

Education and the poor: A stocktaking

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Argument

Labour market outcomes (employment and wages) depend on educational background

Failure of the school system is central to the failure to accelerate growth, to increase social mobility and to reduce income inequality

- This failure is evident in weak performance on international tests and in low learning trajectories

Major **educational disparities** coincide with racial and class cleavages

Not resources, but **what happens in classrooms** is the most important factor in education quality

BACKGROUND

Example of a (primary school?) question from a century ago

**A man buys $2\frac{1}{2}$ gross of bicycles at £27:16:7½
each. How much does he have to pay?**

(Praktiese Onderwijs: Lesing van de heer J. Van Schalkwijk, *Het Volksblad*, Vrijdag 12 Julie 1917)

For many, maths learning stops before simple subtraction is mastered...

Only 24% of South African **Grade 5** children can answer this Grade 2 level question

Pam has R40.

She spends R28.


How much money does she have left?

Is language perhaps the barrier?

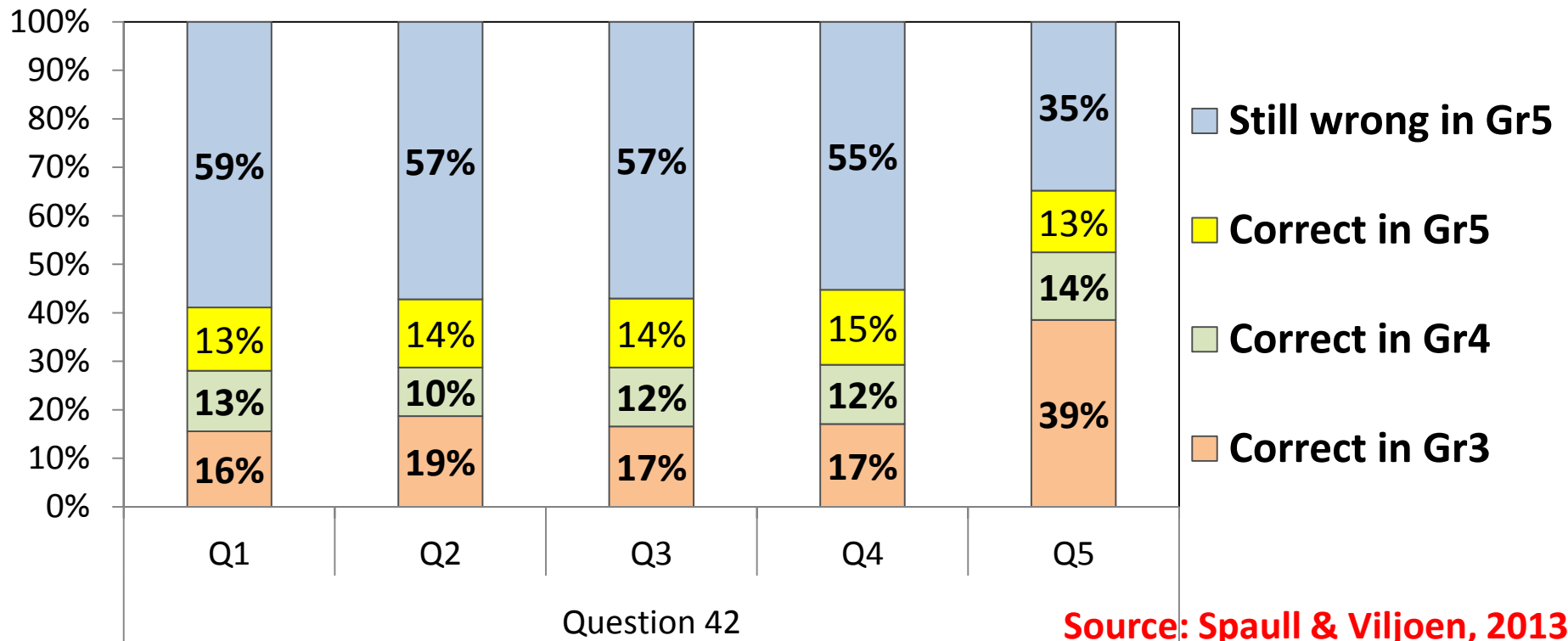
Then how can one explain that only 14% of **Grade 5s** could answer this Grade 3-level question?

$$\begin{array}{r} 105 \\ - 28 \\ \hline \hline \end{array}$$

NSES question 42

$24 \div 3 =$ _____ 

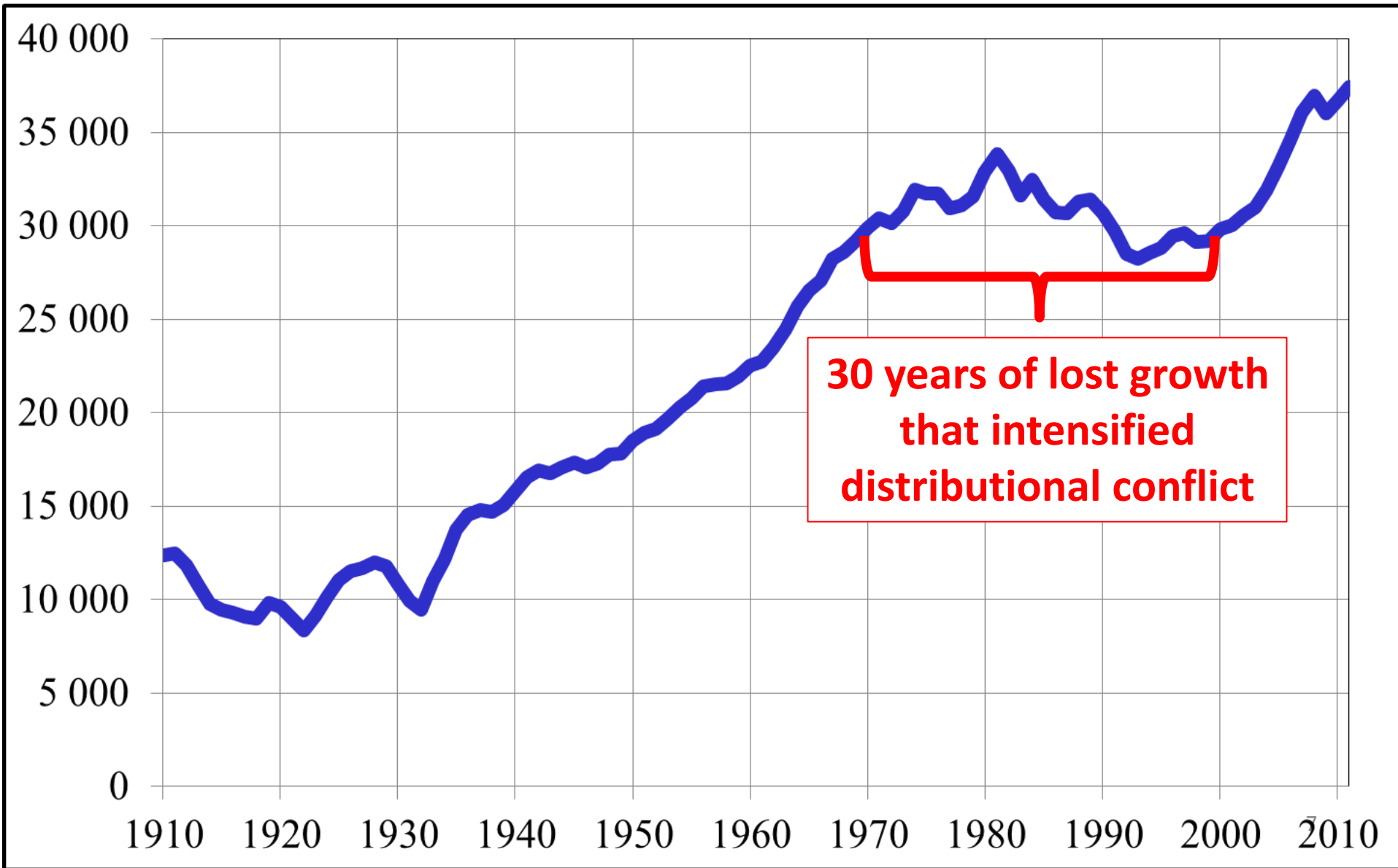
Grade 3 maths curriculum: “Can perform calculations using appropriate symbols to solve problems involving: division of at least 2-digit by 1-digit numbers”



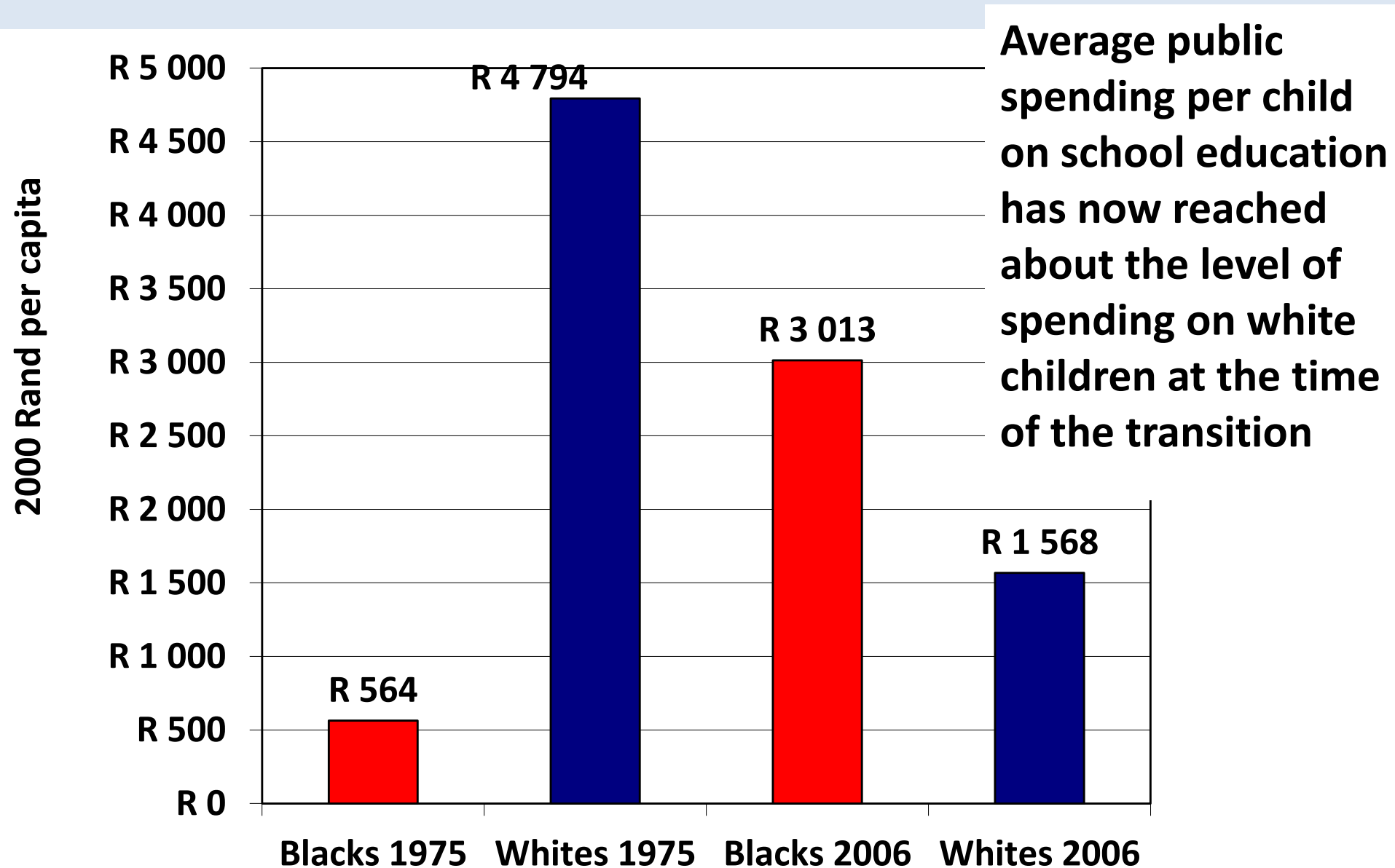
Source: Spaul & Viljoen, 2013

GDP per capita 1910-2011

(in 2005 Rand values)



Social spending per capita, 1975 to 2006




SA's dualistic school system and labour market

High productivity jobs & incomes


- ±10-15% of labour force – mainly professional, managerial & skilled jobs
- Requires degree, good quality matric, or good vocational skills
- Historically mainly whites

High quality schools

- ±10-15 % of schools, mainly former (though no longer) white
- Produce strong cognitive skills
- Teachers qualified, schools functional, good assessment, parent involvement

- 
- Vocational training
 - Affirmative action

- 
- Some talented, motivated or lucky students manage the transition

- 
- Big demand for good schools, despite fees
 - A few schools cross the divide

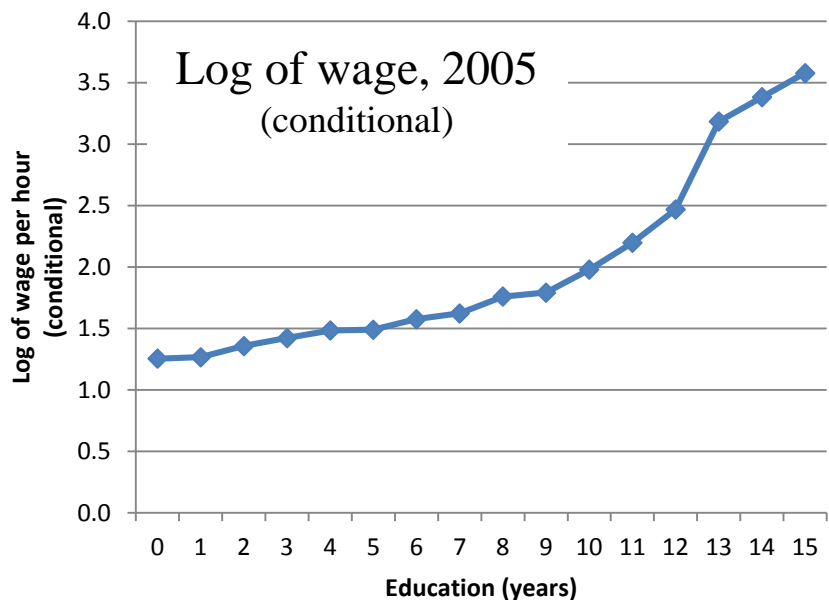
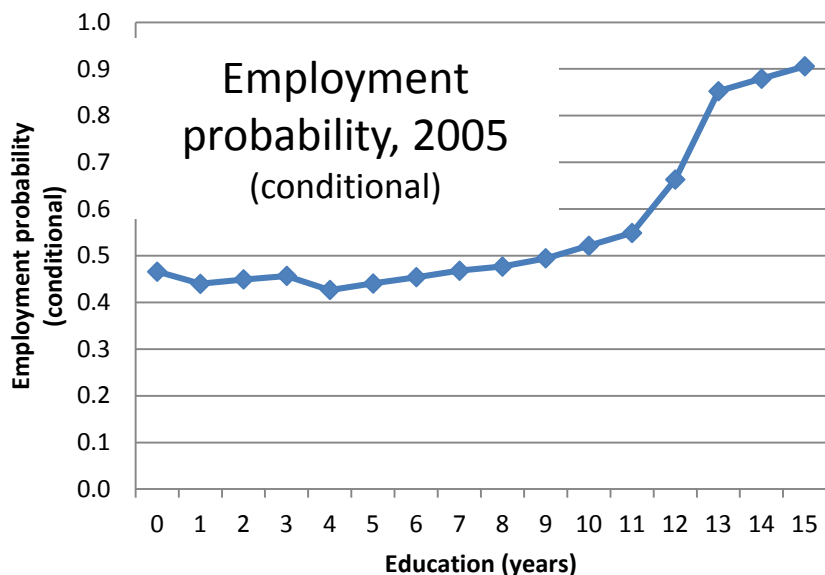
Low productivity jobs & incomes

- Often manual or low skill jobs
- Limited or low quality education

Low quality schools

- Mainly former black (DET) schools
- Very weak cognitive skills
- Teachers less qualified, de-motivated, schools dysfunctional, assessment weak, little parental involvement, strong unions

Education's influence on labour market



- **Skills shortage** at top end generates a wage premium:
 - **A graduate earns 3½ times as much as a matriculant** (conditional upon race, gender, experience)
- **Oversupply of unskilled workers** depresses their wages
- Skills premium and distribution of educational attainment are **central to SA income inequality**

Wage inequality & income distribution

Gini for wages amongst the employed is steady at ± 0.60

Other factors that could affect distribution:

Household size – worsens Gini

Household composition – worsens Gini

Unemployment – worsens Gini

Dividends, property income – worsen Gini

Transfers – slightly improve Gini (reduces poverty more)

Thus wage inequality sets a floor below the Gini

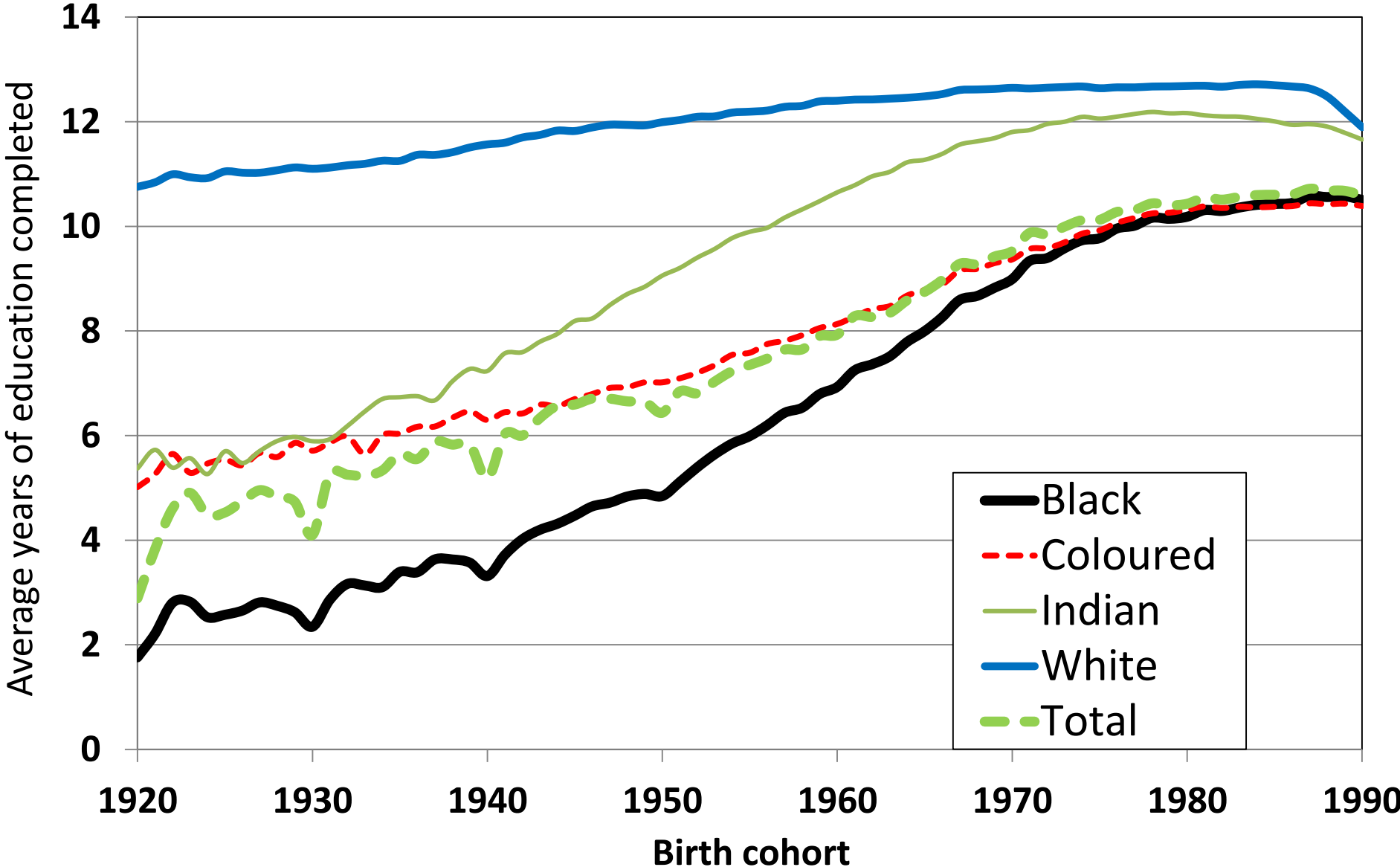
Income distribution will not substantially improve before wage inequality is reduced through:

- Changes in educational attainment and quality, and
- Changes in returns to education

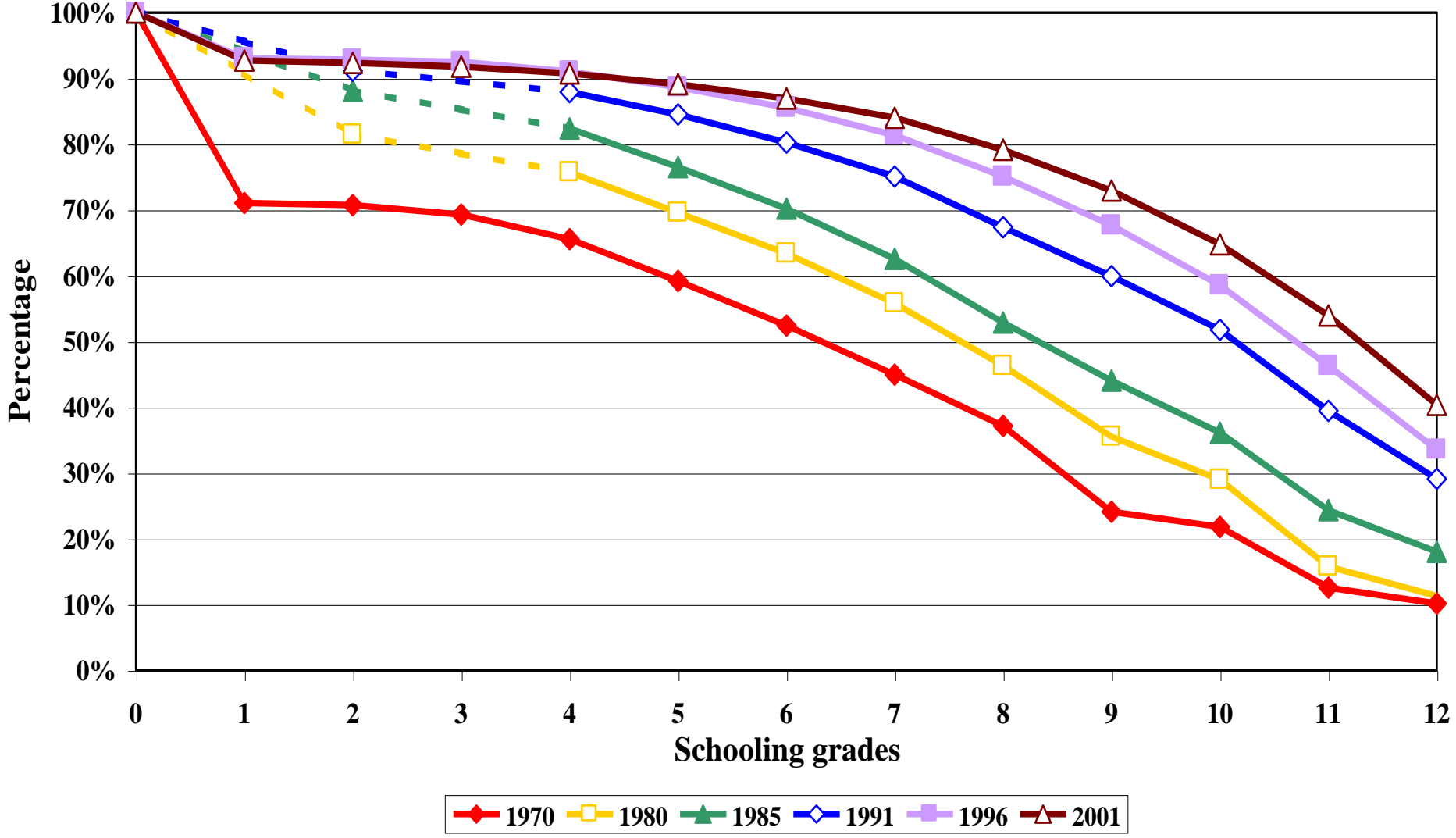
**EDUCATIONAL ATTAINMENT INCREASED
GREATLY, EVEN DURING APARTHEID**

Average years of education by race and birth cohort, 2011

(Source: Own calculations from Census 2011)



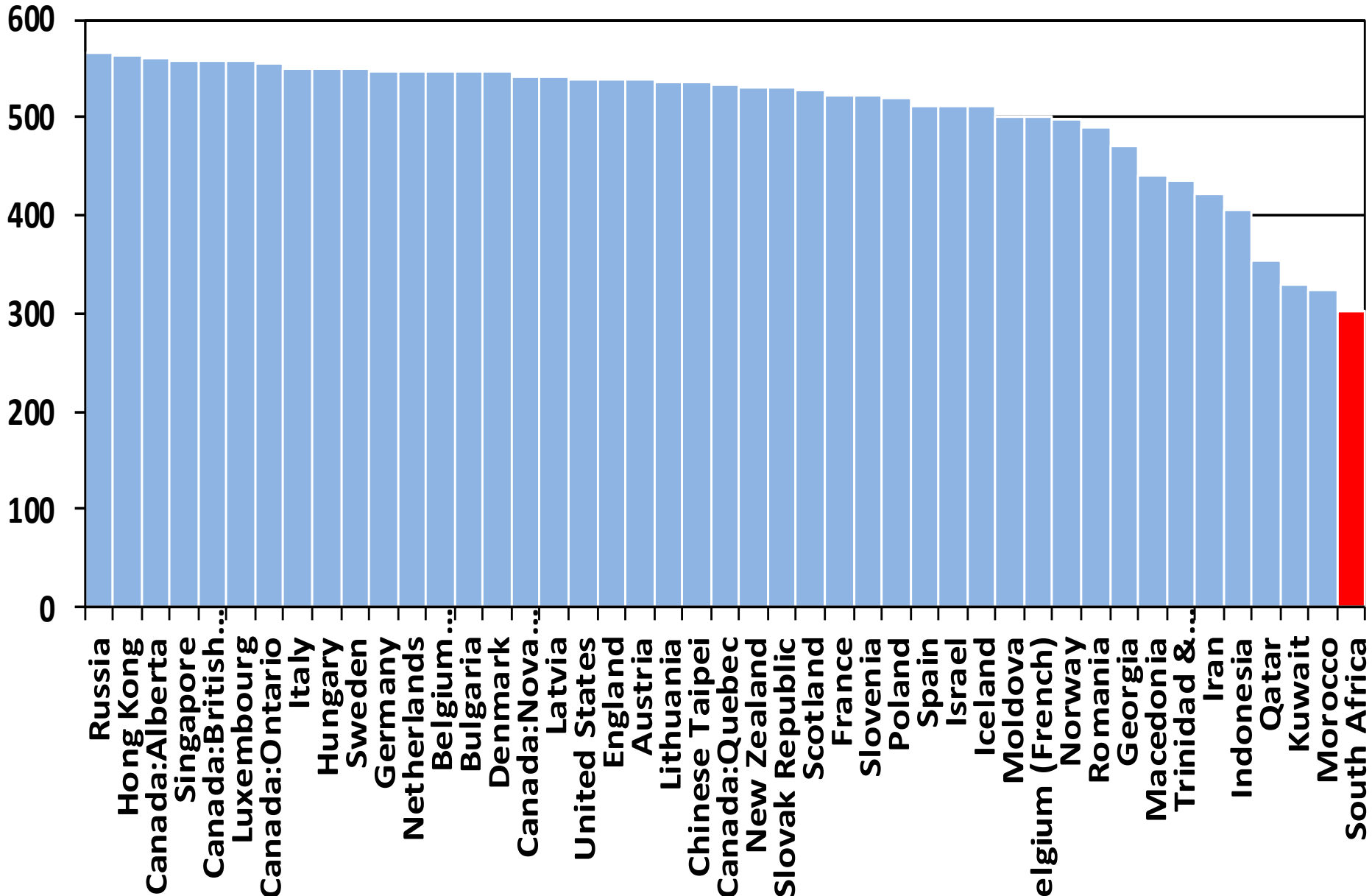
Attainment profiles of 21-25 year olds by census year



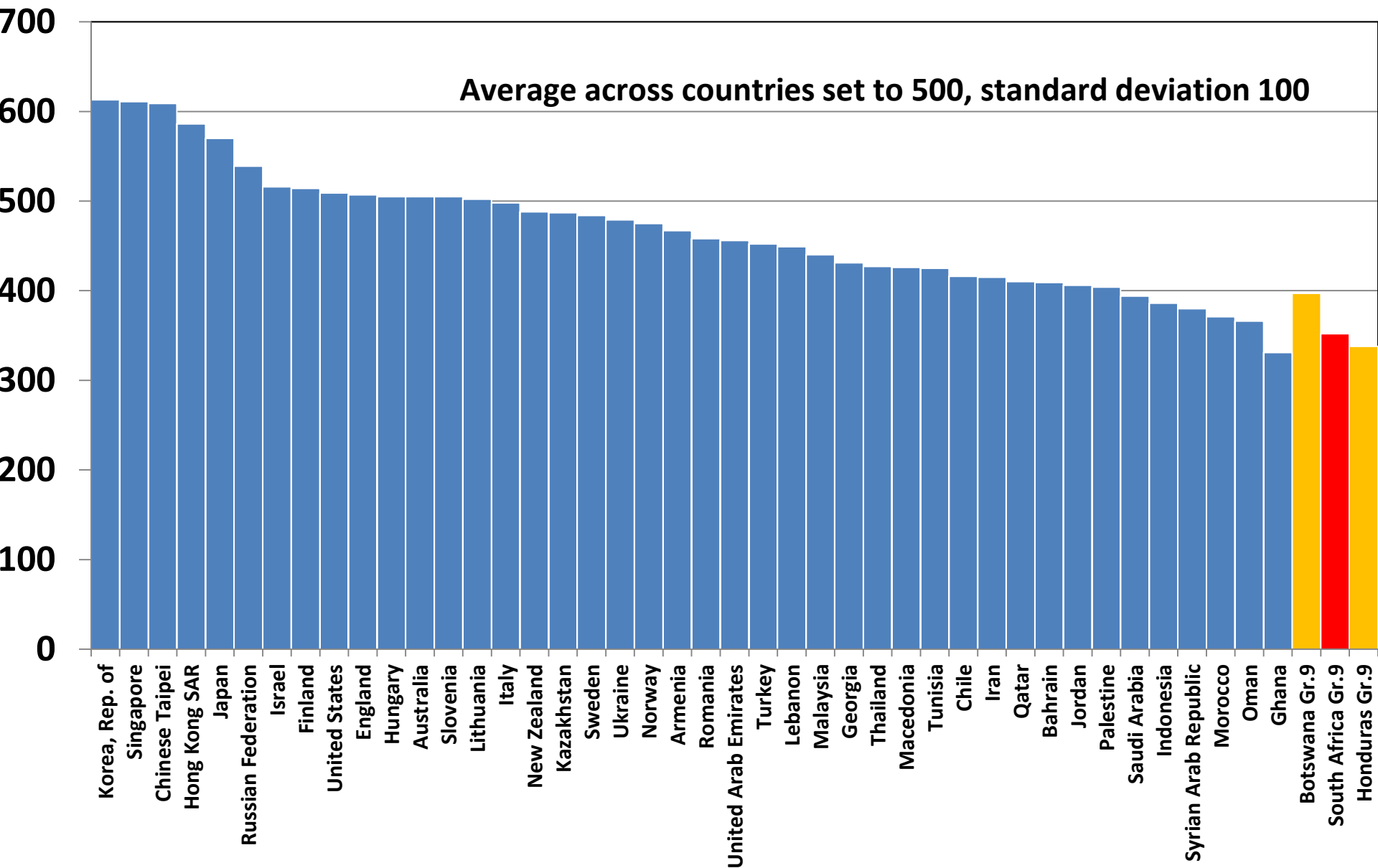
Source: Own calculations based on Census data for various years

**SA PERFORMS POORLY IN INTERNATIONAL
EDUCATIONAL ASSESSMENTS**

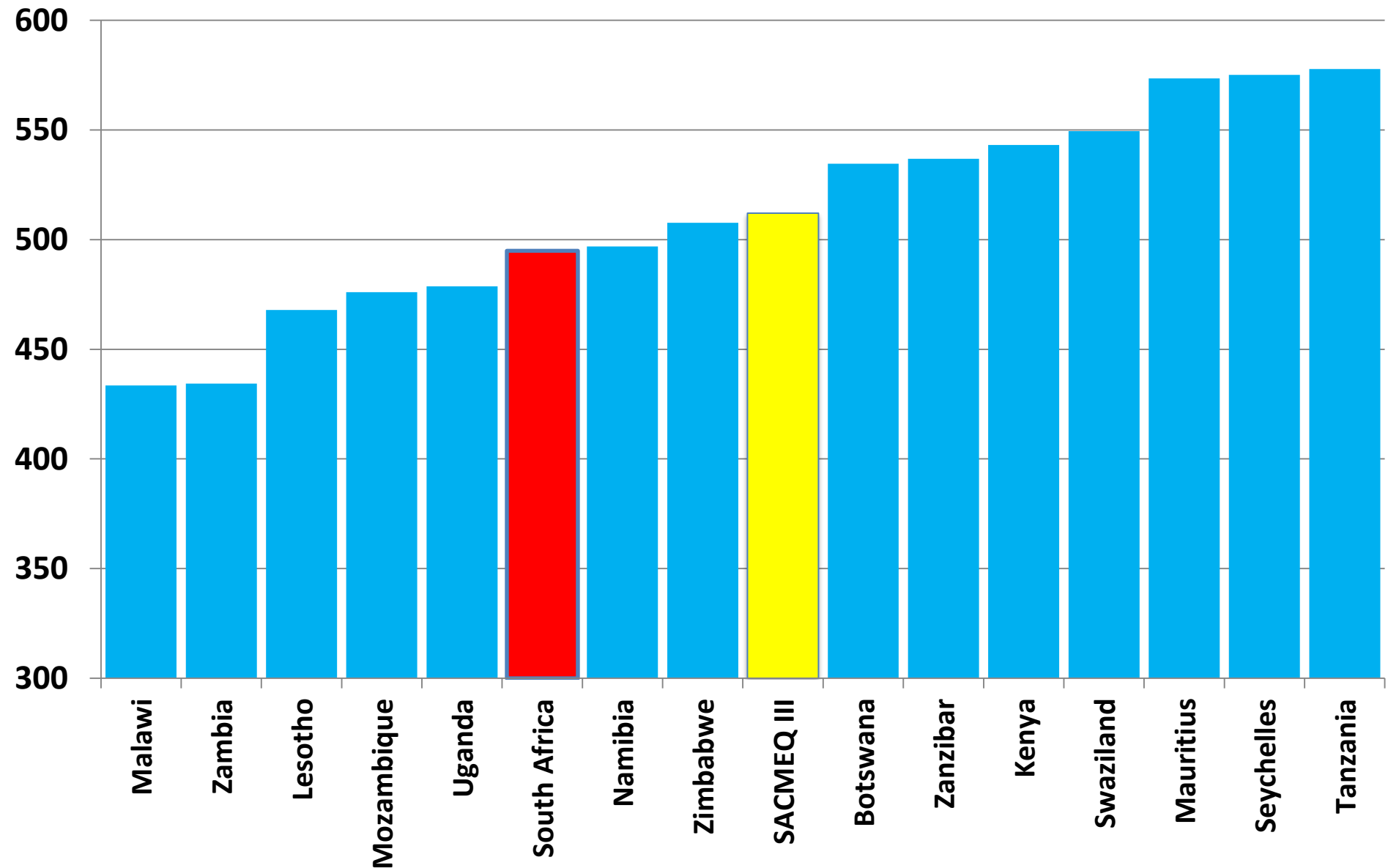
Reading performance in Gr 4 compared to developed and middle income countries in PIRLS (SA tested in Gr5)



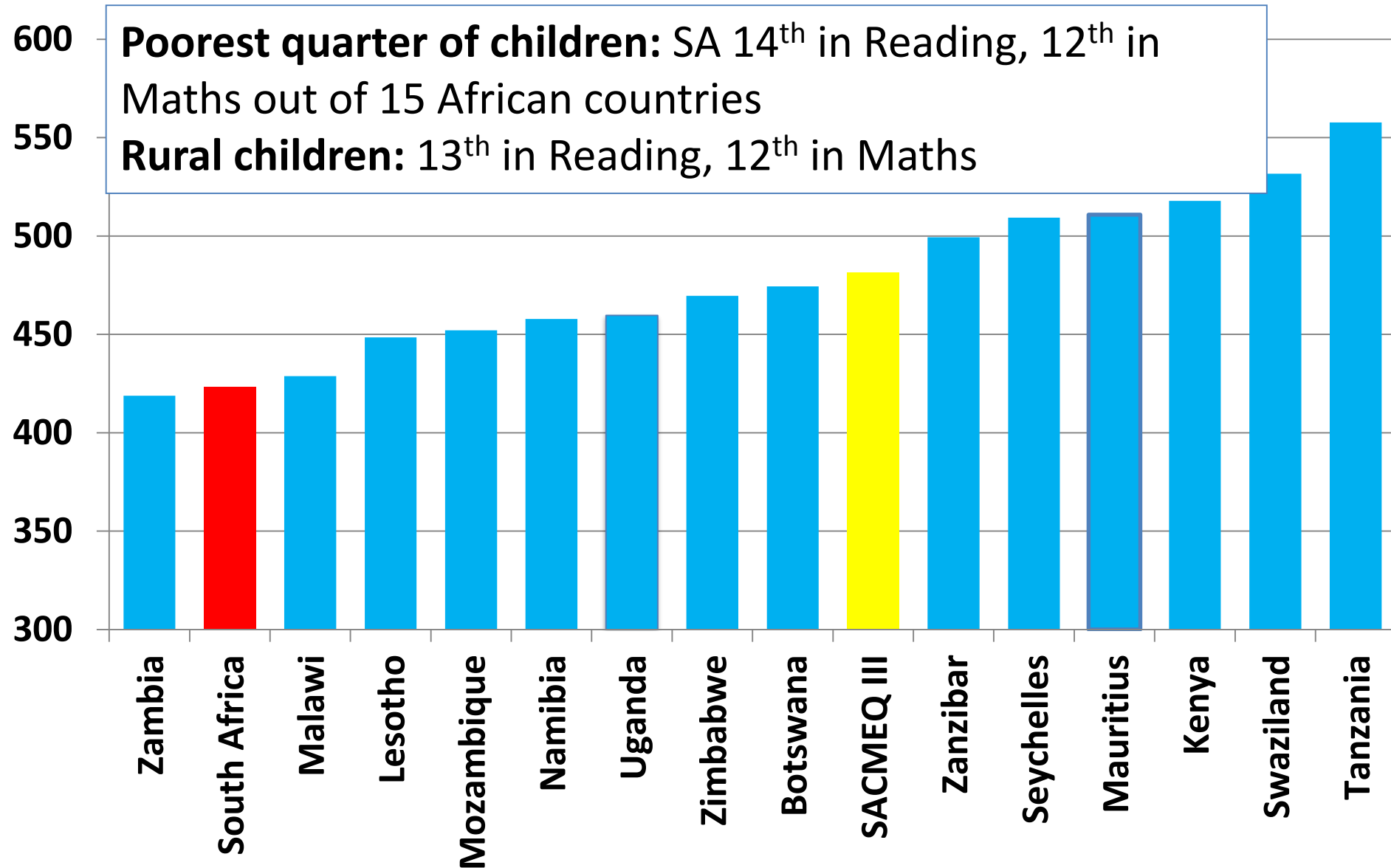
Maths performance in Gr8 compared to developed and middle income countries TIMSS 2011 (SA tested in Gr9)



Reading performance in Gr6 compared to southern and eastern African countries in SACMEQ III

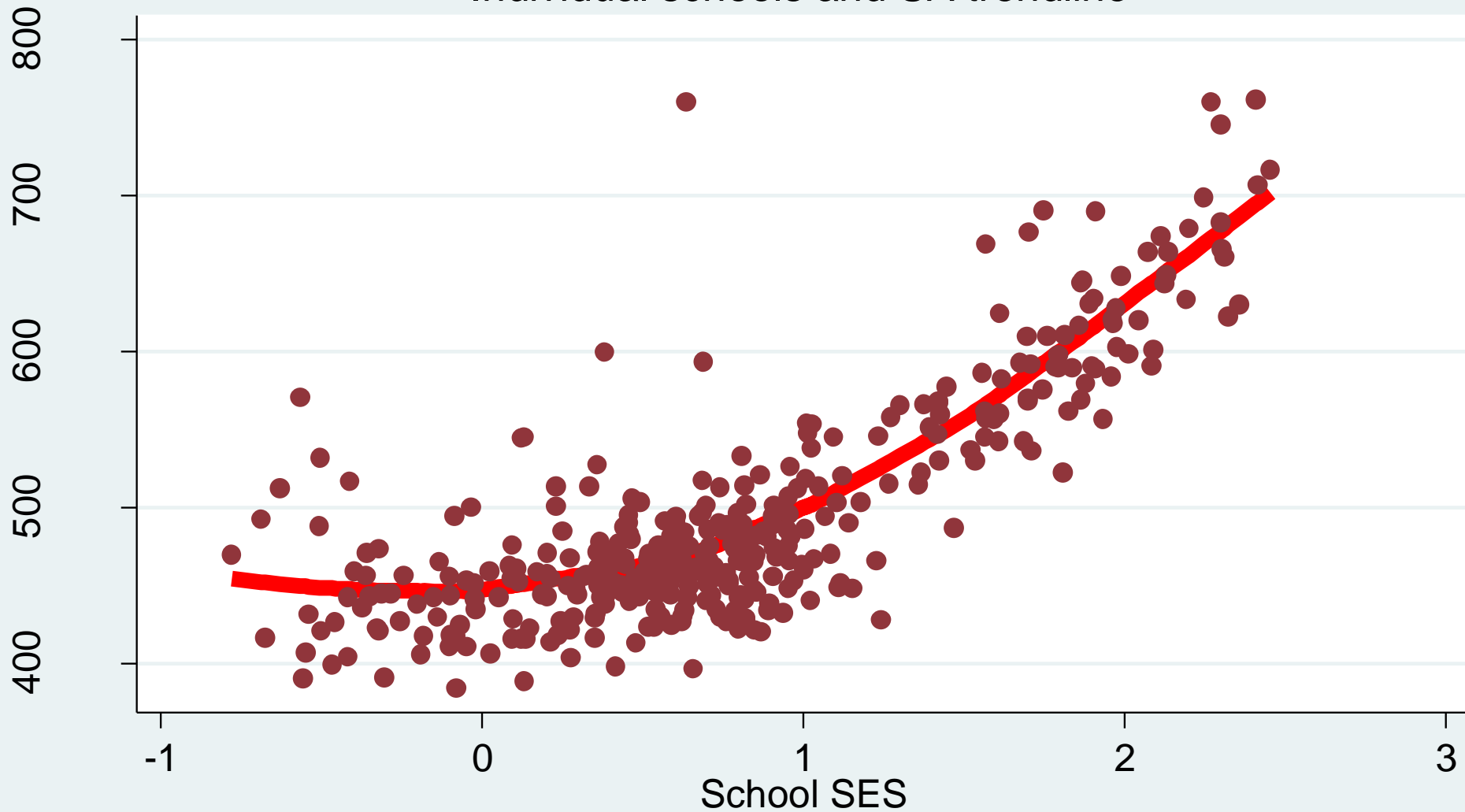


Reading score for poorest quarter (SACMEQ III)



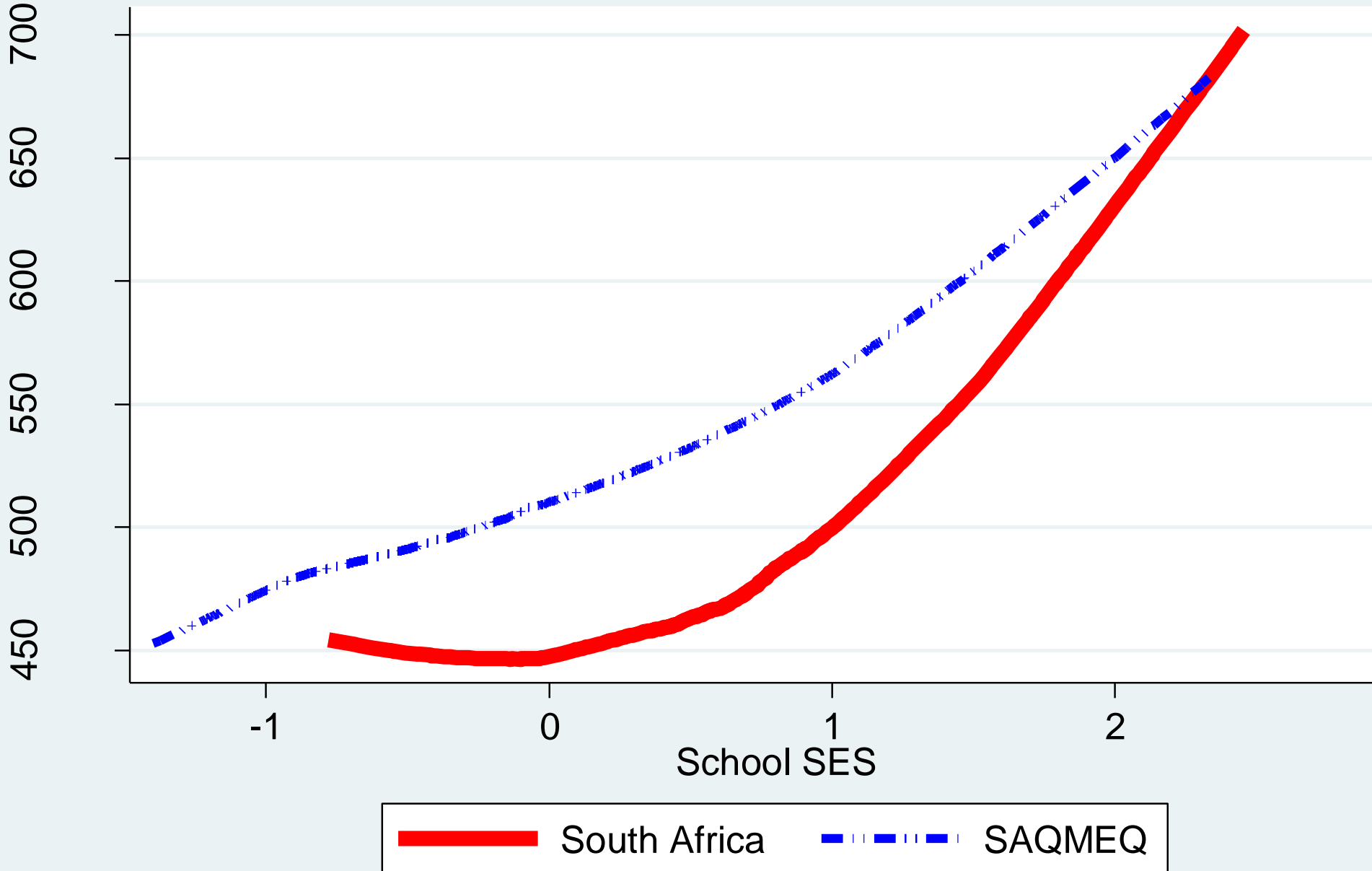
Maths Score and School SES

Individual schools and SA trendline



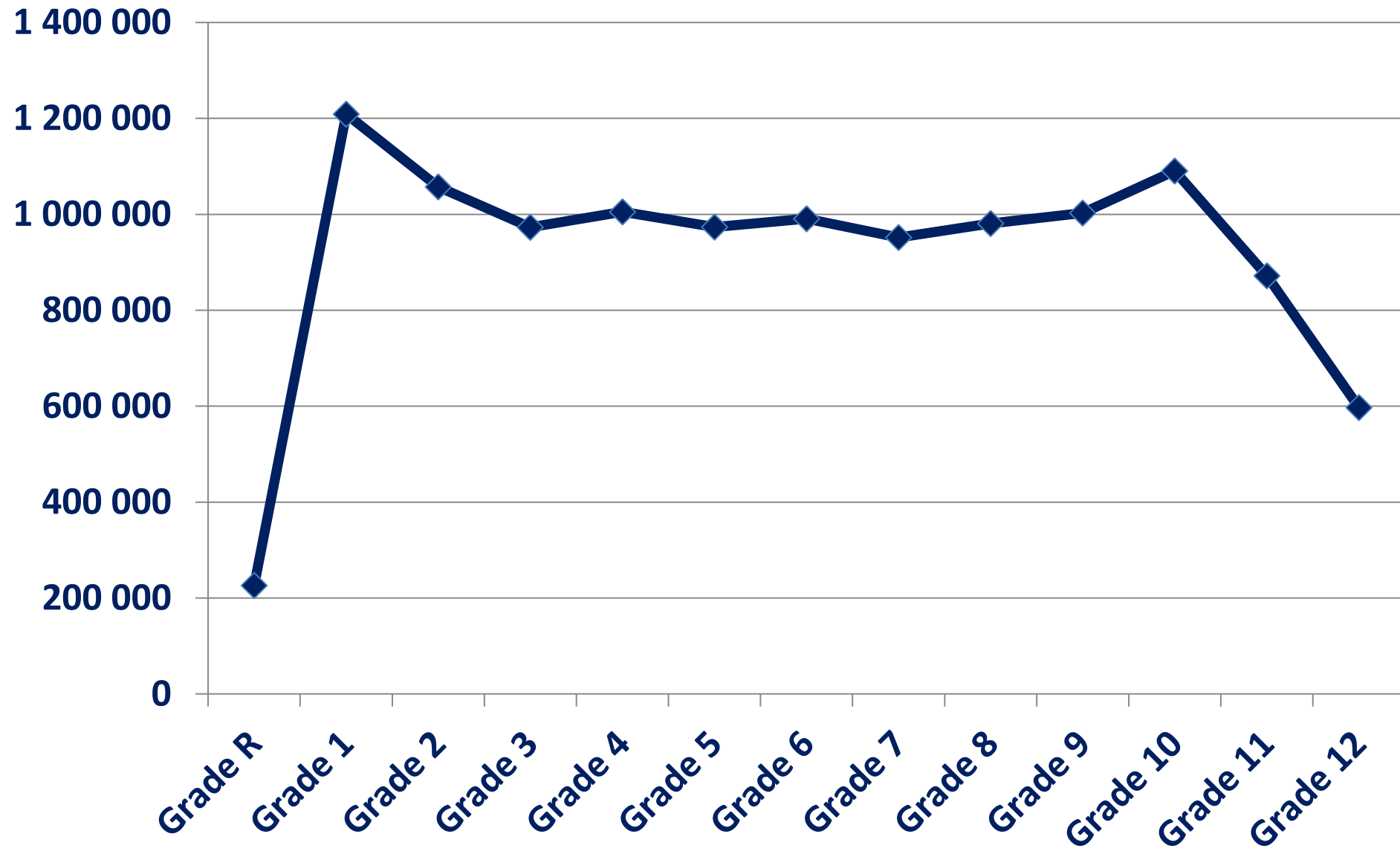
Maths Score and School SES

SA vs SACMEQ



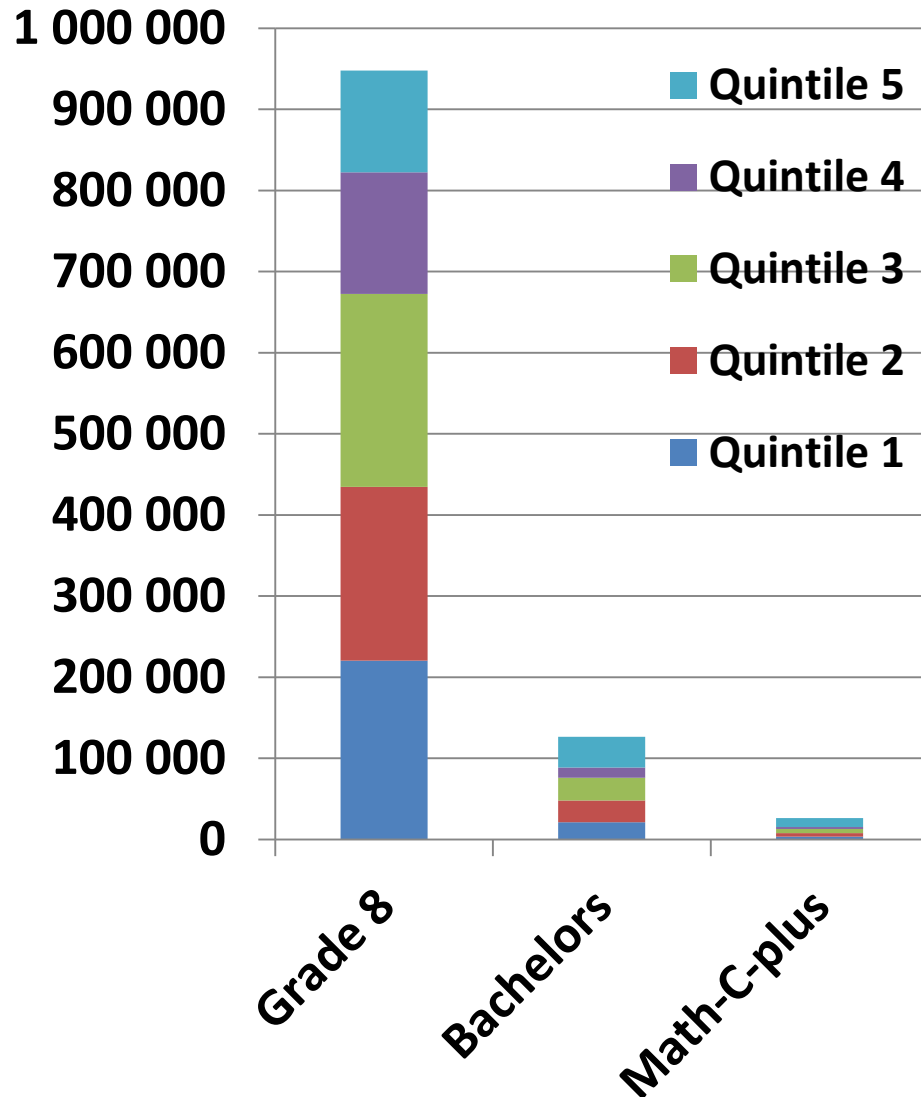
STUDENT FLOWS THROUGH THE EDUCATION SYSTEM

The 2013 matric cohort (Gr. 1 in 2002)

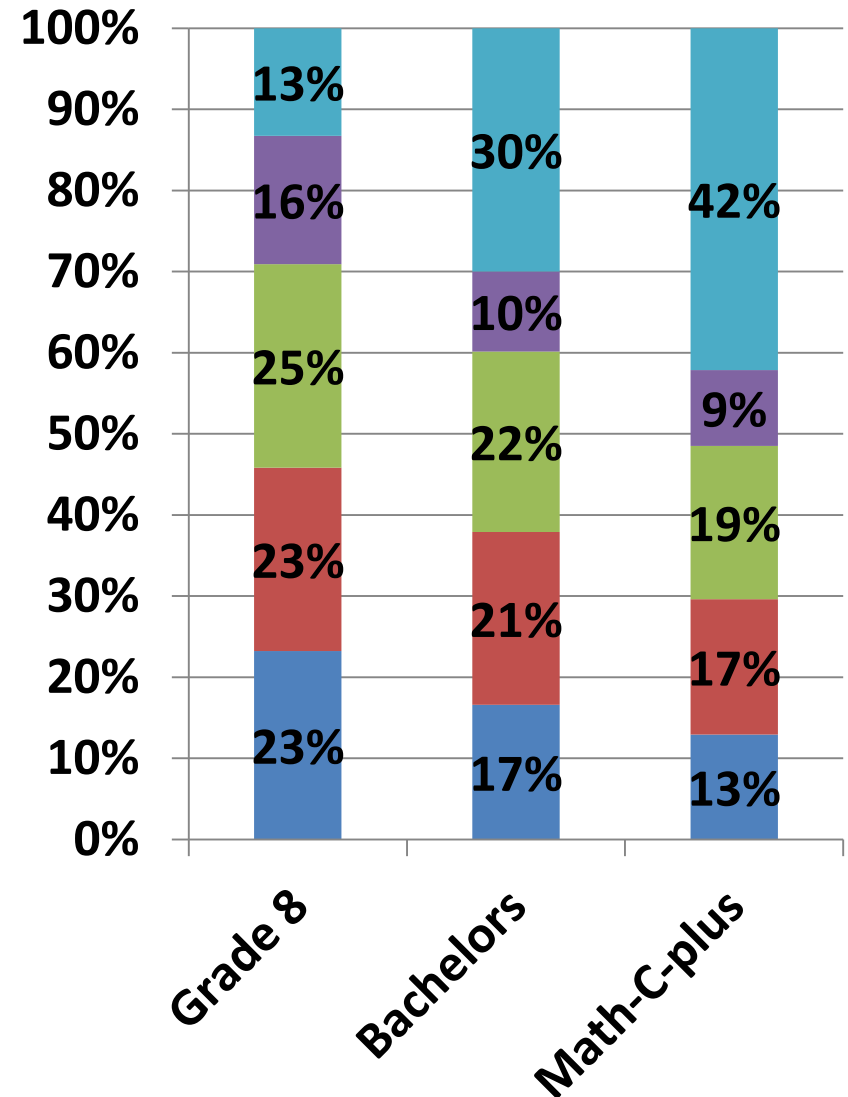


Quintiles: Gr. 8, Bachelors, Maths C-plus

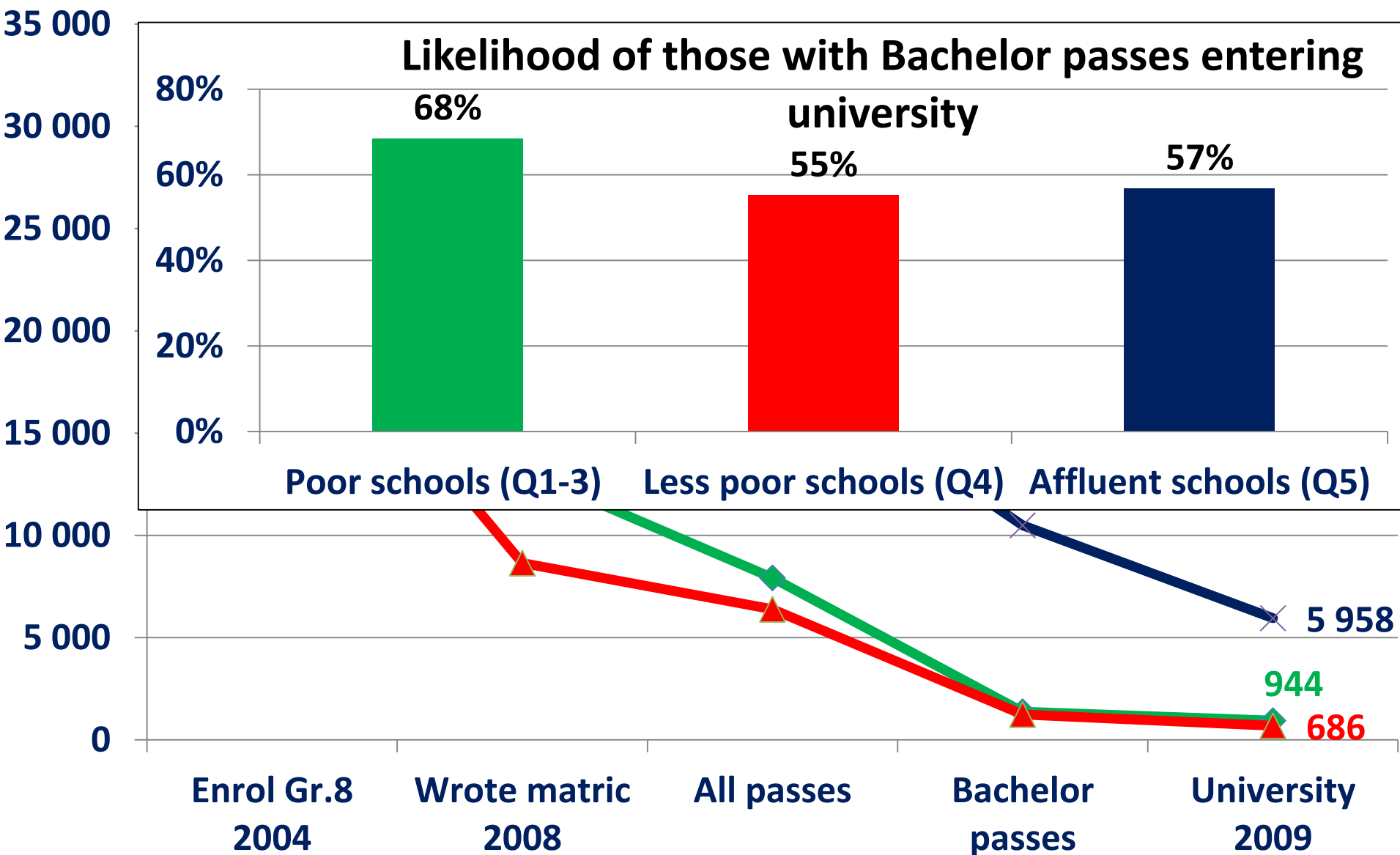
Numbers



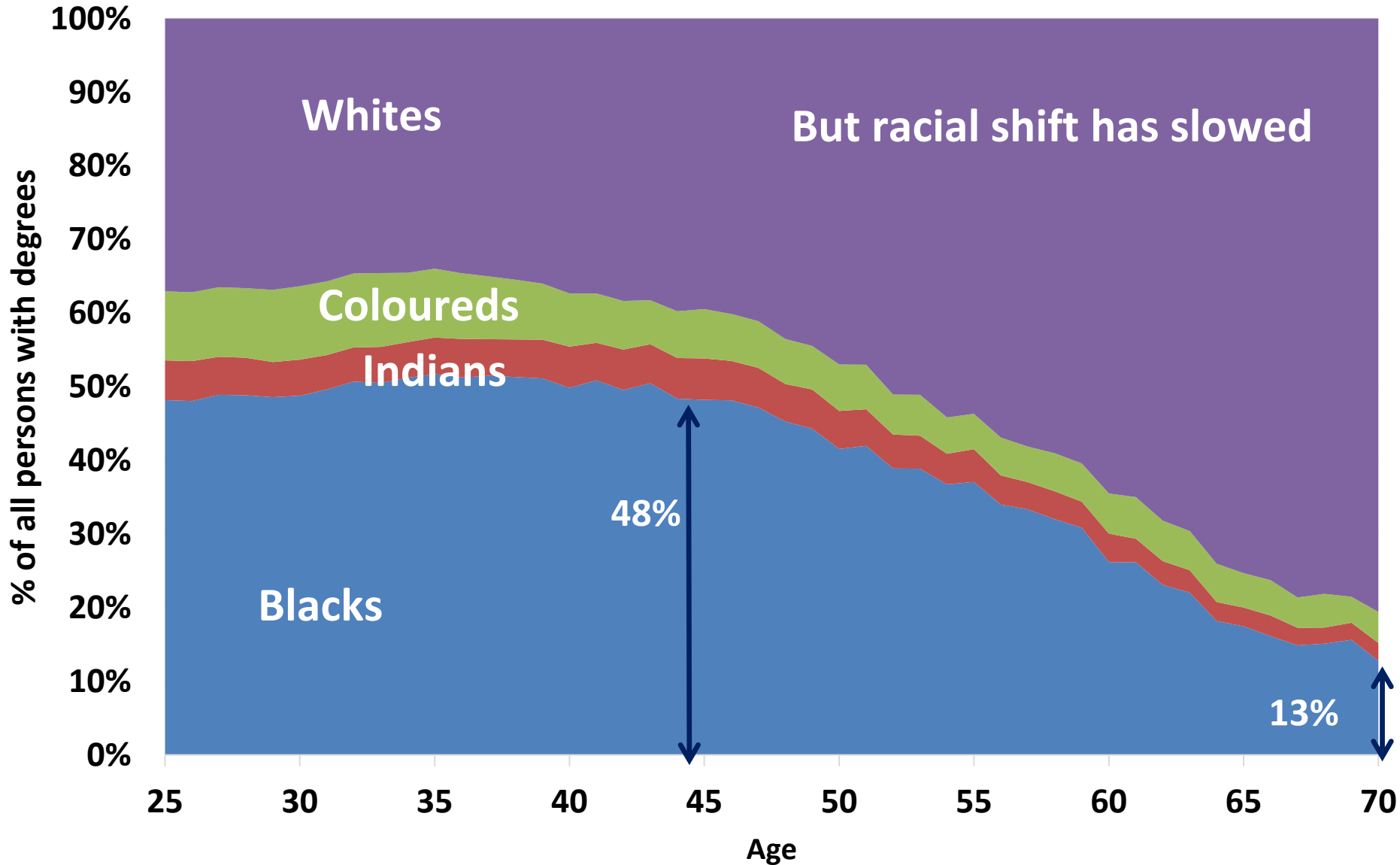
Proportions



Western Cape: Flows from Gr.8 to university by school quintile, 2004 to 2009



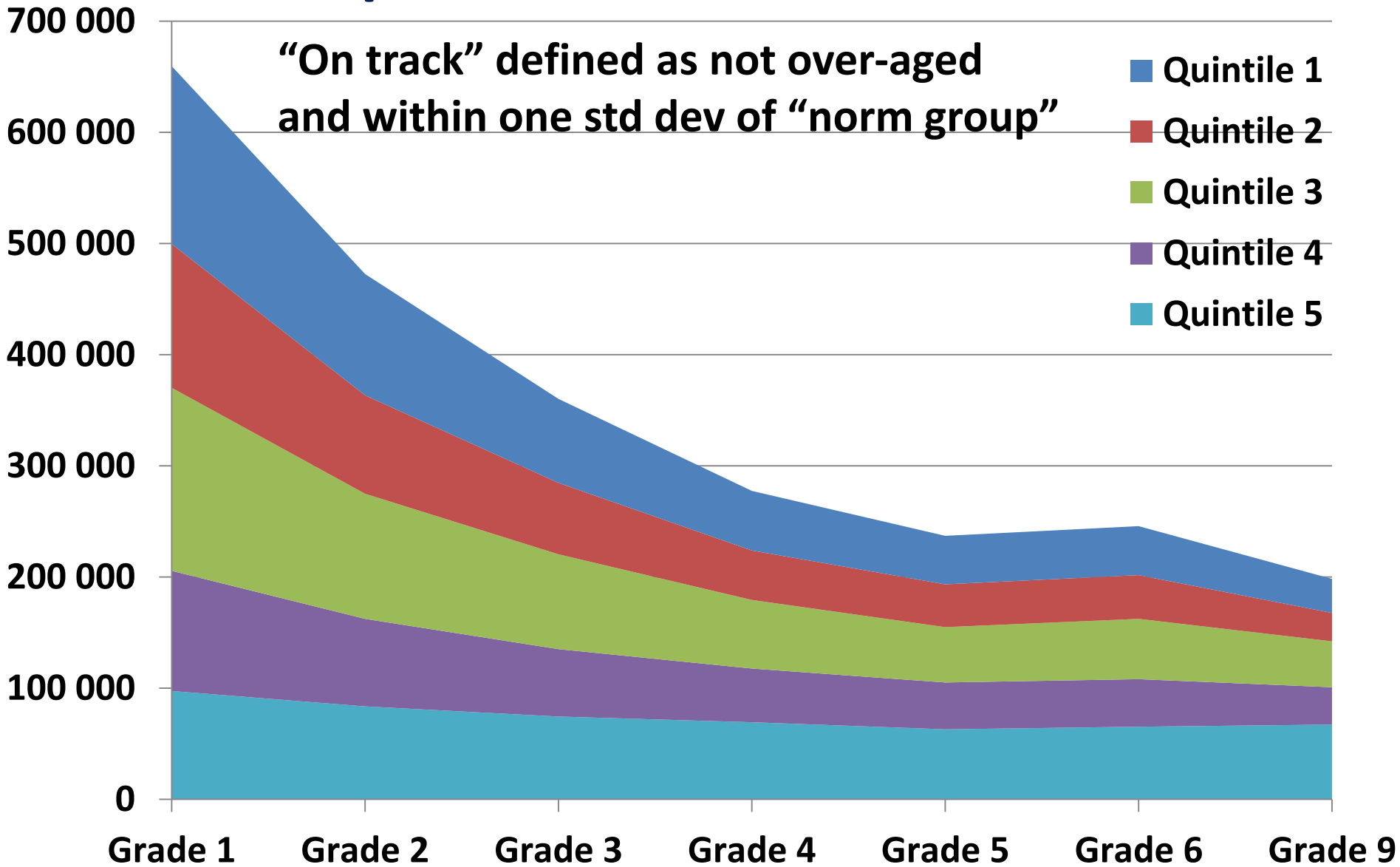
Changing racial composition of graduate pool



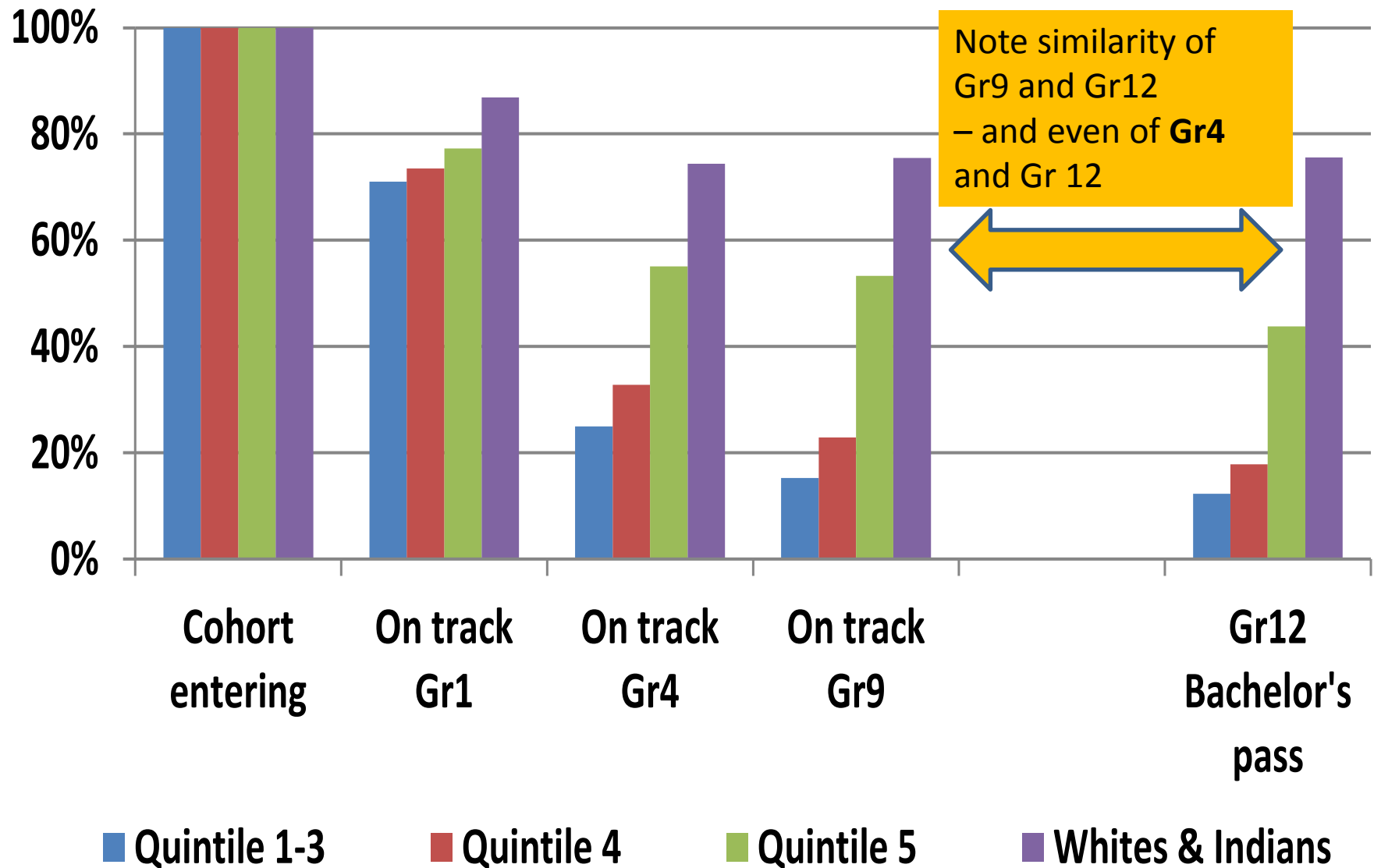
Children 'on track' by grade and quintile in ANA Maths, 2012

"On track" defined as not over-aged and within one std dev of "norm group"

- Quintile 1
- Quintile 2
- Quintile 3
- Quintile 4
- Quintile 5



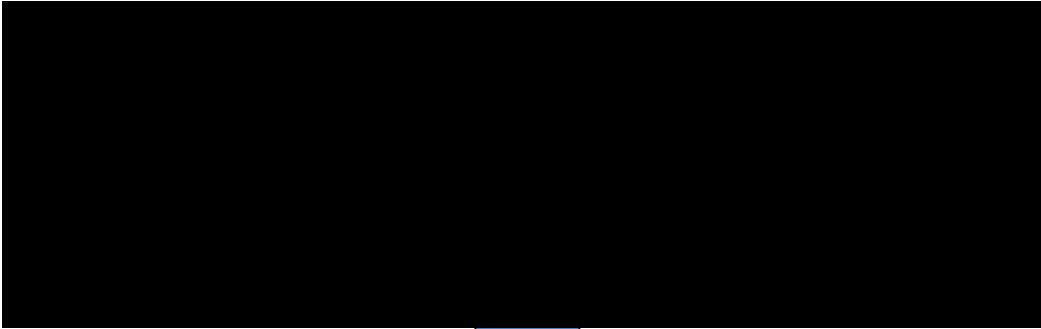
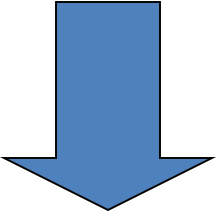
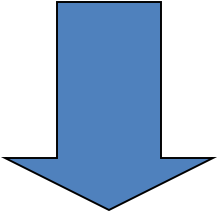
'On track' by grade in ANA Maths 2012, and 2013 Bachelor's passes relative to size of entering cohort (entering cohort=100%)



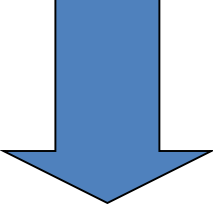
INSIDE SCHOOLS: A PRODUCTION FUNCTION APPROACH

**SOCIO-ECONOMIC
BACKGROUND**

**INPUTS
(Teachers, books,
etc.)**



SCHOOL



**OUTPUTS
(Numbers & quality)**

INSIDE CLASSROOMS: EVIDENCE FROM THE FIELD

Inside classrooms

By Sept/Oct 2009, NSES study found that

- **One-third of Gr.5 children had not written a single paragraph-length piece during that whole school year; only 7% had written 10+**
- **40% had done fewer than 5 “complex calculations” in their books**

In North West province, teachers taught only 40% of scheduled lessons in poorer schools (Carnoy et al, 2012)

Though 78% of Gr.6 pupils had a language textbook, only 22% could produce it when asked (School Monitoring Survey 2011)

Former department	% in schools where 25+ maths topics covered	Literacy exercises in “best” student’s book
DET (Black)	26%	33
HOR (Coloured)	25%	63
HOD (Indian)	38%	72
HOA (White)	75%	75

Source: NSES

Resources versus functionality

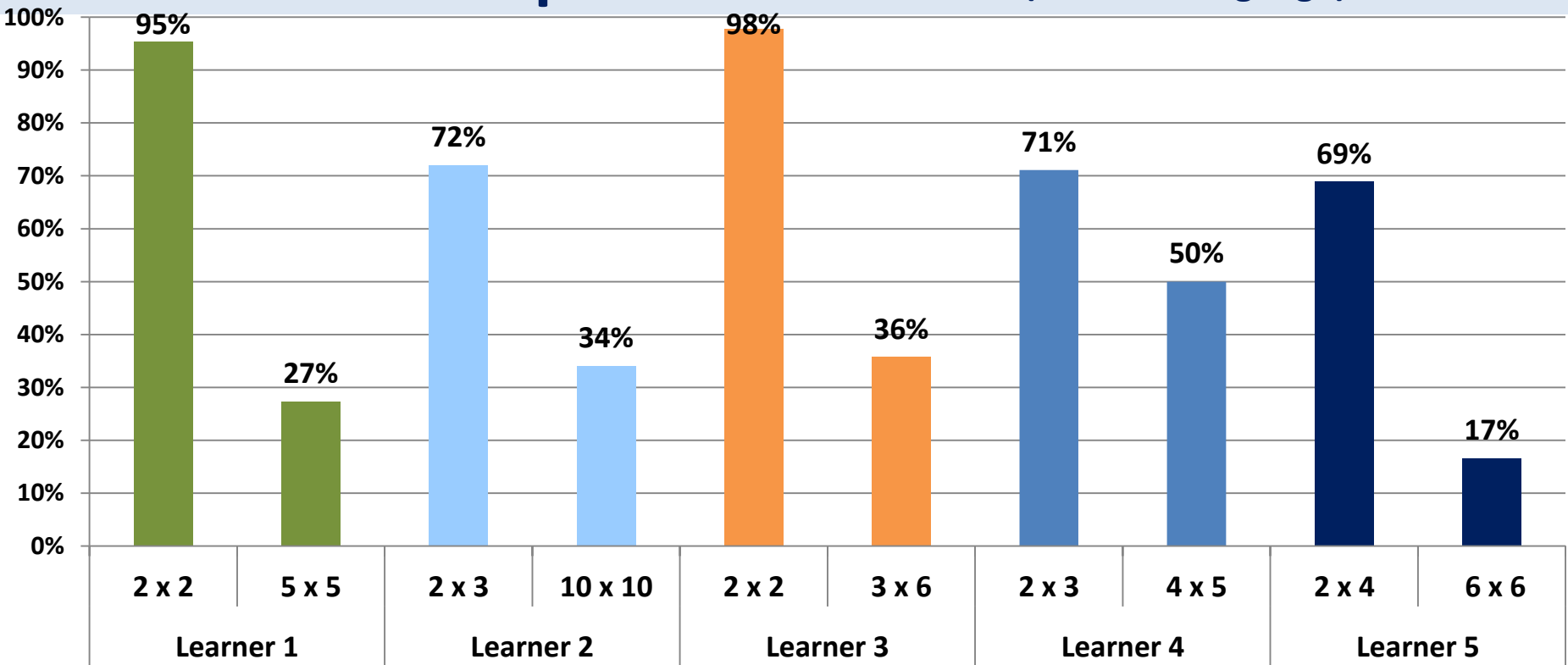
- **Resources bring little improvement** in weak schools, due to functionality and accountability issues
 - Thus resources are less important than the ability of schools to convert them into learning outcomes
 - What would a weak school gain from having two more teachers?

Why is so little work covered in class?

Or: Why is instructional time so poorly used?

- NEEDU 2012 report concludes it is
 - mainly because teachers can't (knowledge resources),
 - less because teachers won't (discipline)
- We need more information on this issue
- NEEDU (2013: 24-5) distinguishes three aspects of teacher knowledge:
 - subject knowledge
 - knowledge of curriculum
 - pedagogical knowledge
- + teacher competence (expertise in the classroom)

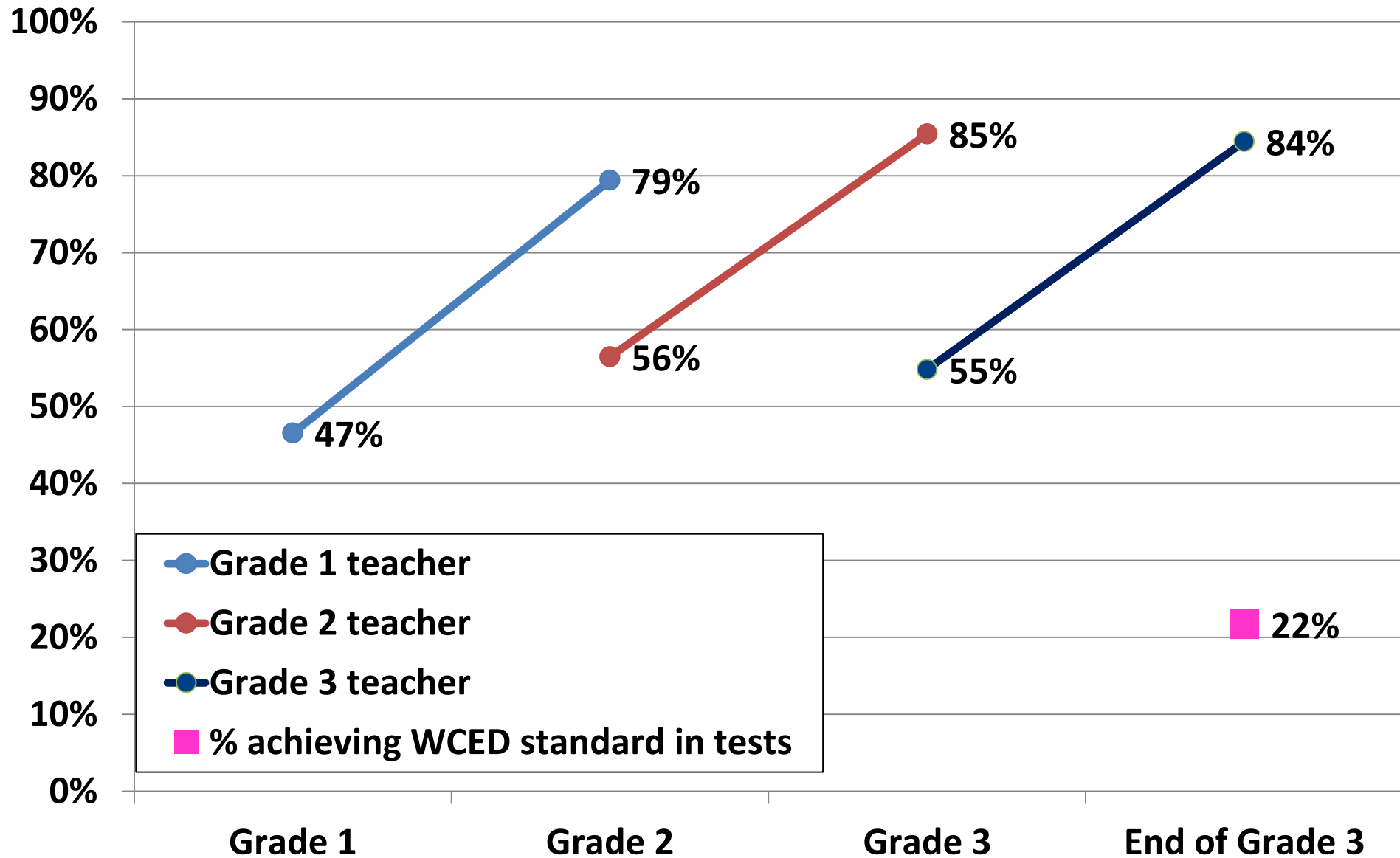
WCED study: % of Gr. 3 learners who could verbally answer questions below (in home language)



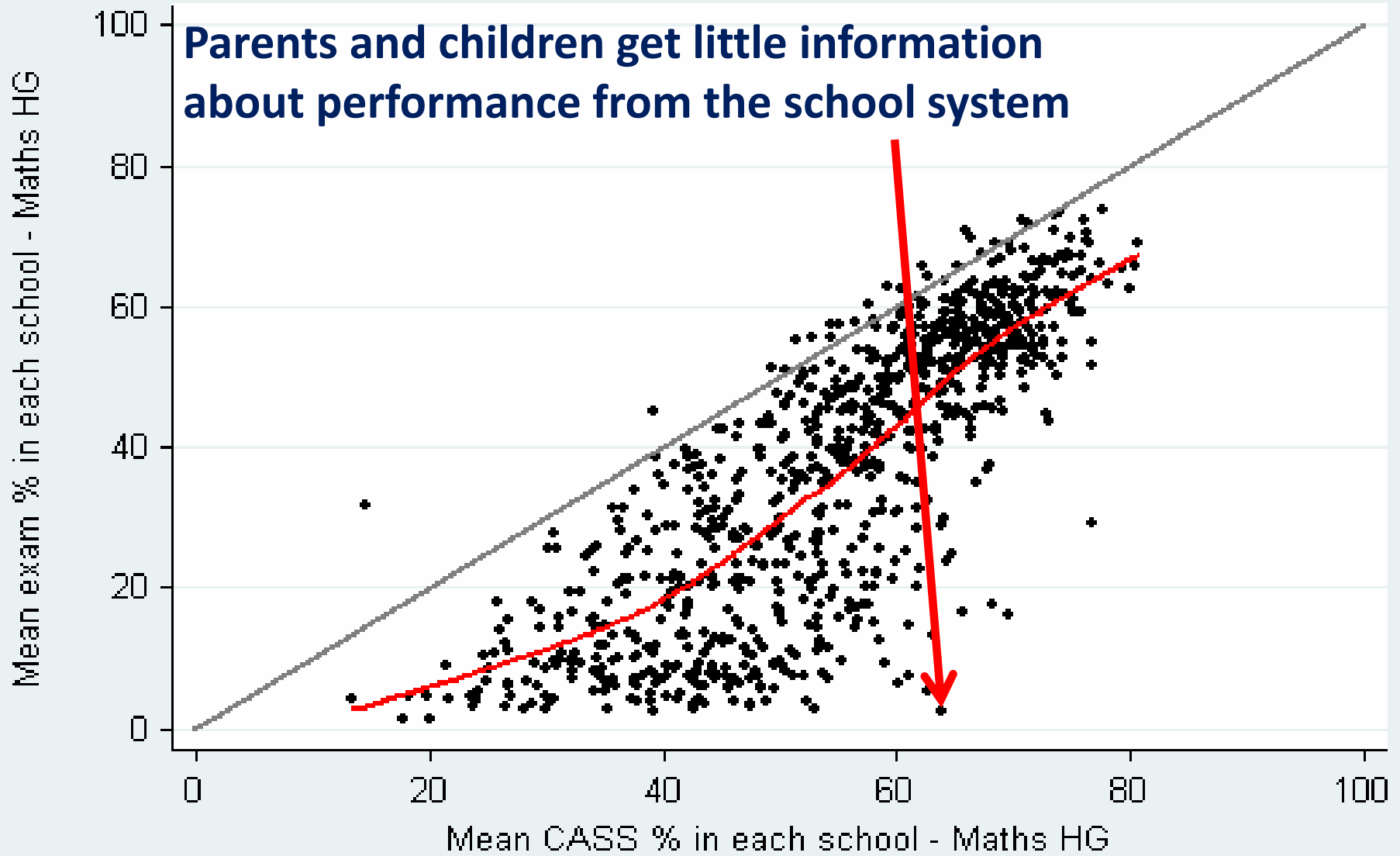
Although $\frac{3}{4}$ of teachers said they covered times tables 3+ days per week

... barely half were confident that most of their students could correctly answer "2 times 4"

Teacher views on % of class at appropriate level in Numeracy for grade at beginning and end of year



School level continuous assessment and exam marks, Maths HG 2005



What we now know, and still need to know

What we know:

- SA education system performs dismally
 - Evidence from international large scale evaluations, ANA, matric
- Little work gets done in most classrooms
 - Evidence from NSES, NEEDU, WCED Grade 3 Improvement Study, literature reviews, SPADE, etc.

What we still need to know:

- Why is there so little opportunity to learn?
 - In NEEDU's terms: Is it because teachers can't, or because teachers won't?
- What can we do about it?
 - Need *systematic* evidence on what works *at scale*, e.g. classroom interventions, teacher training
 - Need clear *accountability mechanisms* that limit perverse incentives