

## CHAPTER 5

# Sample Implementation in PIRLS 2016

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### Overview

Rigorous sampling of schools and students was a key component of the PIRLS 2016 project. Implementing the sampling plan was the responsibility of the National Research Coordinator (NRC) in each participating country. NRCs were supported in this endeavor by the PIRLS 2016 sampling consultants, Statistics Canada, and the Sampling Unit of IEA Hamburg. Sampling consultants conducted the school sampling for most countries and trained NRCs using the Windows® Within-school Sampling Software (WinW3S) provided by IEA Hamburg to implement within-school sampling. As an essential part of their sampling activities, NRCs were responsible for providing detailed documentation describing their national sampling plans (sampling data, school sampling frames, and school sample selections). The documentation for each PIRLS participant was reviewed and completed by the sampling consultants, including detailed information on coverage and exclusion levels, stratification variables, sampling, participation rates, and variance estimates. The TIMSS & PIRLS International Study Center and the PIRLS 2016 Sampling Referee, Dr. Keith Rust of Westat, Inc., used this information to evaluate the quality of the samples.

This chapter provides a summary of the major characteristics of the national samples for PIRLS 2016, including PIRLS Literacy and ePIRLS. More detailed information on the sample design for each country, including details of population coverage and exclusions, stratification variables, and schools' sampling allocations, is provided in Appendix 5A Characteristics of National Samples.

### Target Population

As described in [Chapter 3](#) (Sample Design), the international target population for the PIRLS 2016 assessment is defined as the grade representing 4 years of formal schooling, counting from the first year of primary or elementary schooling.

For the PIRLS 2016 cycle, countries could participate in PIRLS Literacy—a less difficult reading assessment. PIRLS Literacy, which replaces prePIRLS from PIRLS 2011, was designed for countries where students found the PIRLS reading assessment too difficult. Countries considering PIRLS Literacy had the option of participating in PIRLS Literacy only or in both the PIRLS Literacy and PIRLS assessments. For countries who participated in both assessments, the student sample size was doubled and the PIRLS and PIRLS Literacy booklets were rotated within the sampled classes so that each student in the class was given either a PIRLS booklet or a PIRLS Literacy booklet.

The Islamic Republic of Iran and Morocco administered both PIRLS and PIRLS Literacy, while Egypt, Kuwait, and South Africa administered PIRLS Literacy only. Denmark administered PIRLS Literacy at the third grade and PIRLS at the fourth grade.

Exhibit 5.1 presents the grade identified as the target grade for sampling by each country and includes the number of years of formal schooling that the grades represent and the average age of students in the target grade at the time of testing.

For most countries, the target grade did indeed turn out to be the grade with 4 years of schooling—i.e., the fourth grade. However, in England, Malta, New Zealand, and Trinidad and Tobago, children begin primary school at an early age.<sup>1</sup> Therefore, these countries administered the PIRLS assessment in the fifth year of schooling. Norway chose to assess its fifth grade to obtain better comparisons with Sweden and Finland, while also assessing its fourth grade to measure trends to previous PIRLS assessments.

In addition to administering PIRLS Literacy at the fourth grade, South Africa administered PIRLS to assess students taught in English, Afrikaans, and Zulu at the fifth grade.

<sup>1</sup> Given the cognitive demands of the assessment, PIRLS wants to avoid assessing very young students. Thus, PIRLS recommends assessing the next higher grade (i.e., fifth grade) if the average age at the time of testing would be less than 9.5 years.

**Exhibit 5.1: National Grade Definition – PIRLS 2016**

Country	Country's Name for Grade Tested	Years of Formal Schooling	Average Age at Time of Testing
Australia	Year 4	4	10.0
Austria	Grade 4	4	10.3
Azerbaijan	Grade 4	4	10.1
Bahrain	Grade 4	4	9.9
Belgium (Flemish)	Grade 4	4	10.1
Belgium (French)	Grade 4	4	10.0
Bulgaria	Grade 4	4	10.8
Canada	Grade 4	4	9.9
Chile	Grade 4	4	10.1
Chinese Taipei	Grade 4	4	10.1
Czech Republic	Grade 4	4	10.3
Denmark	Grade 4	4	10.8
Egypt	Grade 4	4	10.0
England	Year 5	5	10.3
Finland	Grade 4	4	10.8
France	Grade 4	4	9.8
Georgia	Grade 4	4	9.7
Germany	Grade 4	4	10.3
Hong Kong SAR	Primary 4	4	9.9
Hungary	Grade 4	4	10.6
Iran, Islamic Rep. of	Grade 4	4	10.2
Ireland	Fourth Class	4	10.5
Israel	Grade 4	4	10.0
Italy	Grade 4	4	9.7
Kazakhstan	Grade 4	4	10.3
Kuwait	Primary Grade 4	4	9.6
Latvia	Grade 4	4	10.9
Lithuania	Grade 4	4	10.8
Macao SAR	Primary 4	4	10.0
Malta	Year 5	5	9.7
Morocco	Grade 4	4	10.2
Netherlands	Grade 6	4	10.1
New Zealand	Year 5	4.5 - 5.5	10.1
Northern Ireland	Year 6	4	10.4
Norway (5)	Grade 5	5	10.8
Oman	Grade 4	4	9.7

**Exhibit 5.1: National Grade Definition – PIRLS 2016 (Continued)**

Country	Country's Name for Grade Tested	Years of Formal Schooling	Average Age at Time of Testing
Poland	Primary 4	4	10.7
Portugal	Grade 4	4	9.8
Qatar	Grade 5 for English curriculum schools; Grade 4 for other schools	4	10.0
Russian Federation	Grade 4	4	10.8
Saudi Arabia	Grade 4	4	9.9
Singapore	Grade 4	4	10.4
Slovak Republic	Grade 4	4	10.4
Slovenia	Grade 4	4	9.9
South Africa	Grade 4	4	10.6
Spain	Grade 4	4	9.9
Sweden	Grade 4	4	10.7
Trinidad and Tobago	Standard 3	5	10.2
United Arab Emirates	Grade 4	4	9.8
United States	Grade 4	4	10.1
<b>Benchmarking Participants</b>			
Buenos Aires, Argentina	Grade 4	4	10.0
Ontario, Canada	Grade 4	4	9.8
Quebec, Canada	Grade 4	4	10.1
Denmark (3)	Grade 3	3	9.8
Norway (4)	Grade 4	4	9.8
Moscow City, Russian Fed.	Grade 4	4	10.8
Eng/Afr/Zulu - RSA (5)	Grade 5	5	11.6
Andalusia, Spain	Grade 4	4	9.8
Madrid, Spain	Grade 4	4	9.9
Abu Dhabi, UAE	Grade 4	4	9.7
Dubai, UAE	Grade 4; Year 5 for schools following UK curriculum	4	9.9

## National Coverage and Exclusions

Exhibits 5.2 summarizes population coverage and exclusions for the PIRLS 2016 and Exhibit 5.3 provides a similar summary for ePIRLS.

### Coverage

National coverage of the PIRLS 2016 international target population was generally comprehensive, with some exceptions. These included Canada, which assessed students only from the provinces of Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Ontario, Quebec, and Saskatchewan, and Georgia, which assessed only students taught in Georgian and Azerbaijani. These participants chose a national target population that was less than the international target population. For these exceptions where coverage was below 100 percent, the results were footnoted in the PIRLS 2016 international reports.

The national coverage for PIRLS and ePIRLS was equivalent for every country but Canada. In Canada, only British Columbia, Newfoundland, Ontario, and Quebec took part in ePIRLS.

**Exhibit 5.2: Coverage of Target Population – PIRLS 2016**

Country	International Target Population		Exclusions from National Target Population		
	Coverage	Notes on Coverage	School-Level Exclusions	Within-Sample Exclusions	Overall Exclusions
Australia	100%		2.3%	2.4%	4.8%
<sup>2</sup> Austria	100%		1.2%	4.4%	5.6%
Azerbaijan	100%		2.1%	0.0%	2.1%
Bahrain	100%		0.4%	2.3%	2.7%
Belgium (Flemish)	100%		0.7%	0.9%	1.6%
<sup>2</sup> Belgium (French)	100%		4.9%	1.1%	6.0%
Bulgaria	100%		1.2%	3.1%	4.3%
<sup>1 2</sup> Canada	97%	Students from the provinces of Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Ontario, Quebec, and Saskatchewan	2.8%	4.7%	7.5%
Chile	100%		1.7%	2.3%	4.0%
Chinese Taipei	100%		0.0%	0.9%	0.9%
Czech Republic	100%		2.7%	0.7%	3.4%
<sup>2</sup> Denmark	100%		1.9%	7.9%	9.8%
Egypt	100%		1.2%	0.0%	1.2%
England	100%		1.6%	2.1%	3.7%
Finland	100%		1.3%	1.2%	2.4%
France	100%		4.7%	0.6%	5.4%
<sup>1</sup> Georgia	96%	Students taught in Georgian and Azerbaijani	0.8%	3.0%	3.8%
Germany	100%		1.4%	2.8%	4.2%
<sup>2</sup> Hong Kong SAR	100%		7.3%	2.8%	10.1%
Hungary	100%		2.6%	1.9%	4.5%
Iran, Islamic Rep. of	100%		3.9%	0.1%	4.1%
Ireland	100%		2.3%	0.8%	3.1%
<sup>3</sup> Israel	100%		21.0%	3.9%	24.9%
Italy	100%		0.8%	4.1%	4.9%
Kazakhstan	100%		4.1%	0.8%	4.9%
Kuwait	100%		2.5%	1.4%	4.0%
<sup>2</sup> Latvia	100%		4.3%	3.5%	7.9%
Lithuania	100%		2.1%	2.1%	4.2%
Macao SAR	100%		1.4%	2.2%	3.6%
<sup>2</sup> Malta	100%		1.5%	6.4%	7.9%

<sup>1</sup> National Target Population does not include all of the International Target Population.

<sup>2</sup> National Defined Population covers 90% to 95% of National Target Population.

<sup>3</sup> National Defined Population covers less than 90% of National Target Population (but at least 77%).

**Exhibit 5.2: Coverage of Target Population – PIRLS 2016 (Continued)**

Country	International Target Population		Exclusions from National Target Population		
	Coverage	Notes on Coverage	School-Level Exclusions	Within-Sample Exclusions	Overall Exclusions
Morocco	100%		1.7%	0.0%	1.7%
Netherlands	100%		2.4%	0.7%	3.1%
New Zealand	100%		1.3%	2.4%	3.7%
Northern Ireland	100%		2.6%	0.4%	3.0%
Norway (5)	100%		2.0%	3.3%	5.3%
Oman	100%		0.1%	0.5%	0.6%
Poland	100%		1.4%	2.5%	3.9%
<sup>2</sup> Portugal	100%		1.0%	6.5%	7.5%
Qatar	100%		2.0%	1.9%	3.9%
Russian Federation	100%		2.0%	2.1%	4.1%
Saudi Arabia	100%		1.9%	0.4%	2.3%
<sup>3</sup> Singapore	100%		10.6%	0.5%	11.1%
Slovak Republic	100%		3.1%	1.7%	4.8%
Slovenia	100%		1.5%	0.8%	2.4%
South Africa	100%		2.4%	0.2%	2.5%
Spain	100%		1.6%	3.2%	4.8%
Sweden	100%		1.3%	3.9%	5.2%
Trinidad and Tobago	100%		0.3%	1.0%	1.3%
United Arab Emirates	100%		2.0%	1.3%	3.3%
United States	100%		0.0%	4.8%	4.8%
<b>Benchmarking Participants</b>					
Buenos Aires, Argentina	100%		1.5%	1.2%	2.8%
Ontario, Canada	100%		2.3%	1.8%	4.1%
Quebec, Canada	100%		3.5%	1.6%	5.1%
<sup>2</sup> Denmark (3)	100%		1.9%	7.5%	9.3%
Norway (4)	100%		2.0%	3.0%	5.1%
Moscow City, Russian Fed.	100%		0.8%	2.6%	3.3%
Eng/Afr/Zulu - RSA (5)	100%		0.9%	0.2%	1.1%
Andalusia, Spain	100%		1.0%	3.2%	4.2%
<sup>2</sup> Madrid, Spain	100%		3.1%	3.4%	6.5%
Abu Dhabi, UAE	100%		2.2%	1.7%	3.9%
Dubai, UAE	100%		1.6%	1.5%	3.2%

**Exhibit 5.3: Coverage of Target Population – ePIRLS 2016**

Country	International Target Population		Exclusions from National Target Population		
	Coverage	Notes on Coverage	School-Level Exclusions	Within-Sample Exclusions	Overall Exclusions
<sup>1,2</sup> Canada	74%	Students from the provinces of British Columbia, Newfoundland, Ontario, and Quebec	2.9%	3.6%	6.5%
Chinese Taipei	100%		0.0%	0.9%	0.9%
Denmark	100%		1.9%	8.0%	9.9%
<sup>1</sup> Georgia	96%	Students taught in Georgian and Azerbaijani	0.8%	3.0%	3.8%
Ireland	100%		2.3%	1.4%	3.7%
<sup>3</sup> Israel	100%		21.0%	3.9%	24.9%
Italy	100%		0.8%	4.1%	4.9%
Norway (5)	100%		2.0%	3.4%	5.3%
<sup>2</sup> Portugal	100%		1.0%	6.5%	7.5%
<sup>3</sup> Singapore	100%		10.6%	0.5%	11.1%
Slovenia	100%		1.5%	0.8%	2.4%
Sweden	100%		1.3%	3.9%	5.2%
United Arab Emirates	100%		2.0%	1.3%	3.3%
United States	100%		0.0%	4.9%	4.9%
<b>Benchmarking Participants</b>					
Abu Dhabi, UAE	100%		2.2%	1.7%	3.9%
Dubai, UAE	100%		1.6%	1.6%	3.2%

1 National Target Population does not include all of the International Target Population.

2 National Defined Population covers 90% to 95% of National Target Population.

3 National Defined Population covers less than 90% of National Target Population (but at least 77%).

### School-Level and Student-Level Exclusions

Within the national target population, it was possible to exclude certain types of schools and students. For the most part, school-level exclusions consisted of schools for students with disabilities and very small or remote schools. Occasionally, schools were excluded for other reasons, as documented in Appendix 5A Characteristics of National Samples. Student-level, or within-school, exclusions generally consisted of students with disabilities or students who could not be assessed in the language of the test. For most PIRLS participants, the overall percentage of excluded students (combining school and within-school levels) was 5 percent or less after rounding. However, Austria, Belgium (French), Canada, Denmark, Hong Kong SAR, Latvia, Malta, and Portugal, as well as

the benchmarking participants Denmark (3) and Madrid (Spain), had exclusions accounting for between 5 and 10 percent of the desired population. Israel and Singapore had exclusions exceeding 10 percent. Because the same students were sampled for ePIRLS in most countries, the ePIRLS overall exclusion rates were similar to those of PIRLS. Participants with an overall exclusion rate of more than 5 percent were annotated in the international reports.

## Target Population Size

Exhibits 5.4 and 5.5 show the number of schools and students in each participant's target population<sup>2</sup> and sample for PIRLS and ePIRLS, respectively, as well as an estimate of the student population size based on the sample data. The target population figures were derived from the sampling frame used to select the PIRLS 2016 samples, and the sample figures were based on the number of sampled schools and students that participated in the assessments. The sample figures were computed using sampling weights (explained in more detail in [Chapter 3](#)). The student population size was based on the sampling frame and did not take into account the portion of the population excluded within sampled schools nor did it account for changes in the population between the date when the information in the sampling frame was collected and the date of the PIRLS 2016 data collection—usually a 2-year interval. Nevertheless, a comparison between the two estimates of population size can be seen as a validity check on the sampling procedure. In most cases, the population size estimated from the sample closely matched the population size from the sampling frame.

2 After school-level exclusions.

**Exhibit 5.4: Population and Sample Sizes – PIRLS 2016**

Country	Population		Sample		
	Schools	Students	Schools	Students	Student Population Size Estimated from Sample
Australia	6,530	275,099	286	6,341	287,196
Austria	3,020	81,005	150	4,360	81,450
Azerbaijan	3,709	122,286	170	5,994	128,877
Bahrain	183	17,769	182	5,480	17,493
Belgium (Flemish)	2,421	70,315	148	5,198	70,366
Belgium (French)	1,662	50,813	158	4,623	53,772
Bulgaria	1,752	62,074	153	4,281	60,411
Canada	9,377	344,011	926	18,245	342,617
Chile	6,012	228,629	154	4,294	230,972
Chinese Taipei	2,667	201,779	150	4,326	199,501
Czech Republic	3,440	102,460	157	5,537	99,938
Denmark	1,649	66,075	185	3,508	60,829
Egypt	16,401	1,610,893	160	6,957	1,543,299
England	14,946	597,669	170	5,095	588,313
Finland	2,237	58,254	151	4,896	55,611
France	31,577	776,184	163	4,767	787,106
Georgia	1,989	43,331	200	5,741	43,214
Germany	17,901	719,596	208	3,959	684,064
Hong Kong SAR	507	47,404	138	3,349	50,804
Hungary	2,796	91,826	149	4,623	90,647
Iran, Islamic Rep. of (Combined)	36,817	1,120,197	271	8,766	1,202,181
Literacy	36,817	1,120,197	271	4,381	1,202,181
PIRLS	36,817	1,120,197	271	4,385	1,202,181
Ireland	2,719	62,807	148	4,607	62,101
Israel	1,696	110,408	159	4,041	108,461
Italy	6,940	565,199	149	3,940	544,538
Kazakhstan	6,066	258,530	172	4,925	253,209
Kuwait	375	48,346	177	4,609	47,299
Latvia	649	18,515	150	4,157	18,478
Lithuania	827	25,969	195	4,317	25,062
Macao SAR	57	4,217	57	4,059	4,244
Malta	97	4,055	95	3,647	4,057

**Exhibit 5.4: Population and Sample Sizes – PIRLS 2016 (Continued)**

Country	Population		Sample		
	Schools	Students	Schools	Students	Student Population Size Estimated from Sample
Morocco (Combined)	19,216	649,390	360	10,942	664,737
Literacy	19,216	649,390	360	5,453	664,737
PIRLS	19,216	649,390	360	5,489	664,737
Netherlands	6,361	179,849	132	4,206	168,482
New Zealand	1,813	57,715	188	5,646	58,169
Northern Ireland	765	21,908	134	3,693	22,306
Norway (5)	1,991	59,159	150	4,232	58,583
Oman	662	54,975	306	9,234	52,512
Poland	11,473	368,742	148	4,413	333,001
Portugal	1,228	101,911	218	4,642	99,852
Qatar	208	19,690	216	9,077	19,791
Russian Federation	33,639	1,322,675	206	4,577	1,342,153
Saudi Arabia	11,708	438,538	202	4,741	433,654
Singapore	177	39,143	177	6,488	39,355
Slovak Republic	1,991	50,300	220	5,451	47,901
Slovenia	729	18,207	160	4,499	19,659
South Africa	16,896	944,645	293	12,810	983,873
Spain	12,730	473,955	629	14,595	472,876
Sweden	3,289	104,640	154	4,525	109,181
Trinidad and Tobago	511	18,956	151	4,177	18,333
United Arab Emirates	721	75,340	468	16,471	76,604
United States	69,235	3,989,251	158	4,425	3,752,434
<b>Benchmarking Participants</b>					
Buenos Aires, Argentina	876	38,886	150	4,382	41,023
Ontario, Canada	3,626	140,193	188	4,270	136,781
Quebec, Canada	1,726	75,398	127	3,179	74,775
Denmark (3)	1,649	66,075	186	3,600	62,709
Norway (4)	2,018	59,646	154	4,354	60,180
Moscow City, Russian Fed.	740	87,790	150	4,289	89,266
Eng/Afr/Zulu - RSA (5)	8,781	525,074	125	5,282	483,437
Andalusia, Spain	2,443	97,000	150	4,169	97,750
Madrid, Spain	1,293	66,613	168	3,794	65,346
Abu Dhabi, UAE	278	26,871	151	4,188	27,825
Dubai, UAE	161	20,920	174	7,859	21,867

**Exhibit 5.5: Population and Sample Sizes – ePIRLS 2016**

Country	Population		Sample		
	Schools	Students	Schools	Students	Student Population Size Estimated from Sample
Canada	9,902	262,540	474	8,871	264,737
Chinese Taipei	2,667	201,779	150	4,299	199,501
Denmark	1,649	66,075	142	2,506	60,103
Georgia	1,989	43,331	199	5,557	43,210
Ireland	2,719	62,807	147	2,473	62,393
Israel	1,696	110,408	157	3,798	108,348
Italy	6,940	565,199	148	3,767	544,871
Norway (5)	1,991	59,159	142	3,610	58,862
Portugal	1,228	101,911	218	4,558	99,852
Singapore	177	39,143	177	6,320	39,355
Slovenia	729	18,207	159	4,303	19,668
Sweden	3,289	104,640	144	3,879	109,160
United Arab Emirates	721	75,340	465	15,566	76,653
United States	69,235	3,989,251	153	4,090	3,765,069
<b>Benchmarking Participants</b>					
Abu Dhabi, UAE	278	26,871	150	3,980	27,869
Dubai, UAE	161	20,920	174	7,741	21,895

## Meeting PIRLS 2016 Standards for Sampling Participation

PIRLS 2016 participants understood that the goal for sampling participation was 100 percent for all sampled schools, classrooms, and students. Guidelines for reporting achievement data for participants that secure less than full participation were modeled after IEA’s previous PIRLS assessment cycles. As summarized below in Exhibit 5.6, countries were assigned to one of three categories on the basis of their sampling participation. Countries in Category 1 were considered to have met all PIRLS 2016 sampling requirements and to have acceptable participation rates. Countries in Category 2 met the participation requirements only after including replacement schools. Countries that failed to meet the participation requirements even with the use of replacement schools were assigned to Category 3. One of the main goals for quality data in PIRLS 2016 was to have as many countries as possible achieve Category 1 status.

**Exhibit 5.6: Categories of Sampling Participation**

<b>Category 1</b>	<p>Acceptable sampling participation rate <b>without</b> the use of replacement schools.</p> <p>In order to be placed in this category, a country had to have:</p> <ul style="list-style-type: none"> <li>▪ An <b>unweighted</b> school response rate <b>without</b> replacement of at least 85% (after rounding to nearest whole percent) AND an <b>unweighted</b> student response rate (after rounding) of at least 85%</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>▪ A <b>weighted</b> school response rate <b>without</b> replacement of at least 85% (after rounding to nearest whole percent) AND a <b>weighted</b> student response rate (after rounding) of at least 85%</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>▪ The product of the (unrounded) <b>weighted</b> school response rate <b>without</b> replacement and the (unrounded) <b>weighted</b> student response rate of at least 75% (after rounding to the nearest whole percent).</li> </ul> <p>Countries in this category would appear in the tables and figures in international reports without annotation, and will be ordered by achievement as appropriate.</p>
<b>Category 2</b>	<p>Acceptable sampling participation rate <b>only when replacement schools are included</b>. A country would be placed in this category 2 if:</p> <ul style="list-style-type: none"> <li>▪ It failed to meet the requirements for Category 1 but had a weighted school response rate <b>without</b> replacement of at least 50% (after rounding to the nearest percent)</li> </ul> <p>AND HAD EITHER</p> <ul style="list-style-type: none"> <li>▪ A <b>weighted</b> school response rate <b>with</b> replacement of at least 85% (after rounding to nearest whole percent) AND a <b>weighted</b> student response rate (after rounding) of at least 85%</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>▪ The product of the (unrounded) <b>weighted</b> school response rate <b>with</b> replacement and the (unrounded) <b>weighted</b> student response rate of at least 75% (after rounding to the nearest whole percent).</li> </ul> <p>Countries in this category would be annotated with † in the tables and figures in international reports, and ordered by achievement as appropriate.</p>
<b>Category 3</b>	<p>Unacceptable sampling response rate even when replacement schools are included. Countries that could provide documentation to show that they complied with PIRLS sampling procedures and requirements but did not meet the requirements for Category 1 or Category 2 would be placed in Category 3.</p> <p>Countries in this category would be annotated with ‡ if they nearly met the requirements for Category 2. Countries would be annotated with ≡ if they failed to meet the participation requirements but had a school participation rate of at least 50% before the use of replacement schools. At last, if none of these conditions are met, countries would appear in a separate section of the achievement tables, below the other countries, in international reports. These countries would be presented in alphabetical order.</p>

Exhibits 5.7 and 5.8 present the weighted school, classroom, student, and overall participation rates in the PIRLS and ePIRLS assessments, and Exhibits 5.9 and 5.10 present the unweighted participation rates. Almost all PIRLS participants had excellent participation rates and were classified as Category 1. Hong Kong SAR, the Netherlands, and the United States achieved the minimum acceptable participation rate only after including replacement schools, and therefore their results were annotated with the symbol † in the achievement exhibits of the PIRLS international results report (Category 2). Despite efforts to secure full participation, the benchmarking

participant Quebec, Canada, did not meet the required sampling participation rate even with the use of replacement schools and was annotated with the symbol  $\equiv$  in the achievement exhibits of the report (Category 3).

Similarly, nearly all ePIRLS participants had very good participation rates and were classified as Category 1. The United States achieved the minimum acceptable participation rate only after including replacement schools and were annotated with the symbol  $\dagger$  in the achievement exhibits of the ePIRLS report (Category 2). In spite of efforts to achieve full participation, Denmark did not meet the required sampling participation rate in ePIRLS even with the replacement schools and their achievement results were annotated with the symbol  $\equiv$  in the report (Category 3).

**Exhibit 5.7: Participation Rates (Weighted) – PIRLS 2016**

Country	School Participation		Class Participation	Student Participation	Overall Participation	
	Before Replacement	After Replacement			Before Replacement	After Replacement
Australia	97%	100%	100%	95%	92%	94%
Austria	100%	100%	100%	98%	98%	98%
Azerbaijan	100%	100%	100%	96%	96%	96%
Bahrain	99%	99%	100%	98%	98%	98%
Belgium (Flemish)	79%	94%	100%	98%	77%	92%
Belgium (French)	96%	100%	100%	97%	93%	97%
Bulgaria	100%	100%	100%	95%	95%	95%
Canada	81%	90%	100%	96%	77%	86%
Chile	92%	100%	100%	96%	88%	96%
Chinese Taipei	100%	100%	100%	98%	98%	98%
Czech Republic	100%	100%	100%	95%	95%	95%
Denmark	87%	96%	100%	94%	82%	90%
Egypt	100%	100%	100%	97%	97%	97%
England	99%	100%	100%	96%	95%	96%
Finland	98%	99%	100%	96%	95%	96%
France	99%	100%	100%	96%	95%	96%
Georgia	98%	99%	100%	97%	95%	96%
Germany	97%	100%	100%	96%	93%	95%
<sup>†</sup> Hong Kong SAR	74%	91%	100%	87%	64%	79%
Hungary	98%	100%	100%	97%	95%	97%
Iran, Islamic Rep. of (Combined)	100%	100%	100%	99%	99%	99%
Literacy	100%	100%	100%	99%	99%	99%
PIRLS	100%	100%	100%	99%	99%	99%
Ireland	100%	100%	100%	96%	96%	96%
Israel	98%	99%	100%	95%	93%	94%
Italy	89%	99%	100%	96%	85%	95%
Kazakhstan	100%	100%	100%	99%	99%	99%
Kuwait	98%	98%	100%	93%	91%	91%
Latvia	95%	97%	100%	94%	89%	91%
Lithuania	100%	100%	100%	95%	95%	95%
Macao SAR	100%	100%	100%	98%	98%	98%
Malta	100%	100%	100%	96%	96%	96%
Morocco (Combined)	100%	100%	100%	99%	99%	99%
Literacy	100%	100%	100%	99%	99%	99%
PIRLS	100%	100%	100%	99%	99%	99%

PIRLS guidelines for sampling participation: The minimum acceptable participation rates were 85 percent of both schools and students, or a combined rate (the product of school and student participation) of 75 percent. Participants not meeting these guidelines were annotated as follows:

<sup>†</sup> Met guidelines for sample participation rates only after replacement schools were included.

<sup>‡</sup> Nearly satisfied guidelines for sample participation rates after replacement schools were included.

<sup>≡</sup> Did not satisfy guidelines for sample participation rates.

**Exhibit 5.7: Participation Rates (Weighted) – PIRLS 2016 (Continued)**

Country	School Participation		Class Participation	Student Participation	Overall Participation	
	Before Replacement	After Replacement			Before Replacement	After Replacement
<sup>†</sup> Netherlands	69%	90%	100%	96%	66%	86%
New Zealand	85%	97%	100%	96%	81%	92%
Northern Ireland	84%	88%	100%	96%	81%	84%
Norway (5)	95%	99%	100%	96%	91%	95%
Oman	99%	100%	100%	99%	98%	98%
Poland	95%	99%	100%	91%	86%	90%
Portugal	97%	99%	100%	94%	91%	93%
Qatar	100%	100%	100%	97%	97%	97%
Russian Federation	100%	100%	100%	98%	98%	98%
Saudi Arabia	92%	100%	100%	96%	88%	96%
Singapore	100%	100%	100%	97%	97%	97%
Slovak Republic	94%	100%	100%	97%	92%	97%
Slovenia	94%	94%	100%	96%	90%	90%
South Africa	92%	97%	100%	96%	88%	94%
Spain	99%	100%	100%	97%	95%	97%
Sweden	99%	100%	100%	95%	94%	95%
Trinidad and Tobago	100%	100%	100%	96%	96%	96%
United Arab Emirates	98%	99%	100%	96%	95%	95%
<sup>†</sup> United States	75%	92%	100%	94%	71%	86%

**Benchmarking Participants**

Buenos Aires, Argentina	88%	100%	100%	92%	81%	92%
Ontario, Canada	96%	97%	100%	96%	92%	93%
<sup>≡</sup> Quebec, Canada	39%	67%	99%	96%	37%	64%
Denmark (3)	88%	97%	100%	95%	83%	92%
Norway (4)	95%	99%	100%	96%	91%	95%
Moscow City, Russian Fed.	100%	100%	100%	97%	97%	97%
Eng/Afr/Zulu - RSA (5)	84%	89%	100%	96%	81%	86%
Andalusia, Spain	99%	100%	100%	96%	96%	96%
Madrid, Spain	100%	100%	100%	97%	97%	97%
Abu Dhabi, UAE	100%	100%	100%	96%	96%	96%
Dubai, UAE	99%	99%	100%	96%	95%	95%

**Exhibit 5.8: Participation Rates (Weighted) – ePIRLS 2016**

Country	School Participation		Class Participation	Student Participation	Overall Participation	
	Before Replacement	After Replacement			Before Replacement	After Replacement
Canada	79%	85%	100%	93%	74%	79%
Chinese Taipei	100%	100%	100%	98%	98%	98%
≡ Denmark	67%	74%	100%	87%	58%	64%
Georgia	97%	99%	100%	95%	92%	94%
Ireland	99%	99%	100%	91%	91%	91%
Israel	97%	98%	100%	91%	88%	89%
Italy	89%	99%	100%	92%	82%	91%
Norway (5)	91%	93%	99%	88%	79%	81%
Portugal	97%	99%	100%	92%	90%	91%
Singapore	100%	100%	100%	95%	95%	95%
Slovenia	94%	94%	99%	93%	86%	86%
Sweden	93%	93%	99%	90%	83%	83%
United Arab Emirates	98%	98%	100%	92%	90%	90%
† United States	74%	89%	100%	90%	67%	80%

**Benchmarking Participants**

Abu Dhabi, UAE	99%	99%	100%	92%	91%	91%
Dubai, UAE	99%	99%	99%	92%	91%	91%

PIRLS guidelines for sampling participation: The minimum acceptable participation rates were 85 percent of both schools and students, or a combined rate (the product of school and student participation) of 75 percent. Participants not meeting these guidelines were annotated as follows:

† Met guidelines for sample participation rates only after replacement schools were included.

‡ Nearly satisfied guidelines for sample participation rates after replacement schools were included.

≡ Did not satisfy guidelines for sample participation rates.

**Exhibit 5.9: Participation Rates (Unweighted) – PIRLS 2016**

Country	School Participation		Class Participation	Student Participation	Overall Participation	
	Before Replacement	After Replacement			Before Replacement	After Replacement
Australia	98%	100%	97%	94%	89%	91%
Austria	100%	100%	100%	98%	98%	98%
Azerbaijan	100%	100%	100%	96%	96%	96%
Bahrain	99%	99%	100%	98%	98%	98%
Belgium (Flemish)	79%	94%	100%	98%	77%	92%
Belgium (French)	96%	100%	100%	97%	93%	97%
Bulgaria	100%	100%	100%	95%	95%	95%
Canada	87%	93%	100%	96%	83%	89%
Chile	90%	100%	100%	96%	86%	96%
Chinese Taipei	100%	100%	100%	98%	98%	98%
Czech Republic	100%	100%	100%	95%	95%	95%
Denmark	89%	97%	100%	94%	83%	91%
Egypt	100%	100%	100%	97%	97%	97%
England	99%	100%	100%	96%	95%	96%
Finland	98%	99%	100%	96%	94%	96%
France	99%	100%	100%	96%	95%	96%
Georgia	99%	100%	100%	97%	95%	96%
Germany	98%	100%	100%	96%	94%	96%
Hong Kong SAR	75%	91%	100%	86%	65%	78%
Hungary	98%	100%	100%	97%	95%	97%
Iran, Islamic Rep. of (Combined)	100%	100%	100%	99%	99%	99%
Literacy	100%	100%	100%	99%	99%	99%
PIRLS	100%	100%	100%	99%	99%	99%
Ireland	100%	100%	100%	96%	96%	96%
Israel	98%	99%	100%	95%	93%	95%
Italy	89%	99%	100%	96%	85%	95%
Kazakhstan	99%	100%	100%	99%	98%	99%
Kuwait	98%	98%	100%	92%	90%	90%
Latvia	94%	97%	100%	93%	87%	90%
Lithuania	100%	100%	100%	95%	95%	95%
Macao SAR	100%	100%	100%	98%	98%	98%
Malta	100%	100%	100%	96%	96%	96%
Morocco (Combined)	100%	100%	100%	98%	98%	98%
Literacy	100%	100%	100%	98%	98%	98%
PIRLS	100%	100%	100%	98%	98%	98%
Netherlands	68%	89%	100%	96%	65%	85%

**Exhibit 5.9: Participation Rates (Unweighted) – PIRLS 2016 (Continued)**

Country	School Participation		Class Participation	Student Participation	Overall Participation	
	Before Replacement	After Replacement			Before Replacement	After Replacement
New Zealand	84%	95%	100%	95%	80%	90%
Northern Ireland	85%	88%	100%	95%	81%	84%
Norway (5)	95%	99%	100%	96%	92%	95%
Oman	99%	100%	100%	98%	98%	98%
Poland	95%	99%	100%	90%	85%	89%
Portugal	95%	99%	100%	94%	89%	92%
Qatar	100%	100%	100%	97%	97%	97%
Russian Federation	100%	100%	100%	98%	98%	98%
Saudi Arabia	92%	100%	100%	95%	87%	95%
Singapore	100%	100%	100%	97%	97%	97%
Slovak Republic	95%	100%	100%	97%	92%	97%
Slovenia	94%	94%	100%	96%	91%	91%
South Africa	93%	97%	100%	96%	90%	93%
Spain	99%	100%	100%	97%	96%	97%
Sweden	99%	100%	100%	95%	94%	95%
Trinidad and Tobago	100%	100%	100%	96%	96%	96%
United Arab Emirates	98%	99%	100%	97%	95%	95%
United States	76%	92%	100%	94%	71%	86%
<b>Benchmarking Participants</b>						
Buenos Aires, Argentina	87%	100%	100%	92%	80%	92%
Ontario, Canada	95%	96%	100%	96%	91%	92%
Quebec, Canada	51%	73%	99%	96%	48%	69%
Denmark (3)	89%	97%	100%	95%	84%	92%
Norway (4)	95%	99%	100%	96%	91%	95%
Moscow City, Russian Fed.	100%	100%	100%	97%	97%	97%
Eng/Afr/Zulu - RSA (5)	84%	90%	100%	96%	81%	87%
Andalusia, Spain	99%	100%	100%	97%	95%	97%
Madrid, Spain	100%	100%	100%	97%	97%	97%
Abu Dhabi, UAE	100%	100%	100%	96%	96%	96%
Dubai, UAE	99%	99%	100%	96%	96%	96%

**Exhibit 5.10: Participation Rates (Unweighted) – ePIRLS 2016**

Country	School Participation		Class Participation	Student Participation	Overall Participation	
	Before Replacement	After Replacement			Before Replacement	After Replacement
Canada	93%	94%	100%	91%	85%	86%
Chinese Taipei	100%	100%	100%	98%	98%	98%
Denmark	69%	74%	100%	87%	60%	65%
Georgia	98%	99%	100%	94%	93%	93%
Ireland	99%	99%	100%	91%	91%	91%
Israel	97%	98%	100%	91%	88%	89%
Italy	89%	99%	100%	92%	81%	90%
Norway (5)	91%	93%	99%	88%	79%	81%
Portugal	95%	99%	100%	92%	88%	91%
Singapore	100%	100%	100%	94%	94%	94%
Slovenia	94%	94%	99%	93%	86%	86%
Sweden	94%	94%	98%	90%	82%	82%
United Arab Emirates	98%	98%	99%	92%	90%	90%
United States	74%	89%	100%	90%	67%	80%
<b>Benchmarking Participants</b>						
Abu Dhabi, UAE	99%	99%	99%	92%	91%	91%
Dubai, UAE	99%	99%	99%	92%	91%	91%

Exhibits 5.11 and 5.12 show the achieved sample sizes in terms of schools for each of the participants in the PIRLS and ePIRLS assessments, respectively, and Exhibits 5.13 and 5.14 show the achieved sample sizes on these assessments in terms of students.

**Exhibit 5.11: School Sample Sizes – PIRLS 2016**

Country	Number of Schools in Original Sample	Number of Eligible Schools in Original Sample	Number of Schools in Original Sample that Participated	Number of Replacement Schools that Participated	Total Number of Schools that Participated
Australia	286	286	281	5	286
Austria	152	150	150	0	150
Azerbaijan	170	170	170	0	170
Bahrain	184	183	182	0	182
Belgium (Flemish)	160	157	124	24	148
Belgium (French)	158	158	152	6	158
Bulgaria	154	153	153	0	153
Canada	1,020	998	872	54	926
Chile	154	154	139	15	154
Chinese Taipei	150	150	150	0	150
Czech Republic	157	157	157	0	157
Denmark	198	191	170	15	185
Egypt	160	160	160	0	160
England	171	170	168	2	170
Finland	159	152	149	2	151
France	166	163	161	2	163
Georgia	201	201	198	2	200
Germany	210	209	204	4	208
Hong Kong SAR	152	151	114	24	138
Hungary	154	149	146	3	149
Iran, Islamic Rep. of	274	271	271	0	271
Ireland	150	148	148	0	148
Israel	160	160	157	2	159
Italy	150	150	134	15	149
Kazakhstan	174	172	171	1	172
Kuwait	187	181	177	0	177
Latvia	156	154	145	5	150
Lithuania	196	195	195	0	195
Macao SAR	57	57	57	0	57
Malta	97	95	95	0	95
Morocco	361	360	360	0	360
Netherlands	150	148	101	31	132
New Zealand	198	198	167	21	188
Northern Ireland	154	153	130	4	134

**Exhibit 5.11: School Sample Sizes – PIRLS 2016 (Continued)**

Country	Number of Schools in Original Sample	Number of Eligible Schools in Original Sample	Number of Schools in Original Sample that Participated	Number of Replacement Schools that Participated	Total Number of Schools that Participated
Norway (5)	153	152	145	5	150
Oman	308	307	305	1	306
Poland	150	149	141	7	148
Portugal	222	221	211	7	218
Qatar	218	216	216	0	216
Russian Federation	206	206	206	0	206
Saudi Arabia	208	202	185	17	202
Singapore	177	177	177	0	177
Slovak Republic	221	220	208	12	220
Slovenia	172	170	160	0	160
South Africa	304	302	282	11	293
Spain	630	629	625	4	629
Sweden	158	154	153	1	154
Trinidad and Tobago	152	151	151	0	151
United Arab Emirates	482	475	467	1	468
United States	176	172	131	27	158
<b>Benchmarking Participants</b>					
Buenos Aires, Argentina	150	150	131	19	150
Ontario, Canada	198	196	186	2	188
Quebec, Canada	176	174	89	38	127
Denmark (3)	198	191	170	16	186
Norway (4)	155	155	147	7	154
Moscow City, Russian Fed.	150	150	150	0	150
Eng/Afr/Zulu - RSA (5)	152	139	117	8	125
Andalusia, Spain	150	150	148	2	150
Madrid, Spain	168	168	168	0	168
Abu Dhabi, UAE	153	151	151	0	151
Dubai, UAE	178	175	174	0	174

**Exhibit 5.12: School Sample Sizes – ePIRLS 2016**

Country	Number of Schools in Original Sample	Number of Eligible Schools in Original Sample	Number of Schools in Original Sample that Participated	Number of Replacement Schools that Participated	Total Number of Schools that Participated
Canada	507	503	467	7	474
Chinese Taipei	150	150	150	0	150
Denmark	198	191	132	10	142
Georgia	201	201	197	2	199
Ireland	150	148	147	0	147
Israel	160	160	155	2	157
Italy	150	150	133	15	148
Norway (5)	153	152	138	4	142
Portugal	222	221	211	7	218
Singapore	177	177	177	0	177
Slovenia	172	170	159	0	159
Sweden	158	154	144	0	144
United Arab Emirates	482	475	464	1	465
United States	176	172	128	25	153
<b>Benchmarking Participants</b>					
Abu Dhabi, UAE	153	151	150	0	150
Dubai, UAE	178	175	174	0	174

**Exhibit 5.13: Student Sample Sizes – PIRLS 2016**

Country	Within-school Student Participation (Weighted Percentage)	Number of Sampled Students in Participating Schools	Number of Students Withdrawn from Class/School	Number of Students Excluded	Number of Eligible Students	Number of Students Absent	Number of Students Assessed
Australia	95%	7,064	168	155	6,741	400	6,341
Austria	98%	4,709	20	222	4,467	107	4,360
Azerbaijan	96%	6,361	113	0	6,248	254	5,994
Bahrain	98%	5,771	56	148	5,567	87	5,480
Belgium (Flemish)	98%	5,378	39	28	5,311	113	5,198
Belgium (French)	97%	4,841	8	64	4,769	146	4,623
Bulgaria	95%	4,677	75	108	4,494	213	4,281
Canada	96%	20,072	265	736	19,071	826	18,245
Chile	96%	4,648	73	85	4,490	196	4,294
Chinese Taipei	98%	4,471	39	38	4,394	68	4,326
Czech Republic	95%	5,939	78	35	5,826	289	5,537
Denmark	94%	4,091	68	278	3,745	237	3,508
Egypt	97%	7,321	150	0	7,171	214	6,957
England	96%	5,568	149	113	5,306	211	5,095
Finland	96%	5,178	52	42	5,084	188	4,896
France	96%	5,050	56	33	4,961	194	4,767
Georgia	97%	6,123	59	131	5,933	192	5,741
Germany	96%	4,279	58	102	4,119	160	3,959
Hong Kong SAR	87%	4,024	21	96	3,907	558	3,349
Hungary	97%	4,852	21	57	4,774	151	4,623
Iran, Islamic Rep. of (Combined)	99%	8,999	106	10	8,883	117	8,766
Literacy	99%	4,498	53	4	4,441	60	4,381
PIRLS	99%	4,501	53	6	4,442	57	4,385
Ireland	96%	4,881	30	44	4,807	200	4,607
Israel	95%	4,368	13	107	4,248	207	4,041
Italy	96%	4,309	22	166	4,121	181	3,940
Kazakhstan	99%	5,035	51	0	4,984	59	4,925
Kuwait	93%	5,082	66	14	5,002	393	4,609
Latvia	94%	4,636	21	134	4,481	324	4,157
Lithuania	95%	4,670	35	79	4,556	239	4,317
Macao SAR	98%	4,254	10	93	4,151	92	4,059
Malta	96%	4,022	6	223	3,793	146	3,647

Students attending a sampled class at the time the sample was chosen but leaving the class before the assessment was administered were classified as “withdrawn.”  
 Students with a disability or language barrier that prevented them from participating in the assessment were classified as “excluded.”  
 Students not present when the assessment was administered, and not subsequently assessed in a make-up session, were classified as “absent.”

**Exhibit 5.13: Student Sample Sizes – PIRLS 2016 (Continued)**

Country	Within-school Student Participation (Weighted Percentage)	Number of Sampled Students in Participating Schools	Number of Students Withdrawn from Class/School	Number of Students Excluded	Number of Eligible Students	Number of Students Absent	Number of Students Assessed
Morocco (Combined)	99%	11,370	194	0	11,176	234	10,942
Literacy	99%	5,680	94	0	5,586	133	5,453
PIRLS	99%	5,690	100	0	5,590	101	5,489
Netherlands	96%	4,446	42	15	4,389	183	4,206
New Zealand	96%	6,128	77	119	5,932	286	5,646
Northern Ireland	96%	3,920	27	20	3,873	180	3,693
Norway (5)	96%	4,595	49	142	4,404	172	4,232
Oman	99%	9,619	146	67	9,406	172	9,234
Poland	91%	5,069	43	125	4,901	488	4,413
Portugal	94%	5,305	58	293	4,954	312	4,642
Qatar	97%	9,730	182	205	9,343	266	9,077
Russian Federation	98%	4,740	4	63	4,673	96	4,577
Saudi Arabia	96%	5,044	37	23	4,984	243	4,741
Singapore	97%	6,719	29	0	6,690	202	6,488
Slovak Republic	97%	5,869	207	41	5,621	170	5,451
Slovenia	96%	4,721	10	35	4,676	177	4,499
South Africa	96%	13,669	348	26	13,295	485	12,810
Spain	97%	15,634	55	520	15,059	464	14,595
Sweden	95%	4,988	38	189	4,761	236	4,525
Trinidad and Tobago	96%	4,506	108	50	4,348	171	4,177
United Arab Emirates	96%	17,381	89	232	17,060	589	16,471
United States	94%	5,056	159	175	4,722	297	4,425
<b>Benchmarking Participants</b>							
Buenos Aires, Argentina	92%	4,843	46	43	4,754	372	4,382
Ontario, Canada	96%	4,572	50	71	4,451	181	4,270
Quebec, Canada	96%	3,396	17	59	3,320	141	3,179
Denmark (3)	95%	4,120	60	261	3,799	199	3,600
Norway (4)	96%	4,725	46	138	4,541	187	4,354
Moscow City, Russian Fed.	97%	4,494	14	49	4,431	142	4,289
Eng/Afr/Zulu - RSA (5)	96%	5,692	197	16	5,479	197	5,282
Andalusia, Spain	96%	4,470	22	132	4,316	147	4,169
Madrid, Spain	97%	4,050	16	127	3,907	113	3,794
Abu Dhabi, UAE	96%	4,408	20	27	4,361	173	4,188
Dubai, UAE	96%	8,356	50	148	8,158	299	7,859

**Exhibit 5.14: Student Sample Sizes – ePIRLS 2016**

Country	Within-school Student Participation (Weighted Percentage)	Number of Sampled Students in Participating Schools	Number of Students Withdrawn from Class/School	Number of Students Excluded	Number of Eligible Students	Number of Students Absent	Number of Students Assessed
Canada	93%	10,178	83	391	9,704	833	8,871
Chinese Taipei	98%	4,471	39	38	4,394	95	4,299
Denmark	87%	3,139	48	219	2,872	366	2,506
Georgia	95%	6,072	58	128	5,886	329	5,557
Ireland	91%	2,767	18	44	2,705	232	2,473
Israel	91%	4,315	14	105	4,196	398	3,798
Italy	92%	4,295	22	166	4,107	340	3,767
Norway (5)	88%	4,294	48	136	4,110	500	3,610
Portugal	92%	5,305	58	293	4,954	396	4,558
Singapore	95%	6,719	29	0	6,690	370	6,320
Slovenia	93%	4,676	10	35	4,631	328	4,303
Sweden	90%	4,528	34	170	4,324	445	3,879
United Arab Emirates	92%	17,208	89	232	16,887	1,321	15,566
United States	90%	4884	155	175	4554	464	4,090

**Benchmarking Participants**

Abu Dhabi, UAE	92%	4,367	20	27	4,320	340	3,980
Dubai, UAE	92%	8,302	50	148	8,104	633	7,471

Students attending a sampled class at the time the sample was chosen but leaving the class before the assessment was administered were classified as “withdrawn.”

Students with a disability or language barrier that prevented them from participating in the assessment were classified as “excluded.”

Students not present when the assessment was administered, and not subsequently assessed in a make-up session, were classified as “absent.”

In schools with 21 or fewer 4th grade students, all PIRLS students were selected to participate in ePIRLS; in larger schools, a subset of PIRLS students was randomly selected.

## PIRLS 2016 Trends in Student Populations

Because a primary goal of the PIRLS 2016 assessment was to measure changes in students’ reading achievement across assessment cycles, it is important to track any changes over time in population composition and coverage that might be related to student achievement. Exhibit 5.15 presents, for each country, trends across cycles (2016, 2011, 2006, and 2001) in four characteristics of the PIRLS assessment populations: number of years of formal schooling, average student age, percent of students in the national target population excluded from the assessment, and overall participation rates after using replacements. Most countries and benchmarking participants were very similar with regard to these characteristics across the four assessment cycles, although there have been changes in some countries in the age and grade structure of the assessed populations, in target population coverage, and in the exclusion rate.

The Russian Federation and Slovenia underwent structural changes in the age at which children enter schools that are reflected in their samples. In 2001, the Russian sample contained third grade students from some regions and fourth grade students from others, whereas all students were in the fourth grade by 2006. By 2011, Slovenia had completed the transition toward having all children begin school at an earlier age so that they all would have four years of primary schooling at the fourth grade instead of three years, as was the case in 2001.

National coverage of the international target population was generally comprehensive for most countries and has not changed across PIRLS assessments, with some exceptions. In 2011, Lithuania assessed only students receiving instruction in Lithuanian, and in 2016 Lithuania also assessed students receiving instruction in Russian and Polish. To ensure stable measurement of trends, the 2016 trend population for Lithuania (reported in the trend exhibits) included only students taught in Lithuanian, which represents 91 percent of the population assessed in 2016. Similarly, in 2011 Azerbaijan only tested students taught in Azerbaijani, and in 2016 Azerbaijan also tested students taught in Russian. Thus, the 2016 trend population for Azerbaijan included only students taught in Azerbaijani, representing 92 percent of the population assessed in 2016.

In general, the exclusion rates do not exceed the PIRLS 2016 guidelines of 5 percent, and have not changed very much across assessments for most countries. A few countries saw a decrease in their overall exclusion rate. From 2011 to 2016, Azerbaijan decreased its overall exclusion rate by over 5 percentage points by including students taught in Russian in the sample. Belgium (Flemish) reduced their overall exclusion rate by 5.5 percent from 2006 to 2016 by also assessing eligible students from special needs schools in 2016. Student exclusion rates were higher in 2016 than in 2011 by more than 1.5 percent in Bulgaria, Denmark, Germany, Malta, Portugal, and Singapore.

As noted by the footnotes beneath Exhibit 5.15, Austria's increased exclusions in 2016 resulted from more non-native language students within the student population, and Hong Kong SAR's increased exclusions resulted from excluding international schools and schools organized by the English Schools Foundation. Georgia excluded schools in South Ossetia and Abkhazia in both 2011 and 2016, and Singapore's increased exclusions resulted from increased enrollment in private schools. Exclusion and participation rates for South Africa in 2006 were calculated based on the entire fifth grade population in the country, whereas the exclusion rates for South Africa in 2016 were only based on students receiving instruction in English, Afrikaans, or Zulu.

**Exhibit 5.15: Trends in Student Populations – PIRLS 2016**

Country	Years of Formal Schooling*				Average Age at Time of Testing				Overall Exclusion Rates				Overall Participation Rates (After Replacement)			
	2016	2011	2006	2001	2016	2011	2006	2001	2016	2011	2006	2001	2016	2011	2006	2001
Australia	4	4			10.0	10.0			4.8%	4.4%			94%	93%		
Austria	4	4	4		10.3	10.3	10.3		5.6%	5.1%	5.1%		98%	98%	97%	
Azerbaijan	4	4			10.1	10.2			2.1%	7.2%			96%	100%		
Belgium (Flemish)	4		4		10.1		10.0		1.6%		7.1%		92%		91%	
Belgium (French)	4	4	4		10.0	10.1	9.9		6.0%	5.6%	3.9%		97%	82%	95%	
Bulgaria	4	4	4	4	10.8	10.7	10.9	10.9	4.3%	2.5%	6.4%	2.7%	95%	95%	94%	93%
Canada	4	4			9.9	9.9			7.5%	9.9%			86%	94%		
Chinese Taipei	4	4	4		10.1	10.2	10.1		0.9%	1.4%	2.9%		98%	99%	99%	
Czech Republic	4	4		4	10.3	10.4		10.5	3.4%	5.1%		5.0%	95%	94%		90%
Denmark	4	4	4		10.8	10.9	10.9		9.8%	7.3%	6.2%		90%	95%	96%	
England	5	5	5	5	10.3	10.3	10.3	10.2	3.7%	2.4%	2.4%	5.7%	96%	82%	92%	82%
Finland	4	4			10.8	10.8			2.4%	3.1%			96%	95%		
France	4	4	4	4	9.8	10.0	10.0	10.1	5.4%	5.2%	3.8%	5.3%	96%	97%	95%	94%
Georgia	4	4	4		9.7	10.0	10.1		3.8%	4.9%	7.3%		96%	96%	98%	
Germany	4	4	4	4	10.3	10.4	10.5	10.5	4.2%	1.9%	0.7%	1.8%	95%	95%	92%	86%
Hong Kong SAR	4	4	4	4	9.9	10.1	10.0	10.2	10.1%	11.8%	3.9%	2.8%	79%	83%	97%	97%
Hungary	4	4	4	4	10.6	10.7	10.7	10.7	4.5%	4.2%	3.7%	2.1%	97%	96%	97%	95%
Iran, Islamic Rep. of	4	4	4	4	10.2	10.2	10.2	10.4	4.1%	4.5%	3.8%	0.5%	99%	99%	99%	98%
Ireland	4	4			10.5	10.3			3.1%	2.5%			96%	95%		
Israel	4	4			10.0	10.1			24.9%	24.6%			94%	93%		
Italy	4	4	4	4	9.7	9.7	9.7	9.9	4.9%	3.7%	5.3%	2.9%	95%	95%	97%	98%
Latvia	4		4	4	10.9		11.0	11.0	7.9%		4.7%	4.6%	91%		92%	89%
Lithuania	4	4	4	4	10.8	10.7	10.7	10.9	4.2%	5.6%	5.1%	3.8%	95%	94%	92%	83%
Malta	5	5			9.7	9.8			7.9%	4.1%			96%	94%		
Morocco	4	4			10.2	10.5			1.7%	2.0%			99%	95%		
Netherlands	4	4	4	4	10.1	10.2	10.3	10.3	3.1%	3.7%	3.6%	3.7%	86%	89%	90%	87%
New Zealand	4.5 - 5.5	4.5 - 5.5	4.5 - 5.5	4.5 - 5.5	10.1	10.1	10.0	10.1	3.7%	3.3%	5.3%	3.2%	92%	93%	95%	96%
Northern Ireland	4	4			10.4	10.4			3.0%	3.5%			84%	79%		
Norway (4)	4	4	4	4	9.8	9.7	9.8	10.0	5.1%	4.2%	3.8%	2.8%	95%	71%	71%	82%
Oman	4	4			9.7	9.9			0.6%	1.5%			98%	96%		
Portugal	4	4			9.8	10.0			7.5%	2.5%			93%	93%		
Qatar	4	4			10.0	10.0			3.9%	6.2%			97%	99%		
Russian Federation	4	4	3 or 4	3 or 4	10.8	10.8	10.8	10.3	4.1%	5.3%	5.9%	6.6%	98%	98%	97%	97%
Saudi Arabia	4	4			9.9	10.0			2.3%	1.6%			96%	98%		

**Exhibit 5.15: Trends in Student Populations – PIRLS 2016 (Continued)**

Country	Years of Formal Schooling*				Average Age at Time of Testing				Overall Exclusion Rates				Overall Participation Rates (After Replacement)			
	2016	2011	2006	2001	2016	2011	2006	2001	2016	2011	2006	2001	2016	2011	2006	2001
Singapore	4	4	4	4	10.4	10.4	10.4	10.1	11.1%	6.3%	0.9%	0.1%	97%	96%	95%	98%
Slovak Republic	4	4	4	4	10.4	10.4	10.4	10.3	4.8%	4.6%	3.6%	2.0%	97%	96%	94%	96%
Slovenia	4	4	3 or 4	3	9.9	9.9	9.9	9.8	2.4%	2.6%	0.8%	0.3%	90%	94%	93%	94%
South Africa	4	4			10.6	10.5			2.5%	3.0%			94%	95%		
Spain	4	4	4		9.9	9.9	9.9		4.8%	5.4%	5.3%		97%	96%	97%	
Sweden	4	4	4	4	10.7	10.7	10.9	10.8	5.2%	4.1%	3.9%	5.0%	95%	91%	96%	92%
Trinidad and Tobago	5	5	5		10.2	10.3	10.1		1.3%	0.9%	0.7%		96%	95%	94%	
United Arab Emirates	4	4			9.8	9.8			3.3%	3.3%			95%	97%		
United States	4	4	4	4	10.1	10.2	10.1	10.2	4.8%	7.2%	5.9%	5.3%	86%	81%	82%	83%

**Benchmarking Participants**

Ontario, Canada	4	4	4	4	9.8	9.9	9.8	9.9	4.1%	7.9%	8.3%	6.6%	93%	95%	87%	92%
Quebec, Canada	4	4	4	4	10.1	10.1	10.1	10.2	5.1%	3.7%	3.6%	3.3%	64%	92%	81%	89%
Eng/Afr/Zulu - RSA (5)	5		5		11.6		11.7		1.1%		4.3%		86%		88%	
Andalusia, Spain	4	4			9.8	9.9			4.2%	5.1%			96%	96%		
Abu Dhabi, UAE	4	4			9.7	9.7			3.9%	2.7%			96%	96%		
Dubai, UAE	4	4			9.9	9.9			3.2%	5.1%			95%	94%		

\* Represents years of schooling counting from the first year of ISCED Level 1.

An empty cell indicates a country did not participate in that year's assessment or did not have comparable data.

Trend results for Azerbaijan do not include students taught in Russian. Trend results for Lithuania do not include students taught in Polish or Russian.

Austria's increased exclusions in 2016 resulted from more non-native language speakers, probably due to the refugee crisis in Europe.

Canada's decreased exclusions in 2016 resulted from provinces formerly reported as exclusions to be considered not covered by the target population.

Georgian schools in South Ossetia and Abkhazia were excluded in 2011 and 2016 due to lack of access and absence of official statistics. Abkhazia refugee schools in other territories of Georgia were included in the sample frame.

Hong Kong SAR's increased exclusions in 2011 and 2016 resulted from excluding international schools and schools organized by the English Schools Foundation. These schools do not follow Hong Kong's central curriculum and medium of instruction.

Singapore's increased exclusions in 2016 resulted from increased enrollment in private schools, which predominantly serve international students and are different from public schools in many respects (e.g., different language of instruction and calendar year).

Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (Eng), Afrikaans (Afr) and Zulu. Exclusion and participation rates from 2006 are for the entire country of South Africa.

# Appendix 5A: Characteristics of National Samples

## Australia

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and very remote schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by state or territory (8)
- Implicit stratification by geographic location (metropolitan, provincial, remote), school type (Catholic, government, independent), and socioeconomic index (low socioeconomic status, high socioeconomic status)
- Prior to class sampling within schools, all indigenous students were grouped into a single classroom and were selected with certainty. The other classroom in the school was sampled using the standard procedure.
- Schools were oversampled at the state/territory level

### Allocation of School Sample in Australia

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Australian Capital Territory	30	0	29	1	0	0	0
New South Wales	45	0	42	2	1	0	0
Northern Territory	15	0	15	0	0	0	0
Queensland	45	0	45	0	0	0	0
South Australia	41	0	41	0	0	0	0
Tasmania	27	0	27	0	0	0	0
Victoria	44	0	43	1	0	0	0
Western Australia	39	0	39	0	0	0	0
<b>Total</b>	<b>286</b>	<b>0</b>	<b>281</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>

## Austria

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 3) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers
- Exclusion rates are higher than usual because of more non-native language speakers in classes. This higher proportion of non-native language speakers is probably due to the refugee crisis in Europe.

### Sample Design

- Explicit stratification by region (9)
- No implicit stratification
- Sampled two classrooms per school whenever possible

### Allocation of School Sample in Austria

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Burgenland	8	1	7	0	0	0	0
Kärnten	10	0	10	0	0	0	0
Niederösterreich	28	0	28	0	0	0	0
Oberösterreich	26	0	26	0	0	0	0
Salzburg	10	0	10	0	0	0	0
Steiermark	20	0	20	0	0	0	0
Tirol	12	0	12	0	0	0	0
Vorarlberg	8	0	8	0	0	0	0
Wien	30	1	29	0	0	0	0
<b>Total</b>	<b>152</b>	<b>2</b>	<b>150</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Azerbaijan

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and schools with English and Georgian instructional language
- No within-school exclusions
- Exclusion rates are biased downward due to exclusion of Armenian community schools in the Nagorno-Karabakh conflict zone and international schools for which no statistics were available

### Sample Design

- Explicit stratification by language of instruction (Azerbaijani only, Russian or Russian/Azerbaijani), urbanization (urban, rural) within Azerbaijani only strata, and city (Baku, other) within urban stratum
- No implicit stratification
- Sampled two classrooms in schools with four or more classrooms

### Allocation of School Sample in Azerbaijan

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Azerbaijani - Urban - Baku	24	0	24	0	0	0	0
Azerbaijani - Urban - Other cities	38	0	38	0	0	0	0
Azerbaijani - Rural	68	0	68	0	0	0	0
Russian or Russian/Azerbaijani	40	0	40	0	0	0	0
<b>Total</b>	<b>170</b>	<b>0</b>	<b>170</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Bahrain

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 10), special needs schools, students taught in French, and students taught in Japanese
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by governorate (5) and gender (girls, boys) within public schools
- No implicit stratification
- Sampled one classroom per school
- All schools were selected
- Schools or classes were used as variance estimation strata and classes or half classes were used to build jackknife replicates, when all classes within school were sampled

### Allocation of School Sample in Bahrain

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public Muharraq - Girls	10	0	10	0	0	0	0
Public Muharraq - Boys	11	0	11	0	0	0	0
Public Capital - Girls	19	0	19	0	0	0	0
Public Capital - Boys	21	0	21	0	0	0	0
Public Northern - Girls	21	0	21	0	0	0	0
Public Northern - Boys	17	0	17	0	0	0	0
Public Southern - Girls	11	0	11	0	0	0	0
Public Southern - Boys	11	0	11	0	0	0	0
Private	63	1	61	0	0	1	0
<b>Total</b>	<b>184</b>	<b>1</b>	<b>182</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>

## Belgium (Flemish)

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5) and French schools
- Within-school exclusions consisted of students with intellectual disabilities and non-native language speakers

### Sample Design

- Explicit stratification by region (6), socioeconomic status (4), school type (official, private), and a stratum of eligible special education schools
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 37)
- Field Test and Main Data Collection samples were selected separately. PIRLS Field Test sample was selected simultaneously with the TIMSS 2015 Main Data Collection sample to avoid overlap. PIRLS Main Data Collection sample was selected using the Chowdhury method to minimize overlap with both PIRLS Field Test sample and TIMSS 2015 Main Data Collection sample.

**Allocation of School Sample in Belgium (Flemish)**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Antwerpen - Official - Low SES	9	0	6	2	0	1	0
Antwerpen - Private - Low SES	8	0	4	3	1	0	0
Antwerpen - High SES	8	0	7	1	0	0	0
Antwerpen - Med-High SES	8	1	7	0	0	0	0
Antwerpen - Med-Low SES	8	0	7	0	0	1	0
Brussels Hoofdstedelijk Gewest - Low SES	8	0	6	1	0	1	0
Limburg - Higher SES	10	0	6	3	1	0	0
Limburg - Lower SES	10	0	5	3	0	2	0
Oost-Vlaanderen - High SES	8	0	7	0	0	1	0
Oost-Vlaanderen - Med-High SES	7	0	6	0	0	1	0
Oost-Vlaanderen - Med-Low SES	10	0	10	0	0	0	0
Oost-Vlaanderen - Low SES	8	0	5	3	0	0	0
Vlaams-Brabant - Higher SES	12	0	8	1	2	1	0
Vlaams-Brabant - Lower SES	12	0	12	0	0	0	0
West-Vlaanderen - High SES	8	0	8	0	0	0	0
West-Vlaanderen - Med-High SES	7	0	7	0	0	0	0
West-Vlaanderen - Lower SES	9	0	8	1	0	0	0
Special Education schools	10	2	5	1	1	1	0
<b>Total</b>	<b>160</b>	<b>3</b>	<b>124</b>	<b>19</b>	<b>5</b>	<b>9</b>	<b>0</b>

## Belgium (French)

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school network (public at state level, public at local level, private) and socioeconomic status (4)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 47)

### Allocation of School Sample in Belgium (French)

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public at state level - 1st and 2nd SES quartiles	8	0	8	0	0	0	0
Public at state level - 3rd and 4th SES quartiles	8	0	8	0	0	0	0
Public at local level - 1st SES quartile	18	0	18	0	0	0	0
Public at local level - 2nd SES quartile	16	0	15	1	0	0	0
Public at local level - 3rd SES quartile	20	0	20	0	0	0	0
Public at local level - 4th SES quartile	22	0	22	0	0	0	0
Private sectarian - 1st SES quartile	14	0	13	1	0	0	0
Private sectarian - 2nd SES quartile	14	0	13	1	0	0	0
Private sectarian - 3rd SES quartile	20	0	18	2	0	0	0
Private sectarian - 4th SES quartile	18	0	17	1	0	0	0
<b>Total</b>	<b>158</b>	<b>0</b>	<b>152</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Bulgaria

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (elementary, basic, general) and urbanization (capital, large cities, other)
- Implicit stratification by urbanization (city, village) within the basic schools found outside the larger cities
- Sampled two classrooms in large schools (measure of size > 69)
- The school sample was selected by controlling for the overlap with the TIMSS 2015 sample using the Chowdhury approach

### Allocation of School Sample in Bulgaria

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Elementary - Capital and Large Cities	8	0	8	0	0	0	0
Elementary - Others	8	0	8	0	0	0	0
Basic - Capital	10	1	9	0	0	0	0
Basic - Large Cities	29	0	29	0	0	0	0
Basic - Others	44	0	44	0	0	0	0
General - Capital	14	0	14	0	0	0	0
General - Large Cities	17	0	17	0	0	0	0
General - Others	24	0	24	0	0	0	0
<b>Total</b>	<b>154</b>	<b>1</b>	<b>153</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Canada

### Coverage and Exclusions

- Coverage is 96.9 percent. Coverage in Canada is restricted to students from the provinces of Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Ontario, Quebec, and Saskatchewan.
- School-level exclusions consisted of very small schools (measure of size < 4 in Manitoba and Saskatchewan; measure of size < 6 in Alberta, Newfoundland, and Ontario; measure of size < 9 in British Columbia; and measure of size < 10 in Quebec); special needs schools, First Nations, French first language (in Newfoundland); home schooled, institutional, and private schools as well as public special schools (in Manitoba); international schools, non-ministry, and special status schools (in Quebec); and distance learning and not funded schools (in British Columbia)
- For ePIRLS, coverage is 74 percent. Coverage in Canada is restricted to students from the provinces of British Columbia, Newfoundland, Ontario, and Quebec.
- For ePIRLS, school-level exclusions consisted of very small schools (measure of size < 4 in Manitoba and Saskatchewan, measure of size < 6 in Alberta, Newfoundland and Ontario, measure of size < 9 in British Columbia, and measure of size < 10 in Quebec); special needs schools, First Nations, French first language (in Newfoundland); international schools, non-ministry, and special status schools (in Quebec); and distance learning and not funded schools (in British Columbia)
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by province (8). Within the province of British Columbia, explicit stratification was done by school language (English, French) and school type within English schools (English only, immersion, dual track). Within the province of Alberta, explicit stratification was done by school system (French, English) and school type (immersion, regular). Within the province of Ontario, explicit stratification was done by school type (private, Catholic, public) and language (English, French) within Catholic and public schools. Within Quebec, explicit stratification was done by school type (public, private) and language (French, English). Within the province of New Brunswick, explicit stratification was done by school language (English, French)
- Implicit stratification by region (4) in public and Catholic explicit strata within Ontario

- Sampled two classrooms in large schools for Quebec and Ontario (measure of size > 80), as well as in Alberta French schools. All classrooms selected in British Columbia French schools.
- The PIRLS school sample was selected by controlling for the overlap with the TIMSS 2015 Grade 4 sample using the Chowdhury approach
- All French schools in British Columbia were selected
- For ePIRLS, only a subsample of PIRLS schools was randomly selected in Quebec. School weights were adjusted accordingly.
- In British Columbia French schools stratum, schools or classes were used as variance estimation strata and half classes were used as jackknife replicates

**Allocation of School Sample in Canada - PIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Newfoundland	130	0	128	0	0	2	0
New Brunswick - English	136	6	130	0	0	0	0
New Brunswick - French	66	0	66	0	0	0	0
Quebec - English - Private	8	1	7	0	0	0	0
Quebec - English - Public	42	0	39	0	0	3	0
Quebec - French - Private	8	0	8	0	0	0	0
Quebec - French - Public	118	1	35	25	13	44	0
Ontario - Private	8	0	0	1	0	7	0
Ontario - English - Catholic	30	0	30	0	0	0	0
Ontario - English - Public	80	2	77	1	0	0	0
Ontario - French - Catholic & Public	80	0	79	0	0	1	0
Manitoba	8	1	7	0	0	0	0
Saskatchewan	8	0	6	2	0	0	0
British Columbia - English System - English	106	1	104	0	0	1	0
British Columbia - English System - Immersion	8	0	8	0	0	0	0
British Columbia - English System - Dual Track	18	1	17	0	0	0	0
British Columbia - French System	17	0	17	0	0	0	0
Alberta - English System - Private	6	1	4	1	0	0	2
Alberta - English System - Public	17	1	10	1	1	4	1
Alberta - English System - French Immersion - Private	6	1	3	1	0	1	1
Alberta - English System - French Immersion - Public	90	0	75	7	1	7	2
Alberta - French System - Public	24	0	22	0	0	2	0
<b>Total</b>	<b>1014</b>	<b>16</b>	<b>872</b>	<b>39</b>	<b>15</b>	<b>72</b>	<b>6</b>

**Allocation of School Sample in Canada - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Newfoundland	130	0	127	0	0	3	0
Quebec - English - Private	2	0	2	0	0	0	0
Quebec - English - Public	2	0	2	0	0	0	0
Quebec - French - Private	2	0	2	0	0	0	0
Quebec - French - Public	24	0	8	4	1	11	0
Ontario - Private	8	0	0	1	0	7	0
Ontario - English - Catholic	30	0	30	0	0	0	0
Ontario - English - Public	80	2	75	1	0	2	0
Ontario - French - Catholic & Public	80	0	77	0	0	3	0
British Columbia - English System - English	106	1	102	0	0	3	0
British Columbia - English System - Immersion	8	0	8	0	0	0	0
British Columbia - English System - Dual Track	18	1	17	0	0	0	0
British Columbia - French System	17	0	17	0	0	0	0
<b>Total</b>	<b>507</b>	<b>4</b>	<b>467</b>	<b>6</b>	<b>1</b>	<b>29</b>	<b>0</b>

## Chile

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and geographically inaccessible schools
- Within-school exclusions consisted of students with intellectual disabilities

### Sample Design

- Explicit stratification by school type (public, private subsidized, private paid), urbanization (rural, urban) within public schools and school size (up to 40 students, 41-80 students, more than 80 students) within public and private subsidized schools
- No implicit stratification
- Sampled one classroom
- The school sample for PIRLS was selected by controlling for the overlap with the ICCS sample using the Chowdhury approach

### Allocation of School Sample in Chile

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public - Urban - Up to 40 students	14	0	14	0	0	0	0
Public - Urban - 41 to 80 students	16	0	16	0	0	0	0
Public - Urban - 80 or more students	8	0	8	0	0	0	0
Public - Rural	9	0	9	0	0	0	0
Private subsidized - Up to 40 students	20	0	17	3	0	0	0
Private subsidized - 41 to 80 students	24	0	22	1	1	0	0
Private subsidized - 80 or more students	24	0	21	3	0	0	0
Private	39	0	32	7	0	0	0
<b>Total</b>	<b>154</b>	<b>0</b>	<b>139</b>	<b>14</b>	<b>1</b>	<b>0</b>	<b>0</b>

## Chinese Taipei

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by region (north, middle, south, east and isolated islands). East and isolated islands were grouped together.
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 289)

### Allocation of School Sample in Chinese Taipei - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
North	66	0	66	0	0	0	0
Middle	38	0	38	0	0	0	0
South	38	0	38	0	0	0	0
East & Isolated Islands	8	0	8	0	0	0	0
<b>Total</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### Allocation of School Sample in Chinese Taipei - ePIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
North	66	0	66	0	0	0	0
Middle	38	0	38	0	0	0	0
South	38	0	38	0	0	0	0
East & Isolated Islands	8	0	8	0	0	0	0
<b>Total</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Czech Republic

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 3), special needs schools, and Polish instructional language schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by region (14)
- No implicit stratification
- Sampled two classrooms whenever possible

### Allocation of School Sample in Czech Republic

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Praha	17	0	17	0	0	0	0
Středočeský	20	0	20	0	0	0	0
Jihočeský	9	0	9	0	0	0	0
Plzeňský	8	0	8	0	0	0	0
Karlovarský	8	0	8	0	0	0	0
Ústecký	12	0	12	0	0	0	0
Liberecký	8	0	8	0	0	0	0
Královéhradecký	8	0	8	0	0	0	0
Pardubický	8	0	8	0	0	0	0
Vysočina	8	0	8	0	0	0	0
Jihomoravský	17	0	17	0	0	0	0
Olomoucký	9	0	9	0	0	0	0
Zlínský	8	0	8	0	0	0	0
Moravskoslezský	17	0	17	0	0	0	0
<b>Total</b>	<b>157</b>	<b>0</b>	<b>157</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Denmark

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, daycare and rehabilitation home schools as well as German, English, and Rudolf Steiner schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, private)
- No implicit stratification
- Sampled one classroom per school

### Allocation of School Sample in Denmark - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public	171	7	154	8	0	2	0
Private	27	0	16	6	1	4	0
<b>Total</b>	<b>198</b>	<b>7</b>	<b>170</b>	<b>14</b>	<b>1</b>	<b>6</b>	<b>0</b>

### Allocation of School Sample in Denmark - ePIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public	171	7	124	5	0	35	0
Private	27	0	8	4	1	14	0
<b>Total</b>	<b>198</b>	<b>7</b>	<b>132</b>	<b>9</b>	<b>1</b>	<b>49</b>	<b>0</b>

## Egypt

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 10), schools in Matrouh, and schools in North Sinai
- No within-school exclusions

### Sample design

- Explicit stratification by region (Capital, North, South) and school type (government, private)
- Implicit stratification by urbanization (urban, rural) within government schools strata
- Sampled one classroom per school

### Allocation of School Sample in Egypt

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Capital - Government	30	0	30	0	0	0	0
Capital - Private	10	0	10	0	0	0	0
North - Government	60	0	60	0	0	0	0
North - Private	8	0	8	0	0	0	0
South - Government	44	0	44	0	0	0	0
South - Private	8	0	8	0	0	0	0
<b>Total</b>	<b>160</b>	<b>0</b>	<b>160</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## England

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 8), special needs schools, and pupil referral units
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (state-funded, private) and attainment level (5)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 99)
- The Field Test and Main Data Collection PIRLS samples were selected separately. The PIRLS Main Data Collection sample was selected by controlling for the overlap with the TIMSS 2015 samples and with the PIRLS Field Test sample using the Chowdhury approach.

### Allocation of School Sample in England

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
State-funded - Low attainment level	26	0	25	1	0	0	0
State-funded - Low to Mid attainment level	34	0	34	0	0	0	0
State-funded - Mid and missing attainment level	34	0	33	1	0	0	0
State-funded - Mid to High attainment level	35	0	35	0	0	0	0
State-funded - High attainment level	30	0	30	0	0	0	0
Private	12	1	11	0	0	0	0
<b>Total</b>	<b>171</b>	<b>1</b>	<b>168</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Finland

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools and schools with instructional languages other than Finnish or Swedish
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by major region (Helsinki and Uusimaa, southern, western, northern) and urbanization (urban and semi-urban, rural) within Finnish schools. Swedish speaking schools are in a separate explicit stratum.
- No implicit stratification
- Sampled two classrooms per school
- The PIRLS samples were selected by controlling for the overlap with the TIMSS 2015 Main Data Collection sample using the Chowdhury approach

### Allocation of School Sample in Finland

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Helsinki & Uusimaa	40	0	39	0	0	1	0
Southern - Urban & Semi-Urban	26	3	22	1	0	0	0
Southern - Rural	8	2	6	0	0	0	0
Western - Urban & Semi-Urban	32	1	31	0	0	0	0
Western - Rural	8	0	8	0	0	0	0
Northern & Eastern - Urban & Semi-Urban	26	0	25	1	0	0	0
Northern & Eastern - Rural	10	1	9	0	0	0	0
Swedish speaking	9	0	9	0	0	0	0
<b>Total</b>	<b>159</b>	<b>7</b>	<b>149</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>

## France

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 3), overseas territories, Reunion and Mayotte Islands, Guyana (Southern Hemisphere), private schools without contract, specialized schools, and French schools in foreign countries
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public-other, public-priority education zone, private)
- No implicit stratification
- Sampled two classrooms per school
- PIRLS 2016 samples and TIMSS 2015 samples were selected simultaneously to avoid overlap between the two studies

### Allocation of School Sample in France

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public-other	100	2	98	0	0	0	0
Public-priority education zone	44	1	42	1	0	0	0
Private	22	0	21	1	0	0	0
<b>Total</b>	<b>166</b>	<b>3</b>	<b>161</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Georgia

### Coverage and Exclusions

- Coverage is 95.9 percent. Coverage in Georgia is restricted to students taught in Georgian and Azerbaijani.
- School-level exclusions consisted of very small schools (measure of size < 3) and foreign instructional language schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by language taught in school (Georgian, Azerbaijani), teacher certification (certified, non-certified), urbanization (urban, rural), and school type (public, private)
- No implicit stratification
- Sampled two classrooms in Georgian schools with certified teachers
- The Field Test and Main Data Collection PIRLS samples were selected sequentially. The PIRLS Main Data Collection sample was selected by controlling for the overlap with the PIRLS Field Test sample using the Chowdhury approach.
- Oversampled Azerbaijani schools as well as public schools with certified teachers in order to get better estimates
- Class group option was used in bilingual schools as well as in schools with certified teachers

**Allocation of School Sample in Georgia - PIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Georgian - Certified - Urban - Public	71	0	71	0	0	0	0
Georgian - Certified - Rural - Public	16	0	16	0	0	0	0
Georgian - Certified - Private	8	0	8	0	0	0	0
Georgian - Non-certified - Urban - Public	33	0	33	0	0	0	0
Georgian - Non-certified - Rural - Public	35	0	34	1	0	0	0
Georgian - Non-certified - Private	8	0	6	0	1	1	0
Azeri	30	0	30	0	0	0	0
<b>Total</b>	<b>201</b>	<b>0</b>	<b>198</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>

**Allocation of School Sample in Georgia - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Georgian - Certified - Urban - Public	71	0	70	0	0	1	0
Georgian - Certified - Rural - Public	16	0	16	0	0	0	0
Georgian - Certified - Private	8	0	8	0	0	0	0
Georgian - Non-certified - Urban - Public	33	0	33	0	0	0	0
Georgian - Non-certified - Rural - Public	35	0	34	1	0	0	0
Georgian - Non-certified - Private	8	0	6	0	1	1	0
Azeri	30	0	30	0	0	0	0
<b>Total</b>	<b>201</b>	<b>0</b>	<b>197</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>

## Germany

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by percentage of immigrants in school (very low, low, medium, high). A separate stratum was created for the special needs schools (SEN).
- No implicit stratification
- Sampled one classroom per school

### Allocation of School Sample in Germany

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Regular - Very low	62	1	57	2	1	1	0
Regular - Low	94	0	94	0	0	0	0
Regular - Medium	28	0	27	1	0	0	0
Regular - High	16	0	16	0	0	0	0
Special needs schools	10	0	10	0	0	0	0
<b>Total</b>	<b>210</b>	<b>1</b>	<b>204</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>

## Hong Kong SAR

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools and international schools
- Within-school exclusions consisted of students with intellectual disabilities and non-native language speakers

### Sample Design

- Explicit stratification by school gender (single gender, co-educational) and school type (4) within co-educational strata
- No implicit stratification
- Sampled two classrooms in large co-educational aided schools with six or more classrooms

### Allocation of School Sample in Hong Kong SAR

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Single gender	8	0	6	1	1	0	0
Co-educational - Aided	120	1	89	15	5	10	0
Co-educational - Direct subsidy	8	0	7	0	0	1	0
Co-educational - Government	8	0	8	0	0	0	0
Co-educational - Private	8	0	4	2	0	2	0
<b>Total</b>	<b>152</b>	<b>1</b>	<b>114</b>	<b>18</b>	<b>6</b>	<b>13</b>	<b>0</b>

## Hungary

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and students taught in foreign language
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by community type (capital and county town, town, rural area) and national assessment reading score (low, medium, high, missing)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 55)

### Allocation of School Sample in Hungary

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Capital and County Town - Low or Medium score	16	0	16	0	0	0	0
Capital and County Town - High score	30	0	29	1	0	0	0
Capital and County Town - Missing score	8	1	6	1	0	0	0
Town - Low score	14	0	14	0	0	0	0
Town - Medium score	20	1	19	0	0	0	0
Town - High score	14	1	12	1	0	0	0
Town - Missing score	12	0	12	0	0	0	0
Rural Area - Low score	14	0	14	0	0	0	0
Rural Area - Medium score	10	0	10	0	0	0	0
Rural Area - High score	8	0	8	0	0	0	0
Rural Area - Missing score	8	2	6	0	0	0	0
<b>Total</b>	<b>154</b>	<b>5</b>	<b>146</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Iran, Islamic Rep. of

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and geographically inaccessible schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, private), gender (mixed, other), region group (1, 2, 3), province or grouped provinces (6), and gender (boys, girls) within “other” gender public schools
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 119)
- The Field Test and Main Data Collection PIRLS samples were selected separately
- PIRLS and PIRLS Literacy booklets were rotated within classes

**Allocation of School Sample in Iran, Islamic Rep. of**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Private	16	0	16	0	0	0	0
Public - Mixed - Region group 1	10	0	10	0	0	0	0
Public - Mixed - Region group 2	8	0	8	0	0	0	0
Public - Mixed - Region group 3	8	1	7	0	0	0	0
Public - Other - Region group 1 - All others provinces - Boys	12	0	12	0	0	0	0
Public - Other - Region group 1 - All others provinces - Girls	12	0	12	0	0	0	0
Public - Other - Region group 1 - Khozestan - Boys	14	0	14	0	0	0	0
Public - Other - Region group 1 - Khozestan - Girls	14	0	14	0	0	0	0
Public - Other - Region group 2 - All others provinces - Boys	10	0	10	0	0	0	0
Public - Other - Region group 2 - All others provinces - Girls	10	0	10	0	0	0	0
Public - Other - Region group 2 - Razavi Khorasan - Boys	14	0	14	0	0	0	0
Public - Other - Region group 2 - Razavi Khorasan - Girls	14	0	14	0	0	0	0
Public - Other - Region group 2 - Tehran Province - Boys	14	0	14	0	0	0	0
Public - Other - Region group 2 - Tehran Province - Girls	14	0	14	0	0	0	0

**Allocation of School Sample in Iran, Islamic Rep. of (Continued)**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public - Other - Region group 3 - All others provinces - Boys	10	0	10	0	0	0	0
Public - Other - Region group 3 - All others provinces - Girls	10	0	10	0	0	0	0
Public - Other - Region group 3 - Esfahan - Boys	14	1	13	0	0	0	0
Public - Other - Region group 3 - Esfahan - Girls	14	0	14	0	0	0	0
Public - Other - Region group 3 - Fars - Boys	14	1	13	0	0	0	0
Public - Other - Region group 3 - Fars - Girls	14	0	14	0	0	0	0
Public - Other - Region group 3 - Tehran City - Boys	14	0	14	0	0	0	0
Public - Other - Region group 3 - Tehran City - Girls	14	0	14	0	0	0	0
<b>Total</b>	<b>274</b>	<b>3</b>	<b>271</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Ireland

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4), special needs schools, and non-aided private schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school level socioeconomic status DEIS (non-DEIS, rural, urban band 1, urban band 2), school type (ordinary, Gaeltacht, Gaelscoil), and gender (boys, girls, mixed)
- No implicit stratification
- Sampled two classrooms per school
- For ePIRLS, students were subsampled within classes and students weights were adjusted accordingly

### Allocation of School Sample in Ireland - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Gaelscoil	10	0	10	0	0	0	0
Gaeltacht	8	0	8	0	0	0	0
Non-DEIS - Ordinary - Boys	12	1	11	0	0	0	0
Non-DEIS - Ordinary - Girls	12	0	12	0	0	0	0
Non-DEIS - Ordinary - Mixed	80	0	80	0	0	0	0
Rural - Ordinary	8	1	7	0	0	0	0
Urban Band 1 - Ordinary	10	0	10	0	0	0	0
Urban Band 2 - Ordinary	10	0	10	0	0	0	0
<b>Total</b>	<b>150</b>	<b>2</b>	<b>148</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Allocation of School Sample in Ireland - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Gaelscoil	10	0	10	0	0	0	0
Gaeltacht	8	0	8	0	0	0	0
Non-DEIS - Ordinary - Boys	12	1	11	0	0	0	0
Non-DEIS - Ordinary - Girls	12	0	12	0	0	0	0
Non-DEIS - Ordinary - Mixed	80	0	80	0	0	0	0
Rural - Ordinary	8	1	6	0	0	1	0
Urban Band 1 - Ordinary	10	0	10	0	0	0	0
Urban Band 2 - Ordinary	10	0	10	0	0	0	0
<b>Total</b>	<b>150</b>	<b>2</b>	<b>147</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>

## Israel

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, schools teaching in English or French, and Ultra-Orthodox schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school sector (Hebrew-Secular, Hebrew-Religious, Arabic), socioeconomic status (high, medium, low) and subgroups within Arab sector (Arab, Bedouin, Druze)
- No implicit stratification
- Sampled one classroom per school

### Allocation of School Sample in Israel - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Hebrew-Secular - High SES	42	0	41	0	0	1	0
Hebrew-Secular - Medium SES	26	0	25	1	0	0	0
Hebrew-Secular - Low SES	10	0	10	0	0	0	0
Hebrew-Religious - High SES	10	0	9	1	0	0	0
Hebrew-Religious - Medium SES	16	0	16	0	0	0	0
Hebrew-Religious - Low SES	8	0	8	0	0	0	0
Arabic-Arab - Medium SES	10	0	10	0	0	0	0
Arabic-Arab - Low SES	18	0	18	0	0	0	0
Arabic-Bedouin	12	0	12	0	0	0	0
Arabic-Druze	8	0	8	0	0	0	0
<b>Total</b>	<b>160</b>	<b>0</b>	<b>157</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>

**Allocation of School Sample in Israel - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Hebrew-Secular - High SES	42	0	41	0	0	1	0
Hebrew-Secular - Medium SES	26	0	25	1	0	0	0
Hebrew-Secular - Low SES	10	0	10	0	0	0	0
Hebrew-Religious - High SES	10	0	9	1	0	0	0
Hebrew-Religious - Medium SES	16	0	15	0	0	1	0
Hebrew-Religious - Low SES	8	0	7	0	0	1	0
Arabic-Arab - Medium SES	10	0	10	0	0	0	0
Arabic-Arab - Low SES	18	0	18	0	0	0	0
Arabic-Bedouin	12	0	12	0	0	0	0
Arabic-Druze	8	0	8	0	0	0	0
<b>Total</b>	<b>160</b>	<b>0</b>	<b>155</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>

## Italy

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of Slovenian, Ladin, and German instructional language schools
- Within-school exclusions consisted of students with functional disabilities and non-native language speakers

### Sample Design

- Explicit stratification by school type (private, public) and region (center, south and islands, north east, north west, south) within public schools
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 109)
- The Field Test and Main Data Collection PIRLS samples were selected separately. The PIRLS Main Data Collection sample was selected by controlling for the overlap with the TIMSS 2015 and PIRLS Field Test samples using the Chowdhury approach.

### Allocation of School Sample in Italy - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Private	10	0	8	2	0	0	0
Public - Center	28	0	24	4	0	0	0
Public - South and Islands	22	0	20	2	0	0	0
Public - North East	26	0	21	4	0	1	0
Public - North West	36	0	34	2	0	0	0
Public - South	28	0	27	1	0	0	0
<b>Total</b>	<b>150</b>	<b>0</b>	<b>134</b>	<b>15</b>	<b>0</b>	<b>1</b>	<b>0</b>

**Allocation of School Sample in Italy - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Private	10	0	8	2	0	0	0
Public - Center	28	0	24	4	0	0	0
Public - South and Islands	22	0	19	2	0	1	0
Public - North East	26	0	21	4	0	1	0
Public - North West	36	0	34	2	0	0	0
Public - South	28	0	27	1	0	0	0
<b>Total</b>	<b>150</b>	<b>0</b>	<b>133</b>	<b>15</b>	<b>0</b>	<b>2</b>	<b>0</b>

## Kazakhstan

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4), special needs schools, and languages other than Kazakh and Russian
- No within-school exclusions

### Sample Design

- Explicit stratification by region (4), language (Kazakh, Russian, both languages) and urbanization (urban, rural)
- No implicit stratification
- Sampled two classrooms in schools with both Kazakh and Russian languages of instruction
- Class group option was used in bilingual schools

**Allocation of School Sample in Kazakhstan**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Region A - Kazakh - Urban	10	0	10	0	0	0	0
Region A - Kazakh - Rural	18	1	17	0	0	0	0
Region A - Russian	8	0	7	1	0	0	0
Region A - Both Kazakh and Russian	12	0	12	0	0	0	0
Region B - Kazakh - Urban	8	0	8	0	0	0	0
Region B - Kazakh - Rural	10	0	10	0	0	0	0
Region B - Both Kazakh and Russian - Urban	8	0	8	0	0	0	0
Region B - Both Kazakh and Russian - Rural	10	0	10	0	0	0	0
Region B and C - Russian/Other	14	0	14	0	0	0	0
Region C - Kazakh - Urban	12	0	12	0	0	0	0
Region C - Kazakh - Rural	8	1	7	0	0	0	0
Region C - Both Kazakh and Russian - Urban	16	0	16	0	0	0	0
Region C - Both Kazakh and Russian - Rural	8	0	8	0	0	0	0
Region D - Kazakh - Urban	8	0	8	0	0	0	0
Region D - Kazakh - Rural	8	0	8	0	0	0	0
Region D - Russian	8	0	8	0	0	0	0
Region D - Both Kazakh and Russian	8	0	8	0	0	0	0
<b>Total</b>	<b>174</b>	<b>2</b>	<b>171</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Kuwait

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools and minority language schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, private), region (6), and gender (male, female) within public schools, and language (Arabic, foreign, bilingual) within private schools
- No implicit stratification
- Sampled two classrooms in private bilingual schools
- The PIRLS samples were selected simultaneously with the TIMSS Main Data Collection to avoid overlap
- All private bilingual were sampled for PIRLS

**Allocation of School Sample in Kuwait**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public - Asema – Female	10	1	9	0	0	0	0
Public - Asema – Male	11	0	11	0	0	0	0
Public - Hawally – Female	8	0	8	0	0	0	0
Public - Hawally - Male	8	0	8	0	0	0	0
Public - Farwaniya - Female	11	0	11	0	0	0	0
Public - Farwaniya - Male	12	0	12	0	0	0	0
Public - Ahmadi - Female	12	0	12	0	0	0	0
Public - Ahmadi - Male	13	1	12	0	0	0	0
Public - Jahra - Female	10	0	10	0	0	0	0
Public - Jahra - Male	10	0	10	0	0	0	0
Public - Mubarak Alkabeer - Female	7	0	7	0	0	0	1
Public - Mubarak Alkabeer - Male	6	0	6	0	0	0	1
Private - Arabic	18	2	16	0	0	0	0
Private - Foreign	29	0	27	0	0	2	0
Private - Bilingual	20	0	18	0	0	2	0
<b>Total</b>	<b>185</b>	<b>4</b>	<b>177</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## Latvia

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools and schools with instructional language other than Latvian or Russian
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school level (Grade 4 only, Grade 4 and 8), urbanization (Riga, city, town and rural area), language (Latvian, Russian), and school type (gymnasium-secondary, basic-beginners) within town and rural area Latvian schools
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 59)
- Did not participate in the Field Test. The PIRLS Main data Collection sample was selected simultaneously with the 2016 ICCS Main Data Collection sample to avoid overlap.
- Class group option was used in bilingual schools

**Allocation of School Sample in Latvia**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Grade 4 only - Riga	6	1	5	0	0	0	0
Grade 4 only - City	8	0	8	0	0	0	0
Grade 4 only - Town-Rural	8	0	8	0	0	0	0
Grade 4 & Grade 8 - Riga - Latvian	22	0	22	0	0	0	0
Grade 4 & Grade 8 - Riga - Russian	24	0	21	1	0	2	0
Grade 4 & Grade 8 - City - Latvian	10	0	10	0	0	0	0
Grade 4 & Grade 8 - City - Russian	12	0	11	1	0	0	0
Grade 4 & Grade 8 - Town-Rural - Latvian - Gymnasium-Secondary	34	0	31	1	0	2	0
Grade 4 & Grade 8 - Town-Rural - Latvian - Basic-Beginners	24	0	23	0	1	0	0
Grade 4 & Grade 8 - Town-Rural - Russian	8	0	7	1	0	0	0
<b>Total</b>	<b>156</b>	<b>1</b>	<b>146</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>0</b>

## Lithuania

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and other language schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by language (Lithuanian, Russian, Polish, mixed) and urbanization within Lithuanian schools (4)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 99) and in bilingual schools
- The Field Test and Main data Collection PIRLS samples were selected sequentially
- Class group option was used in bilingual schools

### Allocation of School Sample in Lithuania

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Lithuanian - Capital	22	0	22	0	0	0	0
Lithuanian - Other Major City	33	0	33	0	0	0	0
Lithuanian - City	52	0	52	0	0	0	0
Lithuanian - Small City or Village	29	0	29	0	0	0	0
Russian	20	0	20	0	0	0	0
Polish	19	0	19	0	0	0	1
Mixed	20	0	20	0	0	0	0
<b>Total</b>	<b>195</b>	<b>0</b>	<b>195</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>

## Macao SAR

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of international schools
- Within-school exclusions consisted of students with functional disabilities and non-native language speakers

### Sample Design

- All schools were sampled and therefore no explicit or implicit stratification were used
- All classrooms selected within school
- Classes were used as variance estimation strata and half classes were used to build jackknife replicates
- Did not participate in the Field Test

### Allocation of School Sample in Macao SAR

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Macao SAR	57	0	57	0	0	0	0
<b>Total</b>	<b>57</b>	<b>0</b>	<b>57</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Malta

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4), special needs schools, and foreign instructional language schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (state, church, independent)
- No implicit stratification
- All classrooms were sampled
- All schools and all Grade 4 (Year 5) students were selected
- Classes were used as variance estimation strata and half classes were used to build jackknife replicates. All classrooms selected within schools.

### Allocation of School Sample in Malta

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Church	25	0	25	0	0	0	0
Independent	8	0	8	0	0	0	2
State	62	0	62	0	0	0	0
<b>Total</b>	<b>95</b>	<b>0</b>	<b>95</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

## Morocco

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 6)
- No within-school exclusions

### Sample Design

- Explicit stratification by school type (private, public) and region (16)
- No implicit stratification
- The Field Test and Main Data Collection PIRLS samples were selected separately. The PIRLS Main Data Collection sample was selected by controlling for the overlap with the TIMSS 2015 samples and with the PIRLS Field Test sample using the Chowdhury approach.
- Oversampling of private schools and public within each region. All public schools were sampled in the region of Oued eddahab Lagouira. In these census strata, two classrooms were selected per school, and schools or classes were used as variance estimation strata and classes or half classes were used to build jackknife replicates. Sampled one classroom per school in other strata.
- PIRLS and PIRLS Literacy booklets were rotated within classes

### Allocation of School Sample in Morocco

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Private - Grand Casablanca	12	0	12	0	0	0	0
Private - All Other Regions	28	0	28	0	0	0	0
Public - Chaouia Ouardigha	20	0	20	0	0	0	0
Public - Doukkala Abda	20	0	20	0	0	0	0
Public - Fes Boulmane	20	0	20	0	0	0	0
Public - Gharb Chrada Beni Hsein	20	0	20	0	0	0	0
Public - Goulmim Smara	20	0	20	0	0	0	0
Public - Grand Casablanca	20	0	20	0	0	0	0
Public - Laayoune Boujdour Sakia Hamra	20	0	20	0	0	0	0
Public - Marrakech Tansift Haouz	20	0	20	0	0	0	0
Public - Meknes Tafilalt	20	0	20	0	0	0	0
Public - Oued eddhab Lagouira	21	1	20	0	0	0	0
Public - Rabat Salé Zemmour Zaer	20	0	20	0	0	0	0
Public - Région Est	20	0	20	0	0	0	0
Public - Souss Massa Draa	20	0	20	0	0	0	0
Public - Tadla Azilal	20	0	20	0	0	0	0
Public - Tanger Tetouan	20	0	20	0	0	0	0
Public - Taza Hoceima Taounate	20	0	20	0	0	0	0
<b>Total</b>	<b>361</b>	<b>1</b>	<b>360</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Netherlands

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 6) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities and non-native language speakers

### Sample Design

- Explicit stratification by combinations of TIMSS and PIRLS socioeconomic status (5) and urbanization (5)
- No implicit stratification
- All classrooms were sampled
- PIRLS 2016 samples and TIMSS 2015 samples were selected simultaneously to avoid overlap

**Allocation of School Sample in Netherlands**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
TIMSS & PIRLS High Mean SES - Very High Population Density	8	0	3	3	0	2	0
TIMSS & PIRLS High Mean SES - High Population Density	14	0	9	4	1	0	0
TIMSS & PIRLS High Mean SES - Moderate Population Density	16	0	11	3	0	2	0
TIMSS & PIRLS High Mean SES - Low Population Density	16	0	13	1	0	2	0
TIMSS & PIRLS High Mean SES - Very Low Population Density	16	0	14	1	1	0	0
TIMSS High & PIRLS Medium Mean SES - High to Very High Density	10	0	5	1	1	3	0
TIMSS High & PIRLS Medium Mean SES - Low to Moderate Density	14	0	9	1	3	1	0
TIMSS & PIRLS Medium Mean SES - High to Very High Density	10	0	7	3	0	0	0
TIMSS & PIRLS Medium Mean SES - Low to Moderate Density	12	1	11	0	0	0	0
TIMSS Medium & PIRLS Low Mean SES - High to Very High Density	14	1	10	2	0	1	0
TIMSS Medium & PIRLS Low Mean SES - Low to Moderate Density	10	0	8	1	0	1	0
TIMSS & PIRLS Low Mean SES	10	0	1	2	3	4	0
<b>Total</b>	<b>150</b>	<b>2</b>	<b>101</b>	<b>22</b>	<b>9</b>	<b>16</b>	<b>0</b>

## New Zealand

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4), special needs schools, Westmount closed Brethren campus, and correspondence school
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (4), socioeconomic status level (4), and urbanization (2)
- No implicit stratification
- Sampled two classrooms per school
- The PIRLS school samples were selected by controlling for the overlap with the TIMSS 2015 Grade 4 and Grade 8 samples using the Chowdhury approach

**Allocation of School Sample in New Zealand**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Maori-Medium	10	0	4	1	1	4	0
English-Medium - High Immersion	10	0	8	1	0	1	0
Bilingual schools	8	0	5	0	1	2	0
English-Medium (other) - Independent	8	0	7	0	0	1	0
English-Medium (other) - Low SES	24	0	19	3	1	1	0
English-Medium (other) - Moderately low SES - Major urban centers	24	0	20	3	1	0	0
English-Medium (other) - Moderately low SES - Smaller centers	14	0	12	1	0	1	0
English-Medium (other) - Moderately high SES - Major urban centers	33	0	31	2	0	0	0
English-Medium (other) - Moderately high SES - Smaller centers	16	0	15	1	0	0	0
English-Medium (other) - High SES - Major urban centers	43	0	39	3	1	0	0
English-Medium (other) - High SES - Smaller centers	8	0	7	1	0	0	0
<b>Total</b>	<b>198</b>	<b>0</b>	<b>167</b>	<b>16</b>	<b>5</b>	<b>10</b>	<b>0</b>

## Northern Ireland

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 6) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by region (5) and deprivation (5)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 58)
- PIRLS 2016 sample and TIMSS 2015 samples were drawn simultaneously to avoid overlap

### Allocation of School Sample in Northern Ireland

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Belfast - Lower Deprivation Level	10	0	9	1	0	0	0
Belfast - Highest Deprivation Level	12	0	10	0	0	2	0
Western - Lower Deprivation Level	10	0	10	0	0	0	0
Western - Moderate to High Deprivation Level	10	0	5	1	0	4	0
Western - Highest Deprivation Level	8	0	6	0	0	2	0
North Eastern - Lowest Deprivation Level	8	0	6	0	0	2	0
North Eastern - Low to Moderate Deprivation Level	12	0	11	1	0	0	0
North Eastern - Higher Deprivation Level	14	0	12	1	0	1	0
South Eastern - Lowest Deprivation Level	12	1	9	0	0	2	0
South Eastern - Low to Moderate Deprivation Level	8	0	7	0	0	1	0
South Eastern - Higher Deprivation Level	14	0	13	0	0	1	0
Southern - Lower Deprivation Level	12	0	10	0	0	2	0
Southern - Moderate Deprivation Level	12	0	11	0	0	1	0
Southern - Higher Deprivation Level	12	0	11	0	0	1	0
<b>Total</b>	<b>154</b>	<b>1</b>	<b>130</b>	<b>4</b>	<b>0</b>	<b>19</b>	<b>0</b>

## Norway (5)

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and instructional language other than Bokmål and Nynorsk
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by “Grade 5”/“Grade 4 and Grade 5” schools and language within “Grade 4 and Grade 5” stratum (Bokmål, Nynorsk)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 45)
- The PIRLS school samples were selected by controlling for the overlap with the TIMSS 2015 sample using the Chowdhury approach

### Allocation of School Sample in Norway (5) - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Grade 5	7	1	6	0	0	0	0
Grade 4 & Grade 5 - Bokmål	126	0	119	5	0	2	0
Grade 4 & Grade 5 - Nynorsk	20	0	20	0	0	0	0
<b>Total</b>	<b>153</b>	<b>1</b>	<b>145</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>0</b>

### Allocation of School Sample in Norway (5) - ePIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Grade 5	7	1	6	0	0	0	0
Grade 4 & Grade 5 - Bokmål	126	0	114	4	0	8	0
Grade 4 & Grade 5 - Nynorsk	20	0	18	0	0	2	0
<b>Total</b>	<b>153</b>	<b>1</b>	<b>138</b>	<b>4</b>	<b>0</b>	<b>10</b>	<b>0</b>

## Oman

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (government, private, international) and governorate (11) within government schools
- No implicit stratification
- In census strata and schools selected with certainty, schools or classes were used as variance estimation strata and classes or half classes were used to build jackknife replicates. Two classrooms selected within these schools. Sampled one classroom per school in other schools.

**Allocation of School Sample in Oman**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Muscat Governorate	28	0	28	0	0	0	0
Ash Sharqiyah North Governorate	26	1	25	0	0	0	0
Ash Sharqiyah South Governorate	26	0	26	0	0	0	0
Ad Dakhliyah Governorate	26	0	26	0	0	0	0
Adh Dhahirah Governorate	26	0	26	0	0	0	0
Al Batinah North Governorate	30	0	30	0	0	0	0
Al Batinah South Governorate	26	0	26	0	0	0	0
Al Buraimi Governorate	15	0	15	0	0	0	0
Musandam Governorate	7	0	7	0	0	0	0
Al Wusta Governorate	20	0	20	0	0	0	0
Dhofar Governorate	26	0	26	0	0	0	0
Private Schools	26	0	24	1	0	1	0
International Schools	26	0	26	0	0	0	0
<b>Total</b>	<b>308</b>	<b>1</b>	<b>305</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>

## Poland

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and instructional language other than Polish
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by urbanization (4) and school performance level (5)
- No implicit stratification
- Sampled two classrooms per school

**Allocation of School Sample in Poland**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Village - Low Performance	14	0	14	0	0	0	0
Village - Medium-Low Performance	10	0	10	0	0	0	0
Village - Medium Performance	10	0	10	0	0	0	0
Village - Medium-High Performance	10	0	10	0	0	0	0
Village - High Performance	12	0	12	0	0	0	0
Town (Up to 20 thousand inhabitants) - Medium-Low Performance	8	0	8	0	0	0	0
Town (Up to 20 thousand inhabitants) - Medium-High Performance	10	1	8	1	0	0	0
City (20 to 100 thousand inhabitants) - Low Performance	10	0	9	1	0	0	0
City (20 to 100 thousand inhabitants) - Medium-Low Performance	8	0	7	0	0	1	0
City (20 to 100 thousand inhabitants) - Medium-High Performance	8	0	8	0	0	0	0
City (20 to 100 thousand inhabitants) - High Performance	10	0	9	1	0	0	0
City (Above 100 thousand inhabitants) - Low Performance	10	0	10	0	0	0	0
City (Above 100 thousand inhabitants) - Medium-Low Performance	10	0	9	1	0	0	0

**Allocation of School Sample in Poland (Continued)**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
City (Above 100 thousand inhabitants) - Medium-High Performance	10	0	9	1	0	0	0
City (Above 100 thousand inhabitants) - High Performance	10	0	8	2	0	0	0
<b>Total</b>	<b>150</b>	<b>1</b>	<b>141</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>0</b>

## Portugal

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 6), special needs schools, and minority language schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, private) and region (7) within public schools
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 149)
- The PIRLS samples were selected by controlling for the overlap with the TIMSS 2015 sample using the Chowdhury approach
- Probability proportional to (school) size systematic sampling was used in the 3 largest explicit strata, and systematic sampling selection with equal probabilities was used in all other strata

### Allocation of School Sample in Portugal - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Private - Lisboa	8	0	7	1	0	0	0
Private - All Other Regions	11	0	10	1	0	0	1
Public - Alentejo	30	0	27	2	0	1	0
Public - Algarve	8	0	8	0	0	0	0
Public - Centro	48	0	48	0	0	0	0
Public - Lisboa	36	0	35	1	0	0	0
Public - Norte	64	0	61	1	0	2	0
Public - R. A. Açores	8	0	7	1	0	0	0
Public - R. A. Madeira	8	0	8	0	0	0	0
<b>Total</b>	<b>221</b>	<b>0</b>	<b>211</b>	<b>7</b>	<b>0</b>	<b>3</b>	<b>1</b>

**Allocation of School Sample in Portugal - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Private - Lisboa	8	0	7	1	0	0	0
Private - All Other Regions	11	0	10	1	0	0	1
Public - Alentejo	30	0	27	2	0	1	0
Public - Algarve	8	0	8	0	0	0	0
Public - Centro	48	0	48	0	0	0	0
Public - Lisboa	36	0	35	1	0	0	0
Public - Norte	64	0	61	1	0	2	0
Public - R. A. Açores	8	0	7	1	0	0	0
Public - R. A. Madeira	8	0	8	0	0	0	0
<b>Total</b>	<b>221</b>	<b>0</b>	<b>211</b>	<b>7</b>	<b>0</b>	<b>3</b>	<b>1</b>

## Qatar

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, and instructional language other than English and Arabic
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (independent, community, private) and gender (boys, girls) within independent schools
- No implicit stratification
- Sampled two classrooms per school
- Census of schools
- Schools or classrooms or half classrooms were used to build jackknife replicates for variance estimation

### Allocation of School Sample in Qatar

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Independent - Boys	46	0	46	0	0	0	0
Independent - Girls	49	0	49	0	0	0	0
Community	17	0	17	0	0	0	0
Private	106	2	104	0	0	0	0
<b>Total</b>	<b>218</b>	<b>2</b>	<b>216</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Russian Federation

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by region (42)
- No implicit stratification
- Sampled two classrooms in large schools in Moscow City (measure of size > 270), one classroom otherwise
- An extra sampling stage (regions) was required prior to sampling schools. 28 of 69 regions were selected with probability proportional to the region size and 14 bigger regions were selected with certainty. While each certainty region itself is an explicit stratum, the other sampled regions make one large explicit stratum. In the large explicit stratum, a sample of schools was selected within each region.
- Within regions, schools were selected with probability proportional to (school) size systematic sampling. Schools were sorted (serpentine) by location (up to 7 levels) before being sorted by school size. The same region sample was used for both TIMSS and PIRLS.
- Within the certainty regions, schools were paired for variance calculation purposes. Otherwise, selected regions were paired for variance calculation purposes.

### Allocation of School Sample in Russian Federation

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Sankt-Petersburg*	6	0	6	0	0	0	0
Mosco City*	14	0	14	0	0	0	0
Moscow Region*	10	0	10	0	0	0	0
Nizhni Novgorod Region*	4	0	4	0	0	0	0
Perm Territory*	4	0	4	0	0	0	0
Samara Region*	4	0	4	0	0	0	0
Republic of Tatarstan*	6	0	6	0	0	0	0
Republic of Bashkortostan*	8	0	8	0	0	0	0
Krasnodar Territory*	8	0	8	0	0	0	0
Rostov Region*	6	0	6	0	0	0	0
Chelyabinsk Region*	6	0	6	0	0	0	0
Sverdlovsk Region*	8	0	8	0	0	0	0
Krasnoyarsk Territory*	4	0	4	0	0	0	0
Republic of Dagestan*	6	0	6	0	0	0	0
Novgorod Region	4	0	4	0	0	0	0
Kaliningrad Region	4	0	4	0	0	0	0
Vologda Region	4	0	4	0	0	0	0
Voronezh Region	4	0	4	0	0	0	0
Vladimir Region	4	0	4	0	0	0	0
Tula Region	4	0	4	0	0	0	0
Bryansk Region	4	0	4	0	0	0	0
Ryazan Region	4	0	4	0	0	0	0
Kaluga Region	4	0	4	0	0	0	0
Republic of Marij El	4	0	4	0	0	0	0
Ulyanovsk Region	4	0	4	0	0	0	0
Chuvashi Republic	4	0	4	0	0	0	0
Orenburg Region	4	0	4	0	0	0	0
Saratov Region	4	0	4	0	0	0	0
Astrakhan Region	4	0	4	0	0	0	0
Kurgan Region	4	0	4	0	0	0	0
Khanty Mansijsk AD	4	0	4	0	0	0	0
Irkutsk Region	4	0	4	0	0	0	0

\* Certainty Regions

**Allocation of School Sample in Russian Federation (Continued)**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Kemerovo Region	4	0	4	0	0	0	0
Novosibirsk Region	4	0	4	0	0	0	0
Altai Territory	4	0	4	0	0	0	0
Zabaikalsk Territory	4	0	4	0	0	0	0
Tomsk Region	4	0	4	0	0	0	0
Sakhalin Region	4	0	4	0	0	0	0
Republic of Sakha (Yakutia)	4	0	4	0	0	0	0
Primorski Territory	4	0	4	0	0	0	0
Stravropol Territory	4	0	4	0	0	0	0
Kabardino-Balkarian Republic	4	0	4	0	0	0	0
<b>Total</b>	<b>206</b>	<b>0</b>	<b>206</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Saudi Arabia

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 7) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by region and by gender (boys, girls) within larger regions
- No implicit stratification
- Sampled one classroom per school

### Allocation of School Sample in Saudi Arabia

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Asir - Boys	8	0	8	0	0	0	0
Asir - Girls	8	0	8	0	0	0	0
Bahah	8	0	8	0	0	0	0
Eastern Region - Boys	12	0	10	1	1	0	0
Eastern Region - Girls	12	0	11	0	1	0	0
Hail	8	0	8	0	0	0	0
Jawf	8	0	8	0	0	0	0
Jizan	10	2	5	1	2	0	0
Madinah - Boys	8	0	8	0	0	0	0
Madinah - Girls	8	0	7	1	0	0	0
Makkah - Boys	20	0	18	2	0	0	0
Makkah - Girls	22	0	20	1	1	0	0
Najran	8	4	0	1	3	0	0
Northern Borders	8	0	8	0	0	0	0
Qassim	8	0	8	0	0	0	0
Riyadh	44	0	42	2	0	0	0
Tabuk	8	0	8	0	0	0	0
<b>Total</b>	<b>208</b>	<b>6</b>	<b>185</b>	<b>9</b>	<b>8</b>	<b>0</b>	<b>0</b>

## Singapore

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools and private schools
- For PIRLS 2016, like in all previous cycles, Singapore took a census of all public schools with Grade 4 students. The sampling frame excluded private schools, which are largely foreign-system schools operating in Singapore and which serve predominantly international students. These foreign-system schools are fundamentally different from the public schools in many respects (e.g., language of instruction; school-calendar year).
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- No explicit stratification
- No implicit stratification
- Sampled two classrooms per school
- Census of all schools. Within schools, two half classrooms were sampled with probability proportional to the size of the classroom. Within selected classrooms, 19 students were randomly sampled.
- Schools were used as variance estimation strata and classes were used to build jackknife replicates

### Allocation of School Sample in Singapore - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
None	177	0	177	0	0	0	0
<b>Total</b>	<b>177</b>	<b>0</b>	<b>177</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### Allocation of School Sample in Singapore - ePIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
None	177	0	177	0	0	0	0
<b>Total</b>	<b>177</b>	<b>0</b>	<b>177</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Slovak Republic

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4), special needs schools, and taught in language other than Slovak and Hungarian
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by language (Slovak, Hungarian), socioeconomic status (less than 1% of students coming from lower socioeconomic status, less than 10% of students coming from lower socioeconomic status, 10% or more students from lower socioeconomic status), and region group (5) within Slovak language strata
- No implicit stratification
- Sampled two classrooms per school
- Field Test and Main Data Collection samples were selected separately. The PIRLS Main Data Collection sample was selected using the Chowdhury method to minimize overlap with the PIRLS Field Test sample.
- Systematic sampling selection with equal probabilities used for sampling in strata with large sampling fractions

**Allocation of School Sample in Slovak Republic**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Slovak - Higher SES - Region 1	20	0	19	1	0	0	0
Slovak - Higher SES - Regions 2 & 3 & 5	20	0	18	2	0	0	0
Slovak - Higher SES - Region 4	20	0	19	1	0	0	0
Slovak - Higher SES - Regions 6 & 8	16	1	14	1	0	0	0
Slovak - Higher SES - Region 7	20	0	19	1	0	0	0
Slovak - Medium and Lower SES - Region 1	7	0	7	0	0	0	0
Slovak - Medium SES - Regions 2 & 3 & 5	26	0	23	3	0	0	0
Slovak - Medium SES - Region 4	8	0	8	0	0	0	0
Slovak - Medium SES - Regions 6 & 7 & 8	20	0	19	1	0	0	0
Slovak - Lower SES - Regions 2 & 3 & 5	8	0	8	0	0	0	0
Slovak - Lower SES - Region 4	8	0	8	0	0	0	0
Slovak - Lower SES - Regions 6 & 7 & 8	32	0	31	0	1	0	0
Hungarian - Higher and Medium SES	8	0	7	1	0	0	0
Hungarian - Lower SES	8	0	8	0	0	0	0
<b>Total</b>	<b>221</b>	<b>1</b>	<b>208</b>	<b>11</b>	<b>1</b>	<b>0</b>	<b>0</b>

## Slovenia

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools and Waldorf schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type according to school structure (main school, dislocated unit) and region (Pomurska, Koroška, Osrednjeslovenska, other regions)
- No implicit stratification
- Sampled two classrooms per school

### Allocation of School Sample in Slovenia - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Main - Pomurska	10	1	9	0	0	0	0
Main - Koroška	10	0	10	0	0	0	0
Main - Osrednjeslovenska	26	1	24	0	0	1	0
Main - Other Regions	70	0	68	0	0	2	0
Dislocated - Pomurska	8	0	8	0	0	0	0
Dislocated - Koroška	13	0	13	0	0	0	0
Dislocated - Osrednjeslovenska	13	0	11	0	0	2	0
Dislocated - Other Regions	22	0	17	0	0	5	0
<b>Total</b>	<b>172</b>	<b>2</b>	<b>160</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>

**Allocation of School Sample in Slovenia - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Main - Pomurska	10	1	9	0	0	0	0
Main - Koroška	10	0	10	0	0	0	0
Main - Osrednjeslovenska	26	1	24	0	0	1	0
Main - Other Regions	70	0	68	0	0	2	0
Dislocated - Pomurska	8	0	8	0	0	0	0
Dislocated - Koroška	13	0	12	0	0	1	0
Dislocated - Osrednjeslovenska	13	0	11	0	0	2	0
Dislocated - Other Regions	22	0	17	0	0	5	0
<b>Total</b>	<b>172</b>	<b>2</b>	<b>159</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>

## South Africa

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools, very small schools (measure of size < 6), schools for which language of testing cannot be determined, and schools with less than 30 learners
- Within-school exclusions consisted of students with intellectual disabilities and non-native language speakers

### Sample Design

- Explicit stratification by language (11) and province (9)
- No implicit stratification
- Sampled two classrooms or more in schools teaching in more than one language
- Class group option was used in schools teaching in more than one language

**Allocation of School Sample in South Africa**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Afrikaans - Northern Cape	10	0	10	0	0	0	0
Afrikaans - All other provinces	14	0	12	1	0	1	0
English - EC, GT, KZ, LP provinces	22	0	19	2	0	1	0
English - All other provinces	16	1	15	0	0	0	0
IsiNdebele - All provinces	8	0	8	0	0	0	0
IsiXhosa - Eastern Cape	16	0	16	0	0	0	0
IsiXhosa - All other provinces	8	0	8	0	0	0	0
IsiZulu - KwaZulu-Natal	24	0	18	4	1	1	0
IsiZulu - All other provinces	8	0	7	0	0	1	0
Sepedi - All provinces	16	0	15	0	0	1	0
Sesotho - All provinces	16	0	16	0	0	0	0
Setswana - Northern Cape	8	0	8	0	0	0	0
Setswana - All other provinces	20	0	20	0	0	0	0
SiSwati - All provinces	22	0	21	0	0	1	0
Tshivenda - All provinces	22	0	22	0	0	0	0
Xitsonga - All provinces	18	0	17	0	0	1	0
Afrikaans & English - EC, GT, KZ, LP provinces	4	0	4	0	0	0	0
Afrikaans & English - Northern Cape	4	0	2	0	0	2	0
Afrikaans & English - All other provinces	10	0	9	1	0	0	0
Neither Afrikaans nor English - FS & NC provinces	4	0	4	0	0	0	0

**Allocation of School Sample in South Africa (Continued)**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Neither Afrikaans nor English - All other provinces	12	0	12	0	0	0	0
Afrikaans/English/others - EC, GT, KZ, LP provinces	12	0	11	1	0	0	0
Afrikaans/English/others - All other provinces	10	1	8	1	0	0	0
<b>Total</b>	<b>304</b>	<b>2</b>	<b>282</b>	<b>10</b>	<b>1</b>	<b>9</b>	<b>0</b>

## Spain

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4), special needs schools, and international schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by region (8), school type (public, private). Within Madrid, private schools were also stratified by category (government dependent, independent) and by bilingual status (bilingual, not bilingual) within the public and government dependent private schools
- No implicit stratification
- Sampled two classrooms in large schools of Andalusia (measure of size > 74) and one classroom otherwise
- Oversampling of schools in Andalusia, Asturias, Basque Country, Canary Islands, Castile and Leon, Catalonia, La Rioja, and Madrid

### Allocation of School Sample in Spain

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Andalusia - Public	110	0	109	1	0	0	0
Andalusia - Private	40	0	39	0	1	0	0
Asturias - Public	30	0	30	0	0	0	0
Asturias - Private	20	0	20	0	0	0	0
Castile and Leon - Public	29	0	29	0	0	0	1
Castile and Leon - Private	20	0	20	0	0	0	0
Catalonia - Public	30	0	30	0	0	0	0
Catalonia - Private	20	0	19	1	0	0	0
La Rioja - Public	27	0	27	0	0	0	0
La Rioja - Private	23	0	23	0	0	0	0
Madrid - Public - Bilingual	40	0	40	0	0	0	0
Madrid - Public - Non Bilingual	40	0	40	0	0	0	0
Madrid - Private - Bilingual	40	0	40	0	0	0	0
Madrid - Private - Non Bilingual	40	0	40	0	0	0	0
Madrid - Independent Private - Non Bilingual	8	0	8	0	0	0	0
Basque Country - Public	30	0	30	0	0	0	0
Basque Country - Private	20	0	20	0	0	0	0
Other regions - Public	42	0	41	1	0	0	0
Other regions - Private	20	0	20	0	0	0	0
<b>Total</b>	<b>629</b>	<b>0</b>	<b>625</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>1</b>

## Sweden

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools, international schools, special program schools, and very small schools (measure of size < 5)
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by grade average (4)
- No implicit stratification
- Sampled two classrooms per school
- The PIRLS sample was selected by controlling for the overlap with the TIMSS Grade 4 and Grade 8 samples using the Chowdhury approach

### Allocation of School Sample in Sweden - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Higher average score	14	0	14	0	0	0	0
Medium average score	14	0	14	0	0	0	0
Low average score	24	1	23	0	0	0	0
Missing score	106	3	102	1	0	0	0
<b>Total</b>	<b>158</b>	<b>4</b>	<b>153</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>

### Allocation of School Sample in Sweden - ePIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Higher average score	14	0	13	0	0	1	0
Medium average score	14	0	13	0	0	1	0
Low average score	24	1	22	0	0	1	0
Missing score	106	3	96	0	0	7	0
<b>Total</b>	<b>158</b>	<b>4</b>	<b>144</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>

## Trinidad and Tobago

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5)
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by type of school (government-related, private) and region within government-related stratum (8). Government-related strata include government and denominational schools.
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 69)

### Allocation of School Sample in Trinidad and Tobago

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Private	12	0	12	0	0	0	0
Government-related - Caroni	22	0	22	0	0	0	0
Government-related - North Eastern	10	0	10	0	0	0	0
Government-related - Port of Spain and surroundings	20	0	20	0	0	0	0
Government-related - South Eastern	12	0	12	0	0	0	0
Government-related - St George East	32	0	32	0	0	0	0
Government-related - St. Patrick	16	1	15	0	0	0	0
Government-related - Tobago	8	0	8	0	0	0	0
Government-related - Victoria	20	0	20	0	0	0	0
<b>Total</b>	<b>152</b>	<b>1</b>	<b>151</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## United Arab Emirates

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools, measure of size < 13 for all Emirates except Dubai and Abu Dhabi and measure of size < 10 for Dubai, schools with an instructional language other than Arabic, English, or French for Dubai and with an instructional language other than English and Arabic for the other Emirates, geographically inaccessible schools in all Emirates except Dubai, and home schools in Emirates other than Abu Dhabi and Dubai
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by Emirates (7), school type (public, private) and language of instruction (Arabic, English)
- No implicit stratification
- Census of schools in Dubai, Umm Al Quwain, and Fujairah private schools. Also, all private English schools with curriculum not from the United Kingdom, United States, or Canada, in the regions Abu Dhabi and Al Ain were sampled. In census strata, classes or half classes were used to build jackknife replicates for variance estimation. Two classrooms selected within these schools. Some schools are paired together within an explicit stratum when there is only one class participating.

**Allocation of School Sample in United Arab Emirates - PIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public - Arabic	28	1	27	0	0	0	0
Private - Arabic	9	1	8	0	0	0	0
Private - English	138	1	136	0	0	1	0
Private - French	3	0	3	0	0	0	0
Abu Dhabi - Public - Both - ADEC Schools	26	0	26	0	0	0	0
Abu Dhabi - Private - Arabic - Ministry of Education	14	0	14	0	0	0	0
Abu Dhabi - Private - English - UK/US/ CAD	30	1	29	0	0	0	0
Abu Dhabi - Private - English - Others	18	1	17	0	0	0	0
Al Ain - Public - Both - ADEC Schools	22	0	22	0	0	0	0
Al Ain - Private - Arabic - Ministry of Education	9	0	9	0	0	0	0
Al Ain - Private - English - UK/US/ CAD	12	0	12	0	0	0	0
Al Ain - Private - English - Others	10	0	10	0	0	0	0
Al Gharbia	12	0	12	0	0	0	0
Sharjah - Public - Arabic	12	0	11	0	0	1	0
Sharjah - Private - Arabic	12	0	10	1	0	1	0
Sharjah - Private - English	20	0	20	0	0	0	0
Ajman - Public - Arabic	12	0	10	0	0	2	0
Ajman - Private - Arabic	12	0	12	0	0	0	0
Ajman - Private - English	8	0	8	0	0	0	0
Umm Al Quwain - Public - Arabic	6	0	6	0	0	0	0
Umm Al Quwain - Private - Arabic	1	0	1	0	0	0	0

**Allocation of School Sample in United Arab Emirates - PIRLS (Continued)**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Umm Al Quwain - Private - English	4	0	4	0	0	0	0
Fujairah - Public - Arabic	18	0	18	0	0	0	0
Fujairah - Private - Arabic	5	0	4	0	0	1	0
Fujairah - Private - English	9	0	9	0	0	0	0
Ras Al Khaimah - Public - Arabic	16	1	15	0	0	0	0
Ras Al Khaimah - Private - Arabic	8	0	7	0	0	1	0
Ras Al Khaimah - Private - English	8	1	7	0	0	0	0
<b>Total</b>	<b>482</b>	<b>7</b>	<b>467</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>0</b>

**Allocation of School Sample in United Arab Emirates - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public - Arabic	28	1	27	0	0	0	0
Private - Arabic	9	1	8	0	0	0	0
Private - English	138	1	136	0	0	1	0
Private - French	3	0	3	0	0	0	0
Abu Dhabi - Public - Both - ADEC Schools	26	0	26	0	0	0	0
Abu Dhabi - Private - Arabic - Ministry of Education	14	0	14	0	0	0	0
Abu Dhabi - Private - English - UK/US/ CAD	30	1	29	0	0	0	0
Abu Dhabi - Private - English - Others	18	1	17	0	0	0	0
Al Ain - Public - Both - ADEC Schools	22	0	22	0	0	0	0
Al Ain - Private - Arabic - Ministry of Education	9	0	9	0	0	0	0
Al Ain - Private - English - UK/US/ CAD	12	0	12	0	0	0	0
Al Ain - Private - English - Others	10	0	10	0	0	0	0
Al Gharbia	12	0	11	0	0	1	0
Sharjah - Public - Arabic	12	0	11	0	0	1	0
Sharjah - Private - Arabic	12	0	10	1	0	1	0
Sharjah - Private - English	20	0	20	0	0	0	0
Ajman - Public - Arabic	12	0	9	0	0	3	0
Ajman - Private - Arabic	12	0	12	0	0	0	0
Ajman - Private - English	8	0	8	0	0	0	0
Umm Al Quwain - Public - Arabic	6	0	6	0	0	0	0
Umm Al Quwain - Private - Arabic	1	0	1	0	0	0	0

**Allocation of School Sample in United Arab Emirates - ePIRLS (Continued)**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Umm Al Quwain - Private - English	4	0	3	0	0	1	0
Fujairah - Public - Arabic	18	0	18	0	0	0	0
Fujairah - Private - Arabic	5	0	4	0	0	1	0
Fujairah - Private - English	9	0	9	0	0	0	0
Ras Al Khaimah - Public - Arabic	16	1	15	0	0	0	0
Ras Al Khaimah - Private - Arabic	8	0	7	0	0	1	0
Ras Al Khaimah - Private - English	8	1	7	0	0	0	0
<b>Total</b>	<b>482</b>	<b>7</b>	<b>464</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>0</b>

## United States

### Coverage and Exclusions

- Coverage is 100 percent
- No school level exclusions
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by poverty level (high, low), school type (public, private), and census region (4)
- Implicit stratification by urbanization (city, suburb, town, rural) and ethnicity status (above 15% non-White students in a school, below 15% non-White students in a school)
- Sampled two classrooms in large schools
- High poverty level schools were oversampled

**Allocation of School Sample in United States - PIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
High Poverty Level - Public - Northeast	8	0	7	1	0	0	0
High Poverty Level - Public - Midwest	9	0	6	1	0	2	0
High Poverty Level - Public - South	24	0	23	1	0	0	0
High Poverty Level - Public - West	9	0	6	0	0	3	0
Low Poverty Level - Private - Northeast	3	1	2	0	0	0	0
Low Poverty Level - Private - Midwest	3	0	2	1	0	0	0
Low Poverty Level - Private - South	4	0	4	0	0	0	0
Low Poverty Level - Private - West	2	1	0	0	0	1	0
Low Poverty Level - Public - Northeast	18	1	11	3	0	3	0
Low Poverty Level - Public - Midwest	25	0	15	5	3	2	0
Low Poverty Level - Public - South	41	1	35	3	2	0	0
Low Poverty Level - Public - West	30	0	20	6	1	3	0
<b>Total</b>	<b>176</b>	<b>4</b>	<b>131</b>	<b>21</b>	<b>6</b>	<b>14</b>	<b>0</b>

**Allocation of School Sample in United States - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
High Poverty Level - Public - Northeast	8	0	7	0	0	1	0
High Poverty Level - Public - Midwest	9	0	6	1	0	2	0
High Poverty Level - Public - South	24	0	22	1	0	1	0
High Poverty Level - Public - West	9	0	6	0	0	3	0
Low Poverty Level - Private - Northeast	3	1	2	0	0	0	0
Low Poverty Level - Private - Midwest	3	0	2	1	0	0	0
Low Poverty Level - Private - South	4	0	4	0	0	0	0
Low Poverty Level - Private - West	2	1	0	0	0	1	0
Low Poverty Level - Public - Northeast	18	1	11	3	0	3	0
Low Poverty Level - Public - Midwest	25	0	15	5	2	3	0
Low Poverty Level - Public - South	41	1	35	3	2	0	0
Low Poverty Level - Public - West	30	0	18	6	1	5	0
<b>Total</b>	<b>176</b>	<b>4</b>	<b>128</b>	<b>20</b>	<b>5</b>	<b>19</b>	<b>0</b>

# Characteristics of Benchmarking Participants

## Buenos Aires, Argentina

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of distance learning schools and special education schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, private) and socioeconomic status (low, medium, high)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 70)

### Allocation of School Sample in Buenos Aires, Argentina

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
State - Low SES	32	0	25	7	0	0	0
State - Medium SES	31	0	30	1	0	0	0
State - High SES	15	0	10	5	0	0	0
Private - Low SES	18	0	16	2	0	0	0
Private - Medium SES	27	0	24	3	0	0	0
Private - High SES	27	0	26	1	0	0	0
<b>Total</b>	<b>150</b>	<b>0</b>	<b>131</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Ontario, Canada

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 6), special needs schools, and First Nations schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (private, Catholic, public) and language (English, French) within Catholic and public schools
- Implicit stratification by region (4) in public and Catholic explicit strata
- Sampled two classrooms in large schools (measure of size > 79)
- The school sample for PIRLS was selected by controlling for the overlap with the TIMSS Grade 4 using the Chowdhury approach

### Allocation of School Sample in Ontario, Canada

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Private	8	0	0	1	0	7	0
English - Catholic	30	0	30	0	0	0	0
English - Public	80	2	77	1	0	0	0
French - Catholic & Public	80	0	79	0	0	1	0
<b>Total</b>	<b>198</b>	<b>2</b>	<b>186</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>0</b>

## Quebec, Canada

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 10), special needs schools, international schools, non ministry schools, and special status schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, private) and language (French, English)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 80)
- The school sample for PIRLS was selected by controlling for the overlap with the TIMSS Grade 4 using the Chowdhury approach

### Allocation of School Sample in Quebec, Canada

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
English - Private	8	1	7	0	0	0	0
English - Public	42	0	39	0	0	3	0
French - Private	8	0	8	0	0	0	0
French - Public	118	1	35	25	13	44	0
<b>Total</b>	<b>176</b>	<b>2</b>	<b>89</b>	<b>25</b>	<b>13</b>	<b>47</b>	<b>0</b>

## Denmark (3)

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, daycare and rehabilitation home schools as well as German, English, and Rudolf Steiner schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (2)
- No implicit stratification
- Sampled one classroom per school
- The same sample of schools for PIRLS Grade 4 was used for Grade 3

### Allocation of School Sample in Denmark (3)

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public	171	7	154	9	0	1	0
Private	27	0	16	6	1	4	0
<b>Total</b>	<b>198</b>	<b>7</b>	<b>170</b>	<b>15</b>	<b>1</b>	<b>5</b>	<b>0</b>

## Norway (4)

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 5), special needs schools, instructional language other than Bokmal and Nynorsk, and school for adults
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by “Grade 4”/”Grade 4 and Grade 5” schools and language within “Grade 4 and Grade 5” (Bokmål, Nynorsk)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 45)
- The PIRLS school samples were selected by controlling for the overlap with the TIMSS 2015 sample using the Chowdhury approach

### Allocation of School Sample in Norway (4)

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Grade 4	9	0	7	2	0	0	0
Grade 4 and Grade 5 - Bokmål	126	0	120	5	0	1	0
Grade 4 and Grade 5 - Nynorsk	20	0	20	0	0	0	0
<b>Total</b>	<b>155</b>	<b>0</b>	<b>147</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>0</b>

## Moscow City, Russian Federation

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4) and special needs schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- No explicit stratification
- No implicit stratification
- Sampled 2 classrooms in large schools (measure of size > 270)

### Allocation of School Sample in Moscow City, Russian Federation

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Moscow City	150	0	150	0	0	0	0
<b>Total</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Eng/Afr/Zulu – RSA (5)

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools, very small schools (measure of size < 6), schools with less than 30 learners, and Afrikaans & IsiZulu & English schools
- Within-school exclusions consisted of non-native language speakers

### Sample Design

- Explicit stratification by language (Afrikaans only, English only, IsiZulu only, Afrikaans and English schools, IsiZulu and English schools)
- No implicit stratification
- Sampled two classrooms in bilingual schools
- The PIRLS Grade 5 sample was selected by controlling for the overlap with the Grade 4 PIRLS Literacy sample using the Chowdhury approach
- Class group option was used in bilingual schools

### Allocation of School Sample in Eng/Afr/Zulu – RSA (5)

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Afrikaans - No English, No IsiZulu	24	0	20	1	0	3	0
English - No Afrikaans, No IsiZulu	45	10	29	1	0	5	0
IsiZulu - No Afrikaans, No English	49	1	41	1	3	3	0
Afrikaans & English	25	1	19	2	0	3	0
IsiZulu & English	9	1	8	0	0	0	0
<b>Total</b>	<b>152</b>	<b>13</b>	<b>117</b>	<b>5</b>	<b>3</b>	<b>14</b>	<b>0</b>

## Andalusia, Spain

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 4), special needs schools, and international schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, private)
- No implicit stratification
- Sampled two classrooms in large schools (measure of size > 74)

### Allocation of School Sample in Andalusia, Spain

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public	110	0	109	1	0	0	0
Private	40	0	39	0	1	0	0
<b>Total</b>	<b>150</b>	<b>0</b>	<b>148</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>

## Madrid, Spain

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of special needs schools and international schools
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, government dependent private, independent private) and bilingual status (bilingual, non bilingual)
- No implicit stratification
- Sampled one classroom per school

### Allocation of School Sample in Madrid, Spain

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public - Bilingual	40	0	40	0	0	0	0
Public - Non Bilingual	40	0	40	0	0	0	0
Private - Bilingual	40	0	40	0	0	0	0
Private - Non Bilingual	40	0	40	0	0	0	0
Independent Private - Non Bilingual	8	0	8	0	0	0	0
<b>Total</b>	<b>168</b>	<b>0</b>	<b>168</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Abu Dhabi, United Arab Emirates

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of remote schools, and schools with an instructional language other than Arabic or English
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by region (Abu Dhabi, Al Ain, Al Gharbia), school type (public, private), language (Arabic, English), and curriculum (4)
- No implicit stratification
- All Private English schools with curriculum not from United Kingdom, United States, or Canada, were sampled in the regions Abu Dhabi and Al Ain. Two classrooms selected within these schools whenever possible. In these census strata, classes or half classes were used to build jackknife replicates for variance estimation. Sampled one classroom per school in other strata.

**Allocation of School Sample in Abu Dhabi, United Arab Emirates - PIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Abu Dhabi - Public - Both - ADEC schools	26	0	26	0	0	0	0
Abu Dhabi - Private - Arabic - Ministry of Education	14	0	14	0	0	0	0
Abu Dhabi - Private - English - UK/US/CAD	30	1	29	0	0	0	0
Abu Dhabi - Private - English - Others	18	1	17	0	0	0	0
Al Ain - Public - Both - ADEC schools	22	0	22	0	0	0	0
Al Ain - Private - Arabic - Ministry of Education	9	0	9	0	0	0	0
Al Ain - Private - English - UK/US/CAD	12	0	12	0	0	0	0
Al Ain - Private - English - Others	10	0	10	0	0	0	0
Al Gharbia	12	0	12	0	0	0	0
<b>Total</b>	<b>153</b>	<b>2</b>	<b>151</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Allocation of School Sample in Abu Dhabi, United Arab Emirates - ePIRLS**

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Abu Dhabi - Public - Both - ADEC schools	26	0	26	0	0	0	0
Abu Dhabi - Private - Arabic - Ministry of Education	14	0	14	0	0	0	0
Abu Dhabi - Private - English - UK/US/CAD	30	1	29	0	0	0	0
Abu Dhabi - Private - English - Others	18	1	17	0	0	0	0
Al Ain - Public - Both - ADEC schools	22	0	22	0	0	0	0
Al Ain - Private - Arabic - Ministry of Education	9	0	9	0	0	0	0
Al Ain - Private - English - UK/US/CAD	12	0	12	0	0	0	0
Al Ain - Private - English - Others	10	0	10	0	0	0	0
Al Gharbia	12	0	11	0	0	1	0
<b>Total</b>	<b>153</b>	<b>2</b>	<b>150</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>

## Dubai, United Arab Emirates

### Coverage and Exclusions

- Coverage is 100 percent
- School-level exclusions consisted of very small schools (measure of size < 10), and schools with an instructional language other than Arabic, English, or French
- Within-school exclusions consisted of students with intellectual disabilities, students with functional disabilities, and non-native language speakers

### Sample Design

- Explicit stratification by school type (public, private) and language (Arabic, English, French)
- No implicit stratification
- Sampled two classrooms per school
- Census of all schools
- Schools or classes were used as variance estimation strata and classes or half classes were used to build jackknife replicates

### Allocation of School Sample in Dubai, United Arab Emirates - PIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public - Arabic	28	1	27	0	0	0	0
Private - Arabic	9	1	8	0	0	0	0
Private - English	138	1	136	0	0	1	0
Private - French	3	0	3	0	0	0	0
<b>Total</b>	<b>178</b>	<b>3</b>	<b>174</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>

### Allocation of School Sample in Dubai, United Arab Emirates - ePIRLS

Explicit Strata	Total Sampled Schools	Ineligible Schools	Participating Schools			Refusal Schools	Excluded Schools
			Original Schools	1st Replacements	2nd Replacements		
Public - Arabic	28	1	27	0	0	0	0
Private - Arabic	9	1	8	0	0	0	0
Private - English	138	1	136	0	0	1	0
Private - French	3	0	3	0	0	0	0
<b>Total</b>	<b>178</b>	<b>3</b>	<b>174</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>