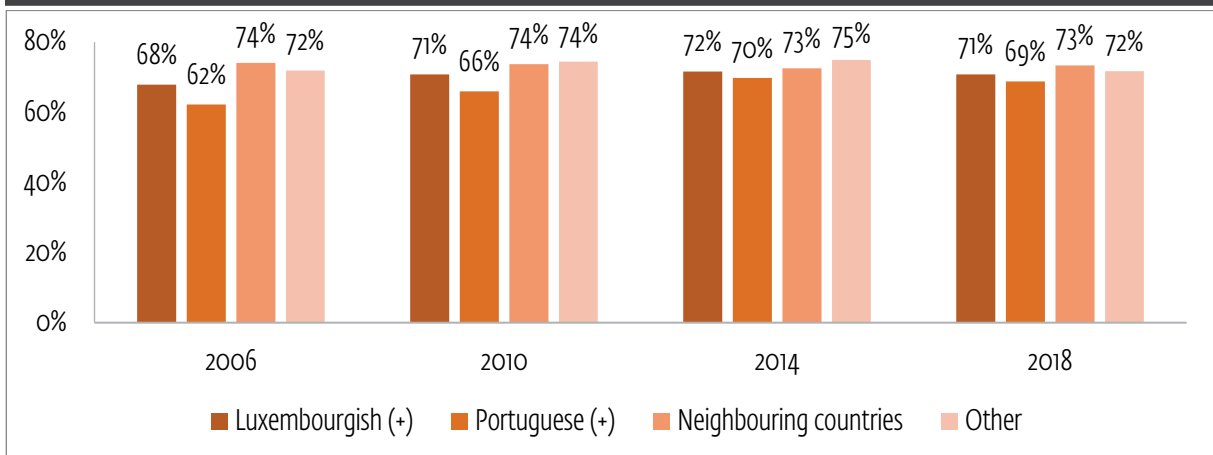


Figure 56: Adolescents who brush their teeth twice a day, by nationality



# PHYSICAL FIGHTING

## QUESTION

Adolescents were asked how many times they were in a physical fight during the last 12 months on a five-point scale. Answer categories ranged from 1 "I have not been in a physical fight" to 5 "4 times or more". The findings below present the proportion of adolescents who were not involved in physical fights in the last 12 months.

## HBSC FINDINGS

Over time, the proportion of pupils who were not involved in a physical fight in the last 12 months has increased. For girls, this proportion has remained more or less stable at around 80%, for boys it has risen from 53% in 2006 to 62% in 2014 but has fallen back to 55% in 2018. Separated by age and gender, boys fight less often the older they are, whereas this decrease by age is less pronounced among girls (see Figure 149 and Figure 150).

Adolescents from "low perceived wealth" families were more frequently involved in physical fights in 2006 than in 2018. Since there were no significant changes in the other two groups, the differences by perceived wealth have narrowed over time.

Pupils of the ESC were less often involved in physical fights in 2018 than in 2006, but the opposite was true for pupils of the *Fondamental*. Since the ESC pupils are less often involved in physical fights than pupils from the *Fondamental* are, the difference between the school types has become larger.

For pupils of Luxembourgish and "other" nationalities, the curves are inversely U-shaped. From 2006 to 2014, there was an increase in both, followed by a small decrease in 2018. Overall, however, the trend is still positive, i.e. from 2006 to 2018, fewer pupils were involved in physical fights.

Figure 57: Adolescents who were not involved in a fight (12 months), by gender

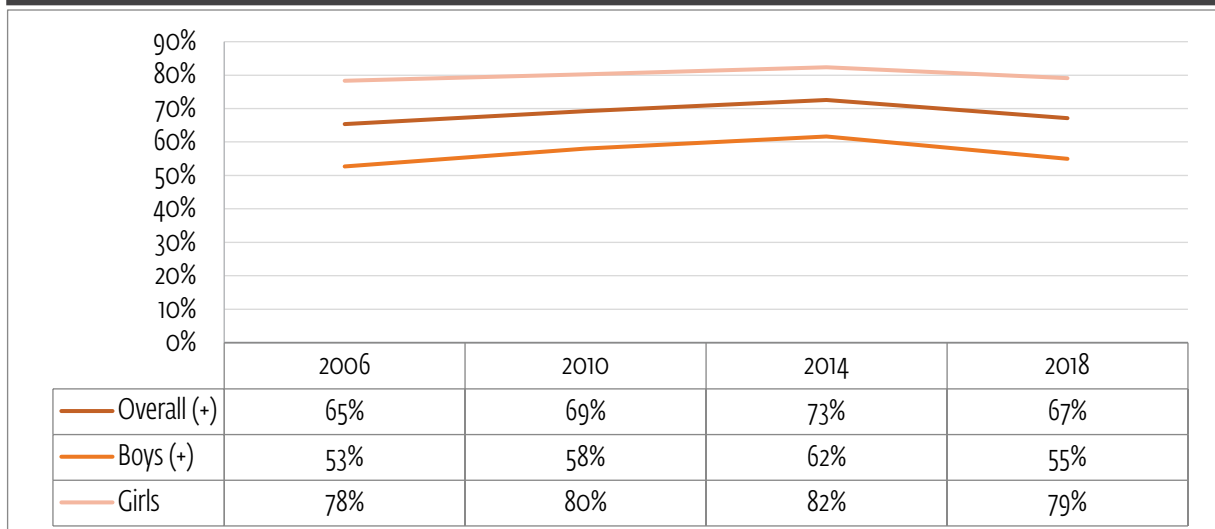


Figure 58: Adolescents who were not involved in a fight (12 months), by perceived wealth

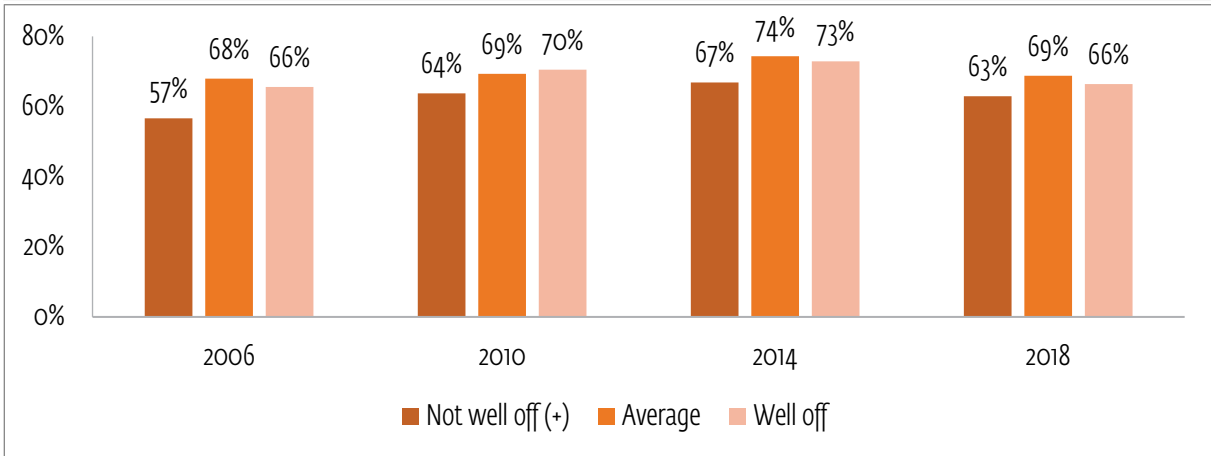


Figure 59: Adolescents who were not involved in a fight (12 months), by school type

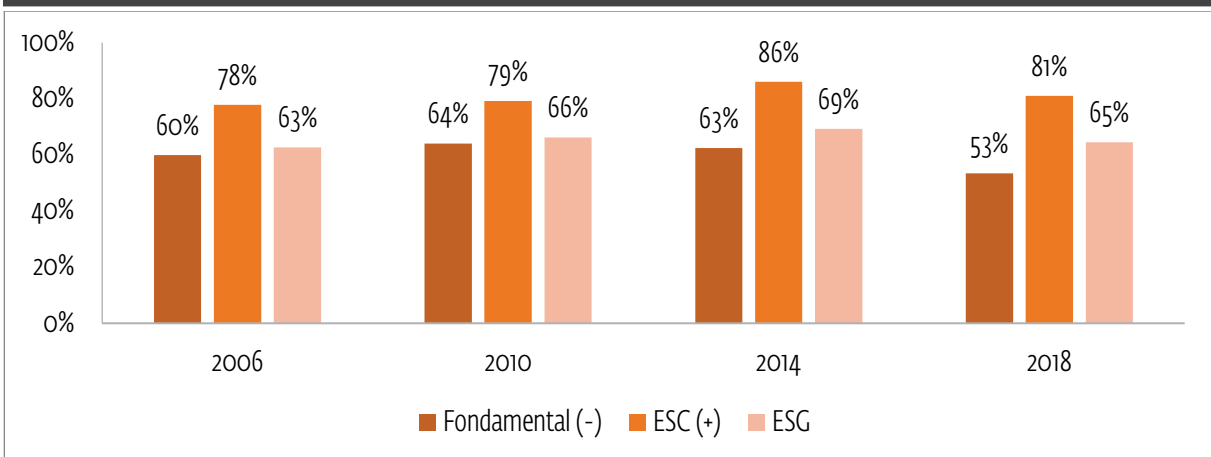
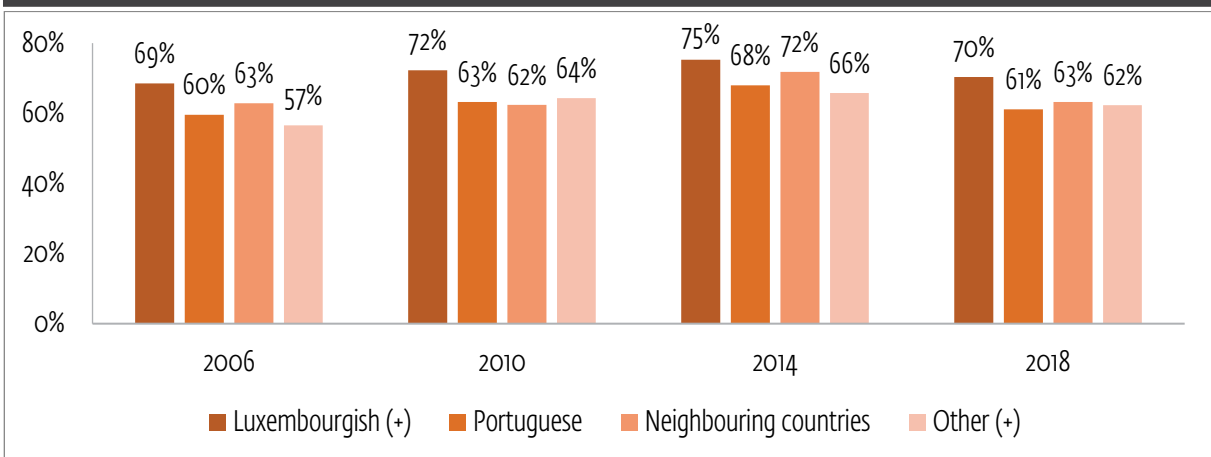


Figure 60: Adolescents who were not involved in a fight (12 months), by nationality



# DRUNKENNESS

## QUESTION

Adolescents were asked if they ever had drunk so much alcohol that they were drunk. For this report, the question was dichotomized into two answer categories "yes" and "no". The findings below present the proportion of adolescents who were never drunk during their lifetime.

## HBSC FINDINGS

The proportion of pupils who have never been drunk has increased from two-thirds in 2006 to over three-quarters in 2018. This increase applies to every group, regardless of gender, wealth, type of school and nationality.

Over time, the gap between girls and boys has narrowed. However, drunkenness is still more common among boys than among girls.

The originally larger differences in drunkenness between categories of perceived wealth and school type have also narrowed over time. The older the pupils are, the less likely it is that they have never been drunk (see Figure 151 and Figure 152). Accordingly, the proportion of pupils who have never been drunk is much higher in the *Fondamental* than in secondary schools. Within secondary schools, it is noticeable that the former differences between ESG and ESC have disappeared over time.

**Figure 61: Adolescents who were never drunk in their lifetime, by gender**

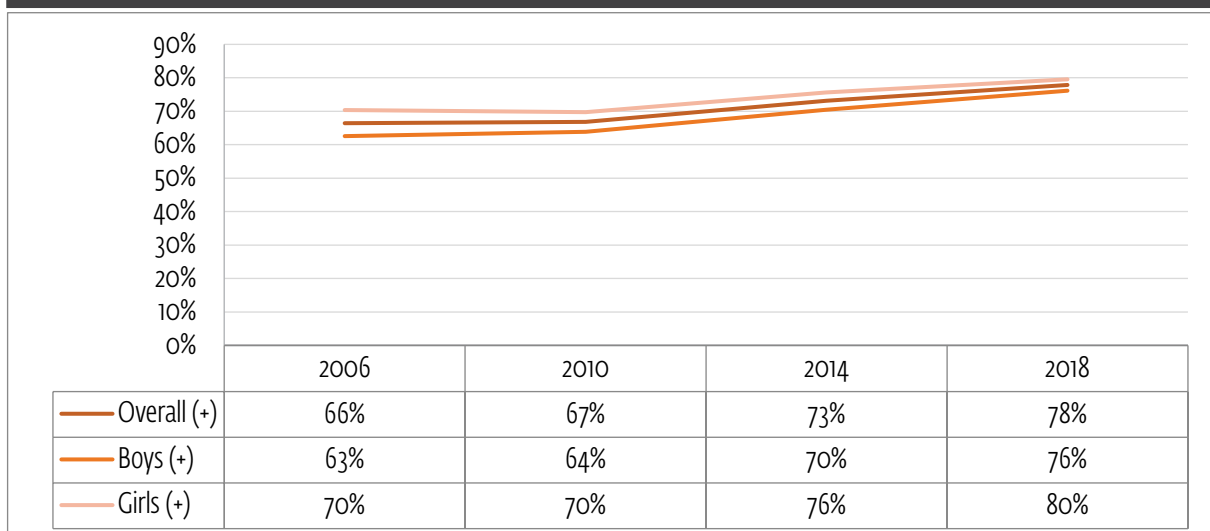


Figure 62: Adolescents who were never drunk in their lifetime, by perceived wealth

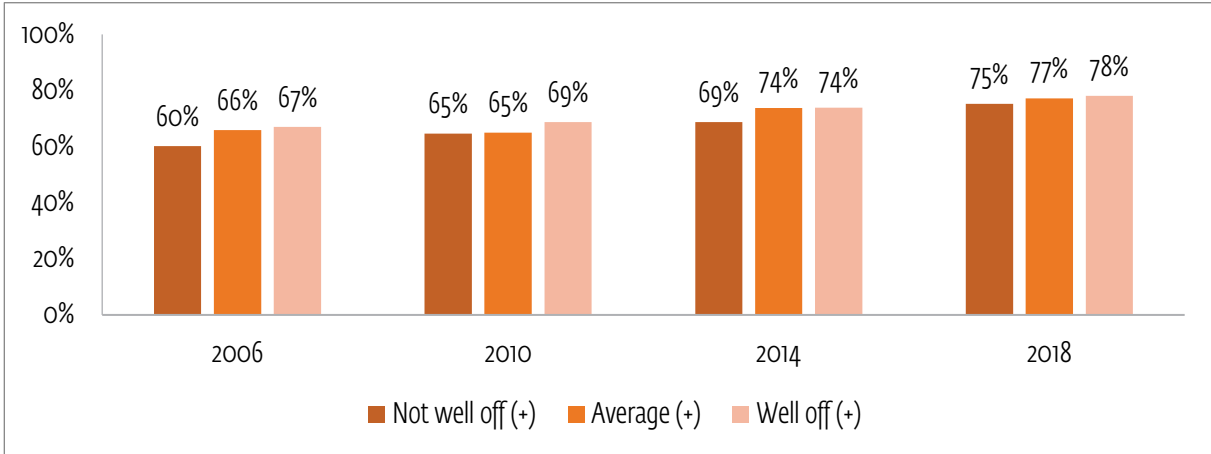


Figure 63: Adolescents who were never drunk in their lifetime, by school type

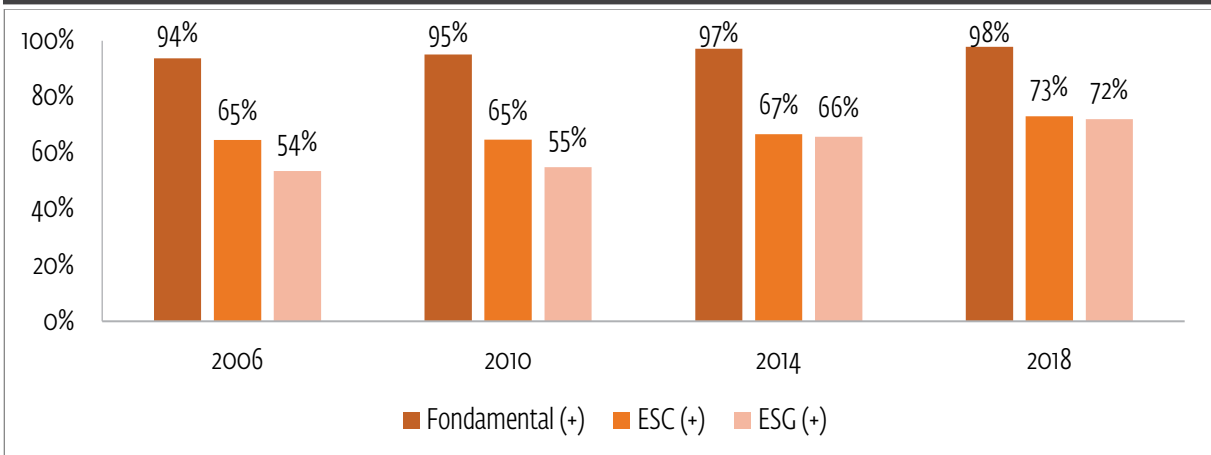
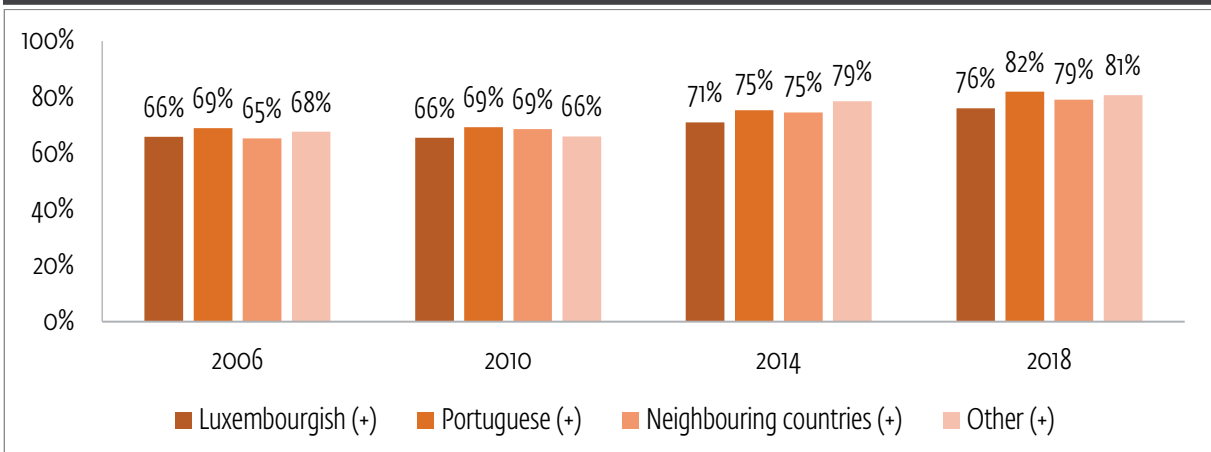


Figure 64: Adolescents who were never drunk in their lifetime, by nationality



## ALCOHOL USE PAST MONTH

### QUESTION

Pupils were asked how often they had drunk alcohol in the past 30 days. The answers ranged from 1 "never" to 7 "on 30 days". This report shows how many pupils have drunk alcohol in the past 30 days (i.e. categories 2 to 7).

### HBSC FINDINGS

The proportion of pupils who have drunk alcohol in the past 30 days has decreased from close to 50% in 2006 to fewer than 30% in 2018. Similar to the trends observed for drunkenness, this decline affects all groups surveyed, regardless of gender, perceived wealth, school type and nationality.

The use of alcohol depends very much on age (see Figure 153 and Figure 154), meaning that the largest differences are found between the *Fondamental* and secondary schools. In contrast, differences by gender, perceived wealth and nationality are smaller. The more pronounced differences in 2006 by perceived wealth almost disappeared in 2018.

Figure 65: Adolescents who drank alcohol in past 30 days, by gender

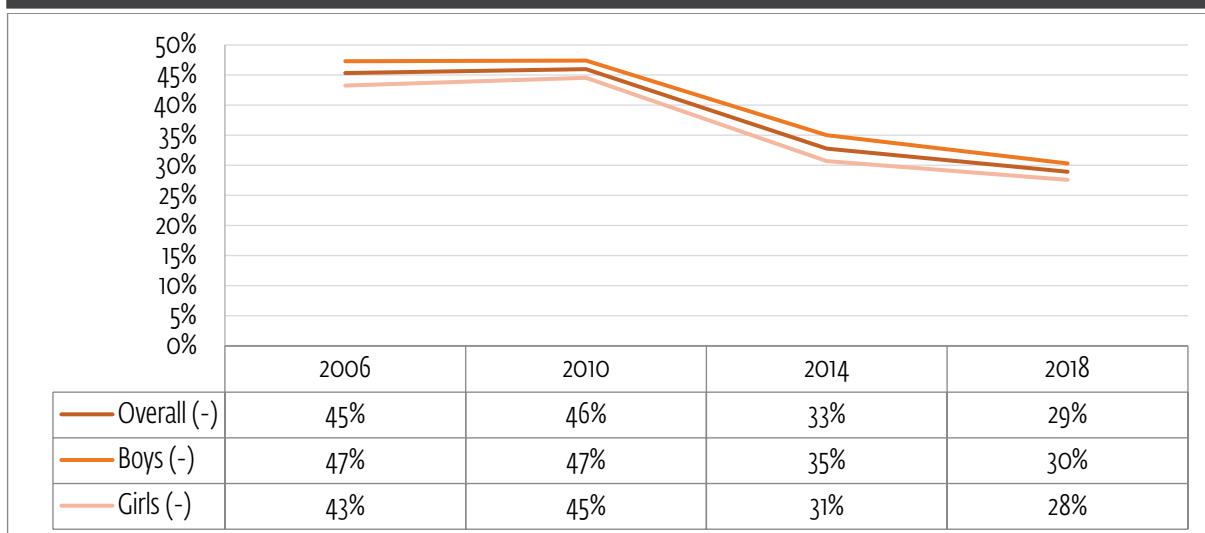




Figure 66: Adolescents who drank alcohol in past 30 days, by perceived wealth

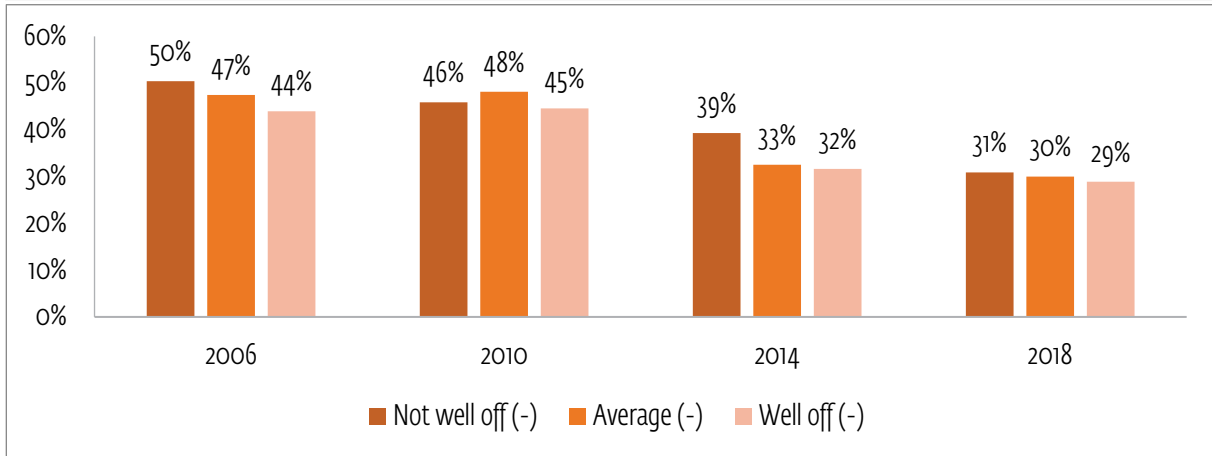


Figure 67: Adolescents who drank alcohol in past 30 days, by school type

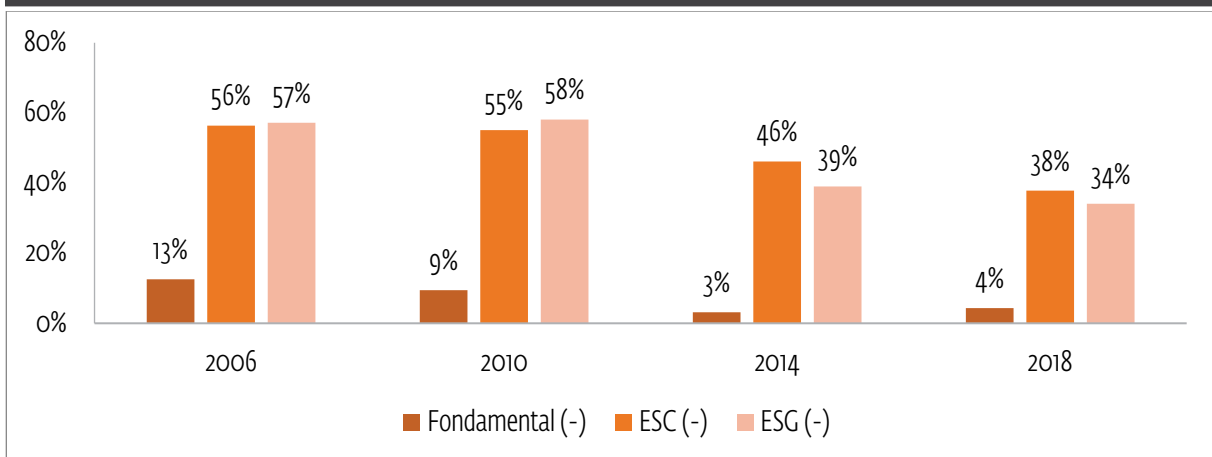
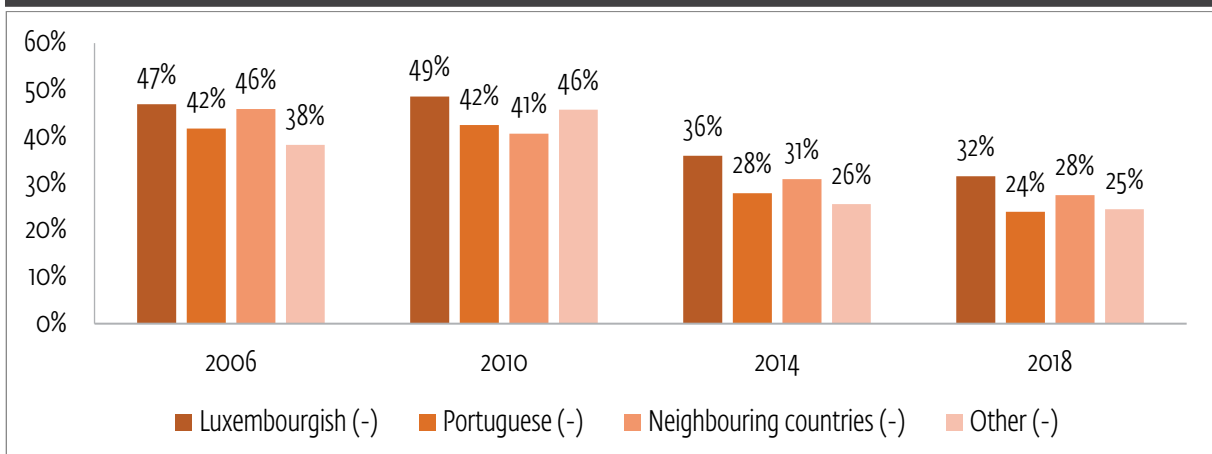


Figure 68: Adolescents who drank alcohol in past 30 days, by nationality



## LIFETIME TOBACCO USE

### QUESTION

Adolescents were asked if they had ever smoked cigarettes in their lifetime. Answer categories ranged from 1 "never" to 7 "30 days (or more)". The findings below present the proportion of adolescents who have never smoked in their lifetime.

### HBSC FINDINGS

Between 2006 and 2010, the proportion of pupils who have never smoked has hardly changed. In the following two survey years, this proportion rose sharply. Similar to trends observed for the use of alcohol, this trend in tobacco use affected all groups, regardless of gender, perceived wealth, school type and nationality.

The differences between boys and girls in tobacco use were marginal in all four survey years. In each survey year, the proportion of non-smokers in the "high perceived wealth" group was higher than in the "low perceived wealth" group. The older the adolescents, the lower the probability that they have never smoked (see Figure 155 and Figure 156). The differences between the nationalities were marginal in each survey year.

Figure 6g: Adolescents who never smoked in lifetime, by gender

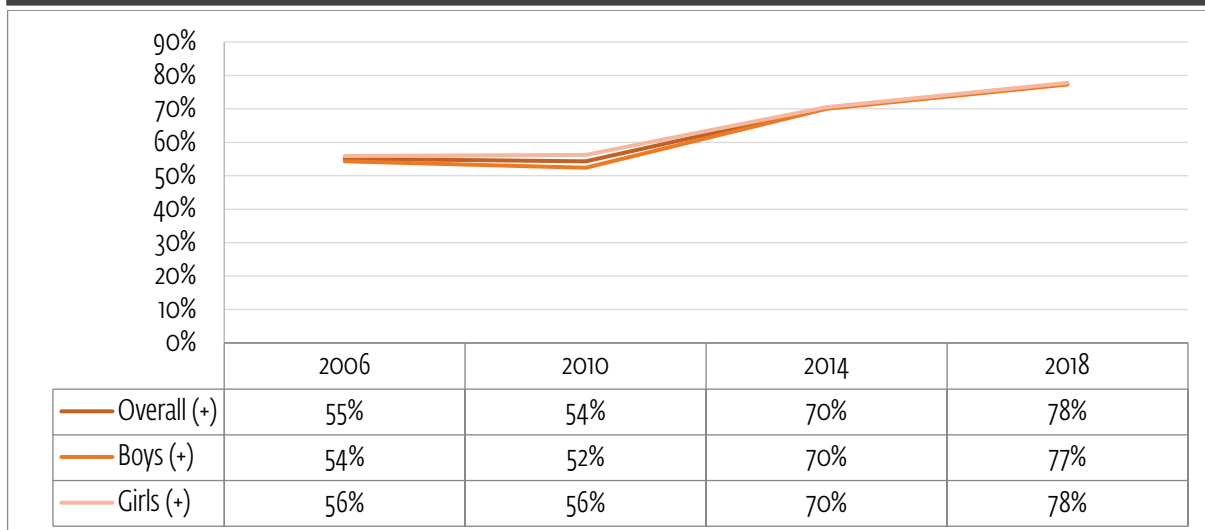


Figure 70: Adolescents who never smoked in lifetime, by perceived wealth

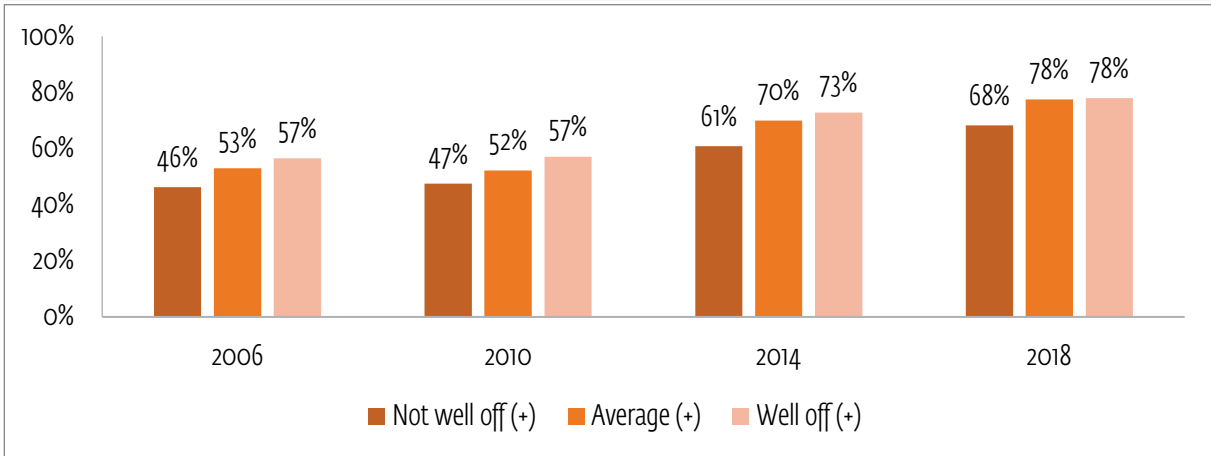


Figure 71: Adolescents who never smoked in lifetime, by school type

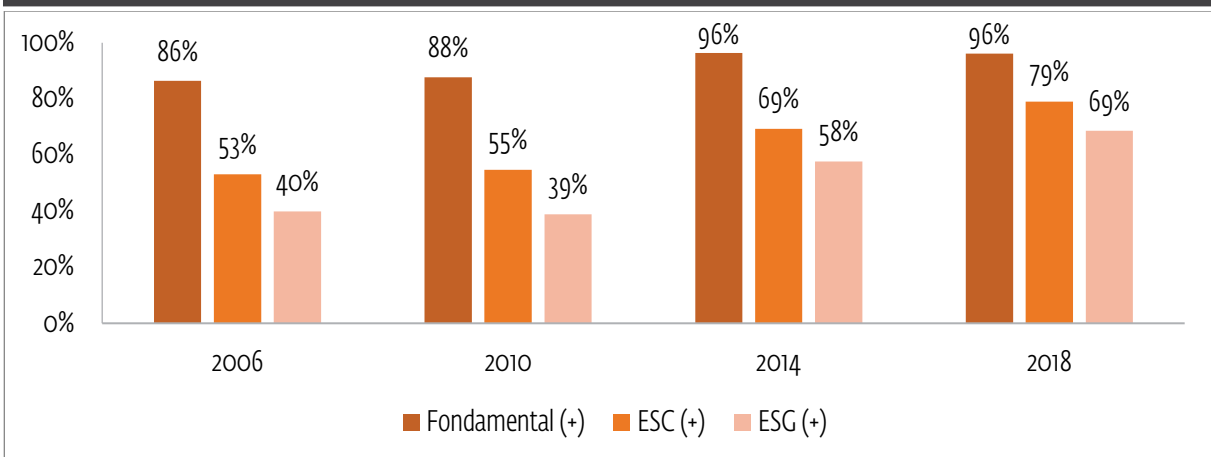
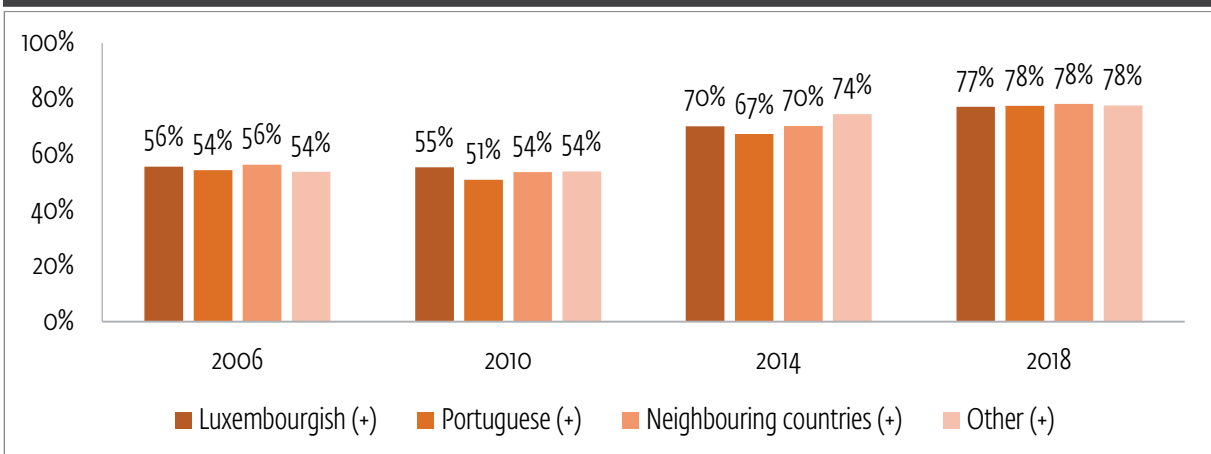


Figure 72: Adolescents who never smoked in lifetime, by nationality



## TOBACCO USE IN PAST MONTH

### QUESTION

Adolescents were asked if they had smoked cigarettes in the past 30 days. Answer categories ranged from 1 “never” to 7 “30 days (or more)”. The findings below present the proportion of adolescents who have smoked cigarettes in the past month.

### HBSC FINDINGS

The trend in lifetime use of tobacco is reflected in the use of tobacco in the last month. The proportion of smokers rose slightly from 23% in 2006 to 26% in 2010, before finally being halved (13%) in 2018. This decline was statistically significant in all groups (gender, perceived wealth, school type and nationality).

Boys and girls hardly differ with regard to smoking in the past month. The differences are larger depending on perceived wealth: the greater the wealth, the lower the rate of smokers.

With age, the proportion of those who have smoked in the past month increases (see Figure 157 and Figure 158). Accordingly, only a few pupils of the *Fondamental* reported that they smoked in the last month. The percentage of adolescents who smoked tobacco in the last month was always highest in the ESG, and the ESC was in the middle. In contrast, differences between nationalities are marginal.

Figure 73: Adolescents who used tobacco in past 30 days, by gender

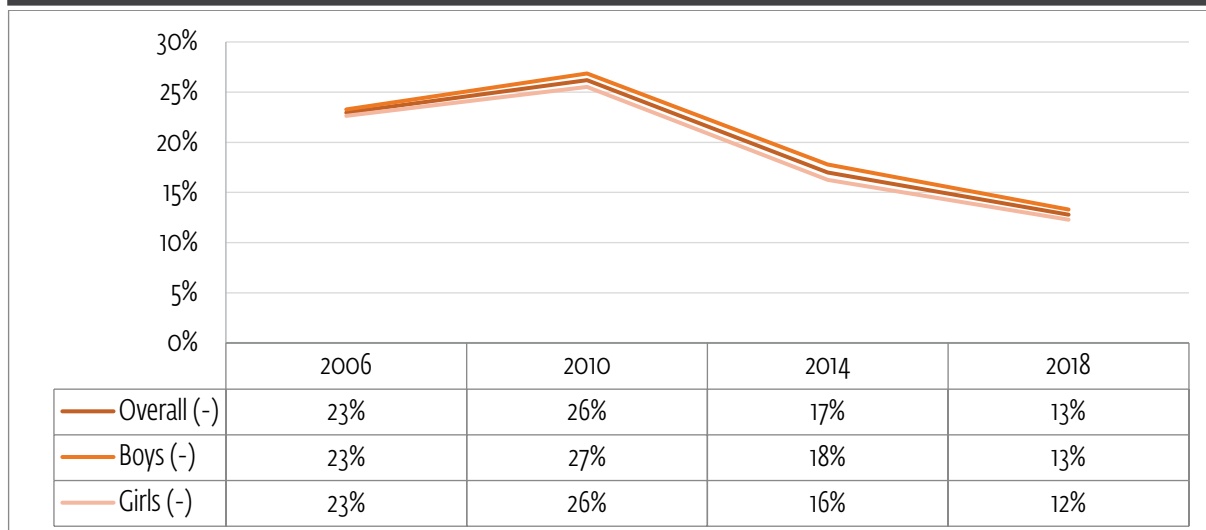


Figure 74: Adolescents who used tobacco in past 30 days, by perceived wealth

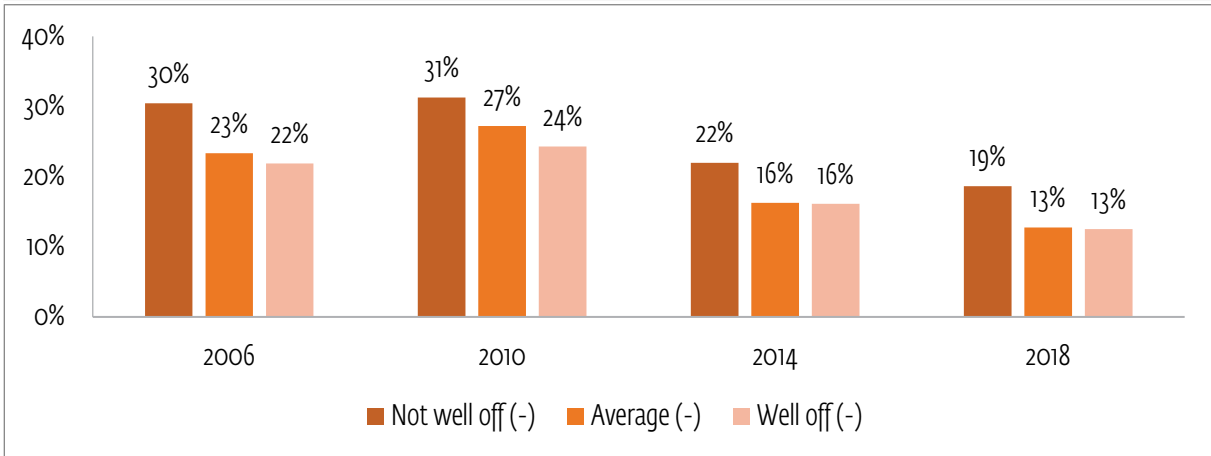


Figure 75: Adolescents who used tobacco in past 30 days, by school type

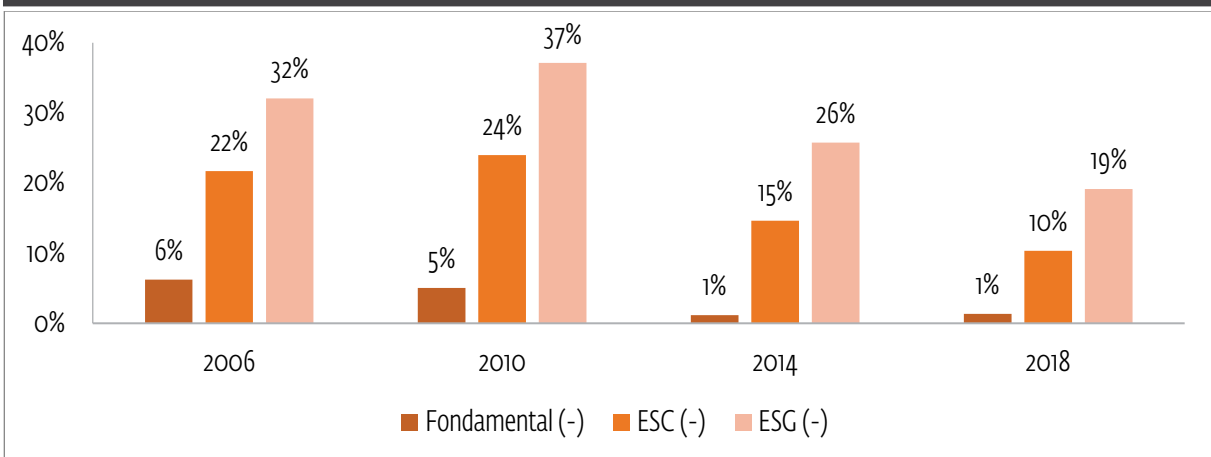
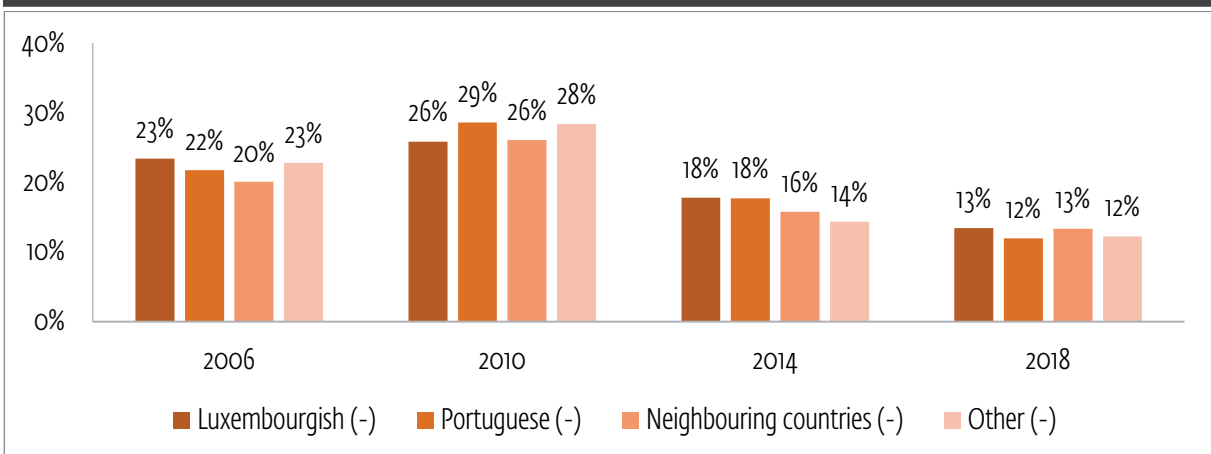


Figure 76: Adolescents who used tobacco in past 30 days, by nationality



## LIFETIME CANNABIS USE

### QUESTION

Adolescents in secondary schools were asked if they had ever taken cannabis in their life. Answer categories ranged from 1 "never" to 7 "30 days or more". The findings below present the proportion of 15 to 18-year-old adolescents who have never taken cannabis in their lifetime.

### HBSC FINDINGS

The proportion of adolescents who have never used cannabis in their lives has remained stable over time at 70% or slightly above. This stability over time is observed for both boys and girls; all perceived wealth groups and both types of school. Only among pupils of "other" nationality has the proportion of non-users increased significantly.

The proportion of non-users is slightly higher among girls than among boys. The other differences (by perceived wealth, type of school and nationality) are very small.

However, the breakdown by age and gender in the appendix shows a contrary trend (see Figure 159 and Figure 160). Among younger adolescents, the proportion of adolescents who have never used cannabis has increased over time. For boys aged 15, for example, this percentage increased from 76% in 2006 to 83% in 2018. For girls of this age, the percentage rose from 77% to 87%. For girls aged 18, on the other hand, the percentage fell from 72% to 59%.

Figure 77: Adolescents who never used cannabis in lifetime, by gender

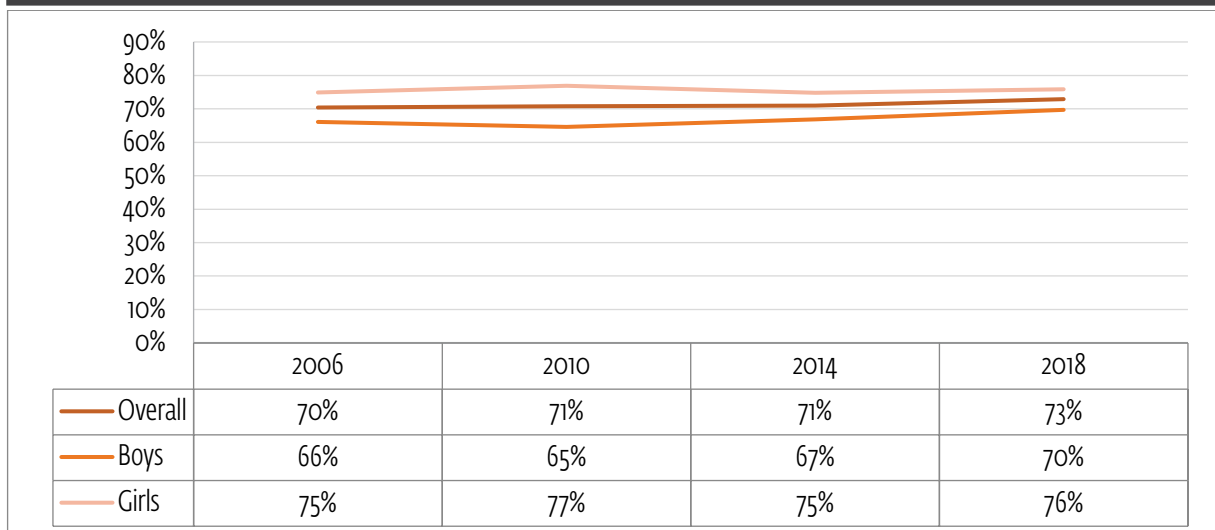


Figure 78: Adolescents who never used cannabis in lifetime, by perceived wealth

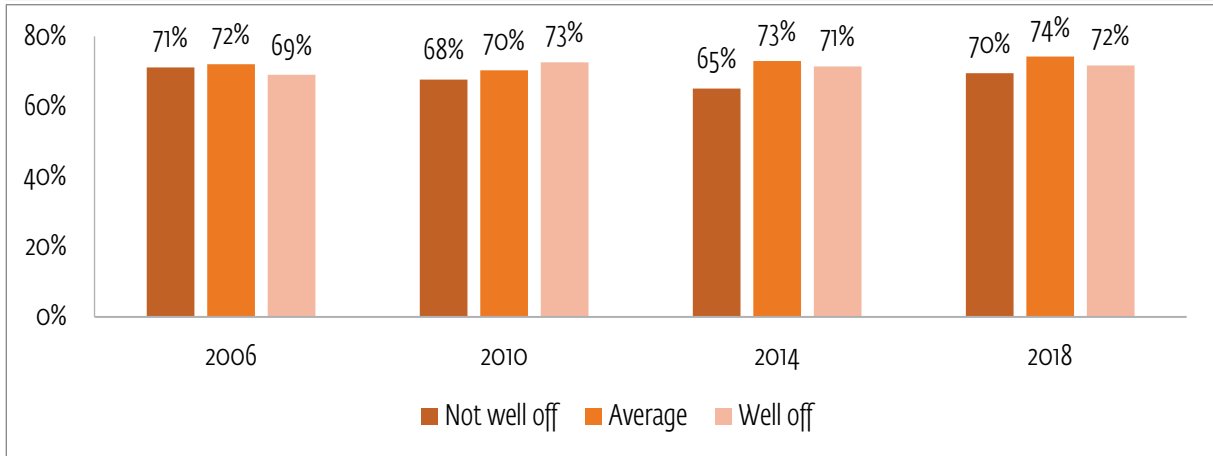


Figure 79: Adolescents who never used cannabis in lifetime, by school type

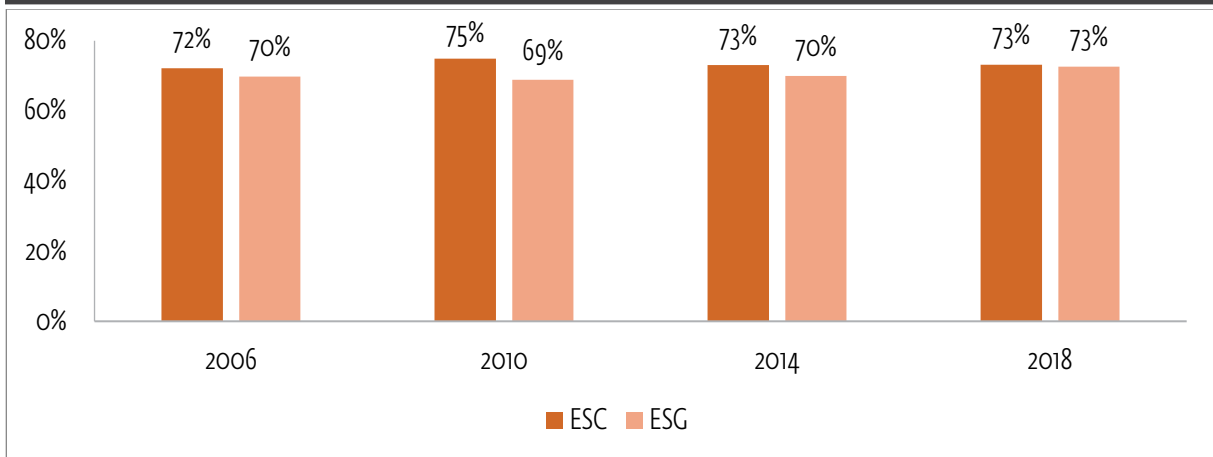
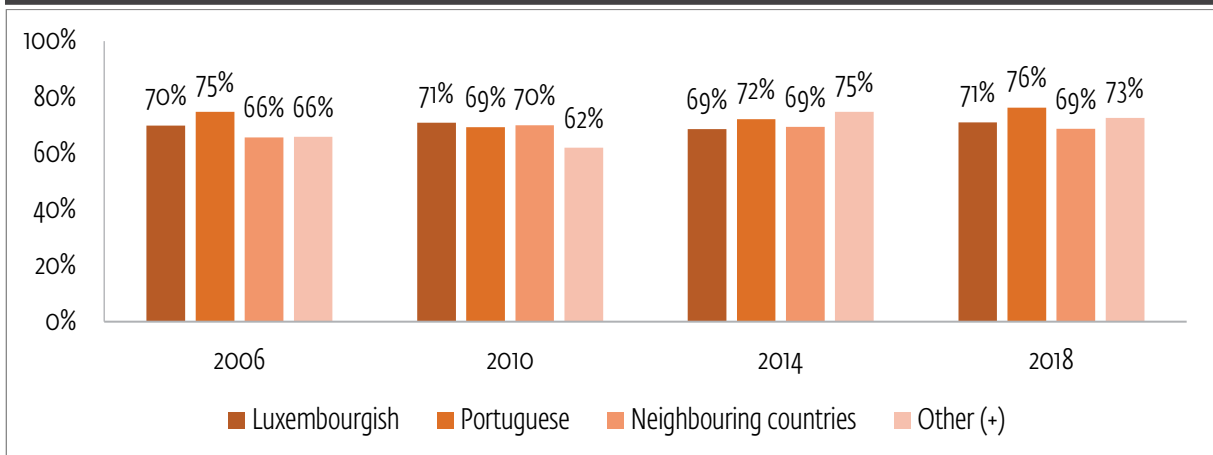


Figure 80: Adolescents who never used cannabis in lifetime, by nationality



## CANNABIS USE IN PAST MONTH

### QUESTION

Adolescents in secondary schools were asked if they had taken cannabis in the past 30 days. Answer categories ranged from 1 "never" to 7 "30 days or more". The findings below present the proportion of 15 to 18-year-old adolescents who have used cannabis in the past month.

### HBSC FINDINGS

While there was little change in the lifetime prevalence of cannabis use from 2006 to 2018, the past month prevalence increased. In 2018, for example, 10% of girls reported having used cannabis in the past month, a statistically significant increase compared to 2006. The figures for boys are similar; however, this increase is not significant. For both genders together, however, the increase is statistically significant.

Where perceived wealth is concerned, there was an increase in the "high perceived wealth" group. Additionally, increases in cannabis use in the past month were found for both types of school and among pupils of Luxembourg nationality.

An interesting trend can be seen in the analysis by age group (see Figure 161 and Figure 162). In 2018, both girls and boys aged 17-18 stated more frequently that they had used cannabis in the past 30 days than in 2006. Among 17-year-old girls, for example, the proportion doubled from 7% to 14%. In contrast, among 15-year-old girls, the percentage has fallen over time, from 9% in 2006 to 6% in 2018 (from 13% to 10% for boys). Separately for girls and boys, these changes are not statistically significant. However, if girls and boys aged 15 are analysed together, a significant decrease can be observed. Thus, the two indicators of cannabis use (lifetime prevalence and 30-day prevalence) suggest that use is decreasing among younger adolescents (i.e. age 15) but increasing among older adolescents.

Figure 81: Adolescents who used cannabis in past 30 days, by gender

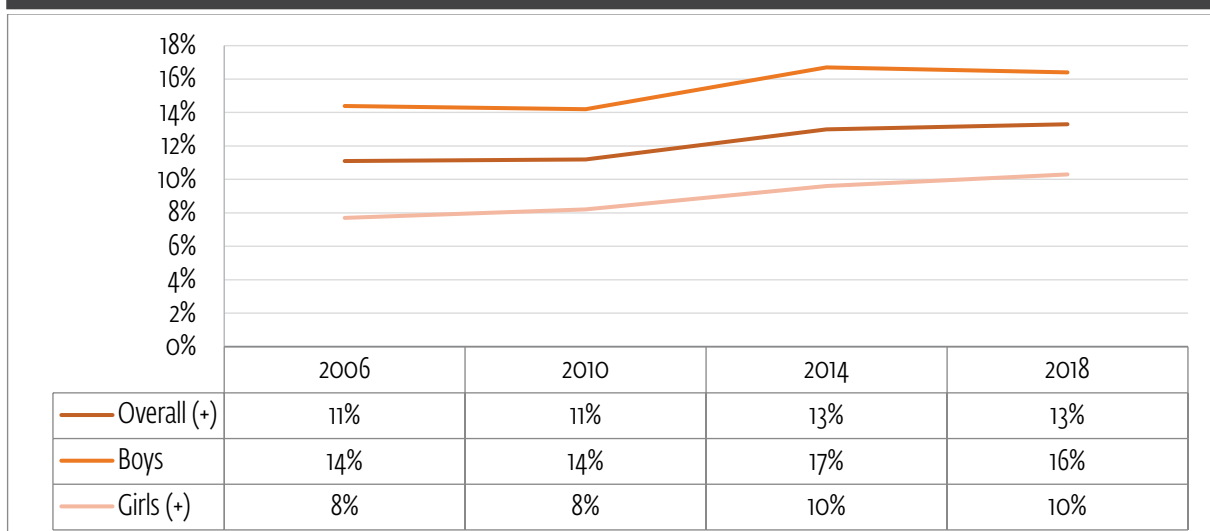




Figure 82: Adolescents who used cannabis in past 30 days, by perceived wealth

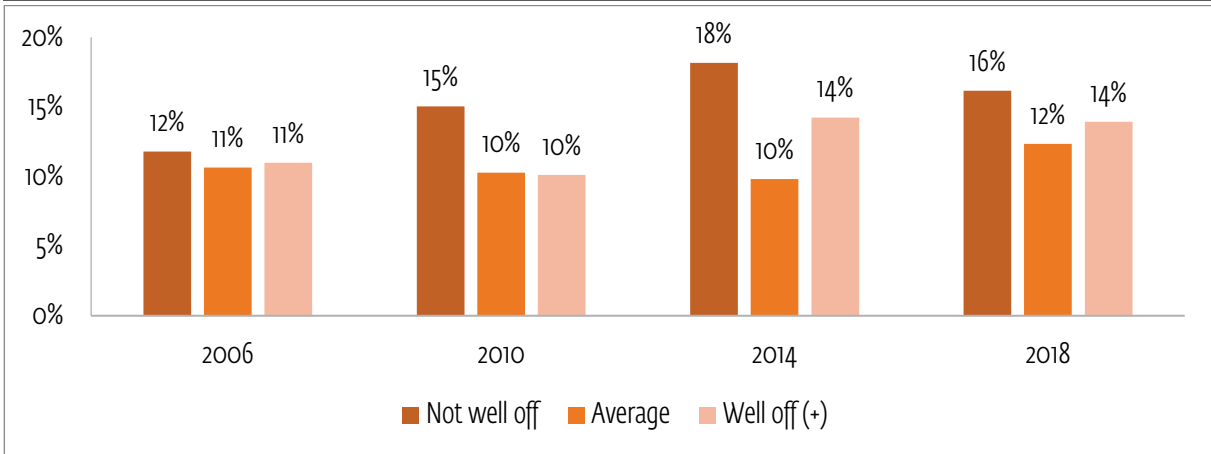


Figure 83: Adolescents who used cannabis in past 30 days, by school type

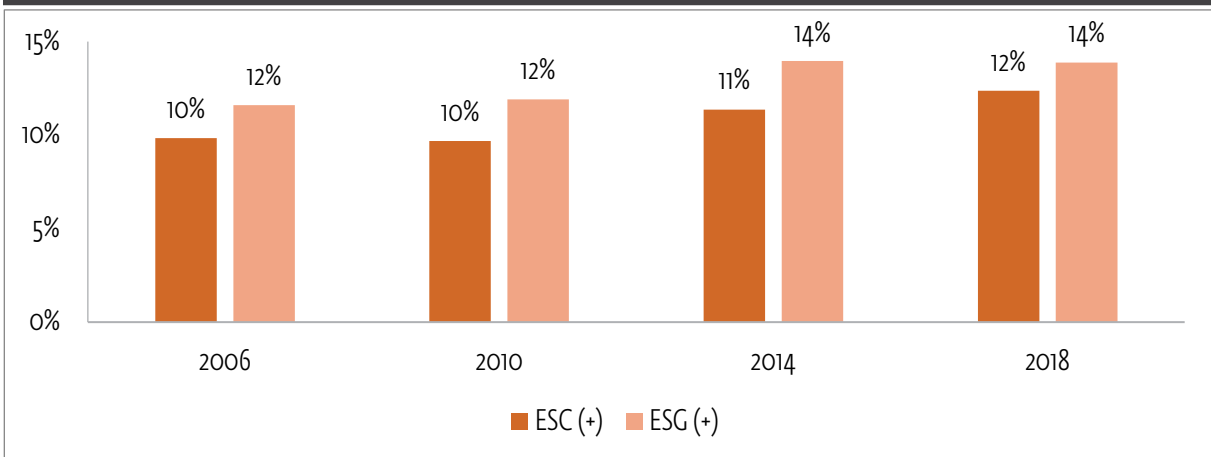
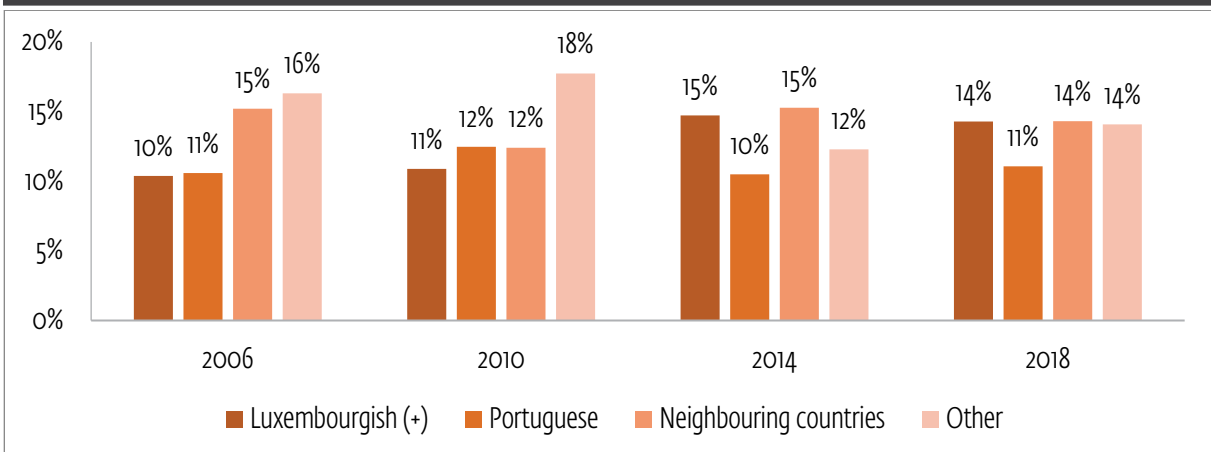


Figure 84: Adolescents who used cannabis in past 30 days, by nationality



## SEXUAL INTERCOURSE

### QUESTION

Pupils at secondary schools were asked whether they had already had sexual intercourse. There were two answer options, "yes" and "no". The findings below present the proportion of 15 – 18-year-old adolescents who had sexual intercourse at least once in their life.

### HBSC FINDINGS

In 2006, half of the adolescents stated that they had already had sexual intercourse. After a small increase in 2010, this proportion fell to 40% in 2018. This decline concerns almost all groups surveyed, regardless of gender, perceived wealth, school type, nationality and age.

With regard to gender, it is noticeable that the percentages of boys and girls increasingly separated over time. In 2006, almost as many girls as boys reported having had sex (49% versus 51%). For girls, however, this proportion fell more sharply over time than for boys, so that the difference was 9 percentage points in 2018. Concerning the type of school, it is noticeable that ESG pupils reported having sexual intercourse much more frequently than pupils from the ESC.

With regard to nationality, there is no stable pattern. In 2006, 54% of pupils of nationality from a neighbouring country reported that they had sexual intercourse already. This group, however, experienced a particularly sharp decline and had a lower percentage in 2018. In the case of pupils of Portuguese nationality, however, the decline was not as strong, although it was also statistically significant.

**Figure 85: Adolescents who have had sex (15-18 year olds), by gender**

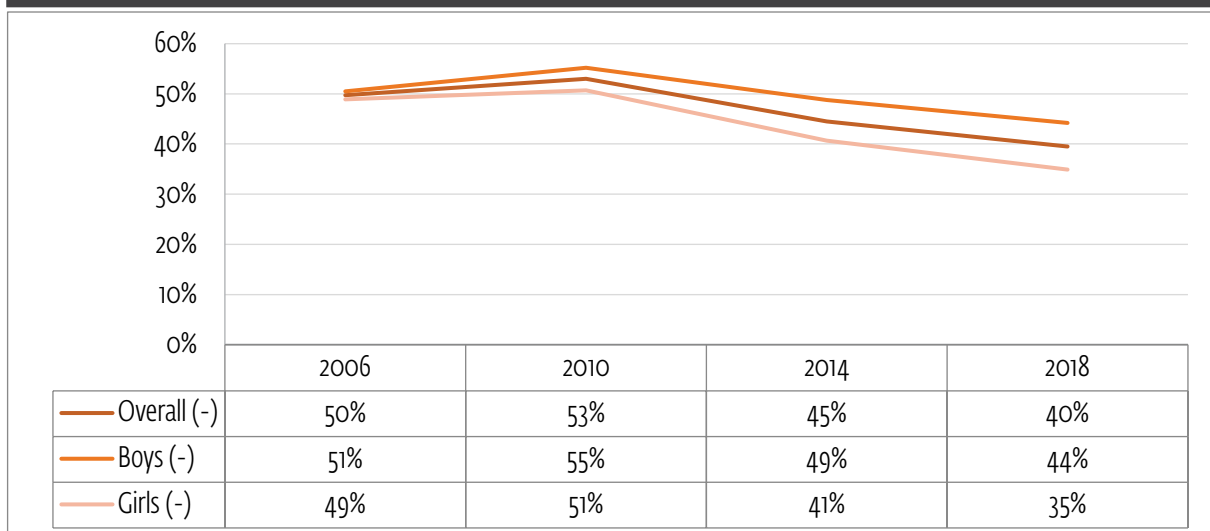


Figure 86: Adolescents who have had sex (15-18 year olds), by perceived wealth

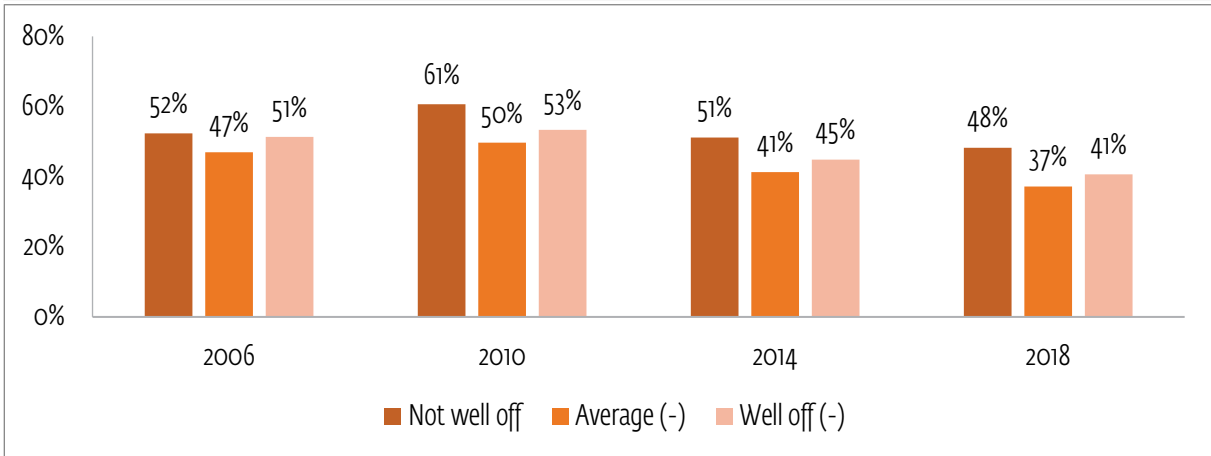
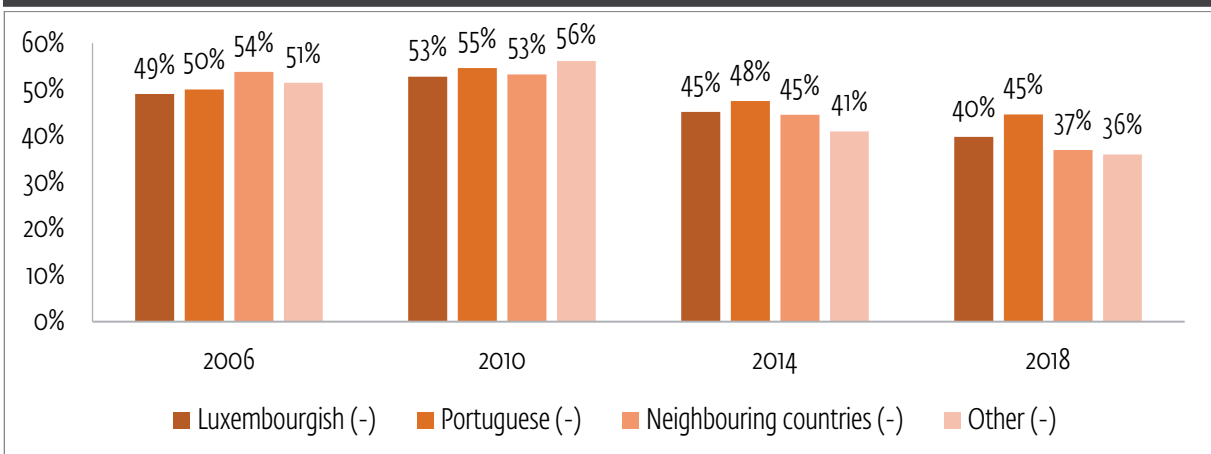


Figure 87: Adolescents who have had sex (15-18 year olds), by school type



Figure 88: Adolescents who have had sex (15-18 year olds), by nationality





# 4. HEALTH OUTCOMES

- There are contrary trends regarding body weight: Over time, the proportion of overweight pupils has increased, but the percentage of underweight pupils has remained stable. Nevertheless, more pupils consider themselves too thin, whereas the percentage of pupils who consider themselves too fat has decreased.
- There are pronounced gender differences in body weight. Boys are more often overweight than girls, but they tend to think that they are too thin. Although girls have a lower risk of being overweight than boys, they are more likely to consider themselves too fat.
- The proportion of pupils who had an injury requiring medical treatment has increased.
- Over time, more pupils indicated that they have multiple health complaints. This increase affected almost all groups surveyed. The indicator self-rated health, by contrast, has not developed so clearly. There was a slight deterioration among the boys and a marked improvement among the girls, so there is an overall improvement in self-rated health.

## BODY IMAGE TOO THIN

### QUESTION

To find out how the adolescents perceive their bodies, they were asked to complete the following sentence: "Do you think your body is..." Answers ranged from "far too thin" (category 1) to "far too fat" (5) on a 5-point scale, with "about the right size" marking the middle. The findings below present the proportion of adolescents who think that they are too thin (i.e. categories 1 and 2).

### HBSC FINDINGS

The feeling of being too thin has become more common over time. Whereas in 2006 only 13% of adolescents felt too thin, this percentage rose to 16% in 2018. This increase is statistically significant in almost all groups studied. Exceptions are found among adolescents who consider their families to be of "low perceived wealth", and pupils of "other" nationalities.

The feeling of being too thin is more common in boys than in girls, and this difference has remained stable over time. Another difference can be seen in the bar charts in the appendix (see Figure 165 and Figure 166); with increasing age, more boys feel that they are too thin, whereas among girls, this proportion decreases with age.

Due to the opposite trend with increasing age, there are no systematic and stable differences between school types. Similarly, the differences by perceived wealth and by nationality are neither large nor stable.

**Figure 89: Adolescents who consider themselves too thin, by gender**

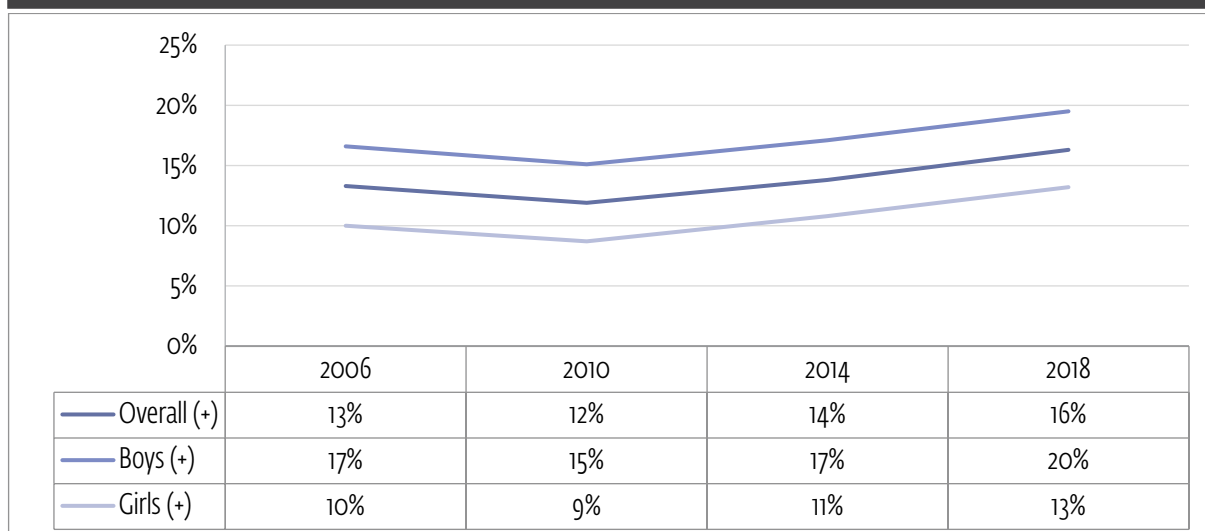


Figure 90: Adolescents who consider themselves too thin, by perceived wealth

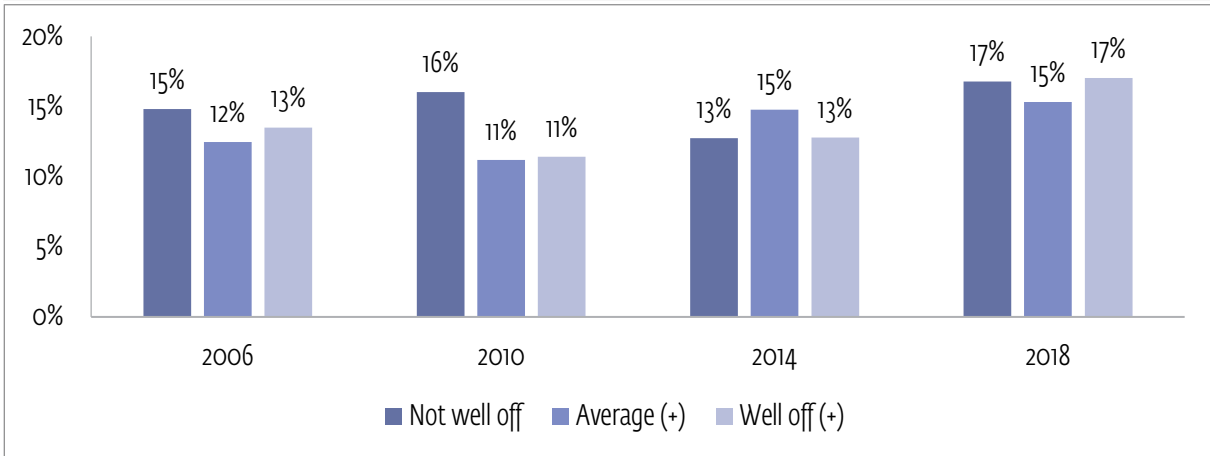


Figure 91: Adolescents who consider themselves too thin, by school type

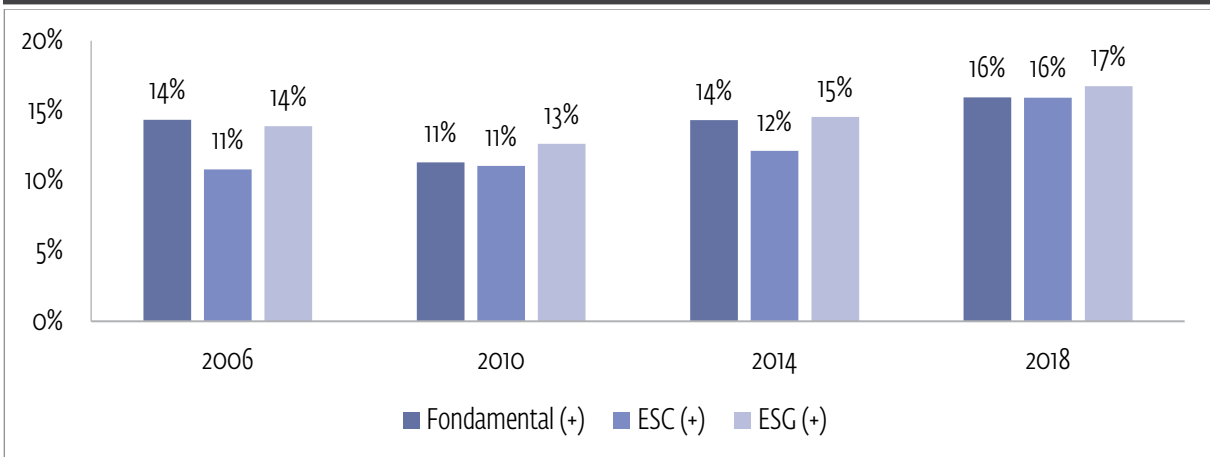
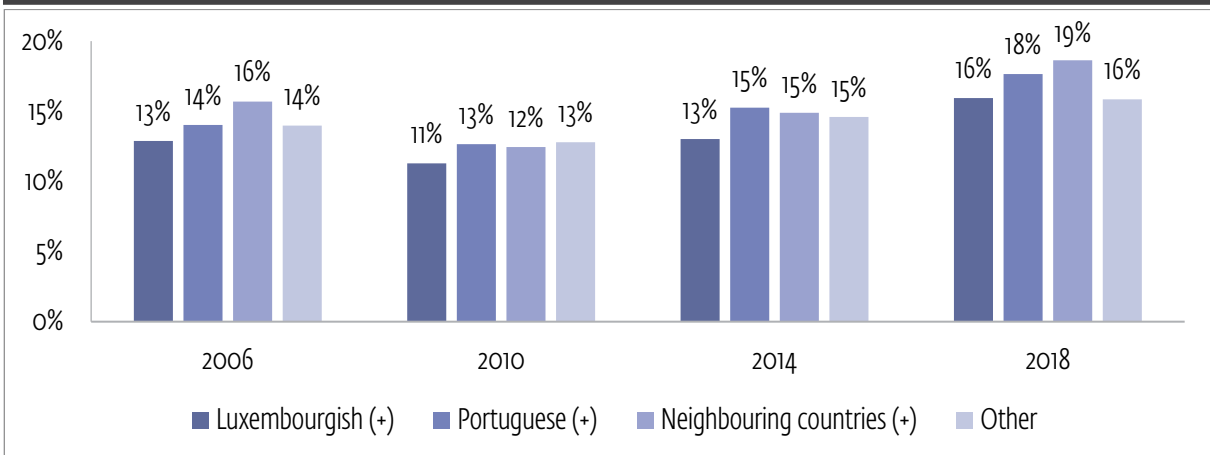


Figure 92: Adolescents who consider themselves too thin, by nationality



## BODY IMAGE TOO FAT

### QUESTION

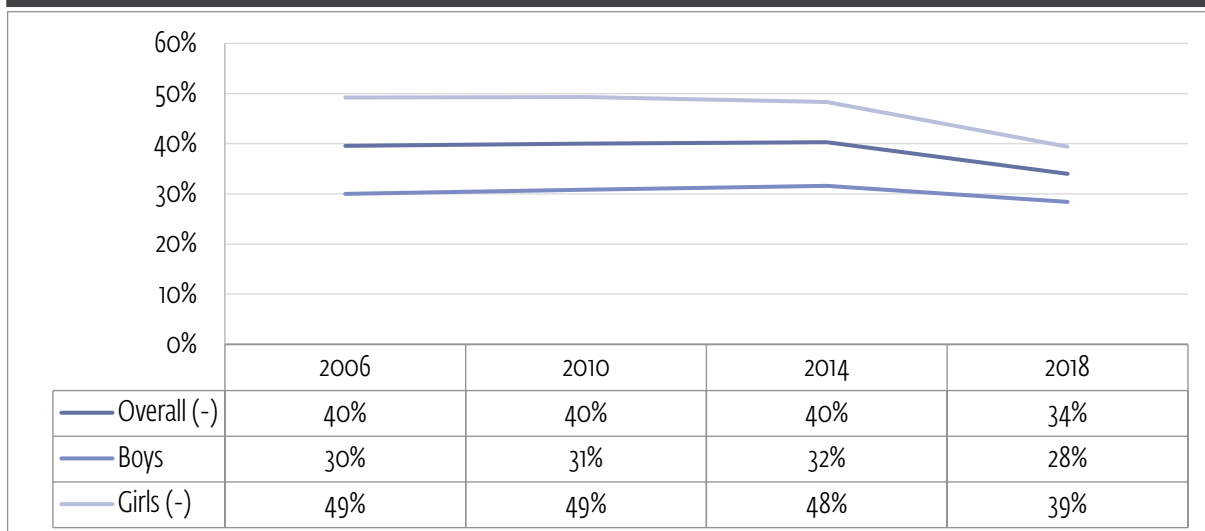
To find out how the adolescents perceive their bodies, they were asked to complete the following sentence: "Do you think your body is..." Answers ranged from "far too thin" (category 1) to "far too fat" (5) on a 5-point scale, with "about the right size" marking the middle. The findings below present the proportion of adolescents who think that they are too fat (i.e. categories 4 and 5).

### HBSC FINDINGS

In the years 2006, 2010 and 2014, 40% of the adolescents rated themselves as too fat. This proportion fell to 34% in 2018. However, separated by gender, only girls show a statistically significant decline. Thus, the differences between girls and boys have become smaller, but girls are still more likely to consider themselves too fat. The feeling of being too fat hardly depends on age among boys. Among girls, however, the 11-12-year-olds are less likely to perceive themselves as too fat compared to older girls (see Figure 167 and Figure 168). Accordingly, the differences between the *Fondamental* on the one hand and the secondary schools on the other are rather small. In each survey, the proportion of pupils who feel too fat was highest in the *ESG*.

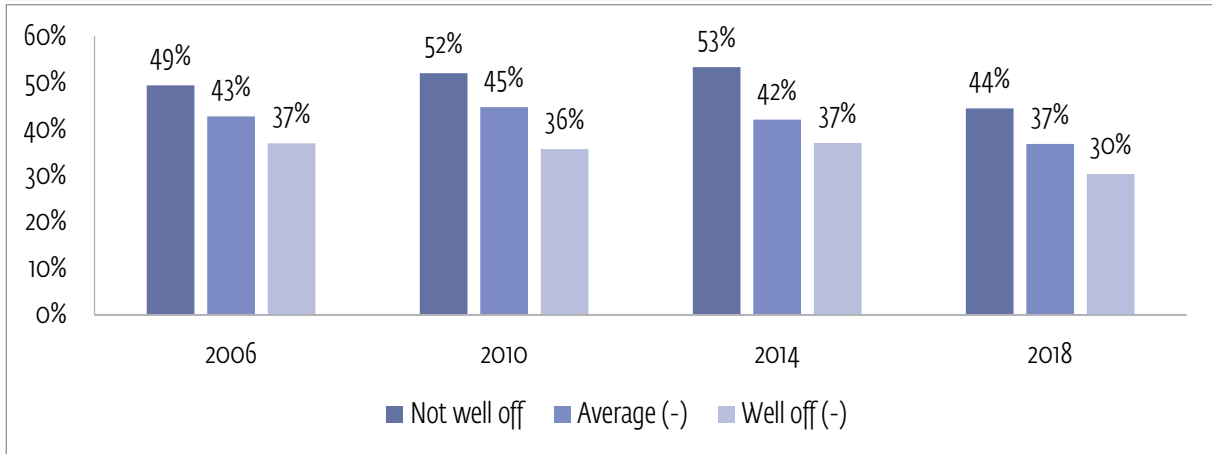
Most differences between nationalities were neither large nor stable over time. One difference was stable: the more well off adolescents consider their family to be, the less likely they are to feel too fat.

Figure 93: Adolescents who consider themselves too fat, by gender

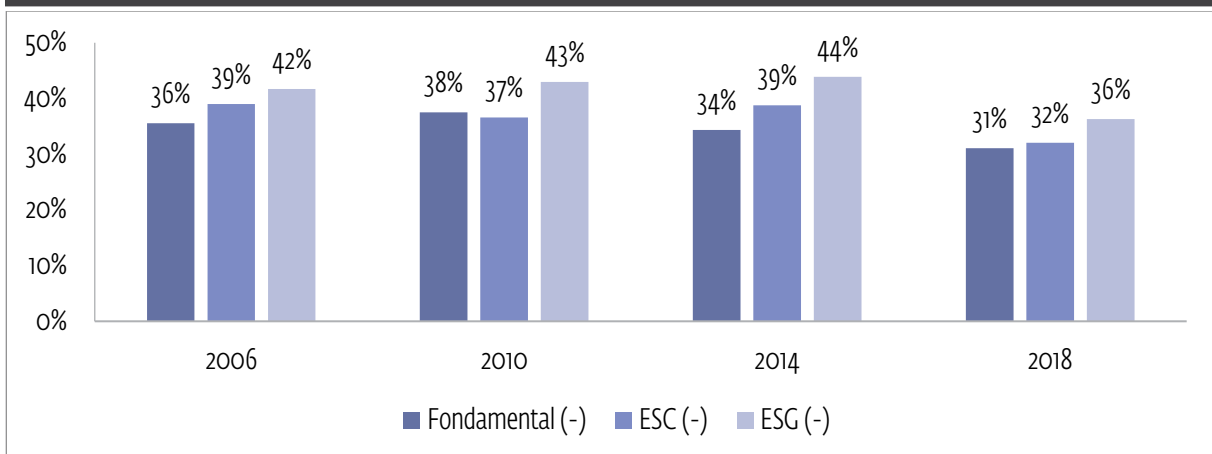




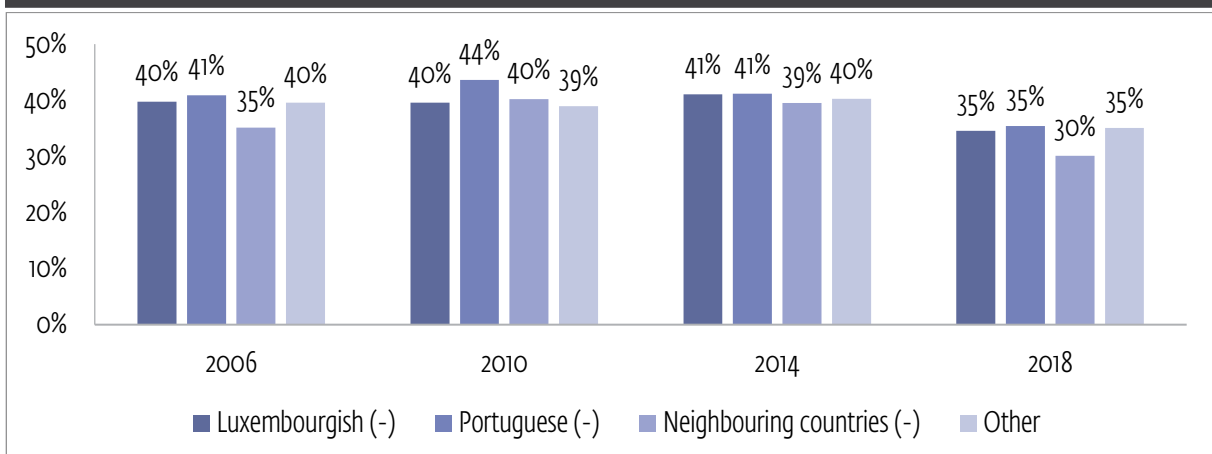
**Figure 94: Adolescents who consider themselves too fat, by perceived wealth**



**Figure 95: Adolescents who consider themselves too fat, by school type**



**Figure 96: Adolescents who consider themselves too fat, by nationality**



# OVERWEIGHT

## QUESTION

Adolescents were asked about their height and weight. Based on this information, their BMI was calculated. The findings below present the proportion of adolescents who are overweight according to their BMI score and the cut-off values as defined by the International Obesity Task Force [9].

## HBSC FINDINGS

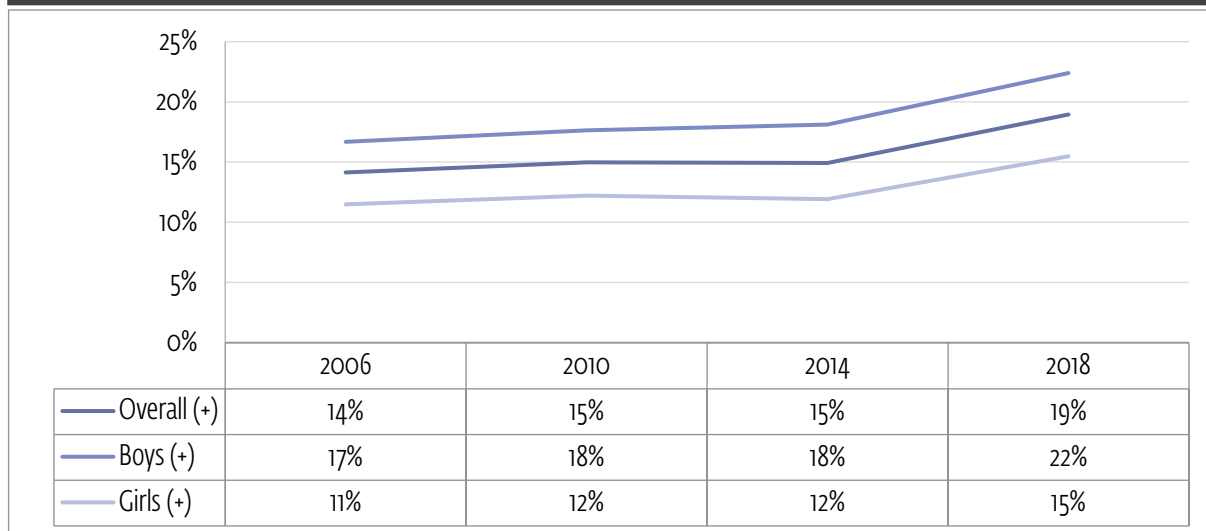
The proportion of overweight adolescents increased between 2006 and 2018. This trend concerned almost all groups analysed; only in the group "low perceived wealth" there was no statistically significant increase over time.

In each survey year, more boys than girls were overweight, with both genders increasing almost in parallel over time. In the case of boys, the proportion of overweight pupils tends to increase with age, whereas in the case of girls there is no clear relationship between age and overweight in the various survey years (see Figure 169 and Figure 170).

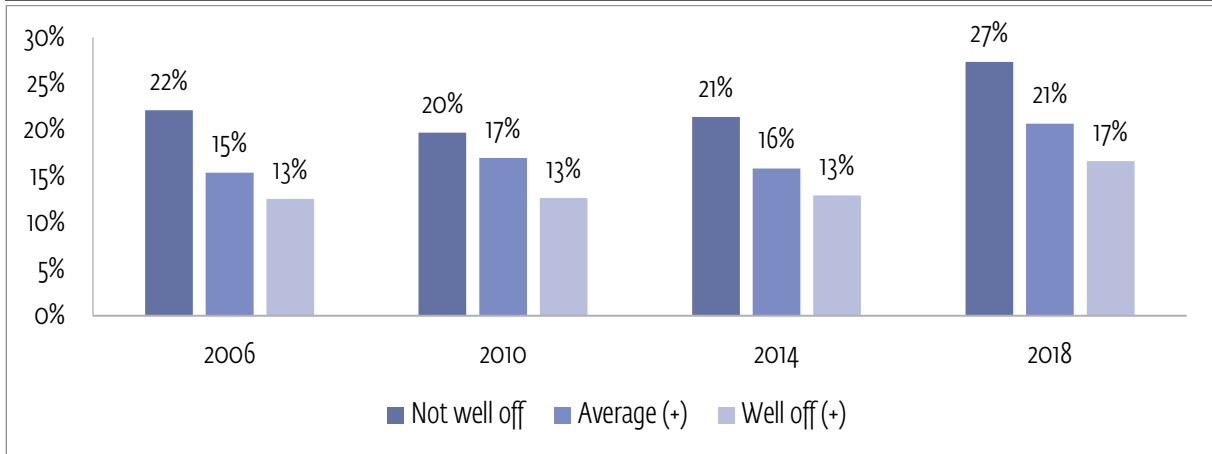
In terms of perceived wealth, the lower the pupils' assessment of their family's wealth, the more likely they are to be overweight. With regard to the type of school, it is noticeable that the proportion of overweight adolescents was lowest in the ESC and highest in the ESG in each survey year, and was twice as high in 2018 (12% versus 24%).

In terms of nationality, all survey years indicated that adolescents of Portuguese nationality had the highest proportion of overweight adolescents, whereas the lowest proportion was found either in the 'neighbouring countries' nationality group or in the 'others' group. Adolescents of Luxembourg nationality always ranged in between.

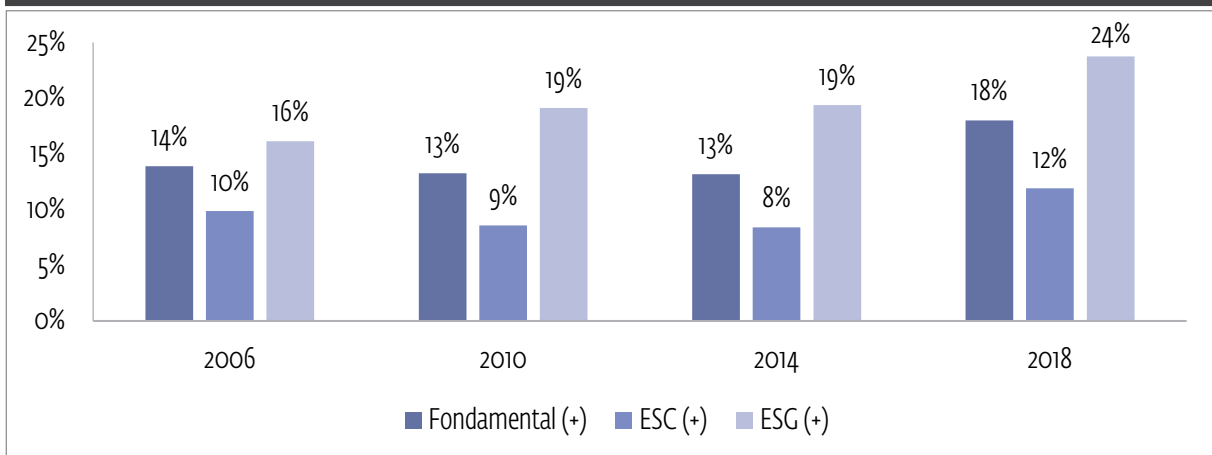
**Figure 97: Adolescents who are overweight, by gender**



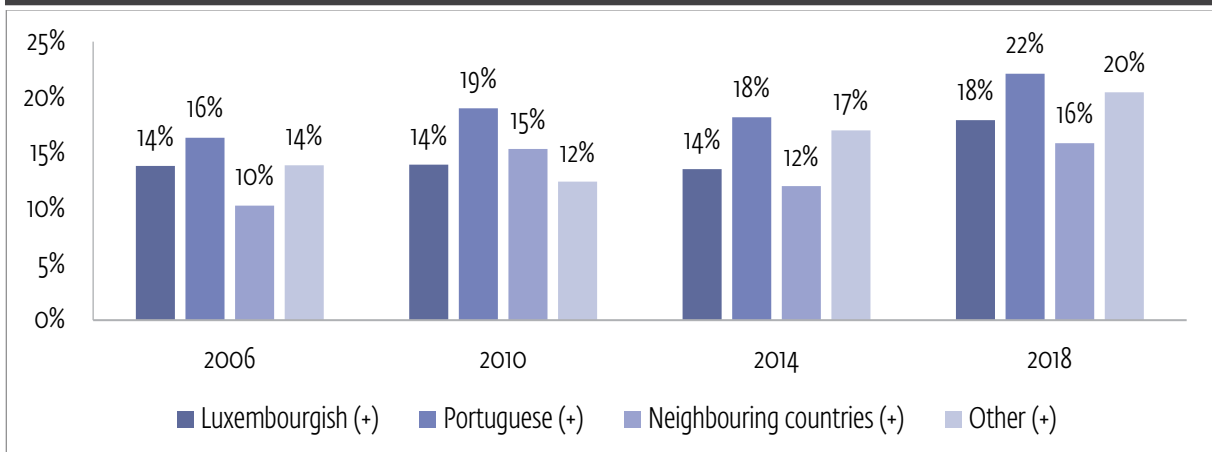
**Figure 98: Adolescents who are overweight, by perceived wealth**



**Figure 99: Adolescents who are overweight, by school type**



**Figure 100: Adolescents who are overweight, by nationality**



# UNDERWEIGHT

## QUESTION

Adolescents were asked about their height and weight. Based on this information, their BMI was calculated. The findings below present the proportion of adolescents who are underweight according to their BMI score and the cut-off values as defined by the International Obesity Task Force [9].

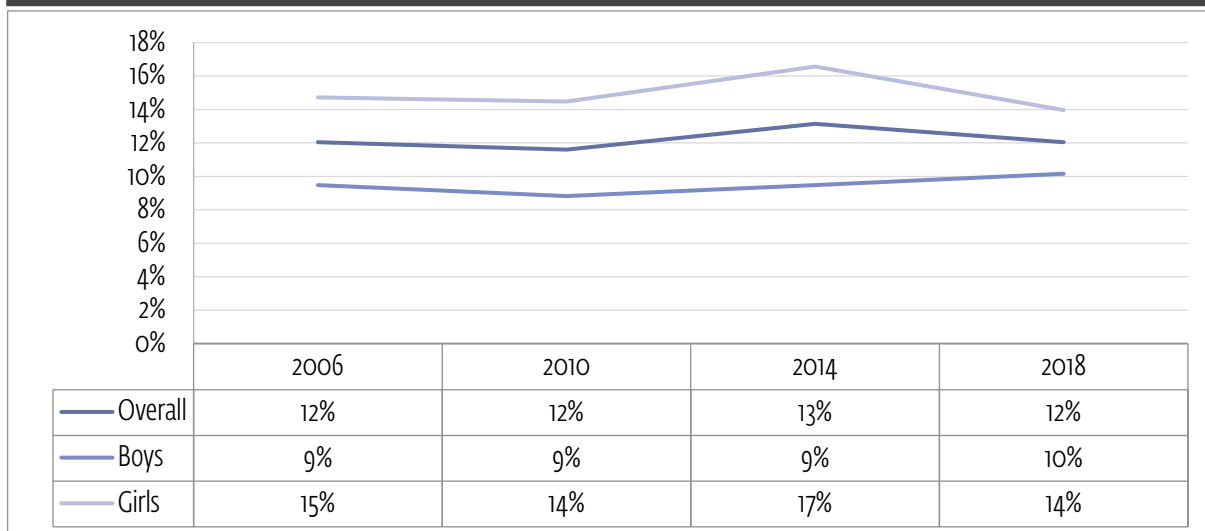
## HBSC FINDINGS

In contrast to overweight, underweight did not change over time, neither overall nor in any of the subgroups. As a result, the patterns remained quite stable. In each survey year, girls had a higher risk of underweight than boys.

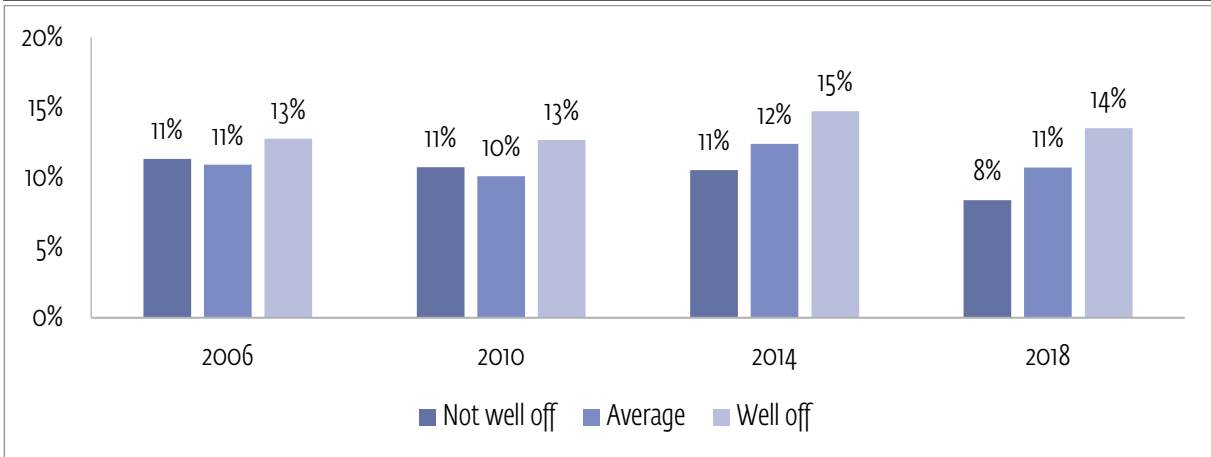
In 2014 and 2018, the higher the perceived wealth of the adolescents, the higher the risk of underweight was. In previous years, this relationship was less clear. In most survey years younger pupils were more likely to be underweight than older pupils (see Figure 171 and Figure 172). Therefore, underweight is more common among pupils from the *Fondamental* than among pupils from secondary schools. Within secondary schools, underweight is more common in the *ESC* than in the *ESG*.

The prevalence of being underweight is lowest among adolescents with Portuguese nationality for all four cycles.

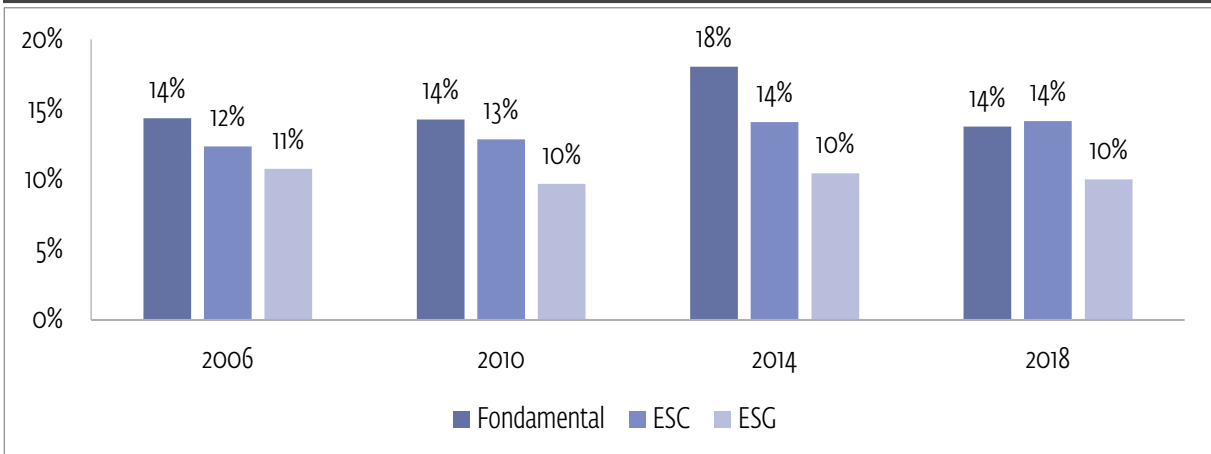
**Figure 101: Adolescents who are underweight, by gender**



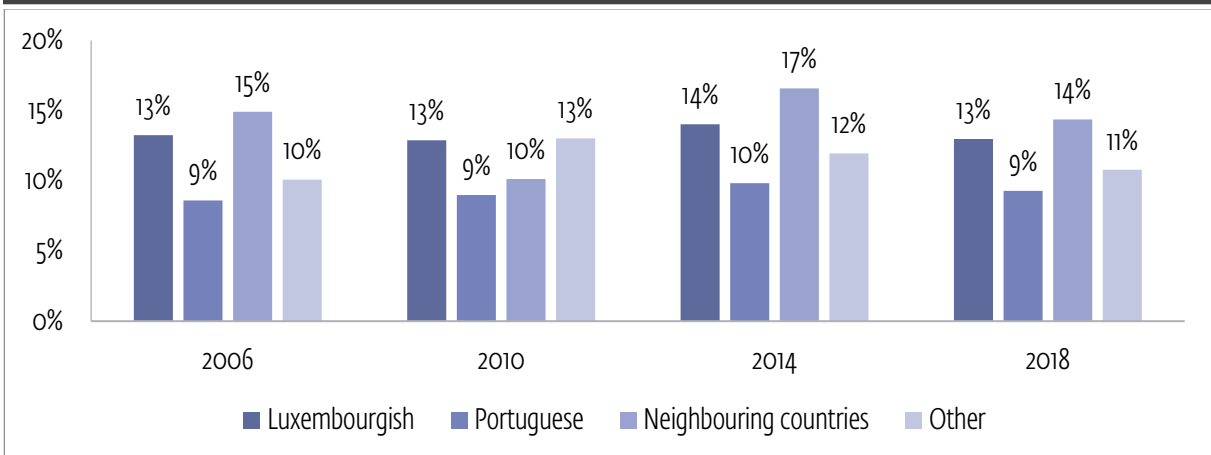
**Figure 102: Adolescents who are underweight, by perceived wealth**



**Figure 103: Adolescents who are underweight, by school type**



**Figure 104: Adolescents who are underweight, by nationality**



# INJURY

## QUESTION

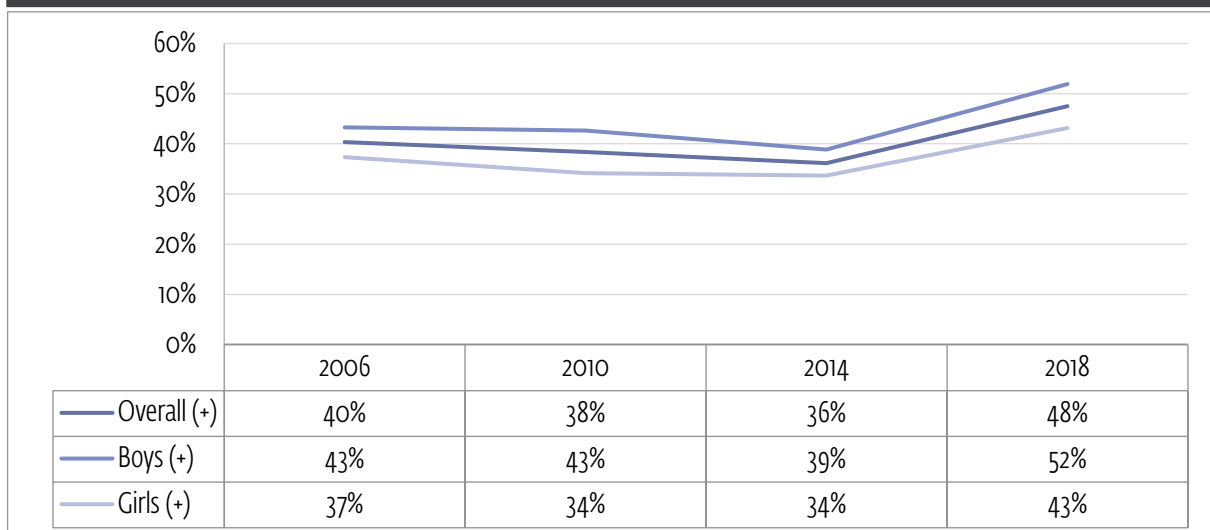
Adolescents were asked how many times during the past 12 months they were injured and had to be treated by a doctor or nurse. This question was asked on a five-point scale. Answer categories ranged from 1 "I was not injured in the past 12 months" (category 1) to "4 times or more" (category 5). The findings below present the proportion of adolescents who were injured at least once (i.e. categories 2 to 5).

## HBSC FINDINGS

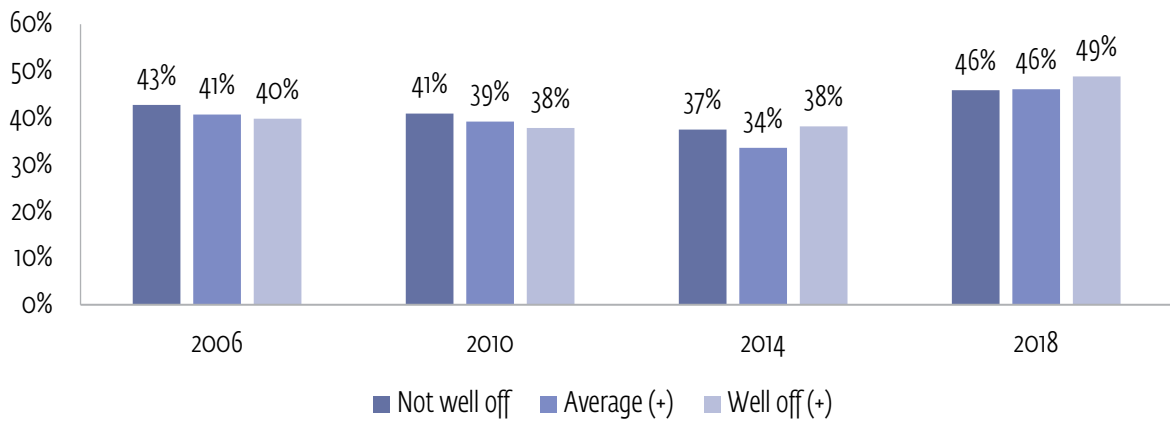
Overall, there was an increase in the proportion of adolescents with medically treated injuries between 2006 and 2018, with the proportion initially falling slightly between 2006 and 2014 and then rising sharply. This increase can be found in almost all the groups examined, with the exception of the "low perceived wealth" group and boys and girls aged 15/16 and 17/18 (see Figure 173 and Figure 174).

For boys, injuries were more frequent in each survey year than for girls. In the other groups, however, there were no clear patterns over time.

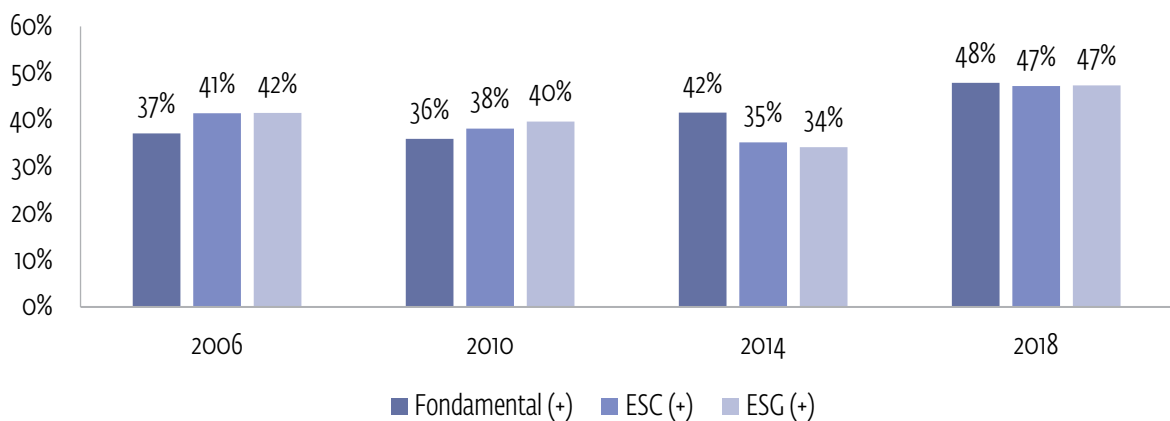
**Figure 105: Adolescents who report at least one injury, by gender**



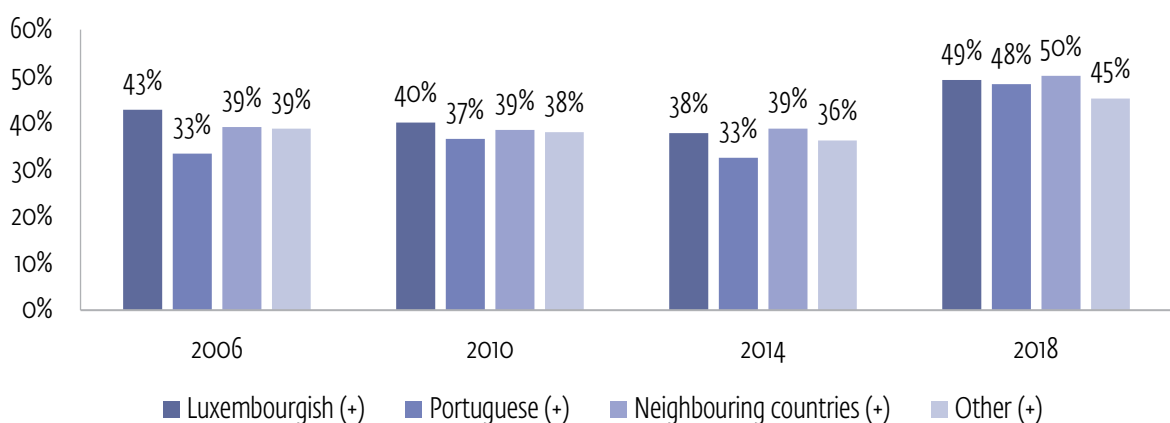
**Figure 106: Adolescents who report at least one injury, by perceived wealth**



**Figure 107: Adolescents who report at least one injury, by school type**



**Figure 108: Adolescents who report at least one injury, by nationality**



## MULTIPLE HEALTH COMPLAINTS

### QUESTION

Adolescents were asked how often they experienced the following health complaints in the last 6 months: headache, stomachache, backache, feeling low, irritability or bad temper, feeling nervous, difficulties in getting to sleep and feeling dizzy. The answer categories ranged from “about every day” (category 1) to “rarely or never” (category 5). The findings below present the proportion of adolescents who frequently have multiple health complaints, i.e. at least two complaints occurring several times a week or even daily (categories 1 and 2).

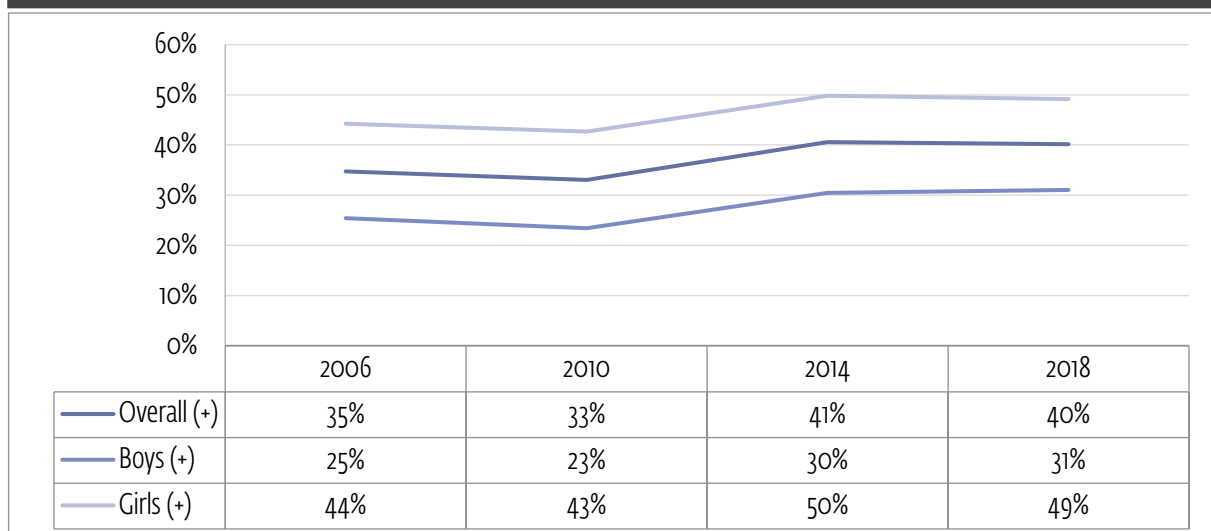
### HBSC FINDINGS

Between 2006 and 2018, the proportion of adolescents with multiple health complaints increased from 35% to 40%. This increase was found in almost all groups, regardless of gender, perceived wealth, school type and nationality.

While fewer than a third of the boys reported multiple health problems in 2018, almost half of the girls reported multiple health complaints, with the increase over time being equal for both genders. In terms of perceived wealth, each survey year showed a clear pattern: the lower the perceived wealth, the more pupils have multiple health complaints.

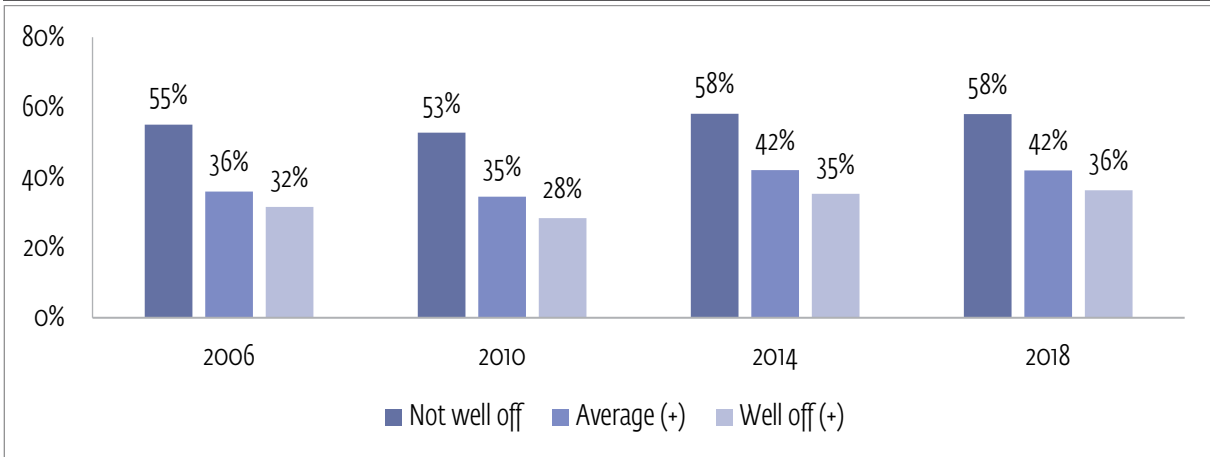
The older the adolescents are, the more often they report multiple health complaints (this correlation is more pronounced among girls, see Figure 175 and Figure 176). Therefore, multiple health complaints are less common in the *Fondamental* than in secondary schools. Within secondary schools, the percentage of pupils with multiple health complaints is lower in the ESC than in the ESG. There are no strong and stable differences between nationalities over time.

Figure 109: Adolescents who report multiple health complaints, by gender

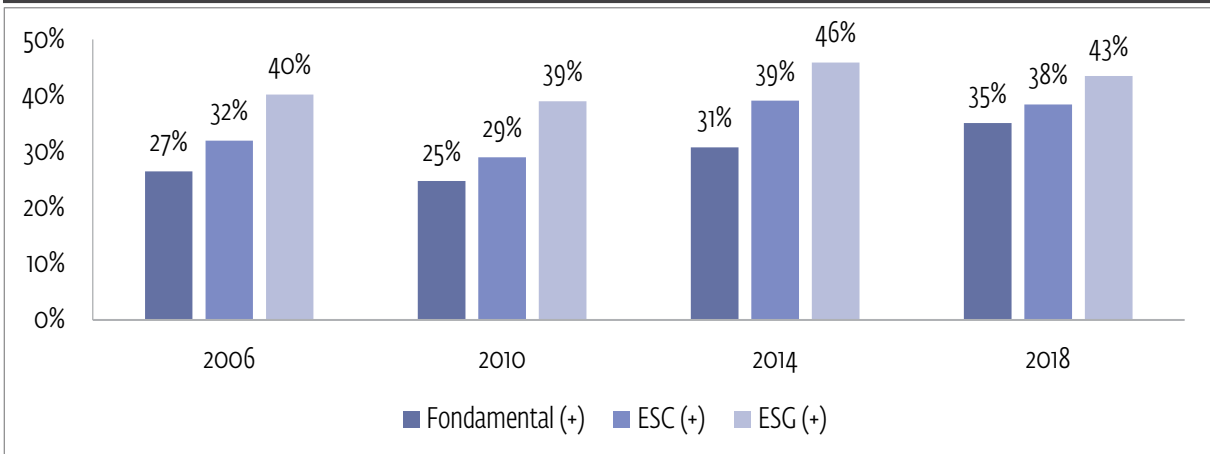




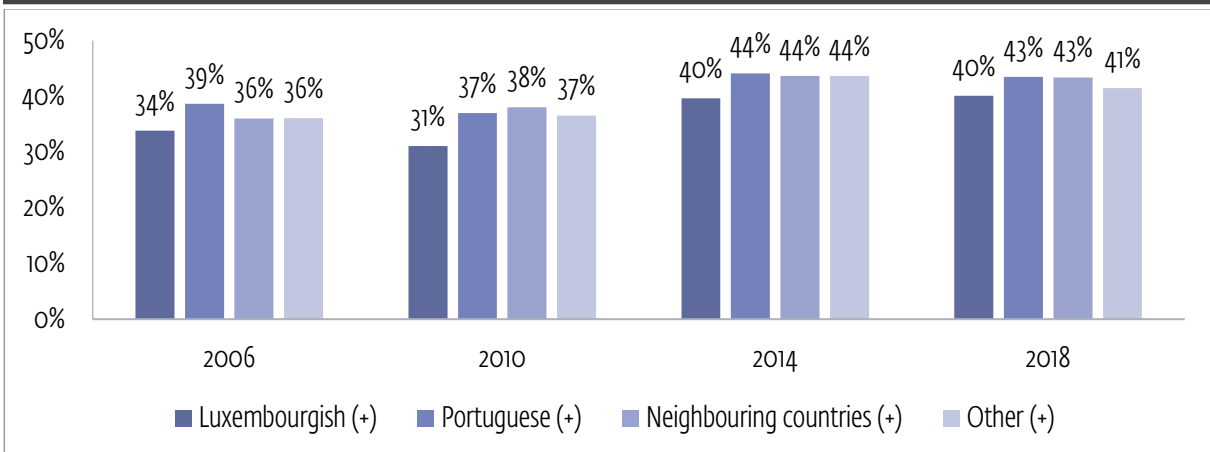
**Figure 110: Adolescents who report multiple health complaints, by perceived wealth**



**Figure 111: Adolescents who report multiple health complaints, by school type**



**Figure 112: Adolescents who report multiple health complaints, by nationality**



## SELF-RATED HEALTH

### QUESTION

Adolescents were asked to rate their health on a four-point scale. Answer categories ranged from 1 “excellent” to 4 “poor”. The findings below present the proportion of adolescents who rate their health as “excellent”.

### HBSC FINDINGS

Self-rated health is one of the few indicators in this report that presents contradicting trends. The proportion of boys who describe their health as excellent has fallen from 43% in 2006 to 41% in 2018. By contrast, the proportion of girls that report excellent health has risen from 26% to 33%. As the increase among girls was greater than the decrease among boys, there is still an overall increase across both genders. There were also statistically significant increases in the “high perceived wealth” group, the ESC school type, pupils of Luxembourgish nationality and girls of all ages.

A look at the age differences in the appendix also shows that the older girls are, the less often they assess their state of health as excellent (see Figure 177 and Figure 178). For boys, this correlation is less pronounced. Accordingly, pupils from the *Fondamental* rate their health more often as excellent than pupils from secondary schools. Within secondary schools, ESC pupils are more likely to rate their health as excellent compared to ESG pupils.

Categorized by nationality, it is noticeable that adolescents of Portuguese nationality rarely considered their health excellent, whereas the differences between the other three groups are smaller

Figure 113: Adolescents who report excellent health, by gender

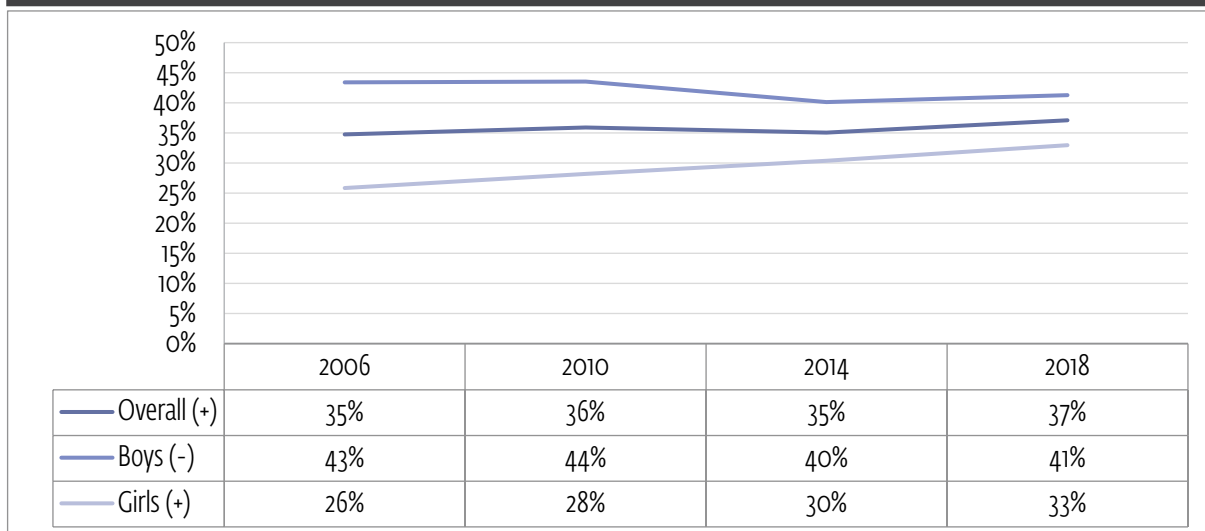


Figure 114: Adolescents who report excellent health, by perceived wealth

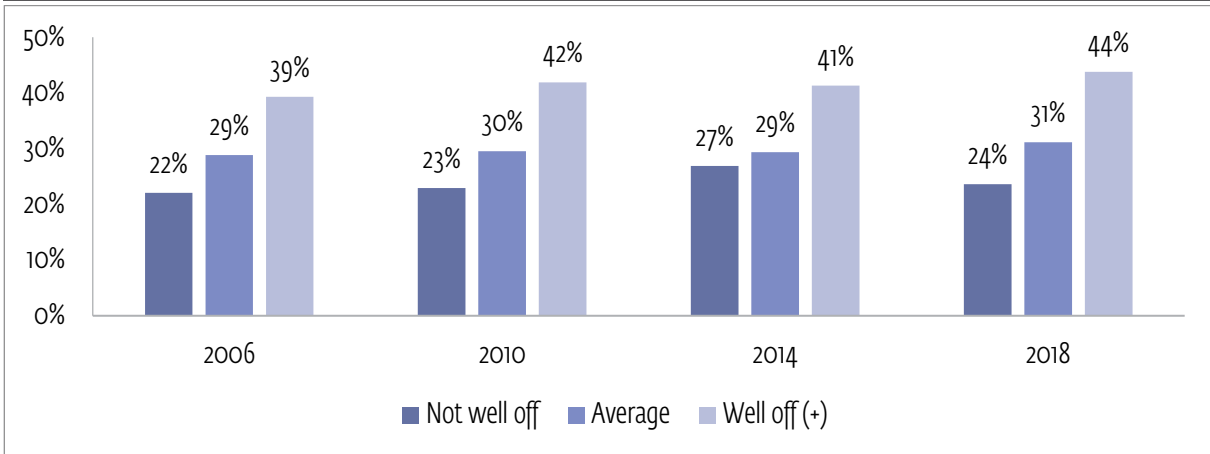


Figure 115: Adolescents who report excellent health, by school type

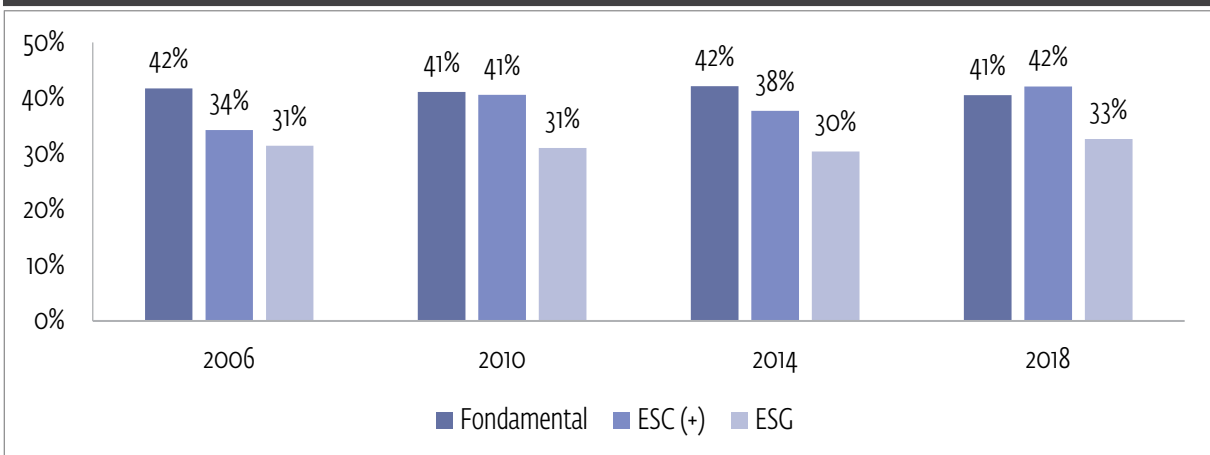
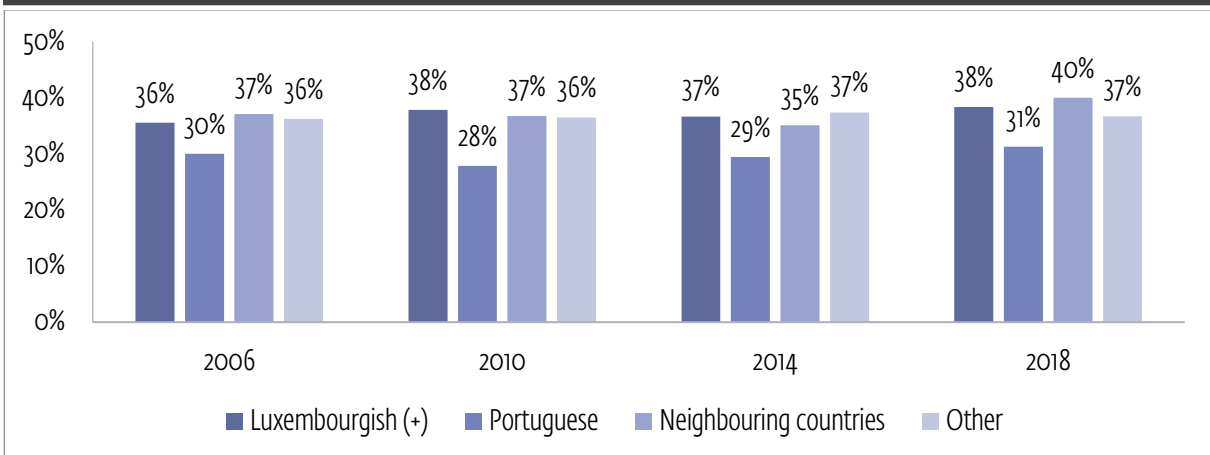


Figure 116: Adolescents who report excellent health, by nationality



## LIFE SATISFACTION

### QUESTION

Adolescents were asked to rate their life satisfaction on a Cantril Ladder [10], ranging from “10 – best possible life” to “0 – worst possible life”. The findings below present the proportion of adolescents with a high level of life satisfaction (score 9 and 10).

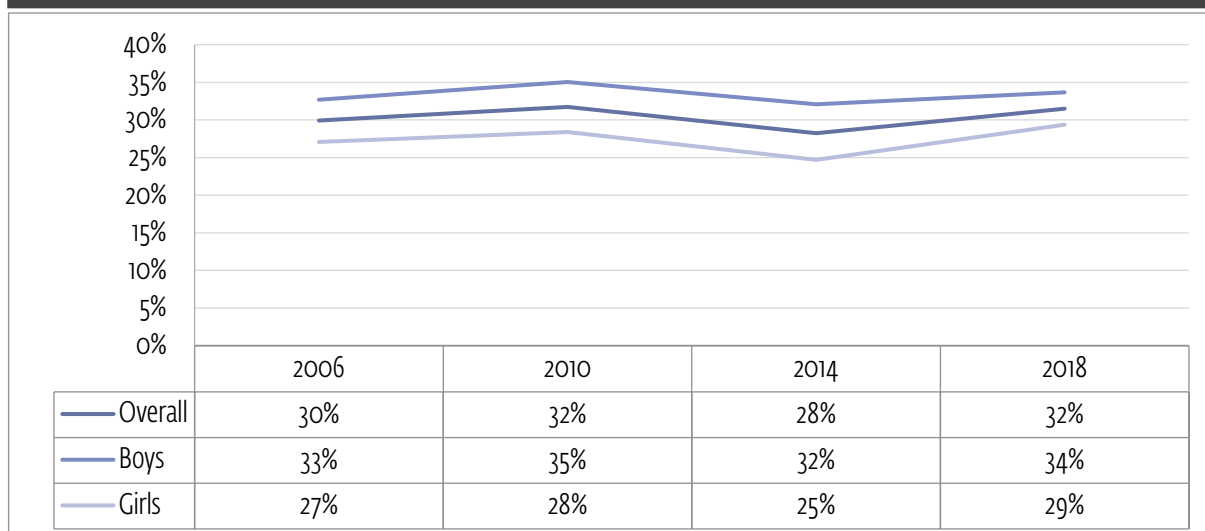
### HBSC FINDINGS

The proportion of adolescents with a high level of life satisfaction was 30% in the four survey years, with slight upward and downward fluctuations. Only a few groups showed statistically significant increases (the “high perceived wealth” group, ESC pupils, girls aged 15/16 and 17/18). In most groups, the percentages were more or less the same over time.

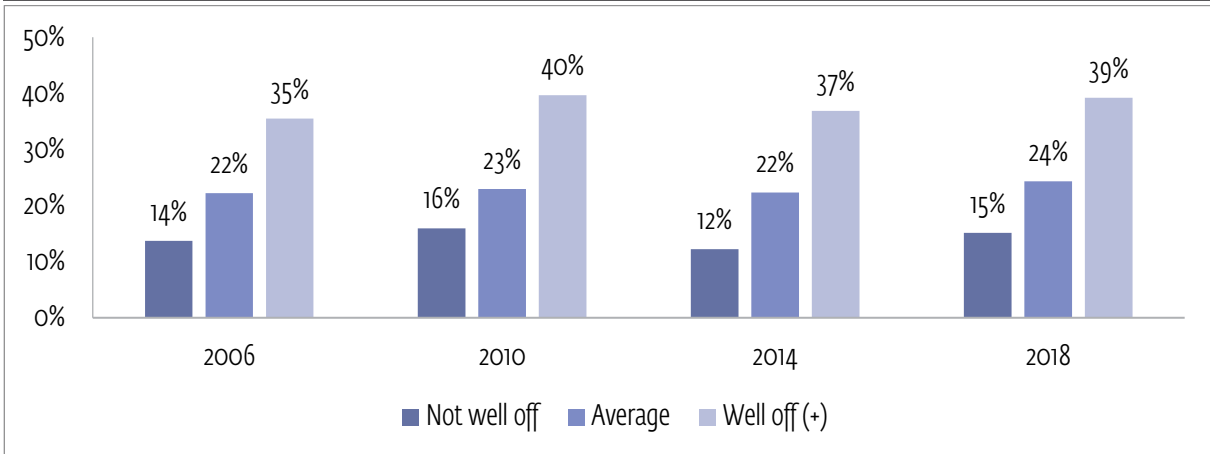
There were stable differences within the groups. In all survey years, boys were more likely to report high life satisfaction than girls were. Among both girls and boys, high life satisfaction decreases with increasing age. In 2018, for example, the proportion of adolescents with high life satisfaction roughly halved (from 46% at age 11-12 to 24% at age 17-18 for boys and from 43% to 23% for girls, see Figure 179 and Figure 180). Accordingly, the proportion of pupils with high life satisfaction is significantly higher in the *Fondamental* than in secondary schools. Within secondary schools, the proportion is higher in the ESC than in the ESG.

Another constant pattern is that the higher the perceived family wealth, the higher the percentage of adolescents with high life satisfaction. In terms of nationality, it is striking that among adolescents of Portuguese nationality the proportion of adolescents with high life satisfaction is always somewhat lower. However, there is no clear order among the three other groups.

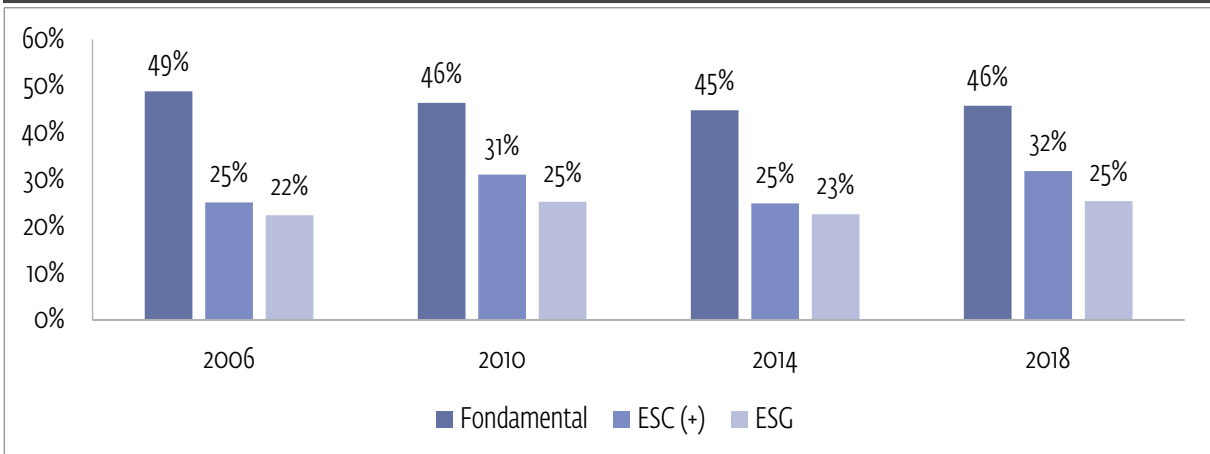
**Figure 117: Adolescents who report high life satisfaction, by gender**



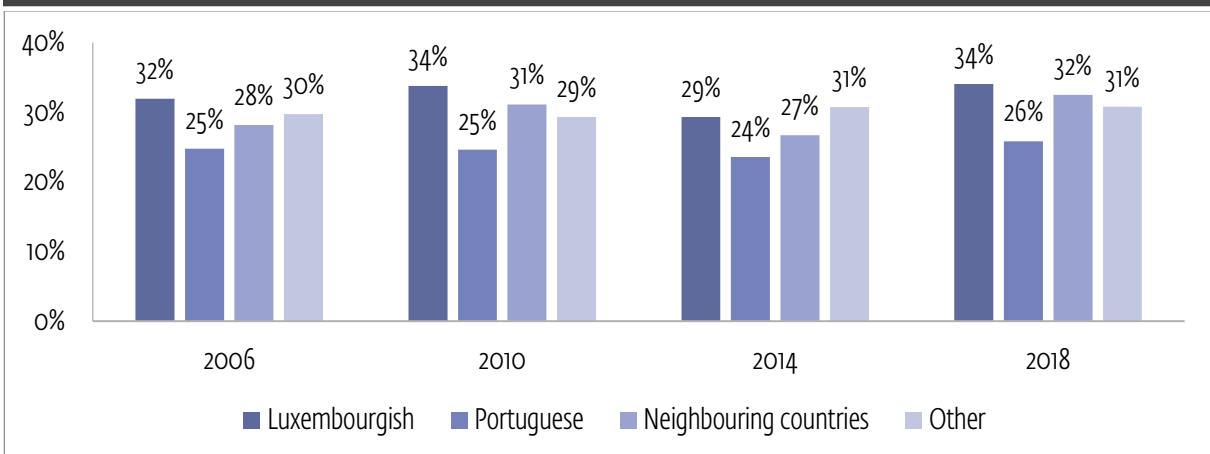
**Figure 118: Adolescents who report high life satisfaction, by perceived wealth**



**Figure 119: Adolescents who report high life satisfaction, by school type**



**Figure 120: Adolescents who report high life satisfaction, by nationality**





# 5. TRENDS – OVERVIEW AND DISCUSSION

## MAIN FINDINGS

Chapters 2 to 4 presented the trends of 30 health indicators across 4 HBSC surveys by gender, perceived family wealth, school type and nationality. In the appendix, the trends in the individual age groups are presented separately for boys and girls. A large number of charts is helpful in understanding individual indicators in detail, but it may also obscure the view of the overarching trends. To ensure that these trends are not lost sight of, Table 4 shows the trends of all indicators for all the groups examined in a single table. As before, "+" indicates a significant increase from 2006-2018 and "-" indicates a significant decrease. Empty cells indicate that the respective indicator has remained stable over time. A verbal summary of the trends can be found in Table 5.

### TRENDS – POSITIVE, NEGATIVE AND MIXED FINDINGS

Improvements over the period 2006-2018 can be observed particularly in some areas of social context and health behaviour: School bullying has decreased and more pupils report good communication with their parents. Regarding nutrition, it is noticeable that adolescents have adopted healthier behaviours over time. More pupils eat fruit every day and consume fewer soft drinks and sweets. Regarding sweets, however, there are two exceptions, pupils in the *Fondamental* and girls aged 11-12, in whom the daily consumption of sweets has increased. In addition, more pupils follow the recommendation to brush their teeth twice a day. There have been strong improvements in risk behaviour: compared to 2006, fewer pupils smoked or drunk alcohol in the past month and fewer have been drunk. However, improvements in the area of health outcomes were sparse. Life satisfaction has only increased in a few groups and remained constant for most. All other outcomes either showed a deterioration or mixed results.

A clear deterioration is evident in social contexts: More pupils feel stressed by schoolwork and fewer pupils report a good climate in the classroom. A deterioration in the field of behaviour is that physical activity has decreased. In addition to the positive trends in nutrition mentioned above, there is also a negative trend, with fewer pupils eating breakfast every day. The positive trend regarding alcohol and tobacco consumption contrasts with the fact that more pupils took cannabis last month. For three health outcome indicators we observe a negative trend: More pupils have multiple health problems, are overweight and have injured themselves so badly in the past 12 months that they needed medical treatment.

There are 5 indicators with a mixed balance, i.e. there have been improvements in some groups and deteriorations in others over time. In the group of 15-16-year-old boys, for example, there was an increase in the indicator "teachers care about me". Among the students of the *Fondamental*, however, there was a decrease in this indicator. The same applies to the following indicators: daily consumption of sweets, cannabis use in lifetime, physical fighting and assessing one's health as excellent.

For other trends, it is not as straightforward to assess these as good or bad. For example, pupils who consider themselves too thin or too fat, may have a realistic or distorted view of their body. For an assessment, it would also be important to know whether they are taking measures that are beneficial or harmful to their health based on this view. Similarly, the trend that fewer pupils have already had sexual intercourse cannot easily be categorised as good or bad. Depending on whether they have had positive or negative sexual experiences, this can increase or decrease their well-being.



Table 4: Trends overview																						
	All	Boys	Girls	Low perceived wealth	Moderate perceived wealth	High perceived wealth	Fondamental	ESC	ESG	Luxembourgish	Portuguese	Other nationality	Neighbouring country	Boys 11-12	Boys 13-14	Boys 15-16	Boys 17-18	Girls 11-12	Girls 13-14	Girls 15-16	Girls 17-18	
11 to 18-year-old pupils who...																						
like school							+							+								
feel pressured by school	+		+		+	+		+		+	+	+	+					+	+		+	+
report a good class climate	-		-		-	-	-	-	-	-	-	-	-					-	-	-	-	-
feel that teachers care about them																						
bullied others	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
were bullied	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
report easy communication with mother	+		+		+	+		+	+	+						+					+	+
report easy communication with father	+		+	+	+	+		+	+	+			+						+	+	+	+
report regular physical activity	-	-	-		-				-	-	-	-	-									-
have daily breakfast on weekdays	-	-	-	-	-	-		-	-	-	-	-	-					-	-	-	-	-
eat fruit daily	+	+			+	+	+			+			+	+	+							
eat sweets daily	-	-	-		-	-	+	-	-	-	-	-	-					+				-
consume soft drinks daily	-	-	-		-	-	-	-	-	-	-	-	-					-	-	-	-	-
brush their teeth twice a day	+	+			+	+	+			+	+			+						+		
were not involved in a fight (12 months)	+	+		+			-	+		+		+		-		+	+				+	
were never drunk in their lifetime	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
drank alcohol in past 30 days	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
never smoked in lifetime	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
used tobacco in past 30 days	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
consider themselves too thin	+	+	+		+	+	+	+	+	+	+		+	+	+	+			+	+	+	+
consider themselves too fat	-		-		-	-	-	-	-	-	-		-					-	-	-	-	-
are overweight	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
are underweight																						
report at least one injury (12 months)	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
report multiple health complaints	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
report excellent health	+	-	+		+	+		+		+								+	+	+	+	+
report a high life satisfaction						+		+		+											+	+
(Questions that were not asked at primary schools)																						
15 to 18-year-old pupils who...	All	Boys	Girls	Low wealth	Moderate wealth	High wealth		ESC	ESG	Luxembourgish	Portuguese	Other nationality	Neighbouring country	Boys 15	Boys 16	Boys 17	Boys 18	Girls 15	Girls 16	Girls 17	Girls 18	
never used cannabis in lifetime												+		+	+				+			-
used cannabis in the past 30 days	+		+			+		+	+	+						+	+				+	+
have had sex	-	-	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

+ significant increase 2006-2018; - significant decrease 2006-2018

Table 5: Summary of main trends		
Improvement 2006-2018	Deterioration 2006-2018	Other and mixed findings
<p><b>Social context</b> Both bullying perpetration and victimisation have decreased. More adolescents report that they can easily talk to both their mother and father about things that worry them. Liking school has increased in two groups (11-12-year-old boys; <i>Fondamental</i>).</p> <p><b>Health behaviours</b> More pupils eat fruit every day. Overall, fewer pupils eat sweets every day (exception: 11-12-year-old girls). Fewer pupils drink soft drinks every day. More pupils brush their teeth twice a day. Fewer pupils have ever been drunk in their lives. Fewer pupils have drunk alcohol in the past month. Fewer pupils have smoked, both in their lifetime and in the last month.</p> <p><b>Health outcomes</b> In some groups, there was an increase in life satisfaction.</p>	<p><b>Social context</b> More pupils feel pressured by schoolwork. Fewer pupils report a good class climate.</p> <p><b>Health behaviours</b> Fewer pupils are physically active. Fewer pupils eat breakfast daily. More pupils have used cannabis in the past month.</p> <p><b>Health outcomes</b> More pupils report multiple health complaints. More pupils are overweight. The proportion of pupils who were injured last year has increased.</p>	<p><b>Social context</b> In five groups, more pupils felt that the teachers do not care about them. In one group, this percentage decreased.</p> <p><b>Health behaviours</b> The proportion of pupils who have had sexual intercourse has decreased in most groups. Among the younger pupils, the proportion of those who have never tried cannabis has increased. Among older girls, however, this proportion has decreased. Overall, fewer pupils were involved in a physical fight last year, but pupils from the <i>Fondamental</i> and young boys were involved more often.</p> <p><b>Health outcomes</b> In some groups, the proportion of those who rate their health as excellent has increased, in others the proportion has decreased. More pupils think they are too thin. Fewer pupils think they are too fat. The proportion of underweight pupils has remained stable in all groups.</p>

### DIFFERENCES WITHIN GROUPS

Breakdowns by gender, perceived wealth and school type largely confirm the differences that were already apparent in both the National Report on the 2014 HBSC survey in Luxembourg [11] and the International HBSC Report [7]. The trends often show that many differences are stable over time.

In terms of gender, the following differences and trends were observed. Girls feel more pressure by schoolwork than boys do and these differences have increased over time. Boys more often bully others than girls. For bullying victimisation, the small differences between boys and girls have disappeared over time. Boys report more often than girls that they can easily talk to their fathers about things that worry them. For communication with the mother, there is no such difference between boys and girls. Boys are more often physically active, and this difference has

remained stable over time. Girls more often say they eat fruit every day, but the differences between boys and girls have diminished over time. Boys drink soft drinks more often every day and brush their teeth less often twice a day. They are also more likely to be involved in fights. There were hardly any differences in the use of alcohol and tobacco. For cannabis, on the other hand, boys report more often having taken cannabis in the past 30 days. Among both girls and boys, the proportion of those who already had sexual intercourse decreased, but among girls, the decrease was stronger. Whereas in 2006 there was no noteworthy difference between girls and boys, in 2018 more boys than girls stated that they already had sexual intercourse. Feeling too thin is more common among boys, whereas girls tend to feel too fat. In terms of actual weight status, the opposite is true. Overweight is more common among boys, but underweight is more common among girls. Boys are more likely to have injuries requiring medical treatment, but girls are more likely to have multiple health complaints. Boys report higher life satisfaction and more often consider their state of health to be excellent.

A large number of indicators have shown that children from wealthy families are often better off in terms of health behaviours and health outcomes than children who consider their family not well off. Only a few indicators did not confirm this correlation, or at least not in all surveys: consumption of sweets and soft drinks, cannabis (lifetime prevalence), feeling too thin and medically treated injuries. For the following indicators, the relationship between wealth and the indicator disappeared over time: participation in fights, drunkenness and consumption of alcohol in the past 30 days. Underweight is the only indicator where wealth has become a risk factor, i.e. the higher the wealth of the family, the more likely a child is to be underweight.

Like in the 2014 HBSC survey [11], many indicators have shown that younger pupils (11-12-year-olds) score better results as older pupils. These age differences are reflected in differences between primary school (*Fondamental*) and secondary school (ESC and ESG), with pupils in the *Fondamental* generally scoring better. Exceptions are bullying, physical fights and underweight, which affect pupils of the *Fondamental* more frequently than pupils from the ESG and ESC. Within secondary schools, we found that ESC pupils score better than ESG pupils do on many indicators, with a few exceptions: Pupils at the ESC feel more pressured by schoolwork and they think more often that teachers do not care about them. In addition, underweight is somewhat more common among them.

Compared to the differences by gender, perceived wealth, school type, and age, the differences by nationality are smaller and many of these differences are not stable over time. There are only a few exceptions. In each survey, pupils of Luxembourgish nationality most frequently indicated a good class climate and no involvement in fights. Pupils of Portuguese nationality were the least likely to report physical activity and the most likely to be overweight and drink soft drinks every day. They also less often reported excellent health or high life satisfaction. Pupils of nationality from neighbouring countries most often reported having breakfast every day and they are less likely to be overweight.

## DISCUSSION

The aim of this report was to describe how the health of 11-18-year-old pupils in Luxembourg has developed since 2006 through a variety of indicators. In chapters 2 to 4 these trends were presented in detail and in the previous section, these details were condensed into an overview. Now we will investigate the following questions: Are there similar trends in other countries or is Luxembourg a special case? Which links between different trends are known in research and which causes are discussed for the trends? It will become apparent that the trends found in Luxembourg are also found in other countries and it will also become apparent that some trends are well researched and others less so. Thus, the following explanations for the trends are preliminary hypotheses which have yet to be confirmed for Luxembourg in further analyses.

Analysis of trends has shown that many health-related behaviours in Luxembourgish adolescents have improved over time. In particular, the consumption of alcohol and tobacco has decreased. This trend is very encouraging, as alcohol and tobacco are still among the most important health hazards globally [12–14]. With regard to alcohol consumption, the HBSC network published a trend report for all HBSC countries in 2018. This report shows that the decline in alcohol consumption is not a Luxembourgish phenomenon, but can be observed in many countries. The reasons discussed are that in many countries the age limits for buying alcohol have been raised and that the consequences of alcohol abuse are better understood. Another potential reason is that social norms around adolescent drinking have become stricter and alcohol use by young people is viewed more critically [15]. However, there is no consensus in the scientific community on the relative importance of the reasons for the decline in alcohol use [16]. This assessment is also confirmed by researchers from Switzerland, who discuss a variety of reasons for this decline in their country (e.g. restrictions on availability, education campaigns etc.). In their report, they explain why it is difficult to calculate the share of individual causes in this trend and accordingly assume that the decline in Switzerland is not due to a single cause [17]. Applied to Luxembourg, it seems plausible that there is a general trend in society towards reduced alcohol consumption, which has been supported and reinforced by various campaigns (e.g. "*Keen Alkohol ënner 16 Joer – Mir halen eis drun!*" [18], "*Semaine d'action alcool*").

The trend of pupils in Luxembourg smoking less can also be observed in many other countries. The authors of the ESPAD study assume that the many measures taken to prevent smoking (e.g. restrictions regarding packaging, labelling, advertising; limitation of access of underage persons to cigarettes) have at least partially contributed to this decline and that the price of cigarettes, in particular, plays an important role [16]. Again, it is difficult to determine the effects of individual measures. For example, the HBSC study in Wales found no evidence that different school smoking policies (i.e. strict versus non-strict) affect pupils' smoking behaviour [19]. In Spain, there were difficulties in evaluating the effectiveness of measures because funding for research projects on this topic ended, prevention campaigns were abolished or measures were not implemented as recommended [20]. This, in turn, shows that measures need to be carefully prepared and secured in the long term. One example of such a long-term campaign in school classes in Luxembourg is "*Mission Nichtrauchen*", which was launched in 1999. A very comprehensive and long-term anti-tobacco strategy exists with the *Plan national de lutte contre le tabagisme 2016-2020*.

The trend of cannabis use in Luxembourg is more differentiated than for alcohol and tobacco use. Overall, the percentage of pupils who have never tried cannabis has not changed. This trend seems to be consistent with the data from the ESPAD study, which covers a longer period. In the countries participating in ESPAD, lifetime use of

cannabis increased from 1999 to 2003 and then stabilised from 2003 to 2015. However, trends varied widely across countries [16]. Nonetheless, a closer look at the Luxembourg HBSC data reveals an interesting pattern: among younger pupils (boys aged 15 and 16); there are more who have never tried cannabis, while among older girls there are fewer. However, the lifetime prevalence of cannabis use is not as meaningful as the prevalence of cannabis use in the past month. Lifetime prevalence covers both one-off "trial use" and regular use, so the frequency of use is not taken into account. Last month use of cannabis is an indicator of regular use, which is more problematic from a health point of view and this indicator has increased overall. Nevertheless, an analysis by age shows the same pattern: the proportion has fallen among the younger pupils, while the proportion has risen among the older pupils.<sup>1</sup> Thus, consumption has increased overall, but the results suggest that the onset has shifted to older age groups. On the one hand, the increase in use is problematic, because the use of cannabis is considered a risk factor for mental illness [21], as well as for social problems, such as lower school achievement and the use of other drugs [22]. On the other hand, the age shift is positive because cannabis use is considered particularly harmful if it starts early in adolescence, is highly dosed and is practiced regularly [21].

For the school as an important social context, an overall mixed picture emerges for Luxembourg. More pupils say that they feel stressed by schoolwork and the assessment of the class climate has slightly deteriorated. Overall, the assessment of teacher support has not changed over time, but there has been a worsening of this indicator in some groups and an improvement in another one. Similarly, the overall proportion of pupils who like school has not changed, but this proportion has increased in the *Fondamental*. Comparable trends were found in the Dutch HBSC study: there was also an increase in feeling pressured by schoolwork and a decrease in both bullying perpetration and victimisation. Among primary school pupils, the proportion of those who like school remained stable and there was no change in secondary schools between 2001 and 2013 and only after that there was a decline [23]. The mixed picture that emerges in Luxembourg is therefore not unusual, but more in-depth analysis is needed in the National HBSC Report in order to better understand it and deduce recommendations.

Overall, liking school has not changed, although more pupils feel stressed by schoolwork and the class climate is rated slightly worse. It is possible that the indicator liking school has remained stable despite these deteriorations because there have also been improvements in the social context of the school. The trends show that pupils experience less aggressive behaviour at school. Fewer pupils said they were involved in fights (however, with increases in some groups) and bullying at school has decreased, with fewer perpetrators and fewer victims. This trend is very positive because bullying is a serious threat to both academic performance and mental health [24], with bullying, for example, being an important risk factor for suicidal ideation and behaviour [25]. According to a recent UNESCO report, bullying also decreased in other countries between 2002 and 2014, including neighbouring France and Germany. In Belgium, the picture is mixed: an increase in the French-speaking part contrasts with a decrease in the Flemish-speaking part. The report also makes clear recommendations on how to prevent bullying. Among other things, politics must make it clear that violence and bullying are not tolerated. Prevention measures should be based on scientific evidence and evaluated. It is therefore important to collect data on bullying on a regular basis. Furthermore, the UNESCO report recommends to train the teachers accordingly, to improve the climate in the school and the class and to promote whole-school approaches including parents and local authorities. In addition, there should be contact persons for the victims [24]. In Luxembourg, these

<sup>1</sup> This pattern becomes apparent when boys and girls are analysed together but separately by age group. We carried out this analysis, but do not show it separately in this report with bar charts.

recommendations are taken up by the “BEE SECURE” initiative, which informs pupils about cyberbullying and how to protect themselves against it. Another initiative is “Stop Mobbing”, which aims to prevent bullying in schools.

A mixed picture emerges in Luxembourg around the topics of nutrition, body weight, body image and exercise. On the one hand, fewer pupils say that they eat sweets and drink soft drinks every day and more pupils eat fruit every day and brush their teeth twice a day. On the other hand, fewer pupils eat breakfast every day and exercise frequently and more pupils are overweight. Many of these Luxembourgish trends were also found in the HBSC report on trends in obesity 2002-2014. This report has shown that the proportion of overweight pupils has increased in half of the HBSC countries, but has decreased only in a few countries. Similarly, daily fruit consumption has increased and consumption of soft drinks and sweets has decreased. However, not apparent was a general decline in exercise [26]. By and large, this mixed picture emerges also in Spain over the longer period 2002-2018, with the exception that in Spain the proportion of overweight people has only increased among girls and decreased among boys [27]. The Dutch HBSC study also showed that pupils eat more fruit, consume less sweets and soft drinks and feel fat less often. There was an up and down in physical activity and overweight from 2001-2017, but no clear trend [23].

In particular, the trend towards more overweight is problematic because overweight increases the risk of many diseases (e.g. cardiovascular disease and type 2 diabetes) and is responsible for a large part of the global burden of disease [28]. The problem with being overweight in adolescence is that it increases the probability of being overweight in adulthood by a factor of 5 [29]. As the prevalence of obesity among children and adolescents is increasing worldwide, WHO has made the fight against obesity a priority in this age group. In its report, WHO makes a number of evidence-based recommendations addressed to various stakeholders. For example, health policy is recommended to “implement a standardized global nutrient labelling system” and to “make food preparation classes available to children, their parents and caregivers.” [30] In the context of overweight prevention, consideration should also be given to reversing the trend towards less physical activity. Suggestions for this can be found, for example, in the WHO Global Action Plan on Physical Activity 2018-2030. It recommends, among other things, combining measures to increase physical activity with healthier diets. In Luxembourg, this recommendation is implemented by the “*Gesond iessen, Méi bewegen GIMB*” initiative, which was launched in 2006 and whose plan for 2018-2025 includes numerous interventions to address both topics [31].

Regarding trends in body weight and body image, it may come as a surprise that more pupils in Luxembourg feel that they are too thin, even though the proportion of those who are actually underweight has remained constant, and that fewer pupils feel that they are too fat, even though there are more overweight pupils. One explanation may be that body ideals have changed over time and that the stigmatisation of obesity may have decreased. Recent discussions on fat shaming and body positivity may have contributed to this, with the aim that no one should be ashamed of their body and not discriminated against because of their figure. As far as we know, studies have not yet shown that this is the case in Luxembourg. However, there is another explanation for the apparent paradox “there are more overweight people - but fewer people think they are too fat”. Several studies have already shown that the proportion of overweight people in the immediate vicinity influences what is perceived to be normal weight and overweight. The more one is surrounded by overweight people, the more likely a certain level of overweight is to be considered normal [32–34]. This effect can resolve the apparent paradox: Precisely because there are more overweight people overall, the more likely it is for a single overweight person to feel normal. Applied to normal-weight people, this can also explain why more people feel too thin, even though the number of underweight people has not risen.



The increase in self-reported multiple health complaints in Luxembourgish adolescents is worrying. It is known from several studies that the health complaints surveyed are an indicator of the psychosomatic health of adolescents [35,36]. Accordingly, the complaints can be an early indication of more serious mental health disorders [37–39]. Trend analyses for the years 2002–2010 and 1994–2010 have shown that the HBSC countries differ greatly regarding the frequency of health complaints as well as regarding trends. In some countries, there have been increases in these periods and decreases in others [40,41]. More recent studies show that the prevalence of health complaints in Scandinavian countries increased between 1994 and 2014 [42,43]. In the Netherlands, the picture was mixed. Between 2001 and 2017, the prevalence of health complaints fluctuated sharply. From 2013 to 2017, there was a decline in primary school pupils. In the case of secondary school pupils, on the other hand, there was an increase from 2009 to 2013, after which the proportion remained stable [23]. Since mental health disorders cause a large burden of disease globally, the WHO adopted the “Mental Health Action Plan 2013–2020” in 2012, which provides numerous recommendations on how mental health problems can be addressed by health policy. One of the objectives of the plan is to “provide comprehensive, integrated and responsive mental health and social care services in community-based settings” [44]. In Luxembourg there are numerous services working in this field with different focuses, e.g. *D'Ligue*, *SOS Détresse*, *Kanner-Jugendtelefon*, *Centre psycho-social et d'accompagnement scolaires/Service psycho-social et d'accompagnement scolaires*, *Aide à l'enfance et à la famille*.

The increase in health complaints in adolescents in Luxembourg matches the increase in pressure by schoolwork and the poorer assessment of the class climate. The Norwegian HBSC study has shown that these three factors are related: Higher school stress and a worse class climate increase the risk of health complaints [45]. This finding was also confirmed in the Polish HBSC study. This study also showed that the link between school stress and health problems is mitigated if family communication works well [46]. Therefore, it is a positive trend that more children feel they can easily talk to their parents about things that worry them. However, since HBSC is a cross-sectional study, causality cannot be inferred from these correlations. In other words, there are connections between school stress, communication with parents, class climate and health problems, and there are starting points for action. Less schoolwork pressure, further improvements in communication with parents and an improvement in the class climate might reduce the prevalence of health complaints.

The overview of trends in this report often shows that the trends of individual indicators fit together, which speaks for their reliability. For example, the decline in bullying perpetration corresponds to a decline in bullying victimisation. The improved communication with the father corresponds to the improvement in communication with the mother, etc. More difficult to interpret are the mixed trends in school as a social context and the trends around nutrition, body weight, body image and exercise. There are plausible explanations for some of these mixed trends and the reliability of the data is supported by the fact that there are similar constellations of trends in other HBSC countries. Nevertheless, more in-depth analyses are needed to test the hypotheses set out in this HBSC 2006–2018 Trends Report.



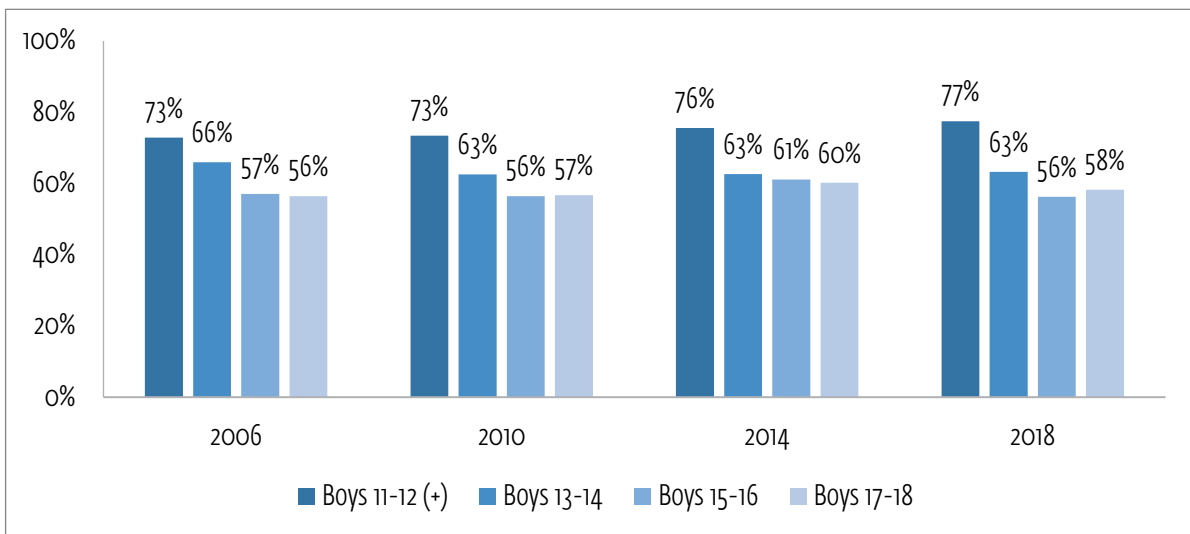


# APPENDIX

## TRENDS BY AGE AND GENDER

In chapters 2-4 of this report, the trends of 30 indicators by gender, perceived wealth, school type and nationality were presented. However, for some of these indicators, age in combination with gender also plays a role, as we pointed out in the description of the outcomes. The corresponding bar charts can be found in the following.

**Figure 121: Adolescents who like school, boys by age**



**Figure 122: Adolescents who like school, girls by age**

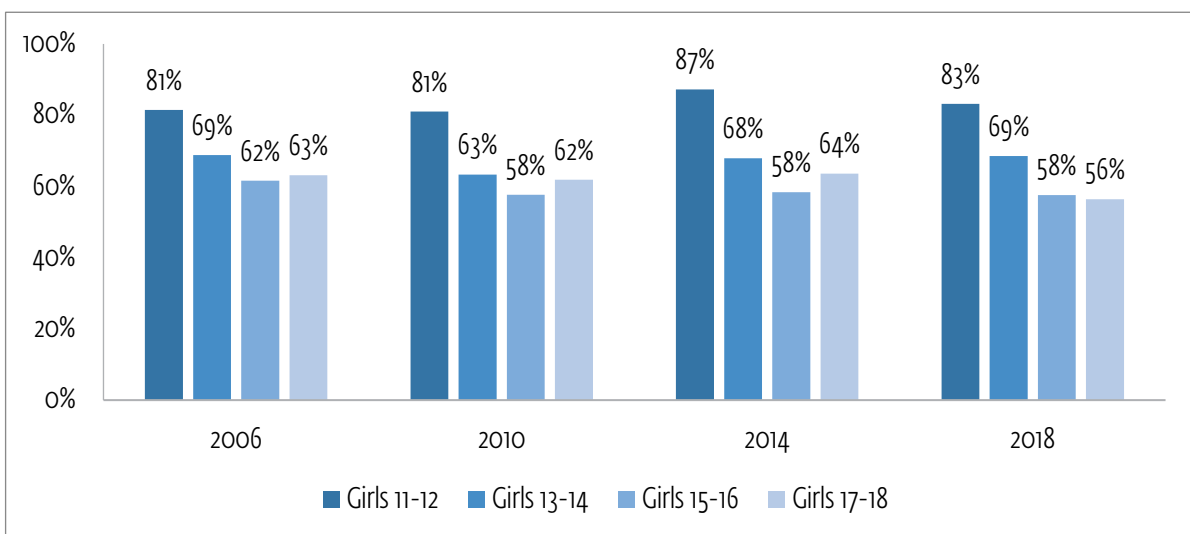


Figure 123: Adolescents who feel pressured by schoolwork, boys by age

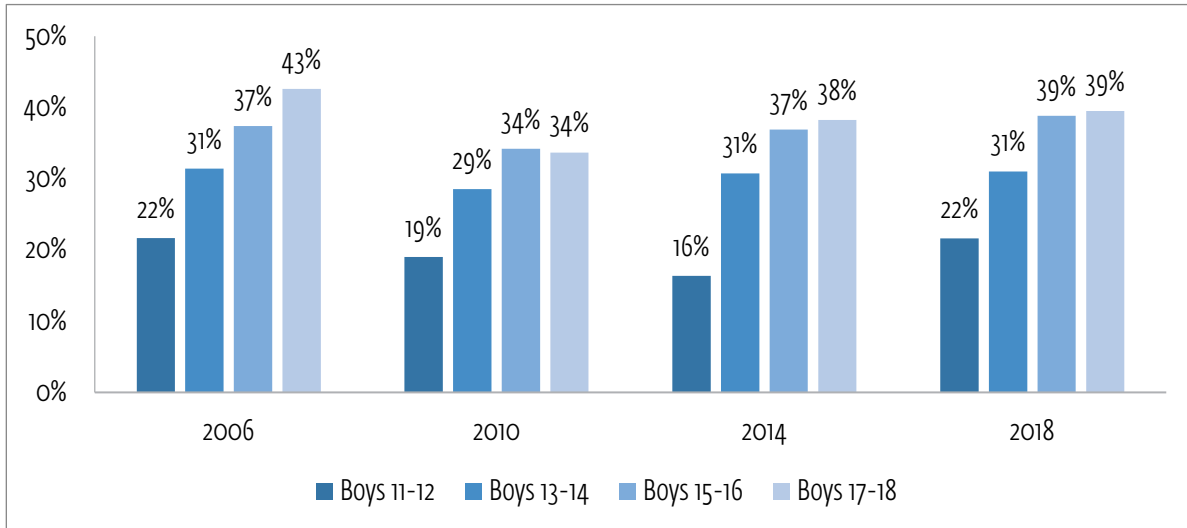
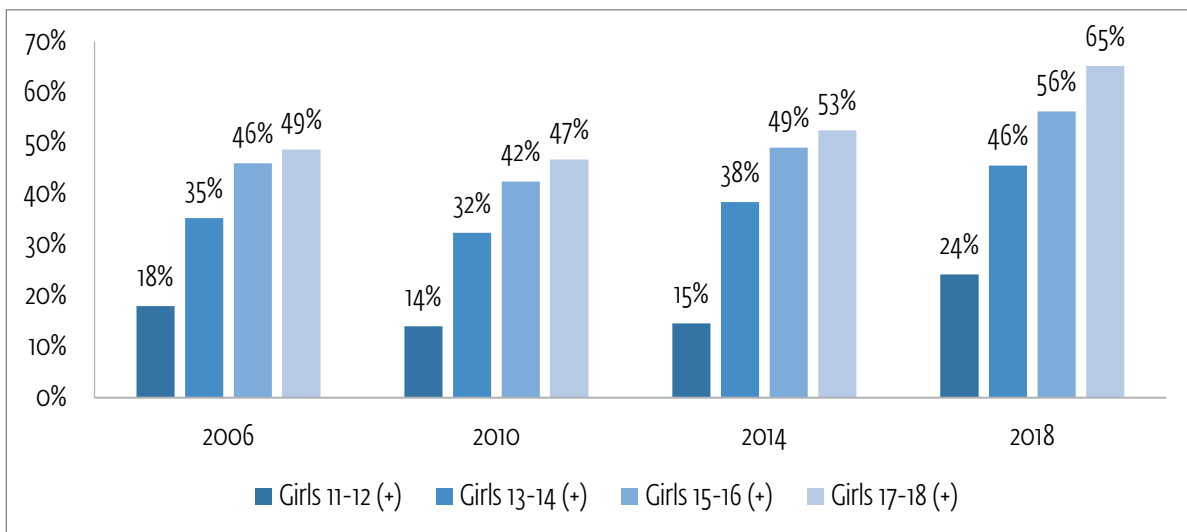
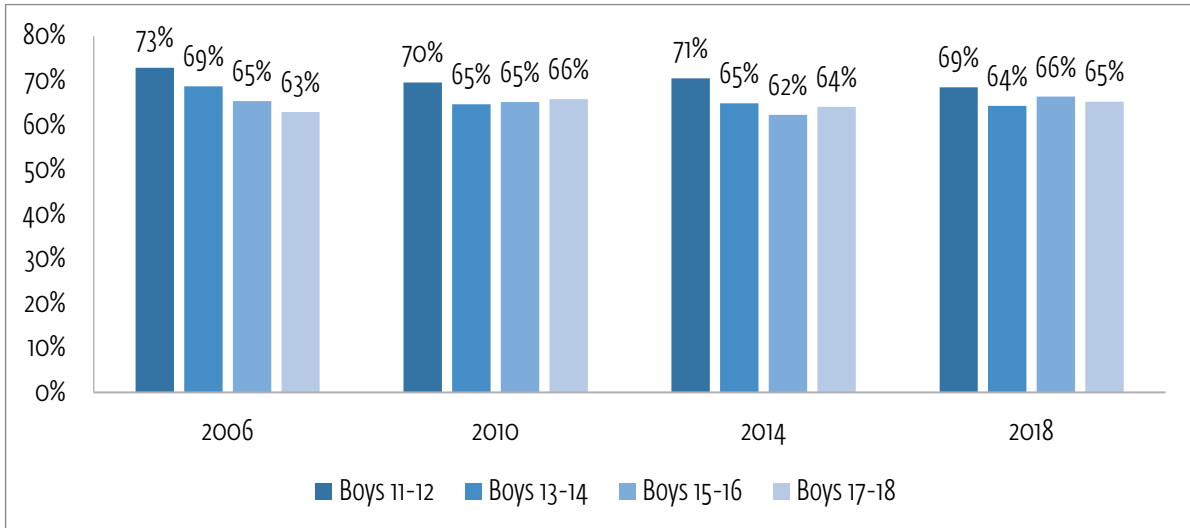


Figure 124: Adolescents who feel pressured by schoolwork, girls by age



**Figure 125: Adolescents who report a good class climate, boys by age**



**Figure 126: Adolescents who report a good class climate, girls by age**

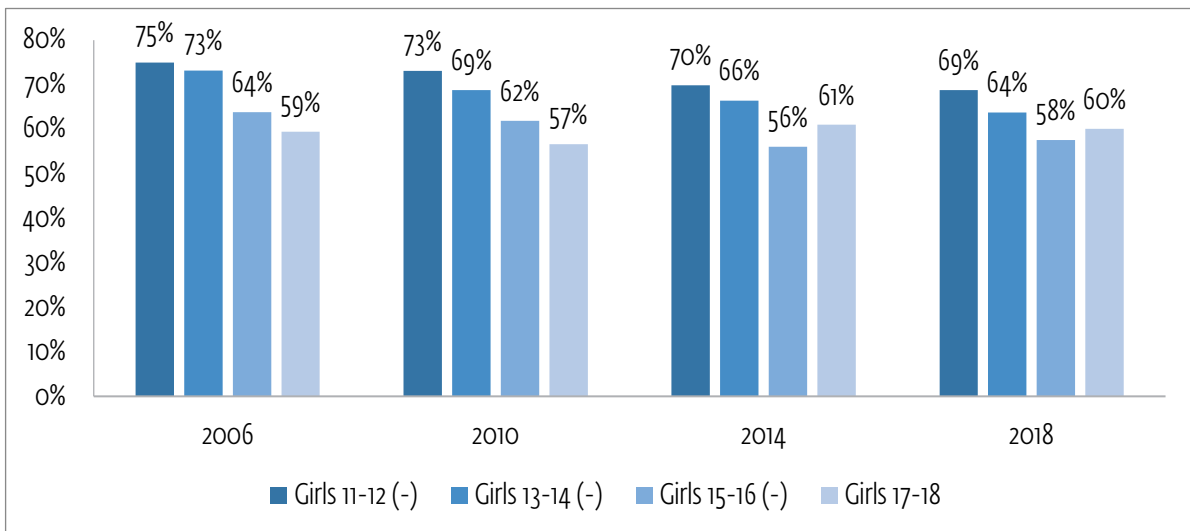


Figure 127: Adolescents who feel that teachers care about them, boys by age

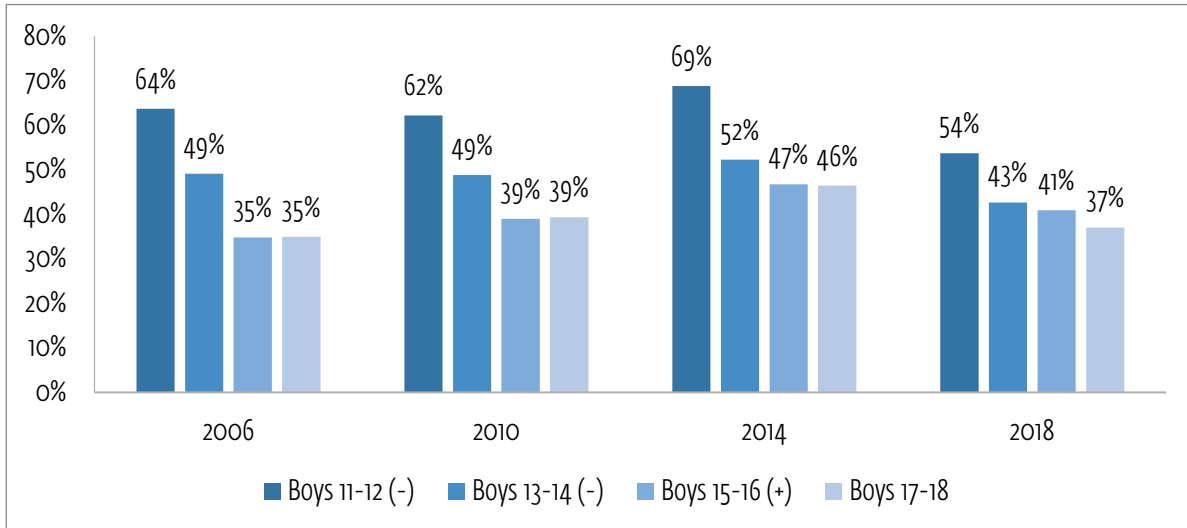
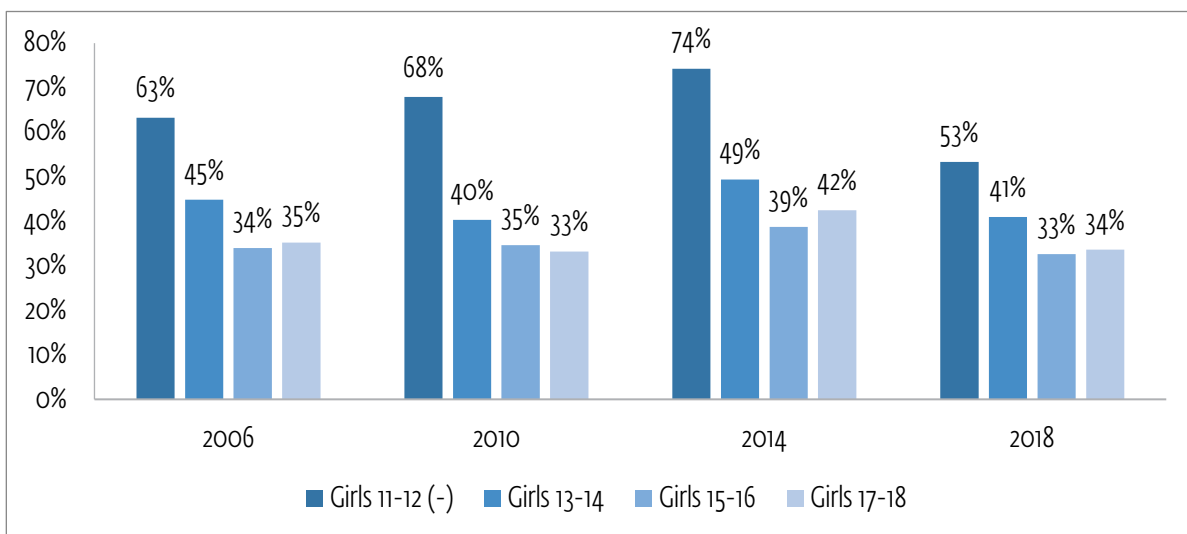
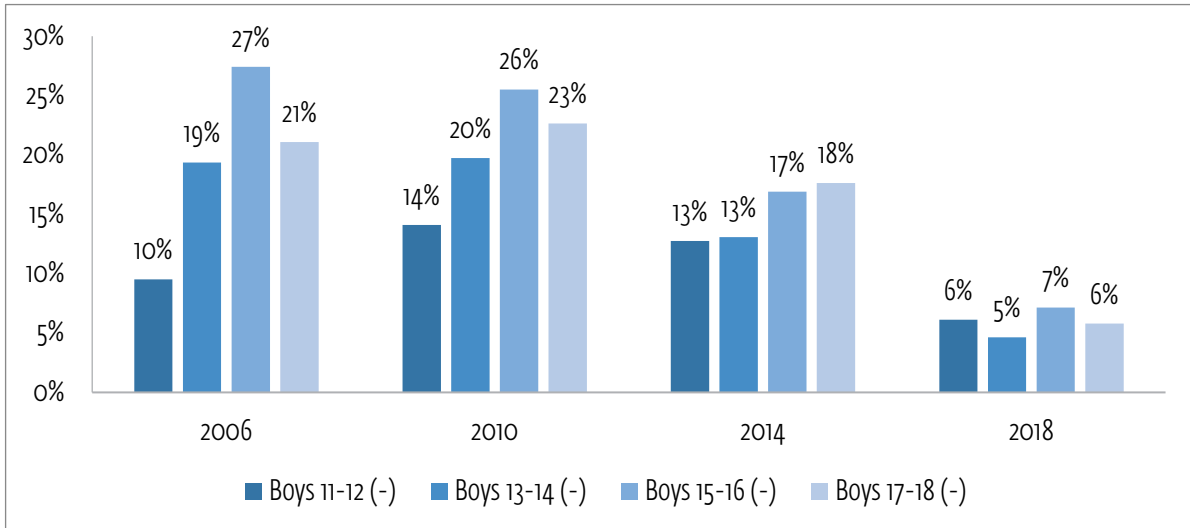


Figure 128: Adolescents who feel that teachers care about them, girls by age



**Figure 129: Adolescents who bullied others, boys by age**



**Figure 130: Adolescents who bullied others, girls by age**

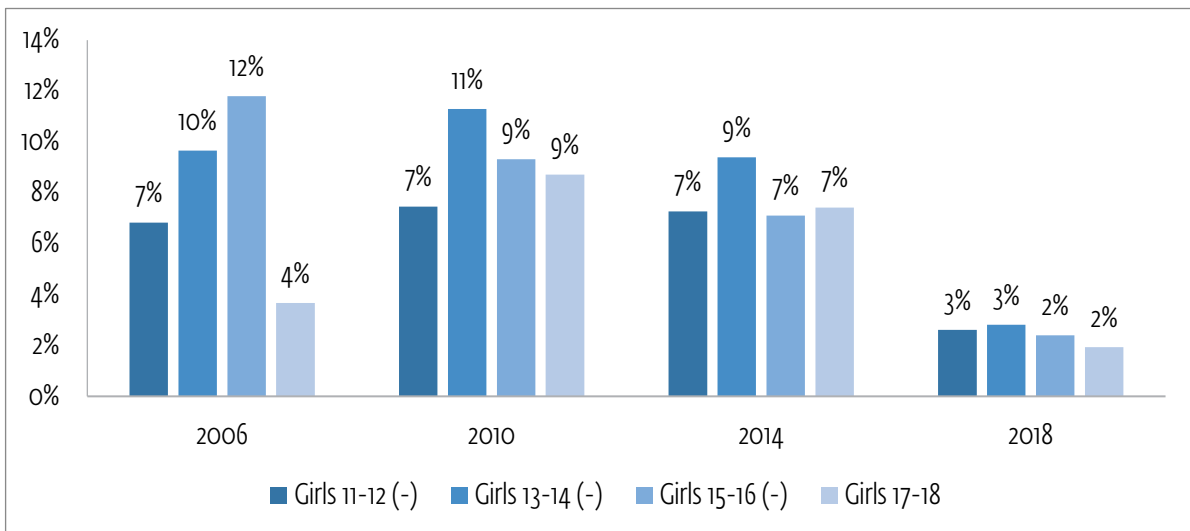


Figure 131: Adolescents who were bullied, boys by age

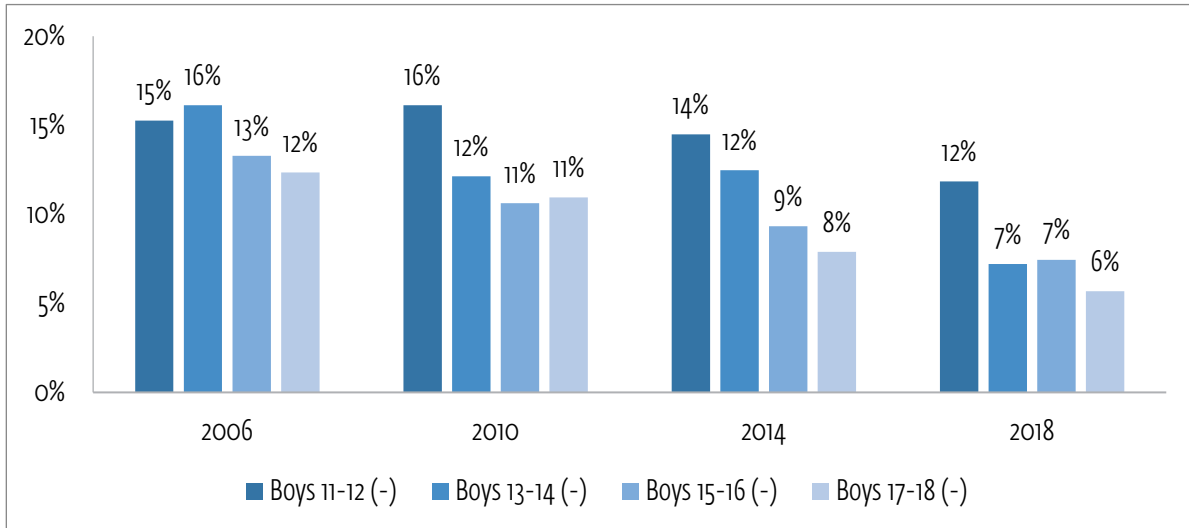
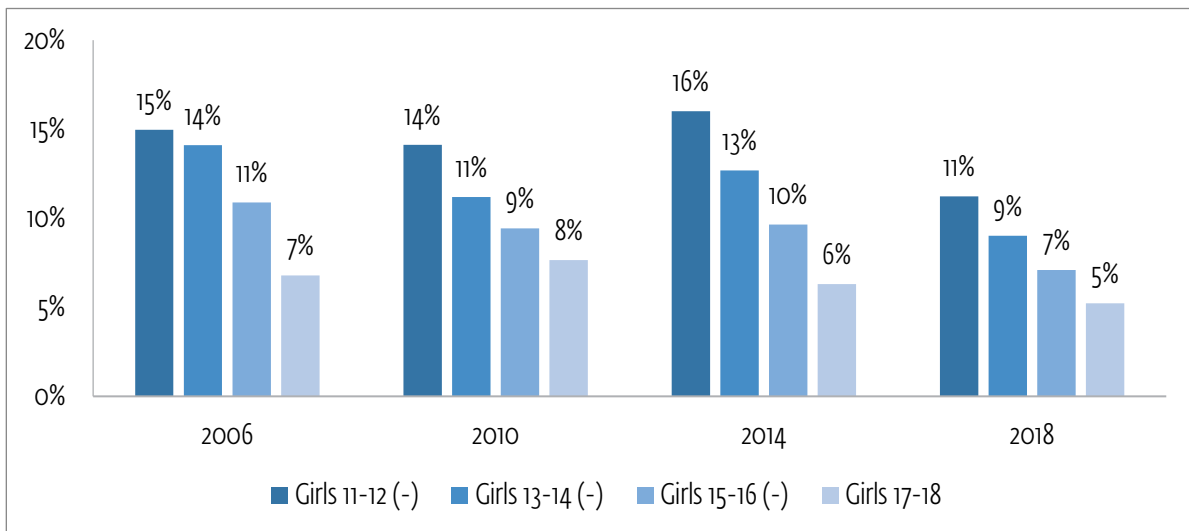
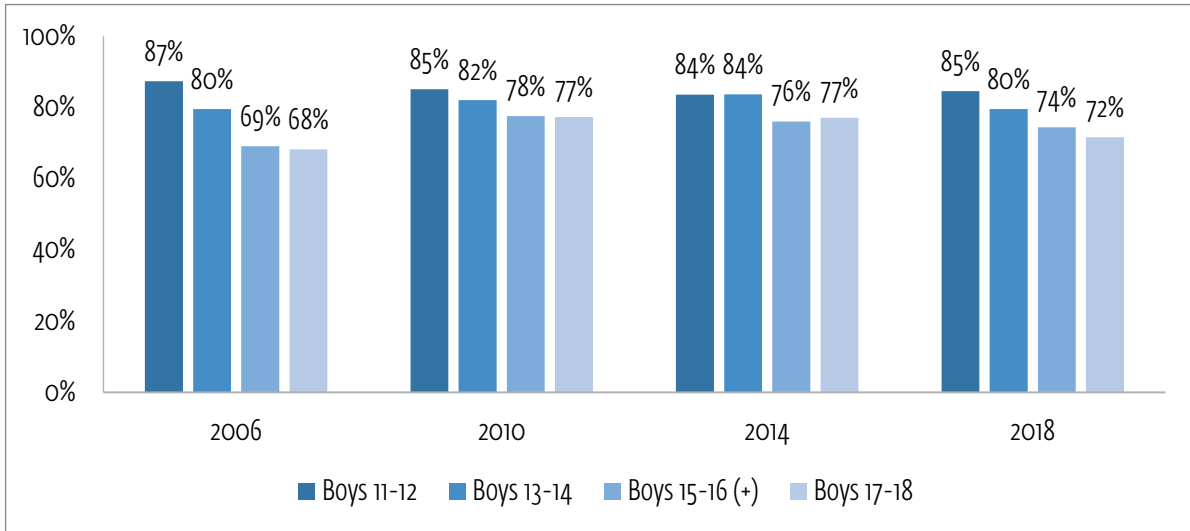


Figure 132: Adolescents who were bullied, girls by age



**Figure 133: Adolescents who report easy communication with mother, boys by age**



**Figure 134: Adolescents who report easy communication with mother, girls by age**

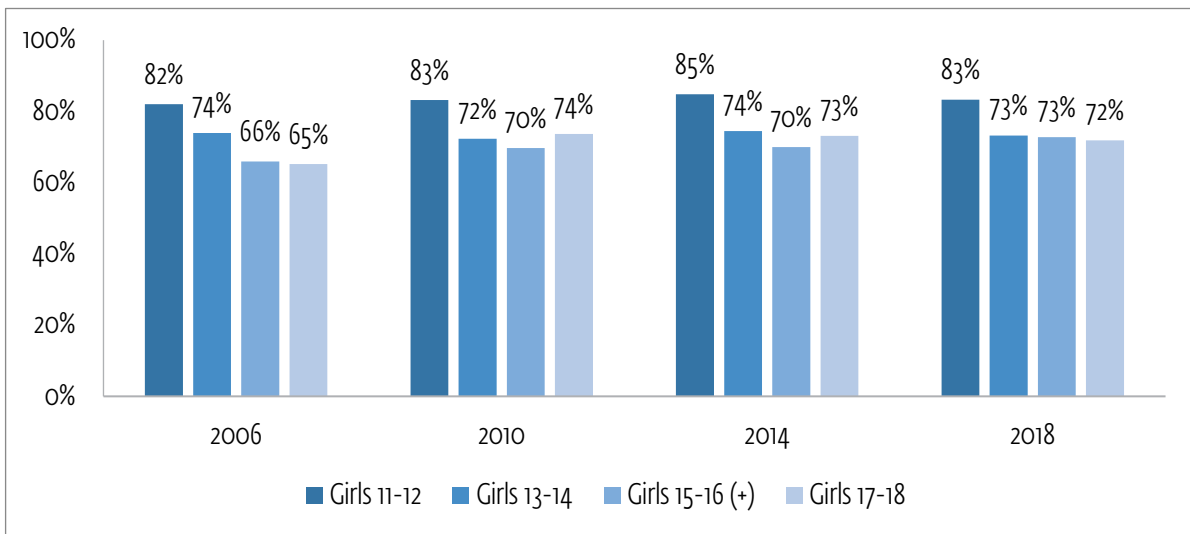




Figure 135: Adolescents who report easy communication with father, boys by age

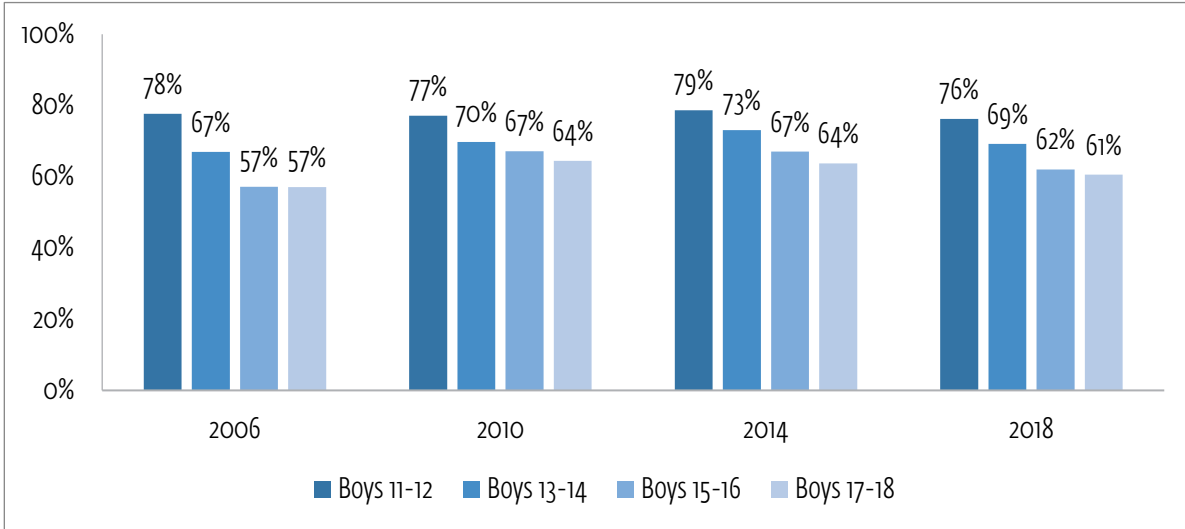
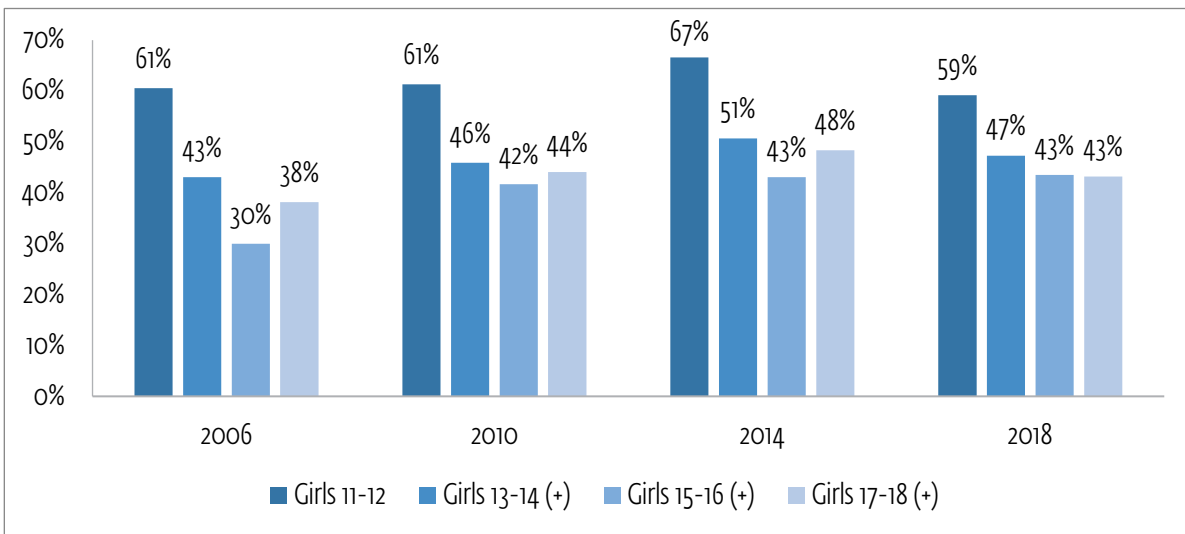
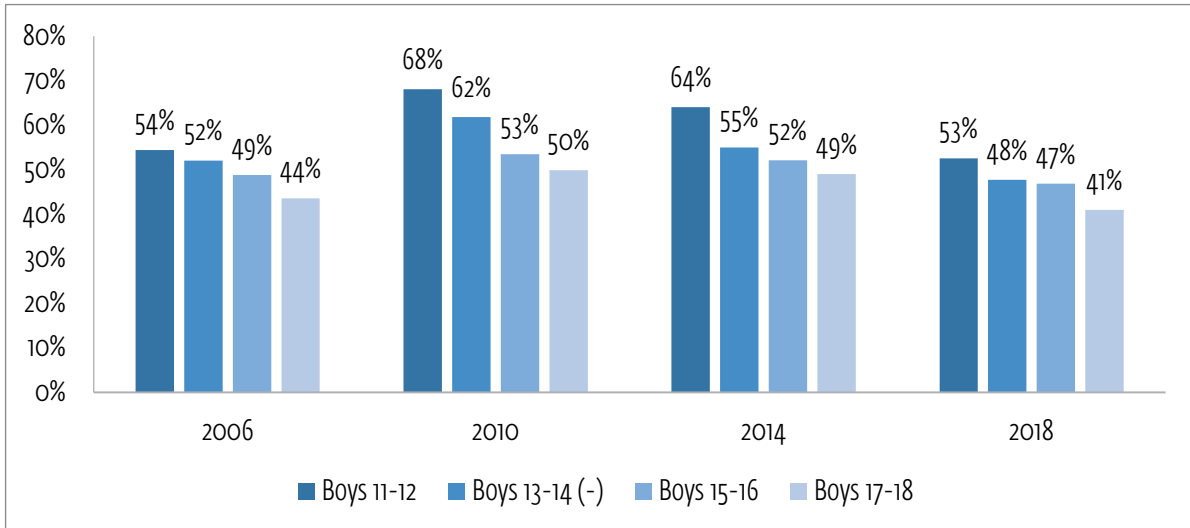


Figure 136: Adolescents who report easy communication with father, girls by age



**Figure 137: Adolescents who report regular physical activity, boys by age**



**Figure 138: Adolescents who report regular physical activity, girls by age**

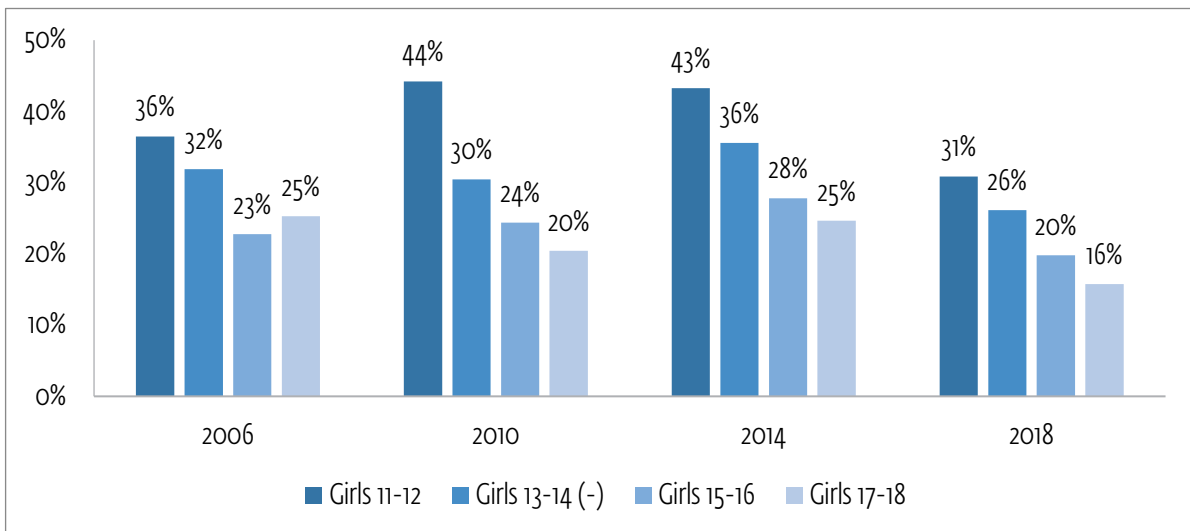


Figure 139: Adolescents who have daily breakfast on weekdays, boys by age

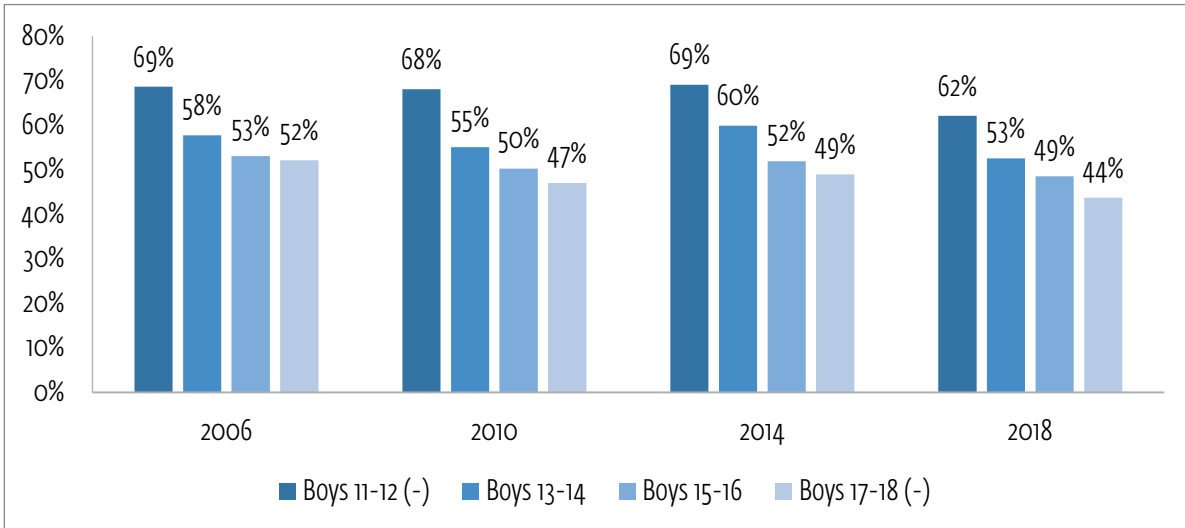
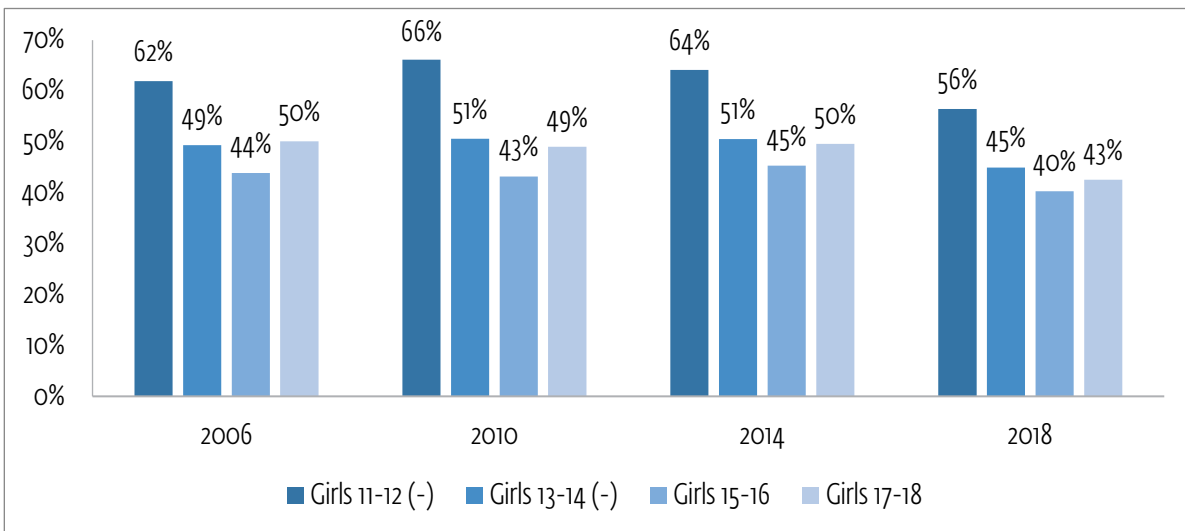
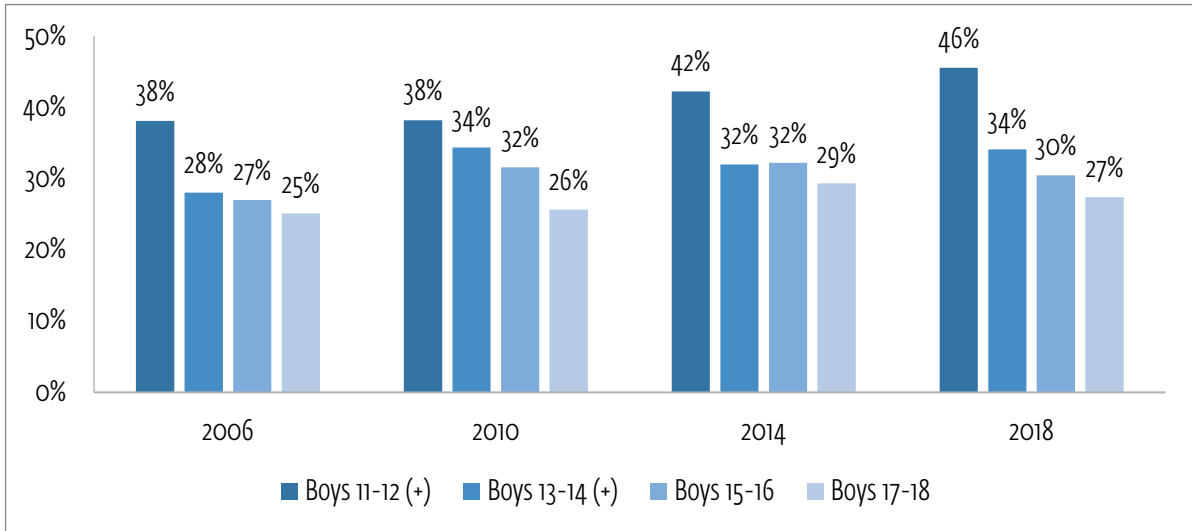


Figure 140: Adolescents who have daily breakfast on weekdays, girls by age



**Figure 141: Adolescents who eat fruit daily, boys by age**



**Figure 142: Adolescents who eat fruit daily, girls by age**

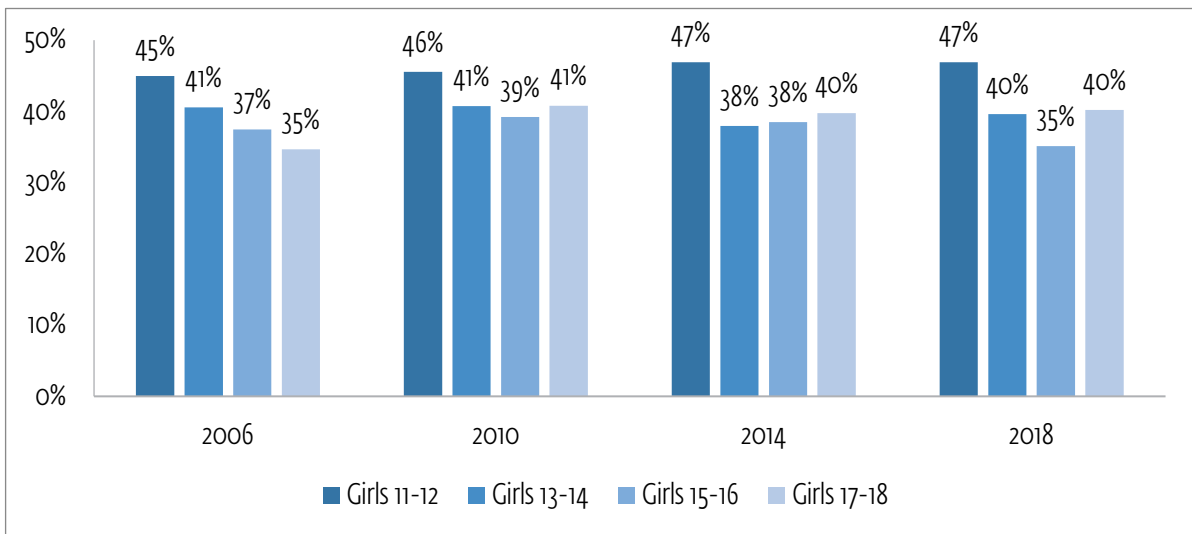


Figure 143: Adolescents who eat sweets daily, boys by age

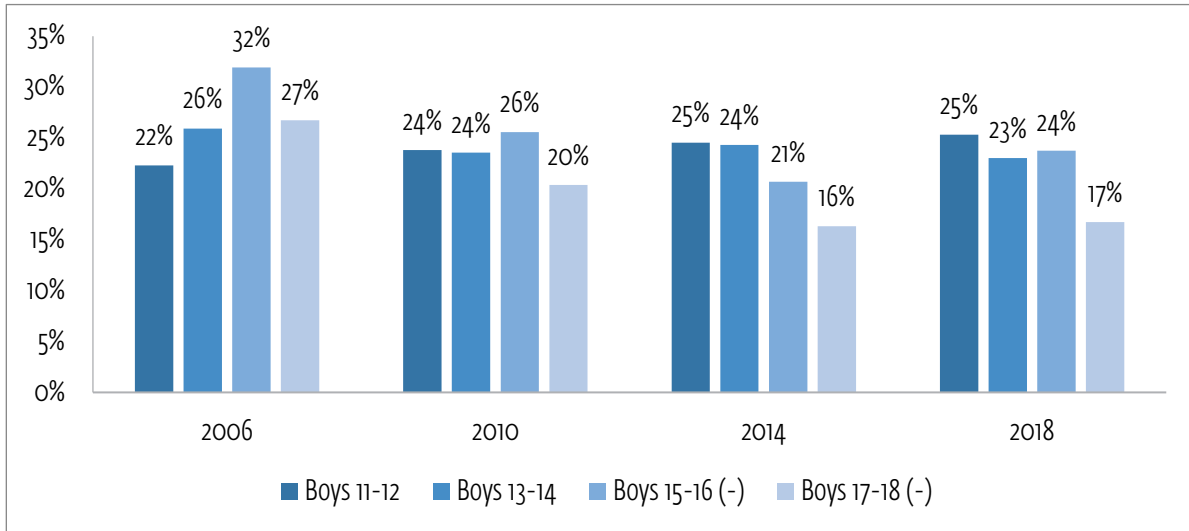
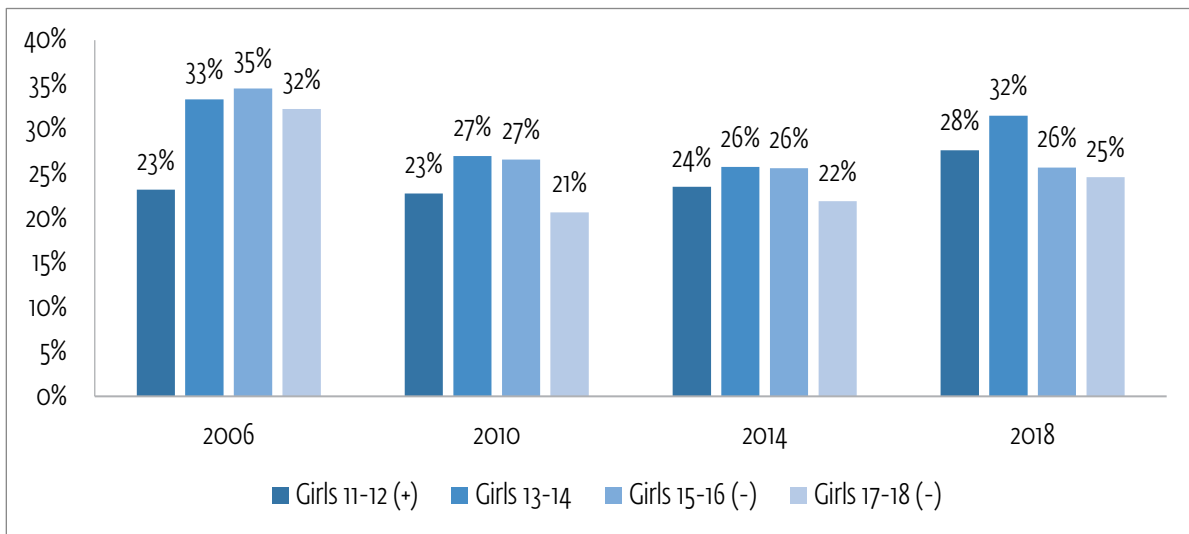
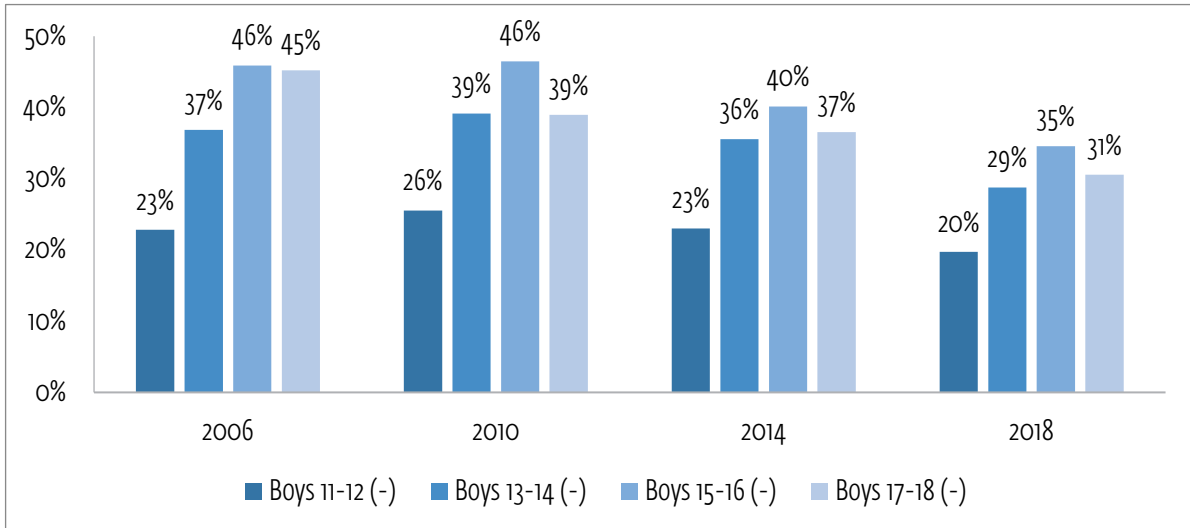


Figure 144: Adolescents who eat sweets daily, girls by age



**Figure 145: Adolescents who consume soft drinks daily, boys by age**



**Figure 146: Adolescents who consume soft drinks daily, girls by age**

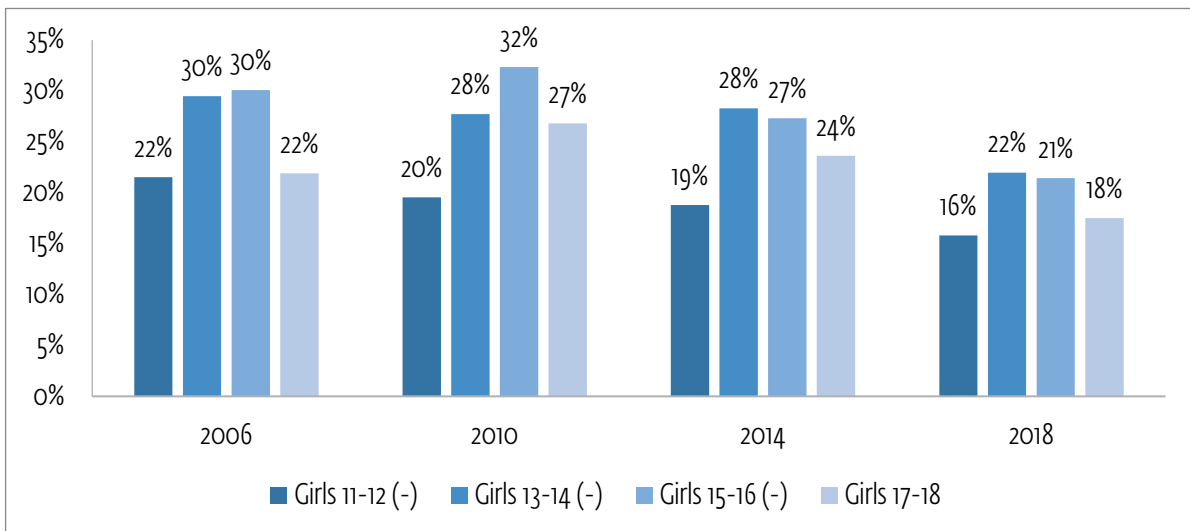


Figure 147: Adolescents who brush their teeth twice a day, boys by age

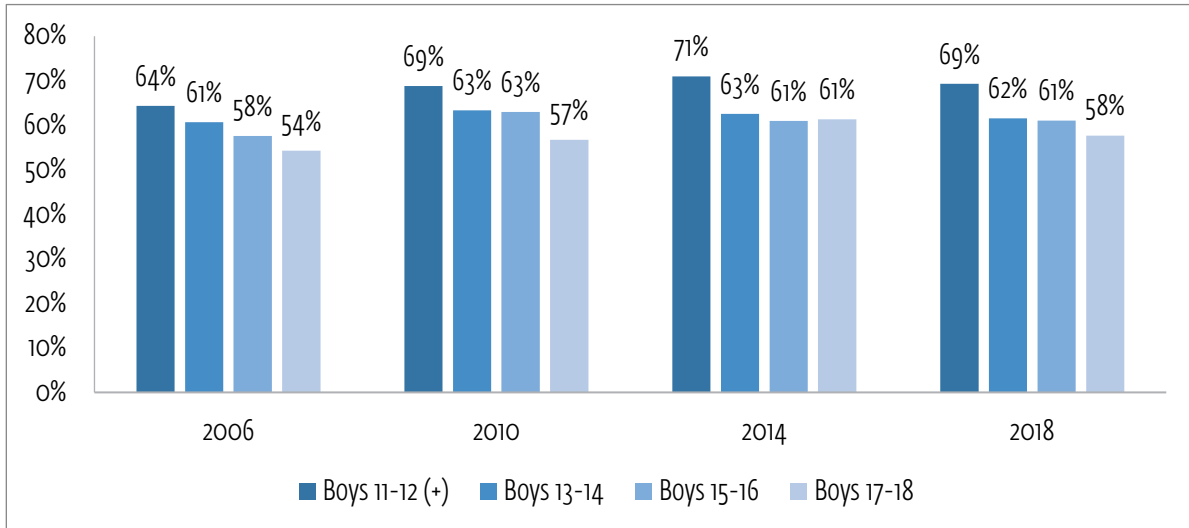


Figure 148: Adolescents who brush their teeth twice a day, girls by age

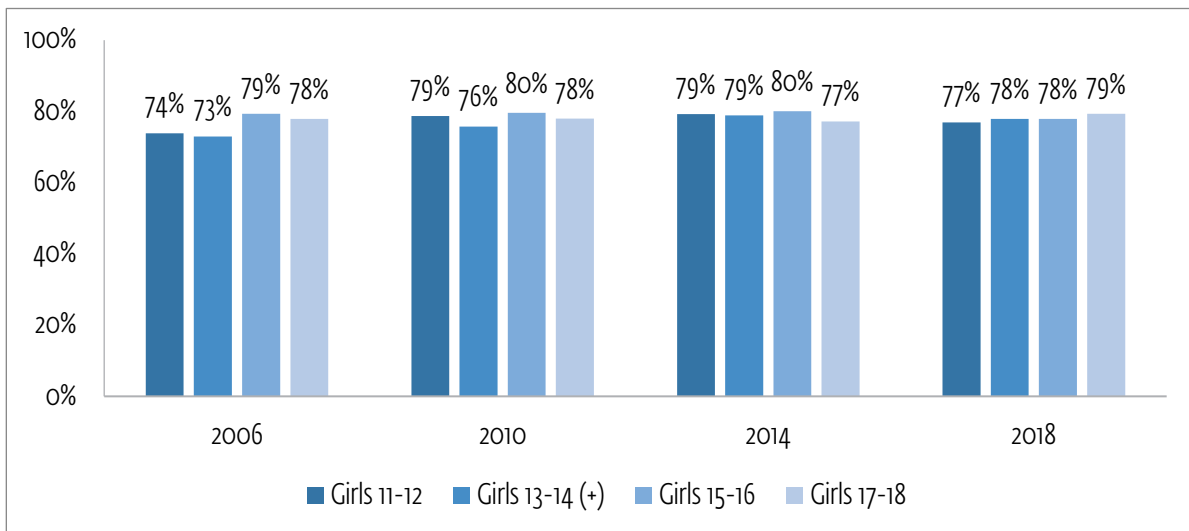


Figure 149: Adolescents who were not involved in a fight (12 months), boys by age

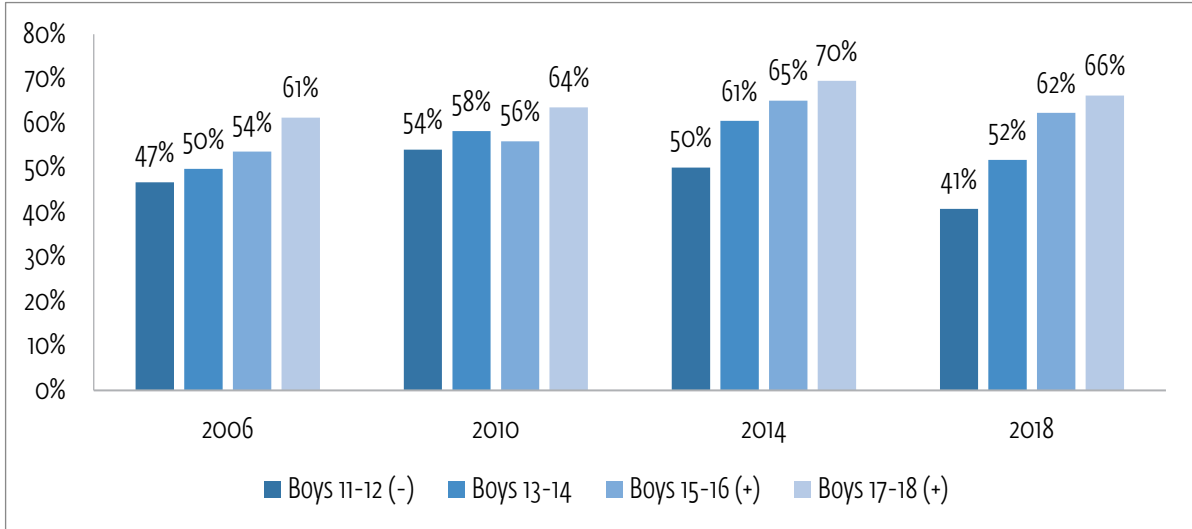


Figure 150: Adolescents who were not involved in a fight (12 months), girls by age

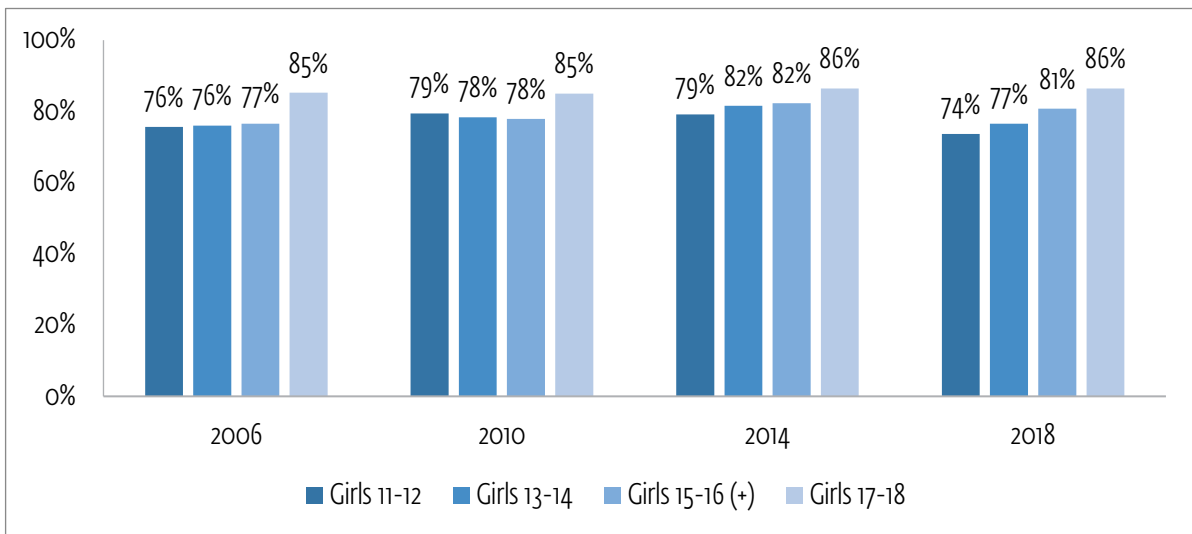




Figure 151: Adolescents who were never drunk in their lifetime, boys by age

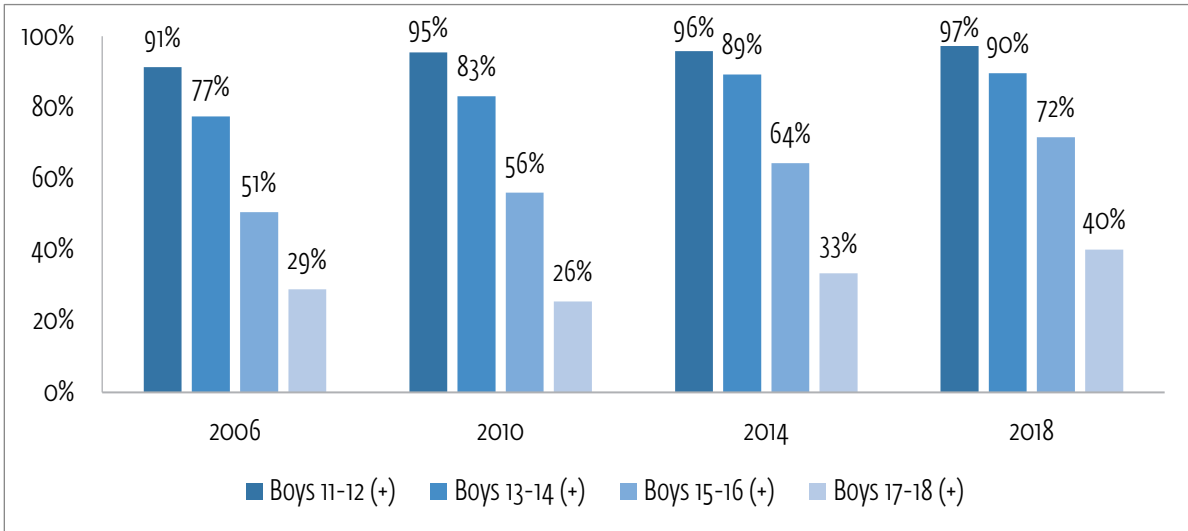


Figure 152: Adolescents who were never drunk in their lifetime, girls by age

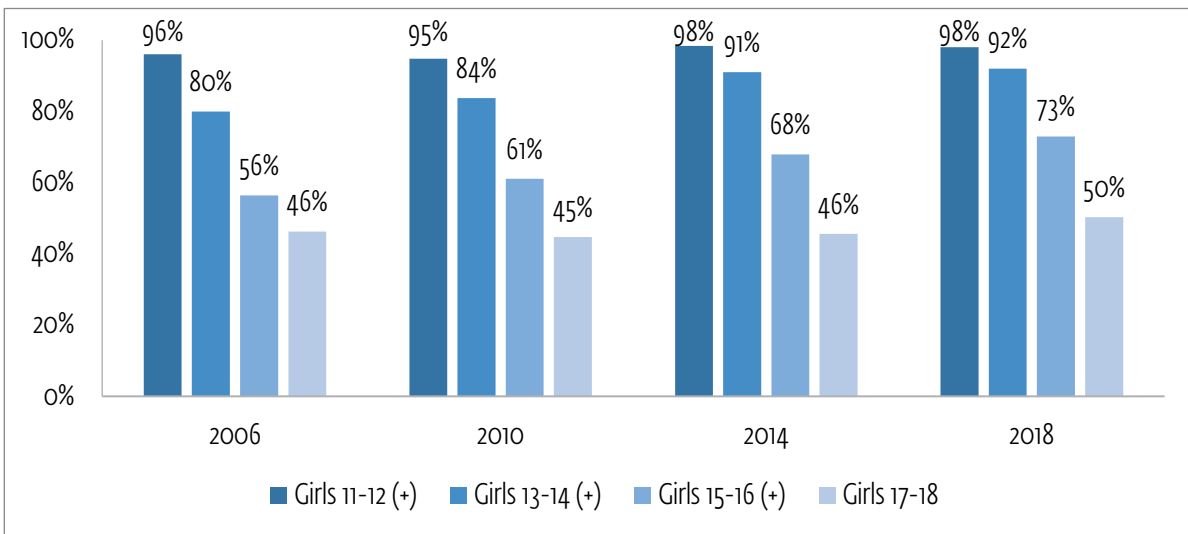


Figure 153: Adolescents who drank alcohol in past 30 days, boys by age

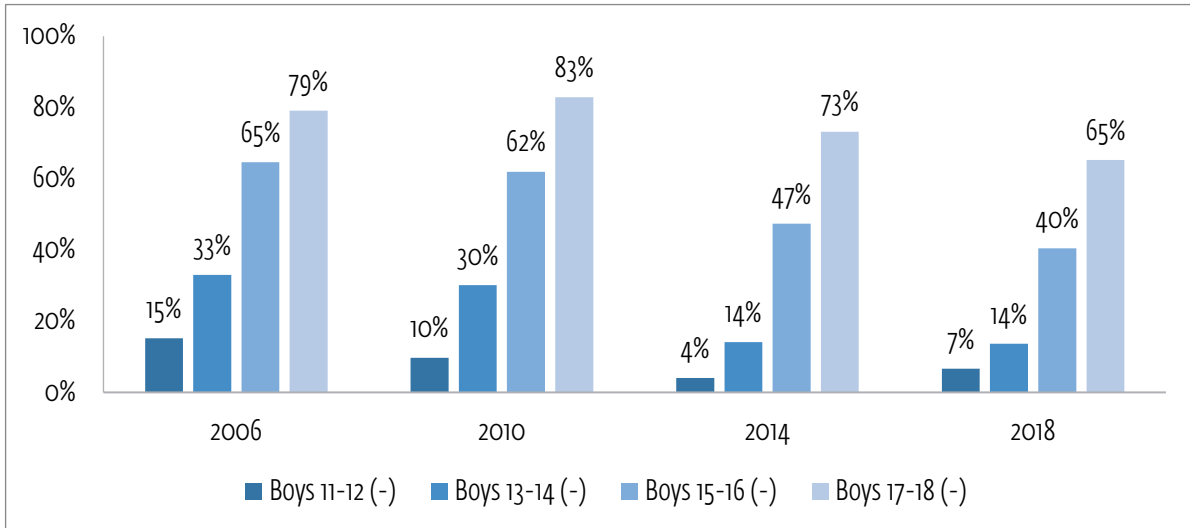


Figure 154: Adolescents who drank alcohol in past 30 days, girls by age

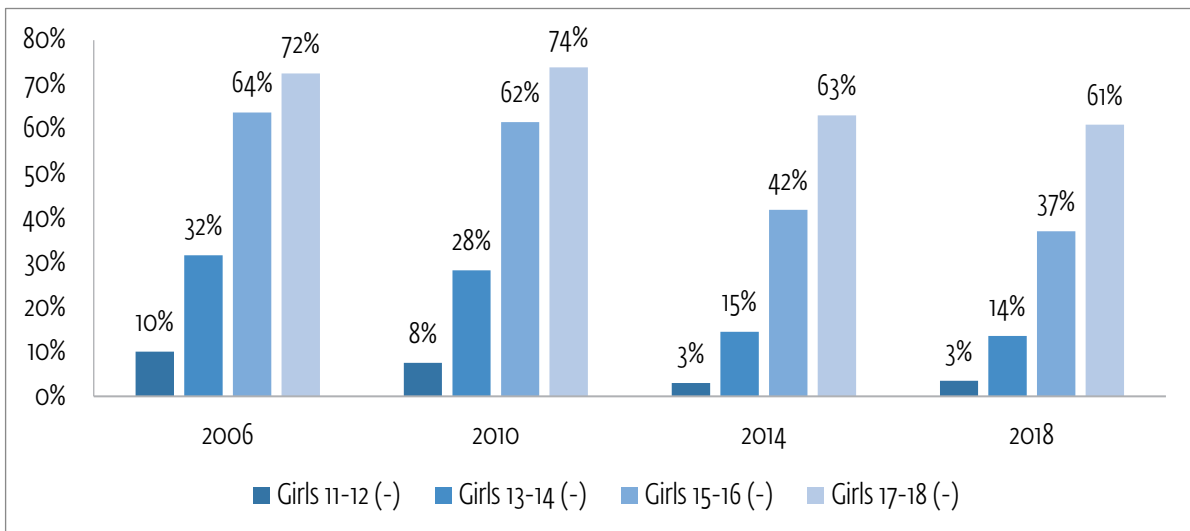


Figure 155: Adolescents who never smoked in lifetime, boys by age

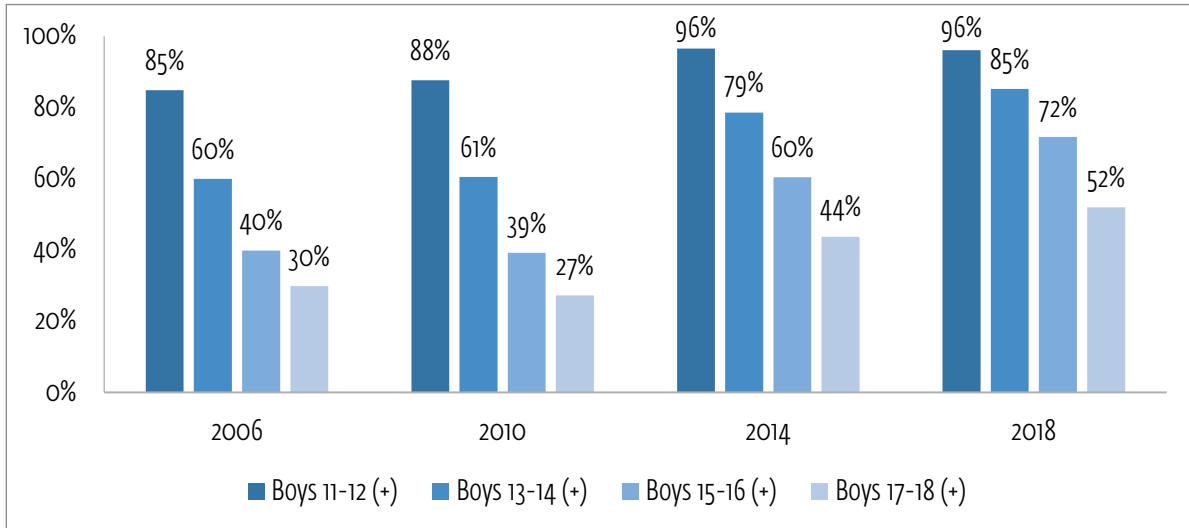
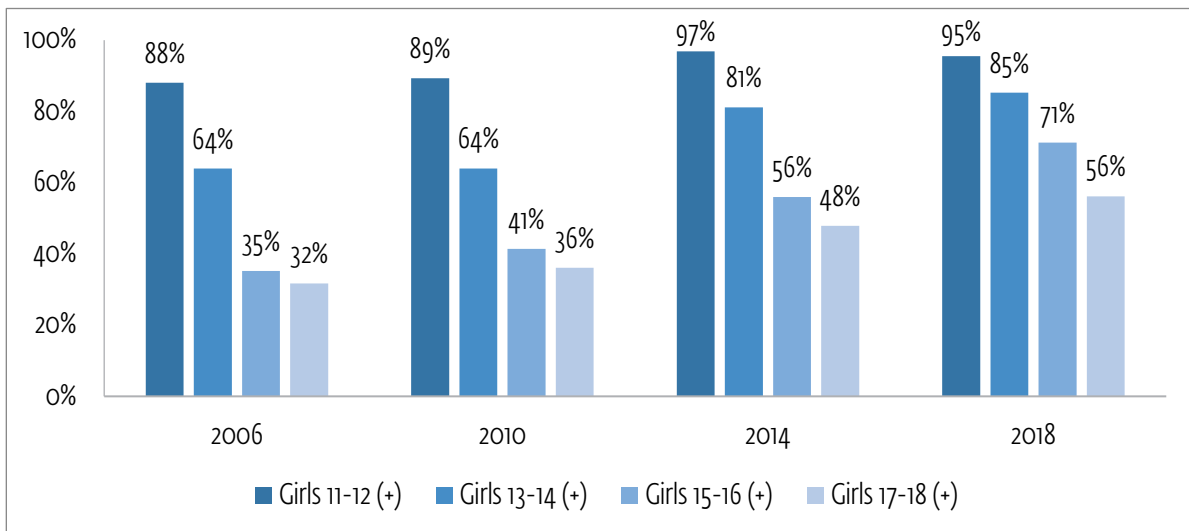
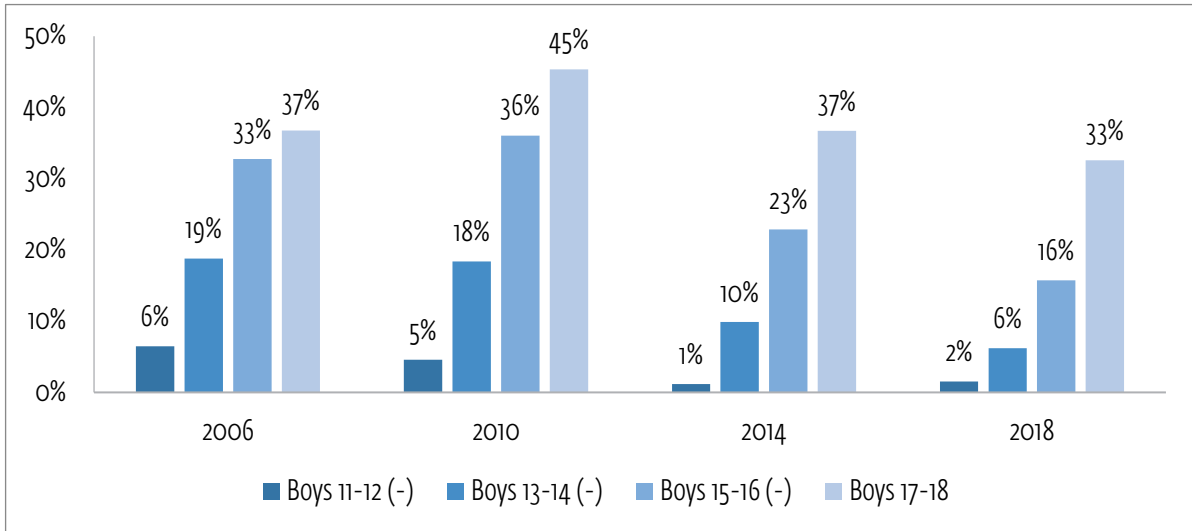


Figure 156: Adolescents who never smoked in lifetime, girls by age



**Figure 157: Adolescents who used tobacco in past 30 days, boys by age**



**Figure 158: Adolescents who used tobacco in past 30 days, girls by age**

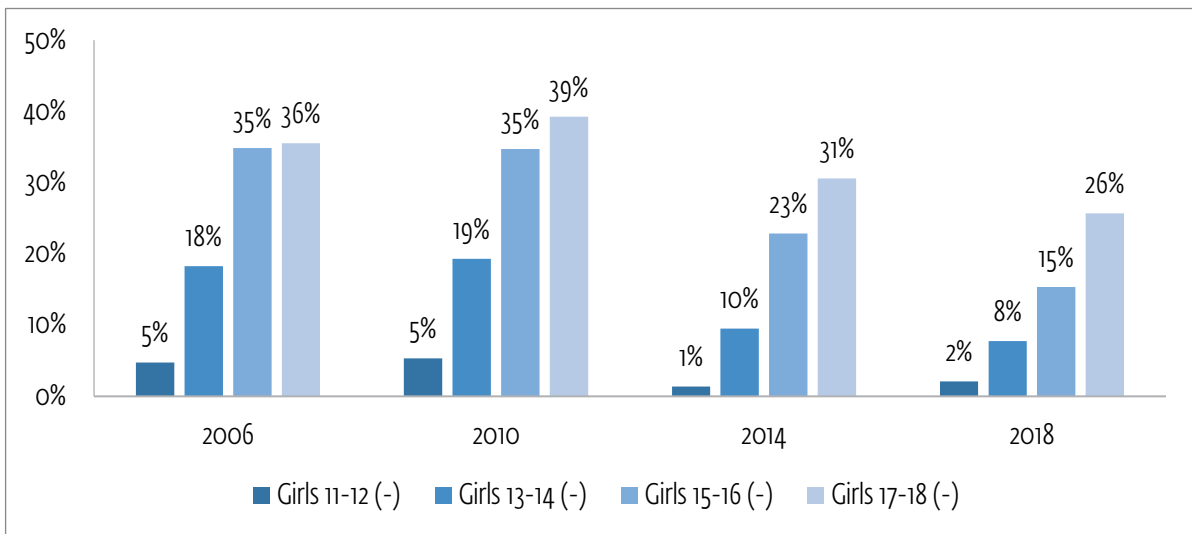


Figure 159: Adolescents who never used cannabis in lifetime, boys by age

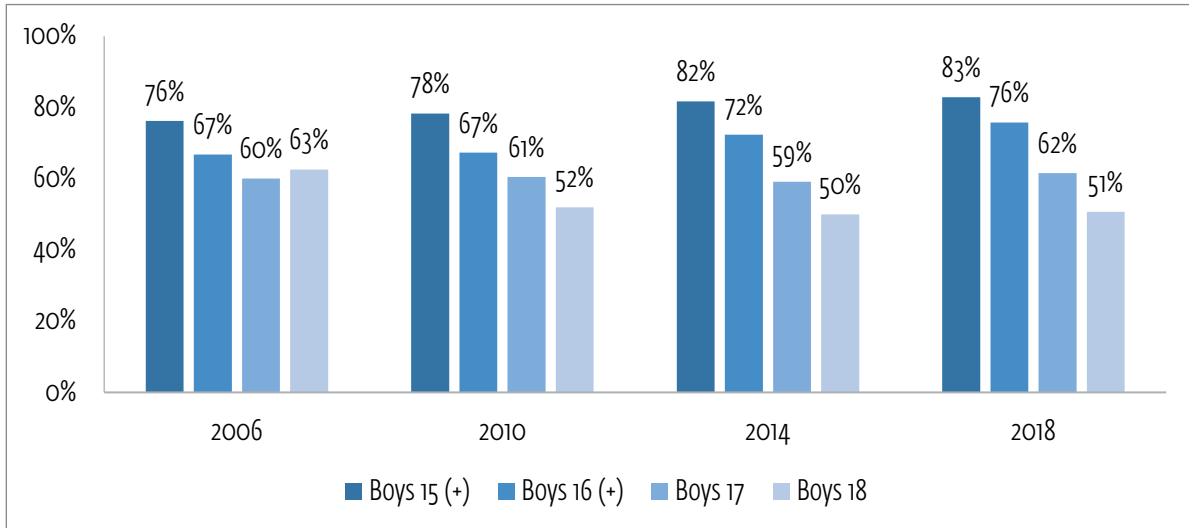
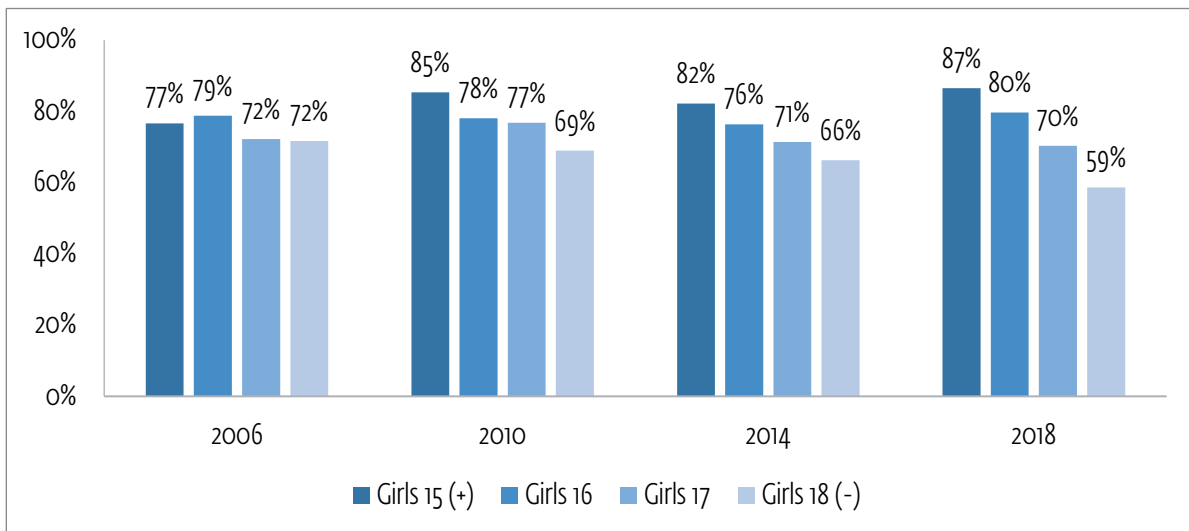
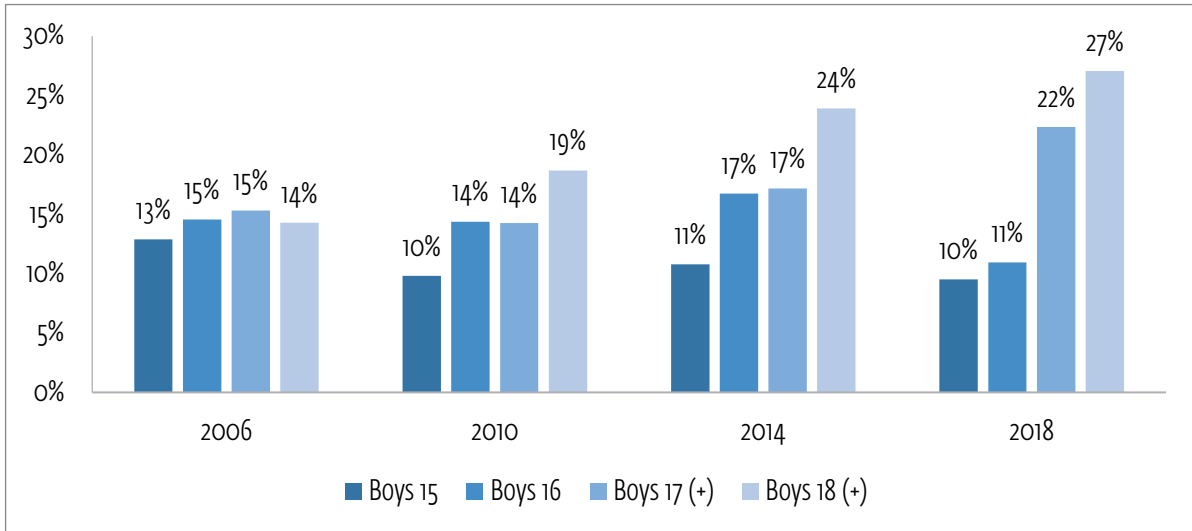


Figure 160: Adolescents who never used cannabis in lifetime, girls by age



**Figure 161: Adolescents who used cannabis in past 30 days, boys by age**



**Figure 162: Adolescents who used cannabis in past 30 days, girls by age**

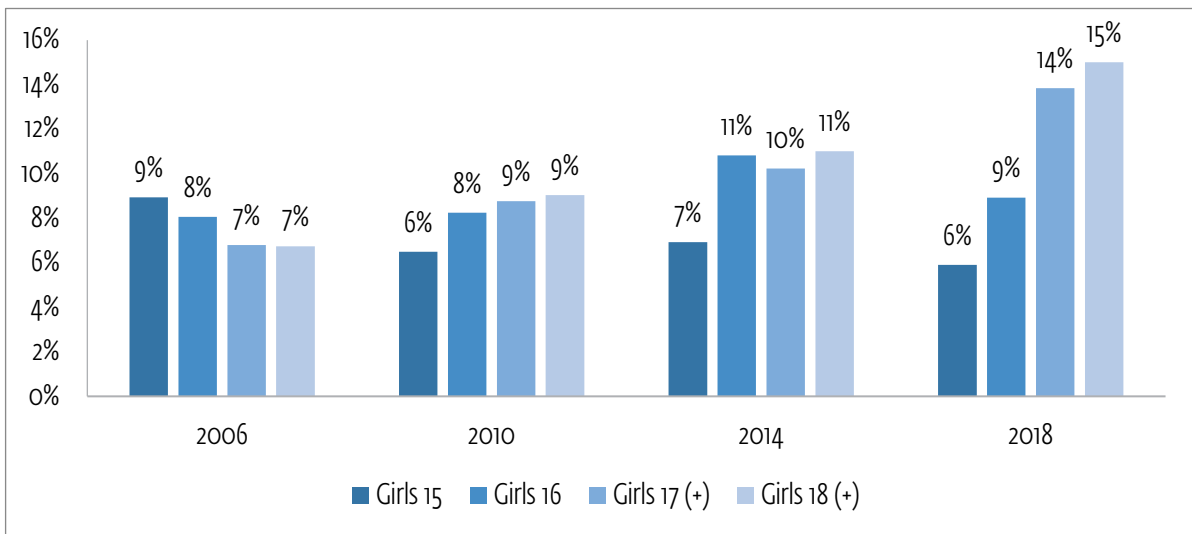


Figure 163: Adolescents who have had sex, boys by age

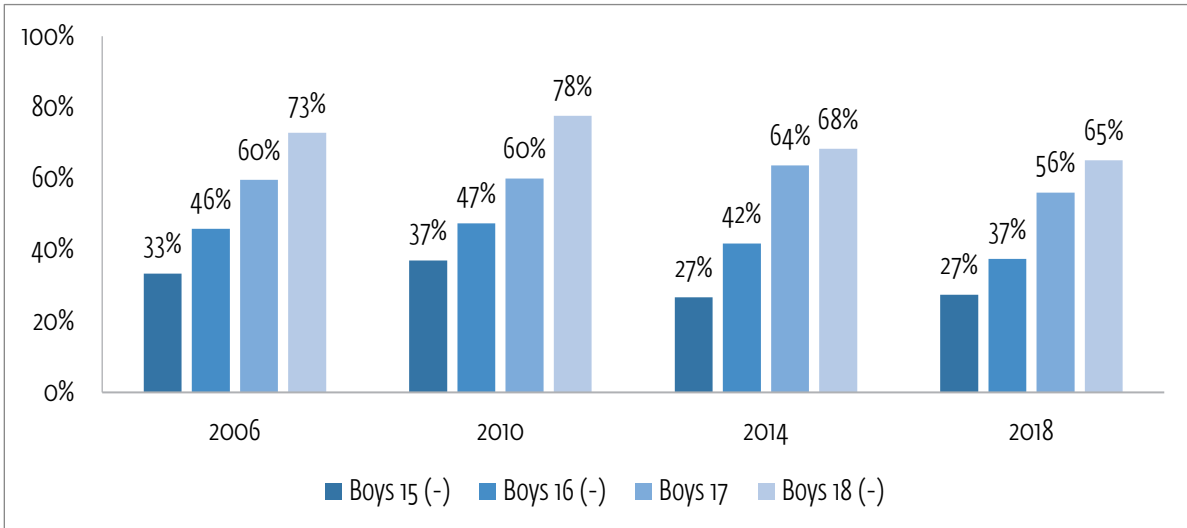
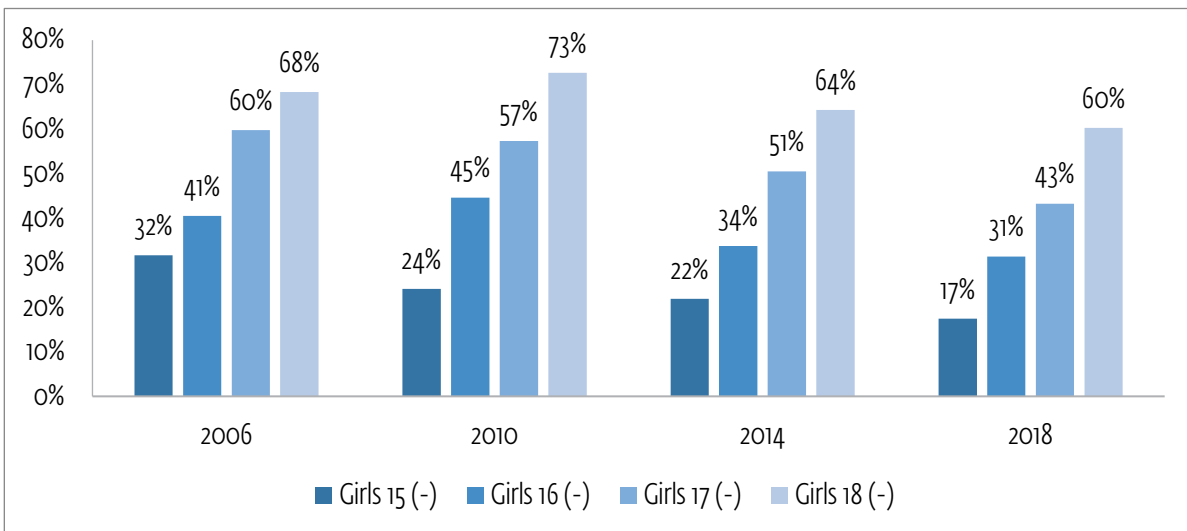
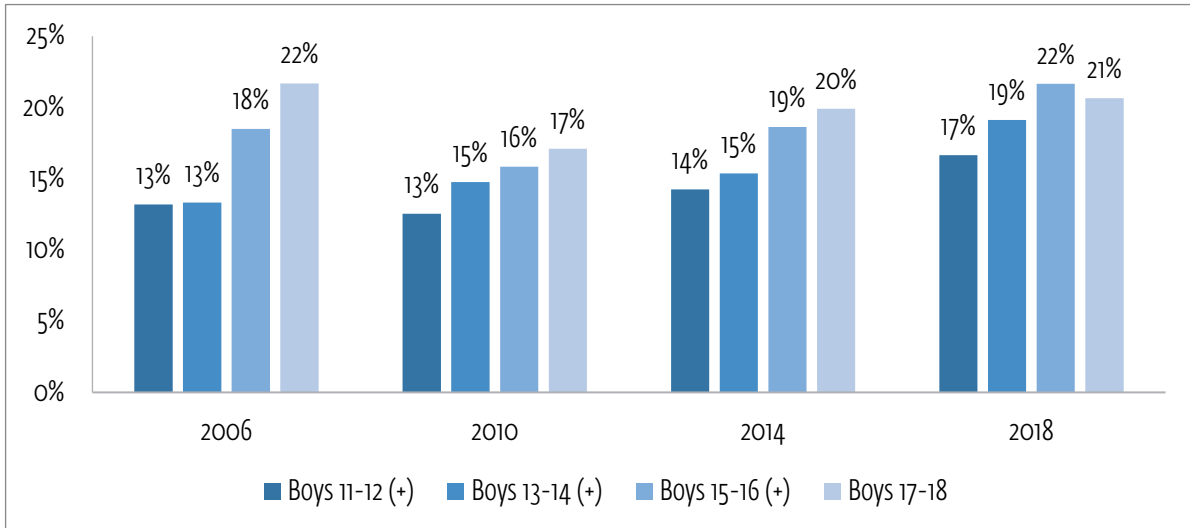


Figure 164: Adolescents who have had sex, girls by age



**Figure 165: Adolescents who consider themselves too thin, boys by age**



**Figure 166: Adolescents who consider themselves too thin, girls by age**

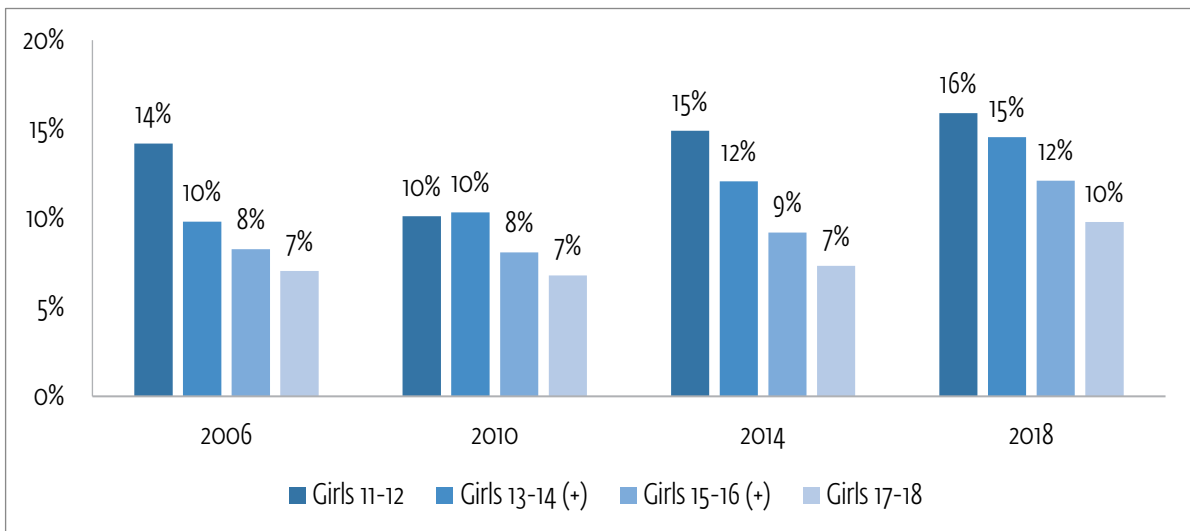




Figure 167: Adolescents who consider themselves too fat, boys by age

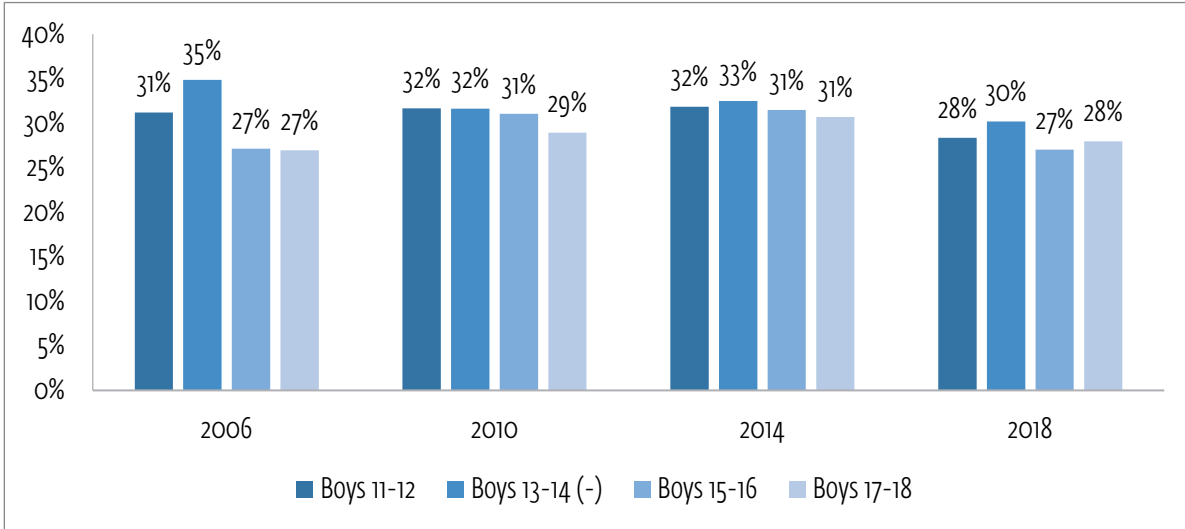
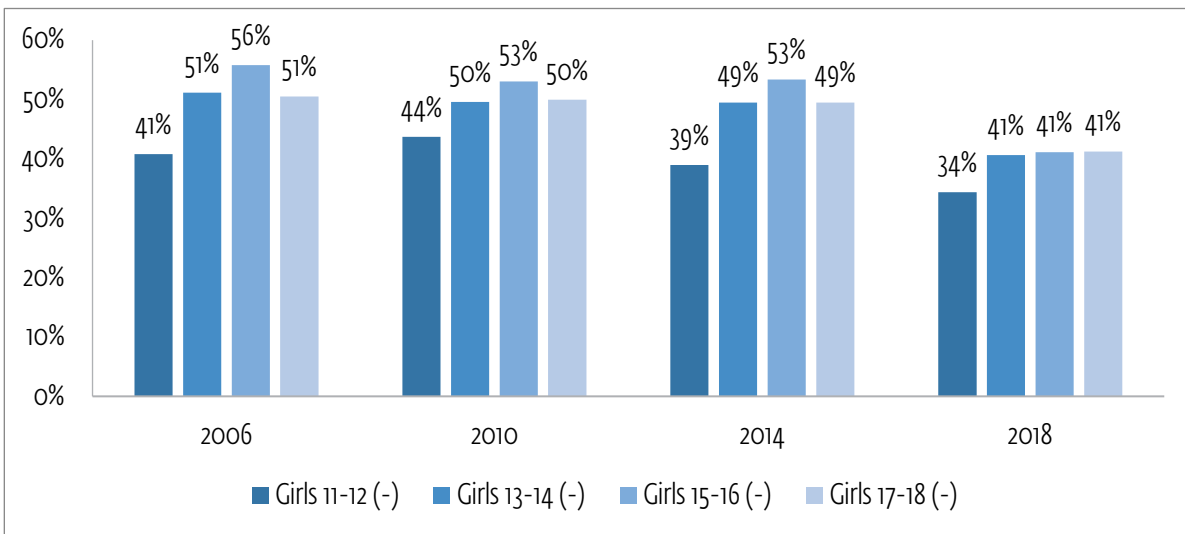
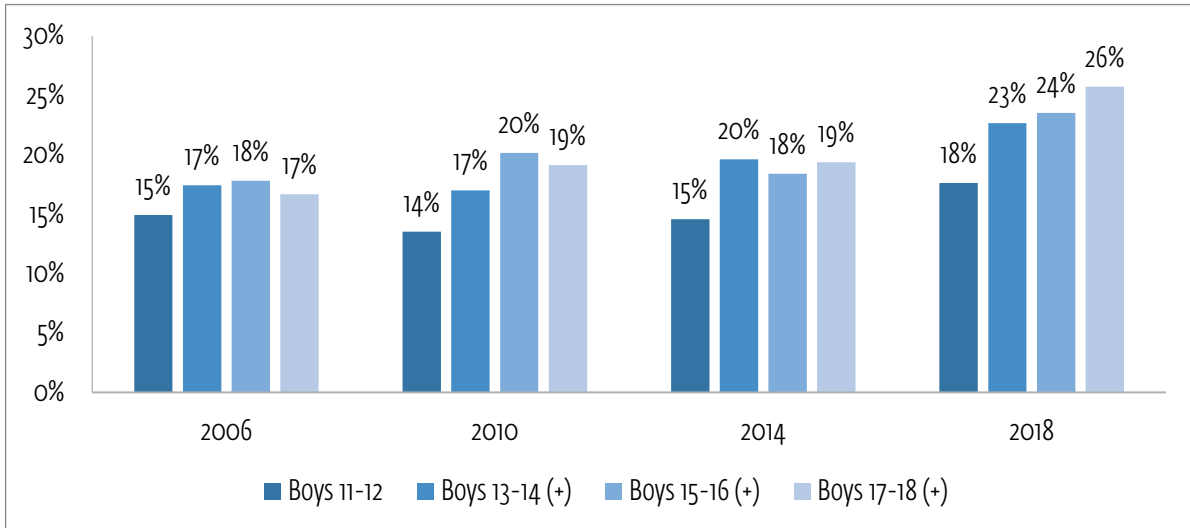


Figure 168: Adolescents who consider themselves too fat, girls by age



**Figure 169: Adolescents who are overweight, boys by age**



**Figure 170: Adolescents who are overweight, girls by age**

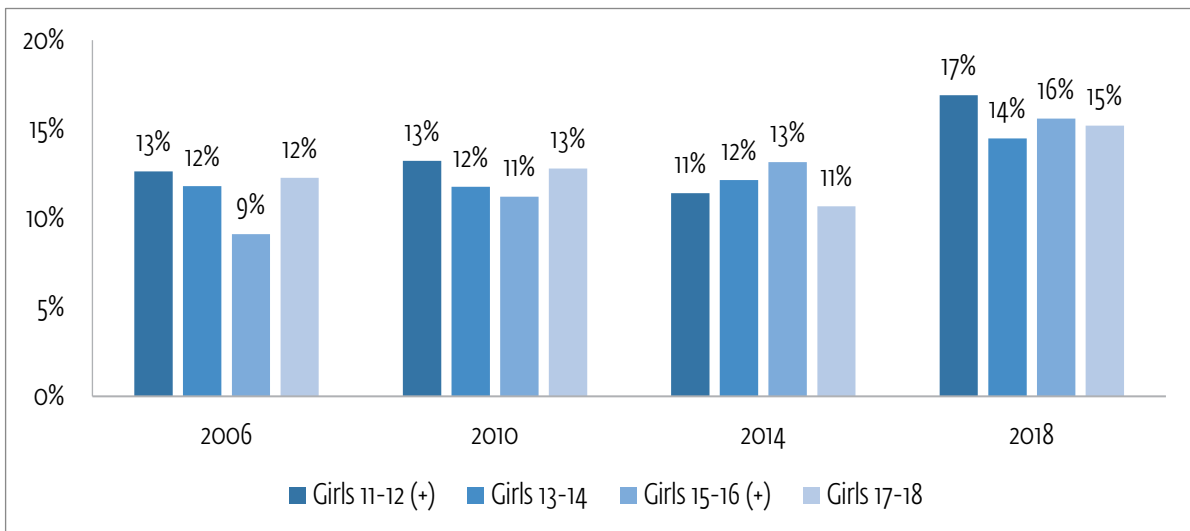


Figure 171: Adolescents who are underweight, boys by age

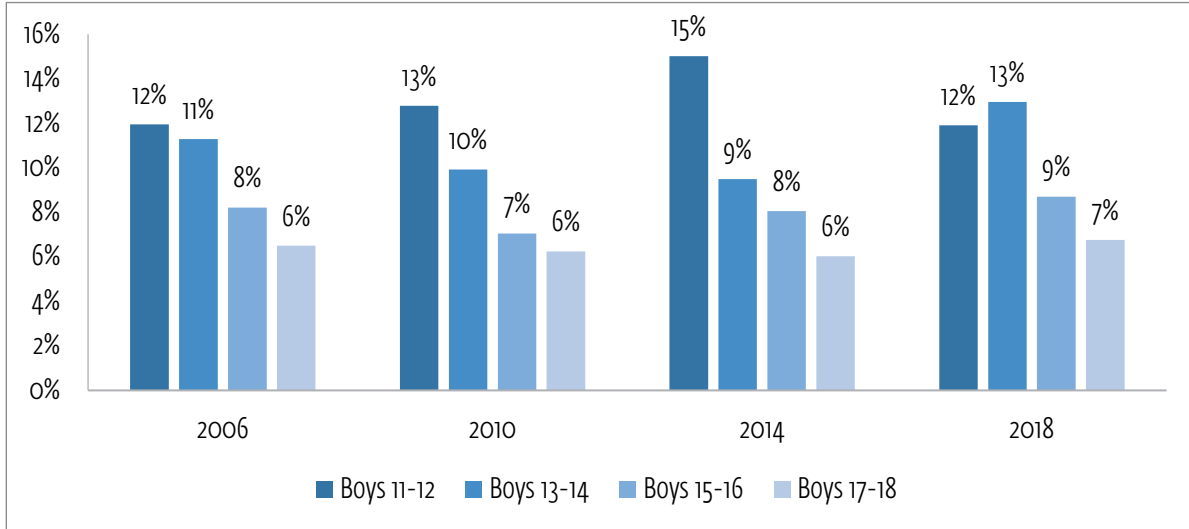


Figure 172: Adolescents who are underweight, girls by age

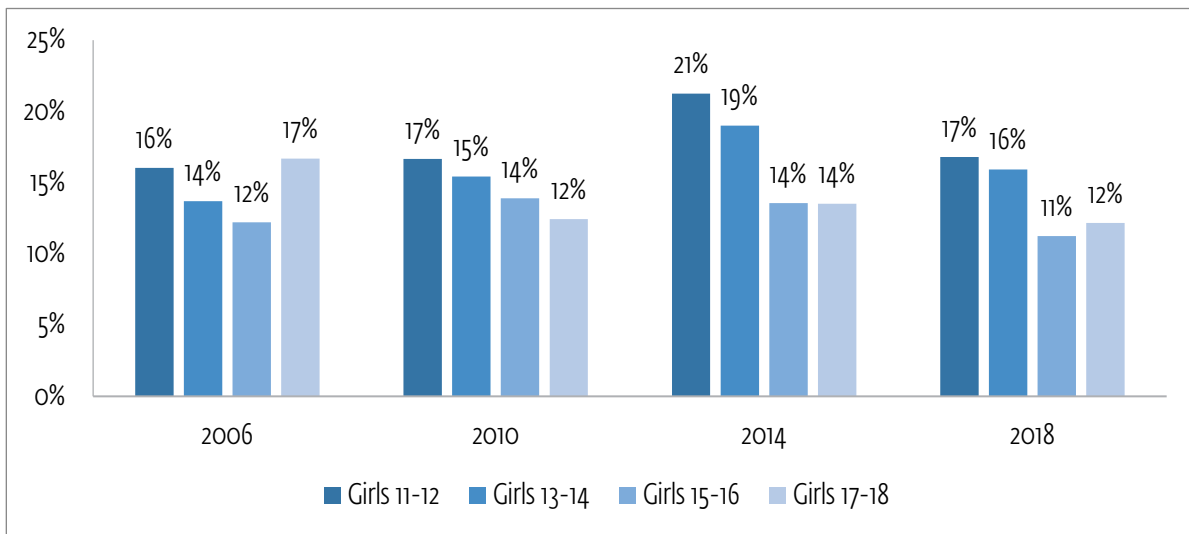


Figure 173: Adolescents who report at least one injury, boys by age

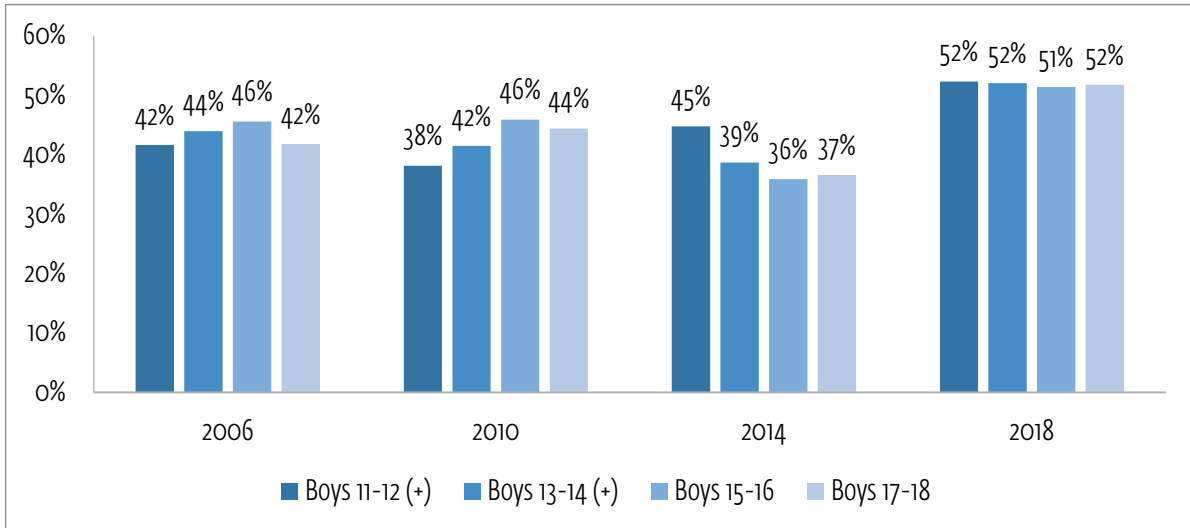


Figure 174: Adolescents who report at least one injury, girls by age

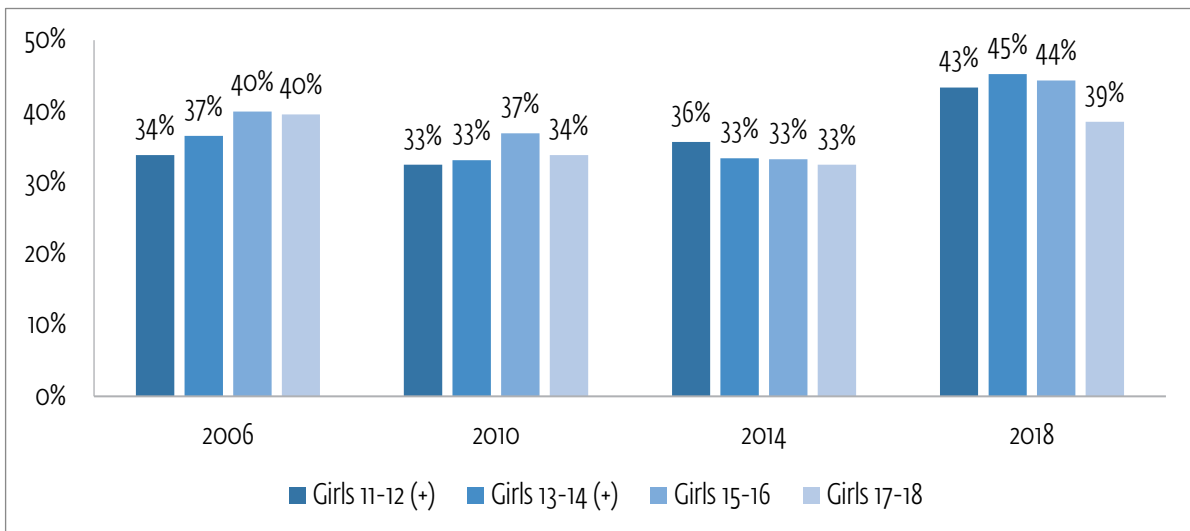


Figure 175: Adolescents who report multiple health complaints, boys by age

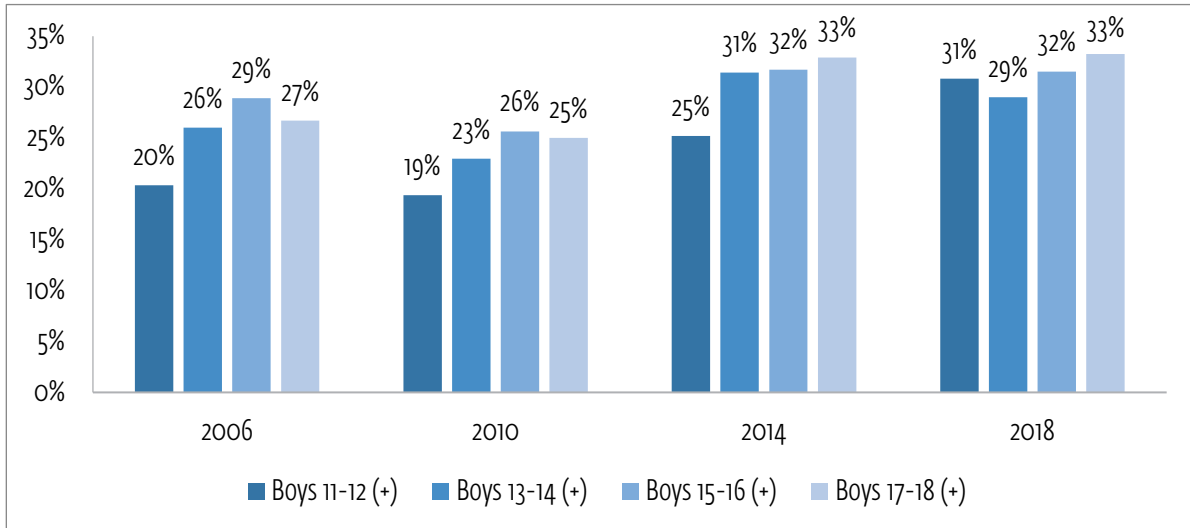
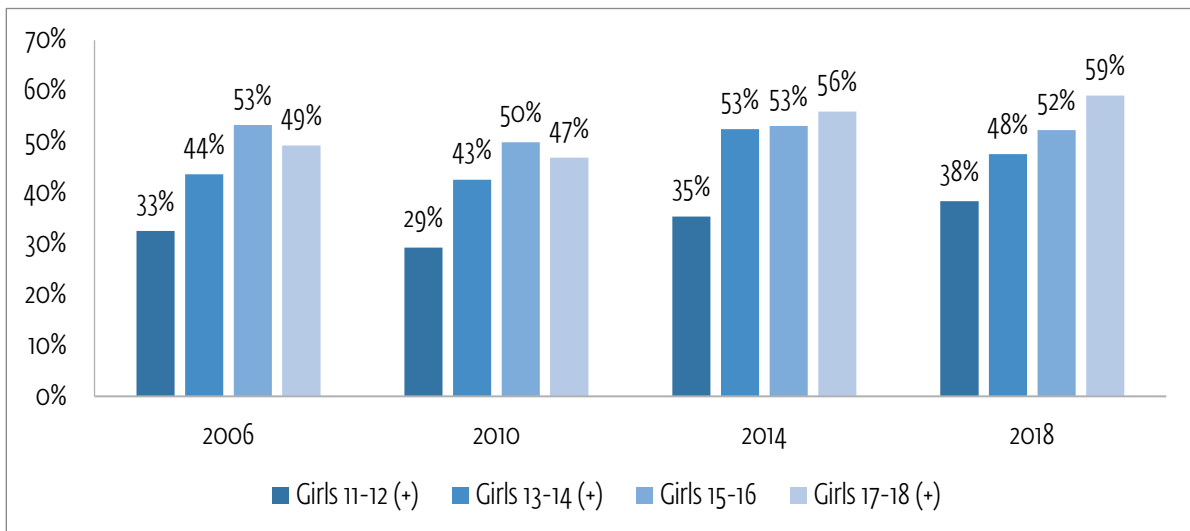
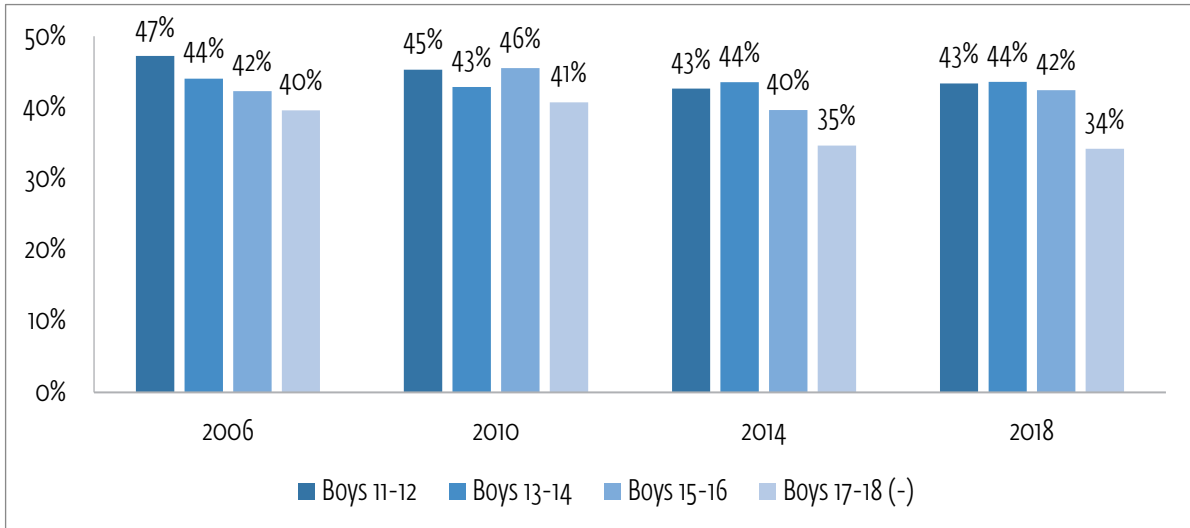


Figure 176: Adolescents who report multiple health complaints, girls by age



**Figure 177: Adolescents who report excellent health, boys by age**



**Figure 178: Adolescents who report excellent health, girls by age**

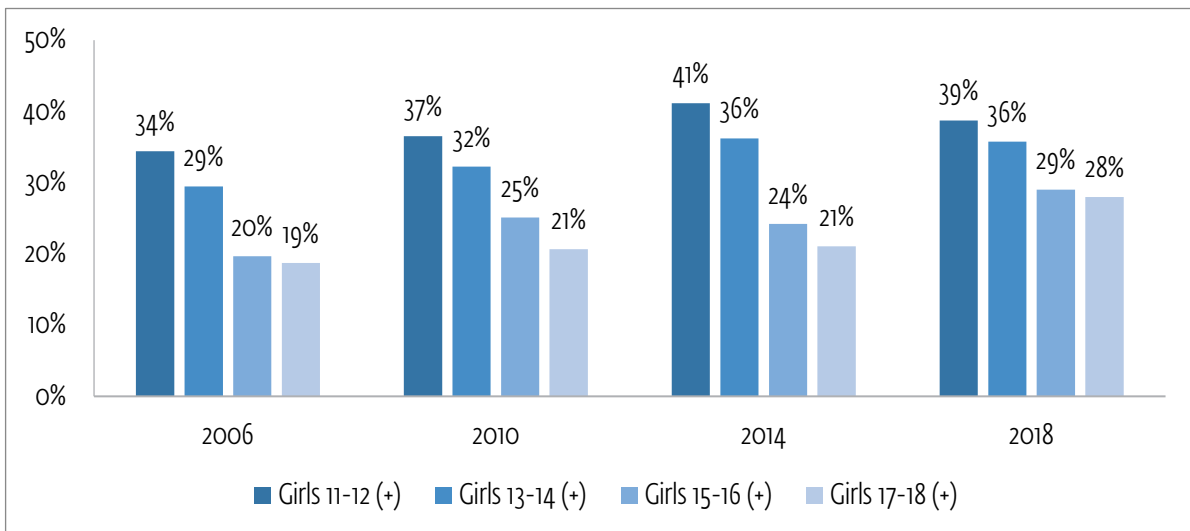


Figure 179: Adolescents who report high life satisfaction, boys by age

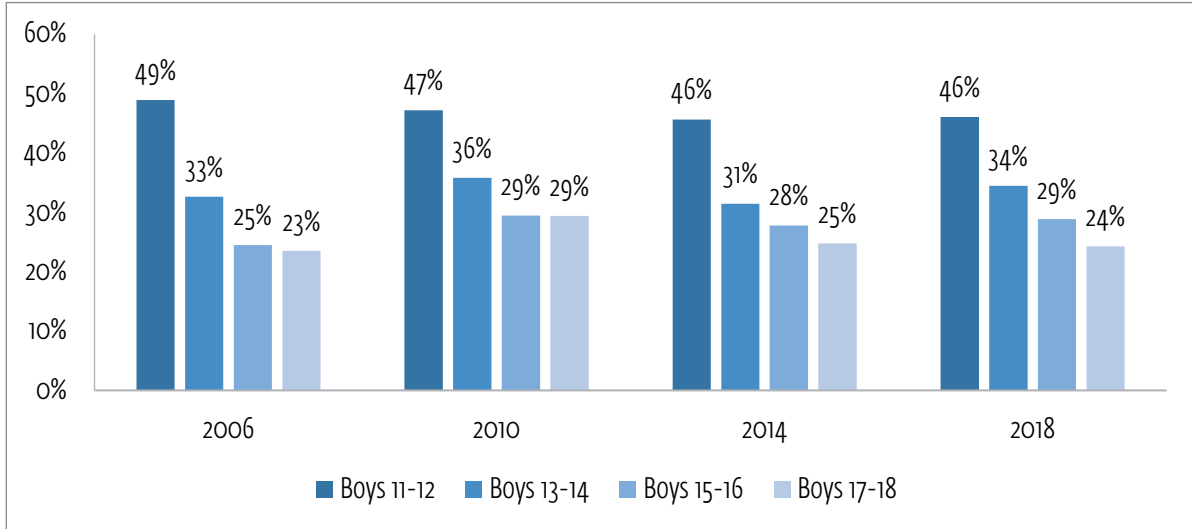
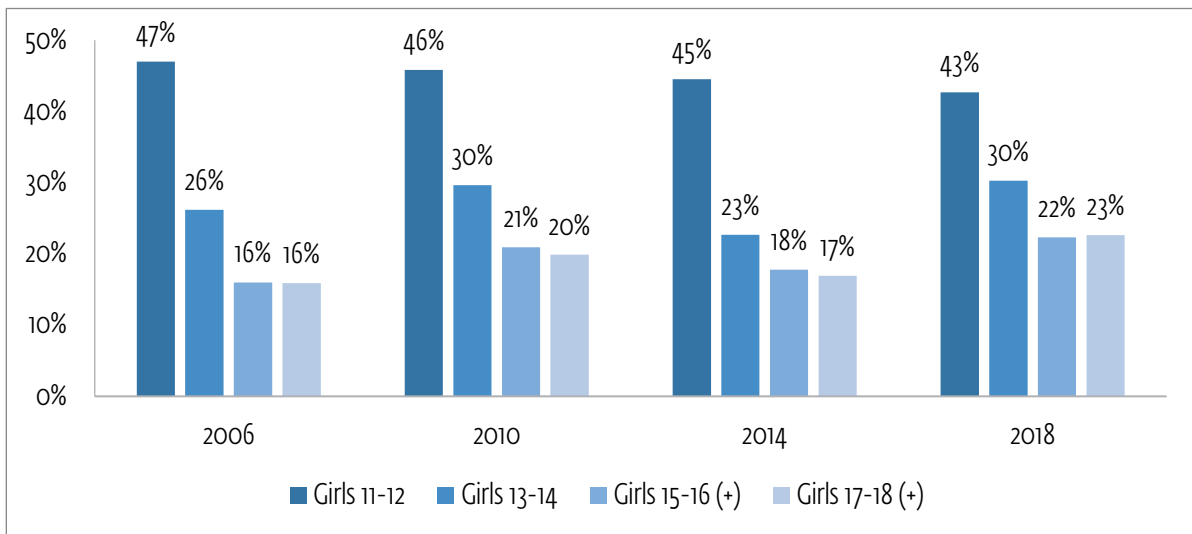


Figure 180: Adolescents who report high life satisfaction, girls by age







## REFERENCES

- [1] Keane E, Gavin A, Perry C, Molcho M, Kelly C, Nic Gabhainn S. Trends in health behaviours, health outcomes and contextual factors between 1998-2014: Findings from the Irish Health Behaviour in School-aged Children study. Dublin: Department of Health and National University of Ireland Galway; 2017.
- [2] World Health Organization. Adolescents: health risks and solutions. [January 28, 2020]; Available from: <https://www.who.int/en/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions>.
- [3] Due P, Krølner R, Rasmussen M, Andersen A, Trab Damsgaard M, Graham H et al. Pathways and mechanisms in adolescence contribute to adult health inequalities. *Scand J Public Health* 2011;39(6 Suppl):62-78. <https://doi.org/10.1177/1403494810395989>.
- [4] Viner RM, Hargreaves DS, Motta JVDS, Horta B, Mokdad AH, Patton G. Adolescence and Later Life Disease Burden: Quantifying the Contribution of Adolescent Tobacco Initiation From Longitudinal Cohorts. *J Adolesc Health* 2017;61(2):171-8. <https://doi.org/10.1016/j.jadohealth.2017.02.011>.
- [5] World Health Organization. Health for the world's adolescents: a second chance in the second decade: summary. Geneva, Switzerland; 2014.
- [6] Fehlen F, Heinz A. Die Luxemburger Mehrsprachigkeit: Ergebnisse einer Volkszählung. 1st ed. Bielefeld: transcript; 2016.
- [7] Inchley J, Currie D, Young T (eds.). Growing up unequal: Gender and socioeconomic differences in young people's health and well-being ; Health Behaviour in School-Aged Children (HBSC) Study: international report from the 2013/2014 survey. Copenhagen: World Health Organization, Regional Office for Europe; 2016.
- [8] Lenz T, Heinz A. Das luxemburgische Schulsystem: Einblicke und Trends. In: Nationaler Bildungsbericht Luxemburg 2018. Esch-sur-Alzette: Université du Luxembourg; 2018, p. 23-34.
- [9] Cole TJ, Lobstein T. Extended international (IOTF) body mass index cut-offs for thinness, overweight and obesity. *Pediatr Obes* 2012;7(4):284-94. <https://doi.org/10.1111/j.2047-6310.2012.00064.x>.
- [10] Cantril H. The pattern of human concerns. New Brunswick N.J.: Rutgers University Press; 1965.
- [11] Heinz A, van Duin C, Catunda C, Kern MR, Residori C, Willems H. Gesundheit und Wohlbefinden von Kindern und Jugendlichen in Luxemburg: Bericht zur HBSC-Befragung luxemburgischer Schülerinnen und Schüler im Jahr 2014. Luxembourg: Université du Luxembourg; 2018.
- [12] Degenhardt L, Charlson F, Ferrari A, Santomauro D, Erskine H, Mantilla-Herrera A et al. The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990-2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Psychiatry* 2018;5(12):987-1012. [https://doi.org/10.1016/S2215-0366\(18\)30337-7](https://doi.org/10.1016/S2215-0366(18)30337-7).
- [13] Forouzanfar MH, Afshin A, Alexander LT, Anderson HR, Bhutta ZA, Biryukov S et al. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2015: A systematic analysis for the Global Burden of Disease Study 2015. *The Lancet* 2016;388(10053):1659-724. [https://doi.org/10.1016/S0140-6736\(16\)31679-8](https://doi.org/10.1016/S0140-6736(16)31679-8).
- [14] Reitsma MB, Fullman N, Ng M, Salama JS, Abajobir A, Abate KH et al. Smoking prevalence and attributable disease burden in 195 countries and territories, 1990-2015: A systematic analysis from the Global Burden of Disease Study 2015. *The Lancet* 2017;389(10082):1885-906. [https://doi.org/10.1016/S0140-6736\(17\)30819-X](https://doi.org/10.1016/S0140-6736(17)30819-X).

- [15] Inchley J (ed.). Adolescent alcohol-related behaviours: Trends and inequalities in the WHO European Region, 2002-2014. Copenhagen: World Health Organization, Regional Office for Europe; 2018.
- [16] ESPAD Group. ESPAD report 2015: Results from the European school survey project on alcohol and other drugs. Luxembourg: Publications Office of the European Union; 2016.
- [17] Wicki M, Labhart F, Gmel G. Erklärungsansätze für die Abnahme des Alkoholkonsums bei Jugendlichen mit einer Betrachtung der Situation in der Schweiz. Lausanne; 2019.
- [18] Biewers Grimm S, Residori C, Joachim P, Décieux JP, Willems H. Lokale Netzwerkbildung als strategisches Konzept in der Prävention: Evaluation einer Sensibilisierungskampagne zum Alkoholkonsum im Jugendalter. Wiesbaden: Springer; 2013.
- [19] Hallingberg B, Flechter A, Murphy S, Morgan K, Littlecott HJ, Roberts C et al. Do stronger school smoking policies make a difference?: Analysis of the Health Behaviour in School-aged Children survey. *Eur J Public Health* 2016;26(6):964–8. <https://doi.org/10.1093/eurpub/ckw093>.
- [20] Leal-López E, Sánchez-Queija I, Moreno C. Trends in tobacco use among adolescents in Spain (2002-2018). *adiciones* 2019;31(4):289–97.
- [21] Hoch E, Bonnetn U, Thomasius R, Ganzer F, Havemann-Reinecke U, Preuss UW. Risks associated with the non-medicinal use of cannabis. *Dtsch Arztebl Int* 2015;112(16):271–8. <https://doi.org/10.3238/arztebl.2015.0271>.
- [22] Silins E, Horwood LJ, Patton GC, Fergusson DM, Olsson CA, Hutchinson DM et al. Young adult sequelae of adolescent cannabis use: An integrative analysis. *The Lancet Psychiatry* 2014;1(4):286–93. [https://doi.org/10.1016/S2215-0366\(14\)70307-4](https://doi.org/10.1016/S2215-0366(14)70307-4).
- [23] Stevens GWJM, van Dorsselaer S, Boer M, Roos Sd, Duinhof E, Bogt TT et al. HBSC 2017: Gezondheid en welzijn van jongeren in Nederland. Utrecht: Universiteit Utrecht; 2018.
- [24] UNESCO. Behind the numbers: ending school violence and bullying. Paris; 2019.
- [25] Zaborskis A, Ilionsky G, Tesler R, Heinz A. The Association Between Cyberbullying, School Bullying, and Suicidality Among Adolescents. *Crisis* 2019;40(2):100–14. <https://doi.org/10.1027/0227-5910/a000536>.
- [26] Inchley J (ed.). Adolescent obesity and related behaviours: Trends and inequalities in the WHO European region, 2002-2014: Observations from the Health Behavior in School-aged Children (HBSC) WHO collaborative cross-national study. Copenhagen: World Health Organization, Regional Office for Europe; 2017.
- [27] Moreno C, Ramos P, Rivera F, Sánchez-Queija I, Jiménez-Iglesias A, García-Moya I et al. Informe comparativo de las ediciones 2002-2006-2010-2014-2018 del Estudio HBSC en España; 2019.
- [28] Afshin A, Forouzanfar MH, Reitsma MB, Sur P, Estep K, Lee A et al. Health Effects of Overweight and Obesity in 195 Countries over 25 Years. *N Engl J Med* 2017;377(1):13–27. <https://doi.org/10.1056/NEJMoa1614362>.
- [29] Simmonds M, Llewellyn A, Owen CG, Woolacott N. Predicting adult obesity from childhood obesity: A systematic review and meta-analysis. *Obes Rev* 2016;17(2):95–107. <https://doi.org/10.1111/obr.12334>.
- [30] World Health Organization. Report of the Commission on Ending Childhood Obesity. Geneva, Switzerland: World Health Organization; 2016.
- [31] Le Gouvernement du Grand-Duché de Luxembourg. Gesund iessen, Méi bewegen: Plan cadre national 2018-2025. Luxembourg; 2018.
- [32] Robinson E, Kersbergen I. Overweight or about right? A norm comparison explanation of perceived weight status. *Obes Sci Pract* 2017;3(1):36–43. <https://doi.org/10.1002/osp4.89>.
- [33] Robinson E. Overweight but unseen: A review of the underestimation of weight status and a visual normalization theory. *Obes Rev* 2017;18(10):1200–9. <https://doi.org/10.1111/obr.12570>.

- [34] Wedow R, Masters RK, Mollborn S, Schnabel L, Boardman JD. Body size reference norms and subjective weight status: A gender and life course approach. *Soc Forces* 2018;96(3):1377–409. <https://doi.org/10.1093/sf/sox073>.
- [35] Haugland S, Wold B. Subjective health complaints in adolescence - reliability and validity of survey methods. *J Adolesc* 2001;24(5):611–24. <https://doi.org/10.1006/jado.2000.0393>.
- [36] Hetland J, Torsheim T, Aarø LE. Subjective health complaints in adolescence: Dimensional structure and variation across gender and age. *Scand J Public Health* 2016;30(3):223–30. <https://doi.org/10.1177/140349480203000309>.
- [37] Garipey G, McKinnon B, Sentenac M, Elgar FJ. Validity and Reliability of a Brief Symptom Checklist to Measure Psychological Health in School-Aged Children. *Child Ind Res* 2016;9(2):471–84. <https://doi.org/10.1007/s12187-015-9326-2>.
- [38] Heinz A, Catunda C, van Duin C, Willems H. Suicide Prevention: Using the Number of Health Complaints as an Indirect Alternative for Screening Suicidal Adolescents. *Journal of Affective Disorders* 2020(260):61–6. <https://doi.org/10.1016/j.jad.2019.08.025>.
- [39] Kinnunen P, Laukkanen E, Kylmä J. Associations between psychosomatic symptoms in adolescence and mental health symptoms in early adulthood. *Int J Nurs Pract* 2010;16(1):43–50. <https://doi.org/10.1111/j.1440-172X.2009.01782.x>.
- [40] Ottová-Jordan V, Smith ORF, Gobina I, Mazur J, Augustine L, Cavallo F et al. Trends in multiple recurrent health complaints in 15-year-olds in 35 countries in Europe, North America and Israel from 1994 to 2010. *Eur J Public Health* 2015;25 Suppl 2:24–7. <https://doi.org/10.1093/eurpub/ckv015>.
- [41] Ottová-Jordan V, Smith ORF, Augustine L, Gobina I, Rathmann K, Torsheim T et al. Trends in health complaints from 2002 to 2010 in 34 countries and their association with health behaviours and social context factors at individual and macro-level. *Eur J Public Health* 2015;25 Suppl 2:83–9. <https://doi.org/10.1093/eurpub/ckv033>.
- [42] Hagquist C, Due P, Torsheim T, Välimaa R. Cross-country comparisons of trends in adolescent psychosomatic symptoms - a Rasch analysis of HBSC data from four Nordic countries. *Health Qual Life Outcomes* 2019;17(1):27. <https://doi.org/10.1186/s12955-019-1097-x>.
- [43] Potrebny T, Wiium N, Haugstvedt A, Sollesnes R, Torsheim T, Wold B et al. Health complaints among adolescents in Norway: A twenty-year perspective on trends. *PLoS ONE* 2019;14(1):e0210509. <https://doi.org/10.1371/journal.pone.0210509>.
- [44] World Health Organization. *Mental Health Action Plan 2013–2020*. Geneva, Switzerland; 2012.
- [45] Torsheim T, Wold B. School-related stress, support, and subjective health complaints among early adolescents: A multilevel approach. *J Adolesc* 2001;24(6):701–13. <https://doi.org/10.1006/jado.2001.0440>.
- [46] Tabak I, Mazur J. Social support and family communication as factors protecting adolescents against multiple recurrent health complaints related to school stress. *Dev Period Med* 2016;20(1):27–39.









## **HBSC Luxembourg Trends Report**

### **HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY**

This report shows how 30 health indicators developed in the four Luxembourg HBSC surveys conducted in 2006, 2010, 2014 and 2018. There were positive trends especially in the health behaviour of the pupils: they smoke less and drink less alcohol. They also report more frequently that they brush their teeth regularly, eat more fruit and fewer sweets and consume fewer soft drinks. From 2006-2018, however, there were also deteriorations. For example, more pupils feel stressed from school and rate the climate among classmates worse. In addition, there are more pupils who are overweight and exercise less and more pupils report having psychosomatic health complaints.

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