

Growing learning gaps in primary grades: Evidence from ANA

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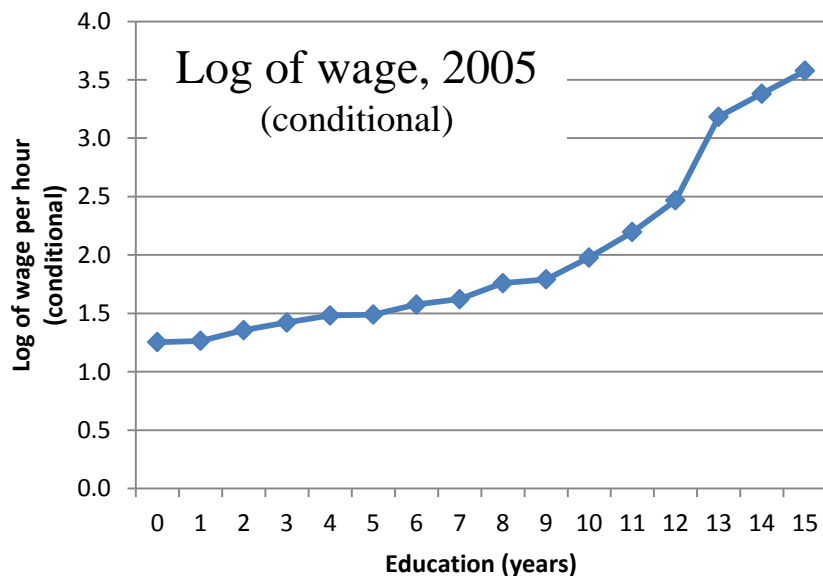
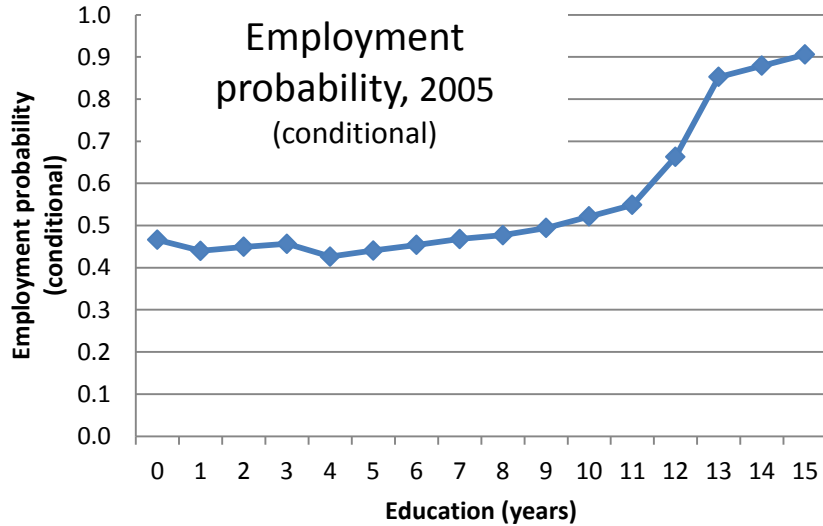
Work-in-progress on *Literacy and Numeracy in the Foundation Phase*, funded by the Zenex Foundation

Summary

- Weak calibration, inter-temporal and inter-grade comparability limit usefulness of ANA for measuring *learning gains*
- But *relative* performance provides meaningful information on learning gaps and deficits
- A reference group that is roughly on track to achieve the TIMSS average is used to estimate the performance required in each grade to perform at TIMSS' low international benchmark

**Inequality: In the labour market,
and in educational outcomes**

Education's influence on labour market



Skills shortage at top end causes a wage premium:

- a graduate earns 3½ times as much as a matriculant

Oversupply of unskilled workers depresses wages at bottom end

- **Race between demand and supply of skills** determines size of skills premium
- Skills premium **central to SA income distribution**

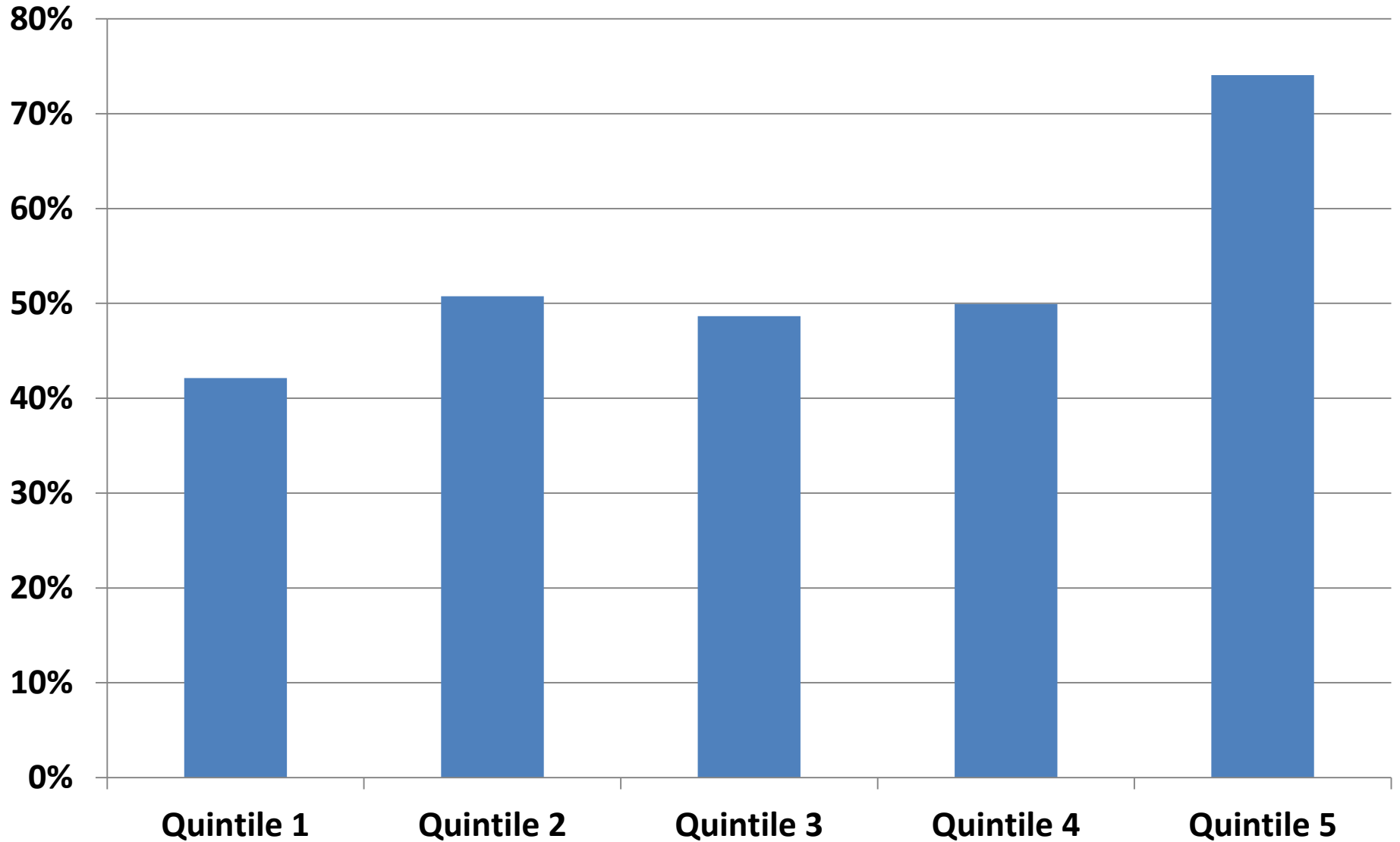
The odds are stacked against poor children...

“a failure of family and school contexts to build on the early cognitive development of bright children from low SES groups ... may be a crucial and under-recognised difference between children from disadvantaged and advantaged backgrounds and a key reason for social immobility.” (Feinstein & Duckworth 2006: i)

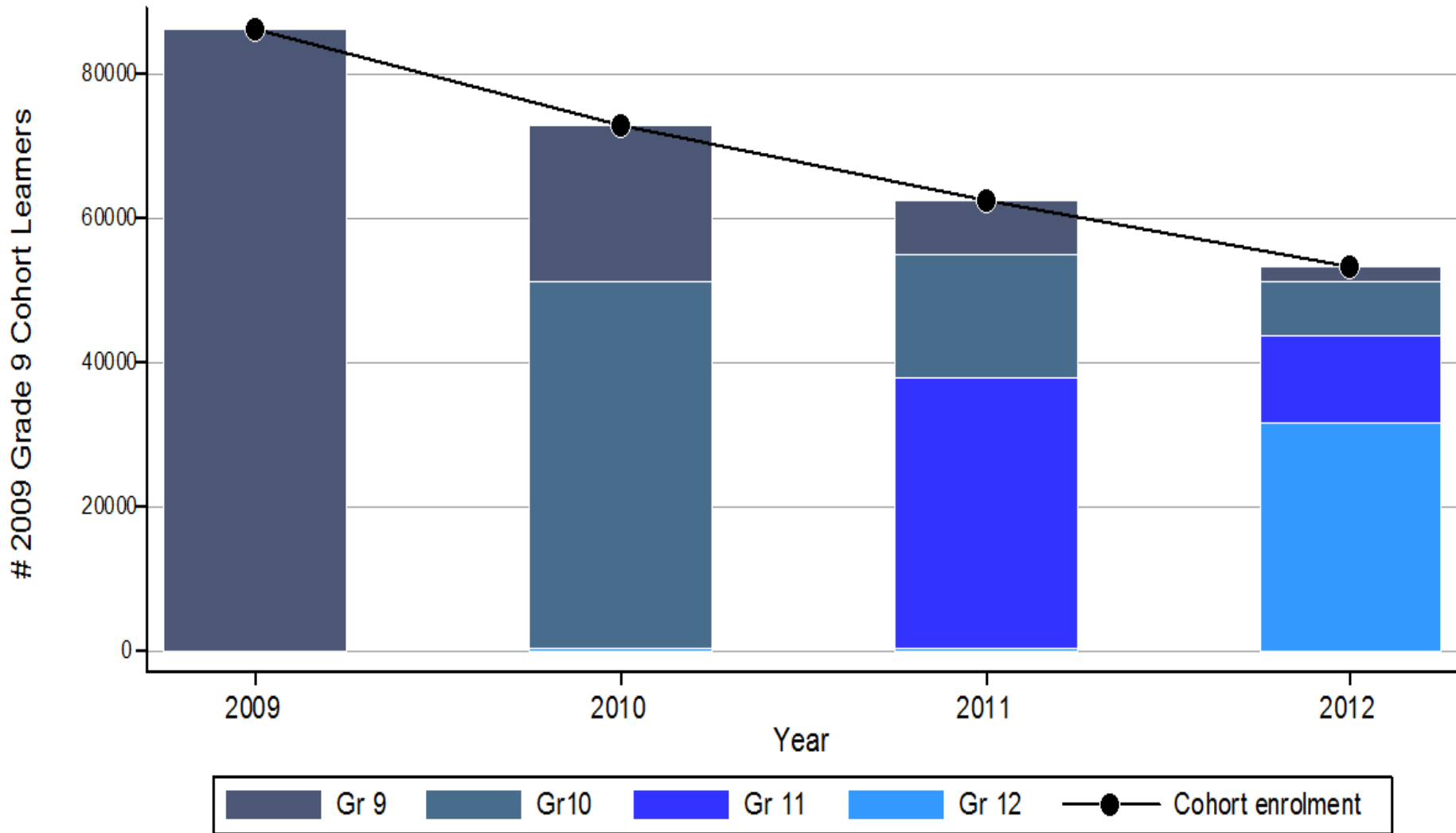
Of ± 1 million children in a cohort,

- $\pm 45\%$ drop out before reaching matric
- 42% will (eventually) pass matric
- 16% will attain matric exemptions ('Bachelor's pass')

% of WCape learners reaching Gr 7 without repeating



Western Cape 2009 Gr 9 cohort



ANA is controversial...
though a logistical feat

“Tests and testing have come under almost universal attack recently from critical educational analysts of a sociological persuasion. The journals on educational policy teem with papers that put tests and testing in the dock for carrying managerialist ideologies, fostering unhealthy competition, and inadvertently promoting deformative pedagogies like ‘teaching to the test’. The impression created by some of this work is that tests are a form of audit and control thought up by regulatory agencies that work on education from the outside, mould it in a particular way, and leave the participants – teachers, learners and their parents – worse off than they were before.” (Hoadley & Muller 2014)

Credibility of ANA for measuring learning

Large fluctuations mean ANA says little about learning gains over time, e.g. :

% achieving 50% or more in ANA Maths:

	2012	2013	2014
Gr 3	36%	59%	65%
Gr 6	11%	27%	35%

- DBE has started working on test items after 2014 ANA tests (South Africa DBE, 2014: 36)
- Is there cheating in some schools?

Average Maths scores in ANA, 2012-14

	2012	2013	2014
Grade 1	68	60	68
Grade 2	57	59	62
Grade 3	41	53	56
Grade 4	37	37	37
Grade 5	30	33	37
Grade 6	27	39	43
Grade 9	13	14	11

Clearly, calibration is still problematic both over time and across grades

Average Maths scores in ANA, 2012-14

“the results may not be perfectly comparable across years as the difficulty and composition of the tests may not be identical from year to year” (DBE 2014: 36)

Clearly, calibration is still problematic both over time and across grades

Correlations between ANA scores and Western Cape systemic evaluation scores, Gr. 6 & 9, 2012

	ANA Maths	ANA Reading	Systemic Maths	Systemic Reading
GRADE 6: (n=54 223)				
ANA Maths	1			
ANA Reading	0.70	1		
Systemic Maths	0.87	0.72	1	
Systemic Reading	0.69	0.74	0.75	1
GRADE 9: (n=43 407)				
ANA Maths	1			
ANA Reading	0.61	1		
Systemic Maths	0.91	0.64	1	
Systemic Reading	0.67	0.75	0.72	1

Correlations, ANA Maths & Reading

Correlations between:		2012 cohort		2013 cohort	
		SA	WCape	SA	WCape
Gr1 Maths	Gr1 Reading	0.67	0.72	0.71	0.73
Generally, WCape & SA patterns similar		0.66	0.70	0.71	0.75
		0.70	0.73	0.71	0.77
		Gr4 Maths	Gr4 Reading	0.74	0.76
Gr5 Maths	Gr5 Reading	0.74	0.74	0.68	0.74
Gr6 Maths	Gr6 Reading	0.70	0.72	0.65	0.73
Gr9 Maths	Gr9 Reading	0.62	0.62	0.57	0.66
2012 cohort tracked to next grade in 2013		SA		Western Cape	
Gr1 Maths	Gr2 Maths	0.40		0.40	
Gr1 Reading	Gr2 Reading	0.26		0.27	
Gr3 Maths	Gr4 Maths	0.54		0.72	
Gr3 Reading	Gr4 Reading	0.56		0.70	

% in top 20% of SA learner performance in each grade, ANA 2012

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Quintiles 4+5
Share of top 20% in:						
Grade 1	20%	17%	24%	18%	22%	40%
Grade 2	19%	15%	23%	18%	25%	43%
Grade 3	18%	15%	22%	18%	27%	45%
Grade 4	16%	12%	20%	19%	32%	51%
Grade 5	16%	13%	19%	18%	34%	52%
Grade 6	20%	16%	20%	16%	29%	45%
Grade 9	18%	14%	19%	15%	34%	49%
Gr 12 exemptions	13%	17%	19%	16%	35%	51%
Population share:						
Grade 1	25%	20%	25%	16%	13%	29%

Relative share of quintiles in top 20% of Maths scores, 2012 (correct share=100)

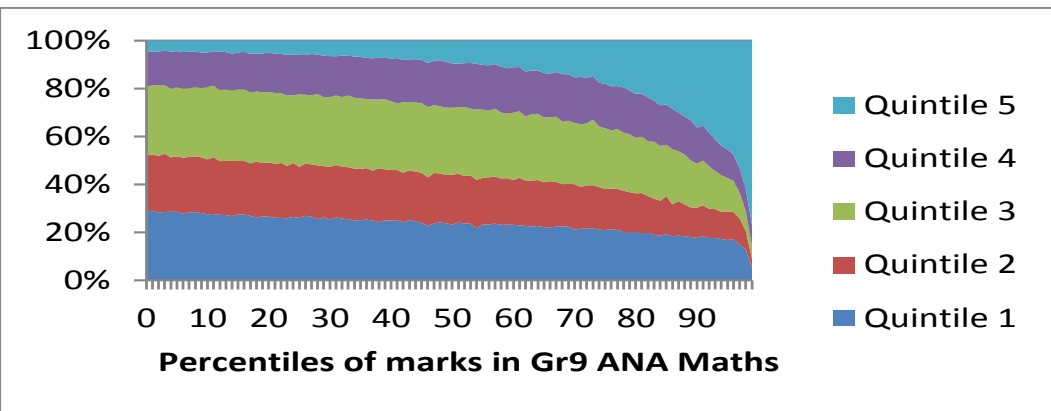
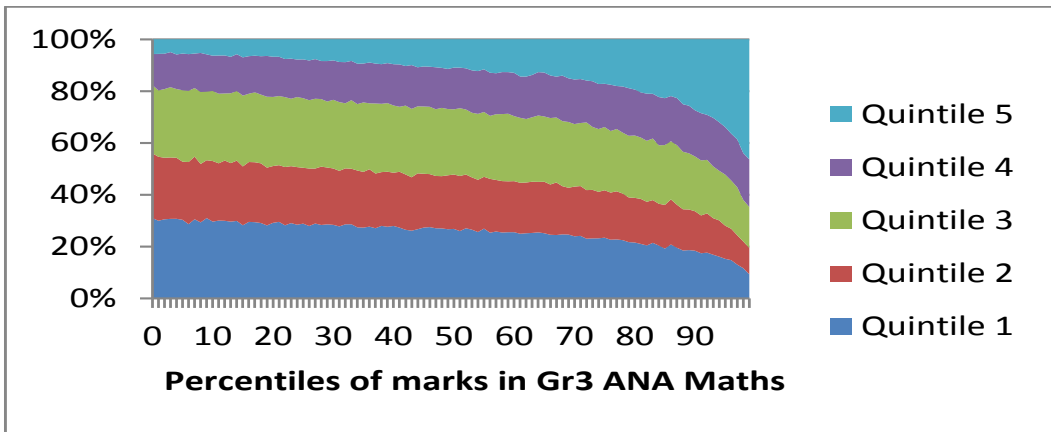
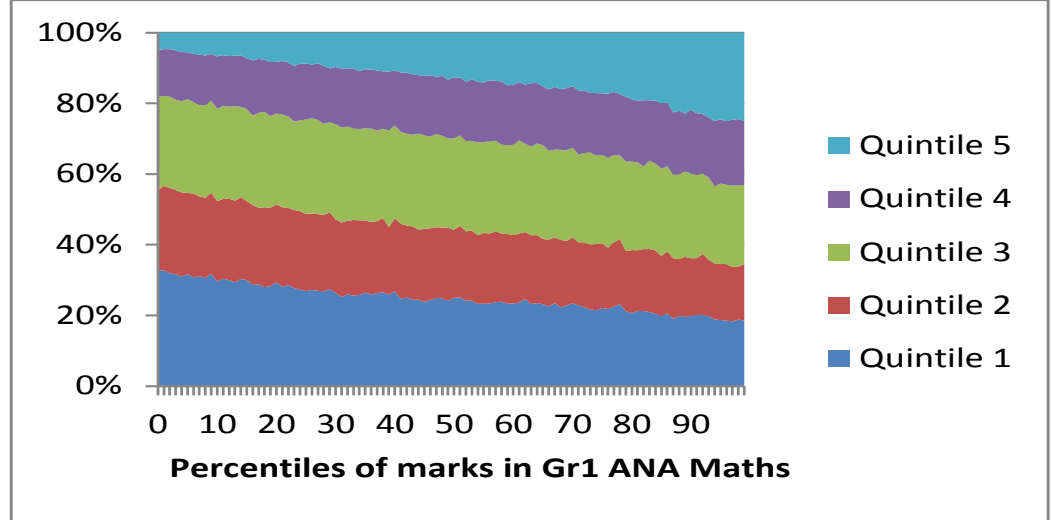
	Q1	Q2	Q3	Q4	Q5
Gr1	80	84	93	108	164
Gr2	76	77	91	109	184
Gr3	74	77	85	110	199
Gr4	64	63	80	118	238
Gr5	65	63	76	110	254
Gr6	79	79	78	99	215
Gr9	73	69	77	95	230
Gr12	53	86	77	103	234

**School differences grow across
grades...**

Intraclass correlation coefficients (rho) for ANA 2012

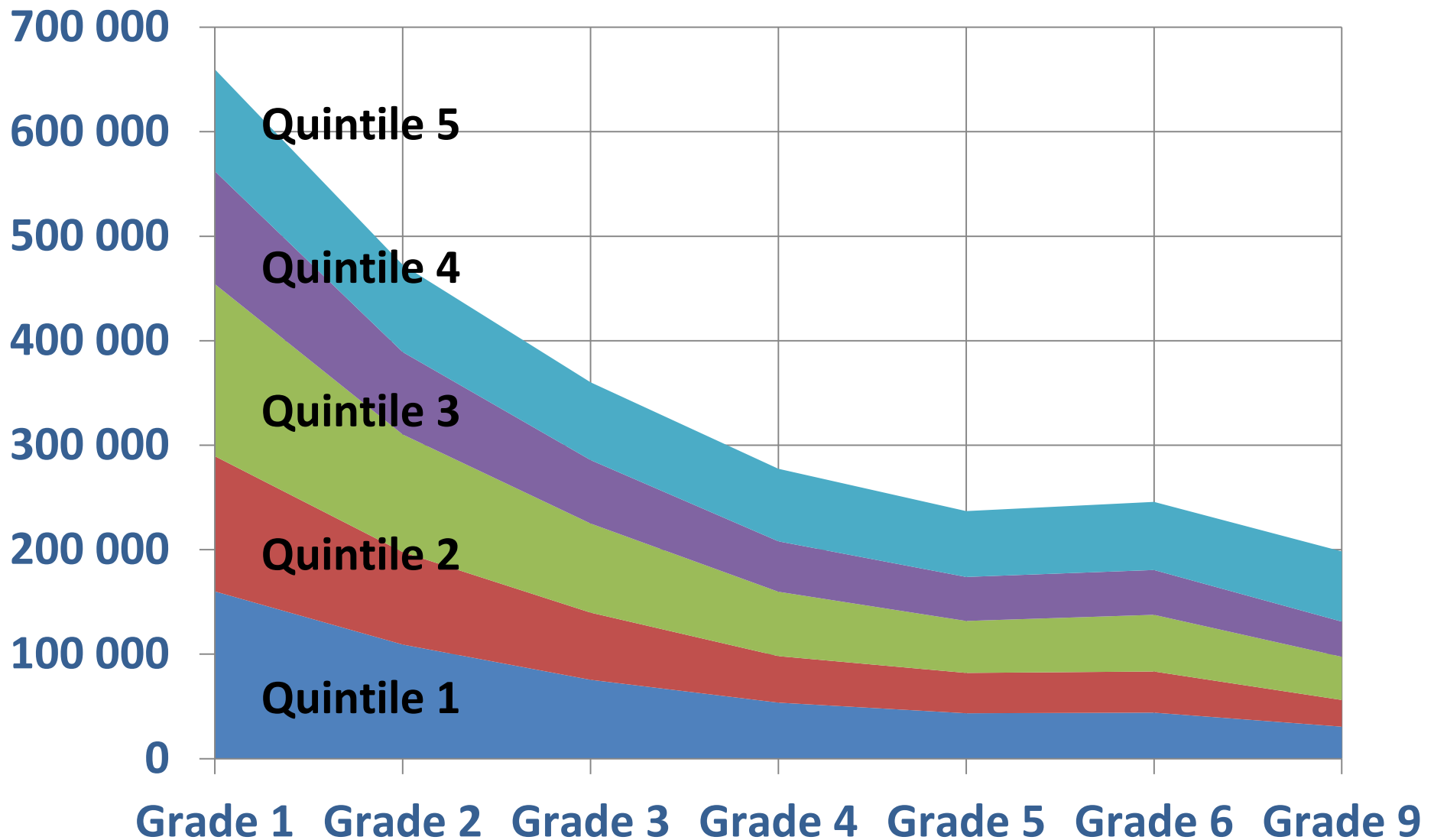
	Maths 2012	Maths 2013	Reading 2012	Reading 2013
Grade 1	0.25	0.28	0.31	0.28
Grade 2	0.38	0.33	0.30	0.29
Grade 3	0.47	0.41	0.31	0.32
Grade 4	0.53	0.53	0.60	0.40
Grade 5	0.57	0.55	0.60	0.46
Grade 6	0.56	0.49	0.56	0.42
Grade 9	0.55	0.54	0.46	0.41

Quintile distribution across percentiles of ANA performance in Grades 1, 3 and 9

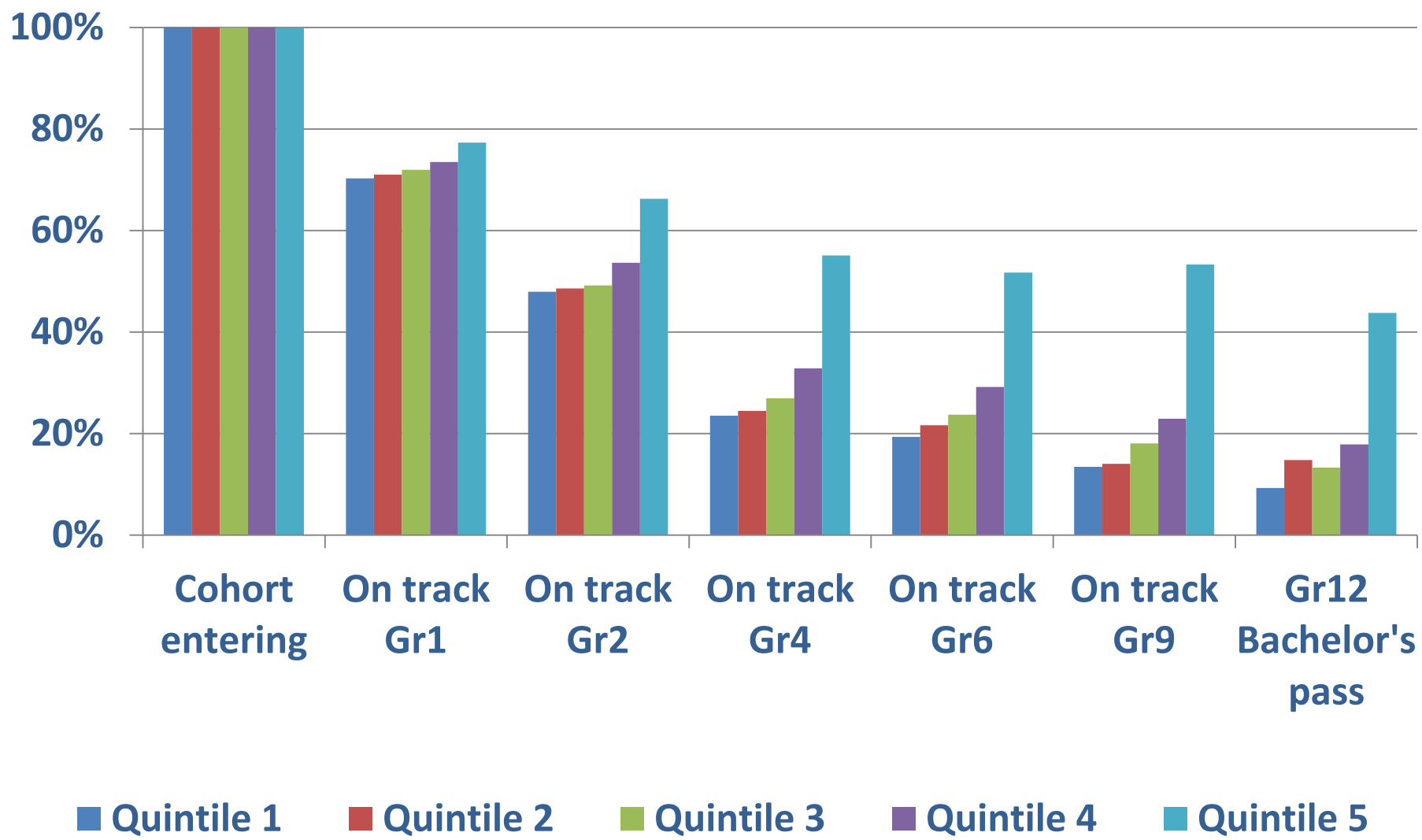


Those 'on track' decline across grades... especially in poorer schools

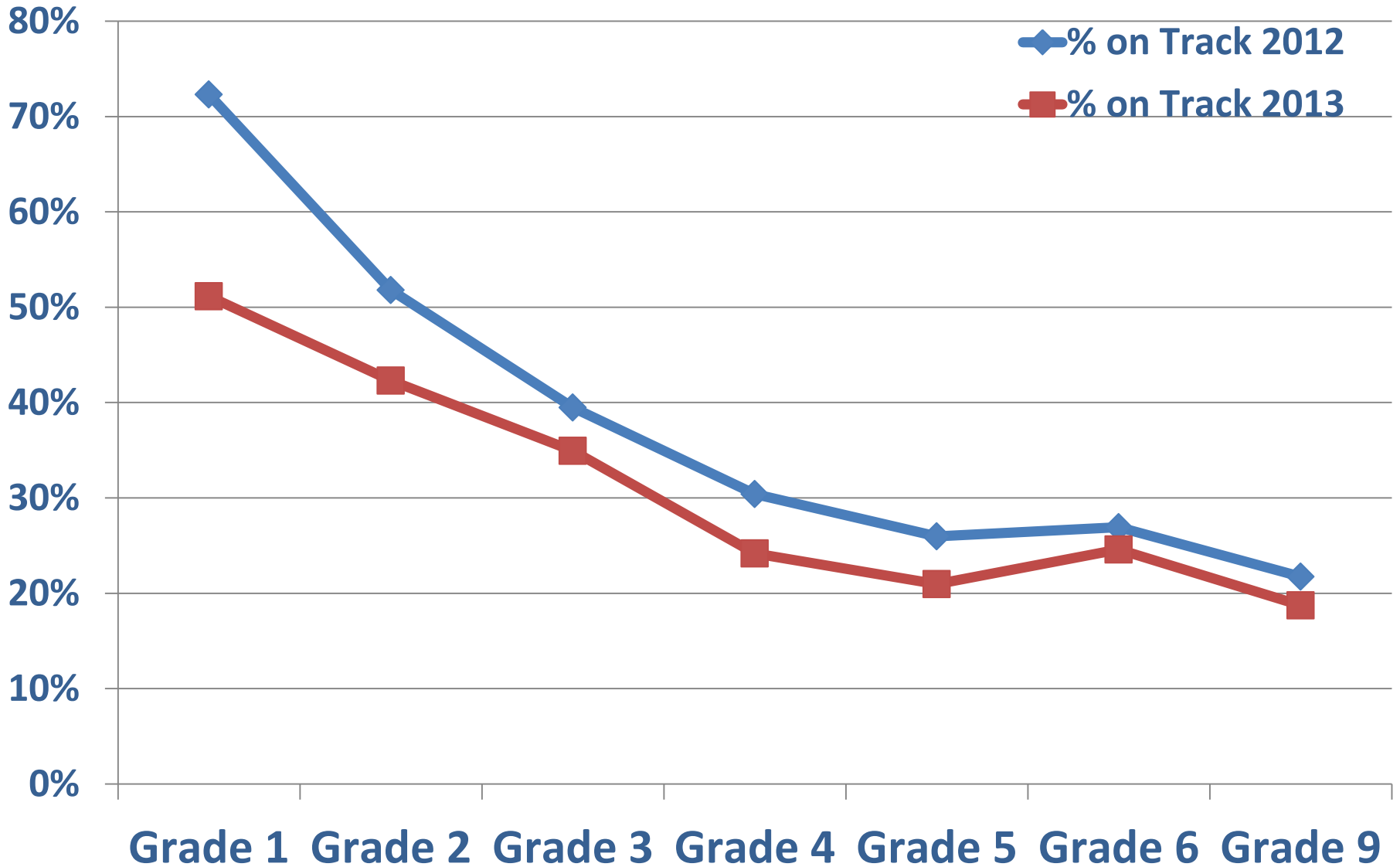
Students 'on track' in ANA 2012 by school quintile



% of entering cohort 'on track' in ANA 2012 and Bachelor's passes in Gr.12, by school quintile & grade



% of entering cohort on track in various grades in ANA 2012 & ANA 2013



Conclusion

- By Grade 4, patterns of 'on track' performance across quintiles approximate matric exemption patterns: academic and labour market prospects are bleak for children who are no longer on track
- This requires greater emphasis on Foundation Phase or earlier
 - whether deficits arise from weak early instruction, or because disadvantaged home environment requires early remediation