TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

TIMSS

TIMSS 2019 User Guide for the International Database

SUPPLEMENT 3

Variables Derived from the Student, Home, Teacher, and School Context Data

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SUPPLEMENT 3

Variables Derived from the Student, Home, Teacher, and School Context Data

Overview

The TIMSS 2019 International Database includes data for derived variables used to report context data in the *TIMSS 2019 International Results in Mathematics and Science* report. This supplement contains information about how each of these variables were derived, organized in the following sections corresponding to the TIMSS 2019 context questionnaires administered to collect the data:

Section 1: Variables Derived from Grade 4 Context Data

- Section 1.1: Student Questionnaire
- Section 1.2: Home Questionnaire
- Section 1.3: Teacher Questionnaire
- Section 1.4: School Questionnaire

Section 2: Variables Derived from Grade 8 Context Data

- Section 2.1: Student Questionnaires
- Section 2.2: Teacher Questionnaire—Mathematics
- Section 2.3: Teacher Questionnaire—Science
- Section 2.4: School Questionnaire

The following information is provided for each derived variable:

- Derived variable name
- Variable label
- International report exhibit(s) where variable is reported

- Procedures for computing the derived variable, including descriptions of source variables and missing data rules
- Information about whether a comparable variable was available in TIMSS 2015.

The sections of this supplement are labeled according to the TIMSS 2019 International Database files that contain the derived variables. The derived variables are named within each data file according to the context variable naming convention described in Exhibit 1 below. The last four characters (indicated with ****) are unique to each variable.

Exhibit 1: Naming Convention for Variables Derived from the TIMSS 2019 Context Data

Variable Naming Convention	Context Data Source
Grade 4	
ASDG****	Student context data (*Student Questionnaire*)
ASDH****	Home context data (*Home Questionnaire* / *Early Learning Survey*)
ATDM****	Teacher context data related to mathematics (*Teacher Questionnaire*)
ATDS****	Teacher context data related to science (*Teacher Questionnaire*)
ACDG****	School context data (*School Questionnaire*)
Grade 8	
BSDG****	Student context data (*Student Questionnaires*)
BTDM****	Mathematics teacher context data (*Teacher Questionnaire—Mathematics*)
BTDS****	Science teacher context data (*Teacher Questionnaire—Science*)
BCDG****	School context data (*School Questionnaire*)

See Chapter 2 of the User Guide for more information.

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SECTION 1.1: VARIABLES DERIVED FROM THE STUDENT CONTEXT DATA GRADE 4

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Derived Variable Name:	Variable Label:
ASDG05S	Number of Home Study Supports

International Report Exhibits

Exhibits 5.1–5.3: Home Resources for Learning

Procedure

Based on responses to the following questions in the Student Questionnaire:
SQG-05c,d: Do you have any of these things at your home?
"Your own room" (ASBG05C)
"Internet connection" (ASBG05D)
Response options: 1 = "Yes"
2 = "No"

Derive ASDG05S:
0 = "Neither Own Room nor Internet Connection" = IF (ASBG05C = 2 AND ASBG05D = 2)
1 = "Either Own Room or Internet Connection" = IF ((ASBG05C = 1 AND ASBG05D = 2) OR (ASBG05C = 2 AND ASBG05D = 1))
2 = "Both Own Room and Internet Connection" = IF (ASBG05C = 1 AND ASBG05D = 1)

Set ASDG05S to missing if either source variable is missing.

0 = "Neither Own Room nor Internet Connection"
1 = "Either Own Room or Internet Connection"
2 = "Both Own Room and Internet Connection"

Trend Comments

See ASDG05S in TIMSS 2015

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SECTION 1.2: VARIABLES DERIVED FROM THE HOME CONTEXT DATA GRADE 4

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Derived Variable Name:	Variable Label:
ASDHAPS	Student Attended Preprimary Education

International Report Exhibits

Exhibits 5.14–5.15: Students Attended Preprimary Education

Exhibits 5.16–5.17: Early Preparation for School

Procedure

Based on responses to the following questions in the Home Questionnaire:
HQ-04Aa,Ab: Did your child attend the following before <first grade>?
"Early childhood educational program or center for children under age 3" (ASBH04AA)
"Pre-primary educational program for children age 3 or older, including <Kindergarten>" (ASBH04AB)
Response options: 1 = "Yes"
2 = "No"
HQ-04B: Approximately, how long was your child in these programs altogether? (ASBH04B)
Response options: 1 = "Did not attend"
2 = "Less than 1 year"
3 = "1 year"
4 = "2 years"
5 = "3 years"
6 = "4 years or more"

Derive ASDHAPS:
0 = "Did Not Attend" = IF ((ASBH04AA = 2 AND ASBH04AB = 2) OR ASBH04B = 1)
1 = "1 Year or Less" = IF (ASBH04B = 2 OR 3)
2 = "2 Years" = IF (ASBH04B = 4)
3 = "3 Years or More" = IF (ASBH04B = 5 OR 6)

Set ASDHAPS to missing if any source variable is missing.

0 = "Did Not Attend"
1 = "1 Year or Less"
2 = "2 Years"
3 = "3 Years or More"

Trend Comments

See ASDHAPS in TIMSS 2015. Modifications made to source variables ASBH04AA, ASBH04AB in 2019.

Derived Variable Name:	Variable Label:
ASDHEDUP	Parents' Highest Education Level

International Report Exhibits

Exhibits 5.1–5.3: Home Resources for Learning

Procedure

Based on responses to the following questions in the Home Questionnaire:
HQ-15: What is the highest level of education completed by the child's <parents/guardians>?
"<Parent/Guardian A>" (ASBH15A)
"<Parent/Guardian B>" (ASBH15B)
Response options: 1 = "Did not go to school"
2 = "Some <Primary education—ISCED Level 1 or Lower secondary education—ISCED Level 2>"
3 = "<Lower secondary education—ISCED Level 2>"
4 = "<Upper secondary education—ISCED Level 3>"
5 = "<Post-secondary, non-tertiary education—ISCED Level 4>"
6 = "<Short-cycle tertiary education—ISCED Level 5>"
7 = "<Bachelor's or equivalent level—ISCED Level 6>"
8 = "<Postgraduate degree: Master's—ISCED Level 7 or Doctor—ISCED Level 8>"
9 = "Not applicable"

Recode ASBH15A as follows:
IF ASBH15A = 7 or 8: Recode to 1 ("University or Higher")
IF ASBH15A = 5 or 6: Recode to 2 ("Post-Secondary Education but not University")
IF ASBH15A = 4: Recode to 3 ("Upper Secondary")
IF ASBH15A = 3: Recode to 4 ("Lower Secondary")
IF ASBH15A = 1 or 2: Recode to 5 ("Some Primary or Lower Secondary or Did not go to School")
IF ASBH15A = 9: Recode to 6 ("Not Applicable")
Recode ASBH15B in the same way.

Derive ASDHEDUP:
Using these categories, the smaller value of the recoded ASBH15A and ASBH15B becomes ASDHEDUP.

Set ASDHEDUP to missing if both source variables are missing.

1 = "University or Higher "
2 = "Post-Secondary Education but not University "
3 = "Upper Secondary "
4 = "Lower Secondary "
5 = "Some Primary or Lower Secondary or Did not go to School "
6 = "Not Applicable"

Trend Comments

See ASDHEDUP in TIMSS 2015. Modifications made to source variables ASBH15A, ASBH15B in 2019.

Derived Variable Name:	Variable Label:
ASDHOCCP	Parents' Occupation

International Report Exhibits

Exhibits 5.1–5.3: Home Resources for Learning

Procedure

Based on responses to the following question in the Home Questionnaire:
HQ-17: What kind of work do the child's <parents/guardians> do for their main jobs?
"<Parent/Guardian A>" (ASBH17A)
"<Parent/Guardian B>" (ASBH17B)
Response options: 1 = "Has never worked for pay"
2 = "Small Business Owner"
3 = "Clerical Worker"
4 = "Service or Sales Worker"
5 = "Skilled Agricultural or Fishery Worker"
6 = "Craft or Trade Worker"
7 = "Plant or Machine Operator"
8 = "General Laborers"
9 = "Corporate Manager or Senior Official"
10 = "Professional"
11 = "Technician or Associate Professional"
12 = "Not applicable"

Recode ASBH17A as follows:
IF ASBH17A = 9, 10, or 11: Recode to 1 ("Professional")
IF ASBH17A = 2: Recode to 2 ("Small Business Owner")
IF ASBH17A = 3 or 4: Recode to 3 ("Clerical")
IF ASBH17A = 5, 6, or 7: Recode to 4 ("Skilled Worker")
IF ASBH17A = 8: Recode to 5 ("General Laborer")
IF ASBH17A = 1: Recode to 6 ("Never Worked for Pay")
IF ASBH17A = 12: Recode to 7 ("Not Applicable")
Recode ASBH17B in the same way.

Derive ASDHOCCP:
Using these categories, the smaller value of the recoded ASBH17A and ASBH17B becomes ASDHOCCP.

Set ASDHOCCP to missing if both source variables are missing.

1 = "Professional"
2 = "Small Business Owner"
3 = "Clerical"
4 = "Skilled Worker"
5 = "General Laborer"
6 = "Never Worked for Pay"
7 = "Not Applicable"

Trend Comments

See ASDHOCCP in TIMSS 2015. Modifications made to source variables ASBH17A, ASBH17B in 2019.

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SECTION 1.3: VARIABLES DERIVED FROM THE TEACHER CONTEXT DATA GRADE 4

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Derived Variable Name:	Variable Label:
ATDMMEM	Teachers Majored in Education and Mathematics

International Report Exhibits

Exhibits 9.5: Teachers Majored in Education and Mathematics

Procedure

Based on responses to the following questions in the Teacher Questionnaire:
TQG-04: What is the highest level of formal education you have completed? (ATBG04)
Response options: 1 = "Did not complete <Upper secondary education—ISCED Level 3>"
2 = "<Upper secondary education—ISCED Level 3>"
3 = "<Post-secondary, non-tertiary education—ISCED Level 4>"
4 = "<Short-cycle tertiary education—ISCED Level 5>"
5 = "Bachelor's or equivalent level—ISCED Level 6>"
6 = "Master's or equivalent level—ISCED Level 7>"
7 = "Doctor or equivalent level—ISCED Level 8>"
TQG-05Aa-Af: During your <post-secondary> education, what was your major or main area(s) of study?
"Education—Primary/Elementary" (ATBG05AA)
"Mathematics" (ATBG05AC)
Response options: 1 = "Yes"
2 = "No"
TQG-05Ba-Bd: If your major or main area of study was education, did you have a <specialization> in any of the following?
"Mathematics" (ATBG05BA)
Response options: 1 = "Yes"
2 = "No"

Derive ATDMMEM:
1 = "Major in primary education and mathematics" = IF (ATBG05AA = 1 AND (ATBG05AC = 1 OR ATBG05BA = 1))
2 = "Major in primary education but no mathematics" = IF (ATBG05AA = 1 AND ATBG05AC = 2 AND ATBG05BA = 2)
3 = "Major in mathematics but no primary education" = IF (ATBG05AA = 2 AND (ATBG05AC = 1 OR ATBG05BA = 1))
4 = "All other majors" = IF (ATBG05AA = 2 AND ATBG05AC = 2 AND ATBG05BA = 2)
5 = "No formal education beyond upper-secondary" = IF (ATBG04 = 1 OR 2)
Otherwise, set to missing.

1 = "Major in Primary Education and Major (or Specialization) in Mathematics"
2 = "Major in Primary Education but No Major (or Specialization) in Mathematics"
3 = "Major in Mathematics but No Major in Primary Education"
4 = "All Other Majors"
5 = "No Formal Education Beyond Upper-Secondary"

Trend Comments

See ATDM05 in TIMSS 2015

Derived Variable Name:	Variable Label:
ATDSMES	Teachers Majored in Education and Science

International Report Exhibits

Exhibit 9.6: Teachers Majored in Education and Science

Procedure

Based on responses to the following questions in the Teacher Questionnaire:
TQG-04: What is the highest level of formal education you have completed? (ATBG04)
Response options: 1 = "Did not complete <Upper secondary education—ISCED Level 3>"
2 = "<Upper secondary education—ISCED Level 3>"
3 = "<Post-secondary, non-tertiary education—ISCED Level 4>"
4 = "<Short-cycle tertiary education—ISCED Level 5>"
5 = "Bachelor's or equivalent level—ISCED Level 6>"
6 = "Master's or equivalent level—ISCED Level 7>"
7 = "Doctor or equivalent level—ISCED Level 8>"
TQG-05Aa-Af: During your <post-secondary> education, what was your major or main area(s) of study?
"Education—Primary/Elementary" (ATBG05AA)
"Science" (ATBG05AD)
Response options: 1 = "Yes"
2 = "No"
TQG-05Ba-Bd: If your major or main area of study was education, did you have a <specialization> in any of the following?
"Science" (ATBG05BB)
Response options: 1 = "Yes"
2 = "No"

Derive ATDSMES:
1 = "Major in primary education and science" = IF (ATBG05AA = 1 AND (ATBG05AD = 1 OR ATBG05BB = 1))
2 = "Major in primary education but no science " = IF (ATBG05AA = 1 AND ATBG05AD = 2 AND ATBG05BB = 2)
3 = "Major in science but no primary education" = IF (ATBG05AA = 2 AND (ATBG05AD = 1 OR ATBG05BB = 1))
4 = "All other majors" = IF (ATBG05AA = 2 AND ATBG05AD = 2 AND ATBG05BB = 2)
5 = "No formal education beyond upper-secondary" = IF (ATBG04 = 1 OR 2)
Otherwise, set to missing.

1 = "Major in Primary Education and Major (or Specialization) in Science "
2 = "Major in Primary Education but No Major (or Specialization) in Science"
3 = "Major in Science but No Major in Primary Education"
4 = "All Other Majors"
5 = "No Formal Education Beyond Upper-Secondary"

Trend Comments

See ATDS05 in TIMSS 2015

Derived Variable Name:	Variable Label:
ATDMNUM	Percent of Students Taught Number Topics

International Report Exhibits

Exhibits 12.4–12.5: Percentages of Students Taught the TIMSS Mathematics Topics

Procedure

Based on responses to the following questions in the Teacher Questionnaire:
TQM-05Aa-Ag: The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <fourth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Concepts of whole numbers, including place value and ordering" (ATBM05AA)
"Adding, subtracting, multiplying, and dividing with whole numbers" (ATBM05AB)
"Concepts of multiples and factors; odd and even numbers" (ATBM05AC)
"Number sentences (finding the missing number, representing problem situations with numbers sentences)" (ATBCM05AD)
"Number patterns (extending number patterns and finding missing terms)" (ATBM05AE)
"Concepts of fractions, including representing, comparing and ordering, adding and subtracting simple fractions" (ATBM05AF)
"Concepts of decimals, including place value and ordering, adding and subtracting with decimals" (ATBM05AG)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive ATDMNUM:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set ATDMNUM to missing if three or more source variables are missing.

Trend Comments

See ATDM06NU in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
ATDMGEO	Percent of Students Taught Measurement and Geometry Topics

International Report Exhibits

Exhibits 12.4–12.5: Percentages of Students Taught the TIMSS Mathematics Topics

Procedure

Based on responses to the following questions in the Teacher Questionnaire:
TQM-05Ba-Bf: The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <fourth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Solving problems involving length, including measuring and estimating" (ATBM05BA)
"Solving problems involving mass, volume, and time" (ATBM05BB)
"Finding and estimating perimeter, area, and volume" (ATBM05BC)
"Parallel and perpendicular lines" (ATBM05BD)
"Comparing and drawing angles" (ATBM05BE)
"Elementary properties of common geometric shapes" (ATBM05BF)
"Three-dimensional shapes, including relationships with their two-dimensional representations" (ATBM05BG)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive ATDMGEO:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set ATDMGEO to missing if three or more source variables are missing.

Trend Comments

See ATDM06GE in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
ATDMDAT	Percent of Students Taught Data Topics

International Report Exhibits

Exhibits 12.4–12.5: Percentages of Students Taught the TIMSS Mathematics Topics

Procedure

Based on responses to the following questions in the Teacher Questionnaire:
TQM-05Ca-Cc: The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <fourth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Reading and interpreting data from tables, pictographs, bar graphs, line graphs, and pie charts" (ATBM05CA)
"Organizing and representing data to help answer questions" (ATBM05CB)
"Drawing conclusions from data displays" (ATBM05CC)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive ATDMDAT:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set ATDMDAT to missing if three or more source variables are missing.

Trend Comments

See ATDM06DT in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
ATDSLIF	Percent of Students Taught Life Science Topics

International Report Exhibits

Exhibits 13.4–13.5: Percentages of Students Taught the TIMSS Science Topics

Procedure

Based on responses to the following questions in the Teacher Questionnaire:
TQS-04Aa-Ag: The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <fourth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Physical and behavioral characteristics of living things and major groups of living things (e.g., mammals, birds, insects, flowering plants)" (ATBS04AA)
"Major body structures and their functions in humans, other animals, and plants" (ATBS04AB)
"Life cycles of common plants and animals (e.g., flowering plants, butterflies, frogs)" (ATBS04AC)
"Characteristics of plants and animals that are inherited" (ATBS04AD)
"Interactions between organisms and their environments (e.g., physical features and behaviors that help living things survive in their environments)" (ATBS04AE)
"Relationships in ecosystems (e.g., simple food chains, predator-prey relationships, competition)" (ATBS04AF)
"Human health (transmission and prevention of diseases, everyday behaviors that promote good health)" (ATBS04AG)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive ATDSLIF:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set ATDSLIF to missing if three or more source variables are missing.

Trend Comments

See ATDS05LI in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
ATDSPHY	Percent of Students Taught Physical Science Topics

International Report Exhibits

Exhibits 13.4–13.5: Percentages of Students Taught the TIMSS Science Topics

Procedure

Based on responses to the following questions in the Teacher Questionnaire:
TQS-04Ba-BI: The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <fourth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"States of matter (solid, liquid, gas) and their properties (volume, shape)" (ATBS04BA)
"Classifying materials based on physical properties (e.g., weight/mass, volume, state of matter, conductivity of heat or electricity)" (ATBS04BB)
"Mixtures, including methods for separating a mixture into its components (e.g., sifting, filtering, evaporation, using a magnet)" (ATBS04BC)
"Properties of magnets (e.g., like poles repel and opposite poles attract, magnets can attract some objects)" (ATBS04BD)
"Physical changes in everyday life (e.g., changes of state, dissolving)" (ATBS04BE)
"Chemical changes in everyday life (e.g., decaying, burning, rusting, cooking)" (ATBS04BF)
"Common sources of energy (e.g., the Sun, wind, oil) and uses of energy (heating and cooling homes, providing light" (ATBS04BG)
"Light and sound in everyday life (e.g., shadows and reflections, vibrating objects make sound)"(ATBS04BH)
"Heat transfer (e.g., energy flows from a hot object to a colder object)" (ATBS04BI)
"Electricity and simple electrical circuits (e.g., a circuit must be complete to work correctly)" (ATBS04BJ)
"Forces that cause objects to move (e.g., gravity, pushing/pulling) or change their motion (e.g., friction)" (ATBS04BK)
"Simple machines (e.g., levers, pulleys, wheels, ramps) that help make motion easier" (ATBS04BL)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive ATDSPHY:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set ATDSPHY to missing if three or more source variables are missing.

Trend Comments

See ATDS05PH in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
ATDSEAR	Percent of Students Taught Earth Science Topics

International Report Exhibits

Exhibits 13.4–13.5: Percentages of Students Taught the TIMSS Science Topics

Procedure

Based on responses to the following questions in the Teacher Questionnaire:
TQS-04Ca-CH: The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <fourth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Physical makeup of Earth's surface (e.g., land and water in unequal proportions, sources of fresh and salt water)" (ATBS04CA)
"Earth's resources used in everyday life (e.g., water, wind, soil, forests, oil, natural gas, minerals)" (ATBS04CB)
"Changes in Earth's surface over time (e.g., mountain building, weathering, erosion)" (ATBS04CC)
"Fossils and what they can tell us about past conditions on Earth" (ATBS04CD)
"Weather and climate (e.g., daily, seasonal, and locational variations versus long term trends)" (ATBS04CE)
"Objects in the Solar System (the Sun, the Earth, the Moon, and other planets) and their movements" (ATBS04CF)
"Earth's motion and related patterns observed on Earth (e.g., day and night, seasons)" (ATBS04CG)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive ATDSEAR:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set ATDSEAR to missing if three or more source variables are missing.

Trend Comments

See ATDS05ES in TIMSS 2015. Modifications made to source variables in 2019.

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SECTION 1.4: VARIABLES DERIVED FROM THE SCHOOL CONTEXT DATA GRADE 4

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Derived Variable Name:	Variable Label:
ACDGSBC	School Composition by Socioeconomic Background

International Report Exhibits

Exhibits 6.1–6.3: School Composition by Socioeconomic Background of the Student Body

Procedure

Based on responses to the following questions in the School Questionnaire:
ScQ-03: Approximately what percentage of students in your school have the following backgrounds?
"Come from economically disadvantaged homes" (ACBG03A)
"Come from economically affluent homes" (ACBG03B)
Response options: 1 = "0 to 10%"
2 = "11 to 25%"
3 = "26 to 50%"
4 = "More than 50%"

Derive ACDGSBC:
1 = "More Affluent" = IF (ACBG03A <=2 AND ACBG03B >= 3)
3 = "More Disadvantaged" = IF (ACBG03A >=3 AND ACBG03B <= 2)
2 = "Neither More Affluent nor More Disadvantaged" = IF (All other combinations of ACBG03A and ACBG03B)

Set ACDGSBC to missing if either source variable is missing.

1 = "More Affluent"
2 = "Neither More Affluent nor More Disadvantaged"
3 = "More Disadvantaged"

Trend Comments

See ACDG03 in TIMSS 2015

Derived Variable Name:	Variable Label:
ACDGTIHY	Total Instructional Hours per Year

International Report Exhibits

Exhibits 12.1–12.2: Instructional Time Spent on Mathematics

Exhibits 13.1–13.2: Instructional Time Spent on Science

Procedure

Based on responses to the following questions in the School Questionnaire:
ScQ-06A: How many days per year is your school open for instruction? (ACBG06A)
(Open-response item)
ScQ-06B: What is the total instructional time, excluding breaks, in a typical day? (ACBG06B)
(Open-response item; response in terms of minutes)

Derive ACDGTIHY:
Step 1: Compute instructional hours per day:
Divide ACBG06B by 60.
Step 2: Compute hours of school per year:
Multiply the result of Step 1 by ACBG06A.

Set ACDGTIHY to missing if either source variable is missing.

Trend Comments

See ACDG08HY in TIMSS 2015

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SECTION 2.1: VARIABLES DERIVED FROM THE STUDENT CONTEXT DATA GRADE 8

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Derived Variable Name:	Variable Label:
BSDG05S	Number of Home Study Supports

International Report Exhibits

Exhibits 5.4–5.6: Home Educational Resources

Procedure

Based on responses to the following questions in the Student Questionnaire:
SQG-05c,d: Do you have any of these things at your home?
"Your own room" (BSBG05C)
"Internet connection" (BSBG05D)
Response options: 1 = "Yes"
2 = "No"

Derive BSDG05S:
0 = "Neither Own Room nor Internet Connection" = IF (BSBG05C = 2 AND BSBG05D = 2)
1 = "Either Own Room or Internet Connection" = IF ((BSBG05C = 1 AND BSBG05D = 2) OR (BSBG05C = 2 AND BSBG05D = 1))
2 = "Both Own Room and Internet Connection" = IF (BSBG05C = 1 AND BSBG05D = 1)

Set BSDG05S to missing if either source variable is missing.

0 = "Neither Own Room nor Internet Connection"
1 = "Either Own Room or Internet Connection"
2 = "Both Own Room and Internet Connection"

Trend Comments

See BSDG06S in TIMSS 2015

Derived Variable Name:	Variable Label:
BSDGEDUP	Parents' Highest Education Level

International Report Exhibits

Exhibits 5.4–5.6: Home Educational Resources

Procedure

Based on responses to the following questions in the Student Questionnaire:
SQIS-06A,B/SQSS-06A,B: What is the highest level of education completed by your <parents/guardians>?
"<Parent/Guardian A"> (BSBG06A)
"<Parent/Guardian B>" (BSBG06B)
Response options: 1 = "Some <Primary education—ISCED Level 1 or Lower secondary education—ISCED Level 2> or did not go to school"
2 = "<Lower secondary education—ISCED Level 2>"
3 = "<Upper secondary education—ISCED Level 3>"
4 = "<Post-secondary, non-tertiary education—ISCED Level 4>"
5 = "<Short-cycle tertiary education—ISCED Level 5>"
6 = "<Bachelor's or equivalent level—ISCED Level 6>"
7 = "<Postgraduate degree: Master's—ISCED Level 7 or Doctor—ISCED Level 8>"
8 = "I don't know"
9 = "Not applicable"

Recode BSBG06A as follows:
IF BSBG06A = 6 or 7: Recode to 1 ("University or Higher")
IF BSBG06A = 4 or 5: Recode to 2 ("Post-Secondary Education but not University")
IF BSBG06A = 3: Recode to 3 ("Upper Secondary")
IF BSBG06A = 2: Recode to 4 ("Lower Secondary")
IF BSBG06A = 1: Recode to 5 ("Some Primary or Lower Secondary or Did not go to School")
IF BSBG06A = 8 or 9: Recode to 6 ("Not Applicable")

Recode BSBG06B in the same way.

Derive BSDGEDUP:
Using these categories, the smaller value of the recoded variables BSBG06A and BSBG06B becomes BSDGEDUP.

Set BSDGEDUP to missing if both source variables are missing.

1 = " University or Higher "
2 = " Post-Secondary Education but not University "
3 = " Upper Secondary "
4 = " Lower Secondary "
5 = "Some Primary or Lower Secondary or Did not go to School"
6 = "Not Applicable"

Trend Comments

See BSDGEDUP in TIMSS 2015. Modifications made to source variables BSBG06A, BSBG06B in 2019.

IEA TIMSS 2019

SECTION 2.2: VARIABLES DERIVED FROM THE MATHEMATICS TEACHER CONTEXT DATA GRADE 8

TIMSS 2019 USER GUIDE FOR THE INTERNATIONAL DATABASE

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Derived Variable Name:	Variable Label:
BTDMMME	Teachers Majored in Mathematics and Mathematics Education

International Report Exhibits

Exhibits 9.7: Teachers Majored in Education and Mathematics

Procedure

Based on responses to the following questions in the Mathematics Teacher Questionnaire:
TQG-04: What is the highest level of formal education you have completed? (BTBG04)
Response options: 1 = "Did not complete <Upper secondary education—ISCED Level 3>"
2 = "<Upper secondary education—ISCED Level 3>"
3 = "<Post-secondary, non-tertiary education—ISCED Level 4>"
4 = "<Short-cycle tertiary education—ISCED Level 5>"
5 = "Bachelor's or equivalent level—ISCED Level 6>"
6 = "Master's or equivalent level—ISCED Level 7>"
7 = "Doctor or equivalent level—ISCED Level 8>"
TQG-05a-i: During your <post-secondary> education, what was your major or main area(s) of study?
"Mathematics" (BTBG05A)
"Education—Mathematics" (BTBG05F)
Response options: 1 = "Yes"
2 = "No"

Derive BTDMMME:
1 = "Major in Mathematics and Mathematics Education" = IF (BTBG05A = 1 AND BTBG05F = 1)
2 = "Major in Mathematics but No Major in Mathematics Education" = IF (BTBG05A = 1 AND BTBG05F = 2)
3 = "Major in Mathematics Education but No Major in Mathematics" = IF (BTBG05A = 2 AND BTBG05F = 1)
4 = "All other majors" = IF (BTBG05A = 2 AND BTBG05F = 2)
5 = "No formal education beyond upper-secondary" = IF (BTBG04 = 1 OR 2)
Otherwise, set to missing.

1 = "Major in Mathematics and Mathematics Education"
2 = "Major in Mathematics but No Major in Mathematics Education"
3 = "Major in Mathematics Education but No Major in Mathematics"
4 = "All other majors"
5 = "No formal education beyond upper-secondary"

Trend Comments

See BTDM05 in TIMSS 2015

Derived Variable Name:	Variable Label:
BTDMNUM	Percent of Students Taught Number Topics

International Report Exhibits

Exhibits 12.6–12.7: Percentages of Students Taught the TIMSS Mathematics Topics

Procedure

Based on responses to the following questions in the Mathematics Teacher Questionnaire:
TQM-18Aa-Ac: The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <eighth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Computing with negative numbers" (BTBM18AA)
"Concepts of fractions and decimals" (BTBM18AB)
"Solving problems involving proportions and percents" (BTBM18AC)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive BTDMNUM:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set BTDMNUM to missing if three or more source variables are missing.

Trend Comments

See BTDM21NU in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
BTDMALG	Percent of Students Taught Algebra Topics

International Report Exhibits

Exhibits 12.6–12.7: Percentages of Students Taught the TIMSS Mathematics Topics

Procedure

Based on responses to the following questions in the Mathematics Teacher Questionnaire:
TQM-18Ba-Bg: The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <eighth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Simplifying and evaluating algebraic expressions" (BTBM18BA)
"Simple linear equations" (BTBM18BB)
"Simple linear inequalities" (BTBM18BC)
"Simultaneous (two variables) equations" (BTBM18BD)
"Representation of linear and quadratic functions in tables, graphs, words, or equations" (ATBM18BE)
"Properties of functions (slopes, intercepts, etc.)" (BTBM18BF)
"Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns)" (BTBM18BG)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive BTDMALG:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set BTDMALG to missing if three or more source variables are missing.

Trend Comments

See BTDM21AL in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
BTDMGEO	Percent of Students Taught Geometry Topics

International Report Exhibits

Exhibits 12.6–12.7: Percentages of Students Taught the TIMSS Mathematics Topics

Procedure

Based on responses to the following questions in the Mathematics Teacher Questionnaire:
TQM-18Ca-Cf: The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <eighth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Geometric properties of angles, pairs of lines, and geometric shapes (triangles, quadrilaterals, and other common polygons)" (BTBM18CA)
"Solving problems involving perimeters, circumferences, and areas" (BTBM18CB)
"Solving problems involving the Pythagorean Theorem" (BTBM18CC)
"Translation, reflection, and rotation" (BTBM18CD)
"Congruent figures and similar triangles" (BTBM18CE)
"Solving problems with three-dimensional shapes" (BTBM18CF)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive BTDMGEO:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set BTDMGEO to missing if three or more source variables are missing.

Trend Comments

See BTDM21GE in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
BTDMDAT	Percent of Students Taught Data and Probability Topics

International Report Exhibits

Exhibits 12.6–12.7: Percentages of Students Taught the TIMSS Mathematics Topics

Procedure

Based on responses to the following questions in the Mathematics Teacher Questionnaire:
TQM-18Da-Df: The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <eighth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Reading and interpreting data from one or more sources to solve problems (interpolating, extrapolating, drawing conclusions)" (BTBM18DA)
"Identifying appropriate procedures for collecting data" (BTBM18DB)
"Organizing and representing data to help answer questions" (BTBM18DC)
"Calculating and interpreting statistics summarizing data distributions" (BTBM18DD)
"Theoretical and empirical probability of simple events" (BTBM18DE)
"Theoretical and empirical probability of compound events" (BTBM18DF)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive BTDMDAT:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set BTDMDAT to missing if three or more source variables are missing.

Trend Comments

See BTDM21DT in TIMSS 2015. Modifications made to source variables in 2019.

IEA TIMSS 2019

SECTION 2.3: VARIABLES DERIVED FROM THE SCIENCE TEACHER CONTEXT DATA GRADE 8

TIMSS 2019 USER GUIDE FOR THE INTERNATIONAL DATABASE

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Derived Variable Name:	Variable Label:
BTDSMSE	Teachers Majored in Science and Science Education

International Report Exhibits

Exhibit 9.8: Teachers Majored in Education and Science

Procedure

Based on responses to the following questions in the Science Teacher Questionnaire:
TQG-04: What is the highest level of formal education you have completed? (BTBG04)
Response options: 1 = "Did not complete <Upper secondary education—ISCED Level 3>"
2 = "<Upper secondary education—ISCED Level 3>"
3 = "<Post-secondary, non-tertiary education—ISCED Level 4>"
4 = "<Short-cycle tertiary education—ISCED Level 5>"
5 = "Bachelor's or equivalent level—ISCED Level 6>"
6 = "Master's or equivalent level—ISCED Level 7>"
7 = "Doctor or equivalent level—ISCED Level 8>"

TQG-05a-i: During your <post-secondary> education, what was your major or main area(s) of study?
"Biology" (BTBG05B)
"Physics" (BTBG05C)
"Chemistry" (BTBG05D)
"<Earth Science>" (BTBG05E)
"Education—Science" (BTBG05G)
Response options: 1 = "Yes"
2 = "No"

Derive BTDSMSE:
1 = "Major in Science and Science Education" = IF ((BTBG05B = 1 OR BTBG05C = 1 OR BTBG05D = 1 OR BTBG05E = 1) AND BTBG05G = 1)
2 = "Major in Science but No Major in Science Education" = IF ((BTBG05B = 1 OR BTBG05C = 1 OR BTBG05D = 1 OR BTBG05E = 1) AND BTBG05G = 2)
3 = "Major in Science Education but No Major in Science" = IF ((BTBG05B = 2 AND BTBG05C = 2 AND BTBG05D = 2 AND BTBG05E = 2) AND BTBG05G = 1)
4 = "All other majors" = IF (BTBG05B = 2 AND BTBG05C = 2 AND BTBG05D = 2 AND BTBG05E = 2 AND BTBG05G = 2)
5 = "No formal education beyond upper-secondary" = IF (BTBG04 = 1 OR 2)
Otherwise, set to missing.

1 = "Major in Science and Science Education"
2 = "Major in Science but No Major in Science Education"
3 = "Major in Science Education but No Major in Science"
4 = "All other majors"
5 = "No formal education beyond upper-secondary"

Trend Comments

See BTDS05 in TIMSS 2015

Derived Variable Name:	Variable Label:
BTDSBIO	Percent of Students Taught Biology Topics

International Report Exhibits

Exhibits 13.6–13.7: Percentages of Students Taught the TIMSS Science Topics

Procedure

Based on responses to the following questions in the Science Teacher Questionnaire:
TQS-17Aa-Ag: The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <eighth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Differences among major taxonomic groups of organisms (plants, animals, fungi, mammals, birds, reptiles, fish, amphibians, insects)" (BTBS17AA)
"Major organs and organ systems in humans and other organisms (structure/function, life processes)" (BTBS17AB)
"Cells, their structure and functions, including respiration and photosynthesis as cellular processes" (BTBS17AC)
"Life cycles, sexual reproduction, and heredity (inherited versus acquired/learned characteristics)" (BTBS17AD)
"Role of variation and adaptation in survival/extinction of species (including fossil evidence)" (BTBS17AE)
"Interdependence of populations of organisms in an ecosystem (e.g., carbon and water cycles, energy flow, food webs, competition, predation, human impacts on ecosystems)" (BTBS17AF)
"Human health (e.g., causes, transmission, and prevention of common infectious diseases, immunity) and the importance of diet, exercise, and other lifestyle choices in maintaining health" (BTBS17AG)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive BTDSBIO:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set BTDSBIO to missing if three or more source variables are missing.

Trend Comments

See BTDS20BI in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
BTDSCHE	Percent of Students Taught Chemistry Topics

International Report Exhibits

Exhibits 13.6–13.7: Percentages of Students Taught the TIMSS Science Topics

Procedure

Based on responses to the following questions in the Science Teacher Questionnaire:
TQS-17Ba-Bh: The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <eighth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Particulate structure, classification, and composition of matter (protons, neutrons, electrons, atoms, molecules, elements, compounds, mixtures)" (BTBS17BA)
"The periodic table as an organizing principle for the known elements" (BTBS17BB)
"Physical and chemical properties of matter" (BTBS17BC)
"Mixtures and solutions (e.g., solvent, solute, concentration/dilution)" (BTBS17BD)
"Properties of common acids and bases (e.g., acids have pH less than 7, reactions with indicators produce color changes, acids and bases neutralize each other)" (BTBS17BE)
"Characteristics of chemical reactions (e.g., transformation of reactants, evidence of chemical change)" (BTBS17BF)
"Matter and energy in chemical reactions (conservation of matter, familiar exothermic and endothermic reactions, factors affecting reaction rates)" (BTBS17BG)
"The role of electrons in chemical bonds" (BTBS17BH)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive BTDSCHE:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set BTDSCHE to missing if three or more source variables are missing.

Trend Comments

See BTDS20CH in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
BTDSPHY	Percent of Students Taught Physics Topics

International Report Exhibits

Exhibits 13.6–13.7: Percentages of Students Taught the TIMSS Science Topics

Procedure

Based on responses to the following questions in the Science Teacher Questionnaire:
TQS-17Ca-Cg: The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <eighth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Physical states and changes in matter (explanations of properties in terms of movement and distance between particles; phase change, changes in volume and/or pressure, physical changes)" (BTBS17CA)
"Energy transformation and transfer (e.g., forms of energy, energy conservation, heat temperature, equilibrium)" (BTBS17CB)
"Basic properties/behaviors of light (reflection, refraction, color, shadows, simple ray diagrams)" (BTBS17CC)
"Basic properties/behaviors of sound (vibrations that produce sound, transmission through media, loudness, pitch)" (BTBS17CD)
"Electric circuits (e.g., electrical conductors/insulators and the flow of electricity in series/parallel circuits)" (BTBS17CE)
"Properties and uses of permanent magnets and electromagnets" (BTBS17CF)
"Motion and forces (e.g., basic description of motion, common mechanical forces, properties of forces, effects of forces, simple machines, buoyancy, effects of density and pressure)" (BTBS17CG)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive BTDSPHY:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set BTDSPHY to missing if three or more source variables are missing.

Trend Comments

See BTDS20PH in TIMSS 2015. Modifications made to source variables in 2019.

Derived Variable Name:	Variable Label:
BTDSEAR	Percent of Students Taught Earth Science Topics

International Report Exhibits

Exhibits 13.6–13.7: Percentages of Students Taught the TIMSS Science Topics

Procedure

Based on responses to the following questions in the Science Teacher Questionnaire:
TQS-17Da-Dd: The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <eighth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."
"Earth's structure and physical features (e.g., Earth's crust, mantle, and core; composition and relative distribution of water; composition of Earth's atmosphere)" (BTBS17DA)
"Earth's processes, cycles, and history (e.g., rock cycle, major geological events, formation of fossils and fossil fuels, water cycle, weather versus climate)" (BTBS17DB)
"Earth's resources, their use, and conservation (e.g., renewable/nonrenewable resources, human use of land and water resources)" (BTBS17DC)
"Earth in the Solar System and the universe (phenomena on Earth: seasons, eclipses, tides, phases of moon; members of the Solar System; physical features of Earth)" (BTBS17DD)
Response options: 1 = "Mostly taught before this year"
2 = "Mostly taught this year"
3 = "Not yet taught or just introduced"

Derive BTDSEAR:
Step 1: Compute average percent for each topic area:
For each variable, compute the percent of students whose teachers selected 1 = "Mostly taught before this year" OR 2 = "Mostly taught this year."
Step 2: Compute average percent for content domain:
Compute average across the topic area percentages from Step 1.

Set BTDSEAR to missing if three or more source variables are missing.

Trend Comments

See BTDS20ES in TIMSS 2015. Modifications made to source variables in 2019.

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SECTION 2.4: VARIABLES DERIVED FROM THE SCHOOL CONTEXT DATA GRADE 8

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Derived Variable Name:	Variable Label:
BCDGSBC	School Composition by Socioeconomic Background

International Report Exhibits

Exhibits 6.1, 6.4, & 6.5: School Composition by Socioeconomic Background of the Student Body

Procedure

Based on responses to the following questions in the School Questionnaire:
ScQ-03: Approximately what percentage of students in your school have the following backgrounds?
"Come from economically disadvantaged homes" (BCBG03A)
"Come from economically affluent homes" (BCBG03B)
Response options: 1 = "0 to 10%"
2 = "11 to 25%"
3 = "26 to 50%"
4 = "More than 50%"

Derive BCDGSBC:
1 = "More Affluent" = IF (BCBG03A <=2 AND BCBG03B >= 3)
3 = "More Disadvantaged" = IF (BCBG03A >=3 AND BCBG03B <= 2)
2 = "Neither More Affluent nor More Disadvantaged" = IF (All other combinations of BCBG03A and BCBG03B)

Set BCDGSBC to missing if either source variable is missing.

1 = "More Affluent"
2 = "Neither More Affluent nor More Disadvantaged"
3 = "More Disadvantaged"

Trend Comments

See BCDG03 in TIMSS 2015

Derived Variable Name:	Variable Label:
BCDGTIHY	Total Instructional Hours per Year

International Report Exhibits

Exhibits 12.1 & 12.3: Instructional Time Spent on Mathematics

Exhibits 13.1 & 13.2: Instructional Time Spent on Science

Procedure

Based on responses to the following questions in the School Questionnaire:
ScQ-06A: How many days per year is your school open for instruction? (BCBG06A)
(Open-response item)
ScQ-06B: What is the total instructional time, excluding breaks, in a typical day? (BCBG06B)
(Open-response item; response in terms of minutes)

Derive BCDGTIHY:
Step 1: Compute instructional hours per day:
Divide BCBG06B by 60.
Step 2: Compute hours of school per year:
Multiply the result of Step 1 by BCBG06A.

Set BCDGTIHY to missing if either source variable is missing.

Trend Comments

See BCDG07HY in TIMSS 2015

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