

COVID-19 impact on inequality of learning outcomes in SA

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Motivation

COVID-19 hugely disrupted education globally, with an average learning loss of about a third to a half of a school year (Moscoviz & Evans, 2022 ; Patrinos, Vegas & Carter-Rau, 2022)

“Learning loss was consistently much higher among students with lower socioeconomic status ... even in contexts with little or no average learning loss.”
(Moscoviz & Evans, 2022)

South Africa already had a highly unequal education system pre-COVID

- SES – Bimodal distribution where the top 20% of schools have mean outcomes between half a standard deviation to one and half standard deviations higher than the bottom 80% (Van der Berg et. al., 2011, Spaul & Kotze, 2015 ; Spaul, 2019)
- Gender – Boys underperform in all subjects, higher retention & drop-out rates (Zuze & Reddy, 2014 ; Spaul & Van Broekhuizen, 2017 ; Spaul & Makaluza, 2019 ; Hofmeyr, 2022)

This presentation focuses on changes to the distribution of learning outcomes in the face of learning loss in South Africa (Wills & Van der Berg, 2022)

COVID-19 learning loss evidence in SA

Western Cape Systemics WC (2019 & 2021)

Grades: 3, 6, and 9

Subjects: Language and Mathematics

Results

Learners were 40–70% of a school year behind in language and 95–106% of a school year behind in mathematics

(Van der Berg et. al., 2022)

EGRS & Funda Wande EC, MP & NW (2019 - 2021)

Grades: 2 and 4

Subject: Home Language Reading (Alphabetic knowledge & FAL reading)

Results

For home language reading, Gr 2 (EC) had a 57% and Gr 4 (MP) an 81% decrease in years of learning in 2020, whilst the Gr 4 (NW) experienced a 54%–118% decrease in a year of learning by 2021

(Ardington et. al., 2021 ; Wills & van der Berg, 2022)

PIRLS South Africa (2016 & 2021)

Grades: 4 (5&6)

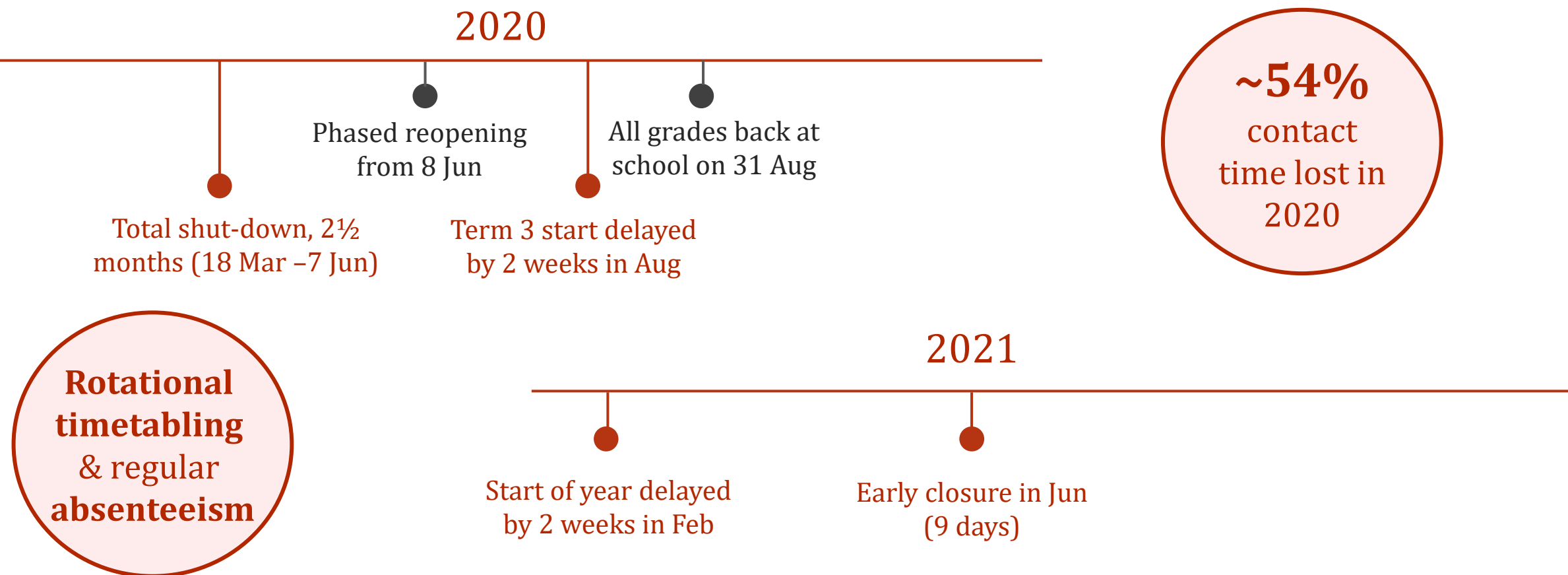
Subjects: Reading and literacy

Results

Mean declined 31 points from 319 points in 2016 to 288 points in 2021, equivalent to about 50 – 55% of a year of learning

(Mullis et. al., 2023)

South Africa's schools COVID timeline



Sources: DBE report *"The COVID-19 pandemic, enrolments, dropping out and attendance explained"*, published in 2022 ; Government Gazette No. 43609, 11 August 2020 ; and private communication, Nomphumelelo Mohlwane private communication referring to Nids-CRAM documentation, 21 Dec 2021

“ The focus was on retaining the curriculum whilst allowing for flexibility in coverage through weakened controls over moderation, assessment and promotion requirements, ceding most curriculum and assessment decisions to the school and classroom levels. Given a very unequal system, this meant that curriculum coverage and learning losses mapped onto and deepened pre-COVID-19 patterns of educational disadvantage. ”

Ursula Hoadley in *COVID-19 and the South African curriculum policy response* (2023)

Focus of the presentation

Initial evidence increased learning inequality by socioeconomic status, as poorer schools in the Western Cape showed the highest learning losses.

PIRLS allows us to get a nationally representative view, however it is limited to a single grade and subject area, reading for Grade 4

This presentation focuses on changes to the distribution of learning outcomes pre- and post-COVID to identify if there has been deepening of learning inequalities

- Policy response: Where to direct catch-up efforts
- Day-to-day experience within the classroom (heterogeneity)

The background of the slide features a dark, semi-transparent image of a person sitting at a desk with a computer monitor. Overlaid on this image is a network diagram consisting of several black nodes connected by thin lines. The overall aesthetic is professional and technical.

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Dataset

Progress in International Reading Literacy Study 2016 & 2021

Grade 4

Reading and Literacy

Nationally representative sample








Stratified by 11 official languages

*Sample size: Number of schools and students
that wrote the PIRLS tests in 2016 & 2021*

Test language	# of schools		# of students	
	2016	2021	2016	2021
English	43	41	2 089	1 479
Afrikaans	38	22	1 228	679
isiNdebele	7	15	277	711
isiXhosa	34	29	1 301	1 026
isiZulu	44	48	1 732	1 857
Sepedi	17	36	898	1 603
Sesotho	20	27	1 148	966
Setswana	30	28	1 275	1 048
siSwati	21	26	970	1 121
Tshivenda	22	25	939	914
Xitsonga	17	24	953	1 018
Total	293	321	12 810	12 422

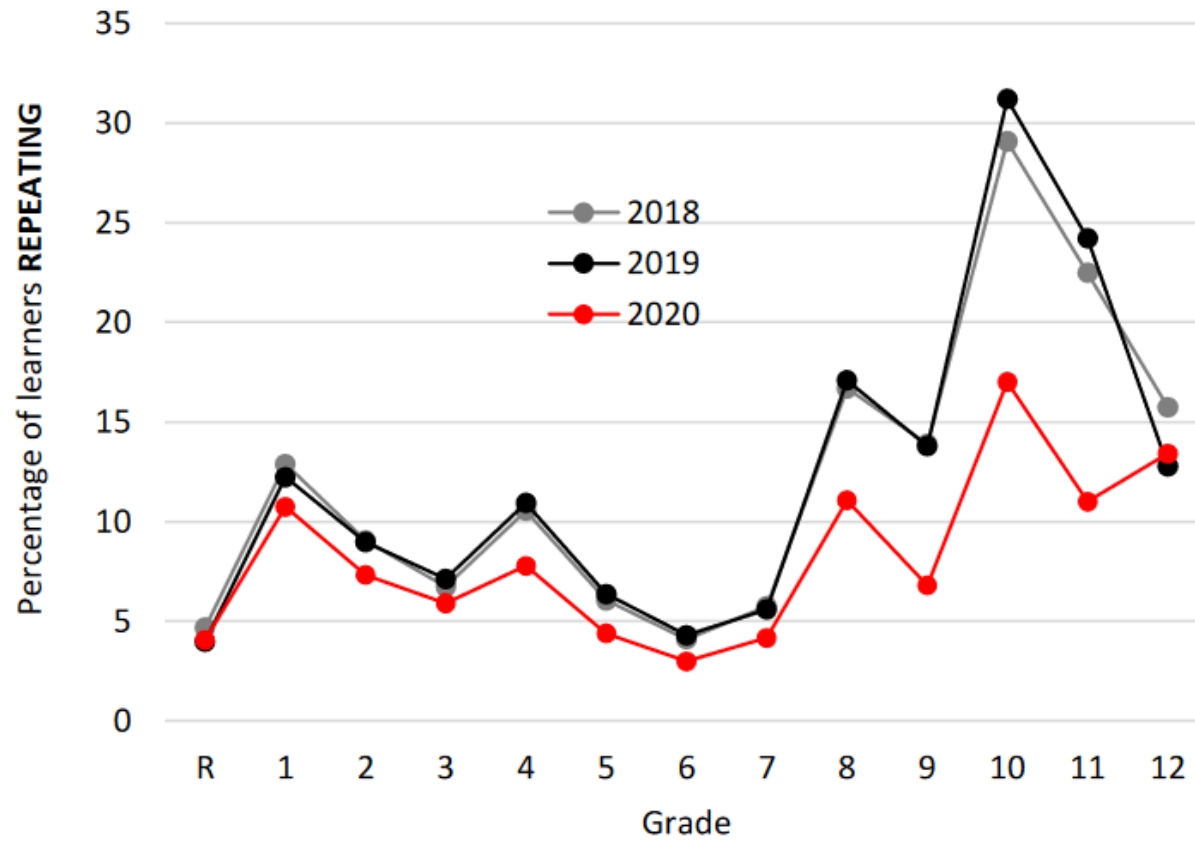
Source: PIRLS 2016 and 2021 datasets

Sample differences in 2016 and 2021

	 Age	 Female	 Class size	 Absent (for test)	 School Resource Index	 Home SES Index	 Student Asset Index
2016	10.65	48%	44.96	3.6%	0.111	0.095	-0.047
2021	10.25	49%	40.83	13.0%	0.078	0.114	0.138
Difference	0.40***	1ppt **	-4.13***	9.4ppt ***	-0.033*	0.019	0.185***

Most differences are likely to result in an underestimation of the COVID-19 impact on learning

Progression and Repetition under COVID



- Repetition rates dropped by about 10 – 50% in 2020
- Secondary schools experienced a larger decline in repetition rates than primary schools
- For the Grade 4's repetition went down from ~11% to ~7.5%

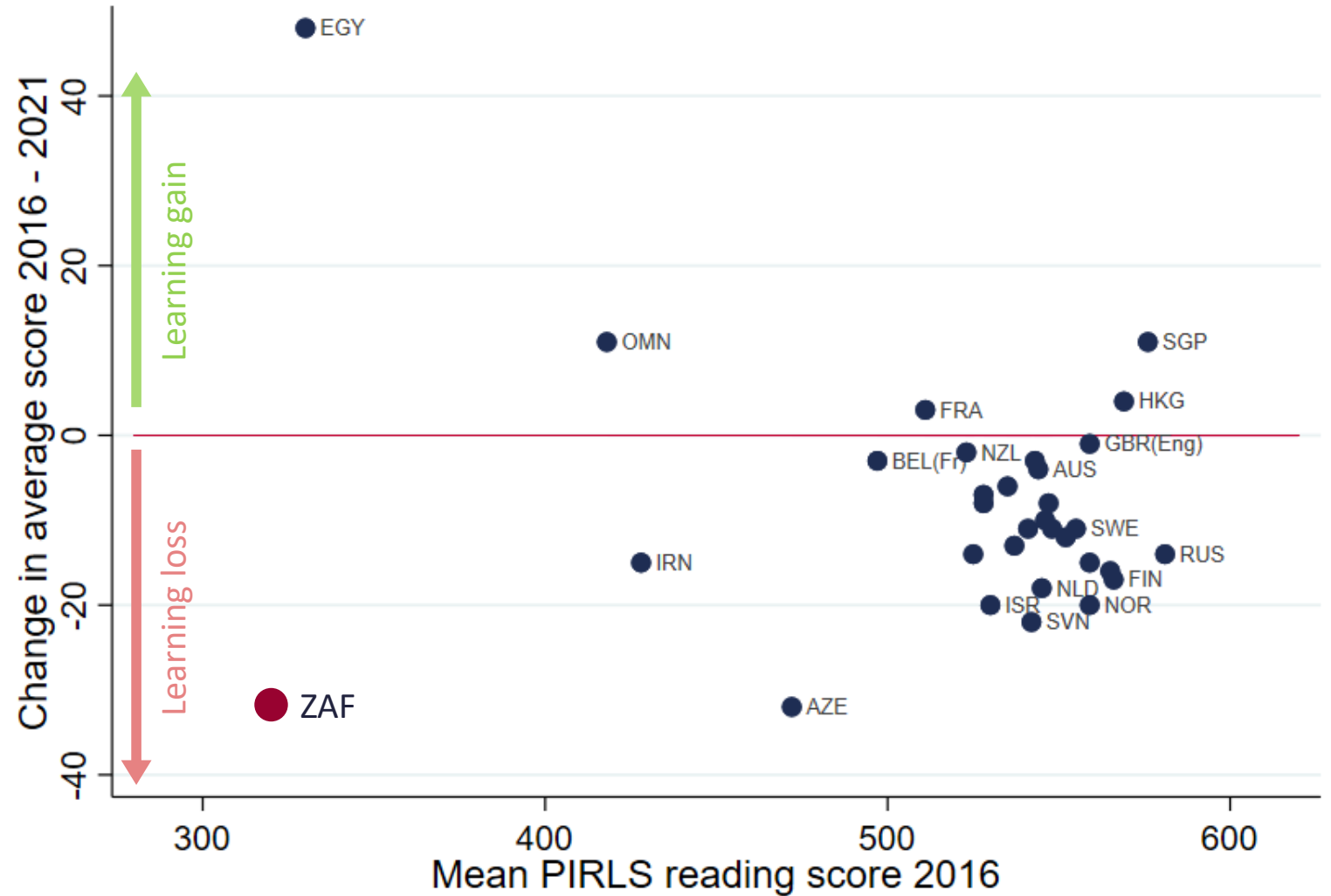
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Mean declines in reading scores by country from 2016 to 2021

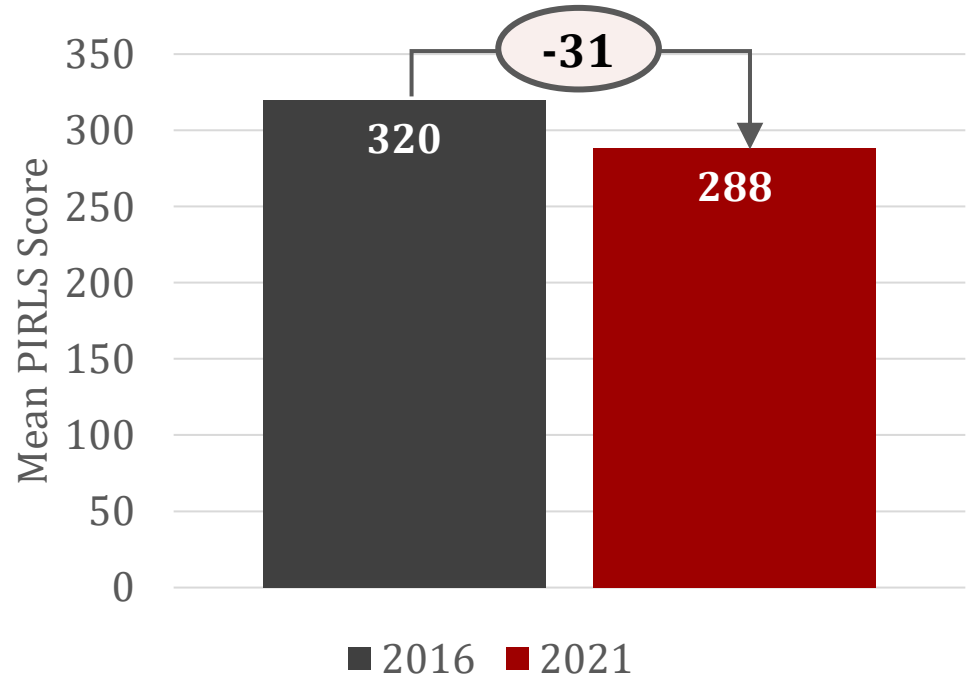


Data source: PIRLS 2016 & 2021 - Mulis et al., N = 32

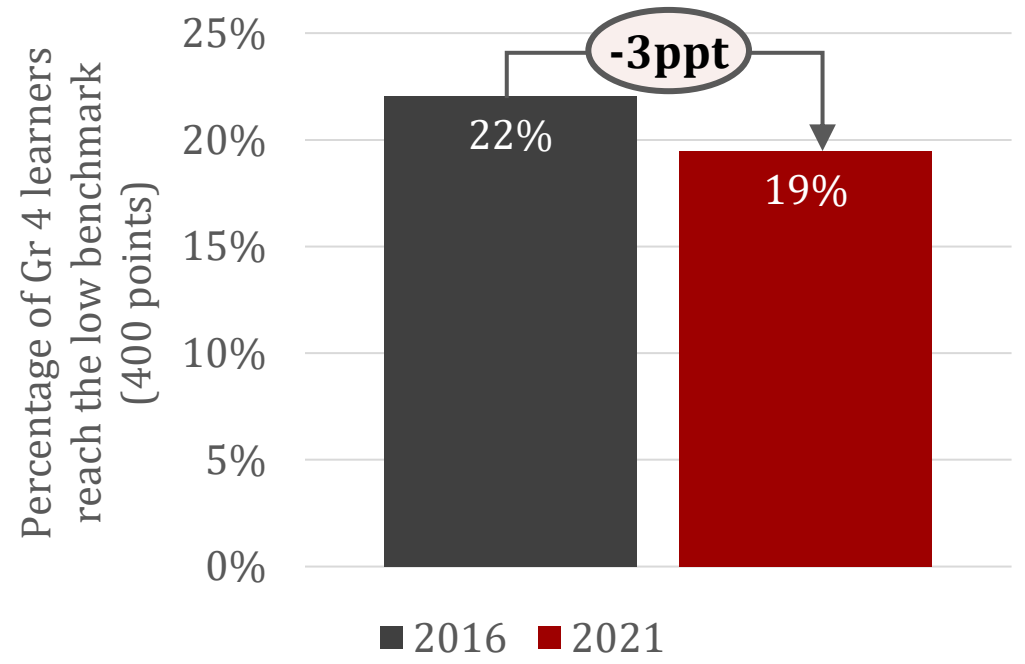
Source: Trends in Reading Achievement 2021, Section 2, available at <https://pirls2021.org/results/trends>. Only included countries where students were assessed at the end of Fourth Grade.

Key PIRLS trends for SA, 2016 and 2021

Mean PIRLS Score

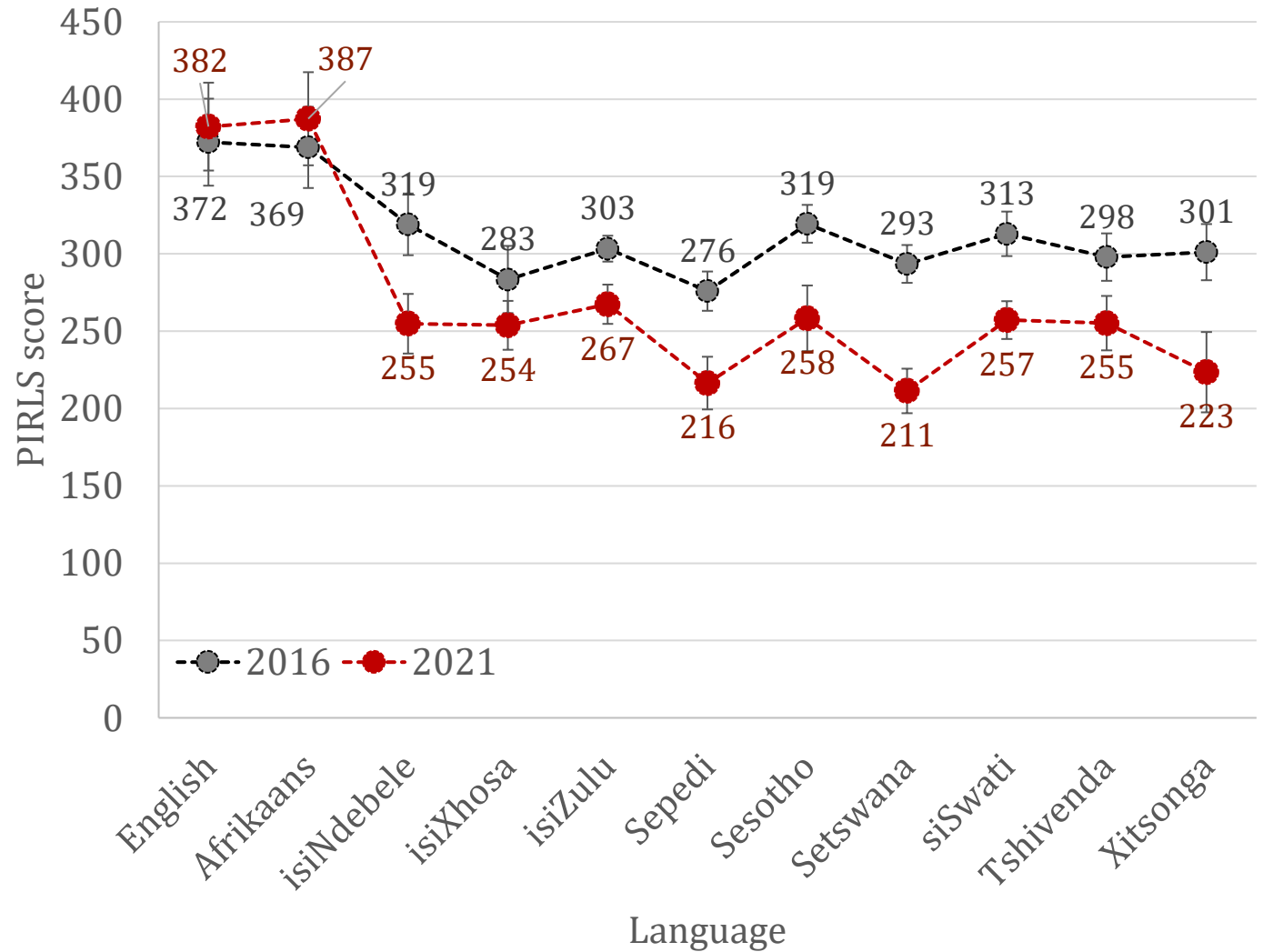


Proportion of kids that can read



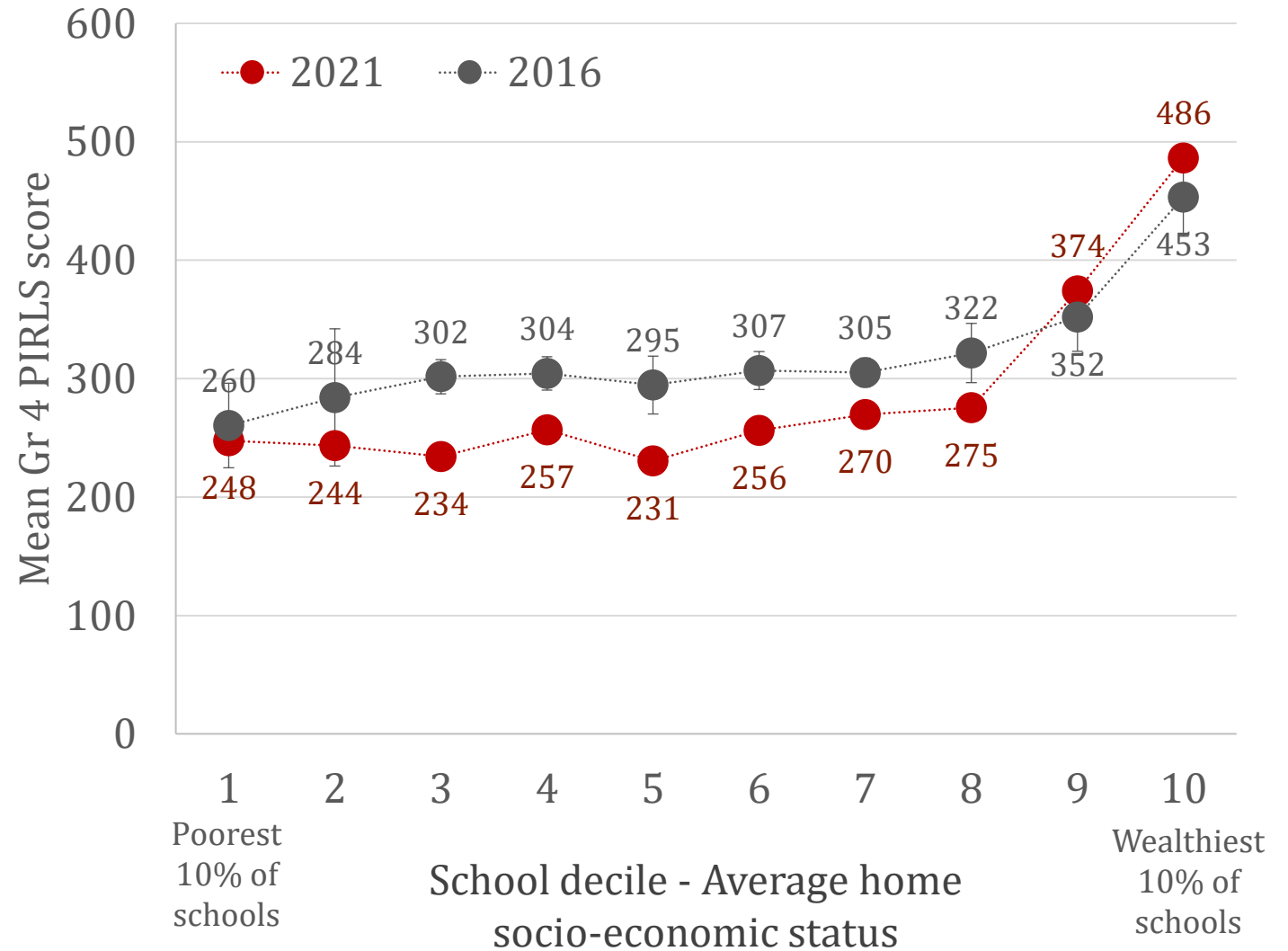
Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones

Grade 4 PIRLS reading scores by test language in 2016 & 2021



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones

Grade 4 PIRLS reading scores by school SES deciles in 2016 & 2021



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones

Inequality increased along three dimensions



Demographic groups

Increase in inequality across language, SES & gender



Within schools

Wider gap between worst and best-performing students within a grade



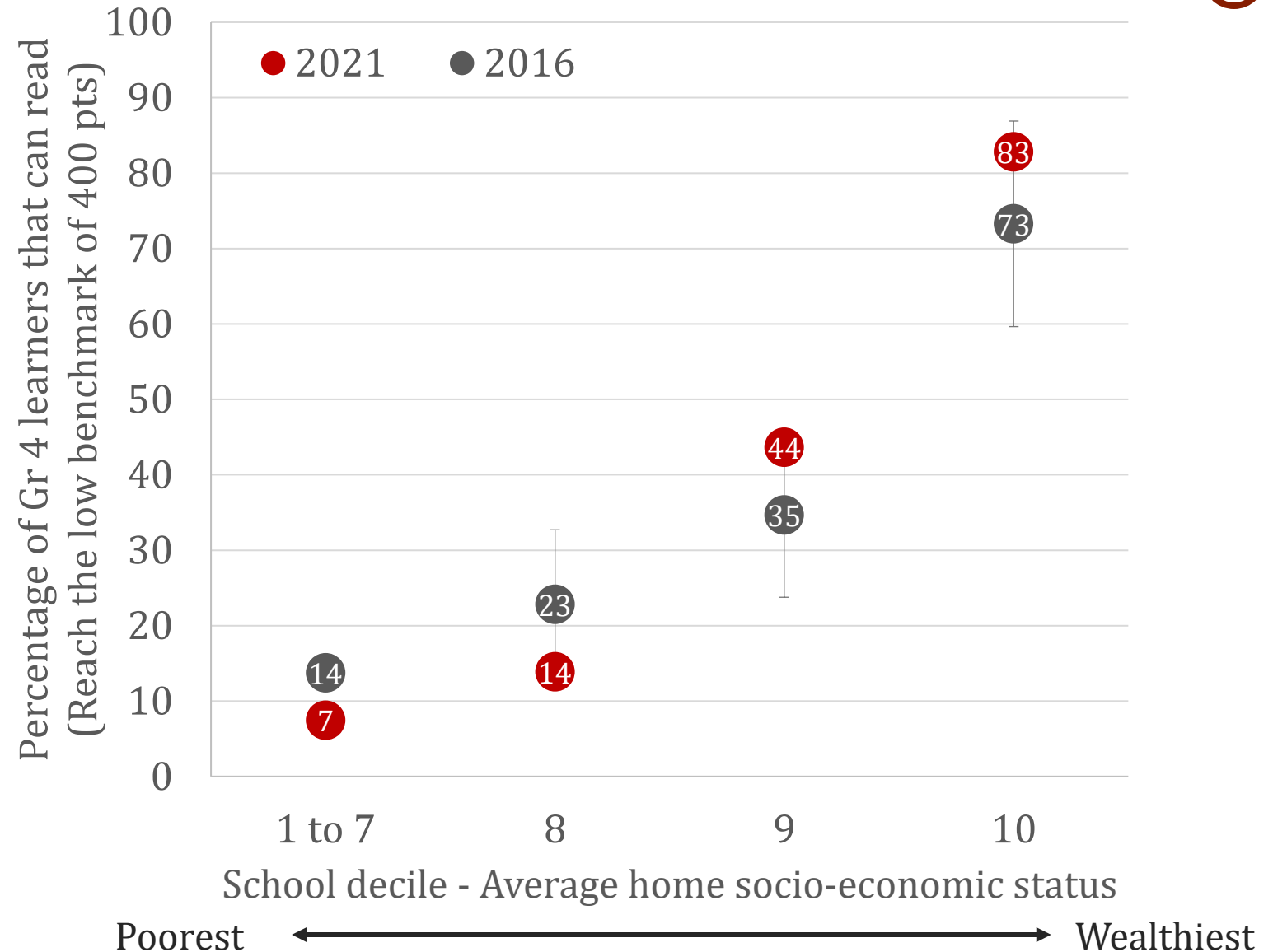
Between schools



Increase in differences in average learning outcomes between schools

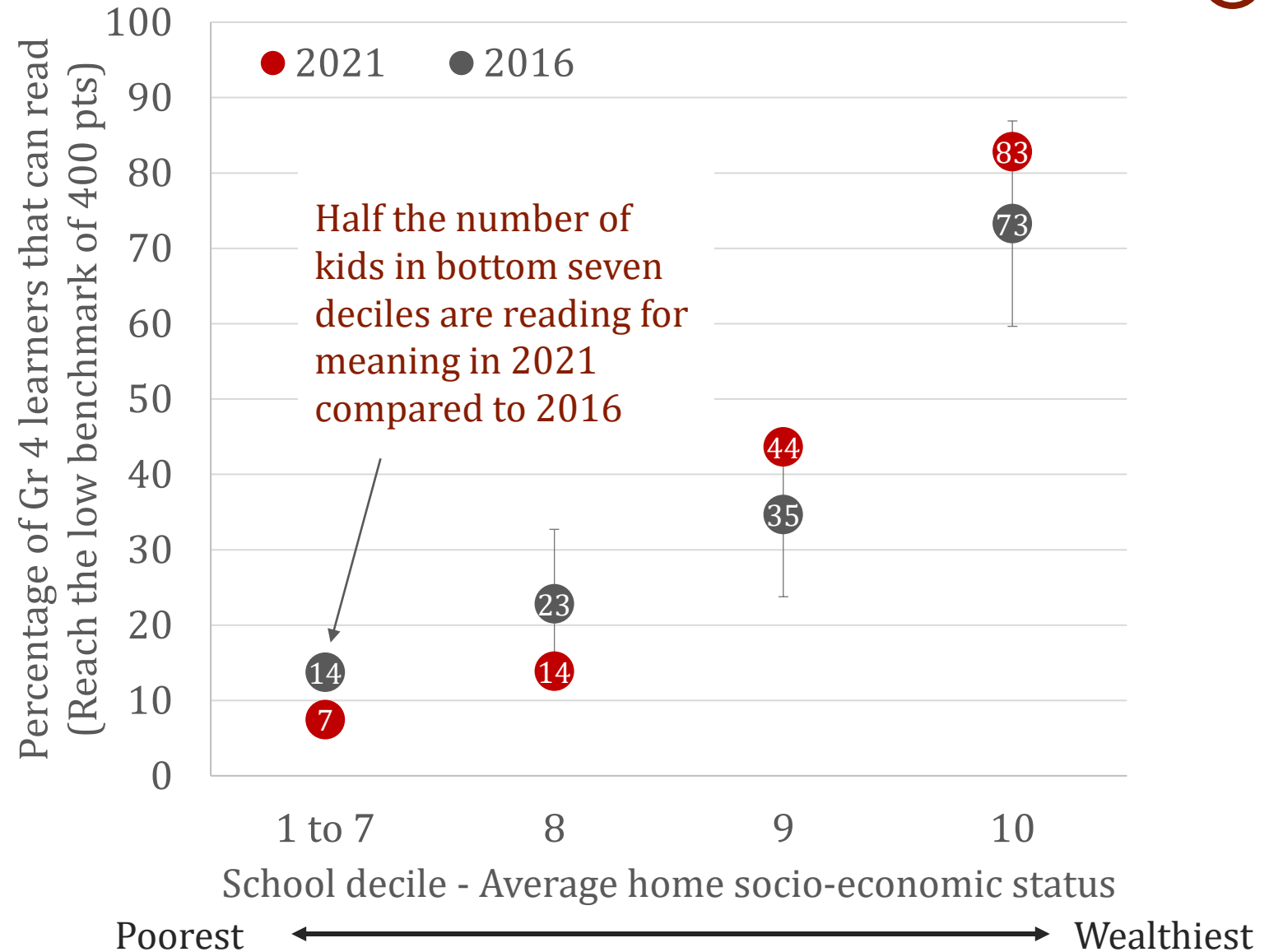
Proportion of Grade 4 learners that can read by school SES in 2016 & 2021

Demographic groups



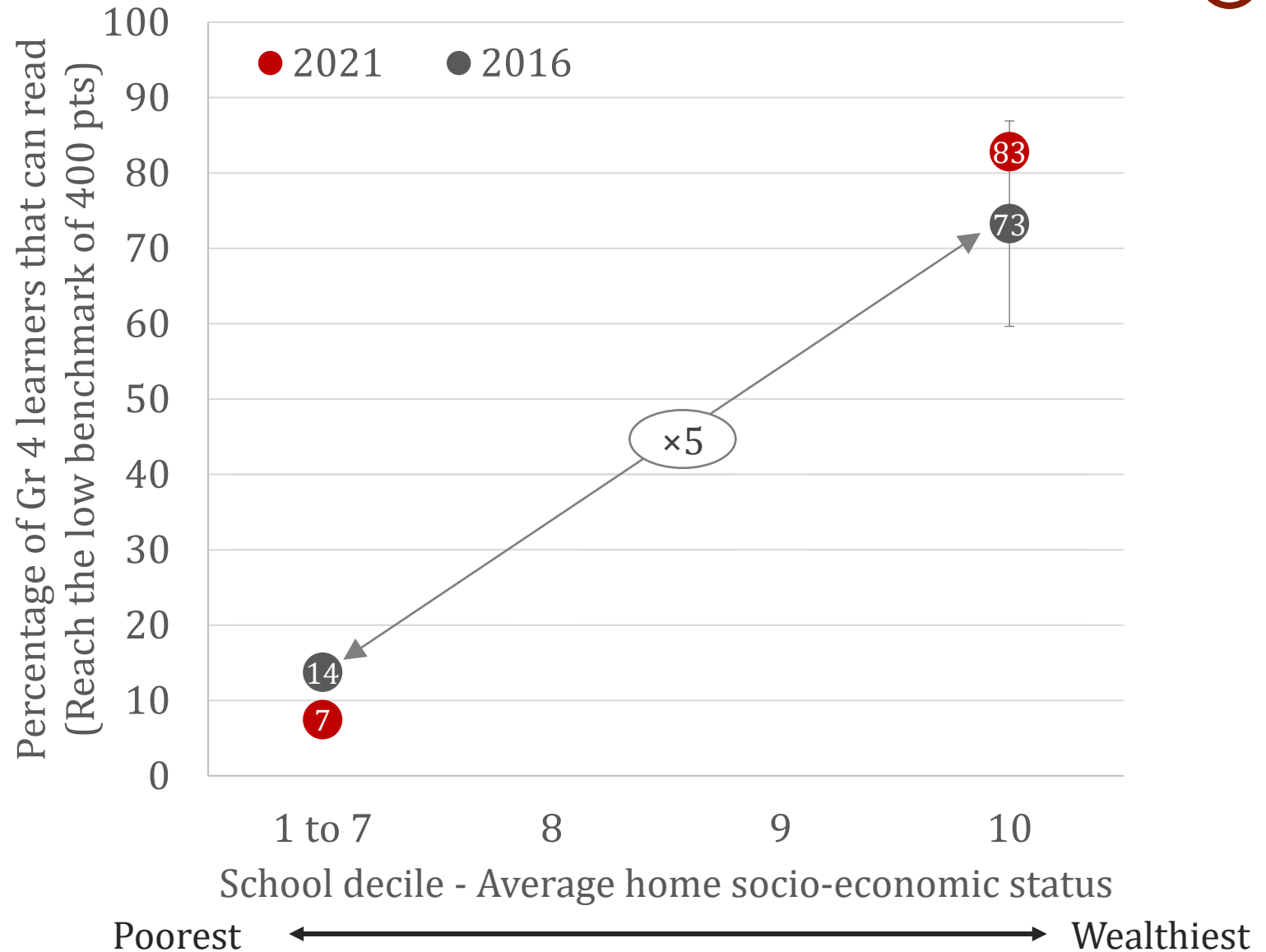
Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones

Proportion of Grade 4 learners that can read by school SES in 2016 & 2021



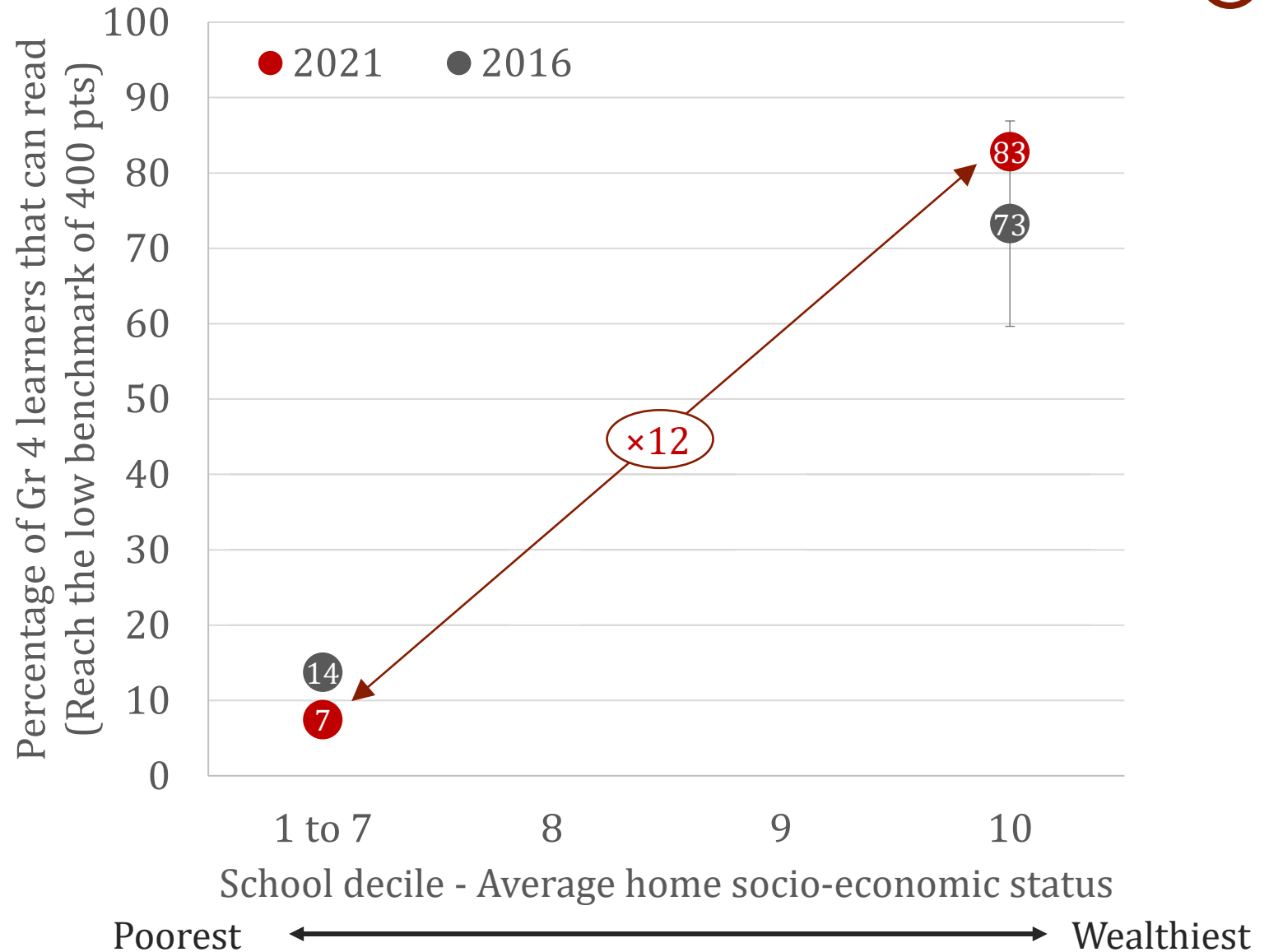
Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones

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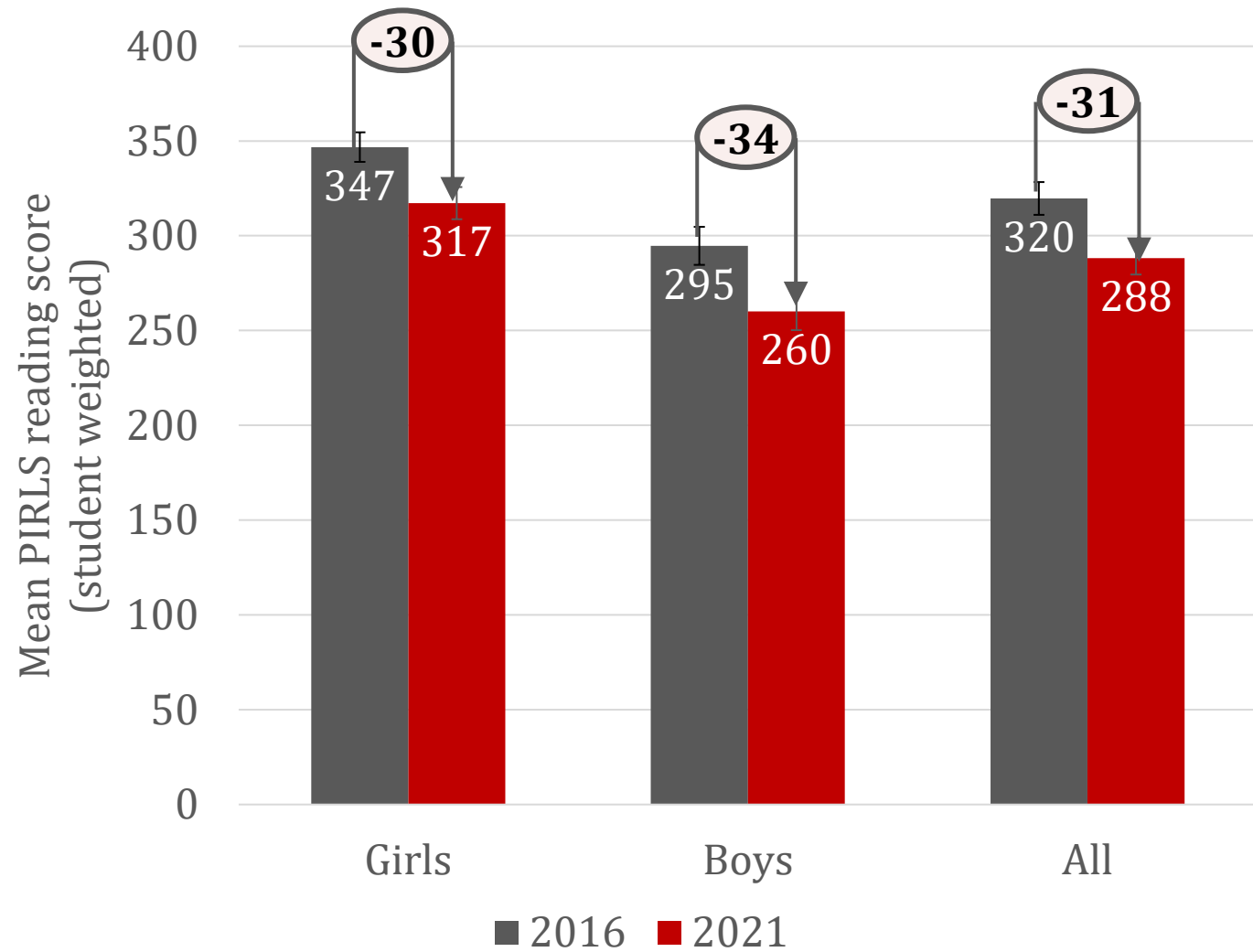
Proportion of Grade 4 learners that can read by school SES in 2016 & 2021



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones



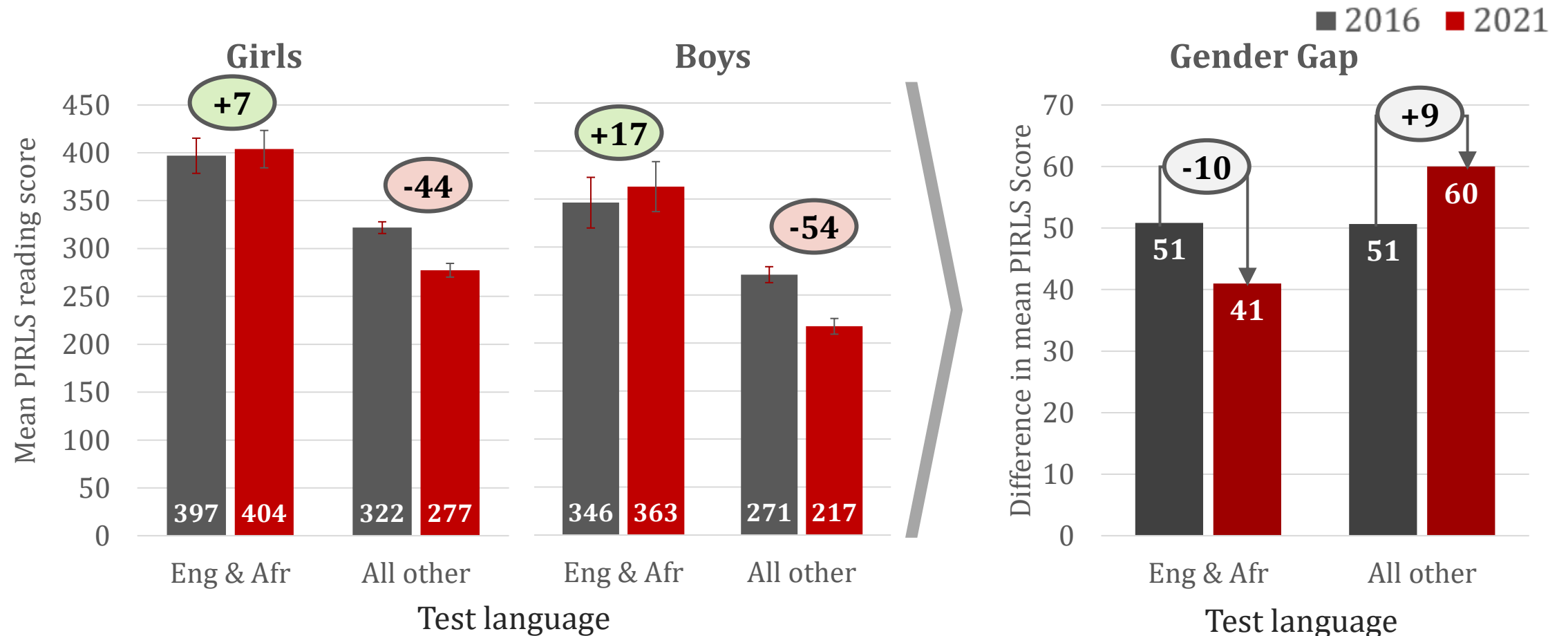
Differences in average reading outcomes in 2016 and 2021 by gender



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones



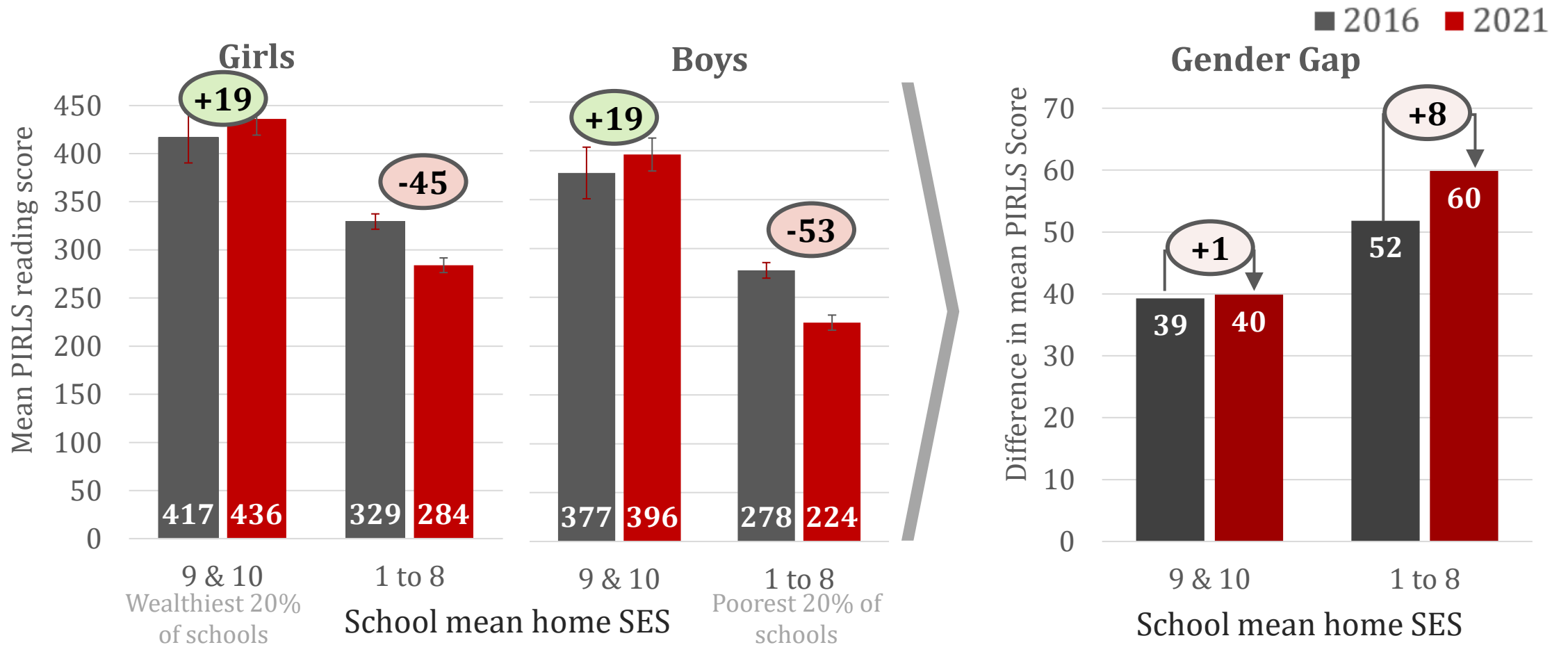
Gender gap for language groups



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones. All other languages includes the 9 Southern Bantu languages that are official language in South Africa: isiZulu, isiNdebele, isiXhosa, Sesotho, siSwati, Tshivenda, Xitsonga, Sepedi and Setswana



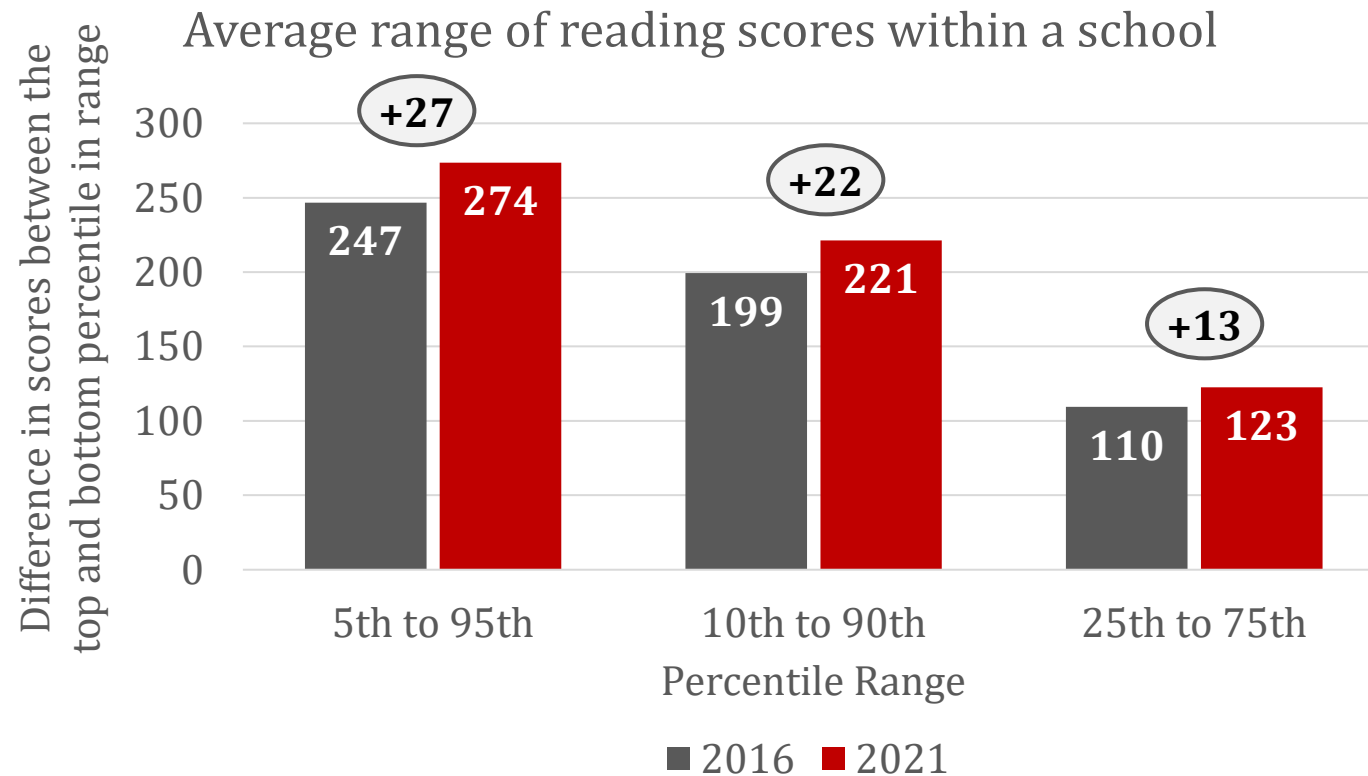
Gender gap by socioeconomic status



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score, standard errors are calculated using jackknifing performed at up to 250 samples schools with 125 zones



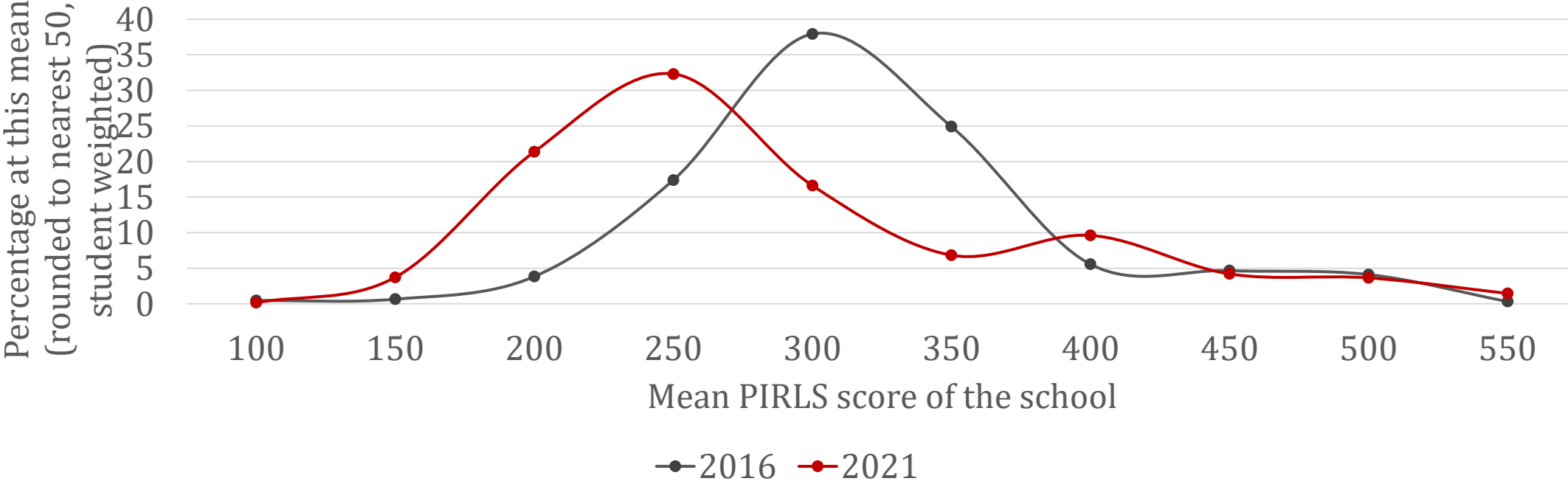
PIRLS reading score ranges within-schools



- Gap between 10th weakest and 10th strongest child in a grade of 100 is ~200 points in 2016
- Gap grew by about 20 points from 2016 to 2021
- Gap in 2016 is equivalent to about 3 yrs 6 mo of learning, which grew to about 3 yrs 11 mo of learning (~4 yrs)



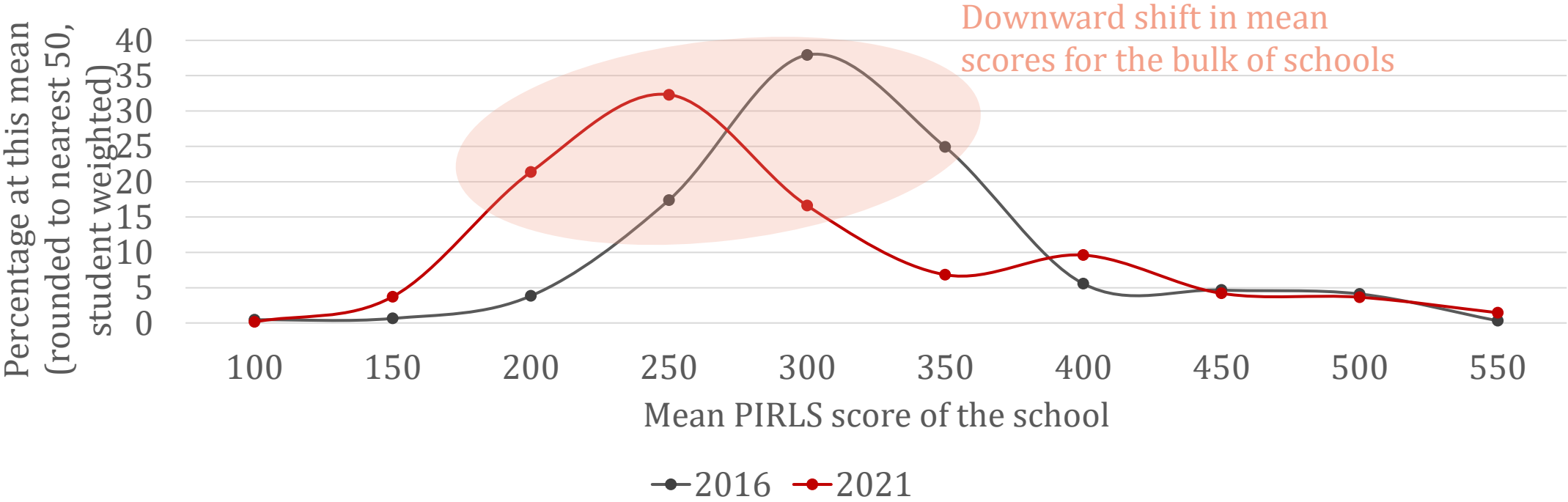
Average differences in learning outcomes between schools have increased



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score



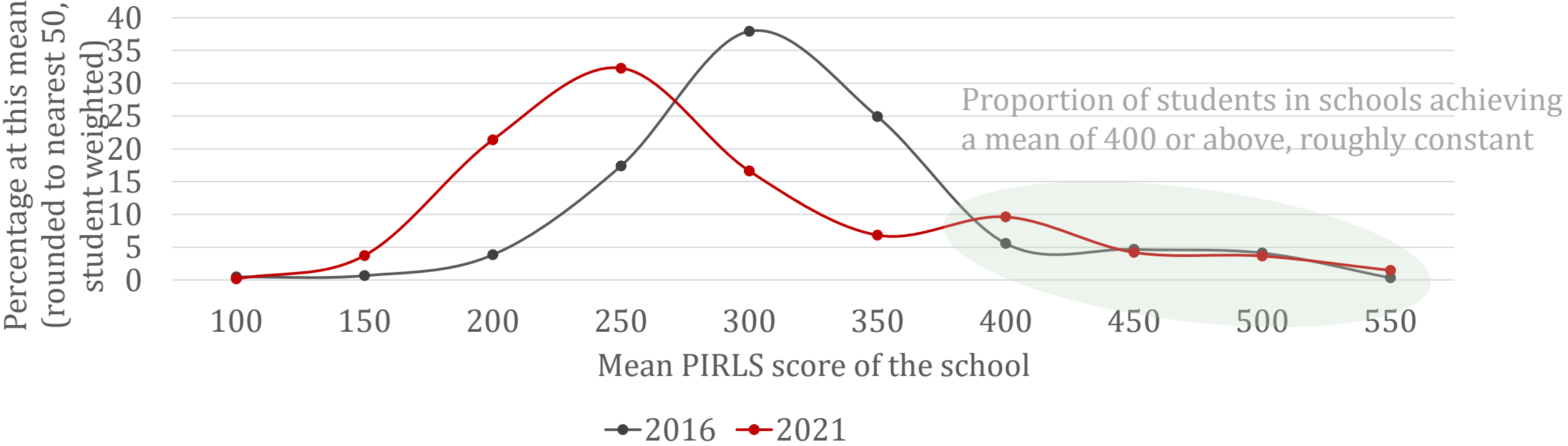
Average differences in learning outcomes between schools have increased



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score



Average differences in learning outcomes between schools have increased



Source: PIRLS 2016 and 2021, own calculations using plausible values for the overall reading score

Average COVID-19 effect with controls

VARIABLES	(1) PIRLS score	(2) PIRLS score	(3) PIRLS score	(4) PIRLS score	(5) PIRLS score	(6) PIRLS score	(7) PIRLS score	(8) PIRLS score
COVID	-31.414*** (6.043)	-29.330*** (6.089)	-37.862*** (5.871)	-36.601*** (5.746)	-43.314*** (4.296)	-40.878*** (4.814)	-38.973*** (4.876)	-36.779*** (5.134)
Language controls		X	X	X	X	X	X	X
Age			X	X	X	X	X	X
Age ²			X	X	X	X	X	X
Female				X	X	X	X	X
Student - Asset Index					X	X	X	X
School - Home SES Index					X	X	X	X
Class absenteeism						X	X	X
Speak Test Language							X	X
School - Resourcing Index								X
Observations	25,232	25,232	25,054	25,051	19,182	19,182	18,337	12,065

Standard errors in parentheses ; *** p<0.01, ** p<0.05, * p<0.1

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Summary

- Large decline in average reading ability (probable underestimate)
- Increases in inequality along a number of dimensions
 - Between language groups, between poorer and richer students, gender and language/SES interaction
 - Within-school heterogeneity
 - Between school differences
- Critical to implement catch-up efforts focussing on the most vulnerable groups and where these are in place, strengthened
- Absenteeism was higher under COVID. If it persists, this will hinder catch-up efforts and serve to maintain an inequitable situation

Questions
&
Comments

