How happy are we?

Primary: (ages 8 – 11)	**Mathematics**

In this exercise, children are asked to analyse a set of charts which collectively are used to measure the wellbeing of children and young people in countries across the OECD. Working in groups they are asked to consider how they would rate the relative importance of the indicators and what additional indicators they would propose. They are also asked to look at the profile of two countries and explore what combination of indicators would show it in the best light, and which would show the opposite. Following this, the pupils conduct a simple well-being survey of pupils in the school. They analyse the data and through the production of charts identify the happiest and least happy classes in the school. They discuss the reasons why.

NB: This lesson plan includes annexes with adaptations for remote learning and additional assessment possibilities

Time allocation	4 to 6 lesson periods
Subject content	Develop essential numeracy skills and calculate with averages Understand the application of mathematics Interpret numerical and graphical information and data
Creativity and critical thinking	This unit has a **critical thinking** focus: • Identify and question assumptions about data • Consider several perspectives on measuring happiness • Reflect on uncertainty/distortion in claims made from data
Other skills	Collaboration
Key words	happiness; data; reading charts; graphs; analysis; surveys; ranking

Products and processes to assess

Students are challenged to interpret and produce charts representing how happy students are. In the process, they need to consider and analyze data about the lives of others, reflect on their sense of wellbeing and challenge established measures of well-being. At the highest levels of achievement, they consider several ways of formulating and answering the question

of how happy we are, they show awareness of the possibility that data can be used to make misleading or partial claims, and they show understanding of how mathematical concepts help them investigate and represent the lives of others. Not only do they produce error-free work individually, they also work successfully with others to collate, organise, and communicate their understanding of the material**.**

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Teaching and Learning plan

This plan suggests potential steps for implementing the activity. Teachers can introduce as many modifications as they see fit to adapt the activity to their teaching context.

Step	Duration	Teacher and student roles	Subject content	Creativity and critical thinking
1	Lesson period 1	Working in small groups, pupils consider the eleven graphs in the appendix. Starting with chart 2.1, pupils need to establish the average score for each country across the 6 categories listed. Therefore, the average score for the United Kingdom would be (12 + 15 + 22 + 20 + 28 + 4) /6 = 16.8. The pupils distribute the countries listed so that all of them contribute to the completion of all the calculations. Once they have calculated the average score for each country they prepare a table with the countries in order of their average score, the country with the smallest figure at the top, and the country will the biggest at the bottom.	Interpreting graphs Engaging in accurate calculations Producing a well presented table	Inquiring into ways of measuring how happy we are
2	Lesson period 2	Having prepared a table of all the countries, they then consider the remaining charts, answering the question above the charts. In group discussion they should identify the 5 charts they think the most important in establishing wellbeing and the 5 charts they think are least important. Selecting two countries to look at, they should work out the average score of each country, using their position on the bar charts. So if they had decided that charts 2.1, 2.2, 2.4, 2.5 and 2.6 were the most important, the score for the United Kingdom would be (8+11+13+16+16)/5 = 12.8. They should do this for two countries. They should then see how this average score might change their position on the table they have produced. They then do the same exercise for the charts they felt were the least important. The group reflection should focus on how the positions had changed, and why they thought this was.	Engaging in accurate calculations Understanding how the way you select which aspects of wellbeing to include in your cumulative assessment changes the ranking of a country	Identifying and questioning assumptions about what the data shows Posing questions and considering different perspectives on a problem Reflecting on the steps taken and implications for claims about happiness
3	Lesson period 3	Each group then chooses two different countries. They should then identify which 5 aspects of wellbeing would show each country in the best light and which would show them with the lowest ranking. They use the same calculations as indicated above. After this, pupils discuss what things make them feel good or not so good which have not been included in the OECD figures, such as having good friends.	Understanding how to present the information about a country in a way which is designed to give a	Making connections between mathematical data and their own well-being

			better or worse character to the country	Reflecting on manipulability of data Making personal contributions and being aware of role in the group
4	Lesson periods 4, 5, 6	Using the questionnaire attached to the activity sheet, pupils working in groups conduct a survey of the school. Groups go into each class (or a selection of classes) and administer the simple questionnaire to each pupil. They then collect the results and return to the classroom. They then use the questionnaires, which are anonymous, to calculate how happy each child is. This produces a set of results for each class. They then find the average for each class and produce a bar chart showing how happy each class is in descending order. They then discuss the results they get and consider the reasons for any variation they have found. They should also have surveyed themselves, and they should see their class in comparison to each other class. They discuss how the wellbeing scores of their class could be improved.	Learning about creating and conducting surveys and analyzing survey data Communicating the results of surveys Comparing and analyzing data	Making connections between their own ideas and those of others Generating ideas, posing questions, and considering different perspectives Acknowledging own bias and uncertainty and appreciating novelty of solution

Resources and examples for inspiration

Web and print

- The OECD Better Life Index (http://www.oecdbetterlifeindex.org/) provides a useful interactive and visual tool for exploring well-being indicators

Other

- A print out of the set of the attached charts for each group of children
- Paper, rulers and pencils
- Print outs of the wellbeing survey for each pupil being surveyed

Opportunities to adapt, extend, and enrich

- Further links can be made to the health and well-being or visual arts curriculum by, for example, linking this activity with one in the same series, *Mapping the Future* which asks students to collaboratively build a model of a city that would support their well-being now and in the future.
- The theme of how information can be manipulated could be continued, and links to Language and Literacy could be created, by also engaging in the activity from the same series, *Do you believe in dragons?*

Creativity and critical thinking rubric for mathematics

- Mapping of the different steps of the lesson plan against the OECD rubric to identify the creative and/or critical thinking skills the different parts of the lesson aim to develop

	CREATIVITY Coming up with new ideas and solutions	Steps	CRITICAL THINKING Questioning and evaluating ideas and solutions	Steps
INQUIRING	Make connections to other maths concepts or to ideas from other disciplines	4,5,6	Identify and question assumptions and generally accepted ways to pose or solve a maths problem	2,6
IMAGINING	Generate and play with several approaches to pose or solve a maths problem	1,2,6	Consider several perspectives on approaching a maths problem	2,5,6
DOING	Pose and envision how to solve meaningfully a maths problem in a personally novel way	1,2,6	Explain both strengths and limitations of different ways of posing or solving a math problem based on logical and possibly other criteria	6
REFLECTING	Reflect on steps taken to pose and solve a maths problem	4,5,6	Reflect on the chosen maths approach and solution relative to possible alternatives	2,3,6

Annex 1: Remote learning adaptations

This plan suggests potential steps for implementing the activity in remote modes of delivery. Teachers can introduce modifications as they see fit to adapt the activity to their teaching context.

Step	Duration	Teacher and student roles	Subject content	Creativity and critical thinking	Adaptations and considerations for online modes of delivery
1	Lesson period 1	Working in small groups, pupils consider the eleven graphs in the appendix. Starting with chart 2.1, pupils need to establish the average score for each country across the 6 categories listed. Therefore, the average score for the United Kingdom would be (12 + 15 + 22 + 20 + 28 + 4) /6 = 16.8. The pupils distribute the countries listed so that all of them contribute to the completion of all the calculations. Once they have calculated the average score for each country they prepare a table with the countries in order of their average score, the country with the smallest figure at the top, and the country will the biggest at the bottom.	Interpreting graphs Engaging in accurate calculations Producing a well presented table	Inquiring into ways of measuring how happy we are	The teacher can introduce the unit in a live video conferencing call or a recorded video. Students can be divided into learning teams and have a regular schedule of short calls with their group, which the teacher also joins. Students complete this work individually but they have one meeting with their learning team and the teacher to ask questions. If they get stuck, they can send a message to their team or the teacher to ask for advice.
2	Lesson period 2	Having prepared a table of all the countries, they then consider the remaining charts, answering the question above the charts. In group discussion they should identify the 5 charts they think the most important in establishing wellbeing and the 5 charts they think are least important. Selecting two countries to look at, they should work out the average score of each country, using their position on the bar charts. So if they had decided that charts 2.1, 2.2, 2.4, 2.5 and 2.6 were the most important, the score for the United Kingdom would be (8+11+13+16+16)/5 = 12.8. They should do this for two countries. They should then see how this average score might change their position on the table they have produced. They then do the same	Engaging in accurate calculations Understanding how the way you select which aspects of wellbeing to include in your cumulative assessment changes the ranking of a country	Identifying and questioning assumptions about what the data shows Posing questions and considering different perspectives on a problem	Students draft initial responses to the questions individually. Then they meet with their learning team to discuss the charts they feel are most important. Once the initial discussion is finished, an online poll can take place (using, for e.g. kahoot or google forms). The teacher can then guide them through the process of calculating the first average and they can be charged with completing the rest of the work asynchronously in-between live sessions, again with the option of messaging their team or the teacher if they get stuck.

		exercise for the charts they felt were the least important. The group reflection should focus on how the positions had changed, and why they thought this was.		Reflecting on the steps taken and implications for claims about happiness	
3	Lesson period 3	Each group then chooses two different countries. They should then identify which 5 aspects of wellbeing would show each country in the best light and which would show them with the lowest ranking. They use the same calculations as indicated above. After this, pupils discuss what things make them feel good or not so good which have not been included in the OECD figures, such as having good friends.	Understanding how to present the information about a country in a way which is designed to give a better or worse character to the country	Making connections between mathematical data and their own well-being Reflecting on manipulability of data Making personal contributions and being aware of role in the group	Students are asked to first consider this independently and then discuss their choices in a team meeting Students can be asked to share initial thoughts on what makes them feel good or not so good on a collaborative whiteboard such as Miro. A plenary session could then be held with the class as a whole to discuss and vote on the most important well-being indicators that were not included in the original material.
4	Lesson periods 4, 5, 6	Using the questionnaire attached to the activity sheet, pupils working in groups conduct a survey of the school. Groups go into each class (or a selection of classes) and administer the simple questionnaire to each pupil. They then collect the results and return to the classroom. They then use the questionnaires, which are anonymous, to calculate how happy each child is. This produces a set of results for each class. They then find the average for each class and produce a bar chart showing how happy each class is in descending order. They then discuss the results they get and consider the reasons for any variation they have found. They should also have surveyed themselves, and they should see their	Learning about creating and conducting surveys and analyzing survey data Communicating the results of surveys Comparing and analyzing data	Making connections between their own ideas and those of others Generating ideas, posing questions, and considering different perspectives Acknowledging own bias and uncertainty and appreciating	An online survey tool such as SurveyMonkey can be used for this, and the teacher will need to liaise with colleagues to make sure other classes receive the survey. The teacher will need to guide students through the process of finding the average for each class, for example, in a video conferencing session. Small group discussions can take place in a team meeting. The teacher can then hold a final plenary whole-class session to report back on team

	class in comparison to each other class. They discuss how the wellbeing scores of their class could be improved.	novelty of solution	discussions, reflect on learnings, and wrap-up the unit.

Annex 2:
Additional assessment activities

There are many ways this activity can be assessed in addition to attention to the processes and products already outlined. Here are just some possible activities, many of which can be used for either formative or summative assessment and which aim to assess both subject knowledge and creative and/or critical thought.

	DETAILS	POSSIBLE CRITERIA	POSSIBLE ONLINE MODES OF DELIVERY
HOMEWORK	Students could be asked to design an additional survey for parents/the general community, record, represent, analyse the data, reflect on its strengths and limitations, and then come up with a series of interesting tips for being happy or personal happiness resolutions. Alternatively, students could find or be assigned data or statistics on happiness in different countries and critically evaluate them. What does it say about happiness? What are the limitations or what do we need to be careful about?.	• Ability to generate ideas for questions • Effort put into to managing and finishing tasks and creating outputs of good quality • Use of mathematical vocabulary, calculations, and reasoning • Ability to generate interesting ideas for tips/resolutions • Ability to identify and explain strengths and limitations of data with good reasoning • Extent to which student acknowledges uncertainty/limits of endorsed opinion/solution • Quality of graphs and other visual representations	This can be done using SurveyMonkey or equivalent online survey software independently and asynchronously. The teacher may need to check in with students and care-givers regularly to check progress and give feedback. Students' tips can be typed up or photographed and submitted to the teacher in an agreed format.
PORTFOLIO/ PROJECT	Students could be asked to take part in a "happiness project". They could work individually or in groups and either design or be assigned content, such as: • Profiles of the happiness of different countries, with a visual/graphical representation of the data for each country	This depends on the nature of the entries, but may include: • Use of mathematical vocabulary, reasoning, and knowledge • Quality of graphs and other visual representations	An online portfolio or collaborative online document can be used to record student's work and share with the teacher. The teacher may need to check in with the student regularly to check progress and provide feedback.

	• Reflections on the strengths and limitations of the data for each country and whether it can be used to make different claims • Come up with interesting tips to help people be more happy • Look at all of the tips the class has created. How could you categorise them into different types (e.g. about family etc.). Make a graphical representation of the different types • Write/discuss on "I think happiness can be measured by…." Provide the argument for and the argument against measuring happiness. What are you sure about? What is more uncertain?	• Ability to identify and explain strengths and limitations of data with good reasoning • Ability to generate interesting ideas for tips and/or categories • Quality of reasoning • Extent to which student acknowledges uncertainty/limits of endorsed opinion/solution • Effort put in to creating a high quality output • Ability to generate ideas for things to include in their project	
EXAM/QUIZ	Students are provided with simple data about happiness and asked under timed conditions what it says about happiness and what are its strengths and limitations.	• Ability to interpret simple data and apply it to a subject • Ability to identify and explain strengths and limitations and acknowledge uncertainty	In a live video conferencing session or a take-home exam
CREATIVE OUTPUT	Students could be asked to write a story or play in which two different characters look at the same data and argue about which country is the happiest and why.	• Ability to imagine two different perspectives on the same data • Understanding of the limitations of both perspectives • Ability to create an engaging story which shows mathematical understanding	Independently, asynchronously and submitted to the teacher in an agreed format
PERFORMANCE/ PRESENTATION	Students could be asked to present on 'how happy are we?' to an invited audience of fellow students or parents. Students explain their data (either their own data or pre-existing data), how they analysed it, and what the results were, as well as to explain the limitations of the data and where there is still uncertainty/room for alternative interpretations	• Presentation style and skills • Ability to explain data and analysis and quality of reasoning • Ability to identify and explain strengths and limitations and acknowledge uncertainty	This can take place in a live video conference session or the student can pre-record video or audio, embed into slides and submit through the agreed format (e.g. through the learning platform or via email etc.). Note that video clips can

			be too heavy for some email systems. If the student emails a link to the presentation, they may need to ensure permissions are shared for each embedded video or audio clip individually in addition to the presentation itself.

Annex 3

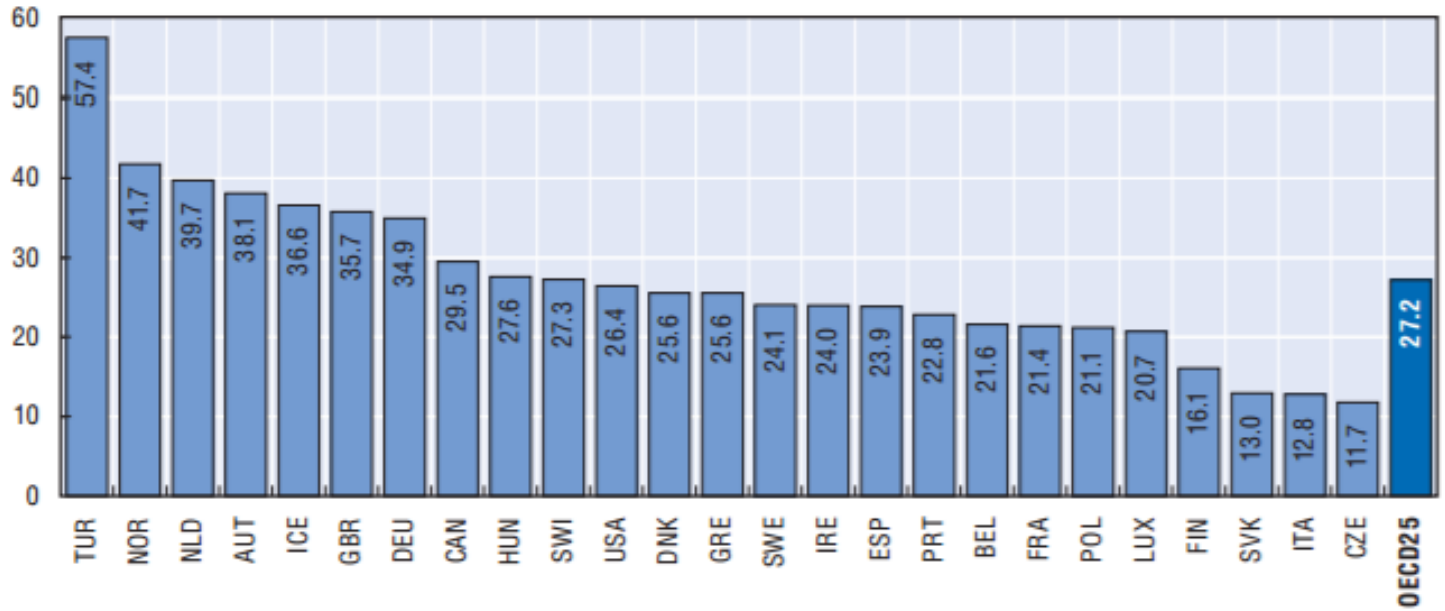
Tables for use in the exercise on well being

What makes you happy, healthy and feel good?

1. Does it make you unhappy or feel bad if you don't like school?

Figure 2.19. **Most OECD children do not like school**

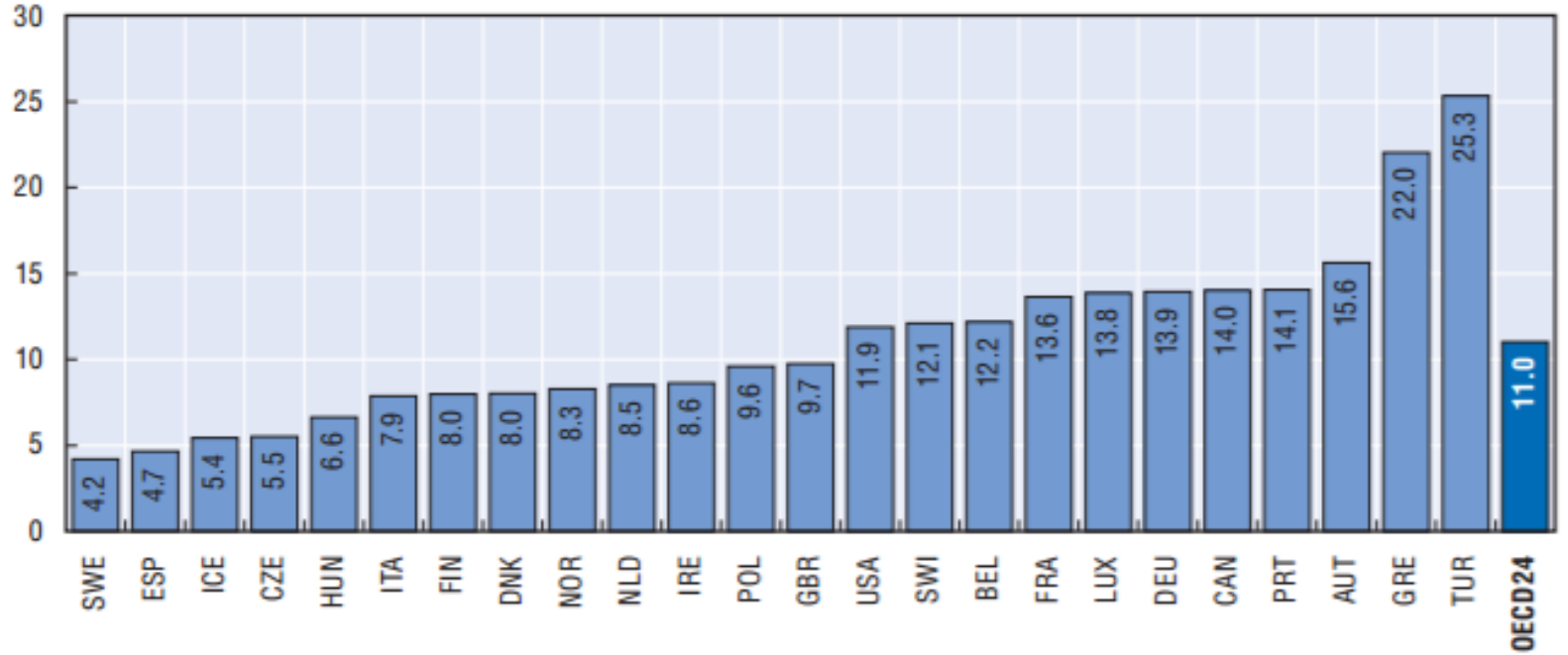
Percentage of 11-, 13- and 15-year-old children who report liking school, 2005/06



2. Does it make you unhappy or feel bad if you are bullied?

Figure 2.18. **High numbers of children experience bullying in some countries**

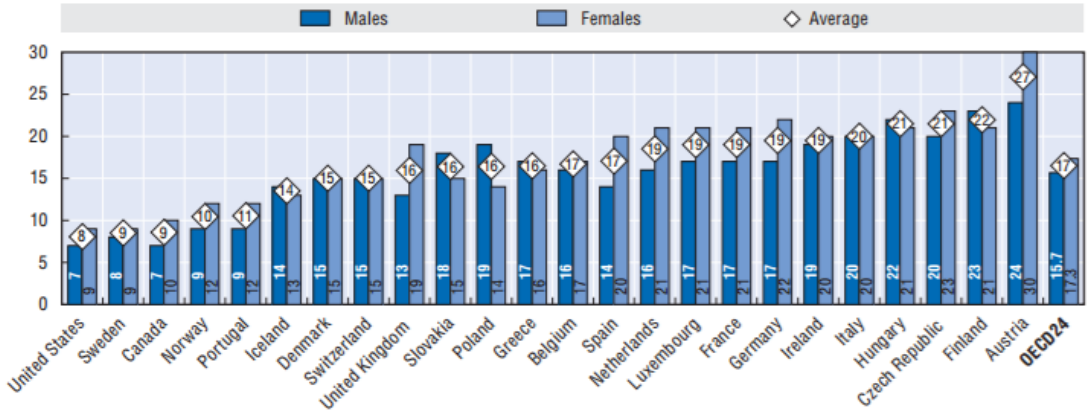
Percentage of 11-, 13- and 15-year-old children bullied at school at least twice in the last two months, 2005/06



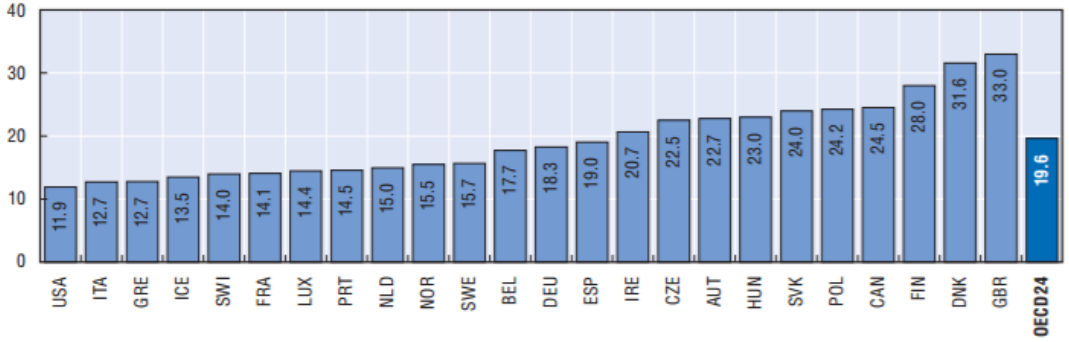
3. Does it make you unhappy and unhealthy if you smoke and drink alcohol?

Figure 2.16. **No country ranks consistently high or low on risk-taking measures**

a. Percentage of 15-year-old children who smoke at least once a week, 2005/06



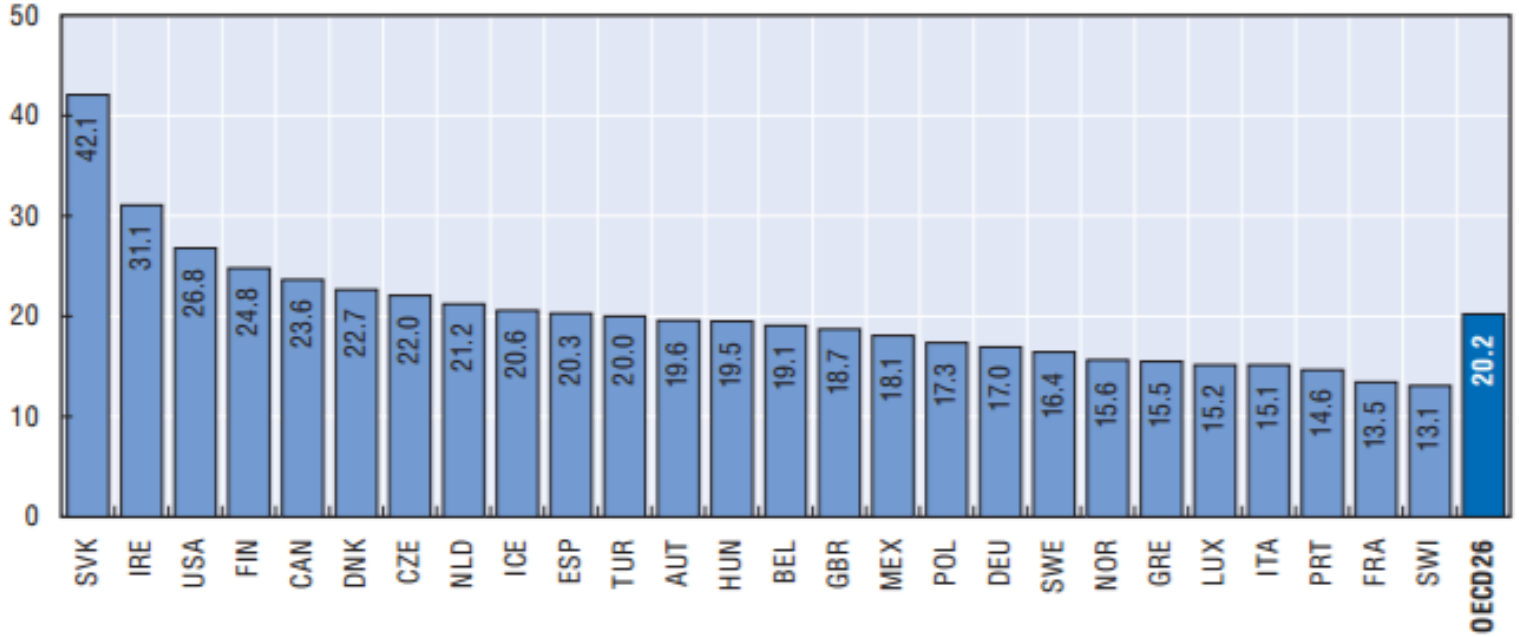
b. Percentage of 13- and 15-years-old children who have been drunk at least twice, 2005/06



4. Does it make you happy and feel good if you take exercise?

Figure 2.13. **Only one in five older children does the recommended amount of physical activity across the OECD**

Children doing moderate-to-vigorous physical activity daily in the past week by age and sex, 2005/06



5. Does it make you healthy and feel well if you get your injections?

Figure 2.12. **Eastern European OECD members have the best immunisation rates** *(cont.)*

Vaccination rates for measles, children aged 2 (circa 2005)

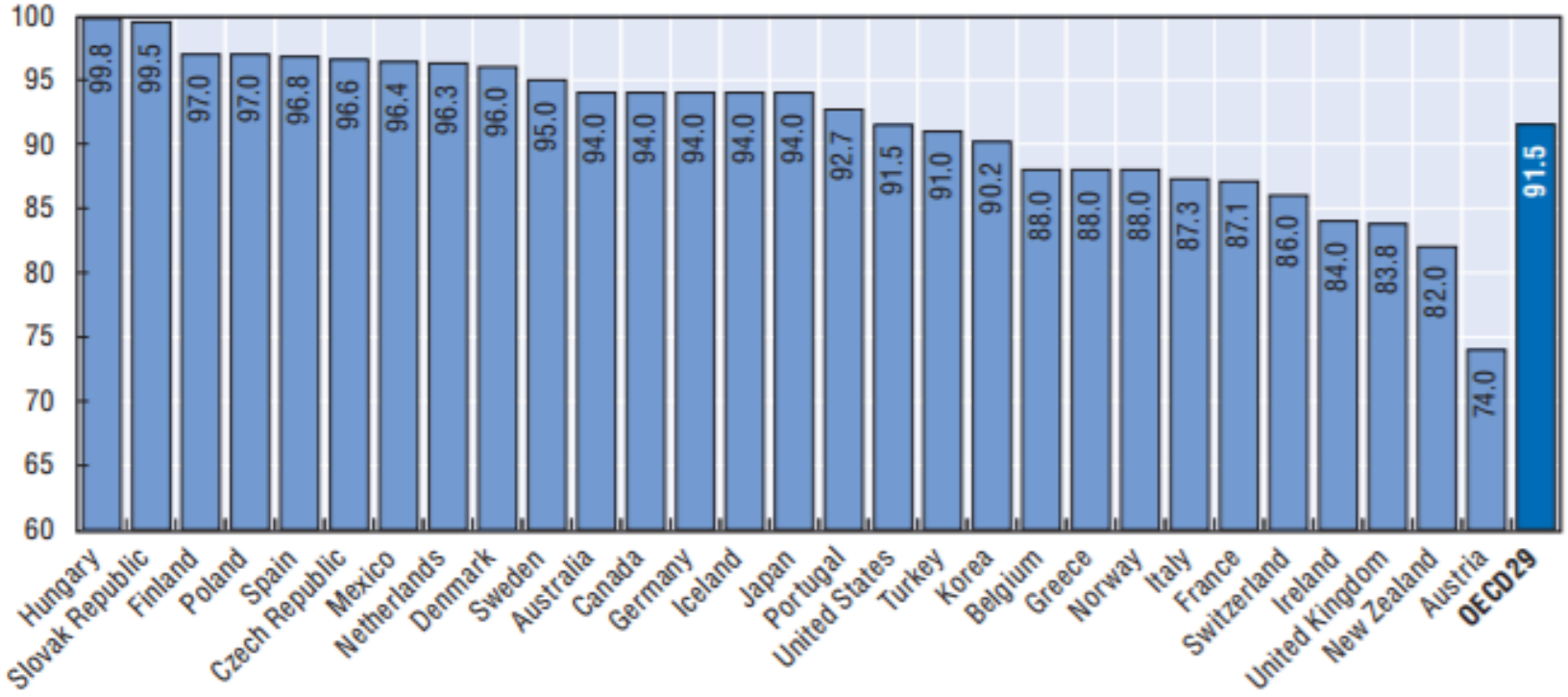
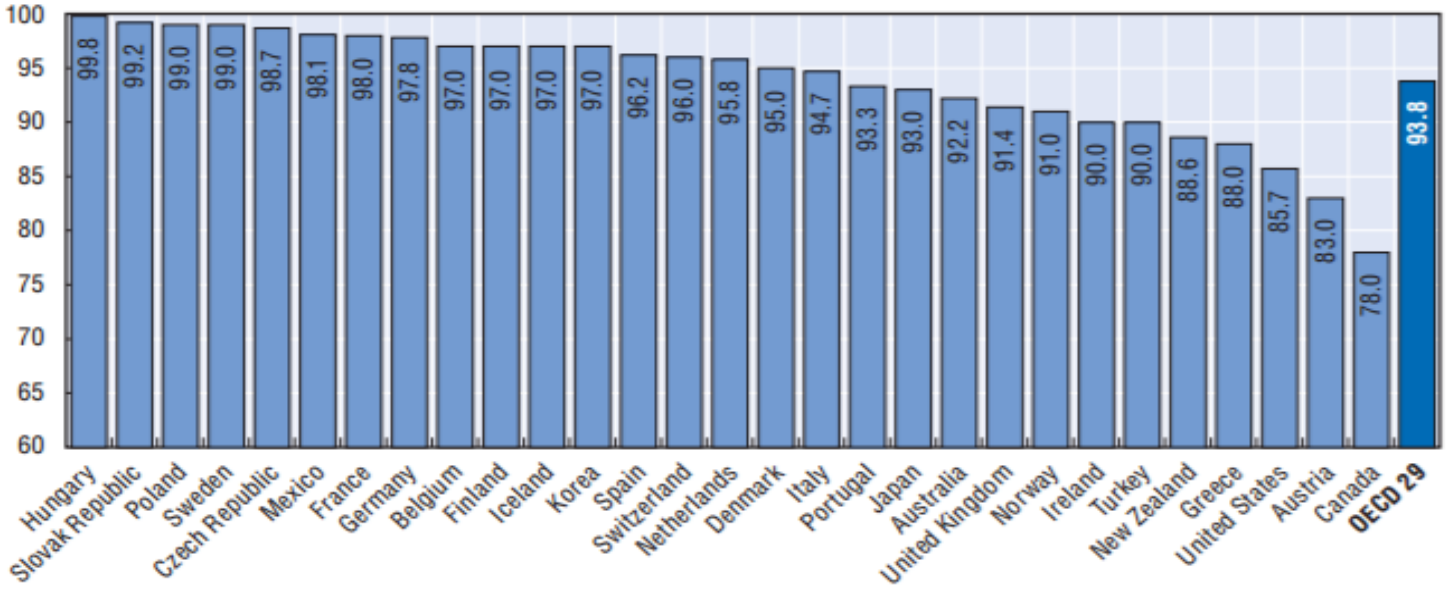


Figure 2.12. **Eastern European OECD members have the best immunisation rates**

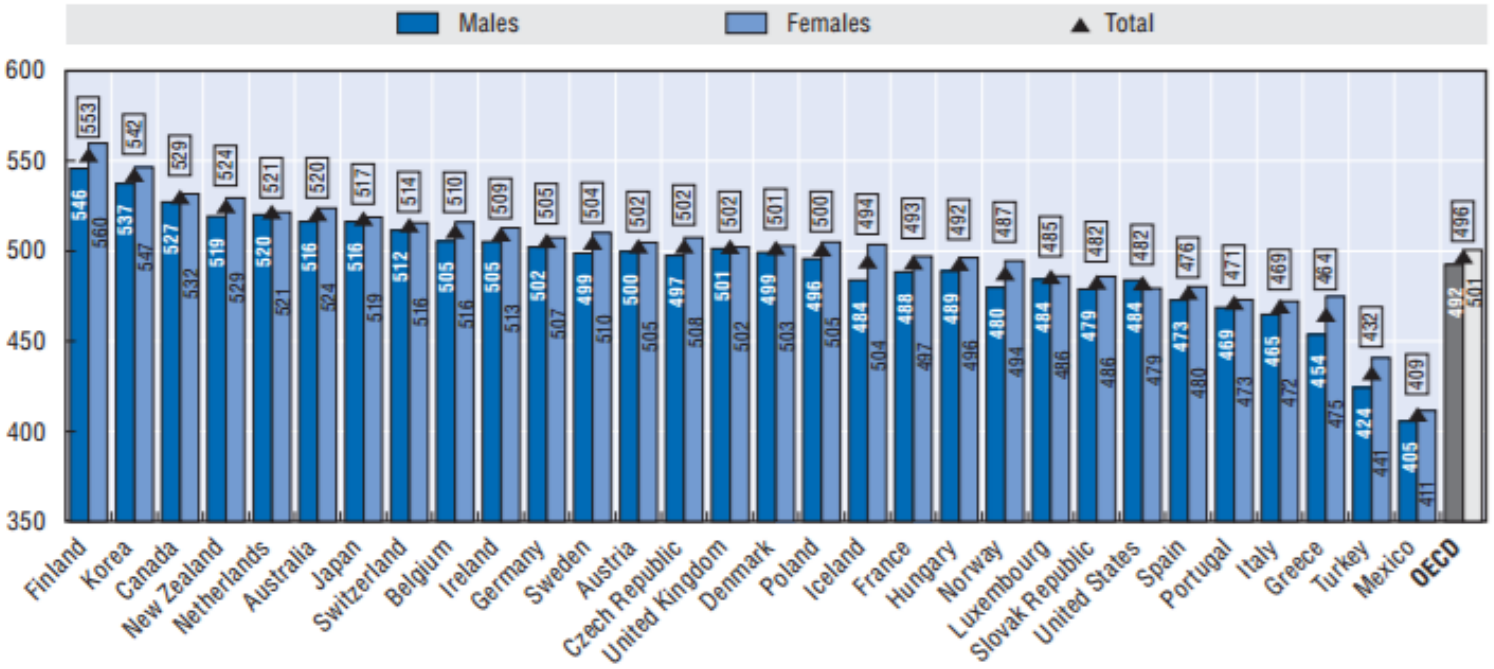
Vaccination rates for pertussis, children aged 2 (circa 2005)



6. If does it make you happy and feel good if you do well in school?

Figure 2.6. **Average educational achievement of 15-year-olds across the OECD**

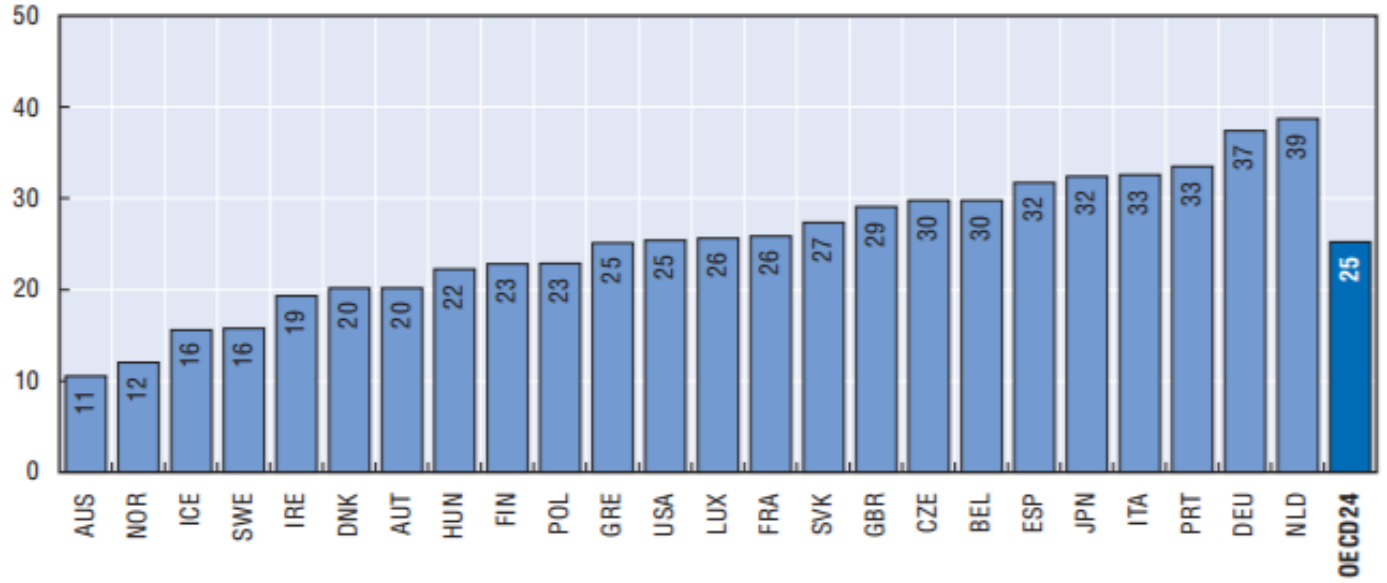
Mean PISA literacy achievement for 15-year-olds by sex, 2006



7. Does it make you happy and feel well if your house is well built, warm and clean?

Figure 2.5. **Local environmental conditions are poor for a quarter of OECD children**

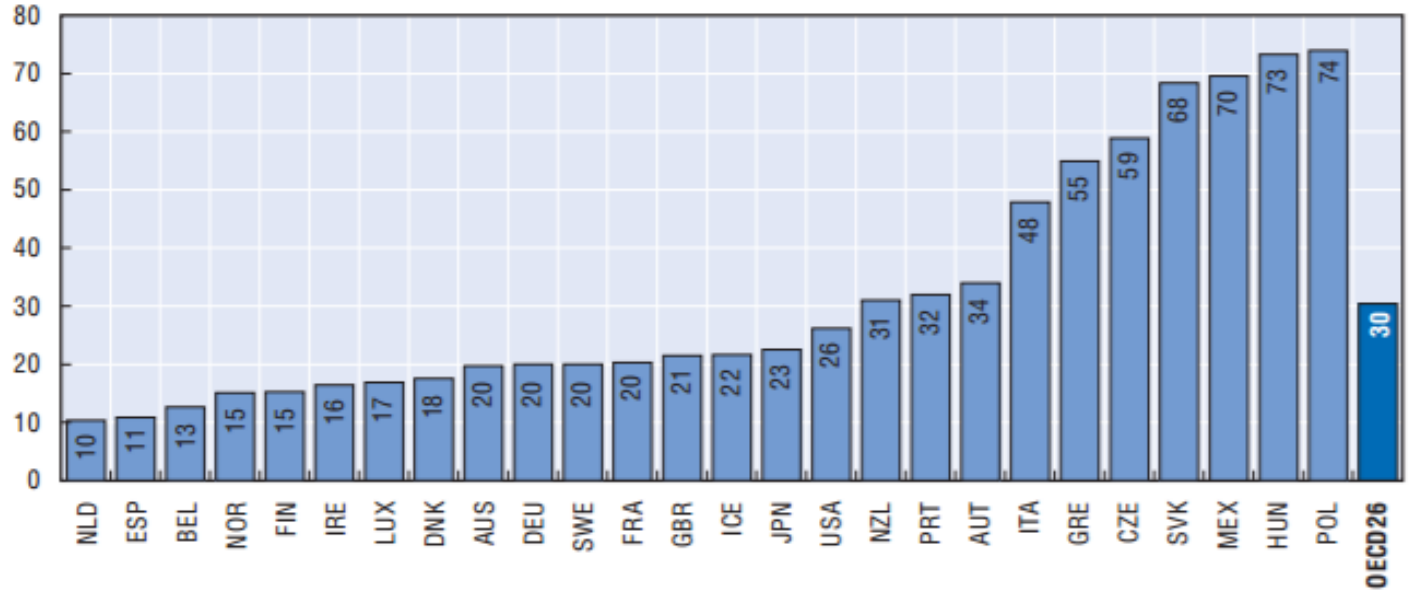
Percentage of 0-17 year-old children living in homes with poor environmental conditions by age of the youngest child, 2006



8. Does it make you feel unhappy or feel bad if your home is over- crowded?

Figure 2.4. **On average, one in three children across the OECD lives in overcrowded conditions**

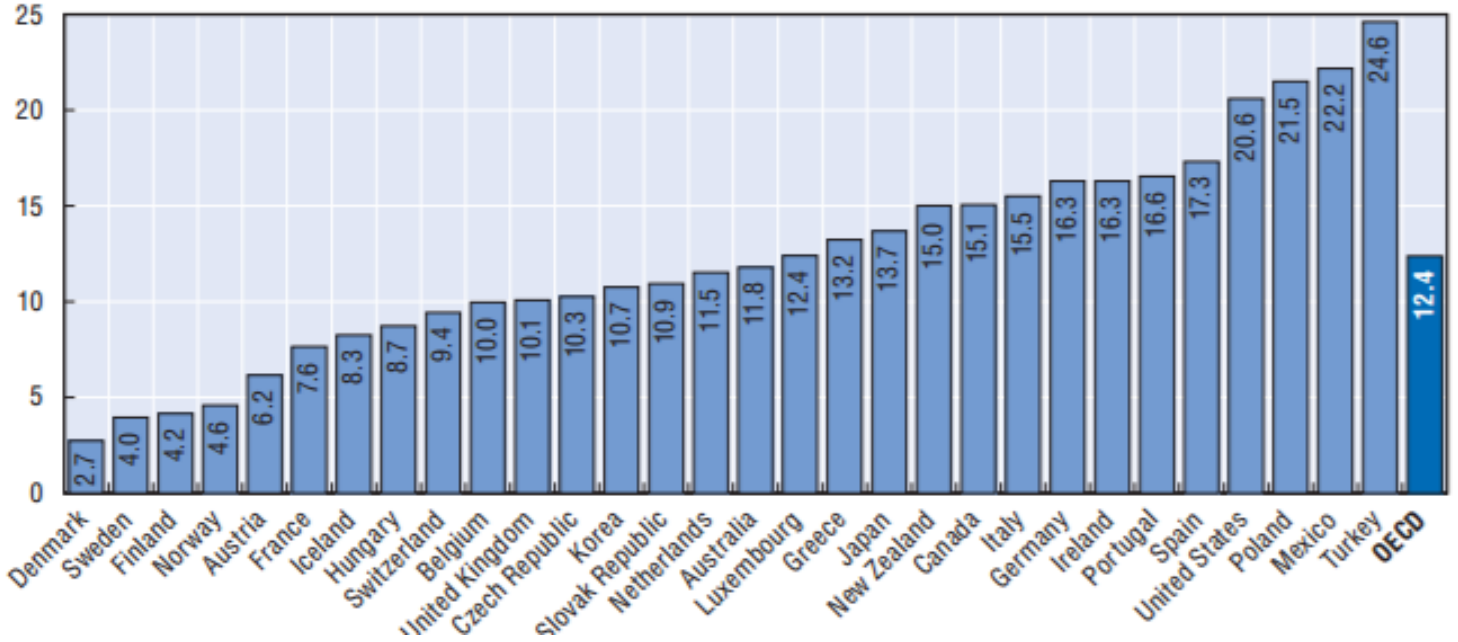
Percentage of 0-17 year-old children living in overcrowded homes by age of the youngest child, 2006



9. Does it make you feel unhappy or feel bad if your family is poor?

Figure 2.2. **Child poverty is nine times higher in Turkey than in Denmark**

Percentage of children living in poor households (below 50% of the median equivalised income), circa 2005



10. Does it make you happy and feel well if your family has money to spend?

Figure 2.1. **Average income of children is seven times higher in Luxembourg than in Turkey**

Average equivalised household disposable income (0-17 year-olds), USD PPP thousands, circa 2005

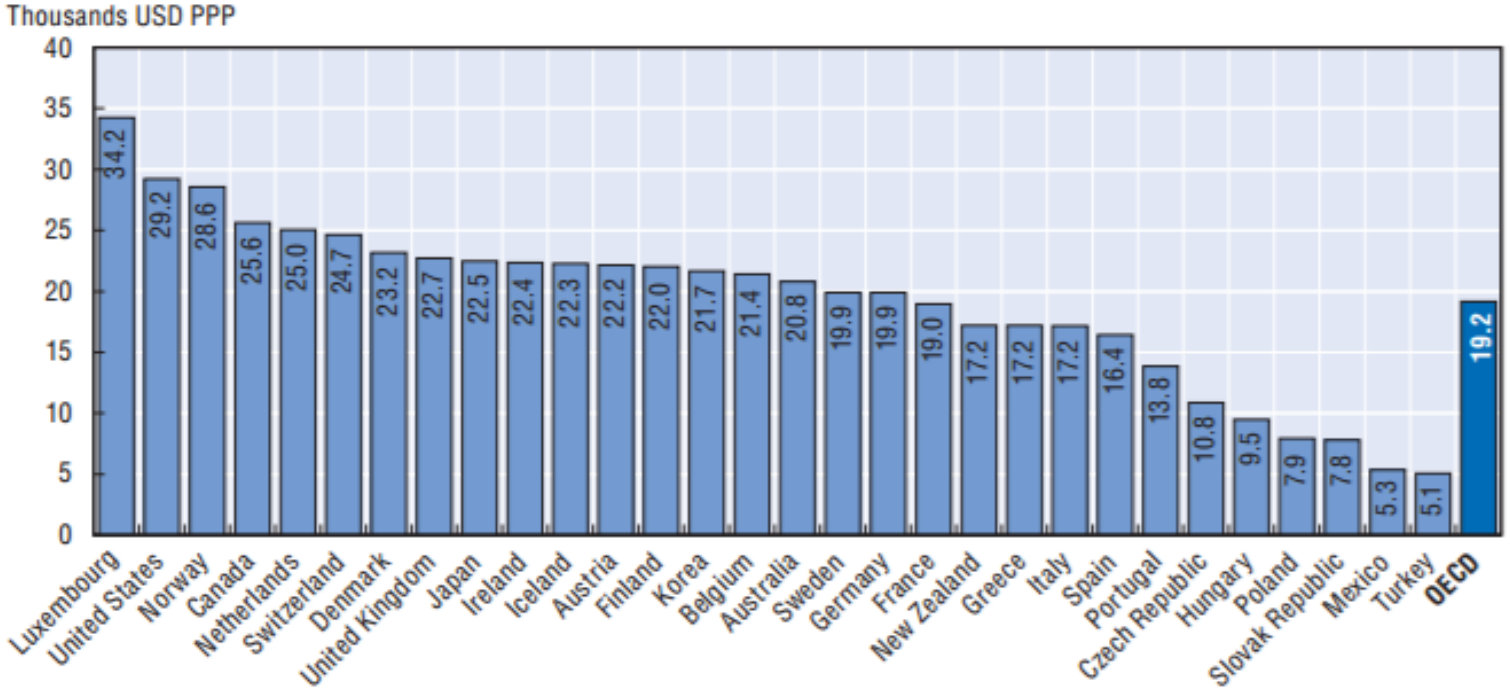


Table 2.1. **Comparative policy-focused child well-being in 30 OECD countries**

1 ranks the best performing country

	Material well-being	Housing and environment	Educational well-being	Health and safety	Risk behaviours	Quality of school life
Australia	15	2	6	15	17	n.a.
Austria	5	9	18	27	27	11
Belgium	11	11	20	26	13	19
Canada	14	n.a.	3	22	10	16
Czech Republic	18	24	19	5	23	17
Denmark	2	6	7	4	21	8
Finland	4	7	1	6	26	18
France	10	10	23	19	12	22
Germany	16	18	15	9	18	9
Greece	26	19	27	23	7	24
Hungary	20	21	12	11	25	7
Iceland	8	4	14	2	8	1
Ireland	17	5	5	25	19	10
Italy	19	23	28	17	11	20
Japan	22	16	11	13	2	n.a.
Korea	13	n.a.	2	10	2	n.a.
Luxembourg	3	8	17	7	14	23
Mexico	29	26	29	28	30	n.a.
Netherlands	9	17	4	8	9	3
New Zealand	21	14	13	29	24	n.a.
Norway	1	1	16	16	4	2
Poland	28	22	8	14	20	15
Portugal	25	20	26	18	6	21
Slovak Republic	27	25	24	1	22	25
Spain	24	13	21	12	16	6
Sweden	6	3	9	3	1	5
Switzerland	7	n.a.	10	21	5	13
Turkey	30	n.a.	30	30	29	12
United Kingdom	12	15	22	20	28	4
United States	23	12	25	24	15	14

How I feel about myself in School

Read the statements and **tick the one** that is true for you. 

Remember, this is how you feel about yourself when you are **in school.**

		Not often	Sometimes	Often
(1)	I feel good about myself	☐	☐	☐
(2)	I feel healthy	☐	☐	☐
(3)	I feel I am doing well	☐	☐	☐
(4)	I feel miserable	☐	☐	☐
(5)	I feel I have lots of energy	☐	☐	☐
(6)	I feel cared for	☐	☐	☐
(7)	I feel valuable	☐	☐	☐
(8)	I feel worried	☐	☐	☐
(9)	I feel I can deal with problems	☐	☐	☐
(10)	I feel bored	☐	☐	☐