

Chapter 1



International Student Achievement in Reading

Hong Kong SAR, the Russian Federation, Finland, and Singapore were the top-performing countries in PIRLS 2011.

Since 2001, ten countries have raised their levels of reading achievement, and only four have had decreases. Girls outperformed boys in 2011 in nearly all of the countries and benchmarking participants, and there has been little reduction in the reading achievement gender achievement gap over the decade.

Chapter 1 contains PIRLS 2011 and prePIRLS achievement results for the 49 participating countries and nine benchmarking participants. To summarize reading achievement across participants, the chapter provides:

- ◆ Averages (means) and distributions of reading achievement;
- ◆ Trends in reading achievement over time for participants in previous PIRLS assessments in 2001 and 2006;
- ◆ Achievement differences by gender; and
- ◆ Trends in achievement differences by gender.

The results for percentages of students reaching the PIRLS International Benchmarks (Advanced, High, Intermediate, and Low) are presented in Chapter 2.

Reading Achievement Across Countries

PIRLS 2011 Reading Achievement

This section reports the PIRLS 2011 reading results as average scores and distributions on the PIRLS scale, which has a range of 0–1,000 (although student performance typically ranges between 300 and 700). The PIRLS reading achievement scale was established in PIRLS 2001 based on the achievement distribution across all participating countries, treating each country equally. The scale centerpoint of 500 was set to correspond to the mean of the overall achievement distribution, and 100 points on the scale was set to correspond to the standard deviation. Achievement data from subsequent PIRLS assessment cycles were linked to this scale so that increases or decreases in average achievement may be monitored across assessments.¹ PIRLS uses the scale centerpoint as a point of reference that remains constant from assessment to assessment.

Exhibit 1.1 shows the distributions of student achievement for the participants in PIRLS 2011, including the average scale score with its 95 percent confidence interval and the ranges in performance for the middle half of the students (25th to 75th percentiles) as well as the extremes (5th and 95th percentiles).

The first page of Exhibit 1.1 presents the results for the 45 countries that assessed students at the PIRLS target population of fourth grade. In particular, the PIRLS target population is the grade that represents four years of schooling,

¹ Please see *Methods and Procedures in TIMSS and PIRLS 2011* on the TIMSS and PIRLS website for further detail (timssandpirls.bc.edu).

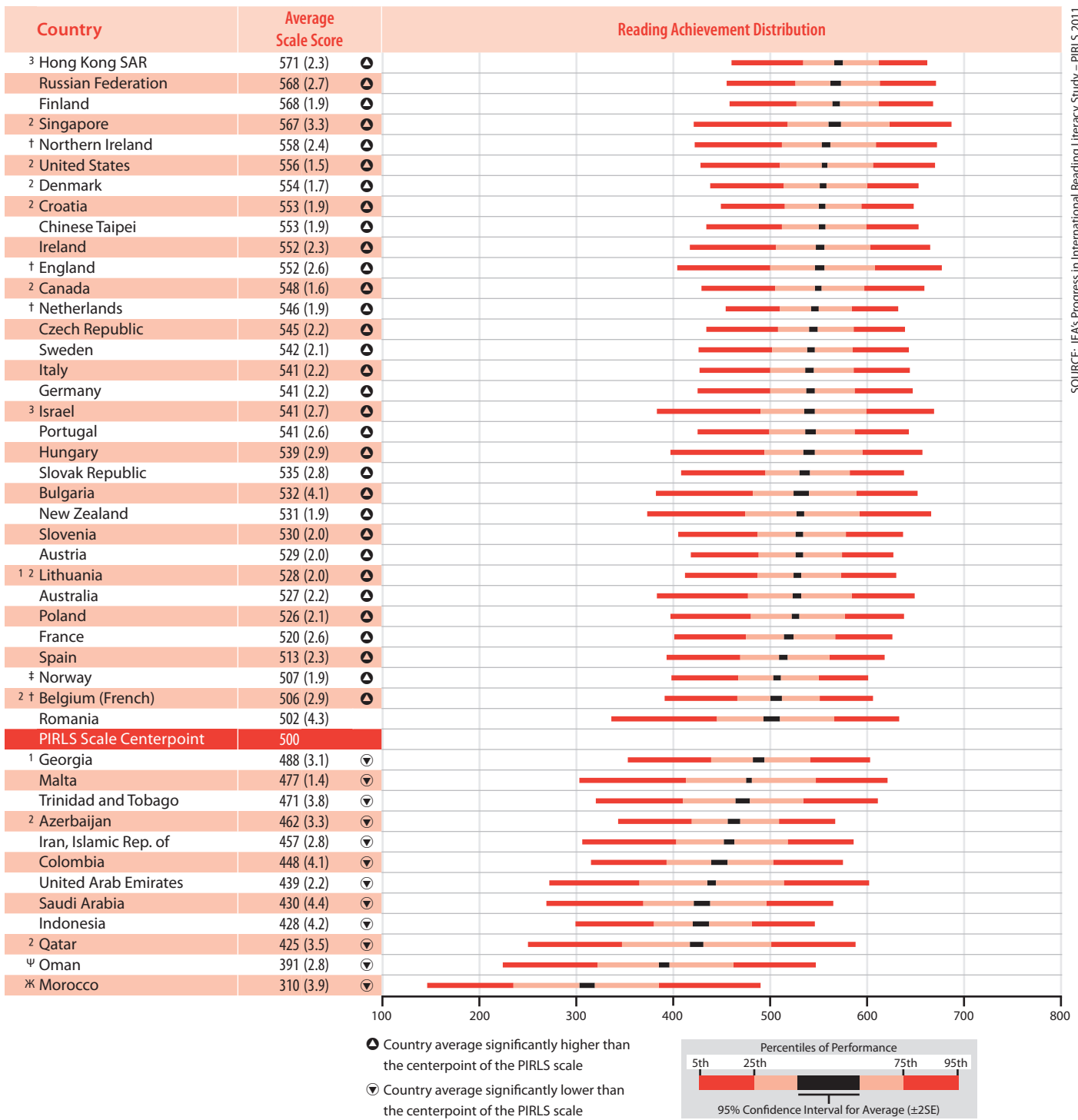
counting from the first year of ISCED Level 1.² Level 1 corresponds to primary education or the first stage of basic education, with the first year of Level 1 marking “systematic apprenticeship of reading, writing and mathematics.” However, IEA has a policy that children should be at least 9 years old before being asked to participate in a paper-and-pencil assessment such as PIRLS. Thus, as a policy, PIRLS also tries to ensure that, at the time of testing, students do not fall under the minimum average age of 9.5 years old. So, England, Malta, New Zealand, and Trinidad and Tobago, where students start school at a young age, were assessed in their fifth year of schooling, but still have among the youngest students and are reported together with the fourth grade countries. Exhibit C.1 in Appendix C shows the grades and average ages of the students tested across countries, together with information about the policies and practices related to age of entry to primary school across countries. The *PIRLS 2011 Encyclopedia* contains further details, such as countries’ policies about promotion and retention.

The second page of Exhibit 1.1 shows the results for several countries that assessed their sixth grade students. To meet the needs of the increasing number of developing countries wanting to participate in PIRLS 2011, the TIMSS & PIRLS International Study Center encouraged countries where the assessment was too difficult for fourth grade students to give PIRLS at the fifth or sixth grade or to participate in prePIRLS, depending on a country’s educational development. Four countries elected to assess sixth grade students, including Morocco (which also assessed its fourth grade students) and Botswana (which also participated in prePIRLS at the fourth grade).

The second page of Exhibit 1.1 also presents the results for the PIRLS 2011 benchmarking participants. The benchmarking participants followed the same procedures and met the same standards as the countries, the difference being that for the most part they are regional entities of countries included on the first page of Exhibit 1.1. As another innovation in 2011, Malta and South Africa used the PIRLS benchmarking opportunity to collect information relevant to their language of instruction policies.

2 ISCED stands for the International Standard Classification of Education developed by the UNESCO Institute for Statistics (OECD, 1999).

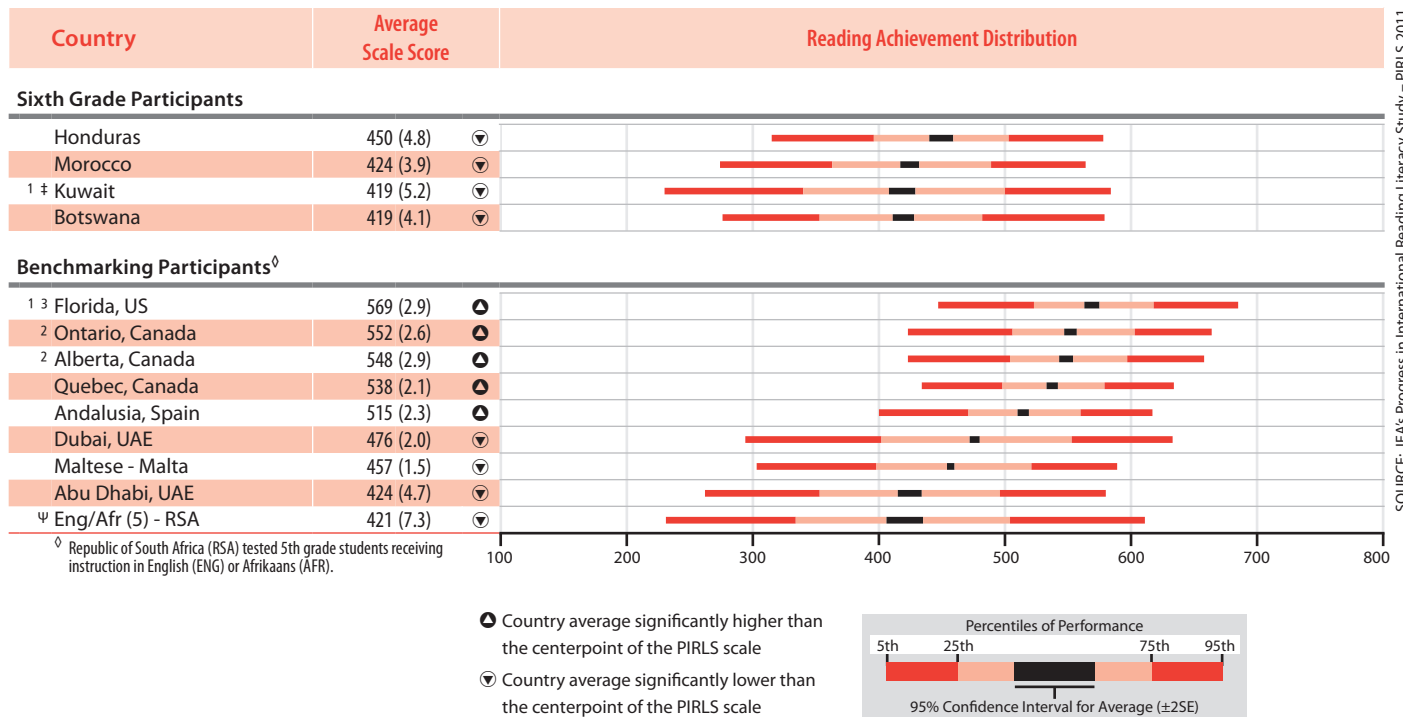
Exhibit 1.1: Distribution of Reading Achievement



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

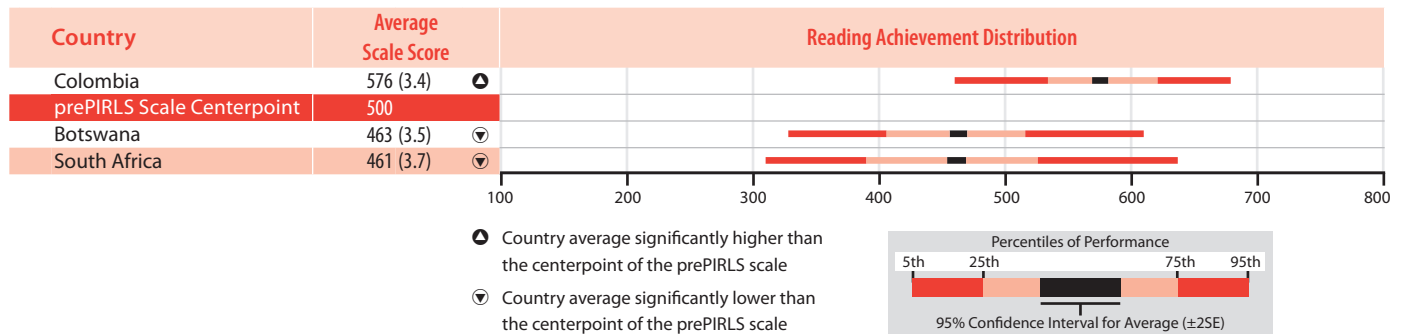
✱ Average achievement not reliably measured because the percentage of students with achievement too low for estimation exceeds 25%.
 ψ Reservations about reliability of average achievement because the percentage of students with achievement too low for estimation does not exceed 25% but exceeds 15%.
 See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 1.1: Distribution of Reading Achievement (Continued)



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Exhibit 1.2: Distribution of Reading Achievement



() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 1.2 (also on the second page of Exhibit 1.1) presents the results for the three countries that participated in prePIRLS: Botswana, Colombia, and South Africa.

For each section of Exhibit 1.1 and in Exhibit 1.2, participants are shown in decreasing order of average achievement. Also, there is a symbol by a participant's average scale score indicating if the average achievement is significantly higher (up arrow) or lower (down arrow) than the scale centerpoint of 500. PIRLS uses the centerpoint of the scale as a point of reference that remains constant from assessment to assessment. (In contrast, the international average, obtained by averaging across the mean scores for each of the participating countries, changes from assessment to assessment as the number and characteristics of the participating countries change.) Finally, several countries have annotations about 1) population coverage (detailed in Exhibit C.2); 2) sampling participation rates (explained in Exhibit C.8), and 3) the potential for bias in their achievement estimates (explained in the section after next).

Achievement in PIRLS 2011 at the Fourth Grade

The results in Exhibit 1.1 (first page) reveal that a number of countries performed quite well on PIRLS 2011, with 32 countries having higher achievement than the scale centerpoint of 500. Impressively, a number of countries had higher achievement on average than the High International Benchmark of 550. Because there are often relatively small differences between participants in average achievement, Exhibit 1.3 shows whether or not the differences in average achievement among the countries are statistically significant.

Hong Kong SAR, the Russian Federation, Finland, and Singapore were the top-performing countries in PIRLS 2011. Looking at the results in Exhibit 1.1 and taking into account the information in Exhibit 1.3, it can be seen that these four countries performed similarly and had higher achievement than all of the other countries. The next tier of high-performing countries included Northern Ireland, the United States, Denmark, Croatia, and Chinese Taipei, followed closely by Ireland and England, who rounded out the top eleven high-achieving countries. Among the benchmarking participants, the state of Florida in the United States was a top performer, similar to the top-tier of high-achieving countries. The Canadian province of Ontario also did very well, with achievement similar to the second tier of high-achieving countries.

While there were small differences from country to country, there was a substantial range in performance from the top-performing to the lower-performing countries. Twelve countries had average achievement below the PIRLS centerpoint of 500. For the most part, these countries had average achievement from 425 to 488, falling between the Intermediate (475) and Low International Benchmarks (400).

Very Low Performance on PIRLS 2011

It is a well-known principle of educational measurement that the difficulty of the items used to assess student achievement should match the ability of the students taking the assessment. In the context of assessing reading comprehension, measurement is most efficient when there is a reasonable match between the reading ability level of the student population being assessed and the difficulty of the assessment passages and items. The greater the mismatch, the more difficult it becomes to achieve reliable measurement. In particular, when the assessment tasks are much too challenging for most students, to the extent that many students are responding at chance level, it is extremely difficult to achieve acceptable measurement quality.

Monitoring trends over time is particularly problematic for a country with a high degree of mismatch between assessment difficulty and student achievement. If there are substantial numbers of students with very low scores, their achievement is likely to be overestimated and, consequently, the overall achievement distribution becomes biased upwards. Educators and policy makers may work hard and make real strides in improving education from this assessment cycle to the next. However, because the achievement distribution at the earlier cycle was overestimated to begin with, the country would not see evidence of this improvement in the assessment results. The apparently poor return for all of the effort could be very disheartening to those who worked so hard and could prove a disincentive to further investment and effort.

Having substantial numbers of students with very low scores in a country also makes it difficult to estimate performance separately for the literary and informational reading purposes and, in particular, for the reading comprehension processes. The items comprising the interpreting, integrating, and evaluating scale were particularly difficult for such countries.

To identify countries where performance is deemed too low to provide reliable measurement of achievement and meaningful trend comparisons, the

Exhibit 1.3: Multiple Comparisons of Average Reading Achievement

Instructions: Read across the row for a country to compare performance with the countries listed along the top of the chart. The symbols indicate whether the average achievement of the country in the row is significantly lower than that of the comparison country, significantly higher than that of the comparison country, or if there is no statistically significant difference between the average achievement of the two countries.

| Country | Average Scale Score | Hong Kong SAR | Russian Federation | Finland | Singapore | Northern Ireland | United States | Denmark | Croatia | Chinese Taipei | Ireland | England | Canada | Netherlands | Czech Republic | Sweden | Italy | Germany | Israel | Portugal | Hungary | Slovak Republic | Bulgaria | New Zealand | Slovenia | Austria | Lithuania | Australia | Poland | France | Spain | |
|-----------------------|---------------------|---------------|--------------------|---------|-----------|------------------|---------------|---------|---------|----------------|---------|---------|--------|-------------|----------------|--------|-------|---------|--------|----------|---------|-----------------|----------|-------------|----------|---------|-----------|-----------|--------|--------|-------|--|
| Hong Kong SAR | 571 (2.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Russian Federation | 568 (2.7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Finland | 568 (1.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Singapore | 567 (3.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Northern Ireland | 558 (2.4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| United States | 556 (1.5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Denmark | 554 (1.7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Croatia | 553 (1.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chinese Taipei | 553 (1.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ireland | 552 (2.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| England | 552 (2.6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Canada | 548 (1.6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Netherlands | 546 (1.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Czech Republic | 545 (2.2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sweden | 542 (2.1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Italy | 541 (2.2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Germany | 541 (2.2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Israel | 541 (2.7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Portugal | 541 (2.6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hungary | 539 (2.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Slovak Republic | 535 (2.8) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bulgaria | 532 (4.1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| New Zealand | 531 (1.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Slovenia | 530 (2.0) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Austria | 529 (2.0) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lithuania | 528 (2.0) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Australia | 527 (2.2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Poland | 526 (2.1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| France | 520 (2.6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spain | 513 (2.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Norway | 507 (1.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Belgium (French) | 506 (2.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Romania | 502 (4.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Georgia | 488 (3.1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Malta | 477 (1.4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trinidad and Tobago | 471 (3.8) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Azerbaijan | 462 (3.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Iran, Islamic Rep. of | 457 (2.8) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Colombia | 448 (4.1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| United Arab Emirates | 439 (2.2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Saudi Arabia | 430 (4.4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Indonesia | 428 (4.2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Qatar | 425 (3.5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oman | 391 (2.8) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Morocco | 310 (3.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Honduras (6) | 450 (4.8) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Morocco (6) | 424 (3.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kuwait (6) | 419 (5.2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Botswana (6) | 419 (4.1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Benchmarking Participants

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|-----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Florida, US | 569 (2.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ontario, Canada | 552 (2.6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alberta, Canada | 548 (2.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Quebec, Canada | 538 (2.1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Andalusia, Spain | 515 (2.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dubai, UAE | 476 (2.0) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maltese - Malta | 457 (1.5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Abu Dhabi, UAE | 424 (4.7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eng/Afr (5) - RSA | 421 (7.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Significance tests were not adjusted for multiple comparisons. Five percent of the comparisons would be statistically significant by chance alone.

(.) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 1.3: Multiple Comparisons of Average Reading Achievement (Continued)

| ▲ Average achievement significantly higher than comparison country | | ▼ Average achievement significantly lower than comparison country | | | |
|--|---|---|---|----------------------------|-----------------------|
| | | | | Average Scale Score | Country |
| ▲ | ▲ | ▼ | ▼ | 571 (2.3) | Hong Kong SAR |
| ▲ | ▲ | ▼ | ▼ | 568 (2.7) | Russian Federation |
| ▲ | ▲ | ▼ | ▼ | 568 (1.9) | Finland |
| ▲ | ▲ | ▼ | ▼ | 567 (3.3) | Singapore |
| ▲ | ▲ | ▼ | ▼ | 558 (2.4) | Northern Ireland |
| ▲ | ▲ | ▼ | ▼ | 556 (1.5) | United States |
| ▲ | ▲ | ▼ | ▼ | 554 (1.7) | Denmark |
| ▲ | ▲ | ▼ | ▼ | 553 (1.9) | Croatia |
| ▲ | ▲ | ▼ | ▼ | 553 (1.9) | Chinese Taipei |
| ▲ | ▲ | ▼ | ▼ | 552 (2.3) | Ireland |
| ▲ | ▲ | ▼ | ▼ | 552 (2.6) | England |
| ▲ | ▲ | ▼ | ▼ | 548 (1.6) | Canada |
| ▲ | ▲ | ▼ | ▼ | 546 (1.9) | Netherlands |
| ▲ | ▲ | ▼ | ▼ | 545 (2.2) | Czech Republic |
| ▲ | ▲ | ▼ | ▼ | 542 (2.1) | Sweden |
| ▲ | ▲ | ▼ | ▼ | 541 (2.2) | Italy |
| ▲ | ▲ | ▼ | ▼ | 541 (2.2) | Germany |
| ▲ | ▲ | ▼ | ▼ | 541 (2.7) | Israel |
| ▲ | ▲ | ▼ | ▼ | 541 (2.6) | Portugal |
| ▲ | ▲ | ▼ | ▼ | 539 (2.9) | Hungary |
| ▲ | ▲ | ▼ | ▼ | 535 (2.8) | Slovak Republic |
| ▲ | ▲ | ▼ | ▼ | 532 (4.1) | Bulgaria |
| ▲ | ▲ | ▼ | ▼ | 531 (1.9) | New Zealand |
| ▲ | ▲ | ▼ | ▼ | 530 (2.0) | Slovenia |
| ▲ | ▲ | ▼ | ▼ | 529 (2.0) | Austria |
| ▲ | ▲ | ▼ | ▼ | 528 (2.0) | Lithuania |
| ▲ | ▲ | ▼ | ▼ | 527 (2.2) | Australia |
| ▲ | ▲ | ▼ | ▼ | 526 (2.1) | Poland |
| ▲ | ▲ | ▼ | ▼ | 520 (2.6) | France |
| ▲ | ▲ | ▼ | ▼ | 513 (2.3) | Spain |
| ▲ | ▲ | ▼ | ▼ | 507 (1.9) | Norway |
| ▲ | ▲ | ▼ | ▼ | 506 (2.9) | Belgium (French) |
| ▲ | ▲ | ▼ | ▼ | 502 (4.3) | Romania |
| ▲ | ▲ | ▼ | ▼ | 488 (3.1) | Georgia |
| ▲ | ▲ | ▼ | ▼ | 477 (1.4) | Malta |
| ▲ | ▲ | ▼ | ▼ | 471 (3.8) | Trinidad and Tobago |
| ▲ | ▲ | ▼ | ▼ | 462 (3.3) | Azerbaijan |
| ▲ | ▲ | ▼ | ▼ | 457 (2.8) | Iran, Islamic Rep. of |
| ▲ | ▲ | ▼ | ▼ | 448 (4.1) | Colombia |
| ▲ | ▲ | ▼ | ▼ | 439 (2.2) | United Arab Emirates |
| ▲ | ▲ | ▼ | ▼ | 430 (4.4) | Saudi Arabia |
| ▲ | ▲ | ▼ | ▼ | 428 (4.2) | Indonesia |
| ▲ | ▲ | ▼ | ▼ | 425 (3.5) | Qatar |
| ▲ | ▲ | ▼ | ▼ | 391 (2.8) | Oman |
| ▲ | ▲ | ▼ | ▼ | 310 (3.9) | Morocco |
| ▲ | ▲ | ▼ | ▼ | 450 (4.8) | Honduras (6) |
| ▲ | ▲ | ▼ | ▼ | 424 (3.9) | Morocco (6) |
| ▲ | ▲ | ▼ | ▼ | 419 (5.2) | Kuwait (6) |
| ▲ | ▲ | ▼ | ▼ | 419 (4.1) | Botswana (6) |
| ▲ | ▲ | ▼ | ▼ | 569 (2.9) | Florida, US |
| ▲ | ▲ | ▼ | ▼ | 552 (2.6) | Ontario, Canada |
| ▲ | ▲ | ▼ | ▼ | 548 (2.9) | Alberta, Canada |
| ▲ | ▲ | ▼ | ▼ | 538 (2.1) | Quebec, Canada |
| ▲ | ▲ | ▼ | ▼ | 515 (2.3) | Andalusia, Spain |
| ▲ | ▲ | ▼ | ▼ | 476 (2.0) | Dubai, UAE |
| ▲ | ▲ | ▼ | ▼ | 457 (1.5) | Maltese - Malta |
| ▲ | ▲ | ▼ | ▼ | 424 (4.7) | Abu Dhabi, UAE |
| ▲ | ▲ | ▼ | ▼ | 421 (7.3) | Eng/Afr (5) - RSA |

Significance tests were not adjusted for multiple comparisons. Five percent of the comparisons would be statistically significant by chance alone. () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

SOURCE: IEA's Progress in International Reading Literacy Study - PIRLS 2011

TIMSS & PIRLS International Study Center conducted extensive investigations to detect when the quality of measurement erodes (Martin, Mullis, & Foy, in press). The proportion of students unable to respond to any items on the assessment was selected as the best indicator of degree of mismatch between students' skills and those demanded by the assessment. Although the absolute lower limit would be no items answered correctly, about half of the items were in multiple-choice format and guessing on these was possible. Thus, beginning in 2011, the criterion for having achievement too low for estimation was established based on the percentage of the students having a score no higher than what a student would achieve by guessing on all the multiple-choice questions—essentially the percentage of students performing below chance.

For each country, Appendix D shows the percentage of students with achievement too low for estimation (Exhibit D.1 for the fourth grade and D.2 for the eighth grade). When, as in Morocco, the percentage of students with achievement too low for estimation exceeded 25 percent, the country was annotated with the symbol Ж. Achievement trends are not reported for these countries because of concerns about bias in the estimation of achievement for the student population. When, as in Oman, the percentage of students with achievement too low for estimation exceeded 15 percent but did not exceed 25 percent, the country was annotated with the symbol Ψ, indicating reservations about the reliability of the achievement estimates.

Achievement in PIRLS 2011 at the Sixth Grade

As a group, the countries assessing their sixth grade students had average achievement between 419 and 450, falling between the Intermediate (475) and Low International Benchmarks (400). This level of achievement is comparable to that of most of lower-performing countries at the fourth grade.

In addition, these countries made the appropriate decision to assess their sixth grade rather than their fourth grade students. It is likely that there would have been difficulty in estimating reading achievement at the fourth grade. As a case in point, Morocco's sixth grade students had an average achievement of 424 compared to the fourth grade average of 310, which was much too low for reliable estimation.

Achievement in prePIRLS 2011

Exhibit 1.2 presents the achievement distributions on prePIRLS for the three countries that pioneered this assessment at the fourth grade. The results demonstrate how prePIRLS results can complement PIRLS results, since

Botswana, Colombia, and South Africa also participated in some aspect of PIRLS 2011. South Africa engaged in a PIRLS 2011 benchmarking effort to link back to its PIRLS 2006 results for fifth grade students receiving instruction in English or Afrikaans. Botswana participated in PIRLS 2011 at the sixth grade, and Colombia administered both PIRLS and prePIRLS to the same fourth grade students.

Because PIRLS has a well-established achievement scale, and PIRLS and prePIRLS are based on the same framework, it was possible to use the Colombian data to link the two assessments. Subsequent to verifying that PIRLS and prePIRLS were measuring the same underlying reading comprehension construct, the prePIRLS scale was established by using the Colombian data to calibrate the prePIRLS items in the context of PIRLS. Essentially the stable PIRLS 2011 item parameters were used to anchor the prePIRLS scale.

Because prePIRLS is a separate assessment, the results are being reported on its own scale. Given the widespread familiarity with the 0–1,000 scale metric used by PIRLS and TIMSS, this metric also was used for prePIRLS. The prePIRLS scale centerpoint of 500 was set to the mean achievement of the three countries combined, and 100 points on the scale was set to the standard deviation of the combined achievement distribution.

The results in Exhibit 1.2 show that the Colombian fourth grade students performed above the scale centerpoint, on average, whereas those from Botswana and South Africa performed below the scale centerpoint. The results from Botswana and South Africa were very similar, except that South Africa had a larger range of performance.

Because the Colombian fourth grade students were able to participate in both PIRLS and prePIRLS with good measurement in both assessments, the Colombian data provide a rough estimate of the relative difficulty of prePIRLS compared to PIRLS. The Colombian fourth grade students had an average achievement of 448 on PIRLS and 576 on prePIRLS, a difference of 128 points. This indicates that PIRLS is, on average, approximately 130 points more difficult than prePIRLS. For example, under this assumption, the fourth grade students in Botswana and South Africa would have an average score on the PIRLS scale of about 330. First, this confirms that fourth grade students in these two countries have average reading achievement below the PIRLS Low International Benchmark (400). It also is interesting to compare the estimated PIRLS difference in reading achievement between the fourth and sixth grade students in Botswana of about 90 points with the Moroccan PIRLS difference

in reading between fourth and sixth grade of 114 points. Apparently, countries with many very low achieving students in the fourth grade make substantial gains in reading achievement by the sixth grade.

Trends in Reading Achievement

Exhibit 1.4 displays changes in average reading achievement for the countries and benchmarking participants that have comparable data from previous PIRLS assessments. The participants are shown in alphabetical order, with 30 countries and four benchmarking participants having data from 2001 and 2006, or either 2001 or 2006, that can be compared to 2011.

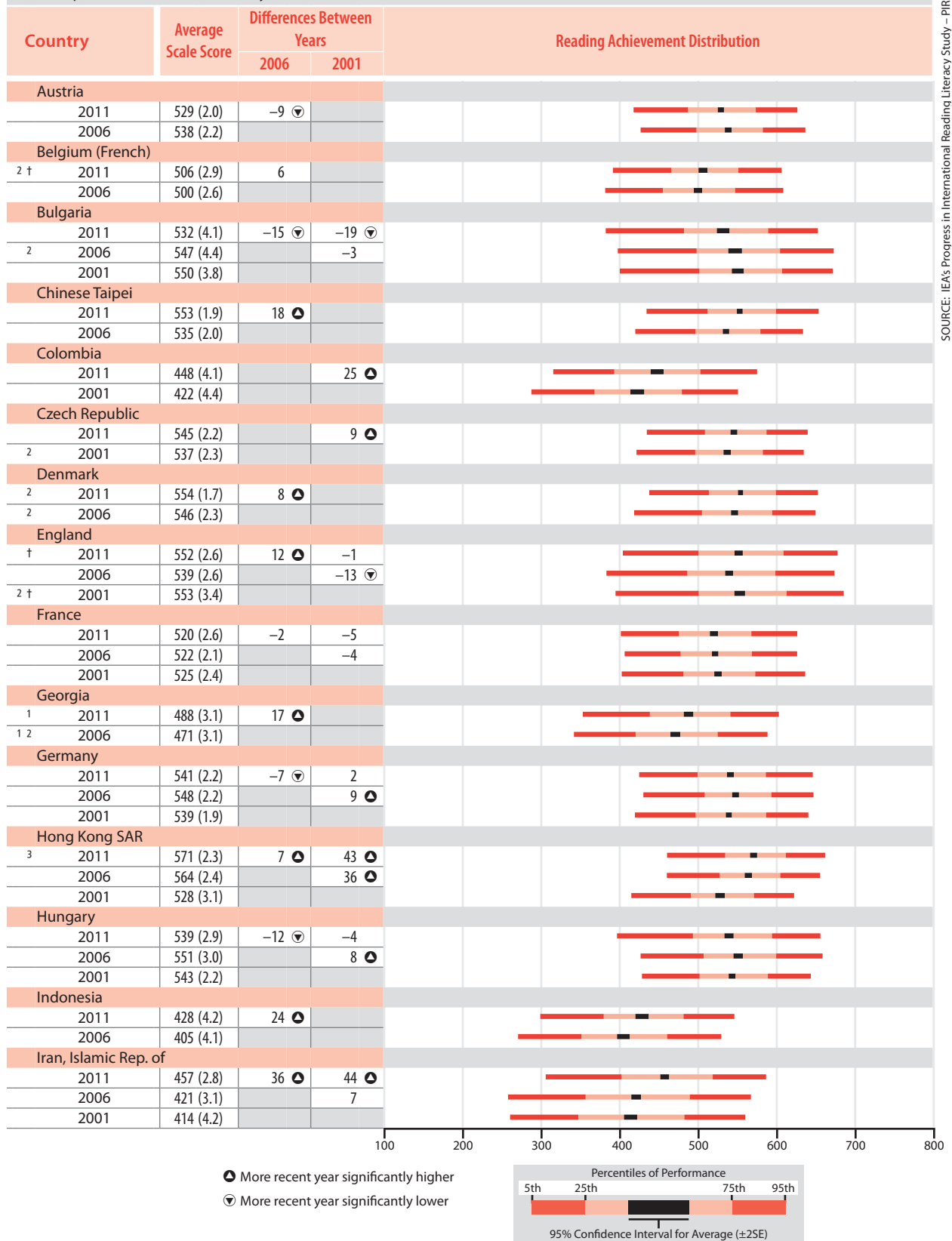
It is particularly interesting to consider the PIRLS 2011 achievement results in light of the information countries provided in the *PIRLS 2011 Encyclopedia*. Many countries are engaged in implementing important structural, curricular, and instructional reforms based on PIRLS 2001 and 2006 results. Looking at the trends across the participants during the decade of 2001 to 2011, there have been more increases than decreases in reading achievement. Ten countries had gains in achievement in 2011 compared to 2001, and 13 countries showed recent improvement between 2006 and 2011. A few of these countries are the same, showing improvement from assessment to assessment, including Hong Kong SAR and Singapore with the bulk of their dramatic improvements between 2001 and 2006, and Slovenia showing a similar pattern but with improvement more equivalent over the two five-year periods. Iran, Norway, and the United States show improvement between 2001 and 2011, but only due to gains between 2006 and 2011.

Declines in reading achievement were primarily in European countries, and more often since 2006. Four European countries—Bulgaria, Lithuania, the Netherlands, and Sweden—showed net declines in reading achievement over the decade, with decreases in average reading achievement since 2006. The ten-year decline in Bulgaria mostly occurred since 2006, and the ten-year decline in Lithuania was relatively comparable from assessment to assessment but slightly larger more recently. The ten-year decline in Sweden was relatively comparable from assessment to assessment but at a decreasing rate. In addition, another four European countries—Austria, Germany, Hungary, and Italy—had declines between 2006 and 2011.

Among the benchmarking participants, the Canadian province of Alberta had lower average reading achievement in 2011 than in 2006. The South African fifth grade students receiving instruction in English and Afrikaans showed signs of improvement compared to those in 2006, but the results were not statistically significant.

Exhibit 1.4: Trends in Reading Achievement

Instructions: Read across the row to determine if the performance in the row year is significantly higher (▲) or significantly lower (▼) than the performance in the column year.



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

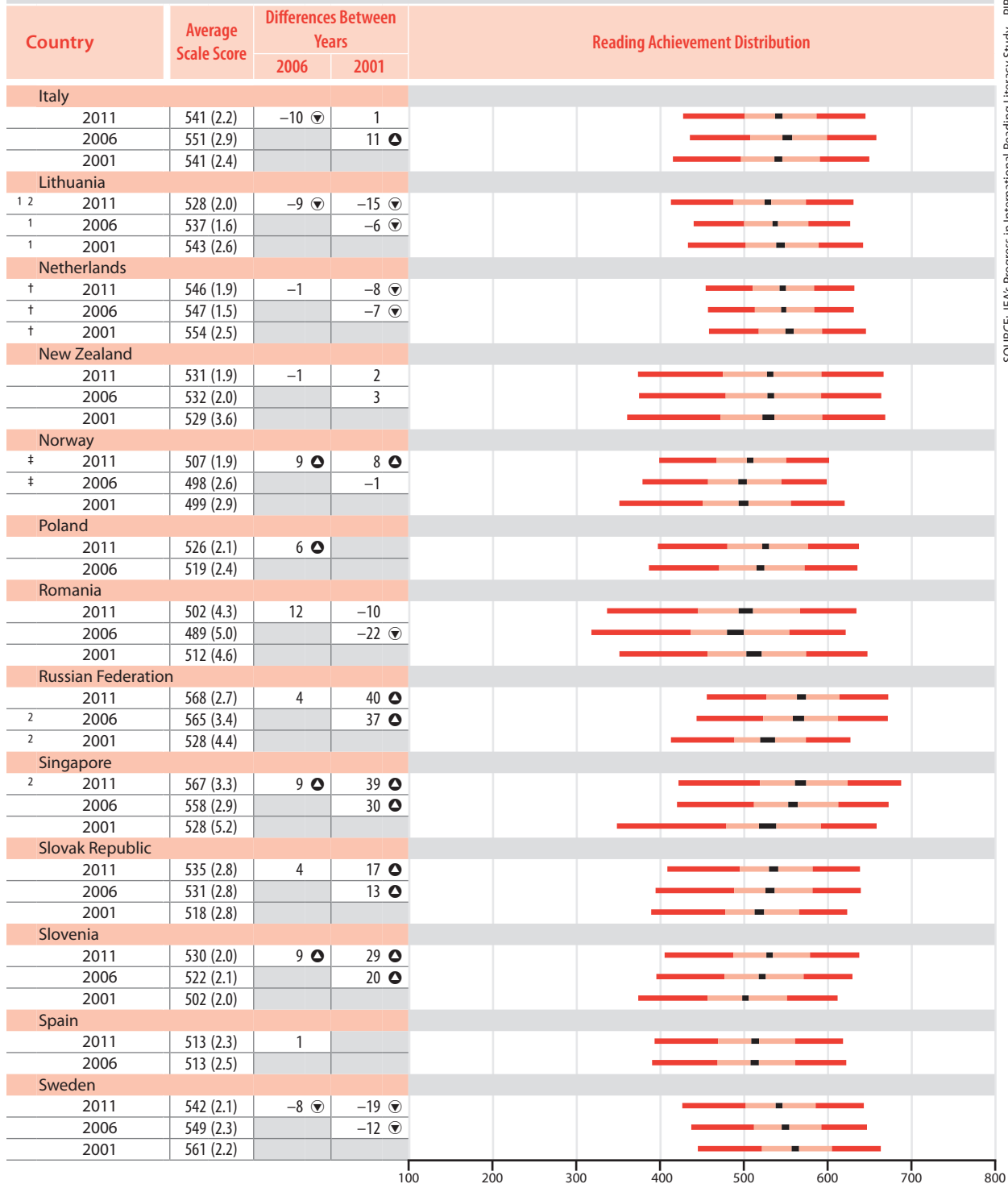
Ψ Reservations about reliability of average achievement because the percentage of students with achievement too low for estimation does not exceed 25% but exceeds 15%. Such annotations in exhibits with trend data began in 2011, so data from assessments prior to 2011 are not annotated for reservations.

See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 1.4: Trends in Reading Achievement (Continued)

Instructions: Read across the row to determine if the performance in the row year is significantly higher (▲) or significantly lower (▼) than the performance in the column year.



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

▲ More recent year significantly higher
▼ More recent year significantly lower

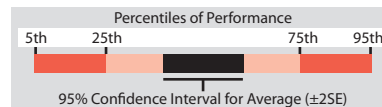
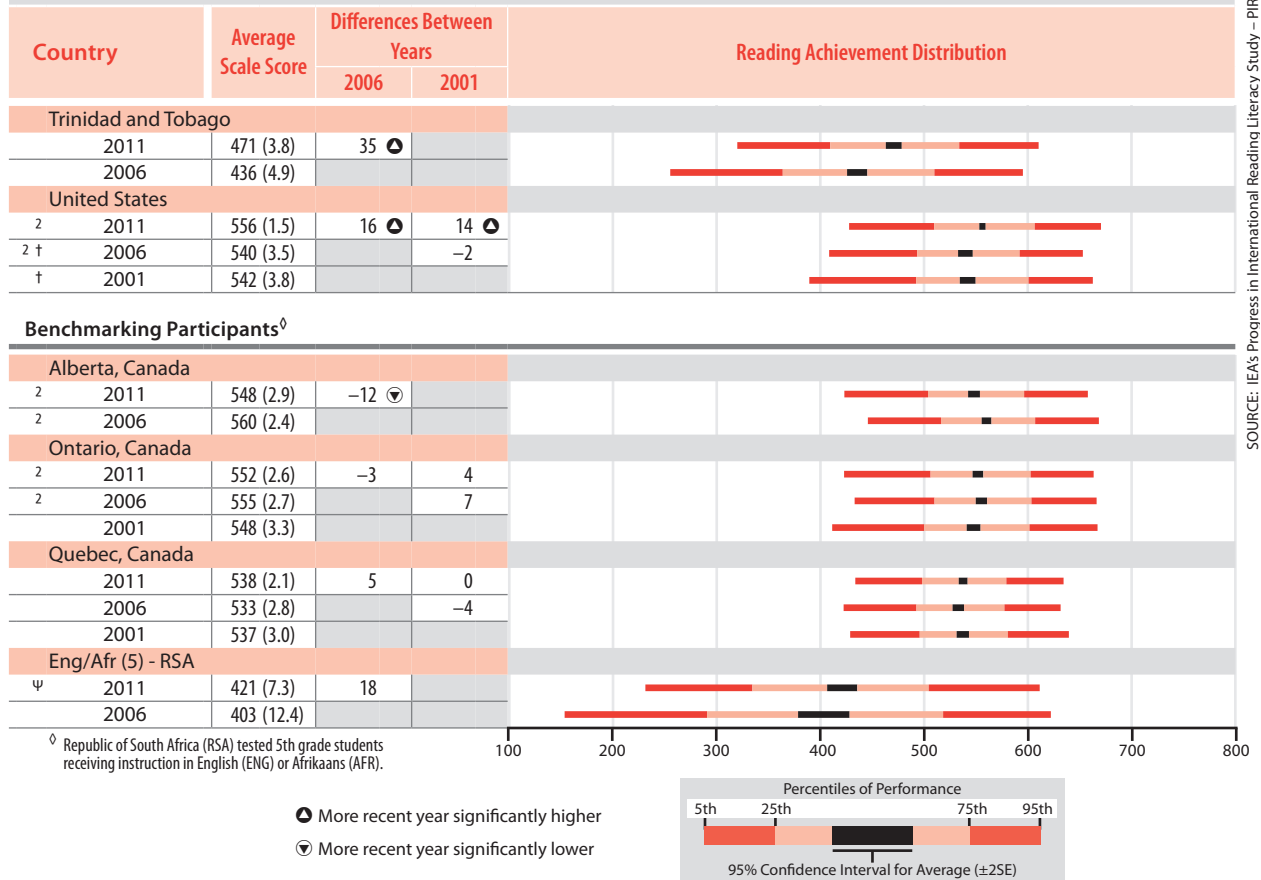


Exhibit 1.4: Trends in Reading Achievement (Continued)

Instructions: Read across the row to determine if the performance in the row year is significantly higher (▲) or significantly lower (▼) than the performance in the column year.



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Gender Differences in Reading

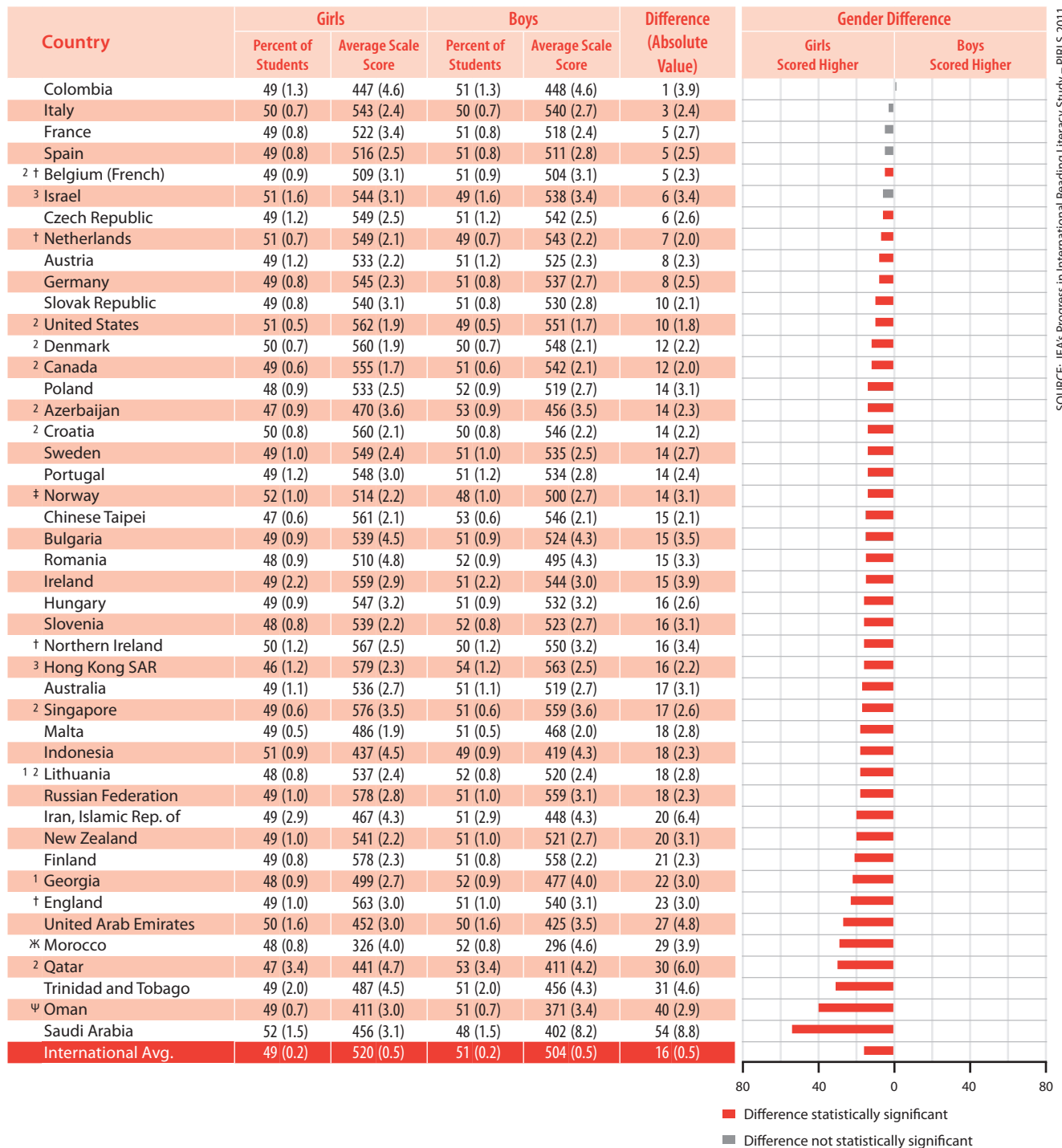
In each successive assessment, PIRLS has consistently found that fourth grade girls have much higher average reading achievement than boys in most countries, and the 2011 results continue this pattern. Recent research in the United States found that girls had an advantage in reading at all grades from kindergarten through the eighth grade (Robinson & Lubienski, 2011), and PISA 2009 reported that 15-year-old girls performed consistently better in reading than boys (OECD, 2010). That gender gaps favoring girls persist across grades is an issue of concern, given the fundamental importance of reading for success in school. However, as noted in the *PIRLS 2011 Encyclopedia*, a number of countries are undertaking wide ranging steps across their educational systems specifically to improve reading teaching and learning for both boys and girls.

Differences in Reading Achievement by Gender

Exhibit 1.5 presents the PIRLS 2011 gender differences in reading achievement. For the PIRLS 2011 countries at fourth grade, at sixth grade, and the benchmarking participants, it shows girls' average achievement, boys' average achievement, and the difference between the two averages. The bar graph shows the size of the difference and whether that difference is statistically significant (as indicated by a darkened bar). For countries participating at the fourth grade, international averages also are shown (averages across the mean scores for girls in each of the countries and the mean scores for boys in each of the countries). Exhibit 1.6 presents corresponding data for prePIRLS participants.

In each section of Exhibit 1.5, the countries are shown in order by the increasing size of the difference between girls and boys in average reading achievement. Internationally, on average, the difference at the fourth grade favoring girls was 520 compared to 504, an advantage of 16 score points (after rounding). For the countries at the fourth grade, the first countries listed in the exhibit showed no reading achievement differences between girls and boys, including Colombia, Italy, France, Spain, and Israel. However, the remaining countries all had differences favoring girls to some extent, from small to quite substantial gaps. Some of the largest differences (27–54 score points) were found in some of the Arabic-speaking countries, including the United Arab Emirates, Morocco, Qatar, Oman, and Saudi Arabia. At the sixth grade, girls had higher average reading achievement than boys in all four countries. Girls also had higher average reading achievement than boys in each of the benchmarking entities.

Exhibit 1.5: Average Reading Achievement by Gender



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

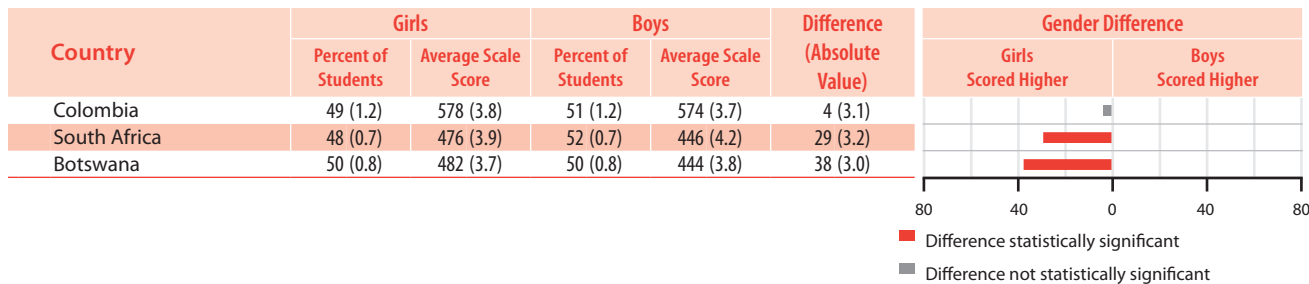
⌘ Average achievement not reliably measured because the percentage of students with achievement too low for estimation exceeds 25%.
 ⚭ Reservations about reliability of average achievement because the percentage of students with achievement too low for estimation does not exceed 25% but exceeds 15%.
 See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.5 for sampling guidelines and sampling participation notes † and ‡.
 () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

Exhibit 1.5: Average Reading Achievement by Gender (Continued)



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Exhibit 1.6: Average Reading Achievement by Gender



() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

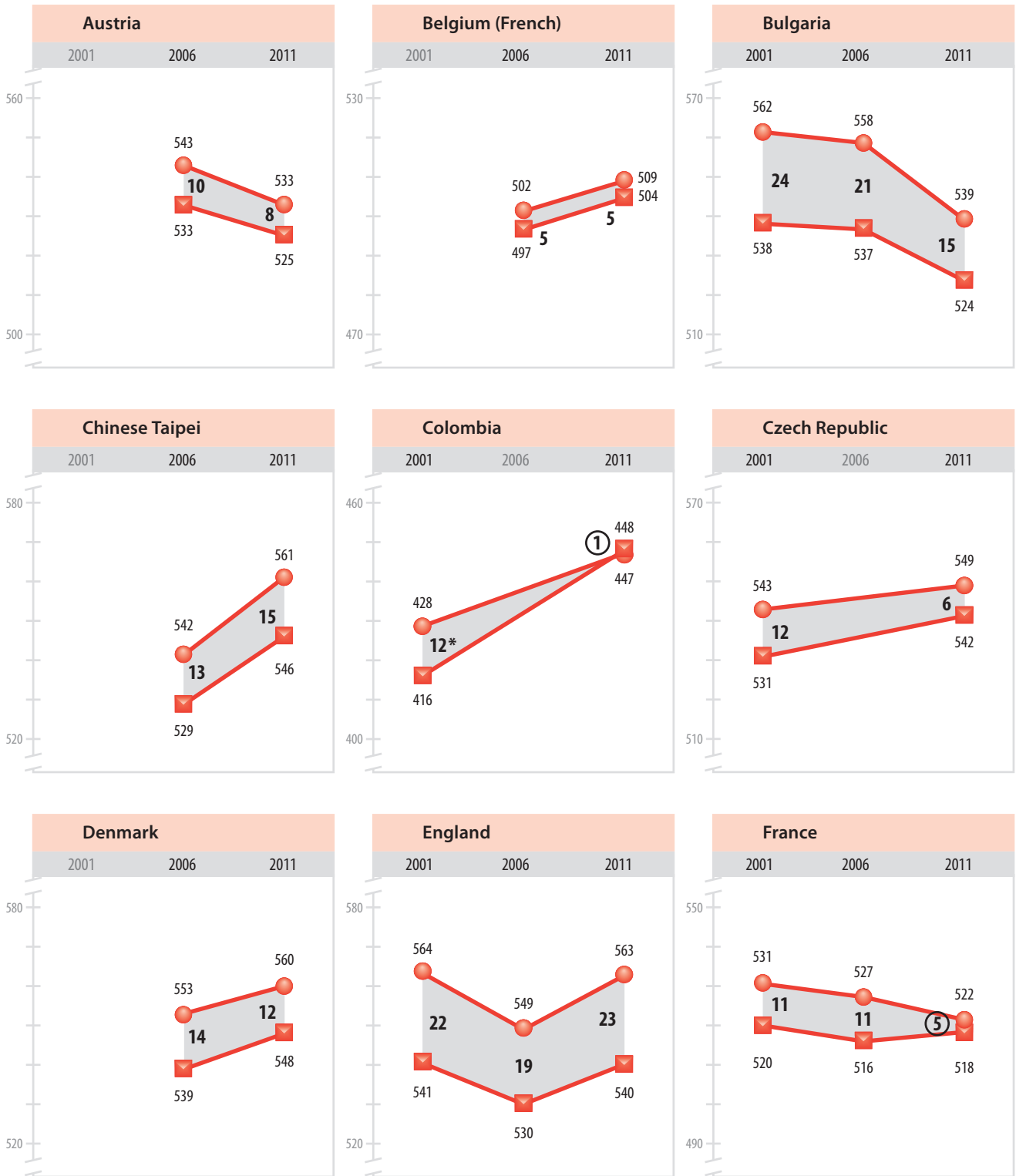
Exhibit 1.6 displays the results for prePIRLS and shows that fourth grade girls had higher average reading achievement than boys in both South Africa and Botswana. The prePIRLS results for Colombian girls and boys paralleled those in PIRLS (Exhibit 1.5), showing essentially no difference in average achievement between the genders.

Trends in Reading Achievement by Gender

Exhibit 1.7 shows a graphic representation, for each country in alphabetical order, of whether the gender gap at fourth grade favoring girls in reading achievement has grown or diminished over the past decade. The scale interval is the same for each country (10 points) to permit comparisons, although the part of the scale shown differs according to each country's average achievement. Unfortunately, the gender gap appears to have remained consistent over time for a number of the countries that participated in prior PIRLS assessments in 2001 and 2006.

Some reduction of the achievement gap has occurred in several countries. Colombia shows an excellent result in having closed the gender gap in average reading achievement between 2001 and 2011. France and Italy, who had differences in average reading achievement in 2001 and 2006 that favored girls, also have narrowed the gender gap, but there was no difference in average achievement in 2011 and this narrowing is due in part to declines in girls' reading achievement in the two countries. Compared to 2001, the Netherlands decreased the size of the gap in 2006 but made no further progress in 2011. In Sweden, the achievement gap remained substantial in 2011, but average reading achievement for girls has declined more than it has for boys across the assessments, thereby reducing the gender gap. Only two examples clearly run contrary to the desired trend: the Russian Federation has increased the gender gap from 2001 to 2011, and Hungary also has a significantly larger gender gap than in 2006.

Exhibit 1.7: Trends in Reading Achievement by Gender

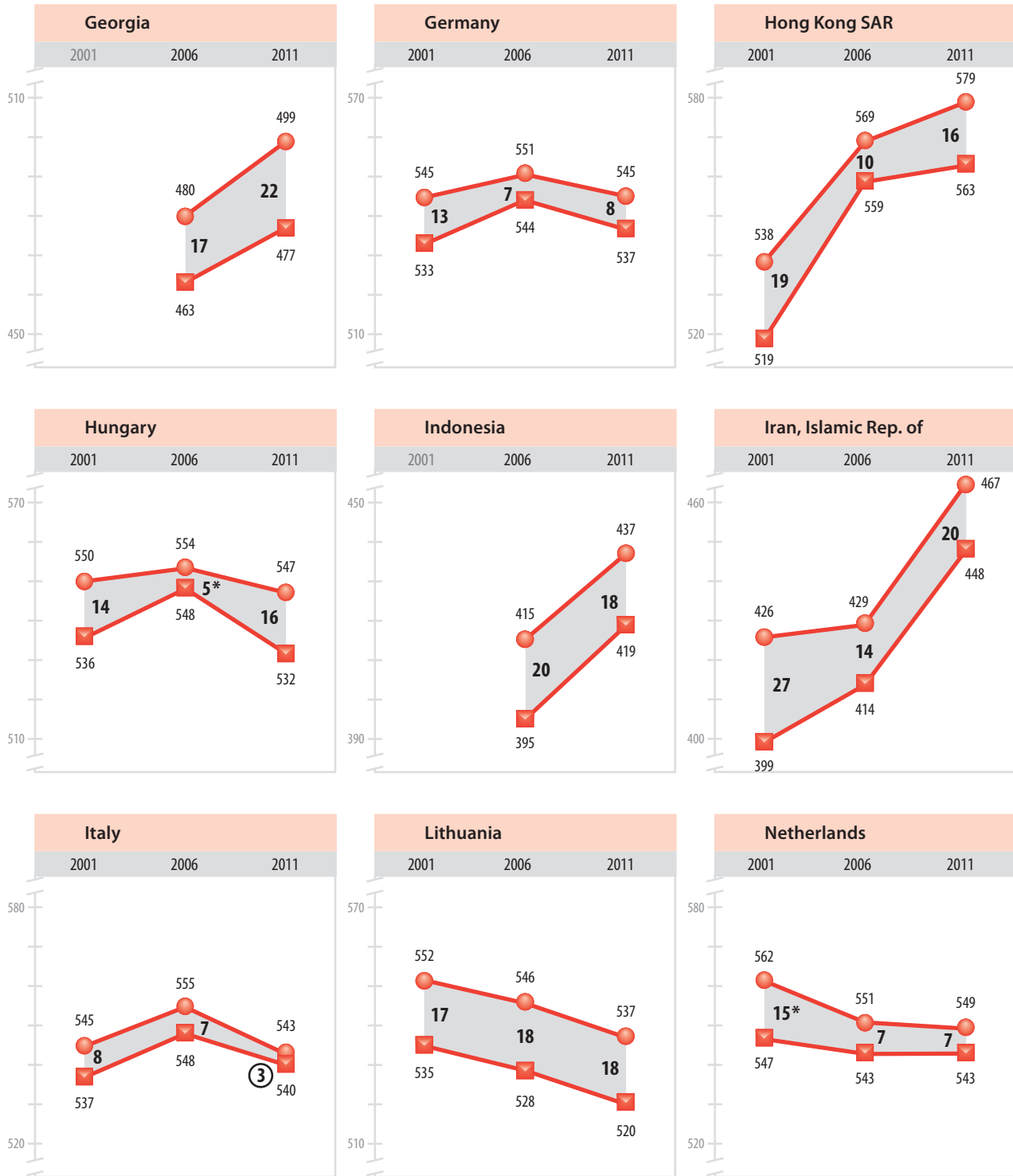


SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Girls —●— Boys —■— Achievement gaps are statistically significant unless they are circled.
 * Indicates achievement gap is significantly different from 2011 achievement gap.

Scale interval is 10 points for each country, but the part of the scale shown differs according to each country's average achievement.

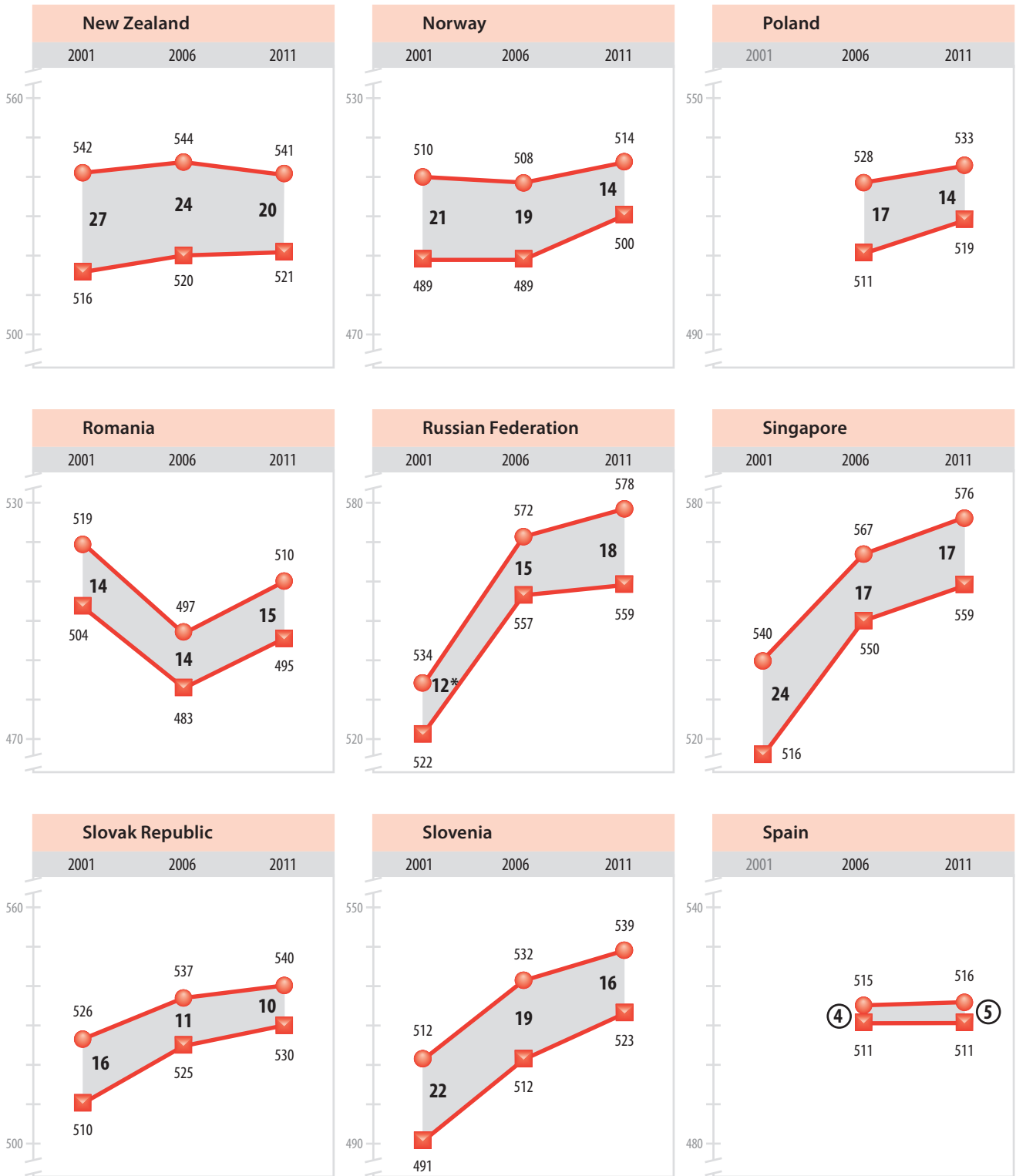
Exhibit 1.7: Trends in Reading Achievement by Gender (Continued)



SOURCE: IEA's Progress in International Reading Literacy Study - PIRLS 2011

Girls —●— Boys —■— Achievement gaps are statistically significant unless they are circled.
 * Indicates achievement gap is significantly different from 2011 achievement gap.

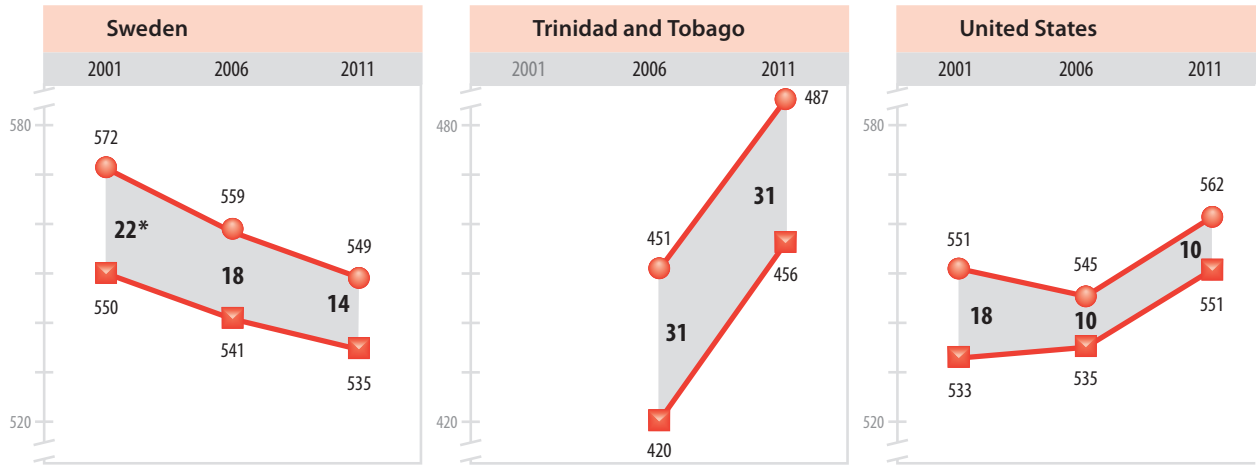
Exhibit 1.7: Trends in Reading Achievement by Gender (Continued)



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

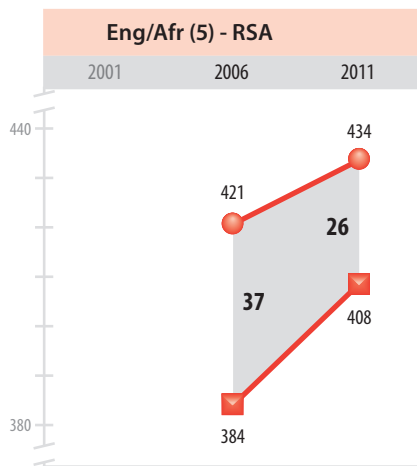
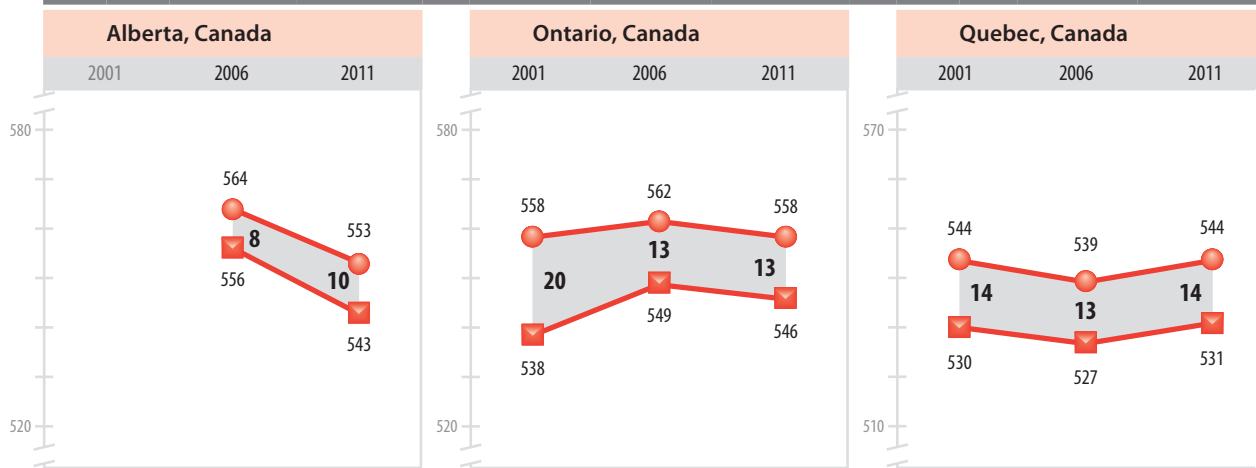
Girls —●— Boys —■— Achievement gaps are statistically significant unless they are circled.
 * Indicates achievement gap is significantly different from 2011 achievement gap.

Exhibit 1.7: Trends in Reading Achievement by Gender (Continued)



SOURCE: IEA's Progress in International Reading Literacy Study – PIRLS 2011

Benchmarking Participants^o



^o Republic of South Africa (RSA) tested 5th grade students receiving instruction in English (ENG) or Afrikaans (AFR).

Girls —●— Boys —■— Achievement gaps are statistically significant unless they are circled.
 * Indicates achievement gap is significantly different from 2011 achievement gap.

