Progress in International Reading Literacy Study International Data Explorer Help Guide

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PIRLS International Data Explorer Help Guide

I. Background on the Progress in International Reading Literacy Study (PIRLS) and the PIRLS International Data Explorer (IDE)

The Progress in International Reading Literacy Study (PIRLS) International Data Explorer (IDE) is a web-based application for accessing PIRLS data, supported by the U.S. National Center for Education Statistics (NCES). PIRLS is an international comparative study of the reading literacy of young students. PIRLS surveys the reading achievement and reading behaviors and attitudes of fourth-grade students in the United States and students in the equivalent of fourth grade in other participating countries.

PIRLS was first administered in 2001 in 35 jurisdictions, and was administered again in 2006 in 45 jurisdictions (including countries and subnational education systems, such as Canadian provinces and Hong Kong, SAR). PIRLS 2001 and 2006 results are available through the IDE; results from PIRLS 2011 are expected to be available in winter 2012-13. The next administration of PIRLS is scheduled for 2016. PIRLS is coordinated by the International Association for the Evaluation of Educational Achievement (IEA).

What aspects of reading literacy can I explore?

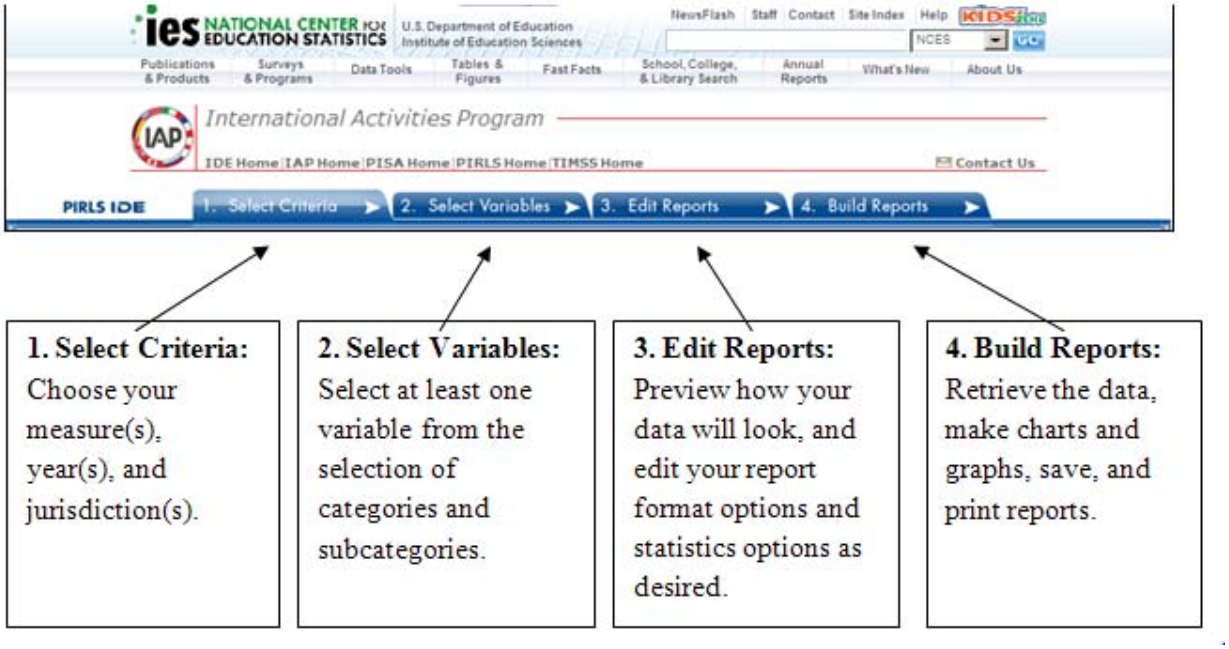
- **PIRLS Reading Literacy (overall):** Students are asked to construct meaning from a variety of fictional and nonfictional texts for varying purposes.
- **PIRLS Reading for Literary Purposes:** Fictional texts are used to measure the ability of students to read for literary experience.
- **PIRLS Reading for Informational Purposes:** Nonfictional texts are used to measure the ability of students to acquire and use information.
- **PIRLS Retrieving and Straightforward Inferencing Processes:** Items ask students to draw conclusions or connections that are based primarily on information contained in the text.
- **PIRLS Interpreting, Integrating, and Evaluating Processes:** Items ask students to interpret and integrate text information that may draw on their background knowledge and experiences more than they do for straightforward inferences.

For more information on the PIRLS reading framework and aspects of reading literacy, please see Mullis, I.V.S., Kennedy, A.M., Martin, M.O., and Sainsbury, M. (2006). *PIRLS 2006 Assessment Framework and Specifications* (2nd ed.). Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College.

II. General Overview

There are four general steps for exploring PIRLS data using the PIRLS IDE (see exhibit 1). Each step is described in more detail starting on page 6.

Exhibit 1. What you will see in the IDE environment and what each step entails



III. Computer Requirements for the IDE

- Screen resolution should be 1024 x 768 pixels.
- Browsers: Internet Explorer (IE) version 6 or higher (IE7 is recommended). For rendering and scrolling pages with large tables, Firefox 2.0 is faster than IE7 (FireFox 3.0 or higher is recommended).
- Enable JavaScript and pop-ups in your browser.
- IDE requires Flash version 9.0.115 or higher (download Adobe Flash Player at http://get.adobe.com/flashplayer/).
- Exports of files to Microsoft Office require Office 2003 or later.
- Exports of files to PDF can be read with Adobe Acrobat Reader.
- Screen reader software should be Jaws 8.0 or higher.

If you encounter an error, please send us the details through Contact Us (located in the upper right portion of the screen on each page of the IDE website). When writing, include your browser version and operating system version, and as many other details as possible. Be sure to provide an e-mail address so that we can contact you.

IV. Steps to Explore Data

To create your own custom tables, charts, and graphs, follow these steps when using the PIRLS IDE.

1. Select criteria
2. Select variables
3. Edit reports
4. Build reports

1. Select Criteria

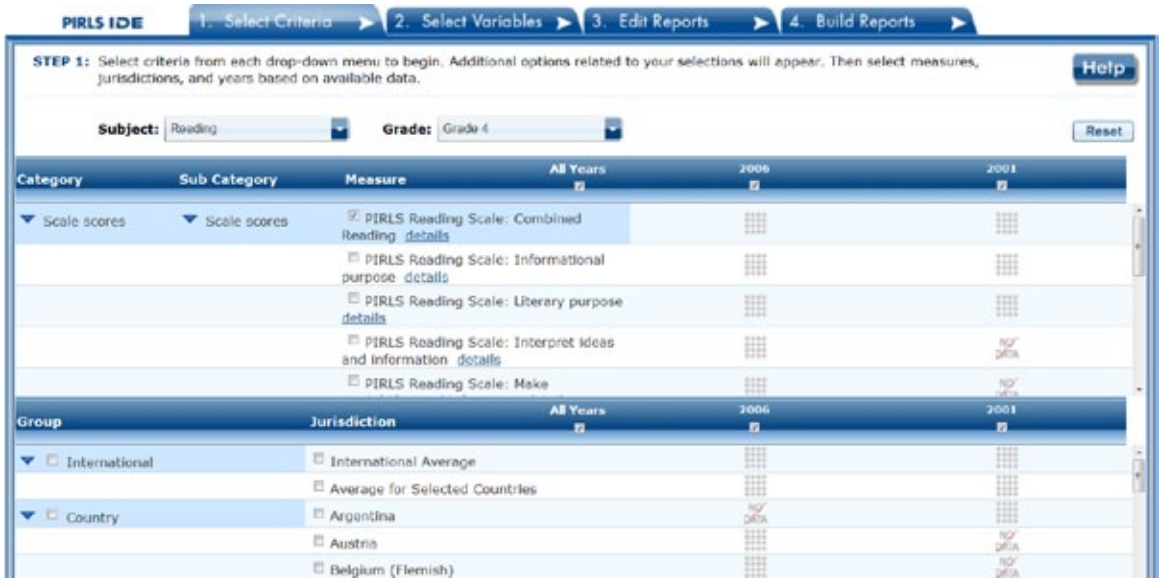
1.A. Overview

Your data query in the IDE begins on the **Select Criteria** screen (see exhibit 2).

Choose one or more **Measures, Years,** and **Jurisdictions** for the data you wish to view or compare. Use the **Reset** button located in the upper right portion of the screen (just below the **Help** button) to erase your choices and begin again.

Click on a blue sideways facing arrow (►) to open up a category, and click on a blue downward facing arrow (▼) to close a category.

Exhibit 2. Select criteria



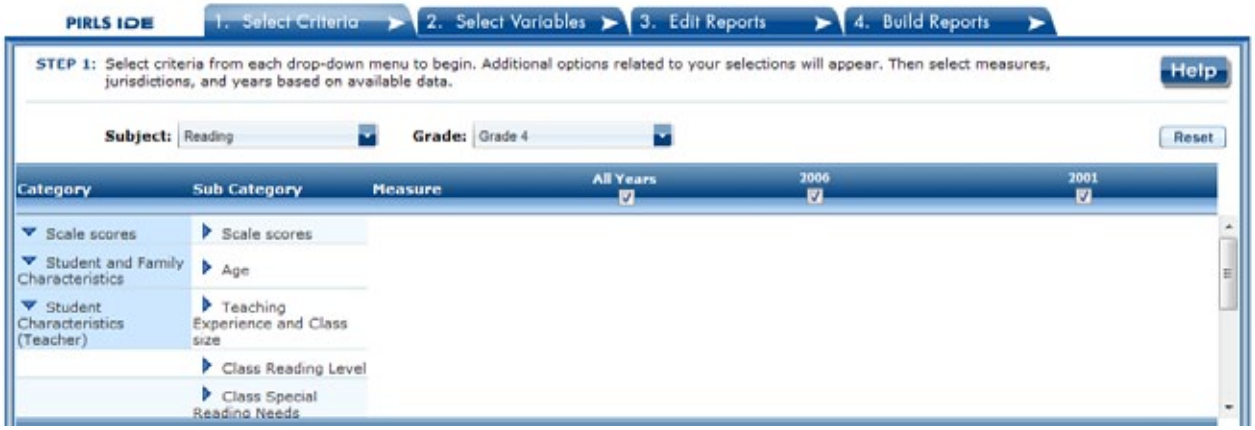
1.B. Choose Measure and Year

Under **Measure,** you can choose the combined reading scale and/or any of the reading subscales. Note that the combined reading scale is the default (as shown in exhibit 2).

In addition, there are a number of variables other than scale scores that you may choose as a measure (see exhibit 3). These variables—such as age, teaching experience, and class size—are all continuous variables and are used as a measure of analysis.

You may also choose the survey year (All years, 2006, or 2001) at the top of either step 1 or 2. Notice for which years a measure, jurisdiction, or variable data are available by looking below each year for the grid of dots (which means data are available) or the "No data" slash.

Exhibit 3. Measures



1.C. Choose Jurisdiction

With your measure selected, next choose at least one **Jurisdiction.**

Jurisdictions are found under the following groups: **Country** and **Benchmarking jurisdictions.** There is also a group category called **International,** with options to display the **International Average** and the **Average for Selected Countries.** Please note that selecting **International Average** or **Average for Selected Countries** may produce an error message in the **Build Reports** step due to the high volume of information contained in these groups.

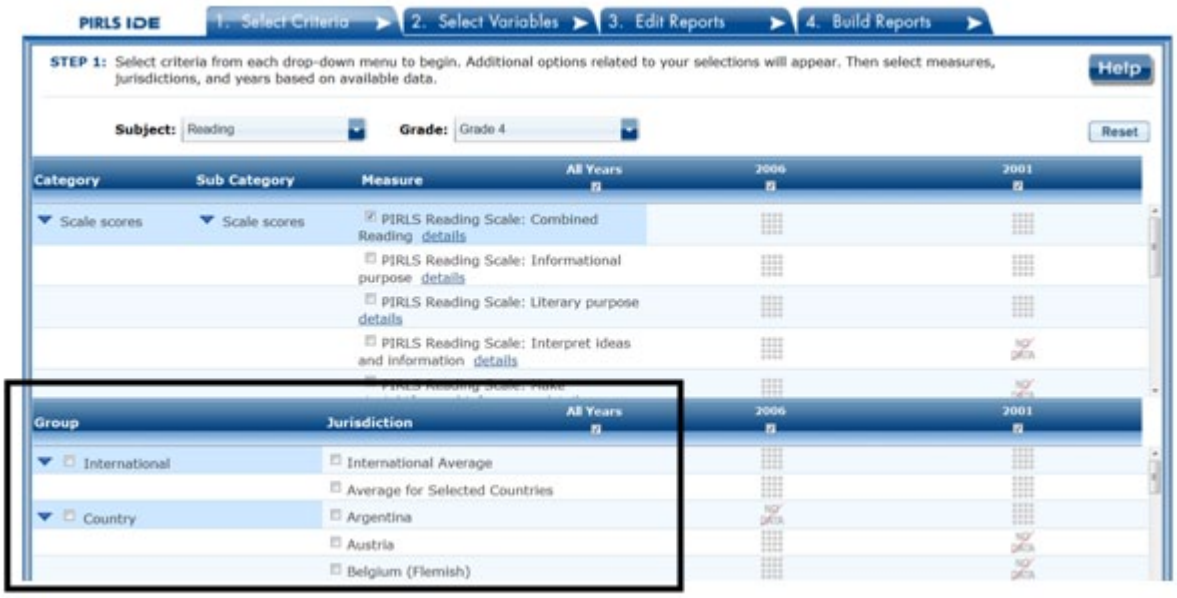
The general procedures for selecting one or more jurisdiction are as follows:

1. To open or close jurisdictions, click on the arrow. Jurisdictions in the group are open and can be selected when the blue arrow points down (see exhibit 4).
2. Click the checkboxes next to specific jurisdictions that you are interested in, or uncheck those jurisdictions that you wish to deselect. If you click the checkbox next to the group

name (e.g., "Country"), you will select all the jurisdictions within that group. If desired, uncheck the group name to deselect all.

3. If you want to close a group (for example, close the list of countries in order to readily see the benchmarking jurisdictions), click the blue arrow next to the group name. The closed group's arrow points to the right. Be advised that closing the group will not deselect your choices.

Exhibit 4. Choosing jurisdictions



To continue in the IDE, click the **Select Variables** button at the bottom of the page or the tab at the top of the page to go to the next screen (see exhibit 4 above).

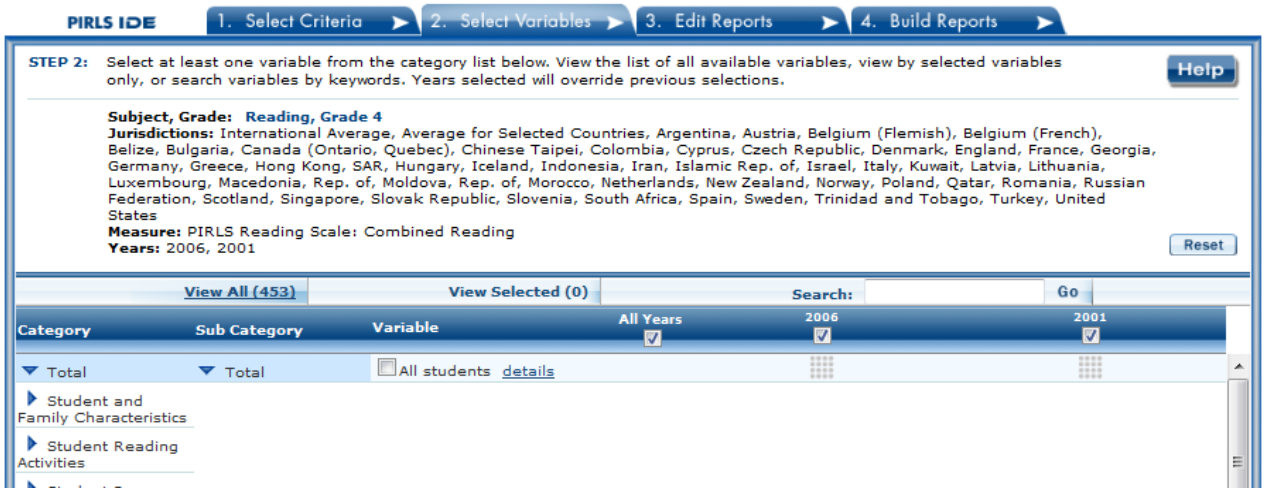
2. Select Variables

2.A. Overview

Step 2, **Select Variables,** can only be accessed after choosing criteria at step 1, **Select Criteria**.

To continue your data query and edit a report, *you must choose at least one variable on this screen.* You can browse for variables either by using the **Category** and **Sub Category** lists or by using the **Search** function (see exhibit 5). You can return to this screen to change variable selections at any time.

Exhibit 5. Selecting variables overview



2.B. Search Using Category and Subcategory Lists

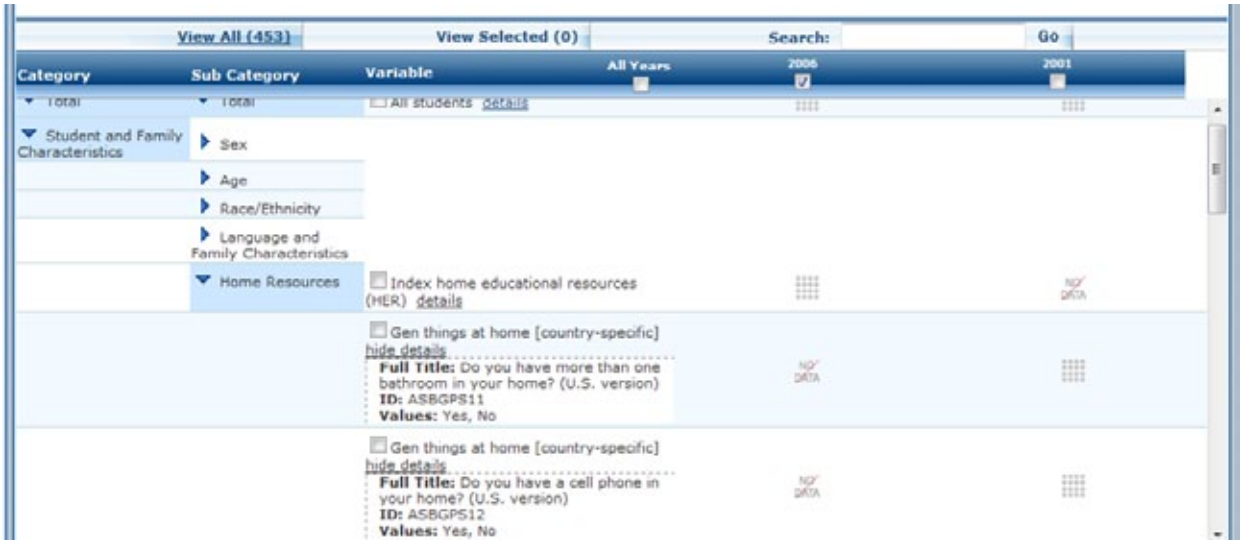
Choose at least one variable on this screen for your report. One way to do this is to search for variables using the **Category** and **Sub Category** lists. If you don't wish to choose from any of the specified categories and subcategories, then select **All students.**

The variables shown are tied to the criteria you selected at step 1 (**Measure, Year** and **Jurisdiction**), which are indicated at the top of the screen. To change any of these criteria, return to step 1, **Select Criteria**.

To browse for variables, get details about them, select them, and view them:

1. Click the blue arrows to open and close categories and subcategories of variables (see exhibit 6).
2. Click **details** or **hide details** to show or hide the full title of a given variable, the PIRLS ID, and the values (i.e., variable labels). Note that some variables have the same or similar short titles, but comparing details will show you how they differ. See the example in exhibit 6, which shows general things in the student's home (ASBGPS11 and ASBGPS12).
3. Click the checkbox next to a variable to select it for your analysis/report. You will see the count increase next to **View Selected**.
4. Click the **View Selected** tab to see the variables you have chosen. To return to the full list of variables by category, click the **View All** tab.
5. Remember to select the year for which you wish to build a report and make sure that data are available for your chosen year and variables.
6. Searching variables is an option from the Search box. See section 2.C below for more details about this function.

Exhibit 6. Select variables using category and subcategory lists



When you have selected the variable(s) you want to include, continue by clicking the **Edit Reports** button at the bottom of the page or the tab at the top of the page to go to the next screen.

2.C. Search Function

The second way to search for variables is to use the **Search** function on the **Select Variables** screen.

Type a term in the **Search** box and click **Go** (or hit "Enter" on your keyboard) to find variables by keywords in the question and/or details for the variable (see exhibit 7). If you use multiple keywords, "and" is assumed. You can also narrow your search by using "or," "not," or "and not." The search function operates on an exact phrase if it is contained in quotes. The variable(s) that include the search term(s) in the question or its details will be listed.

See Section 2.B. Search Using Category and Subcategory Lists (above) for information on how to get details about variables, selecting variables, and viewing variables.

Exhibit 7. Select variables using the search function

When you have selected the variable(s) you want to include, continue by clicking the **Edit Reports** button at the bottom of the page or the tab at the top of the page to go to the next screen.

3. Edit Reports

3.A. Overview

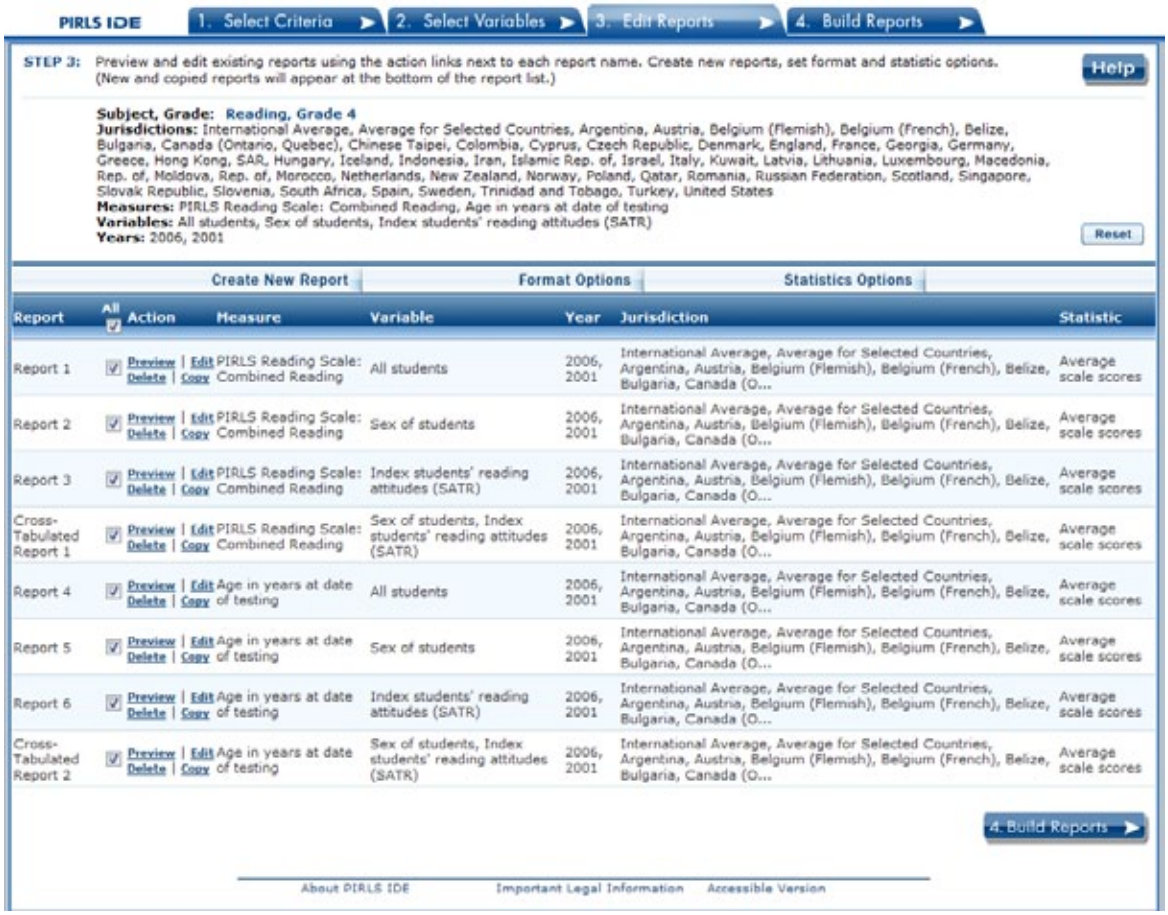
You can access step 3, **Edit Reports,** after choosing criteria at step 1, **Select Criteria**, and choosing at least one variable at step 2, **Select Variables**. The IDE will automatically build reports based on your selections from steps 1 and 2. However, at step 3, the **Edit Reports** phase, you may modify your selections for each report.

At this step, you can

- preview and edit the layout of your reports;
- copy reports or create new reports based on the variables selected;
- change formatting options, such as the number of decimal places to display, for all reports (these may also be changed in individual reports, but formatting options can overwrite previous edits);
- change statistics options, such as average scale scores and achievement levels, for all reports (these may also be changed in individual reports, but statistics options can overwrite previous edits);
- select reports to be built into tables and charts at step 4, **Build Reports**; and
- delete reports.

Using your chosen criteria, the IDE will return a separate data report for each variable you have chosen. If you have selected two or three variables (not counting **All Students**), you will also see a cross-tabulated report that crosses these variables. If your selected criteria include more than one measure (e.g., combined reading scale and age), a separate set of data reports will be generated for each measure (see exhibit 8 below).

Exhibit 8. Edit reports overview

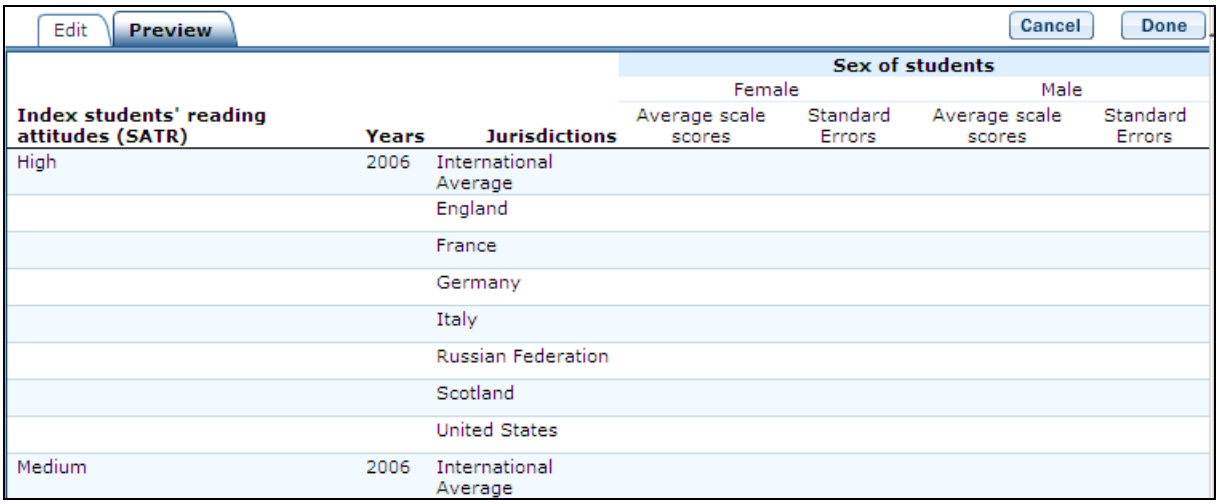


The **Edit Reports** step shows detailed information on the layout of your reports (see exhibit 8). The **Report** column indicates the report, or cross-tabulation report, number based on the variable(s) chosen during the criteria selection. The **Action** column gives you the option to **Preview**, **Edit, Delete**, or **Copy** the report. Here, reports may be chosen for the report-building phase under the **All** tab, either by selecting **All** or selecting individual reports. The **Variable** column indicates the variable(s) included in the report. The **Year** column shows which years you have selected for comparison. The **Jurisdiction** column labels the countries and subnational education systems for comparison, and the **Statistic** column provides the type of statistic output that will be generated in the report-building phase.

3.B. Preview Report

Select **Preview** under the **Action** column to see how your report will be laid out (see exhibit 8). The preview will not provide actual data, but will show how the data will be arranged in rows and columns (see exhibit 9 below). You can select **Preview** at any time to see how your changes will affect the report's final layout.

Exhibit 9. Using preview report

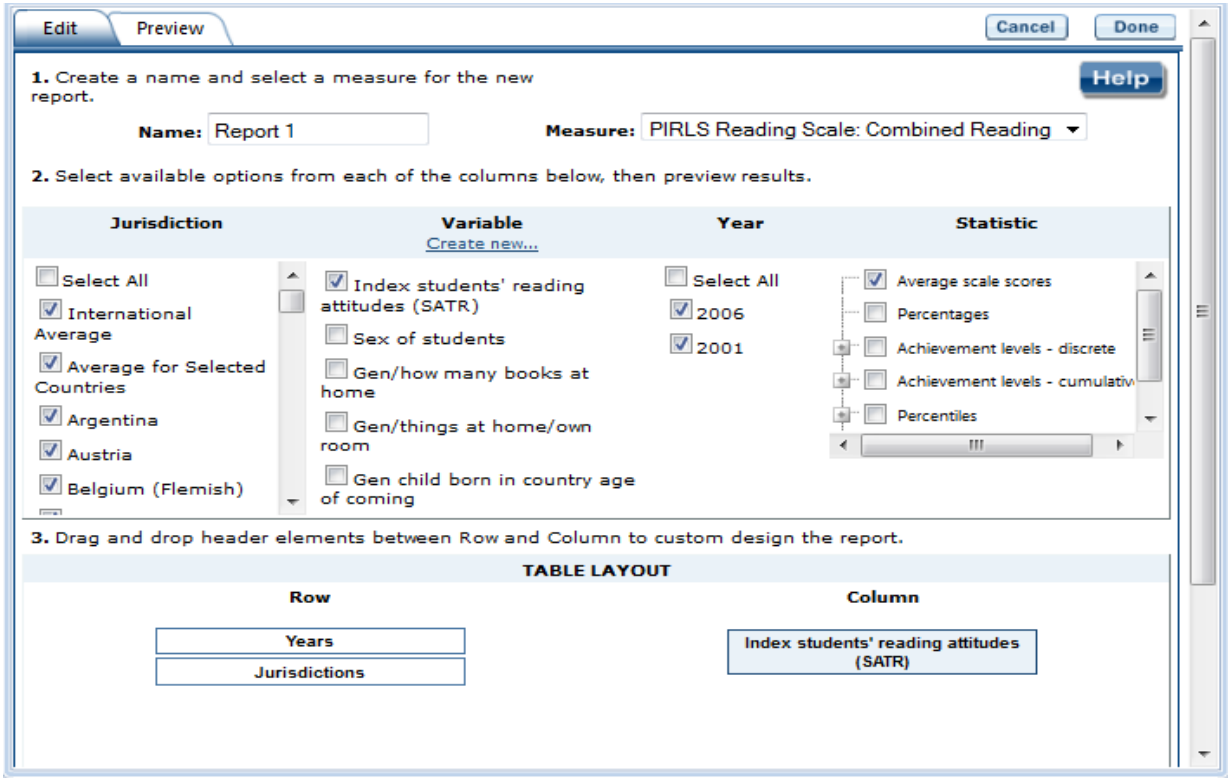


Index students' reading attitudes (SATR)	Years	Jurisdictions	Sex of students: Female – Average scale scores	Female – Standard Errors	Male – Average scale scores	Male – Standard Errors
High	2006	International Average				
		England				
		France				
		Germany				
		Italy				
		Russian Federation				
		Scotland				
		United States				
Medium	2006	International Average				

3.C. Edit Report

To edit the report, select the command under the **Action** column next to the report (see exhibit 8 above). Another way to edit a report is to select the **Edit** tab when you are previewing a report. The following can be done using this function (see exhibit 10):

Exhibit 10. Editing reports



1. Name your report. You have the option of giving each report a distinctive name, up to a limit of 50 characters, using only letters, numbers, spaces, underscores, and hyphens. (Otherwise, the default name is Report 1, Report 2, etc., and Cross-Tabulated Report 1, Cross-Tabulated Report 2, etc.)
2. Select a measure. You can choose a measure if more than one was selected at step 1.
3. Select which jurisdictions, variables, years (if applicable), and statistics to include (out of the selections previously made at steps 1 and 2). You can select up to two statistics options from the following: average scale scores, percentages, achievement levels–discrete, achievement levels–cumulative, percentiles, and standard deviations. (For further information, see Section 3.G. Statistics Options, page 18.)
4. To create a new variable while editing a report, click on **Create New…** under the **Variable** heading. Section 3.D below further explains the process for creating a new variable.
5. Change the table layout by dragging elements to determine which items will appear in rows and which will appear in columns. Some of the arrangements will not be permissible, but a pop-up alert will explain this.

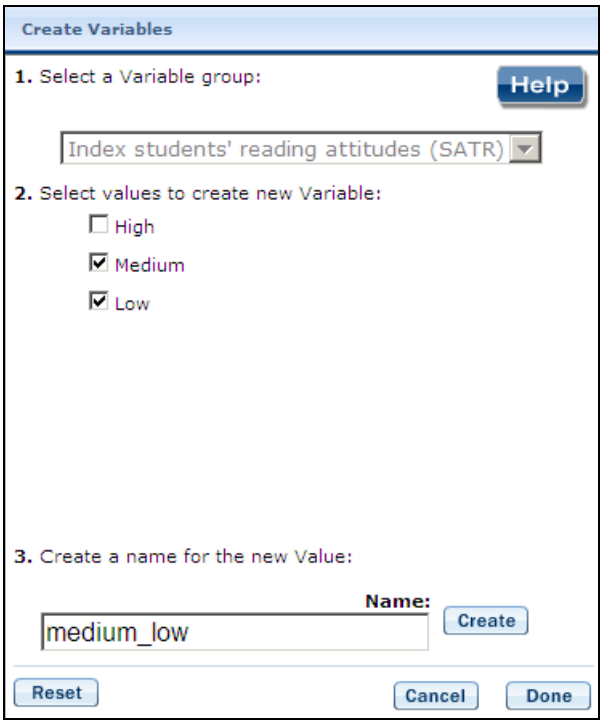
To save changes, make sure to select **Done** in the upper or lower right portion of the screen before closing the **Edit Report** window.

3.D. Create New Variables

To create a new variable, select **Edit** under the **Action** column and select **Create new…** under **Variable** (see exhibit 10). The new variable is created by combining values for an existing variable. The steps are as follows:

1. Click **Create New** under the **Variable** heading.
2. Select the variable for which you wish to combine values.
3. Select the values you want to combine by checking the boxes to the left of the values (see exhibit 11).
4. Create a name for the new value, and press **Create**. The collapsed values will appear in gray to indicate that they have already been used.
5. Wait for the screen to refresh, and press **Done**.

Exhibit 11. Creating new variables



1. The new variable will appear in the **Variable** list (in the **Edit Report** window, if you access it that way, or else in the **Create New Report** window) with the new variable name designated as "(Collapsed)". How the new variable displays will depend upon how it was created originally from the two options mentioned above.
2. Check the box next to the new (collapsed) variable to view it in the report. You can click **Preview** to see how the table will be laid out before retrieving data.

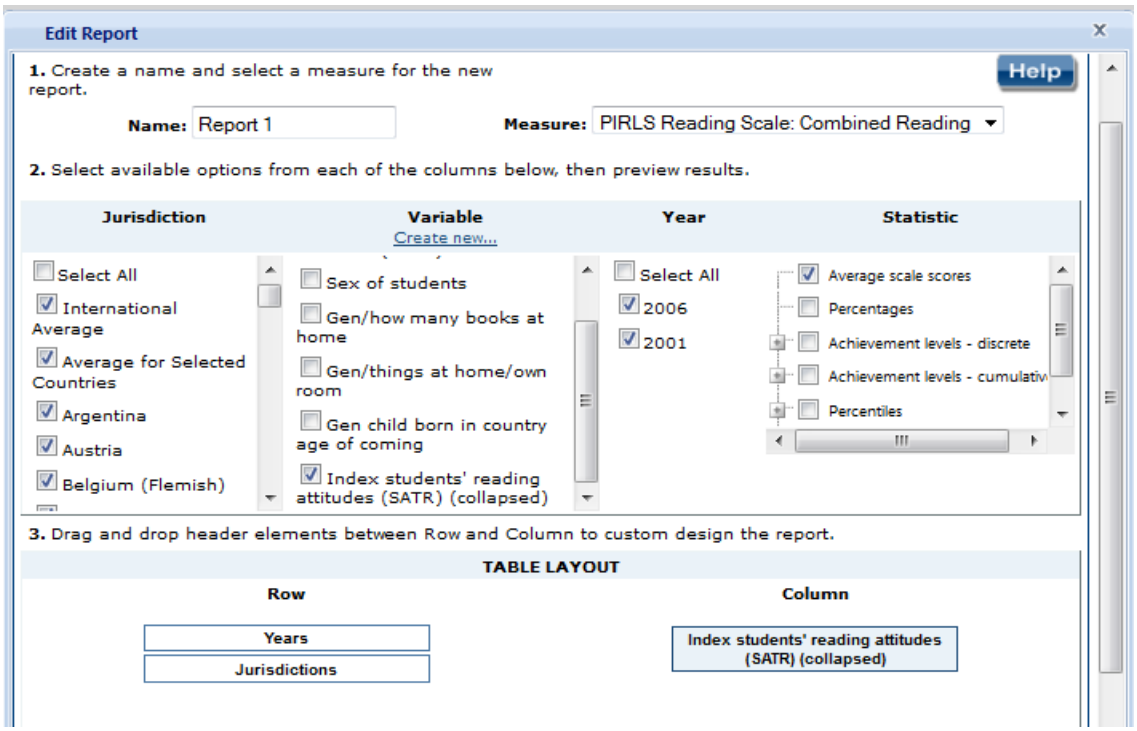
A new variable that you create is applicable to that specific report; it does not apply to the other reports appearing in the **Edit Reports** screen. For example, if you selected multiple measures of reading literacy for analysis, then you would need to create the new variable for each measure or create a copy of the report and edit it accordingly. To do the latter, click on **Copy** report in the **Edit Reports** screen (copied reports appear at the end of the list of reports) and then **Edit** the new copy (using the above example, you can change the measure and give the report a new name).

You can repeat the process and combine different values of a variable to create additional new variables. Using the **Create New Report** function, you can create a new report for each new variable that you create. (For further information, see Section 3.E. Create New Report, below.)

If you selected two or three variables from which to create new variables, you can repeat the process for each of them. Using the **Create New Report** or **Edit Report** function, these

collapsed variables will be listed and available for cross-tabulation (see exhibit 12). You can click **Preview** to see how the table will be laid out before retrieving data.

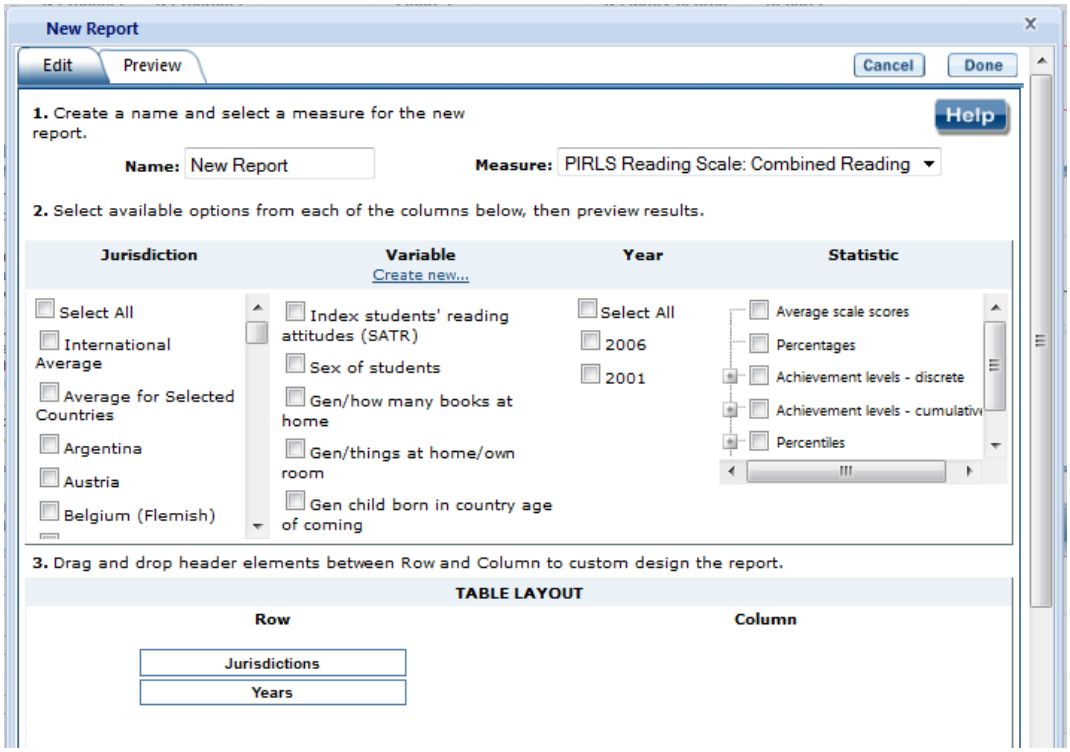
Exhibit 12. Edit report with collapsed variables



3.E. Create New Report

From the main **Edit Reports** screen, clicking on **Create New Report** brings up the same options as **Edit Report**, but with no checkboxes marked and without any new variables you may have created. Thus, **Create New Report** provides a clean slate for your selections from the first two steps, **Select Criteria** and **Select Variables** (see exhibit 13). Each new report you create will appear at the end of the list of reports. If you do not give the report a specific name, it will be called "New Report."

Exhibit 13. Creating new reports



3.F. Format Options

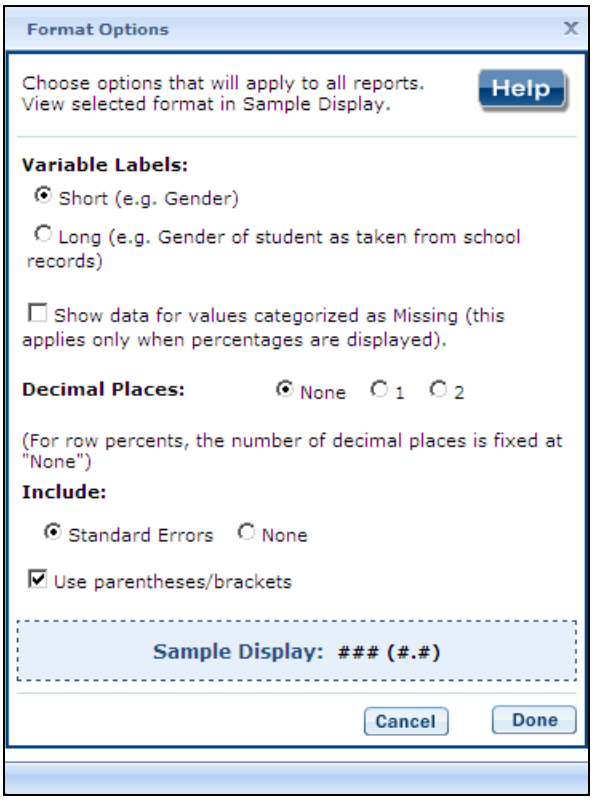
From the main **Edit Reports** screen, clicking on **Format Options** will allow you to make formatting changes applicable to *all* the reports listed. The following formatting options are available using this function (see exhibit 14):

1. **Variable Labels (Long)** displays a more detailed description of the variables selected in a query than the default short label. For variables from questionnaires, the full text of the question is displayed. Be advised that the length of the extra detail may sometimes interfere with table formatting.
2. **Show data for values categorized as "missing"** will include the percentage of students in the total sample or in a reporting group for whom membership in a particular response category is unknown because no response was given by the students, their teacher, or their school. The percentage of "missing" will be shown in the right-most table column. Missing data are available only for queries that involve percentages as the statistic type. Unless you check this option, the default is for missing responses not to be included in the percentage distribution shown.
3. **Decimal Places** allows you to specify a greater level of precision for a particular statistic (one or two decimal places) than does the default, which is whole numbers. Note that only integer-level precision is allowed for percentages; that is, the number of decimal places is fixed at "none" for percentages. Also, standard errors will be shown to one more decimal

place than is shown for a particular statistic. For example, if you request that achievement scores be displayed to one decimal place, the corresponding standard errors will be displayed to two decimal places. If you export to Excel, you will be able to increase the number of decimal places in most cases.

4. **Include** gives you the option to show standard errors and, if you choose to show them, the option to show them inside parentheses/brackets. Unless you indicate otherwise, the default is to show standard errors inside parentheses. You can preview the effects of your selection in the Sample Display area (see the blue-shaded box at the bottom of exhibit 14).

Exhibit 14. Format options



Be advised that choices you make in the **Format Options** window will apply to all reports (i.e., they cannot be changed for individual reports). Use the **Reset** button located in the upper right portion of the screen (just below the **Help** button) to restore the **Format Options** to the default settings (a word of caution: as this will also delete any new reports that you have created).

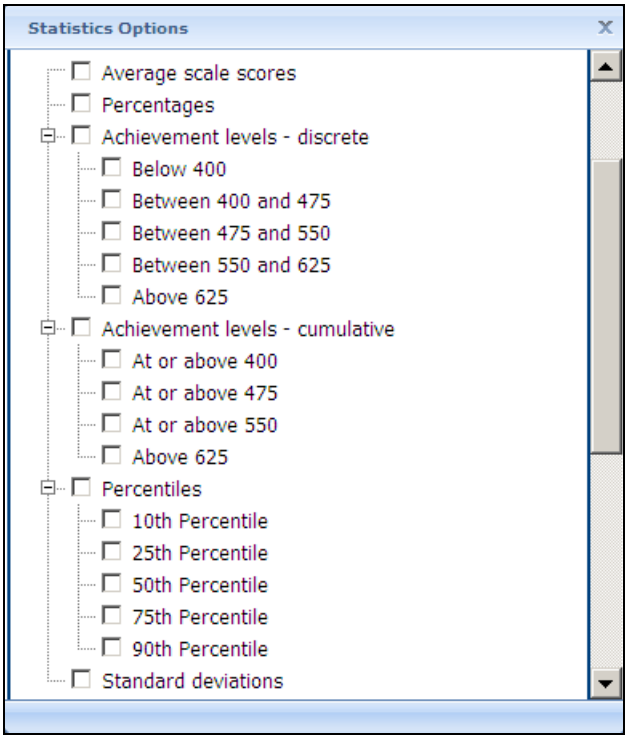
3.G. Statistics Options

Available only from the main **Edit Reports** screen, clicking on **Statistics Options** allows you to designate up to two statistics. The selections made are applicable to *all* the reports listed, although you can also change the statistics for an individual report when you edit that report. (For further information, see Section 3.C. Edit Report, page 13.)

The following statistics options are available (see exhibit 15):

1. **Average scale scores.** For the PIRLS assessment, student performance is reported on scales that range from 0 to 1,000. PIRLS reports the average scale score for a variety of demographic samples of the student population (e.g., the average scale score in reading for literary purposes for female students). By default, the standard errors of the scale scores are shown in parentheses.
2. **Percentages.** This statistic shows the percentage of students as a row percentage. For example, if the first column lists countries, then each country will display its own percentage distribution across its row. If the table cell for Black female students in the United States is 9 percent, then Black females constituted 9 percent of U.S. fourth-graders. By default, percentage distributions do not include missing data. For information on how to show data for values categorized as missing, see Section 3.F. Format Options, above.

Exhibit 15. Statistics options



1. **Achievement levels – discrete.** Discrete achievement levels are reported as the percentage of students performing *at* each international benchmark (*low, intermediate, high,* or *advanced)*, counted separately from the other benchmarks:
    - *Below low* – below 400
    - *At low* – between 400 and 475
    - *At intermediate* – between 475 and 550
    - *At high* – between 550 and 625
    - *At advanced* – above 625

2. **Achievement levels – cumulative.** Cumulative achievement levels are reported as the percentage of students performing *at or above* each international benchmark:
    - *At or above low* – at or above 400
    - *At or above intermediate* – at or above 475
    - *At or above high* – at or above 550
    - *At advanced* – above 625

3. **Percentiles.** This statistic shows the threshold (or cutpoint) score for the following:
    - 10^{th} percentile – the bottom 10 percent of students
    - 25^{th} percentile – the bottom quarter of students
    - 50^{th} percentile – the bottom half of students (half the students scored at or below the cutpoint and half scored above it)
    - 75^{th} percentile – the top quarter of students
    - 90^{th} percentile – the top 10 percent of students

4. **Standard deviations.** The standard deviation is a measure of how widely or narrowly dispersed scores are for a particular dataset. Under general normality assumptions, 95 percent of the scores are within two standard deviations of the mean. For example, if the average score of a dataset is 500 and the standard deviation is 100, it means that 95 percent of the scores in this dataset fall between 300 and 700. The standard deviation is the square root of the variance.

The selections you make in **Statistics Options** will be applied automatically to all reports, although you can change the statistics for an individual report when you edit it. Be advised that if you use **Statistics Options** after editing the statistics in one or more of your individual reports, the statistics options selected will overwrite your previously edited selections. If you wish to use the same criteria and variables in a report with a different selection of statistics, consider using the **Create New Report** function to generate a new report with different statistics. (For further information, see Section 3.E. Create New Report, above.) You can also make a copy of an individual report.

You can use the **Reset** button located in the upper right portion of the screen (just below the **Help** button) to restore the **Statistics Options** to the default setting, which is average scale scores for all reports (this will also delete any new reports that you have created).

Not all statistics are available for all reports. Their availability depends on other selections you have made to define the content and format of your report:

- Percentages will not display if jurisdictions or years appear in columns.
- Achievement-level results cannot be displayed in both columns and rows.
- Achievement-level results are available only for the composite or overall scale.
- If achievement levels are selected as a variable, only percentages will be displayed.

Please note that the statistics produced by the IDE may not exactly match those shown in reports published by the IEA due to differences in certain statistical standards. In particular, organizations sometimes differ in the minimum sample sizes required for publishing student scores. In addition, the results shown in the IDE may differ slightly from those in the IEA PIRLS International Report because of a slightly different procedure used in linking teacher data to the students. In the IEA report, when a student has more than one teacher, the student's weight is distributed equally amongst the teachers, and all the teacher data are used in the analysis. For the same case, the IDE randomly selects one of the teachers for the student, and the entire weight for the student is assigned to this teacher.

3.H. Select Reports to Build

As you edit your reports, you can give them distinct names (up to 50 characters) to differentiate them, as well as make changes to the jurisdictions and variables previously selected, the statistics, and the layout of the rows and columns. (For further information, see Section 3.C. Edit Report, page 13.) You may make copies of reports with these changes. In order to proceed to step 4, **Build Reports**, each report for which you want to retrieve data should be previewed/inspected using the **Preview** function. To decrease processing time as you move to step 4, you can uncheck any reports for which you do not wish to retrieve data. By default, all reports are checked. To uncheck one or more reports, you can either uncheck the reports individually or click on the **All** box. Doing the latter will uncheck all of the reports and allow you to check only those for which you wish to retrieve data. In the example that follows (see exhibit 16), data will be retrieved only for the combined reading measure.

Exhibit 16. Selecting reports to build

If you wish to delete a report from the list of reports, click **Delete** (see 1 above) in the **Action** column. Use the **Reset** button (see 2 above) located in the upper right portion of the screen (just below the **Help** button) to restore the deleted reports (a word of caution: this will also delete any new reports that you have created and restore the Format Options and Statistics Options to the default settings).

To continue to the last step in the IDE, click the **Build Reports** button at the bottom of the page or the tab at the top of the page to go to the next screen (see 3 above).

4. Build Reports

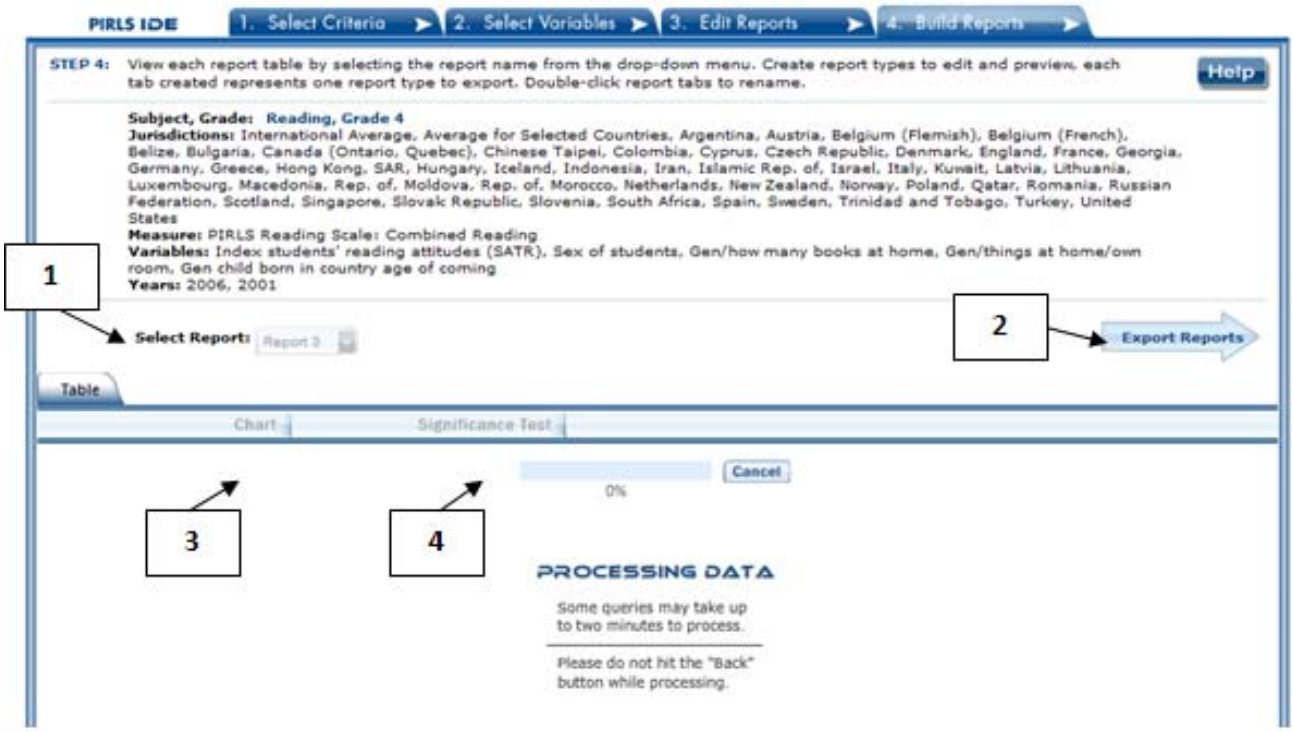
4.A. Overview

You can access step 4, **Build Reports**, after choosing criteria at step 1, **Select Criteria**, in which case the default report built will provide data for average scale scores and for the **All Students** variable. After step 1, you may also go on to steps 2 and 3, where you can select additional variables and edit reports, before moving on to **Build Reports**. In **Build Reports**, you can do the following:

1. Generate a data table for each report selected in step 3, as shown by the **Select Reports** drop-down feature (see 1 in exhibit 17). By default, all reports are checked, though you can uncheck any reports for which you do not wish to retrieve data. (For further information, see Section 3.H. Select Reports to Build, above.)

2. Export and save data tables into various formats using the **Export Reports** button (see 2 in exhibit 17). The output formats include HTML (print-friendly), Microsoft Word, Microsoft Excel, and Adobe PDF.
3. Select the **Chart** tab (see 3 in exhibit 17) to create and customize charts for each report and save them for export in the above formats.
4. Select the **Significance Test** tab (see 4 in exhibit 17) to run a significance test on your results, customize it, and export it.

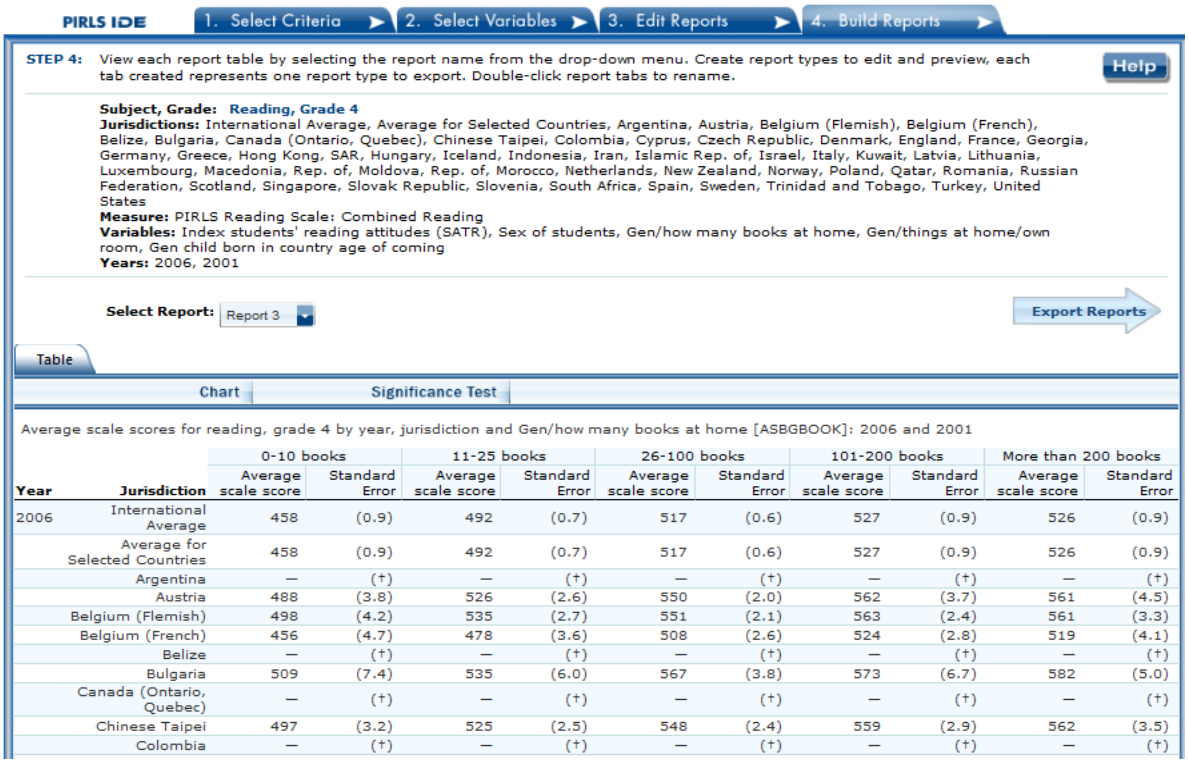
Exhibit 17. Building reports overview



4.B. View Reports as Data Tables

Once you click on **Build Reports,** the words "Processing Data" will appear on your screen (see exhibit 17). Some reports will take longer than others to process, so please do not hit the "Back" button during this stage. To view a table, go to the **Select Report** drop-down menu (see 1 in exhibit 17) and choose a table of interest. Your table will appear once the processing is complete (see exhibit 18). To change the formatting or statistics options of a table or to generate a table from a report not included in your selection, return to step 3, **Edit Reports**.

Exhibit 18. Viewing reports as data tables



PIRLS IDE | 1. Select Criteria | 2. Select Variables | 3. Edit Reports | 4. Build Reports

STEP 4: View each report table by selecting the report name from the drop-down menu. Create report types to edit and preview, each tab created represents one report type to export. Double-click report tabs to rename.

Help

Subject, Grade: Reading, Grade 4
Jurisdictions: International Average, Average for Selected Countries, Argentina, Austria, Belgium (Flemish), Belgium (French), Belize, Bulgaria, Canada (Ontario, Quebec), Chinese Taipei, Colombia, Cyprus, Czech Republic, Denmark, England, France, Georgia, Germany, Greece, Hong Kong, SAR, Hungary, Iceland, Indonesia, Iran, Islamic Rep. of, Israel, Italy, Kuwait, Latvia, Lithuania, Luxembourg, Macedonia, Rep. of, Moldova, Rep. of, Morocco, Netherlands, New Zealand, Norway, Poland, Qatar, Romania, Russian Federation, Scotland, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sweden, Trinidad and Tobago, Turkey, United States
Measure: PIRLS Reading Scale: Combined Reading
Variables: Index students' reading attitudes (SATR), Sex of students, Gen/how many books at home, Gen/things at home/own room, Gen child born in country age of coming
Years: 2006, 2001

Select Report: Report 3 | Export Reports

Table | Chart | Significance Test

Average scale scores for reading, grade 4 by year, jurisdiction and Gen/how many books at home [ASBGBOOK]: 2006 and 2001

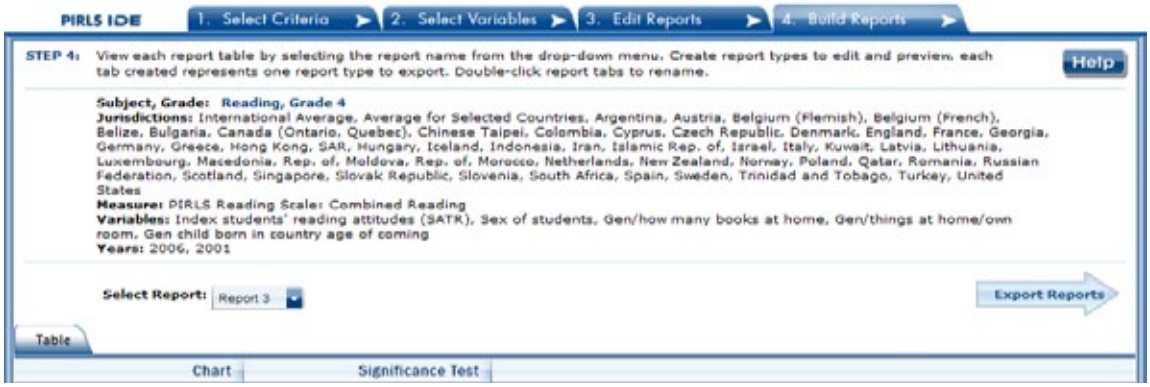
		0-10 books		11-25 books		26-100 books		101-200 books		More than 200 books	
Year	Jurisdiction	Average scale score	Standard Error	Average scale score	Standard Error	Average scale score	Standard Error	Average scale score	Standard Error	Average scale score	Standard Error
2006	International Average	458	(0.9)	492	(0.7)	517	(0.6)	527	(0.9)	526	(0.9)
	Average for Selected Countries	458	(0.9)	492	(0.7)	517	(0.6)	527	(0.9)	526	(0.9)
	Argentina	–	(†)	–	(†)	–	(†)	–	(†)	–	(†)
	Austria	488	(3.8)	526	(2.6)	550	(2.0)	562	(3.7)	561	(4.5)
	Belgium (Flemish)	498	(4.2)	535	(2.7)	551	(2.1)	563	(2.4)	561	(3.3)
	Belgium (French)	456	(4.7)	478	(3.6)	508	(2.6)	524	(2.8)	519	(4.1)
	Belize	–	(†)	–	(†)	–	(†)	–	(†)	–	(†)
	Bulgaria	509	(7.4)	535	(6.0)	567	(3.8)	573	(6.7)	582	(5.0)
	Canada (Ontario, Quebec)	–	(†)	–	(†)	–	(†)	–	(†)	–	(†)
	Chinese Taipei	497	(3.2)	525	(2.5)	548	(2.4)	559	(2.9)	562	(3.5)
	Colombia	–	(†)	–	(†)	–	(†)	–	(†)	–	(†)

4.C. Charts

Go to **Select Report** to choose the report of interest from the drop-down menu, and then click the **Chart** link (see exhibit 19).

You will be able to create many types of charts and customize them. Section 4.E. Create Charts – Chart Options (below) provides a summary of the available features and how they can be customized.

Exhibit 19. Viewing reports as charts

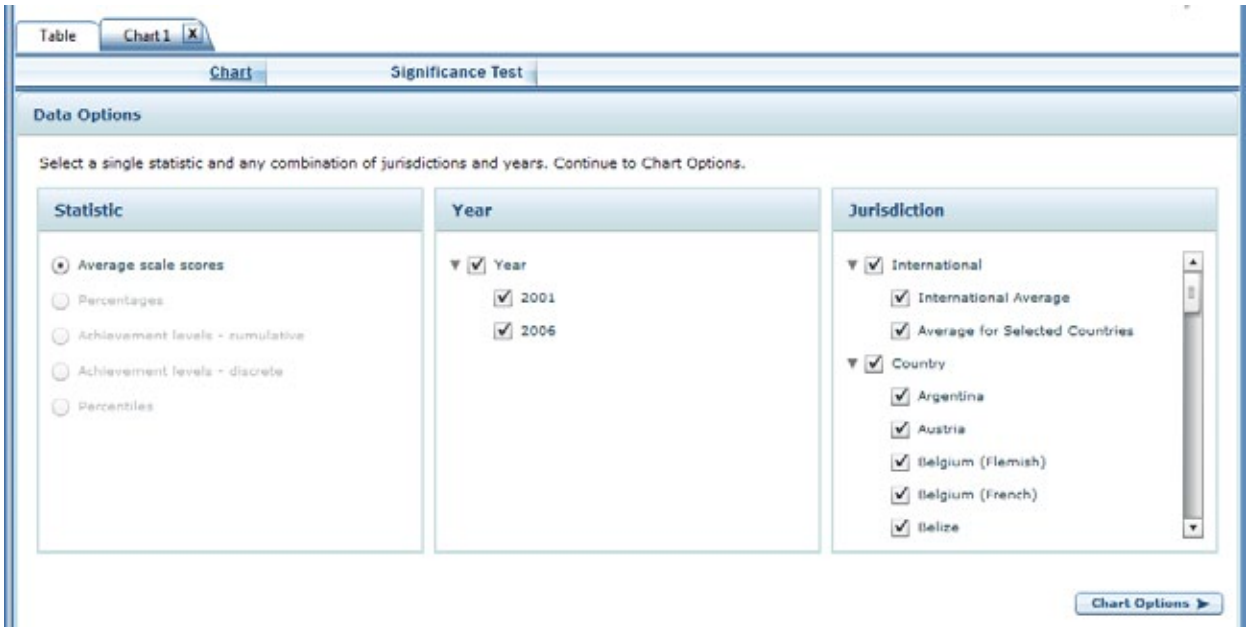


4.D. Create Charts – Data Options

When you click **Chart,** your screen will present **Data Options** pertaining to **Statistic, Year,** and **Jurisdiction.** All are selected by default, except that you can have only one statistic (see exhibit 20). Uncheck any of the criteria that you do not wish to chart, as long as you have one selected in each category.

Once you are finished with the Data Options, click the **Chart Options** button in the lower right corner of the screen.

Exhibit 20. Data options for charts



4.E. Create Charts – Chart Options

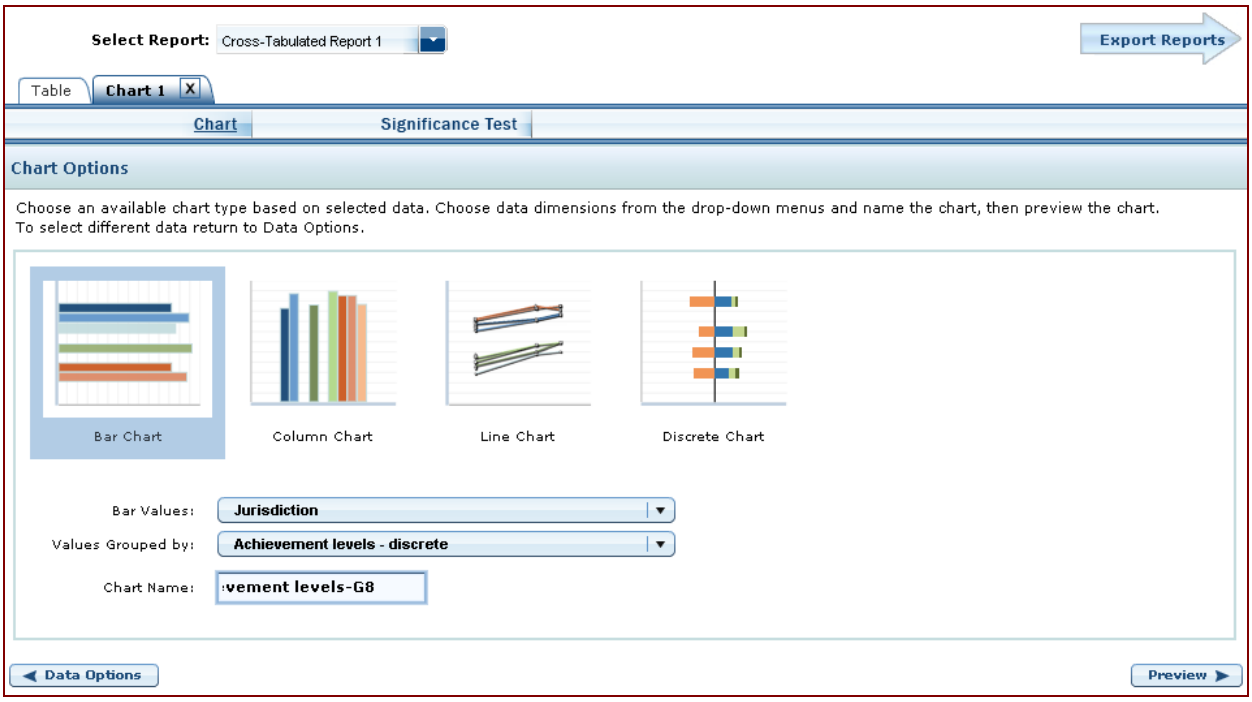
On the Chart Options screen, select **Bar Chart, Column Chart,** or **Line Chart** (see exhibit 21). For data on achievement levels, you also have the option of selecting a **Discrete** or **Cumulative Chart**.

After selecting a chart type, change any data dimensions from the drop-down menus for **Bar, Column,** or **Line Values** and **Values Grouped by.** Any new variables that you created at step 3, **Edit Reports**, will be available for selection, but only if you selected the variables (i.e., placed a check mark next to them) and clicked on **Done** after you edited the report.

Enter a **Chart Name** limited to 25 characters, using only letters, numbers, spaces, underscores, and hyphens (otherwise, the default name is "Chart 1").

Preview your chart by clicking the **Preview** button in the lower right corner, or go back to the data options and make different selections by clicking the **Data Options** button in the lower left corner.

Exhibit 21. Chart options



While previewing your chart, you can do the following (see exhibit 22 as an example of a **Discrete Chart** and exhibit 23 as an example of a **Bar Chart**):

1. Use the drop-down menus to change the jurisdiction and other variables as applicable. Notice that when you change your selection, the change occurs slowly enough that you get a sense of the size and direction of the change—particularly if you didn't previously specify in the data dimensions how you want your values grouped.
2. For the **Discrete Chart,** you can select where you want the divider by clicking one of the achievement-level buttons above the bars. This makes it easier to compare the percentages at a given level(s). In the example shown in exhibit 22, the percentages of students at the high and advanced levels are shown to the right of the divider.
3. Place your cursor over the bars to see the data points and value label(s).
4. Choose between using colors or patterns for the bars by clicking the alternating **Pattern** or **Color** button located just below the **Chart** tab in the upper left portion of the screen. For the **Discrete Chart** and the **Cumulative Chart,** choose between **Color** or **Grayscale.**
5. Change the color of the bars with a single click on each level in the bars. That click brings up a thumbnail of a color chart. Click on the thumbnail to reveal a color grid, and then select the color you desire.
6. Change the pattern of the bars with a single click on each level in the bars. Continuous clicking brings up various patterns to choose from.

Exhibit 22. Preview of discrete chart

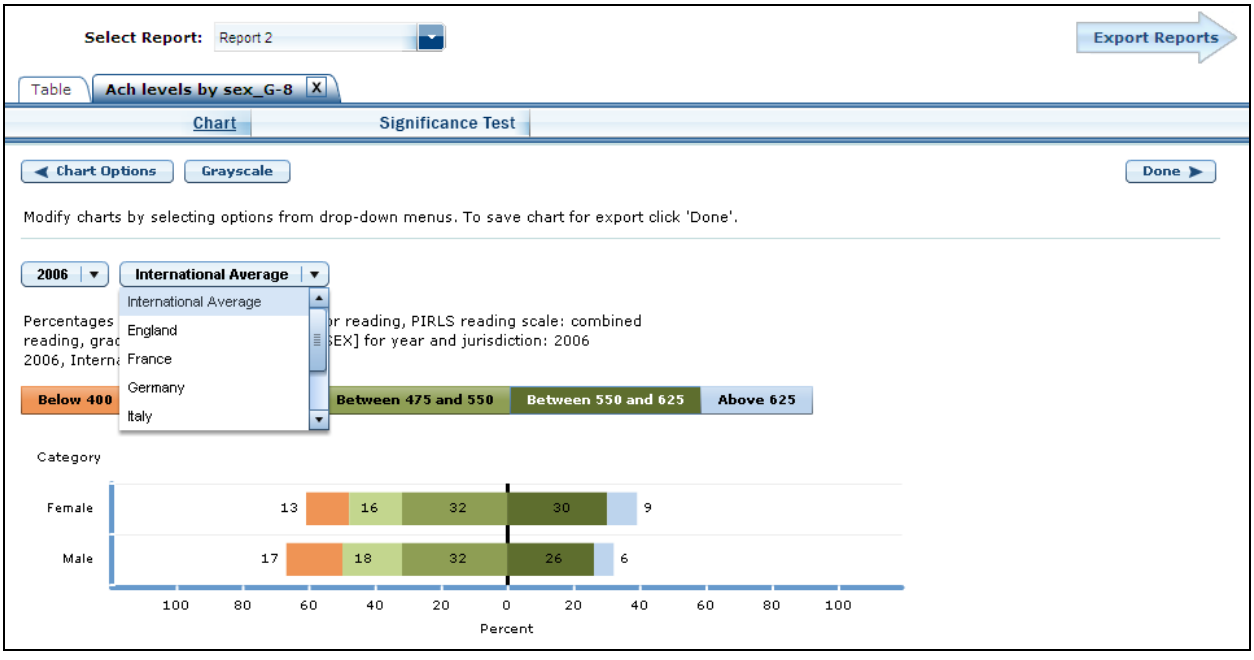
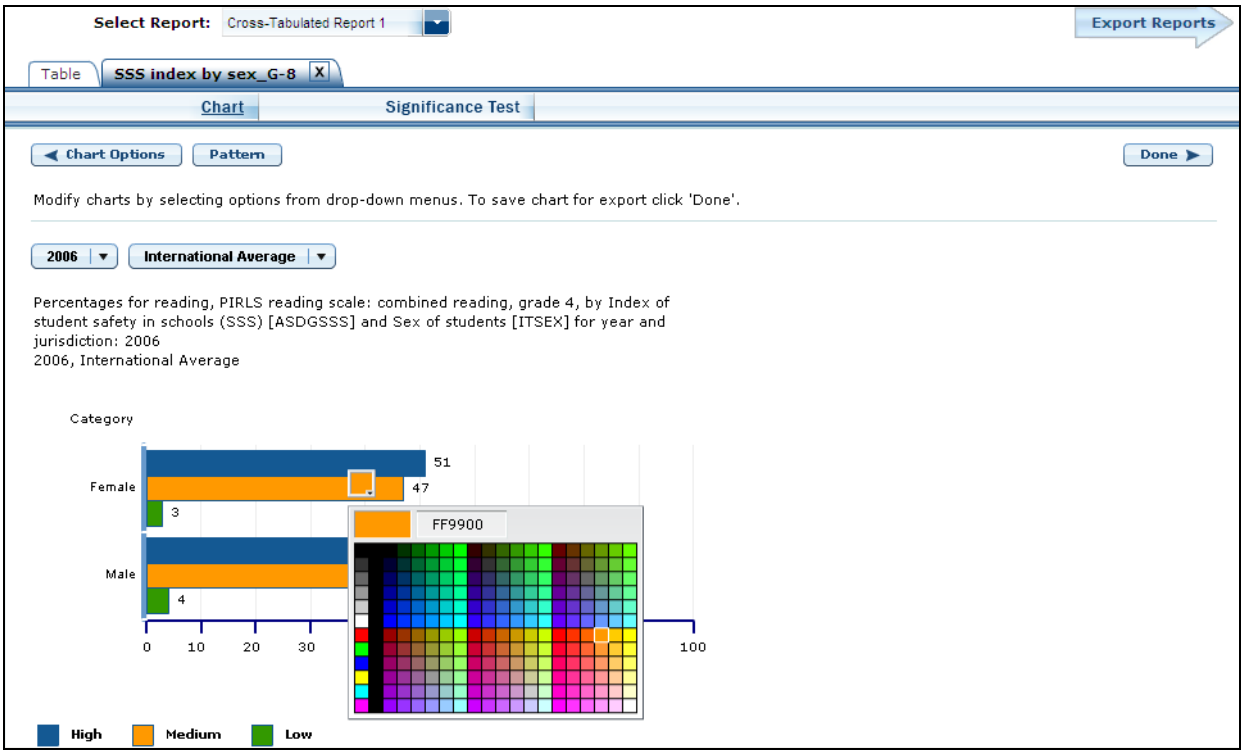


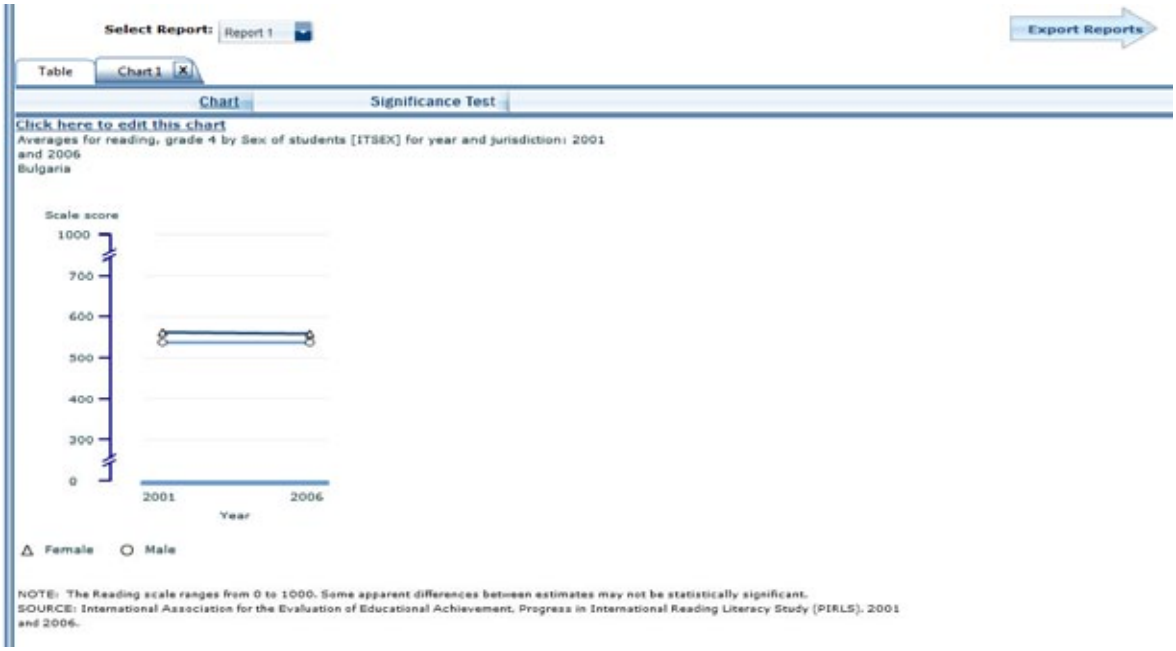
Exhibit 23. Preview of bar chart



Click the **Done** button located on the right side of the screen, or click back to **Chart Options** and/or **Data Options** to change your selection criteria. You must click **Done** if you wish to later save and/or print your chart via **Export Reports**.

Clicking **Done** takes you to the exportable version of the chart (see exhibit 24). You can subsequently **"Click here to edit this chart"** (located in the upper left corner, below the **Chart** link) to make more changes. Alternatively, the entire chart area, if clicked, will take you to the edit screen.

Exhibit 24. Completed chart



To make an additional chart from the same report/table, click the Chart link to begin a new chart. It is recommended that you provide a new chart name (the default is Chart 1, Chart 2, etc.). If you don't start the process again by clicking the Chart link, the new chart will overwrite the previous one.

If you wish to make charts from other reports, select "other report" in the **Select Report** drop-down list. If other reports were not checked in Step 3, **Edit Reports**, go back to step 3 and check the ones you want. Then, when you advance to step 4, **Build Reports**, the reports will appear in the **Select Report** drop-down list. If you need to create new reports, go back to step 1, **Select Criteria**, and/or step 2, **Select Variables**. Remember to export any completed charts you want to save by clicking **Done** and using the **Export Reports** function before leaving the **Build Reports** screen. (For further information, see Section 4.G. Export Reports, below.)

4.F. Significance Tests

Tests for statistical significance indicate whether observed differences between assessment results are likely to have occurred because of sampling error or chance. "Significance" here does not imply any judgment about absolute magnitude or educational relevance. It refers only to the statistical nature of the difference and whether that difference likely reflects a true difference in the population.

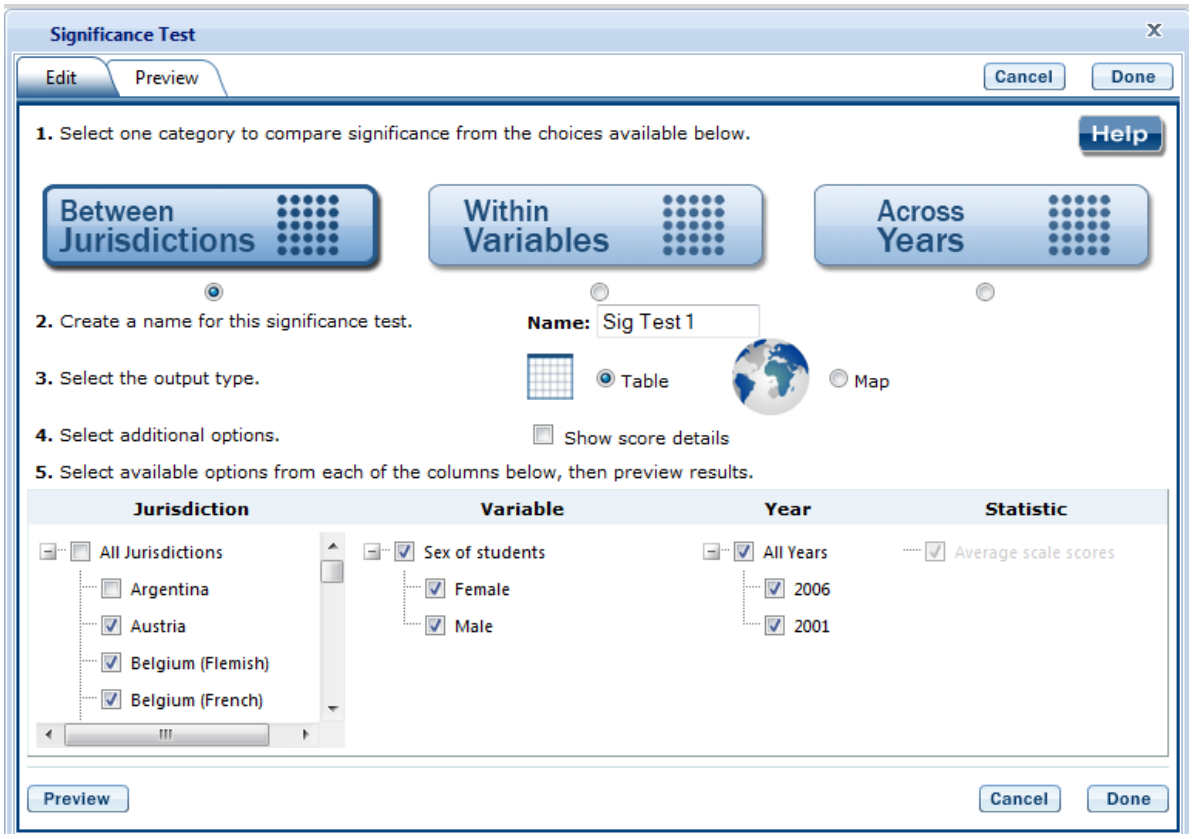
With your report of interest selected, click the **Significance Test** link, which is located to the right of the **Chart** link (see exhibit 24, above). You first need to decide which variable you want to test and the criterion by which you want to test it (i.e., within or between variable values or across years). You will compare or "look across" the variable's range of values, so it must have

more than one value. You can look across jurisdictions for a variable (that is, compare between two or more jurisdictions) or you can look across the values within a variable for a single jurisdiction. For example, with the variables shown in exhibit 25, you could choose to compare female scores between countries, or you could choose to compare male and female scores within a country. Once the primary criterion is chosen, all other criteria must be restricted to a single value.

The general steps for running significance tests are as follows (see exhibit 25):

1. In the **Significance Test** window, select either **Between Jurisdictions**, **Within Variables**, or **Across Years.** Then, select the appropriate jurisdiction(s), variable(s), and statistic(s). For **Between Jurisdictions**, select at least two jurisdictions. For **Within Variables**, select one or more jurisdictions. For **Across Years,** more than one year needs to be selected.
2. Enter a **Name** limited to 25 characters, using only letters, numbers, spaces, underscores, and **hyphens** (otherwise, the default name is "Sig Test 1").
3. Select the **output type** as either **Table** or **Map**. The table option will show the significance test results as a matrix. The map option will show the significance test results on a world map, highlighting countries that have been selected. The map output is only available when "Between Jurisdictions" is selected in the first step.
4. Located under the output type, you can check **Show Score Details** to display the estimates and standard errors for the table cells. If you selected a map, this option is not applicable, as the map will automatically show score details.
5. Click the **Preview** tab located in the upper left corner of the screen or the **Preview** button located in the bottom left corner.
6. Click the **Edit** tab in the upper left corner of the screen if you wish to go back and make changes to the selections you made for running the significance tests.
7. Click the **Done** button in the upper or lower right corner of the screen to run the significance tests.

Exhibit 25. Significance test options



When the table option is selected, you will get a significance test matrix in which you will see the differences and *p* values. Using the symbols shown in the legend of the matrix, an indication is also provided of whether one estimate is significantly lower or higher than another estimate or whether there is no significant difference (see exhibit 26). In the PIRLS IDE, most comparisons are independent with an alpha level of 0.05. The PIRLS IDE performs dependent t-tests only for basic male-female comparisons by country (with no additional variables included in the analysis). Published reports by IEA employ a dependent testing methodology for all male-female comparisons by country (i.e., even when additional variables besides gender and country are included in the analysis). Currently the IDE does not have this capability. Thus, the statistical significance of male-female differences by country may vary slightly between published reports and the IDE. Please note that multiple comparisons are not available in the IDE.

Exhibit 26. Significance test table output

Reading, grade 4
Difference in Percentages Between jurisdictions for Sex of students [ITSEX] = Female by Index of student safety in schools (SSS) [ASDGSSS] = High
2006

	France (44)	Germany (57)
France (44)		< Diff = -13 P-value = 0.0000
Germany (57)	> Diff = 13 P-value = 0.0000	

LEGEND:	
<	Significantly lower.
>	Significantly higher.
x	No significant difference.

NOTE: Most comparisons are independent with an alpha level of 0.05, except for within variable tests for gender where a dependent methodology is used.

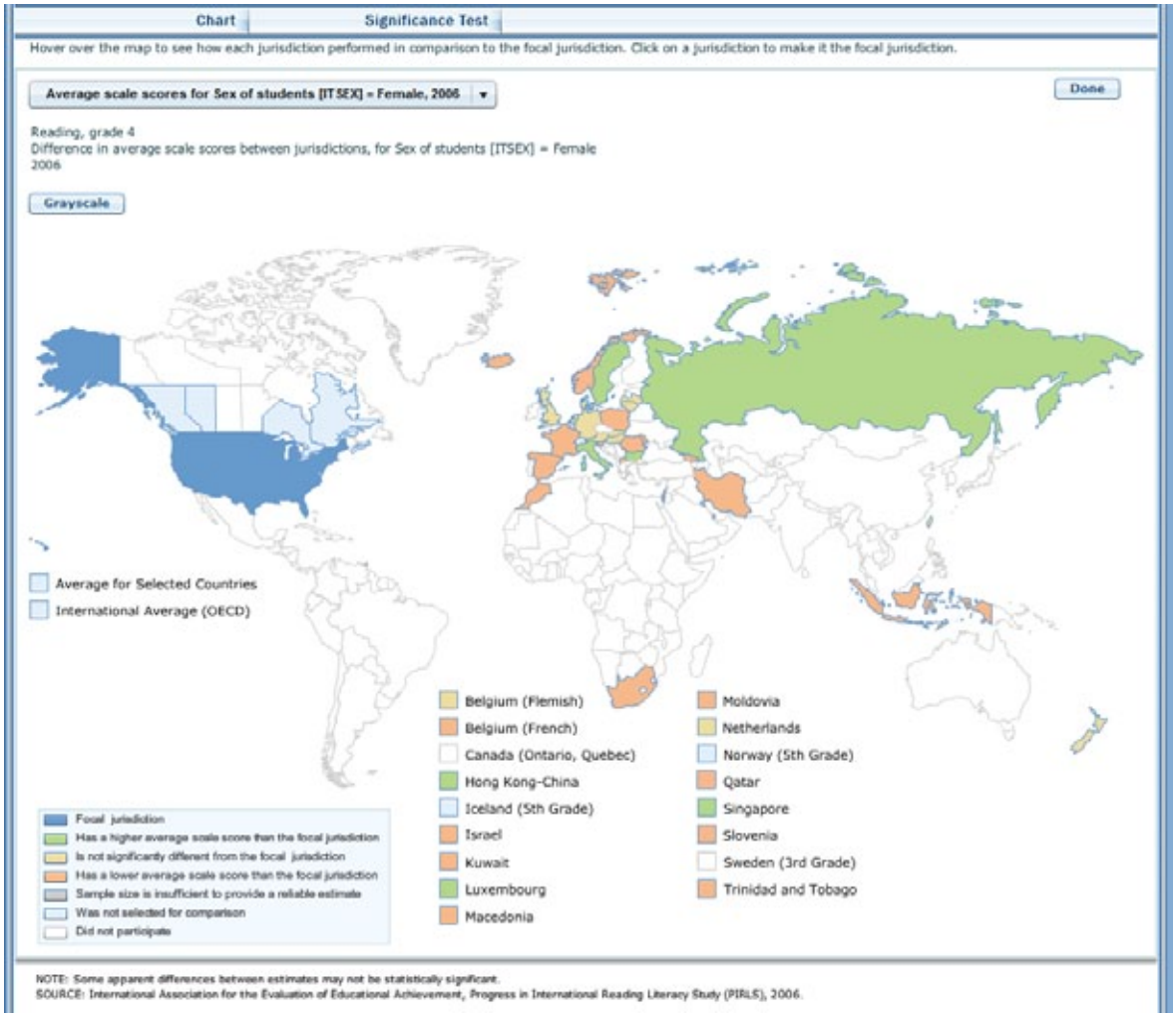
Percentages for reading, grade 4, by year and jurisdiction: 2006

Year	Jurisdiction	Sex of student	High Percentage	High Standard error	Medium Percentage	Medium Standard error	Low Percentage	Standard
2006	France	Female	44	(2.1)	52	(1.9)	4	
	Germany	Female	57	(1.4)	41	(1.3)	2	

NOTE: Detail may not sum to totals because of rounding. Some apparent differences between estimates may not be statistically significant.
SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2006.

When the map option is selected, a global map is shown with the countries selected shaded (see exhibit 27). The focal jurisdiction is shaded in blue and represents a comparison for all the other countries. The other countries are shaded in colors that indicate whether they are higher, lower, or not significantly different from the focal jurisdiction on whatever measure has been selected. When you scroll over a country, a text bubble pops up describing the strength of the difference between that country and the focal jurisdiction. At any point you may choose a different focal jurisdiction by clicking on another country.

Exhibit 27. Significance test map output



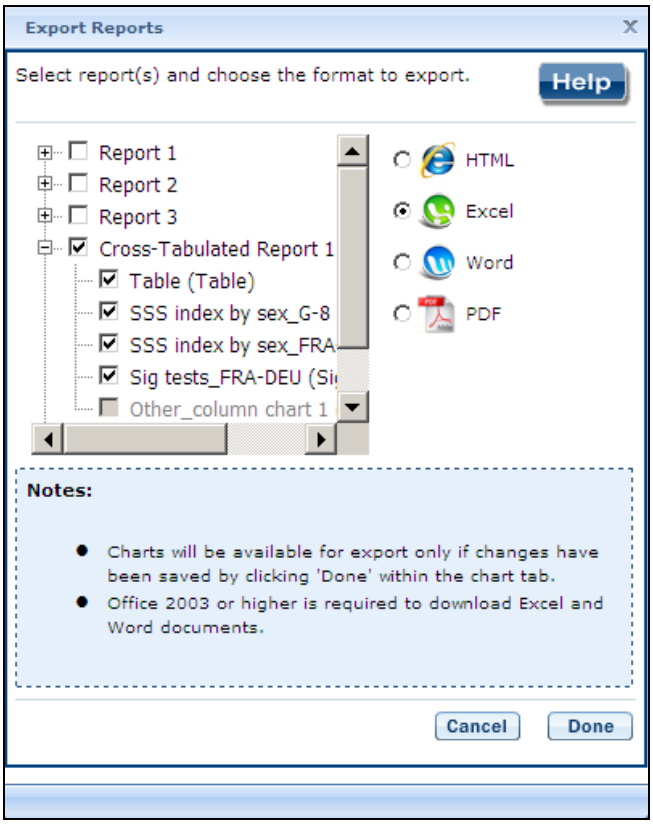
4.G. Export Reports

Click on the **Export Reports** button/arrow located on the right side of the screen to save or print your tables, charts, and significance tests. The report names that appear in the **Export Reports** window are those that were checked off at step 3, **Edit Reports**.

Check the files you want to export, and select one of the file formats: **HTML** (print-friendly), **Excel, Word,** or **PDF** (see exhibit 28). All reports that you select at the same time will be exported in one file. In the Excel format, you will be able to increase the decimal places visible (wherever more precision is available in the database). Because there are many different operating systems in use, you may get an error message with Excel or one of the other formats. Usually, this will not affect your ability to export, so please wait for software "errors" to resolve themselves.

Charts for each report will only be available on this menu if you saved them by clicking **Done** on the last screen after you created them. If a chart that you wish to save or print is grayed out (not available for selection), cancel the **Export Reports** tool, go back to the chart, and be sure to click **Done** on the last screen. After that, it will be available for export.

Exhibit 28. Export report options



If you wish to edit tables or charts before saving or printing them, remember to do this via the **Export Reports** function before leaving the **Build Reports** screen. Returning to prior screens to edit report table formats or change variables or criteria will overwrite the report tables and charts.

V. PIRLS International Data Explorer Definitions

This section describes the kinds of criteria and variables that are used to form data queries, as well as the kinds of data available and statistical methods to assess them.

These topics are as follows:

- Criteria
  - Measures
  - Jurisdictions
- Variables
- Statistics options
  - Average scale scores
  - Percentages
  - Achievement levels (discrete and cumulative)
  - Percentiles
  - Standard deviations
- Cross-tabulations
- Statistical notations and other notes

1. Criteria

Each data query must include at least one selection from three criteria choices: measure(s), year(s), and jurisdiction(s). Shown below is an outline of these selection criteria followed by a brief description.

1. Measure:
   - Scale scores
     - PIRLS reading scale: Combined reading
     - PIRLS reading scale: Informational purpose
     - PIRLS reading scale: Literary purpose
     - PIRLS reading scale: Interpret ideas and information
     - PIRLS reading scale: Make straightforward inferences
   - Student and family characteristics
   - Student characteristics (teacher)
   - English language and reading instruction (teacher)
   - Class resources (teacher)
   - Teacher characteristics
   - School characteristics
   - School instruction time

2. Jurisdiction:
    - International average
    - Average for selected countries
    - Country
    - Benchmarking jurisdiction
3. Years:
    - 2001
    - 2006
    - All Years

Measures

PIRLS focuses on overall reading literacy, but within this broad category four subscales are available: two focusing on the purposes of reading (literary purposes and informational purposes) and two focusing on the processes used for reading (straightforward inferencing and interpreting ideas and information). Subscales are constituent parts of the composite subject scale for an assessment and are specified by the assessment framework. The weighted average of these is the basis for the reading composite scale, as described in the PIRLS framework.

Subscales are based on fewer observations than the combined scale and, as a result, may have larger standard errors.

In addition, there are a number of dependent (or continuous) variables, other than scale scores, that you may choose as a measure. These variables fall under different categories, such as Student and Family Characteristics and School Characteristics.

Jurisdictions

In 2001, 35 jurisdictions participated in PIRLS, including a separate sample for Hong Kong. Three benchmarking jurisdictions also participated, including two Canadian provinces (Ontario and Quebec) and 3rd-grade students in Sweden.

In 2006, 45 jurisdictions participated in PIRLS, including countries and subnational education systems, such as Canadian provinces and Hong Kong, a Special Administrative Region of the People's Republic of China. Seven benchmarking jurisdictions also participated, including five Canadian provinces and 5th-grade students in Norway and Iceland.

All listed jurisdictions can be selected for any analyses. However, the IDE contains a few U.S.-specific background variables (e.g., race/ethnicity) that, when selected, will not yield information for any other jurisdictions.

Years

Currently both 2001 and 2006 PIRLS data are available through the IDE. Each year can be selected separately or both years can be selected together, by selecting All Years.

2. Variables

In the PIRLS IDE, questions from three types of questionnaires (student, teacher, and school) as well as variables that are derived from background information are organized into categories that have shared characteristics and can be selected as a group when designing and generating tables.

Content category and subcategory titles may overlap, but specific variables appear only once in a subcategory. Use "Search" in the Select Variables step to locate variables.

3. Statistics Options

The IDE reports PIRLS data with several statistics options:

- Average scale scores
- Percentages
- Achievement levels – discrete
- Achievement levels – cumulative
- Percentiles
- Standard deviations

Average scale scores

For the PIRLS assessment, student performance is reported on scales that range from 0 to 1,000, with the scale average fixed at 500 and a standard deviation of 100.

Scale scores can show the standard error (in parentheses) and are often accompanied by data showing percentages and standard deviations.

PIRLS scales are produced using item response theory (IRT) to estimate average scores for reading literacy for each jurisdiction. IRT identifies patterns of response and uses statistical models to predict the probability of answering an item correctly as a function of students' proficiency in answering other questions. That is, student responses to the assessment questions are analyzed to determine the percentage of students responding correctly to each multiple-choice question and the percentage of students achieving in each of the score categories for constructed-response questions.

Percentages

This statistic shows the percentage of students as a row percentage. For example, if the first column lists countries, then each country will display its own percentage distribution across its row. If the table cell for Black female students in the United States is 9 percent, then Black females constituted 9 percent of U.S. fourth-graders. By default, percentage distributions do not include missing data, though there is an option to include the missing data.

Achievement levels (discrete and cumulative)

In addition to average scale scores, achievement results for PIRLS are reported using achievement levels. The achievement levels are international benchmarks based on collective judgments about what students should know and be able to do relative to the body of content reflected in each subject-area assessment. The overall reading literacy scale is divided into international benchmarks.

International benchmarks for the reading levels are as follows:

- *Below low* – below 400
- *At low* – between 400 and 475
- *At intermediate* – between 475 and 550
- *At high* – between 550 and 625
- *At advanced* – above 625

Descriptions of competencies at each of the 2006 PIRLS international benchmarks are shown in the following table:

Competencies at PIRLS international benchmarks: 2006

Benchmark	Cutpoint	Reading skills and strategies
Low	400	• Retrieve explicitly stated details from literary and informational texts
Intermediate	475	• Identify central events, plot sequences, and relevant story details • Make straightforward inferences from the text • Begin to make connections across parts of the text
High	550	• Recognize some textual features, such as figurative language and abstract messages • Make inferences on the basis of abstract or embedded information • Integrate information to recognize main ideas and provide explanations
Advanced	625	• Interpret figurative language • Distinguish and interpret complex information from different parts of text • Integrate ideas across text to provide interpretations about characters' feelings and behaviors

NOTE: Information about the procedures used to set the international benchmarks is available in the *PIRLS 2006 Technical Report* (Martin, Mullis, and Kennedy 2007).

SOURCE: International Association for the Evaluation of Educational Achievement, Progress in International Reading Literacy Study (PIRLS), 2001 and 2006.

Achievement-level data are presented in a discrete or cumulative format. In the "discrete" format, the percentage of students performing within each international benchmark is counted separately from the percentage of students at the other benchmarks. These categories are the percentages of students scoring *below low, at low, at intermediate, at high,* and *at advanced.* The "cumulative" format shows the percentage of students performing *at or above* each international benchmark. These categories are the percentages of students scoring *at or above low, at or above intermediate, at or above high,* and *at advanced.* Scoring below *low* indicates that a student's abilities could not be accurately described based on his or her responses.

Percentiles

This statistic shows the threshold (or cutpoint) score for the following:

- 10th percentile – the bottom 10 percent of students
- 25th percentile – the bottom quarter of students
- 50th percentile – the bottom half of students (half the students scored at or below the cutpoint and half scored above it)
- 75th percentile – the top quarter of students
- 90th percentile – the top 10 percent of students

Standard deviations

The standard deviation is a measure of how widely or narrowly dispersed scores are for a particular dataset. Under general normality assumptions, 95 percent of the scores are within two standard deviations of the mean. For example, if the average score of a dataset is 500 and the standard deviation is 100, it means that 95 percent of the scores in this dataset fall between 300 and 700. The standard deviation is the square root of the variance.

In the IDE, you may obtain standard deviations as one of your two choices for "Statistics Options" in the Edit Reports step.

4. Cross-Tabulations

Cross-tabulation is a method of combining separate variables into a single table. Normally, each variable has its own table. If you have selected two or three variables (not counting All Students), when you go to the Edit Reports step, you will automatically get one table for each variable (including one for All Students); at the end of that list, you will get one cross-tabulation for the two or three variables selected.

If you have chosen four or more variables (not counting All Students), you will get tables for each variable, but you won't get the cross-tabulation.

Be advised that if you go back to add another variable without subtracting one to keep the total under four, you will lose any edits you might have made to the cross-tabulation.

5. Statistical Notations and Other Notes

Statistical notations and other notes are found at the end of a data table, as applicable to that table:

— Not available.
† Not applicable. (For instance, the standard error for the statistic cannot be reported because the statistic does not meet reporting standards.)
# The statistic rounds to zero.
‡ Reporting standards not met. (For instance, the sample size is insufficient to permit a reliable estimate.)
NOTE: A general note pertains to any special characteristics of the data in the table.
SOURCE: Source information is listed for all PIRLS data and should be cited when data are used in a publication or presentation.

In the PIRLS IDE, most comparisons are independent with an alpha level of 0.05. The PIRLS IDE performs dependent t-tests only for basic male-female comparisons by country (with no additional variables included in the analysis). Published reports by IEA employ a dependent testing methodology for all male-female comparisons by country (i.e., even when additional

variables besides gender and country are included in the analysis). Currently the IDE does not have this capability. Thus, the statistical significance of male-female differences by country may vary slightly between published reports and the IDE.

6. Glossary

Below is a list of technical and PIRLS-specific assessment terms used in the IDE. Sections A through D refer to variables taken from the PIRLS student questionnaire. Sections E through G refer to variables taken from the PIRLS teacher questionnaire, and sections H through K refer to variables taken from the PIRLS school questionnaire.

A. Student and Family Characteristics

Languages – This 2001 and 2006 question asks students what language they spoke before they started school. Language options vary by country, but in the United States in 2006 the options were as follows: English, Spanish, Vietnamese, Chinese, a Filipino language, and "other." For additional details about country-specific adaptations, see the *PIRLS 2006 User Guide for the International Database* (supplement 2) and the *PIRLS 2001 User Guide for the International Database* (supplement 2).

Home resources – Within the home resources category, four items in 2001 and six items in 2006 are consistent across countries, and up to eight country-specific items could be included.[1] In 2006 and 2001, students in all countries were asked if they had a computer (not including Nintendo®, Gameboy®, or other TV/video game stations); study desk/table for personal use; books of their very own (not including school books); and daily newspaper. In 2006, students in all countries were also asked if they had their own room and their own mobile (cellular) phone. In addition, in 2006 the United States used three country-specific variables: video or digital camera; more than one car, truck, or van; and more than one bathroom. In 2001, the United States used these three country-specific variables as well as five others: recreational vehicle; stereo system with CD player; own cell phone; own room; and telephone answering machine. For additional details about country-specific adaptations, see the *PIRLS 2006 User Guide for the International Database* (supplement 2) and the *PIRLS 2001 User Guide for the International Database* (supplement 2).

For PIRLS 2006, the variables in the home resources category were combined to create an index of home educational resources. The index was created based on the responses to how many books are in the student's home; whether the student has a computer, study desk, own books, and newspaper in the home; and the highest level of education of either

[1] All countries could choose to include items that are not included in the international version of the questionnaire. Within the home resources category, countries could include up to seven items. These items are considered country-specific because they are unique to a country and cannot be compared across countries.

parent. For details on the index of home educational resources, see the *PIRLS 2006 User Guide for the International Database* (supplement 3).

ISCED – The International Standard Classification of Education (ISCED) is an internationally comparable method for describing levels of education across countries, created by the United Nations Educational, Scientific and Cultural Organization (UNESCO). ISCED levels are defined as follows:

Level 0 – The initial stage of organized instruction, designed primarily to introduce very young children to a school-type environment. ISCED level 0 programs can either be center or school based. Preschool and kindergarten programs in the United States fall into the level 0 category.

Level 1 – Consists of primary education, which usually lasts 4 to 6 years. ISCED level 1 typically begins between ages 5 and 7, and is the stage where students begin to study basic subjects, such as reading, writing, and mathematics. In the United States, elementary school (grades 1 through 6) is classified as level 1.

Level 2 – Also known as lower secondary education, students continue to learn the basic subjects taught in level 1, but this level is typically more subject specific than level 1 and may be taught by specialized teachers. ISCED level 2 usually lasts between 2 and 6 years, and begins around the age of 11. Middle school and junior high (grades 7 through 9) in the United States are classified as level 2.

Level 3 – Also known as upper secondary education, student coursework is generally subject specific and often taught by specialized teachers. Students often enter upper secondary education at the age of 15 or 16 and attend anywhere from 2 to 5 years. ISCED level 3 can prepare students for university or the labor force. Senior high school (grades 10 through 12) is considered level 3 in the United States.

Level 4 – Consists of primarily vocational education and courses are taken after the completion of secondary school, though the content is not more advanced than the content of secondary school courses. ISCED level 4 programs in the United States are often in the form of 1-year certificate programs.

Level 5 – Divided into levels 5A and 5B, this level refers to tertiary education (college or university). ISCED level 5A refers to academic higher education below the doctoral level. Level 5A programs are intended to provide sufficient qualifications to gain entry into advanced research programs and professions with high skill requirements. In the United States, bachelor's, master's, and first-professional degree programs are classified as ISCED level 5A. ISCED level 5B refers to vocational higher education. Level 5B programs provide a higher level of career and technical education and are designed to prepare students for the labor market. In the United States, associate's degree programs are classified at this level.

Level 6 – Refers to the doctoral level of academic higher education. Level 6 programs usually require the completion of a research thesis or dissertation.

B. Student Reading Activities

Activities outside of school – Within the category of reading activities students engage in outside of school one country-specific item could be used for 2001 and one for 2006 [ASBGRT09]. Items used internationally asked students if they read comic books; stories or novels; books that explain things; magazines; newspapers; directions or instructions; brochures and catalogs; and subtitles on a television screen. In 2006, the United States did not include a country-specific item. For additional details about country-specific adaptations, see the *PIRLS 2006 User Guide for the International Database* (supplement 2) and the *PIRLS 2001 User Guide for the International Database* (supplement 2).

Students' reports on students reading aloud in class – This 2001 and 2006 index variable is based on students' responses to two questions about how often these things happen in school: I read aloud to the whole class and I read aloud to a small group of students in my class [ASBGTHC2 and ASBGTHC3]. The average is calculated based on a 4-point scale corresponding to four response options for each question: *Never or almost never* = 4; *Once or twice a month* = 3; *Once or twice a week* = 2; and *Every day or almost every day* = 1. Students were categorized for the index variable as follows: *Every day or almost every day* = average of 1 to less than 1.75; *Once or twice a week* = average of 1.75 through 2.5; *Once or twice a month* = average of greater than 2.5 through 3.25; *Every day or almost every day* = average of greater than 3.25 through 4.

Students' reports about independent reading – This 2001 and 2006 index variable is based on students' responses to two questions about how often these things happen in school: I read silently on my own and I read books that I chose myself [ASBGTHC4 and ASBGTHC5]. The average is calculated based on a 4-point scale corresponding to four response options for each question: *Never or almost never* = 4; *Once or twice a month* = 3; *Once or twice a week* = 2; and *Every day or almost every day* = 1. Students were categorized for the index variable as follows: *Every day or almost every day* = average of 1 to less than 1.75; *Once or twice a week* = average of 1.75 through 2.5; *Once or twice a month* = average of greater than 2.5 through 3.25; *Every day or almost every day* = average of greater than 3.25 through 4.

Students' reports on doing projects about class reading – This 2001 only index variable is based on students' responses to three questions about how often they have done the following after having read something in class: draw pictures or do an art project about what was read; act in a play or drama about what was read; and do a group project with other students in the class about what was read [ASBGAFR5–7]. The average is calculated based on a 4-point scale corresponding to four response options for each question: *Never or almost never* = 4; *Once or twice a month* = 3; *Once or twice a week* = 2; and *Every day or almost every day* = 1. Students were categorized for the index variable as follows: *Every day or almost every day* = average of 1 to less than 1.75; *Once or twice a week* = average of 1.75 through 2.5; *Once or twice a month* = average of greater than 2.5 through 3.25; *Every day or almost every day* = average of greater than 3.25 through 4.

Students' reports on answering questions in writing (related to class reading) – This 2001 only index variable is based on students' responses to two questions about how often they have done the following after having read something in class: answer questions in a workbook or on a worksheet about what was read and write something about what was read [ASBGAFR1 and ASBGAFR2]. The average is calculated based on a 4-point scale corresponding to four response options for each question: *Never or almost never* = 4; *Once or twice a month* = 3; *Once or twice a week* = 2; and *Every day or almost every day* = 1. Students were categorized for the index variable as follows: *Every day or almost every day* = average of 1 to less than 1.75; *Once or twice a week* = average of 1.75 through 2.5; *Once or twice a month* = average of greater than 2.5 through 3.25; *Every day or almost every day* = average of greater than 3.25 through 4.

C. Students' Interests and Self-Perception

Index of students' attitudes toward reading (SATR) – This 2001 and 2006 index is composed of five statements about reading enjoyment. Students were asked to respond to the following statements: I read only if I have to; I like talking about books with other people; I would be happy if someone gave me a book as a present; I think reading is boring; and I enjoy reading [ASBGRST1–6]. Student responses were averaged on a 4-point scale as follows: *Agree a lot* = 1; *Agree a little* = 2; *Disagree a little* = 3; and *Disagree a lot* = 4. After reverse-scoring relevant items, responses to each statement were averaged such that *High* = average of 1 to less than 2; *Medium* = average of 2 through 3; and *Low* = average of greater than 3 through 4.

Index of students' reading self-concept (SRSC) – The 2006 index [ASDGSRSC] is composed of four statements about students' reading self-concept. Students were asked to respond to the following statements: Reading is very easy for me; I do not read as well as other students in my class; When I am reading by myself, I understand almost everything I read; and I read slower than other students in my class [ASBGRD1–4]. The 2001 index [ASDGSELF] is composed of three statements about students' reading self-concept. Students were asked to respond to the following statements: Reading is very easy for me; I do not read as well as other students in my class; and reading aloud is very hard for me [ASBGRAB1, 2, and 4]. For both indexes, student responses were averaged on a 4-point scale as follows: *Agree a lot* = 1; *Agree a little* = 2; *Disagree a little* = 3; and *Disagree a lot* = 4. After reverse-scoring relevant items, responses to each statement were averaged such that *High* = average of 1 to less than 2; *Medium* = average of 2 through 3; and *Low* = average of greater than 3 through 4.

D. Student Perception of School

Index of student safety in school (SSS) – This 2006 index is based on students' level of agreement with the statement "I feel safe when I am at school" and students' reports of incidents of bullying, stealing, and injury to themselves or someone in their class in the past month. Specifically, students were asked to respond to the follow statements: Something was stolen from me; Something was stolen from someone in my class; I was

bullied by another student; Someone in my class was bullied by another student; I was injured by another student; and Someone in my class was injured by another student [ASBGOBUL, ASBGOHRT, ASBGOSTL, ASBGSBUL, ASBGSHRT, ASBGSSTL].

Students at the *High* level of the index agreed (a little or a lot) that they felt safe at school, reported one or fewer incidents happening to them, and one or fewer incidents happening to a classmate in the last month. Students at the *Low* level of the index disagreed (a little or a lot) about feeling safe at school, had two or more incidents happen to them, and two or more incidents happen to a classmate during the past month. All other students were at the *Medium* level.

E. Student Characteristics (Teacher)

Fourth-grade – The target population for PIRLS 2001 and 2006 was students enrolled in the fourth year of formal schooling, counting from the first year of primary school as defined by UNESCO's ISCED system. Accordingly, the fourth year of formal schooling should be the fourth grade in most countries. However, to avoid testing very young children, PIRLS has a policy that the average age of children in the grade tested should not be below 9.5 years old, so some countries participate with students in the fifth grade.

F. Homework Assignment (Teacher)

Index of reading for homework (RFH) – This 2001 and 2006 index was created by combining teachers' responses to individual questions about reading homework. Teachers were asked how often they assigned reading as part of homework (for any subject) and how much time they expected students to spend on the homework each time it was assigned [ATBGHWR1 and ATBGHWR2]. Students were placed in one of three categories of the index (*High*, *Medium*, or *Low*) according to their teachers' responses. Cutoff points were established such that the *High* level of the index corresponds to relatively high amounts of reading for homework. Students assigned to the *High* level were expected to spend more than 30 minutes on reading for homework at least 1–2 times per week. Students assigned to the *Low* level were given reading for homework less than once a week and were expected to spend no more than 30 minutes on it if/when assigned. The remaining students were assigned to the *Medium* level.

G. Teacher Characteristics

Index of teacher career satisfaction (TCS) – This 2006 only index combines teachers' responses to five items about their satisfaction with being a teacher. Teachers were asked to respond to the follow statements: I am content with my profession as a teacher; I am satisfied with being a teacher at this school; I would describe the teachers at this school as a satisfied group; I had more enthusiasm when I began teaching than I have now; and I do important work as a teacher [ATBGSAT1–5]. Teachers' responses were averaged on a 4-point scale as follows: *Agree a lot* = 1; *Agree a little* = 2; *Disagree a little* = 3; and *Disagree a lot* = 4. After reverse-scoring relevant items, students whose teacher's average

was 3 or greater (i.e., they agreed either a little or a lot with all five statements) were assigned to the *Low* level of the index, students with a teacher averaging 2 or more but less than 3 were at the *Medium* level, and students with a teacher averaging less than 2 were assigned to the *High* level of the index.

H. School Characteristics

Percentages of students with early literacy skills – This 2001 and 2006 variable is a composite of principals' responses to five questions about the percentage of students entering school with the ability to recognize most of the letters of the alphabet; read some words; read sentences; write letters of the alphabet; and write some words [ACBG1GR1–5]. A 4-point scale was used to compute the average for each principal's responses: *More than 75%* = 4; *51–75%* = 3; *25–50%* = 2; *Less than 25%* = 1. Students were assigned to groups based on average school principal responses as follows: average greater than 3.25 was assigned to the *More than 75%* group; average greater than 2.5 through 3.25 was assigned to the *51–75%* group; average 1.75 through 2.5 was assigned to the *25–50%* group; and average from 1 to less than 1.75 was assigned to the *Less than 25%* group.

I. School Resources

Index of availability of school resources (ASR) – This 2001 and 2006 index is based on principals' responses to 14 items about shortages of or inadequacies in accommodation, staff, equipment, and instructional materials [ACBGSI1–14]. Specifically, principals were asked to indicate if their school's capacity to provide instruction was affected by shortages or inadequacies in qualified teaching staff; teachers with a specialization in reading; second language teachers; instructional materials (e.g., textbooks); supplies (e.g., papers, pencils); school buildings and grounds; heating/cooling and lighting systems; instructional space (e.g., classrooms); special equipment for physically disabled students; computers for instructional purposes; computer software for instructional purposes; computer support staff; library books; and audiovisual resources. Principals' average responses were computed on a 4-point scale: *Not at all* = 1; *A little* = 2; *Some* = 3; and *A lot* = 4. Students were assigned to the *High* level of the index if their school's principal had an average response of less than 2. Students were assigned to the *Medium* level if their principal's average was 2 through 3, and to the *Low* level if the average was greater than 3.

Availability of Computers for Instruction – This 2001 and 2006 index is based on principals' responses to the following two questions: the total number of computers that can be used for instructional purposes by fourth-grade students [ACBGCMP1] and the total enrollment of fourth-grade students in the school [ACBG4ENR]. Total enrollment is divided by the number of computers to calculate the number of students per computer. This result is then coded on a 5-point scale: 1 = *Less than 5 students per computer*; 2 = *5 to 10 students per computer*; 3 = *11 to 20 students per computer*; 4 = *More than 20 students per computer*; 5 = *Student in school without computers.*

J. Home Involvement (School)

Index of home-school involvement (HSI) – This 2001 and 2006 index is based on principals' responses to seven questions, including four questions about the frequency of communication from the school to the home—teacher-parent conferences; letters, calendars, newsletters, etc., sent home; written reports of child's performance; and events at school to which parents are invited [ACBGPRO1–4]—and three questions about the percentage of students with parents who participate in the life of the school—volunteer regularly to help in the classroom or school; attend teacher-parent conferences; and attend cultural, sporting, or social events at the school [ACBGPAR1–3]. Students were assigned to the *High* level of the index if they attended a school that, at least four times a year, held teacher-parent conferences and school events that were attended by more than half the parents; sent home written report cards of the child's performance at least four times a year; and sent home letters, calendars, newsletters, etc., with news about the school at least seven times a year. Students were assigned to the *Low* level of the index if their school never held a teacher-parent conference, or if it did, no more than 25 percent of parents attended; held school events no more than once a year that were attended by no more than 25 percent of parents; sent home letters or newsletters no more than three times a year; and written reports of the child's performance were sent home no more than once a year. Students in schools with other combinations were assigned to the *Medium* level.

K. School Climate

Index of principal's perception of school climate (PPSC) – This 2001 and 2006 index summarizes principals' perception of the overall atmosphere in their school using six items. Principals were asked to characterize each of the following within their school: teachers' job satisfaction; teachers' expectations for student achievement; parental support for student achievement; students' regard for school property; students' desire to do well in school; and students' regard for each other's welfare [ACBGCHA1–6]. An average was computed for each principal on a 5-point scale: *Very high* = 1, *High* = 2, *Medium* = 3, *Low* = 4, and *Very low* = 5. Students whose school principal had an average response greater than 3.67 were assigned to the *Low* level of the index, those where the average was below 2.33 to the *High* level, and the remainder to the *Medium* level.