



SDG 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

METADATA

Target 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

4.a.2 Percentage of students experiencing bullying in the last 12 months in a) primary, and b) lower secondary education

Definition

Percent of students subjected to bullying in the past 12 months (or alternative period as available in the source data) at the primary or secondary levels. Bullying is defined to include, when possible, physical, verbal and relational abuse. This scope reflects current research on bullying as well as the definitions for major international student assessments.

Data sources

Data for estimating this indicator included in the UIS dataset can be categorized into:

- 1) cross-national school health surveys which survey students within schools; and
- 2) cross-national student assessment surveys which also survey students within schools.

Data source 1: Cross-national health surveys

Data collection: Estimates from data sources are included in the UIS database: the Health Behavior in School-Aged Children (HBSC) survey and the Global School-based Student Health Survey (GSHS). Estimates for the HBSC were obtained from UNESCO (2019), and estimates for the GSHS were obtained from GSHS *Country Fact Sheet* series (GSHS 2020).

Calculation method: Estimates from UNESCO (2019) for the HBSC data are defined as follows: “the percentages represent median prevalence of students who reported being bullied on one or more days... in the past few months prior to the survey, in countries/territories that participated in the HBSC” (UNESCO 2019: 66). For the estimates by GSHS (2020), they are the “percentage of students who were bullied on one or more days during the 30 days before the survey.” HBSC disaggregate estimates by age, which consists of 11, 13 and 15 year-olds while the GSHS data is for children aged 11 to 15 but not disaggregated. For the UIS dataset, children aged 11 are defined as being primary level and

4.a.2 Percentage of students experiencing bullying in the last 12 months



children aged 13 or older or defined as being at the secondary level for the HBSC data. Because the GSHS data currently included in the dataset are not disaggregated by age, these figures are treated as a secondary level estimate.

Interpretation: The GSHS and HBSC datasets measure bullying in a much shorter time period than the SDG indicator, at the past few months for the HBSC data and at the past 30 days for the GSHS data. These indicators are expected to be lower than estimates from the student assessment data described subsequently which span the past year when possible.

Disaggregation: estimates are disaggregated by sex.

Data source 2: Cross-national student assessment surveys

Data collection: Data is acquired from the administrators of cross-national assessment; typically, these are available for download publicly. UIS analyses this data to provide estimates of the indicator. Table 1 presents the surveys and the survey questions used to define bullying. Assessment data for grades 8 or higher and for 15 year-olds (PISA¹) are used for estimating bullying at the secondary level while grades 7 or lower are used for primary level estimates.

Calculation method: The indicator is estimated as the percent of students who have experienced any type of bullying in the past year. For assessment i , the measure of prevalence of bullying for the assessment's target population B_i would be defined as:

$$B_i = E[\mathbf{1}\{b_1 = 1 \text{ or } b_2 = 1 \text{ or } \dots \text{ or } b_{n_i} = 1\}] \quad (1)$$

where $\mathbf{1}\{\dots\}$ denotes the indicator function which takes value 1 if the expression is true and zero if false. Variables b_1, \dots, b_{n_i} denote the various types of bullying included in the question on what types of bullying the student may have experienced; these variables equal 1 if the student has experienced the type of bullying and zero if the student answers no. $E[\dots]$ denotes the population mean (expected value); the methodology for estimating the expected value of $\mathbf{1}\{b_1 = 1 \text{ or } b_2 = 1 \text{ or } \dots \text{ or } b_{n_i} = 1\}$ varies by assessment and depends on the assessment's sampling design. Students who did not answer any of the bullying questions would be omitted from the calculation; for students that omitted some of the questions, the omissions would be treated as zeros. The target population would be that of the assessment but excluding those unwilling to answer any of the bullying questions. The time period, to match the SDG indicator definition, would be whether bullying was experienced at least once in a year.

¹ PISA: Programme for International Student Assessment

4.a.2 Percentage of students experiencing bullying in the last 12 months



Table 1 presents the questions used in defining bullying in each assessment. Table A.3 presents the estimation methods used including weighting and estimation of standard errors.

Interpretation

The indicator offers an estimate of the percent of students experiencing bullying; however, there are slight variations in the definition of bullying, and important differences in the target population and their characteristics including age across the different assessments.

Disaggregation

Estimates are disaggregated by sex, socioeconomic status and urban and rural location (see Table A.1 for how these are defined in cross-national student assessment data). Note that estimates for sub-populations are representative of the population that would respond to the question identifying the sub-population. Given that response rates to the questions defining the sub-populations are generally not 100 percent in a sample, the estimated mean for the target population as a whole generally differs from the target population which responds to the sub-population question. As a result, for a particular disaggregation, the average of the indicator for the target population for a country may not lie between the averages of the two sub-populations. In addition, in cases where one of the two categories of a sub-population (e.g.: female and male) is not reported (see non-response and small sample size below), then the other category is also not reported. For example, if there is insufficient sample size or response rate for rural areas for a particular year and country and consequently no reported value for rural areas, then urban areas are also not reported for that particular year and country.

Metadata points

The meta-data points indicate the source of data (Table 1 provides details for each data source). They also include standard errors and confidence intervals estimated based on the methodologies suggested by the assessment programmes (Table A.3).



4.a.2 Percentage of students experiencing bullying in the last 12 months

Table 1. Data sources and questions on bullying

DATA SOURCE	TARGET POPULATION	BULLYING QUESTION(S)	RESPONSES
LLECE 2013 (TERCE)	6th grade students	Do any of these things happen to you when you are at school? <ul style="list-style-type: none">• I am afraid of one of my schoolmates.• I feel threatened by one of my schoolmates.• I fear that one of my schoolmates will hit me or hurt me.• My schoolmates make fun of me.• My schoolmates exclude me.• My schoolmates force me to do things that I don't want to do	bullied: yes not bullied: no omitted: missing
PISA 2018	15 year-old secondary students	During the past 12 months, how often have you had the following experiences in school? (Some experiences can happen in social media) <ul style="list-style-type: none">• Other students left me out of things on purpose• Other students made fun of me• I was threatened by other students• Other students took away or destroyed things that belonged to me• I got hit or pushed around by other students• Other students spread nasty rumours about me	bullied: “a few times a year”; “a few times a month”; “once a week or more” not bullied: “never or almost never” (must be answered to all questions with valid responses to be classified as not bullied) omitted: missing for all questions



4.a.2 Percentage of students experiencing bullying in the last 12 months

DATA SOURCE	TARGET POPULATION	BULLYING QUESTION(S)	RESPONSES
TIMSS 2015 / PIRLS 2016	4 th and 8 th grade students for TIMSS; 4 th grade students for PIRLS	<p>During this school year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?</p> <ul style="list-style-type: none"> • Made fun of me or called me names • Left me out of their games or activities • Spread lies about me • Stole something from me • Hit or hurt me (e.g., shoving, hitting, kicking) • Made me do things I didn't want to do • Shared embarrassing information about me • Posted embarrassing things about me online (asked to 8th grade students only) • Threatened me 	<p>Bullied: "At least once a week"; "Once or twice a month"; "A few times a year"</p> <p>Not bullied: "Never" (must be answered to all questions with valid responses to be classified as not bullied)</p> <p>omitted: missing for all questions</p>
TIMSS 2019	4 th grade students	<p>During this school year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?</p> <ul style="list-style-type: none"> • Made fun of me or called me names • Left me out of their games or activities • Spread lies about me • Stole something from me • Damaged something of mine on purpose • Hit or hurt me (e.g., shoving, hitting, kicking) • Made me do things I didn't want to do • Sent me nasty or hurtful messages online • Shared nasty or hurtful things about me online • Shared embarrassing photos of me online • Threatened me 	<p>Bullied: "At least once a week"; "Once or twice a month"; "A few times a year"</p> <p>Not bullied: "Never" (must be answered to all questions with valid responses to be classified as not bullied)</p> <p>omitted: missing for all questions</p>



4.a.2 Percentage of students experiencing bullying in the last 12 months

DATA SOURCE	TARGET POPULATION	BULLYING QUESTION(S)	RESPONSES
TIMSS 2019 8 th grade	8 th Grade Students	<p>During this school year, how often have other students from your school done any of the following things to you, including through texting or the Internet?</p> <ul style="list-style-type: none">• Said mean things about my physical appearance (e.g., my hair, my size)• Spread lies about me• Shared my secrets with others• Refused to talk to me• Insulted a member of my family• Stole something from me• Made me do things I didn't want to do• Sent me nasty or hurtful messages online• Shared nasty or hurtful things about me online• Shared embarrassing photos of me online• Threatened me• Physically hurt me• Excluded me from their group (e.g., parties, messaging)• Damaged something of mine on purpose	<p>Bullied: "At least once a week"; "Once or twice a month"; "A few times a year"</p> <p>Not bullied: "Never" (must be answered to all questions with valid responses to be classified as not bullied)</p> <p>omitted: missing for all questions</p>

4.a.2 Percentage of students experiencing bullying in the last 12 months

Annex - Metadata for estimating SDG indicators from student level data in cross national student assessments

Definition of sub-populations

Female and male: The dataset used to estimate the indicators include a question asking whether the student is male or female. For TIMSS and PIRLS, the administrative record of the sex of the student was used.

Urban and rural: All assessments ask about the type of location in which the school is located to the school director; however, only LLECE 2013 asks explicitly whether the school is located in an urban or a rural area. The other surveys ask the question in various ways included the number of inhabitants or by description. See Table A.1 for the questions from each assessment and how they were mapped to urban or rural.

High and low socioeconomic: All assessments except TIMSS and PIRLS provide a measure of the socioeconomic status (SES) of students. This is typically based on the response by students about assets at home as well as education of parents.

LLECE 2013 used the responses of the family questionnaire to generate its index.

PASEC 2014 and PISA 2018 used student responses; no index was generated for the PASEC 2014 2nd grade students given their young age and reliability of answers.

TIMSS and PIRLS reports an index of home learning resources based on household possessions reported by students and this was used as a measure of socioeconomic status. To define high and low SES students, the median was calculated for each country, student above the median were defined as high SES while those below were defined as low SES. See Table A.2 for the names of the variables used to define high and low SES in each assessment.

Non-response and small sample sizes: Indicator estimates were not reported for sub-populations if data for the sub-population was available for less than 90 percent of sampled students or if the number of observations for a particular sub-population was less than 100.

Standard errors and confidence intervals methodology

The suggested methodology for estimating standard errors and subsequent confidence intervals varies by assessment and aim to account for clustering at the school-level. All surveys suggest using replicate methods in which the sample variation is obtained from variously defined sub-samples that mimic the sample design; the variation in estimates among the replicates provides an estimate of the sampling variation. The suggested methods were used for all assessments except LLECE 2013. For this survey, replicate weights

4.a.2 Percentage of students experiencing bullying in the last 12 months

were provided with each of the learning achievement datasets; however, a large number of students in the background dataset (which included the responses to the bullying and home language questions) were not included in the student achievement dataset. In order to maximize the background data, a linearization method for estimating the standard errors robust to clustering at the school level was used. Table A-3 describes the methodology used for each assessment.



4.a.2 Percentage of students experiencing bullying in the last 12 months

Table A1. Definition of urban and rural sub-populations

Assessment	Population	Question	Responses (mapping)
LLECE 2013	Grades 3 and 6	How would you characterize the area where your school is located?	In an area considered rural (rural) In an area considered urban (urban)
PASEC 2014	Grades 2 and 6	Your school is located in...	A town (urban) A suburb of a big city (urban) A big village (hundreds of homesteads) (rural) A small village (dozens of homesteads) (rural)
PISA 2018	15 year-olds	Which of the following definitions best describes the community in which your school is located?	A village, hamlet or rural area (fewer than 3 000 people) (rural) A small town (3 000 to about 15 000 people) (rural) A town (15 000 to about 100 000 people) (urban) A city (100 000 to about 1 000 000 people) (urban) A large city (with over 1 000 000 people) (urban)
TIMSS 2015/19; PIRLS 2016	Grades 4 and 8	Which best describes the immediate area in which your school is located?	Urban–Densely populated (urban) Suburban–On fringe or outskirts of urban area (urban) Medium size city or large town (urban) Small town or village (rural) Remote rural (rural)

Table A2. Variables used to define high and low SES students

Assessment	Population	Variable	Respondents
LLECE 2013	Grades 3 and 6	Index of the family's socioeconomic status (isecf)	Parents
PASEC 2014	Grade 2	n/a	n/a
PASEC 2014	Grade 6	Socioeconomic index of the student's family (ses)	Students
PISA 2018	15 year-olds	Index of economic, social and cultural status (escs)	Students
TIMSS 2015 / PIRLS 2016	4th grade	Index of home resources for learning (asbghrl)	Students
TIMSS 2015	8th grade	Index of home educational resources (bsbgher)	Students



4.a.2 Percentage of students experiencing bullying in the last 12 months

Table A3. Methodology for calculating standard errors by assessment

Assessment	Method		Reference for formulas	Software routine
LLECE 2013	Linearized		StataCorp 2013	SVY module for Stata (StataCorp)
	Jackknife	repeated		
PASEC 2014	replication		PASEC 2017	PV module for Stata (Macdonald 2008)
	Balanced	repeated		
PISA 2018	replication		OECD 2009	PV module for Stata (Macdonald 2008)
TIMSS 2015/19;	Jackknife	repeated		
PIRLS 2016	replication		Foy & LaRoche (2016)	PV module for Stata (Macdonald 2008)

4.a.2 Percentage of students experiencing bullying in the last 12 months



References

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