Report on progress in the schooling sector against key learner performance and attainment indicators

18 August 2016

EXECUTIVE SUMMARY

The current report is in part a response to the National Development Plan's call for more evidence-based planning and more intensive use of government data. Its focus is, in particular, on 18 indicators dealing with educational attainment and learner performance appearing in the Department of Basic Education's (DBE) *Action Plan to 2019: Towards the realisation of Schooling 2030.* Several of these indicators are also the focus of Presidency's Medium Term Strategic Framework (MTSF). In keeping with the imperative that reporting against indicators needs to contribute to the policy discourse, and should not be a matter of just producing a series of numbers, the current sector review discusses a range of important educational development matters related to the indicators. Indicators from *Action Plan to 2019* which are not dealt with in the current report include several indicators dealing with inputs and processes in the schooling system. These indicators will be dealt with in other reports of the DBE, partly as many of them depend on fresh data from the School Monitoring Survey. This survey is expected to be run late in 2016. The current report thus focusses largely on the attainment and performance outcomes of the schooling system, in other words how good the system is at keeping learners in school, and the degree to which learners acquire expected skills.

Enrolment of children aged 7 to 15, which has been well above 95% for at least a decade, **has moved closer to 100%, the enrolment ratio for 2014 being 99% and the highest ever recorded**. Recent improvements have been partly driven by improvements in the Western Cape, which has moved from a level slightly below the national average, to a level roughly equal to the national average. The figures indicate that nationally around 57 000 children aged 7 to 14, all of whom should by law be attending school, are out of school at any point in time. Better strategies to deal with this problem are needed, including better use of the DBE's Learner Unit Record Information Tracking System (LURITS) to identify when learners drop out of school.

The schooling system has in recent years faced largely unanticipated increases in enrolments at the primary level as **larger birth cohorts moved into the system**. To illustrate, these increases brought about a 7% increase in Grade 2 enrolments between 2011 and 2012. In 2015, the number of learners in grades 1 to 5 was higher than it had been at any time since 2002. Current enrolment levels are thus not unprecedented, but they do mean resources such as teachers and physical infrastructure have to be spread across more learners than a few years back. There are signs that **incoming birth cohorts are now diminishing slightly** in at least parts of the country. This appears to account for the declines in public school Grade R enrolments in 2015 in Eastern Cape and KwaZulu-Natal.

Continuing increases in the percentage of pre-school children enrolled in some institution are good insofar as participation in effective pre-schooling can improve learning in the foundation phase (grades R to 3) in schools. It also suggests that as schools-based Grade R has expanded, households have diverted money they would otherwise spend on Grade R towards education and care at a lower level. This was in fact one of the intentions of the Grade R policy. To illustrate the progress that has occurred, **in 2014 60% of children aged three were enrolled somewhere, against 20% ten years previously**. Limpopo provides evidence that even in a relatively poor province, high levels of pre-school participation can be achieved. This province saw an enrolment ratio for three year olds of 57% in 2014, a level equal to that of Western Cape.

By 2015, nationally an estimated 95% of children were receiving Grade R before proceeding to Grade 1. This indicator ranged from around 99% in the case of Eastern Cape to 85% in Gauteng. Gauteng is a special case. Despite relatively low levels of schools-based Grade R, and despite fewer households reporting that children are in 'Grade R', Gauteng clearly displays exceptionally high levels of enrolment for children all the way down to age

zero. The low Grade R values for Gauteng partly reflect a different understanding of the term 'Grade R' in this province.

Grade repetition figures remain high and can be seen as a reflection of the inability of many schools to get teaching and learning right and the burden of home background disadvantage. LURITS is beginning to provide accurate grade repetition figures, after years of uncertainty around this problem. It is now clear that particularly high levels of repetition are found in Grade 10, where in 2015 23% of learners were repeating that grade, and Grade 1 (a figure of 15%). Overall, 12% of learners were repeating their grade in 2015. The trend has been for provinces with the highest levels of repetition, in particular Limpopo, to reduce this. For instance, Grade 11 repetition in this province was reduced from 27% in 2013 to 15% in 2015, partly in response to national policy limiting the number of times a learner could repeat grades 10 to 12. Even at the primary level certain provinces, such as Mpumalanga and Free State, have substantially reduced repetition. However, the overall effect has been for provinces to become more like each other. The overall level of repetition (12%) does not appear to be changing substantially.

Despite enrolment ratios which are near 100% up to age 15, **the goal of ensuring that all youths complete at least Grade 9 remains an elusive one**. In 2015, approximately 12% of youths were still not completing Grade 9, and this situation has remained largely unchanged since 2010 (before that year some progress towards the current completion rate of 88% did occur). This is often an overlooked problem, yet it is a serious one if one considers that the 12% of youths concerned would be particularly vulnerable as they are especially unlikely to possess the basic literacy skills needed for improving their prospects. Close to half of the country's youths without Grade 9 are in KwaZulu-Natal and Eastern Cape.

By 2015, 57% of youths were successfully completing Grade 12, meaning they obtained a National Senior Certificate (NSC). This is the highest this indicator value has ever been, and follows **15 years of almost uninterrupted increases**. It is noteworthy that a few provinces which perform poorly against the widely quoted 'pass rate' (NSC passes divided by those who write the examinations), perform rather well if one compares NSCs to the youth population. This is particularly true for KwaZulu-Natal. As acknowledged by the National Development Plan, the NSC does not offer a guarantee of employment or further studies, for a host of reasons related to the economy as a whole and the schooling system itself. However, the NSC remains important, and is the only widely recognised qualification offered by schools.

Increases in the number of NSCs issued per year exceed growth in the youth population by far. This is true nationally and for all provinces, though Northern Cape's NSC growth can be considered worryingly weak. Current increases suggest **it is possible to achieve the target that 75% of youths obtain the NSC from a school by 2029**. The remaining 25% should, according to existing targets, obtain their first further education and training (FET) qualification from a non-school institution such as a technical and vocational education and training (TVET) institution. As discussed in the current report, it is still too common for students to first obtain the NSC from a school and then to obtain an equivalent qualification from a TVET college. This is an inefficient use of public funds and the time of students. Schools should aim to ensure that already at the end of Grade 9 learners have acquired the skills they would need to pursue FET studies in a college.

The 2002 to 2011 Grade 9 TIMSS trend in mathematics and physical science remains arguably the most important indicator of progress of the quality of education below Grade 12. The current report provides further analysis of the TIMSS data which confirms the reliability of this trend. **The year 2016 will see the release of two very important sets of figures which will provide an update on quality trends below Grade 12.** Firstly, SACMEQ 2013 results will allow for a comparison against earlier 2007 results, at the Grade 6

level with regard to mathematics and language. Secondly, TIMSS 2014 results will reveal whether the strong positive trends between 2002 and 2011 have continued beyond 2011.

It remains the aim of government to allow for **more reliable measurement of trends within national testing systems, in particular the Annual National Assessments** (ANA). Whilst ANA has helped the system place learning outcomes more firmly at the top of the schooling agenda, raw ANA scores are still not comparable across years. However, as shown in the current report, ANA rankings of provinces within one year do appear largely reliable, and are similar to rankings seen in systems such as SACMEQ and PIRLS.

Perhaps **the clearest evidence on the trend in learner performance in recent years**, apart from the TIMSS data, comes from **an analysis of Grade 12 mathematics and physical science examinations data** conducted by the DBE in early 2016. This analysis points to large increases in the numbers of learners reaching critical performance thresholds, such as a mark of 50, 60 or 70, in either of the two subjects. To illustrate, the number of learners reaching a mark of 60 in mathematics increased by 25% between 2008 and 2015. The **figure for black African learners was as high as 65%, with the learner numbers increasing from around 11 300 to 18 800**. This reflects the fact that the trend has been towards diminishing racial inequalities. The bulk of the overall 2008 to 2015 increase is the result of improvements in the outputs of historically disadvantaged schools. The DBE's analysis takes into account the fact that the same marks are not exactly equivalent across years. It was thus necessary to adjust the trend for physical science downwards and the mathematics trend upwards. The methodology used for the analysis is summarised in the current report and details can be found in a separate technical report published by the DBE.

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Tables and figures

1 INTRODUCTION

Improving the quality of basic education is Outcome 1 within the government's system of fourteen priority outcomes[1]. The fact that basic education should be the first outcome is no accident. Ensuring that all South Africa's children receive a solid educational foundation in the schools they attend is a prerequisite for virtually all other long-range national development priorities. The National Development Plan explains the economic importance of quality education as follows[2]:

> Improved education ... will lead to higher employment and earnings, while more rapid economic growth will broaden opportunities for all and generate the resources required to improve education.

In the basic education sector, the priority must be to provide as many children and youths as possible with as many years of quality schooling as possible. The current report provides an update how successful the sector is at achieving its attainment and performance goals, partly through careful analysis of historical trends against agreed upon targets, partly through comparisons across provinces, and to some extent through reference to international benchmarks. The findings of the report point to a schooling system which continues to build on past achievements and deal proactively with new challenges. But the report also points to areas of concern where more concerted efforts are needed.

What the current report does not do is to focus on indicators dealing with inputs and processes in the schooling system, for instance indicators dealing with school funding and staffing. Those indicators constitute more or less the second half of the set of indicators put forward in *Action Plan to 2019*. They are dealt with in separate reports[3]. The planned rerunning of the School Monitoring Survey in 2016 is expected to allow for a much better understanding of recent trends with respect to inputs and processes in the schooling system.

The current report is similar in its focus to two earlier sector reviews published by the Department of Basic Education in 2011 and 2013[4]. Key sector-specific plans which inform the focus of this report are, firstly, Presidency's 2014 to 2019 Medium Term Strategic Framework (MTSF) plan for basic education and, secondly, *Action Plan to 2019: Towards the realisation of Schooling 2030*, the Department of Basic Education's long-term sector plan. Both of these plans cover issues and indicators which to a large degree overlap.

In line with government's drive for more evidence-based reporting and policymaking, this report makes critical use of a wide range of data sources. The report acknowledges the limitations of many of the data sources and assesses improvements currently under way to improve this situation. At the same time, it seems clear that there is room for better use of the available data in order to generate a more accurate picture of the challenges facing the various stakeholders in the sector. This report should be seen as part of a larger process, occurring inside and outside government, towards a more evidence-based education discourse.

This report focuses in particular on progress made in the months and years immediately prior to the finalisation of the report in the first half of 2016. Inevitably, coverage in terms of time periods is dependent on the data that were available when the analysis was undertaken. In this regard it is important to note that the Snap Survey enrolment data which were available for analysis extended to the 2015 school year, whilst the more comprehensive Annual Survey of

[1] Presidency, 2014.
[2] National Planning Commission, 2012: 26.
[3] Past reports, available on the DBE's website, include *Detailed indicator report for basic education sector* (2013) and *Second detailed indicator report for basic education sector* (2014).
[4] See for instance Department of Basic Education (2013a).

Schools dataset extended to 2013. The most recent Statistics South Africa household data (specifically the General Household Survey data) were those of 2014.

The main body of the report has two main sections, and this is followed by a number of appendices. In section 2, the general trends with respect to educational attainment, or how far learners progress within the system, are outlined and critically analysed. Section 3 does the same for learner performance, or the competencies learners have at specific points in the system. Appendix A provides provincial breakdowns of national statistics presented in sections 2 and 3. Appendix B focusses on measurement issues relating to participation in Grade R and pre-school more generally, partly with a view to clarifying areas which to many have been unclear. Pre-school is an area of emphasis in the NDP. Appendix C provides a new analysis of Grade 12 attainment relative to the population. Appendix D provides analysis which verifies and elaborates on what had previously been said about the 2002 to 2011 TIMSS[5] trend in South Africa. Finally, Appendix E of the report presents a table that sums up the values and trends with respect to MTSF and Action Plan indicators.

[5] Trends in International Mathematics and Science Study.

2 ENROLMENT AND ATTAINMENT TRENDS

The current section focusses on how far learners get in the schooling system before they leave, and the degree to which they repeat grades. As far as Grade 12 is concerned, the focus in this section is on basic completion of Grade 12, in particular the obtaining of a National Senior Certificate (NSC). Less basic achievement, for instance obtaining a Bachelors-level pass or reaching specific thresholds in individual subjects, is dealt with in section 3.

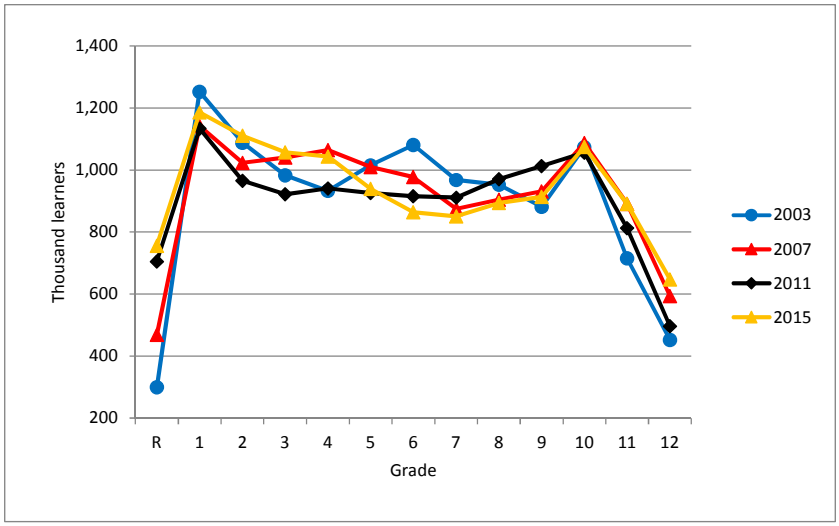
Close to 100% of children of compulsory school-going age in school. The percentage of children aged 7 to 15 reported to be attending schools according to the General Household Survey (GHS) remains high. The GHS percentage for all the years 2011 to 2013 was 98.8%, and in 2014 it reached 99.0%, the highest ever seen in the GHS. The confidence interval for this statistic is narrow, for instance 98.9% to 99.1% for 2014 (at the 5% level of significance). Confidence intervals are important to consider whenever one is dealing with a data collection based on a sample, such as the GHS. The specific confidence interval here means we can be highly certain that the percentage of 7 to 15 year olds enrolled in school was between 98.9% and 99.1% in 2014. Western Cape, which some years ago displayed an enrolment ratio for ages 7 to 15 which was slightly below that of other provinces, had by 2014 closed this gap (see discussion of Table 3 in Appendix A). No child aged 7 to 14 should be outside a school, yet such children continue to exist. In 2014 the number of such children was around 57 000.

Return to relatively high primary level enrolments. Figure 1 below illustrates the enrolment trend in public ordinary schools since 2003. Two trends between 2011 and 2015 are especially noteworthy. One is the substantial increases in primary level enrolments, in particular in grades 2 to 4. The other (discussed below) is the enrolment increases seen in grades 11 to 12. At the lower primary level, what has clearly occurred is the entrance of a 'wave' of larger birth cohorts. In 2011, Grade 1 enrolments increased by 5.2% relative to 2010. In 2012, Grade 2 enrolments increased by 7.0%. By 2015, the increase had reached Grade 5, with enrolments in this grade increasing by 5.2% relative to 2014. As seen in Table 2 in the appendix, substantial increases were seen across all provinces, with the exception of Eastern Cape, which in fact saw a decline[6]. The increases were strongest in Gauteng and Western Cape, almost certainly because these two provinces experienced a combination of two factors, both the demographic change in terms of larger birth cohorts, plus migration into these provinces. By 2015, grades 1 to 7 enrolments had reached 7,1 million in public ordinary schools, the highest figure since 2007 (when the enrolment total was also around 7.1 million). Moreover, total enrolment in just grades 1 to 5 was higher than it had been in any year since 2002. Projections indicate that the increases will continue to be felt in grades beyond Grade 5 in 2016 and beyond. The increases are more appropriately described as a shift to a generally higher level of enrolment, as opposed to a temporary peak in grade-specific enrolments. Thus, for instance, Grade 1 enrolments have remained at a higher level in every year beyond 2011, relative to 2010, and smaller further increases have occurred in the years 2012 to 2015. Similarly, Grade 2 enrolments have remained high after 2012, and so on for the subsequent grades. So far the schooling system has coped relatively well with these increases. However, the enrolment increases have aggravated problems such as staffing shortages and over-sized classes, in particular in provinces such as Gauteng and Western Cape. Analysis in the current report of declines in Grade R enrolments in 2015 in parts of the country seem to point to a return to smaller birth cohorts. However, this trend requires closer analysis before hard

[6] Analysis conducted by the DBE of enrolments by age data and birth registrations data suggests strongly that enrolments increased mainly due to an increase in births around 2004, an increase which appears to have been sustained. Fraudulent reporting of enrolments by schools has been ruled out as major factor, partly given the geographical extent of the increases, and partly given the introduction of more stringent anti-fraud controls. The analysis moreover does not suggest that migration into the country was a major determining factor. The DBE's conclusions are supported by similar analysis undertaken by Stats SA.

conclusions can be drawn. When 2016 and 2017 enrolment data are analysed the trends should become much clearer.

Figure 1: Public school enrolment patterns 2003-2015



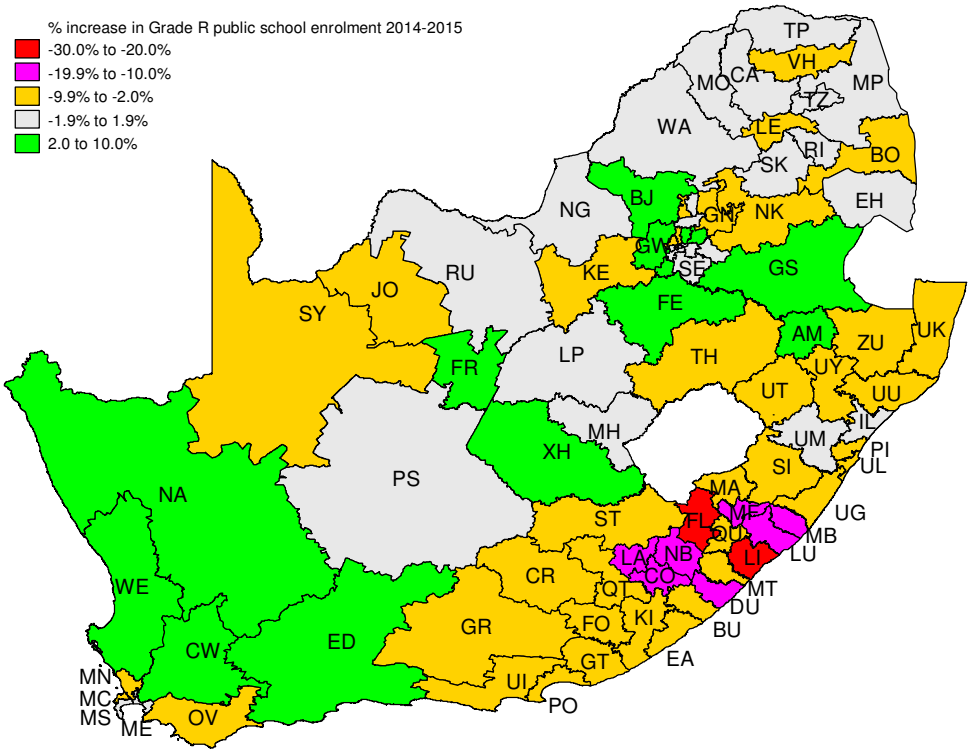
Source: Enrolment publications of DBE.

Increased enrolments in grades 11 and 12. The second noteworthy trend in recent years seen in Figure 1 above is the upward trend in grades 11 to 12 enrolments. Grade 11 enrolments in public schools in 2015, at around 890 000, had not been as high since 2007 (when they were also around 890 000). Grade 12 enrolments reached a particularly high level of around 650 000 in 2015, the highest level they had ever been (the highest earlier figure was around 590 000 in 2007). This trend is an encouraging one insofar as it reflects greater opportunities given to youths to complete Grade 12. Recent increases are partly the outcome of a strong policy emphasis from the end of the 2013 school year on limiting the holding back of learners in grades 10 to 12[7].

A levelling off of schools-based Grade R enrolments. 2010 was the last year displaying large Grade R enrolment increases in public ordinary schools (in that year the increase relative to 2009 was 14%). The 2011 to 2014 increases have been a moderate 2% to 4% a year, and in 2015 Grade R enrolments were 3% lower than in 2014. Analysis into the 2015 decline revealed that this was driven by declines in just two provinces: Eastern Cape saw a decline 11%, whilst the decline for KwaZulu-Natal was 5%. Based on some analysis of the DBE's LURITS[8] data, these declines appear to be legitimate declines driven mostly by smaller birth cohorts entering the schooling system. As can be seen in Figure 2 below, much of the decline was concentrated in the east of Eastern Cape.

[7] See Government Notice 1115 (and 1116) of 2012.
[8] Learner Unit Record Information Tracking System.

Figure 2: 2014 to 2015 changes in Grade R enrolment



Source: Snap Survey datasets of 2014 and 2015.
Note: Only data from public schools were considered. Codes used for the 86 education districts are explained in Table 12 in Appendix A.

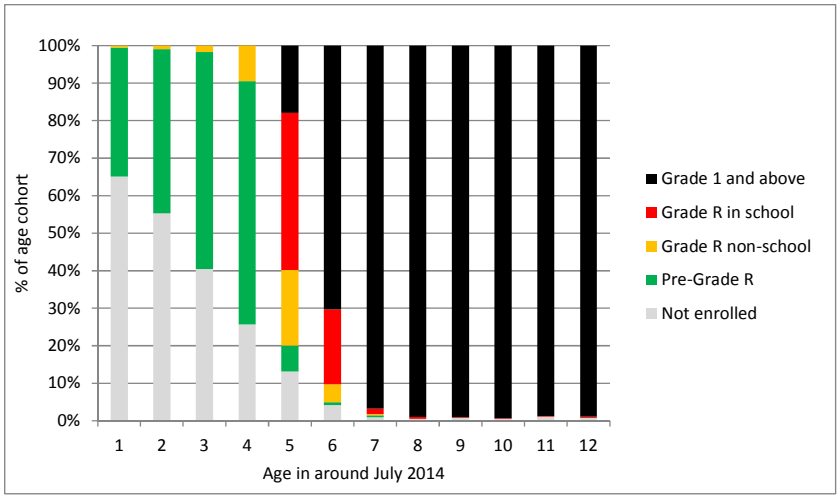
Large growth in independent school enrolments too. Though independent school enrolments as a percentage of all ordinary school enrolments has remained low, it increased from 3.7% to 4.4% between 2010 and 2015. The strongest growth in independent schools over this period occurred in grades 1 to 3, where enrolments increased by around 50% over the five years.

Percentage of Grade 1 learners who have been through Grade R. Importantly, not all Grade R occurs in schools. Some occurs in separate pre-schools or community-run centres. Since 2009, the GHS has asked whether children, from age 5 onwards, are enrolled anywhere in Grade R[9]. The situation in 2014 is illustrated in Figure 3. The critical thing is that by age 5 (with age measured in the middle of the year), 87% of children are enrolled in some kind of institution, and even before age 5 enrolment somewhere is still high. Critically, the GHS does not ask, for children below age 5, whether they are in schools or other institutions such as community centres. As seen in Appendix B, which focusses on the measurement of Grade R participation, many schools-based learners in Grade R are in fact below age 5, though the GHS and Figure 3 below do not show this. So how does one attach values to the Action Plan (and MTSF) indicator of 'The percentage of Grade 1 learners who received Grade R' (the wording in the MTSF is 'formal Grade R')? There are basically two ways of doing this. Firstly, one can use data where the question has been asked whether existing Grade 1 learners received Grade R in the past. Alternatively, one can use data on Grade R enrolments, and deduce what proportion of future Grade 1 learners will have received Grade R. There are problems associated with both methods, but just working through the available data reveals important things, not just with respect to the specific indicator, but Grade R generally. As

[9] Up to 2012, it was assumed that children aged zero to 4 could not be enrolled in Grade R, but from 2013 the questionnaire catered for this possibility too. As seen from Figure 3, around 10% of four-year olds are in fact reported to be attending Grade R.

argued in Appendix B, the indicator value can be considered to lie between 95% and 96% in the 2014 to 2015 period.

Figure 3: Grade R access according to 2014 GHS



Source: General Household Survey dataset, 2014.

Continued increases in enrolments even below Grade R. The DBE's previous 2013 sector progress report pointed to improvements up to 2011 in the enrolment of young children as early as age 3. As seen in the following graph, Figure 4, this trend seems to have continued in the 2011 to 2014 period according to the GHS. By 2014, 60% of children aged 3 were enrolled in some kind of early childhood centre. Ten years earlier the figure was only around 20%[10]. In part, this can be considered a result of the expansion of Grade R. As anticipated by the original 2001 White Paper on early childhood development (ECD), more publicly funded Grade R allows households to spend more on education and childcare below Grade R. The GHS has two questions on pre-school participation. One question asks what kind of institution the child attends, where the options include Grade R, creche and 'day-mother/gogo'. A second question asks whether the child is 'exposed to an Early Childhood Development programme in any way'[11]. Figure 4 makes use of responses to the first question. The second question renders considerably higher values, suggesting that households see themselves receiving early childhood services even in the case of non-enrolled children. To illustrate, the 2014 enrolment ratio for children aged 3 below is 60%, whilst the percentage of these children receiving some service, according to the second question, is 81%[12]. How extensive is attendance with the 'day-mother/gogo', what one could consider the most informal type of ECD[13]? This varies with age, as one would expect. In 2014, of those enrolled according to the graph, 79% of those aged 0 would be with a 'day-mother/gogo', with the figures being 37% for age 2 and 14% for age 4. Thus by age 4 most enrolments would be in relatively formal establishments. So is the improvement seen in the graph between 2011 and 2014 due to

[10] Some of the difference is also likely to be the result of changes in the GHS questionnaire. Specifically, up to 2008, the same question was used for children of all ages, the question being 'Is … currently attending school or any other educational institution?'. In 2009, just for children aged 0 to 4, the question was replaced by 'Does … attend a day care centre, crèche, Early Childhood Development Centre (ECD), play group, nursery school or pre-primary school? (This question continued to be used in 2010, 2011 and 2012.) The 2009 question may have elicited more yes responses than the 2008 question. In fact, the gap between the 2008 and 2009 curves in Figure 4 is rather wide.

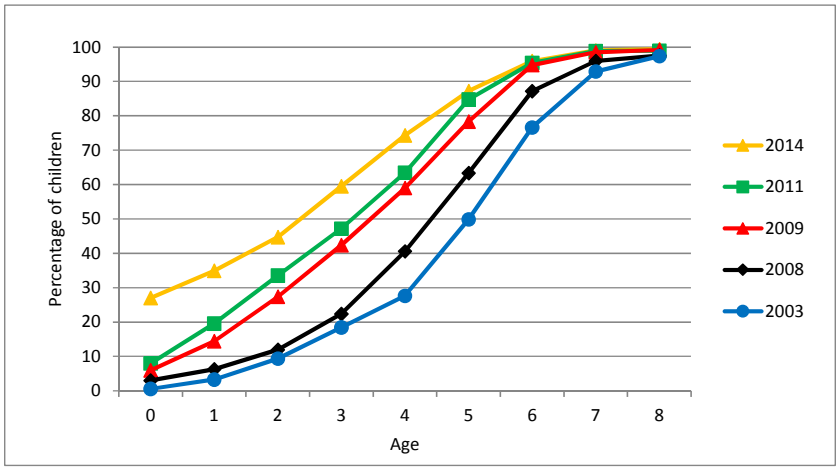
[11] Questions 1.6 and 1.8 in the 2014 GHS questionnaire.

[12] The 2013 progress report (Department of Basic Education, 2013a: 6) made use of the 'exposure to ECD' question (so the second question). This explains the higher levels seen in the corresponding graph of the 2013 report. For instance, that report provided a 2011 figure of 72% for children aged 3, against 47% in Figure 4 in the current report.

[13] The reference to 'day-mother/gogo' was introduced in the 2013 GHS.

changes in the GHS questionnaire, specifically the introduction of 'day-mother/gogo' option in the GHS, something seen for the first time in 2013? This is undoubtedly possible, but other variables in the GHS suggest that between 2011 and 2014 there was an improvement in ECD coverage with respect to children aged 0 to 4. In particular, children aged 0 to 4 said to be 'exposed to' some ECD programme between 2011 and 2014 improved from 66% to 72%.

Figure 4: Enrolment ratios ages 0 to 8



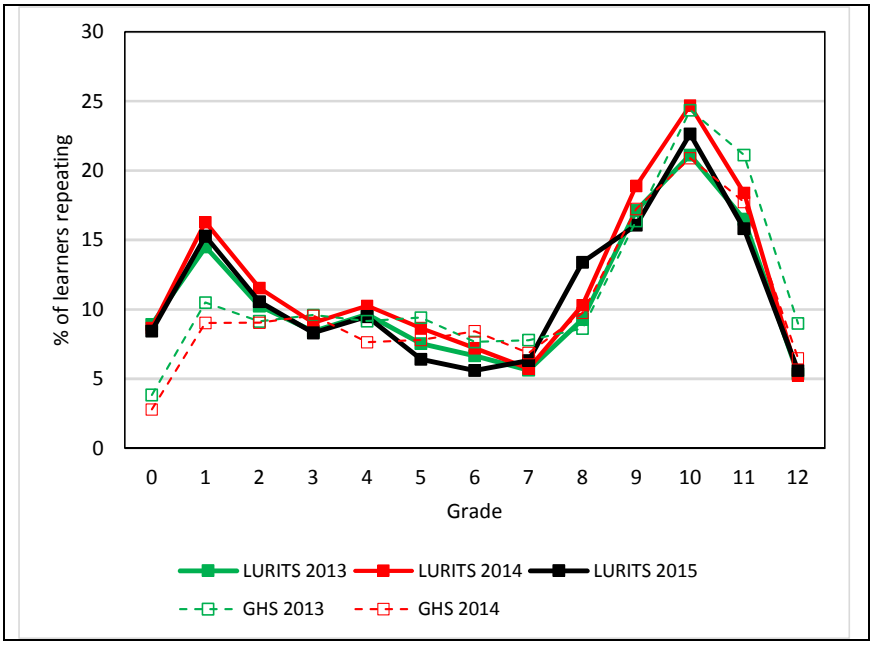
Source: General Household Survey datasets.

Substantial 'pre-school' attendance in all provinces. As seen in Figure 17 in Appendix A, for the youngest children, Gauteng and Free State stand out as having relatively high enrolment levels (for instance 71% for age 3 in both provinces in the 2012 to 2014 period), with Limpopo and Western Cape being in a relatively good situation (57% for both provinces), and the remaining provinces displaying lower levels (all between 43% and 50%).

Age-grade alignments barely changing. There are two indicators in *Action Plan to 2019* which focus on whether learners get to specific grades in the schooling system without dropping out or repeating. One looks at where learners are by age 9, and the other where learners are by age 12. If one considers learners who turned 9 in the previous year, 73% were where they should be (Grade 4 or above) in 2013. This means 27% of learners had fallen behind. At age 12, 63% of learners were where they should be. One would expect the percentage to decline the higher the age. Trends have been more or less flat over the 2010 to 2013 period, as seen in Table 4 in Appendix A, with a small improvement for learners aged 12.

More reliable grade repetition statistics drawing from LURITS data. The monitoring of grade repetition has become easier with the expansion of the LURITS system, which captures within a national database details on every learner, and his or her movements across grades over the years. Around 90% of learners are captured within the system, so coverage is not universal yet, though this target is clearly attainable. A further problem arises because identification numbers of learners sometimes change from one year to the next, when every learner's unique number should ideally never change. Grade repetition statistics, specifically the percentage of learners enrolled in each grade who are repeating that grade, derived from LURITS, are shown in Figure 5 below. Statistics derived from the General Household Survey (GHS), which asks whether learners are enrolled in the same grade as last year, are also shown. The figures confirm that at the grades R and 1 levels, there is under-reporting of grade repetition in the GHS. But for all other grades, the two data sources, GHS and LURITS, display a remarkable similarity.

Figure 5: Percentage of learners repeating



Note: All ordinary schools, public and independent, are considered here. The statistic reflected here is the percentage of enrolled learners who did the same grade in the previous year. This should not be confused with the repeater rate, which describes the percentage of learners in a grade who will end up repeating in the next year. The grade repetition statistics obtained from LURITS are based on a sub-set of the data which excludes schools which were considered to have insufficient data, in particular poor levels of linkages of learners across years. This exclusion is unlikely to affect aggregate statistics to a large degree (especially considering the high level of correspondence with the household data), yet figures need to interpreted cautiously. Blips in the trend, for instance the increase in Grade 8 repetition in 2015 seen in the above graph, might be the result of the fact that certain schools were excluded.

Teaching and learning challenges underlying the repetition patterns. The various peaks across the grades seen in Figure 5 point to various teaching and learning challenges. High levels of repetition are found in Grade 1 as pre-school is not preparing children adequately for the challenges of the Grade 1 curriculum, in particular with respect to reading acquisition. High levels of repetition are found in all the secondary grades 8 to 11 as secondary schools find that the primary level has not prepared learners adequately for secondary school. The very high peak in Grade 10 where, according to Figure 18 in Appendix A over a quarter of learners in Mpumalanga, Limpopo and North West are repeating, is indicative of the fact that secondary schools, even with high levels of repetition in grades 8 and 9, do not consider that learners are coping with the curriculum for the final three school years.

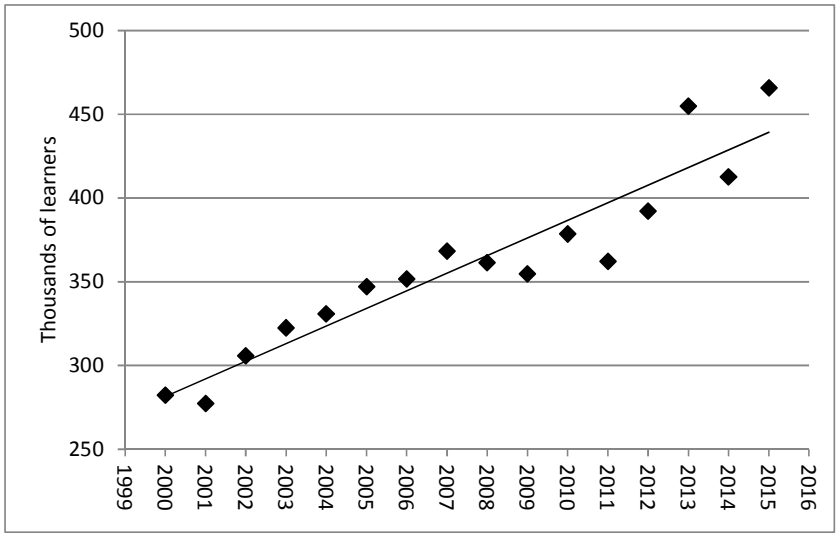
No large national repetition shifts, but important changes in some provinces. Despite a few specific upward or downward trends at specific grades, the overall level of grade repetition has not changed much. Overall, across all three years around 12% of learners were repeating their grade. However, as discussed in Appendix A, specific provinces have experienced large changes in their secondary level grade repetition patterns, which one can assume are linked to the policy drive to reduce repetition, particularly in grades 10 to 12.

A 'true' Grade 12 pass rate of 56% in 2015. An important educational outcome indicator referred to in the Action Plan is the percentage of youths obtaining the National Senior

Certificate (NSC) from a school. As explained in the 2013 progress report[14], different data sources can produce rather different values for this indicator. The 2013 report arrives at a national average figure of 42% for the years 2009 to 2011. *Action Plan to 2019* refers to a figure of 45% for the year 2014 for the same indicator. Appendix C of the current report presents the most explicit and rigorous attempt to date to arrive at values for the indicator. It arrives at values of 53%, 49% and 56% for the years 2013, 2014 and 2015, meaning an average of 53% for the three years. These values are clearly not directly comparable to earlier, lower values (for 2014, 45% and 49% were obtained using different methods). The reason for the gap is essentially that values published earlier are based on the assumption that the number of 18 year olds in the population should draw both from Stats SA mid-year population estimates and age-specific enrolment figures of the DBE. As argued in Appendix C, the discrepancies between the two sources make it preferable to rely mainly on DBE figures for the numerator and the denominator. It is obviously important that trends over time should be measured using values which are truly comparable across years.

Clear increases in the absolute number of Grade 12 passes. The next graph illustrates the national trend for full-time NSC passes, after supplementary examination results have been taken into account. This trend is largely what has driven changes in the ratio of NSCs to youths, given that population figures have been relatively stable.

Figure 6: Number of full-time Grade 12 passes in schools



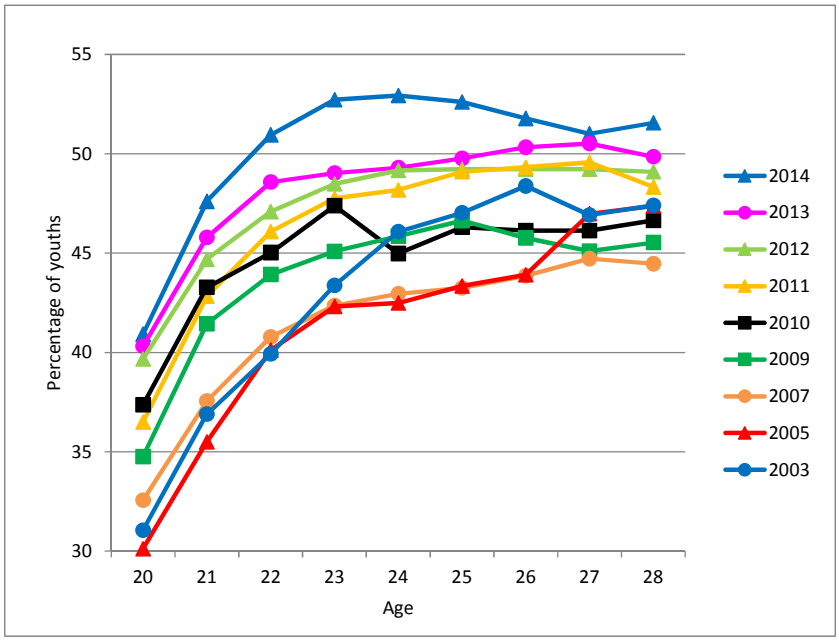
Source: Published examinations reports with post-supplementary figures included for all years. Given that supplementary results following the 2015 year-end examination were not available, the pre-supplementary 2015 number of passes was inflated by 2.1%, based on the patterns from the 2014 examination cycle.

Long-range NSC targets which seem attainable. On the basis of the conclusions presented in Appendix C it can safely be assumed that nationally and in at least eight provinces growth in the number of NSCs issued per year exceeds growth in the youth population, mostly by a large margin (the exceptional province is Northern Cape). In other words, there is progress with respect to the indicator in question. Specifically, over the 2010 to 2015 period the number of 18 year olds has *declined* annually by around 4 000, whilst the number of NSCs obtained by youths has *increased* on average by around 19 000 a year. This speed of improvement makes it possible to reach the 2029 target of *Action Plan to 2019* of 75% (that target requires an annual improvement of around 12 000 additional NSCs per year, so less than the aforementioned actual of 19 000).

[14] Department of Basic Education, 2013a.

Greater but also earlier attainment of Grade 12. Stats SA household data on the attainment of Grade 12 are roughly in line with the picture based on DBE figures and discussed above. In the General Household Survey, youths are asked what the highest level of education is that they have successfully completed. From the responses, it is possible to gain an idea of what proportion of youths have completed Grade 12, by age. Statistics in this regard are presented in Figure 7 below. These statistics need to be interpreted with caution. General patterns are more important than individual points in the graph. One problem is the fact that due to the sample-based nature of the data, there are confidence intervals around each point seen in the graph. Specifically, this confidence interval extends about 5 percentage points either side of the statistic. Thus in the case of a figure of 40%, we can be 95% certain the true statistic lies in the range of around 35% to 45%. The GHS trends confirm that there has been an increase in Grade 12 attainment. If one takes the trend across the points just for age 23 in the graph, one obtains an annual increase of 0,9 percentage points a year for 2003 to 2014. Assuming a population of 18 year olds of 900 000, a 0,9% increase translates into an additional 8 100 Grade 12 graduates a year. The slope in Figure 6 for the 2000 to 2015 period points to 11 000 additional Matrics per year, in other words the two measures are roughly equivalent. It is noteworthy that the 2014 curve in Figure 7 is considerably higher than this curve has been in any previous year. This would reflect the very large increase in the number of passes in 2013 (see Figure 6 – this large increase would only become visible in the 2014 GHS data, given that the GHS is conducted in the middle of the year). The upward movement of the curves is particularly clear for younger individuals, which is indicative of the fact that not only has there been an increase in the attainment of Grade 12, attainment of Grade 12 is also occurring at a younger age, meaning youths are able to access opportunities associated with the NSC sooner in life.

Figure 7: Grade 12 attainment amongst youths according to household data

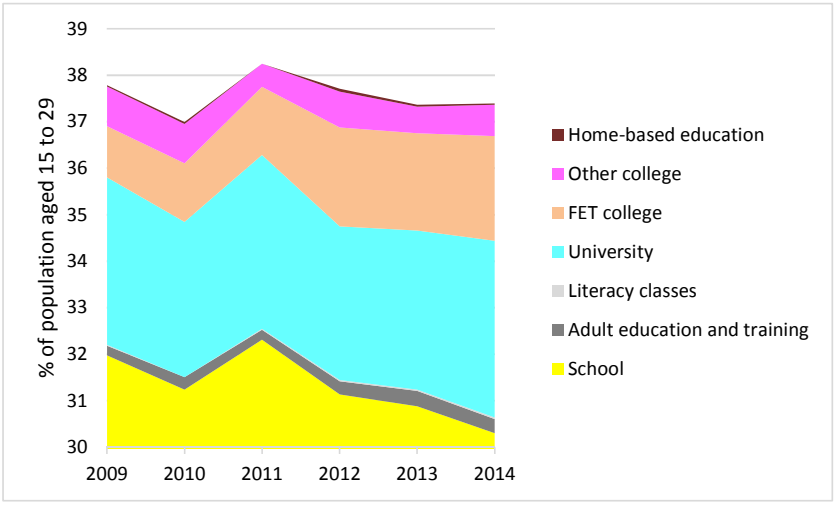


Source: General Household Survey datasets.
Note: For the above graph youths with FET college qualifications were all considered to have a Grade 12 certificate. In reality some do not, though household data suggest that around 80% do. However FET college graduates are treated in the analysis, the overall picture shown by the graph remains (in the age range in question only around 2% of youths in recent years say they have an FET college qualification).

Limited but growing options for youths outside schools. Apart from the indicator focussing on NSCs obtained at schools as a percentage of youths, *Action Plan to 2019* also specifies a

related indicator which is the percentage of youths obtaining any FET[15] qualification, including NSCs from schools. Other FET qualifications would include, for instance, the NC(V) Level 4 qualification obtained at FET colleges. *Action Plan to 2019* envisages that in 2029 all youths would obtain some FET qualification, with around 75% of them receiving this from a school, and 25% through some other institution. The targets within the 2013 *White Paper for Post-School Education and Training* of a million public TVET (FET) college students in 2015 and 2,5 million in 2030 are at least as high as what would be required to achieve a situation where 25% of youths obtain an FET qualification from a non-school institution. *Action Plan to 2019* estimates that the percentage of youths obtaining a first FET qualification from an institution other than a school remained low in 2014, at 2%. Recent increases in FET college enrolments, seen for instance in Stats SA's household data, suggest that the percentage could reach 3% or even 4% soon. Yet this is well short of the long-range target of 25%. In Figure 8 below, FET college enrolments in 2012 to 2014 are about 70% higher than in 2009 to 2011. More work is needed in comparing qualifications offered by schools and colleges, at the individual student level, so that the degree to which youths are obtaining an NSC from a school and thereafter an FET qualification from a college can be assessed. This kind if duplication, which in terms of the National Qualifications Framework represents an inefficiency, is known to be high. Figure 9 below is revealing. If long-range policy targets were achieved, and grade repetition were negligible, one might expect already at age 16 75% of students to be in schools and 25% in colleges. In 2014, almost no 16 year olds were in colleges. Only at age 19 does college enrolment begin to appear substantial. At age 19, of those enrolled in either a school or a college, 8% were enrolled in a college. The patterns seen in Figure 9 is consistent with the pattern of obtaining an NSC from a school first, and then proceeding to a college to obtain a second FET qualification.

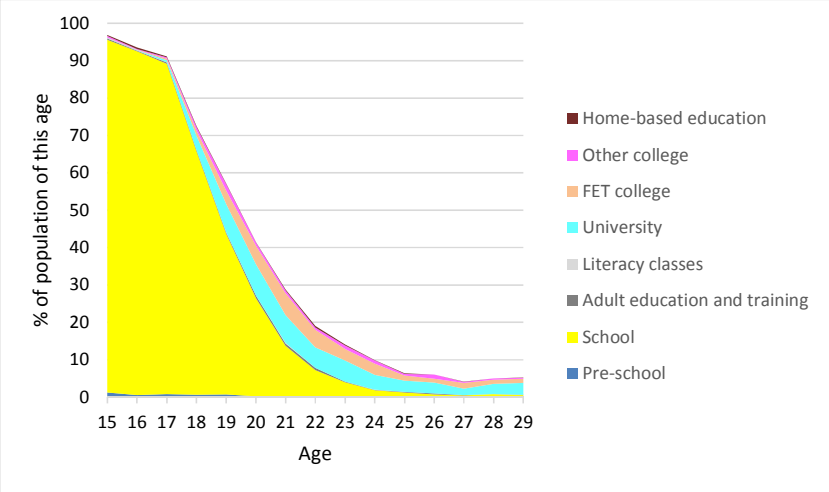
Figure 8: Enrolment by institution type 2009-2014



Source: General Household Survey datasets.

[15] Further education and training.

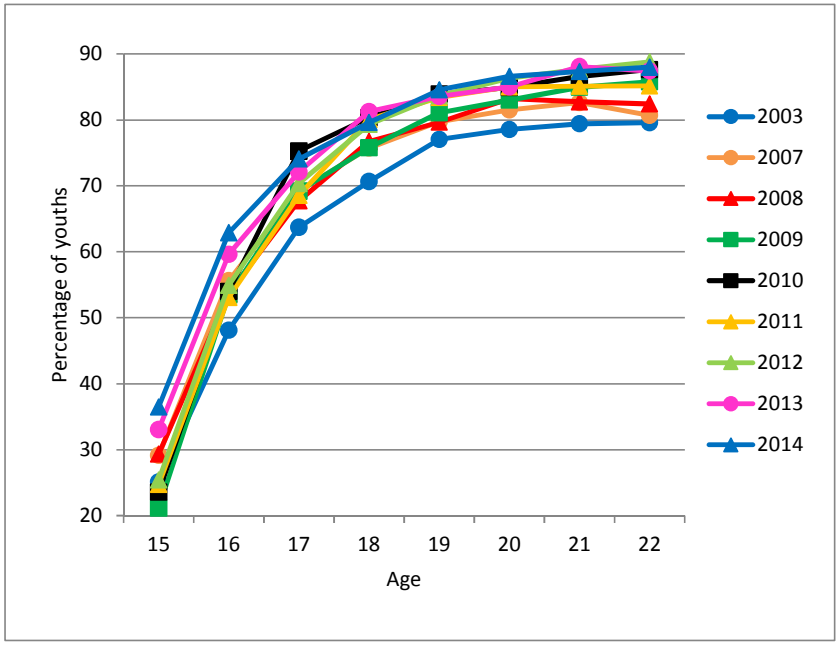
Figure 9: Enrolment by institution type and age 2014



Source: 2014 General Household Survey dataset.

Universal completion of Grade 9 still a serious challenge. Grade 9 is the end of the General Education and Training (GET) band of the curriculum and implicit in the South African Schools Act is that every learner should complete at least Grade 9. Whilst close to 100% of learners stay in school until the age of 15, the percentage of learners who complete Grade 9 is lower. The situation improved fairly substantially in the period 2003 to around 2010. However, progress beyond 2010 has been slow. For instance, the percentage of 22 year olds who reported having successfully completed Grade 9 (or some higher level), according to the GHS, has remained around 88% since 2010. However, at younger ages noteworthy improvements have been achieved. At age 15, the percentage improved from an average of 23% for the years 2009-2011 to 32% for the years 2012-2014. Grade 9 was thus being attained at an earlier age by more learners, yet the aim of ensuring that 100% of young South Africans get to complete Grade 9 is still several steps from being achieved. Clearly a part of the problem is that some learners perform very poorly and are thus made to repeat many grades, creating a large presence of over-aged learners. In Grade 8, where learners who had never repeated should according to policy be aged 13 or 14, 16% of learners were aged 17 or above in 2013, according to the Annual Survey of Schools. Of all 19 year olds who had not completed Grade 9, 25% were in the metro municipalities according to the 2011 population census, and 41% were in the two provinces Eastern Cape and KwaZulu-Natal. Figure 20 in Appendix A illustrates the distribution of the problem across education districts. Solving the problem means largely dealing with dropping out immediately prior to the end of Grade 9. Of 19 year olds without Grade 9 in 2013, 45% had completed Grade 8, 21% had completed Grade 7 and 12% had completed Grade 6. Only 6% (of 19 year olds without Grade 9) reported having received no schooling at all. These figures are from the 2013 General Household Survey.

Figure 10: Grade 9 attainment amongst youths



Source: General Household Survey datasets.

3 LEARNER PERFORMANCE TRENDS

Five years of ANA. Highly publicised Annual National Assessments (ANA) tests have been run from 2011. In 2015 testing did not proceed as planned due to the suspension of the originally planned testing in the wake of teacher union objections to the testing. The scope of ANA for the years since 2011 is shown in Table 1 below.

Table 1: Details on ANA coverage 2011-2015

Year	*Grades covered in Universal ANA*	*Overall % of Universal ANA marks captured*	*Verification ANA run?*
2011	1 to 6	Not officially confirmed.	Yes
2012	1 to 6 and 9	85%	No
2013	1 to 6 and 9	80%	Yes
2014	1 to 6 and 9 (piloting of grades 7 and 8)	91%	Yes
2015*	1 to 9*	Not applicable.	Yes*

*Note: * refers to the fact that details reflect the intentions for ANA 2015. ANA 2015 was not carried out as planned.*

Interpreting ANA differences across years. As explained in Appendix A below, patterns in the ANA results across years and grades confirm that two types of comparison need to be undertaken with extreme caution. One is comparison of average scores or 'pass rates' across years, for the same grade. As stressed by the official ANA reports, the design of the testing programme does not allow for rigorous comparison of raw statistics, for instance school-level mean scores, across years. What is more defensible is comparing rankings across years. ANA rankings of provinces *within* a year are examined in Appendix A and are found to be very much in line with rankings found using Grade 4 test data collected through the 2011 PIRLS[16] wave (PIRLS, an international testing system, follows strict standardisation procedures). Thus if a school or a province has shifted with respect to its ANA results *relative to another school or province*, this could point to a real and meaningful change. However, it is not possible to say that a province or school has improved (or worsened) between two years purely on the basis of its ANA averages.

Interpreting ANA differences across grades. Another type of comparison which cannot easily be performed is comparison across grades within a specific year. There is a clear pattern whereby ANA results appear to be worse the higher the grade. This does not necessarily mean that the fault lies with, say, teachers working at higher grades. Results are worse the higher the grade because learners fall behind the curriculum expectations every year, and accumulated deficits become larger over the years. Even if ANA results are relatively high in, say, grades 1 and 2, much research points to the most urgent need being to strengthen learning and teaching at this level, in particular in reading and writing, so that that a solid foundation is laid for subsequent grades. This foundation can help to reduce the learning deficits accumulated as learners move up the grades.

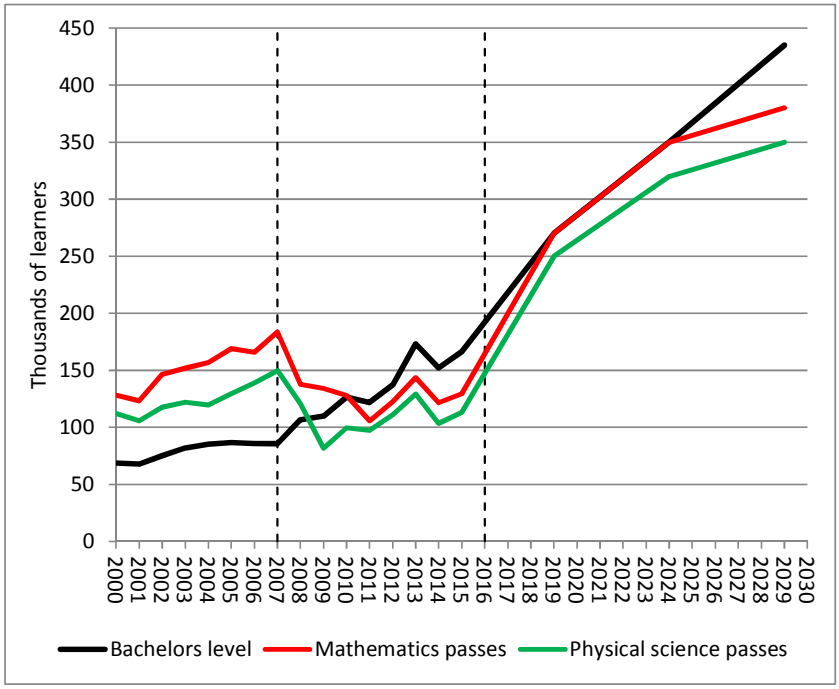
Important SACMEQ and TIMMS releases occurring soon. South Africa successfully implemented testing within the international SACMEQ programme in 2013, at the Grade 6 level, and within TIMSS in 2014, at the grades 5 and 9 levels. 2013 SACMEQ results will allow for the examination of progress since 2007, when South Africa previously participated in the programme. Similarly, the 2014 TIMSS results will allow for comparison against the 2011 Grade 9 results of South Africa. At the Grade 5 level, South Africa took part in a newly developed 'TIMSS numeracy' assessment, designed specifically for developing countries.

[16] Progress in International Reading Literacy Study.

SACMEQ 2013 and TIMSS 2014 results and data are expected to become available to policymakers and researchers before the end of 2016.

Continued increases in the number of Grade 12 learners qualifying for university studies. Three of the indicators in the Action Plan relate to the need to promote excellence and scarce skills in the Grade 12 examinations. One of these indicators involves the tracking of Grade 12 passes at the 'Bachelors level', meaning matriculants who have sufficiently good results across their various subjects to allow them entry into a university for the purposes of obtaining a Bachelors degree. Here the overall trend has been a positive one, as seen in Figure 11 below. The approximately 166 000 passes at the Bachelors level seen in the 2015 year-end examinations is the second-highest value that the schooling system has ever seen, the highest being the peak of 173 000 two years earlier, in 2013. Current trends are roughly consistent with the future trends envisaged in the official targets (the latter are also illustrated in the graph). It is important to note that these figures are based only on the public examinations system. If one includes the results of the Independent Examinations Board (IEB), the overall figure grows by around 9 000 per year. The Action Plan indicator implicitly refers only to the public examination system, yet what occurs outside this system is of course important additional information that influences the overall skills situation in the country. It is worth bearing in mind that many independent schools receive public funding and that the IEB examinations are quality assured by the same public body, Umalusi, that quality assures the public examinations.

Figure 11: Critical skills and the Grade 12 examinations



Source: Official reports on public examination results.
Note: The year 2007 is marked with a vertical line as this was the last year of the outgoing examinations system. 2016 is marked as this is the first future year, so from this year values indicated in the graph are Action Plan target values.

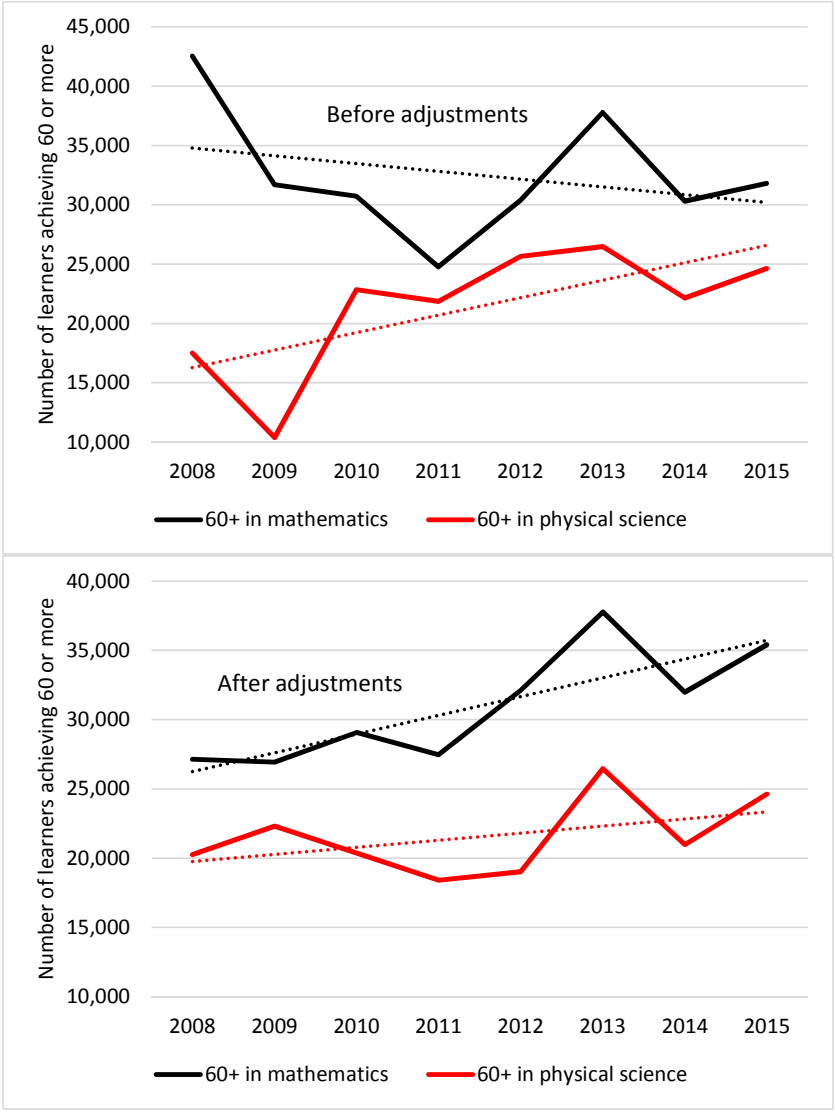
An upward trend in mathematics and physical science passes. The trend with regard to the other two Action Plan indicators dealing with critical skills in Grade 12, the number of mathematics and physical science passes, has also been generally positive, at least at least since the troughs (or dips) seen in 2009 (for physical science) and 2011 (for mathematics). In-depth analysis into the trends conducted by the DBE, discussed below, suggest that strongly

that these troughs were not qualitative declines in the teaching and learning of these subjects, but rather an outcome of initial post-2007 shifts in who opted for the two subjects and the standardisation of marks in the newly established NSC.

Understanding inconsistencies in the mathematics and physical science trends. Presidency's Medium Term Strategic Framework (MTSF) has helped to strengthen the focus on how many learners achieve sufficient marks in Grade 12 in mathematics and physical science to enter science- and mathematics-oriented programmes at university such as engineering, medicine and actuarial science. The MTSF focusses on achievement at the 50% mark level, but achievement at the 60% and 70% levels are also important to monitor as universities tend to use these as admissions thresholds. The first graph in Figure 12 reflects numbers of learners achieving 60% in the two subjects. The two trends seem inconsistent. One would not expect an overall improvement in physical science whilst mathematics outputs are declining (see the dotted lines for the general trend). Analysis conducted by the DBE points to trends seen in the graph being to a large degree driven by slightly different levels of difficulty in the examinations in different years. Whilst the marks standardisation process occurring at the end of each year clearly deals with some of discrepancies in levels of difficulty, this process cannot deal with all such discrepancies. To some extent the marks standardisation process can improve, but in examinations systems such as the Grade 12 one it would be impossible to produce exact equivalences of specific marks, such as 60%, across years. The second graph in Figure 12 displays the patterns found after a recalibration of marks aimed at making, say, 60% in one year more equivalent to 60% in another year. Basically, the method employed was to identify a small sample of schools which were high performing, but also stable over the years in terms of enrolments, racial composition and subject participation, and to assume that the sampled schools did not change substantially over time[17]. The post-adjustment trends are clearly smoother, and outputs for the two subjects tend to move in the same direction, as one would expect.

[17] The full technical report, titled *Understanding trends in high-level achievement in Grade 12 mathematics and physical science*, and published in 2016, is available on the DBE website.

Figure 12: High-level mathematics and physical science achievers

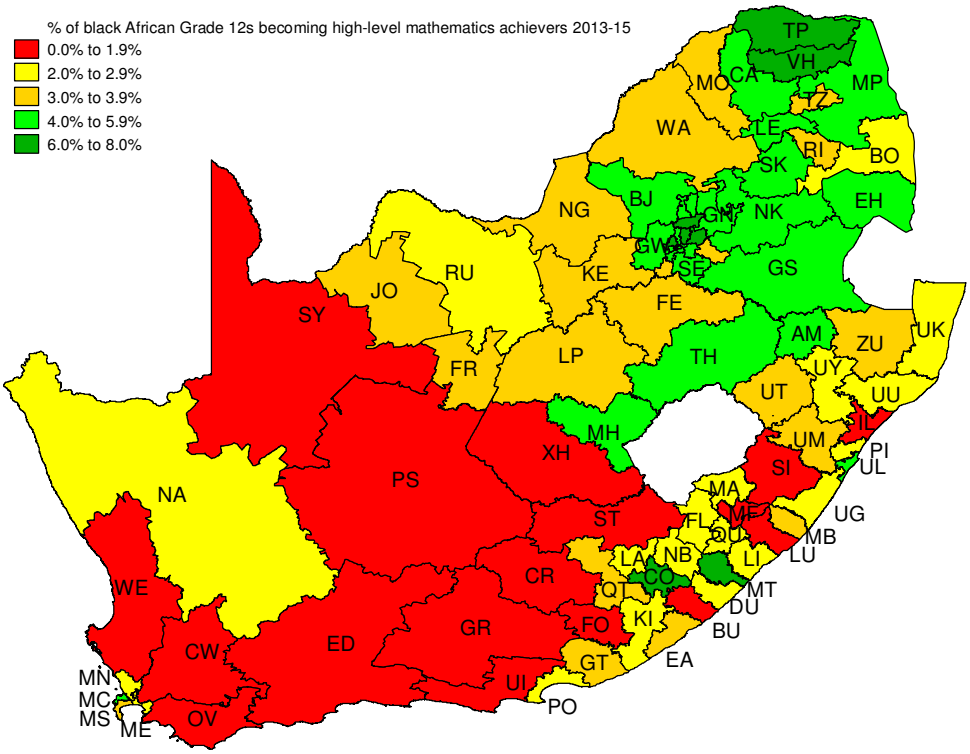


Source: DBE report titled Understanding trends in high-level achievement in Grade 12 mathematics and physical science*, available on the DBE website. See also Table 10 and Table 11 in the current report.*

A 65% increase in the output of high-level black African mathematics achievers. The DBE's analysis finds that most of the improvements seen in the second graph of Figure 12 are due to larger numbers of high achievers in historically disadvantaged schools. The trends in fact help to reduce, to some degree, the large performance differences which have existed in the two subjects in question between, on the one hand, white and Indian learners, and on the other black African and coloured learners. The growth in the outputs of high-level (with 60% or more) mathematics achievers seen in the second graph over the period 2008 to 2015 comes to 25% (the figure for physical science was 7%). If one counts black African learners only, the increase in mathematics was 65%, from around 11 300 to 18 800. These trends are very encouraging. They confirm the improvements, off a low base, reflected in the TIMSS Grade 9 trend between 2002 and 2011 (see discussion in Appendix D on TIMSS). They also suggest that efforts to improve mathematics and physical science, for instance through better provisioning of books, teacher training and more standardised measurement of performance below Grade 12 in the form of the Annual National Assessments, have paid off. The following two maps reflect, firstly, where in the country black African Grade 12 learners have

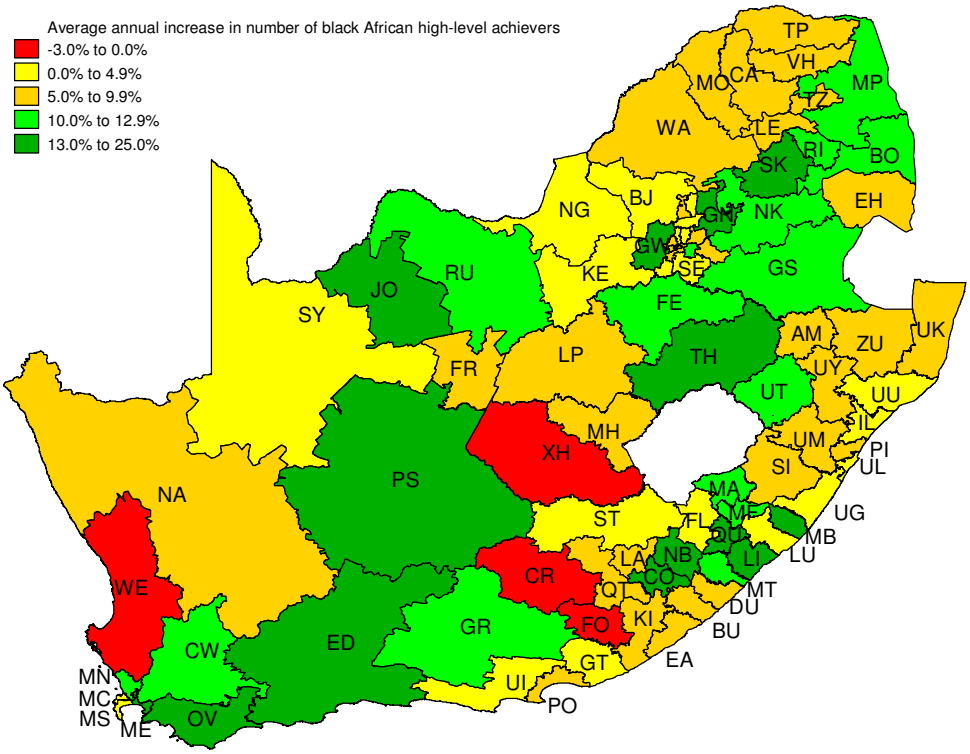
been most likely to become high-level mathematics achievers and, secondly, where the largest improvements in this regard occurred between 2008 and 2015.

Figure 13: Levels of black African high-level achievement in 2013-2015



Note: 'High-level achiever' here and in the following map means a learner who obtained a mark of 60 or more out of 100, after the recalibrations described in the DBE's analysis have been applied.

Figure 14: Average annual increase in black African high-level achievers 2008-2015



Importance of district leadership for Grade 12 improvement. It is noteworthy that many Grade 12 improvement trends are rather district specific. For instance, Eastern Cape, generally not a well-performing province with respect to Grade 12, contains districts, such as Libode (LI) and Cofimvaba (CO), which have seen exceptionally strong improvement. Anecdotal evidence points to strong district leadership behind some of these trends.

APPENDIX A: FOCUS ON PROVINCIAL VALUES

This appendix provides, above all, province-level information to supplement the discussions in sections 2 and 3 of the report.

Enrolment and attainment trends

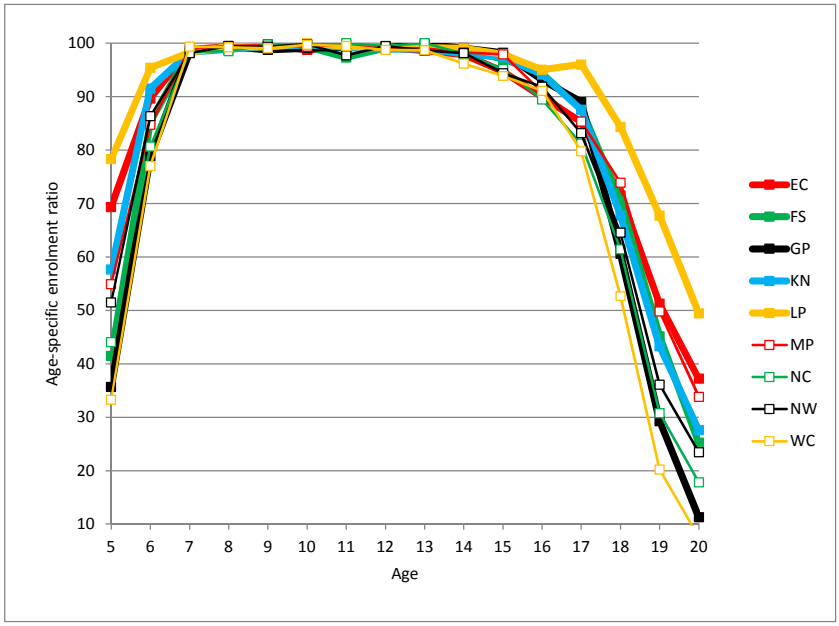
Grades 1 to 5 growth in eight of nine provinces. As seen in Table 2 below, all provinces except for Eastern Cape experienced relatively large enrolment growth in grades 1 to 5 in the years 2010 to 2015.

Table 2: Increases in public school grades 1 to 5 enrolments 2010-2015

	2010	2015	Difference	% change
EC	883,023	856,599	-26,424	-3.0
FS	265,240	298,531	33,291	12.6
GP	752,380	898,414	146,034	19.4
KN	1,105,305	1,176,911	71,606	6.5
LP	604,636	677,392	72,756	12.0
MP	411,150	453,384	42,234	10.3
NC	120,293	129,810	9,517	7.9
NW	327,903	361,817	33,914	10.3
WC	423,419	482,484	59,065	13.9
SA	4,893,349	5,335,342	441,993	9.0

Increased school enrolment for 17 and 18 year olds. Figure 15 below illustrates school enrolment ratios by age according to the General Household Survey for the period 2012 to 2014. In the 2013 sector review a similar graph was presented for the 2009 to 2011 period. One large difference between the two periods is that across all provinces there were higher levels of school enrolment at ages 5 and 6, largely as a result of expansion in schools-based Grade R enrolment. But there were also particularly large enrolment ratio increases at age 17, with the national enrolment ratio increasing from 83% in 2009 to 88% in 2014, and by at least 5 percentage points in Limpopo, KwaZulu-Natal and Western Cape across the two periods (2009-2011 and 2012-2014). At age 18, eight provinces saw an increase in the enrolment ratio across the two periods, whilst at ages 19 and 20 seven provinces saw a *decline* in the enrolment ratio (counting ages 19 and 20 jointly). The overall picture is thus one of increasing enrolments within the 'correct' age range of 6 to 18, and declines beyond that. The average across all the age-specific enrolment ratios in the range age 5 to 20 remained largely unchanged, the averages being 83% in 2009 and 84% in 2014. Thus despite some concentration towards more 'correct' ages, overall enrolments relative to population in the 5 to 20 age range did not change much.

Figure 15: School enrolment ratios by age and province (2012-2014)



Source: General Household Survey datasets, years 2012 to 2014.
Note: Averages across the three years 2012 to 2014 were used to improve the reliability of values, given the smallness of the sample.

A necessary enrolment improvement in Western Cape. The overall picture is one of high enrolment ratios at the critical ages 7 to 15, ages for which schooling is compulsory (though it is legal for some 15 year olds to be outside school, if they turned 15 in the previous year). For the ages 8 to 10 and 12 to 13 in Figure 15 no province displays an enrolment ratio below 99%. Table 3 below reproduces 2011 age 7 to 15 enrolment ratios appearing in the 2013 sector review, and provides the corresponding 2014 figures, all based on the GHS. One important difference between the two years is that in 2014 Western Cape no longer displayed the lowest value. In fact, it is only this province which displays a statistically significant change between the two years, in the case of Western Cape a positive change[18]. Nationally, for ages 7 to 14 (not 15), the enrolment ratio in 2014 was 99.2%. The number of learners aged 7 to 14 represented by a 0.8% out-of-school percentage is around 57 000. These children should be targeted for special inclusion programmes, based on evidence on the reasons for their non-attendance at school.

Table 3: Enrolment ratios for ages 7 to 15 (2011 and 2014)

	Enrolment ratio 2011 (ages 7 to 15)	
	2011	2014
EC	98.5	98.9
FS	98.9	98.3
GP	99.3	99.2
KN	98.7	99.1
LP	99.1	99.3
MP	99.0	99.2
NC	98.6	99.3
NW	98.6	98.1
WC	97.9	98.9
SA	98.8	99.0

Source: 2011 and 2014 GHS datasets.

[18] A simple difference-of-means test was applied, using the 0.05 level of significance.

Indicators on grade attainment. Table 4 below, which is reproduced from *Action Plan to 2019*, illustrates the degree to which learners are progressing at the ideal pace through the grades. If learners entered Grade 1 at the correct age and did not repeat, then all learners who turned nine in the previous year would be in Grade 4 or a higher grade in the current year. The indicator value would thus be 100%. In actual fact, this indicator value has been around 74% in the 2010 to 2013 period, with no clear movement up or down. This implies 26% of learners aged 9 were over-aged relative to their grade. Importantly, the indicator values are too high by around one percentage point because they do not take into account the fact that by age nine around 1.0% of children are not in school, and have almost certainly not reached Grade 4. Taking into account dropping out and repeating simultaneously, as implied by the indicator definition, would require household data. Given that the use of sample-based General Household Survey data would result in wide confidence intervals, Annual Survey of Schools data, which are non-sample school census data, were used for Table 4. However, this means that Table 4 statistics should be viewed together with enrolment ratio statistics (Figure 15) to obtain a complete picture.

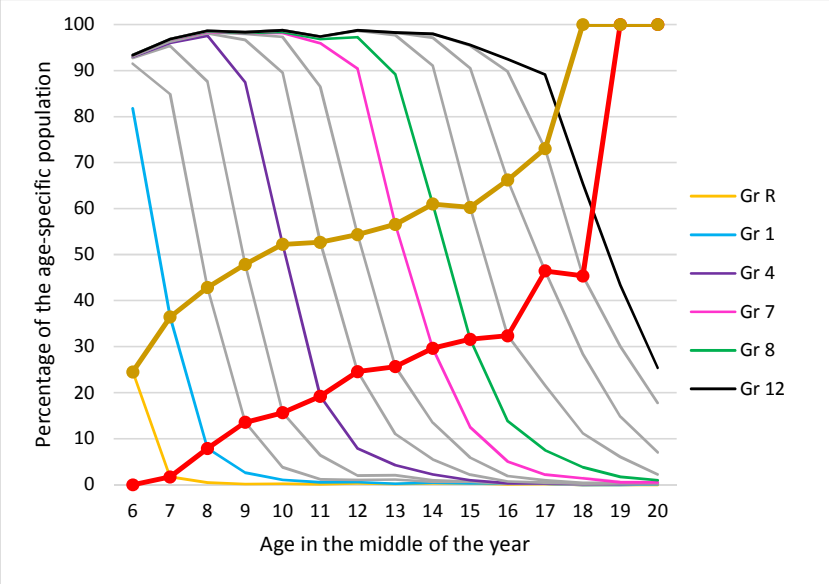
Table 4: Grade attainment indicator values by province 2010-2013

	Indicator 12.1: The percentage of children who turned **9** in the previous year and who are currently enrolled in Grade **4** (or a higher grade).					Indicator 12.2: The percentage of children who turned **12** in the previous year and who are currently enrolled in Grade **7** (or a higher grade).				
	2010	2011	2012	2013	Clear trend?	2010	2011	2012	2013	Clear trend?
EC	60.6	62.2	62.0	63.1		46.6	47.3	46.5	49.0	
FS	72.4	72.6	72.1	69.4		57.5	59.6	59.5	59.5	
GP	83.4	82.9	82.3	83.1		75.6	77.6	77.2	77.7	
KN	74.2	74.3	75.1	75.0		63.2	64.1	64.3	63.2	
LP	81.3	76.6	80.6	79.7		63.4	62.3	65.7	67.0	
MP	76.0	73.7	73.7	68.5		60.6	60.9	61.6	58.4	
NC	70.9	69.3	66.0	69.3		54.3	55.8	53.4	57.0	
NW	68.2	68.8	70.0	70.1	*	53.6	54.6	56.2	56.8	*
WC	73.1	72.6	71.0	69.7		63.6	65.7	65.1	64.5	
SA	74.0	73.5	74.0	73.4		61.3	62.3	62.8	63.1	*

Source: Annual Survey of Schools datasets. Both public and independent schools were considered for this analysis.
Note: A clear trend is indicated with an asterisk if (a) there is a continuous increase across the four years and (b) the actual 2013 value is at least one percentage point higher than the actual 2010 value.

General agreement between school and household data on attainment. The above national figures obtained from the Annual Survey of Schools are in line with the national trends one finds in the General Household Survey of 2014, illustrated in Figure 16 below. The true percentage of children, by age, who are *over*-aged relative to their grade would lie between the two thick curves. It is not possible to obtain precise figures from the GHS data as these data, unlike the ASS data, provide no indication of a child's birthday. Thus a child reported to be age 9 in the middle of the year according to the GHS may have turned 9 in the current year, in which case there would definitely be over-aged if in Grade 2 or a lower grade. However, if the same child turned 9 in the previous year, then the child can definitely be considered over-aged if in Grade 3 or a lower grade. Figure 16 points to the percentage of over-aged children aged 9 in 2014 being between 14% and 48%, which would be in line with the 26% figure mentioned above, based on ASS data.

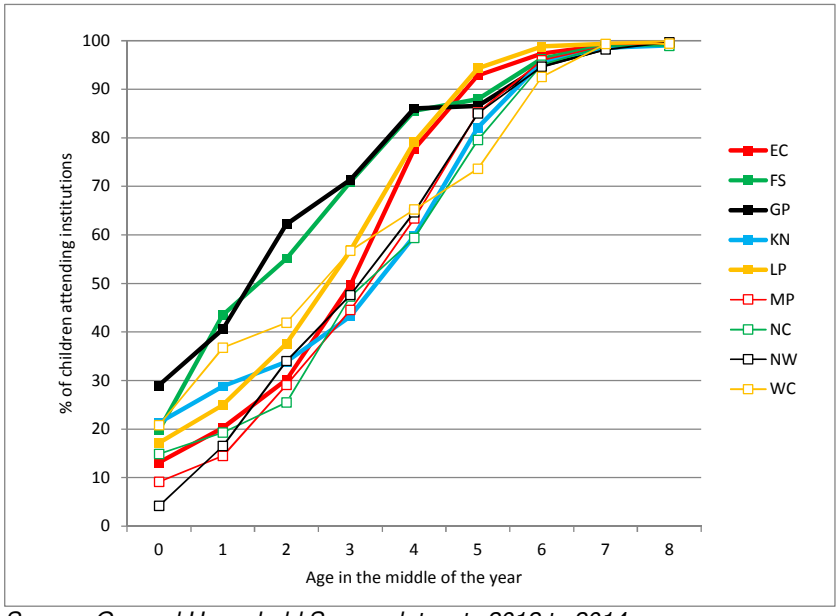
Figure 16: Over-aged learners in the GHS 2014 data



Source: General Household Survey dataset, 2014.
Note: The thick red and brown curves reflect roughly the percentage of the population enrolled in school, but in a grade that is too low relative to age, meaning learners are over-aged. The red curve illustrates the minimum level of over-aged learners, whilst the brown curve illustrates the maximum level. The true level would lie somewhere between the two. Six key grades are marked with thin non-grey curves. Other grades are marked with thin grey curves. The grade curves reflect stacked numbers of learners per grade, so the reader should focus on the gaps between the grade curves to obtain an idea of the number of children.

Enrolment of children aged 0 to 4 particularly high in Gauteng and Free State. The next graph examines recent enrolment trends for children aged 0 to 8, by province, in line with the approach used for the earlier Figure 4. Gauteng and Free State stand out as provinces with particularly high levels of attendance in some kind of education or care institution for children aged 0 to 4. Two provinces with high levels of poverty, Limpopo and Eastern Cape, are relatively good in term of the enrolment of children aged 4, and especially aged 5.

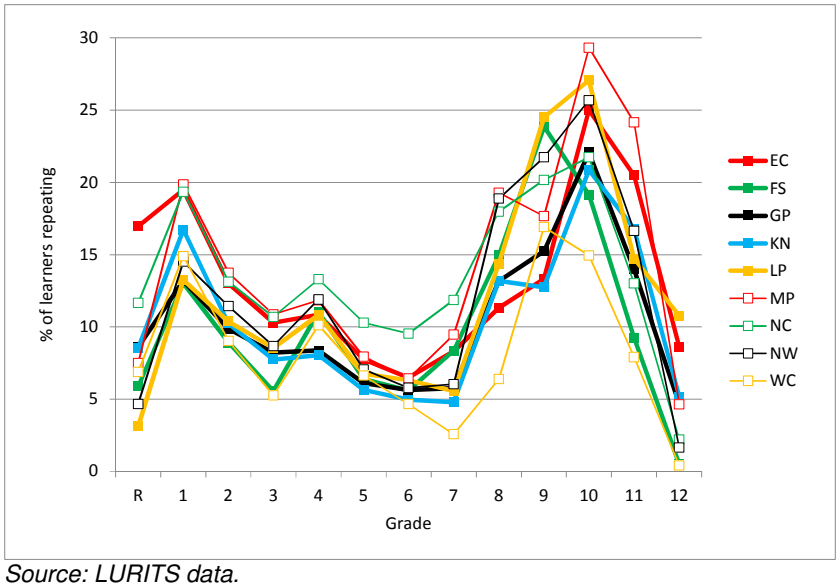
Figure 17: Enrolment ratios for young children by province (2012-2014)



Source: General Household Survey datasets 2012 to 2014.
Note: Each point in the graph is the average across the 2012, 2013 and 2014 statistics.

Grade repetition up to twice as high in some provinces as others. The following two graphs elaborate on the earlier Figure 5 by providing provincial patterns and trends with respect to the percentage of learners, by grade, who are repeating. Clearly, in certain provinces, such as Mpumalanga, grade repetition is for certain grades twice as high as it is in the province with the lowest levels of grade repetition, Western Cape. In seven provinces the repetition peak occurred in Grade 10 in 2015, whilst in Free State and Western Cape it was in Grade 9.

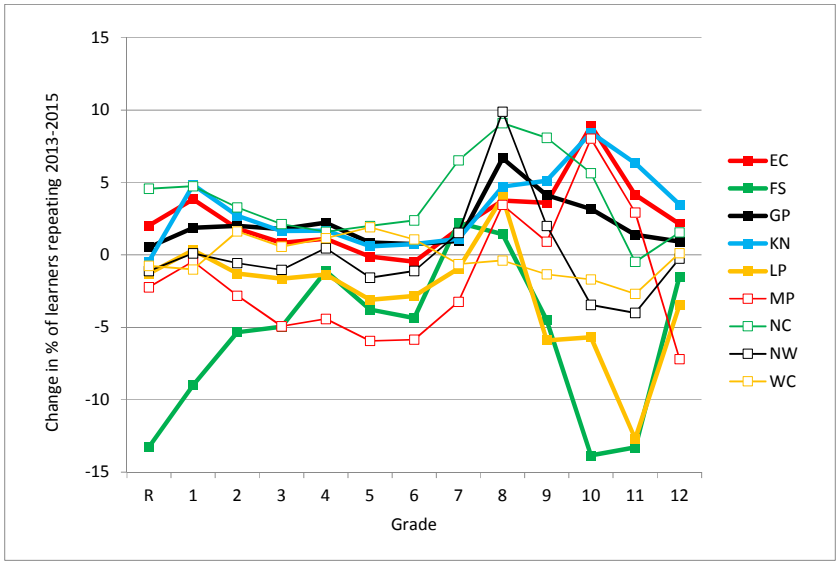
Figure 18: Repeating learners by grade and province (2015)



Source: LURITS data.
Note: For WC, data from 2014 and 2013 were used, as 2015 data were too incomplete. For all other provinces, data from 2015 and 2014 were used.

Large reductions in grade repetition in two provinces. The following graph suggests that without the policy signals which went out in 2013 around the need to reduce grade repetition at the secondary level, repetition would have been even higher in 2015. In particular two provinces, Limpopo and Free State, reduced their grades 10 and 11 repetition considerably. For instance, Limpopo reduced the statistic for Grade 11 from 27% of learners in 2013 to 15% of learners in 2015. The result was less variation across provinces in terms of the percentage of repeaters in 2015, relative to 2013.

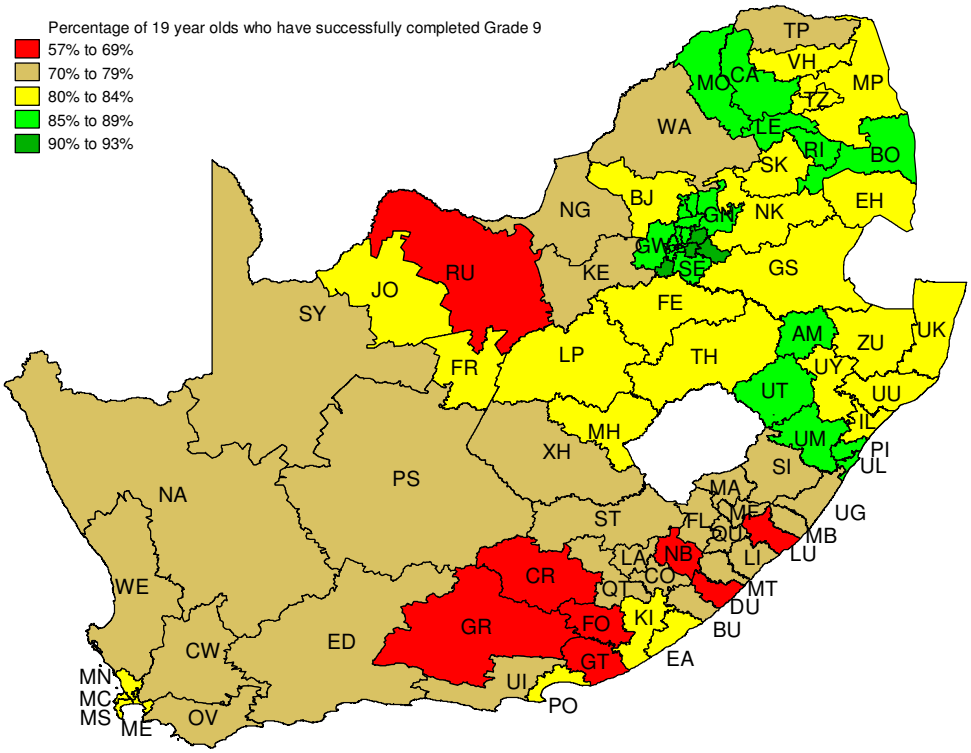
Figure 19: Changes in provincial repetition patterns 2013 to 2015



Note: In line with the note for the previous graph, the WC curve reflects changes between 2013 and 2014. For other provinces, the years 2014 and 2015 were used. Statistics are percentage points, so a shift in Grade 11 in LP from 27% to 15% appears as minus 14 in the graph.

Non-attainment of Grade 9 especially prevalent in three provinces. Figure 20 below provides a picture of where in the country non-attainment of Grade 9 is particularly prevalent. The indicator illustrated here, namely the percentage of 19 year olds who have successfully completed Grade 9 must, like all indicators, be interpreted with caution. In particular, values could be lowered for certain districts if many youths below age 19 without Grade 9 move to other districts. Yet the indicator seems sufficient to gauge where retention up to the end of Grade 9 is least successful. These areas include Eastern Cape, in particular, but it is also clear that rural Western Cape and Northern Cape experience problems.

Figure 20: Grade 9 attainment of 19 year olds by district (2011)



Source: Census 2011 (microdata from the 10 per cent sample).
Note: Correspondence between municipality in the census data and education districts was found by comparing the geo-coordinates of schools to the boundary data for the two demarcations. Where a municipality spanned more than one education district, district values use portions of municipal values with school enrolment used for weighting purposes. The education district codes are explained in Table 12.

Learner performance

Higher reliability of verification ANA results. Six indicators in *Action Plan to 2019* deal with the percentage of learners obtaining a 'required' level of performance in the Annual National Assessments (ANA), in mathematics and language, at the grades 3, 6 and 9 levels. For all ANA grades and subjects, the DBE considers the 'required' level of performance to be 50 marks out of 100. Statistics in Table 5 draw from figures published in the official 2014 ANA report of the DBE[19]. Values obtained from the verification ANA schools, and not the 'universal' schools, are given here. Verification schools in 2014, as in earlier years, were a representative sample of schools constituting around 10% of schools. In these schools, an externally employed service provider ensured that controls and oversight were particularly strong. The remaining 90% of schools are considered universal ANA schools. Verification ANA results at the provincial level in 2014, and in earlier years, tended to be lower than universal ANA results. For instance, the national grades 3 and 6 figures seen in Table 5 are on average 7 percentage points lower than what would be seen if universal ANA results were used. The phenomenon of higher values in universal ANA is seen across all provinces. Analysis of the data has revealed that this is not primarily a result of more lenient testing in 'universal' schools. There are missing schools in the national database of universal ANA results (see Table 1), and missing schools tend to be more socio-economically disadvantaged schools, meaning schools whose learners can on average be expected to perform worse. To illustrate the extent of the problem, the ANA results of 8% of learners were not captured for

[19] *Report on the Annual National Assessment of 2014: Grades 1 to 6 & 9*, available on the DBE website.

Grade 6 in the 2014 ANA cycle, the figure being as high as 18% in Mpumalanga. Verification ANA schools, on the other hand, are virtually all captured in the national database, and these schools are specifically chosen to be representative of schools within each province. Language results in Table 5 for grades 6 and 9 reflect both those learners writing the home language test and the first additional language test. Both of these tests can be either in English or Afrikaans. In 2014, 27% of Grade 6 language marks in the national database were those of learners who wrote the home language test, as opposed to the first additional language test. In Grade 9 the figure was 21%.

Table 5: Percentage of learners achieving 50 in ANA in 2014

	Grade 3		Grade 6		Grade 9	
	Math.	Lang.	Math.	Lang.	Math.	Lang.
EC	52	51	22	28	2	16
FS	65	65	41	49	5	22
GP	74	71	53	74	3	34
KN	56	57	31	40	3	19
LP	34	43	16	26	1	8
MP	55	57	27	40	4	22
NC	49	45	24	48	3	28
NW	39	51	20	41	3	19
WC	68	64	45	75	3	38
SA	56	57	32	46	3	22

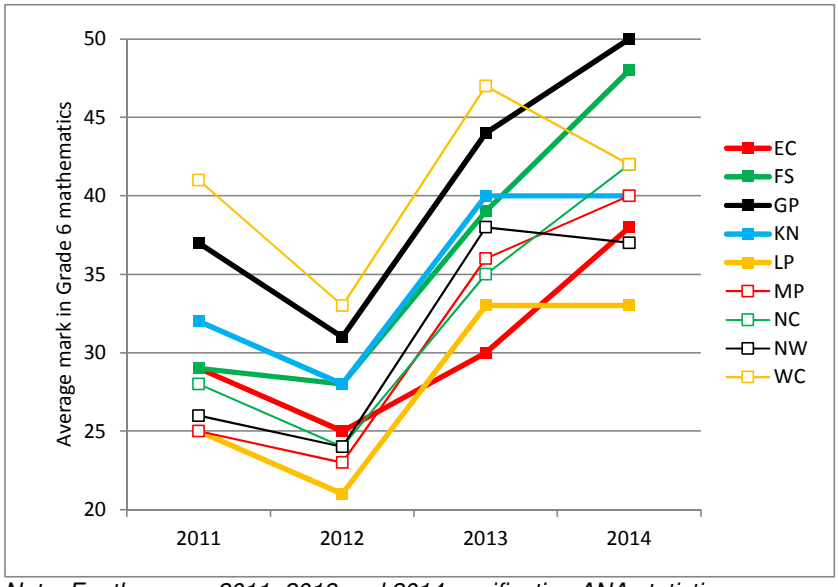
Source: Official ANA report of the Department of Basic Education. Figures from verification ANA schools are used. Figures include learners in independent schools who wrote the ANA tests. Independent school learners comprised around 1.6% of all learners.

Raw ANA results not comparable across years. Even verification ANA statistics need to be interpreted with caution. Two key issues in the published province-level statistics stand out. Firstly, aggregate results have shifted up and down substantially, confirming what the DBE has repeatedly acknowledged, namely that ANA is a maturing system where year-on-year comparability is still far from ideal, because of issues relating to the entire process, from test design to marking. (However, as discussed below, standardisation *within* a year is relatively good.) The official 2014 ANA report explains the matter as follows:

> The fact that ANA tests are exposed necessitates that a different test is administered every year. This makes it difficult to compare performance from year to year because different tests are likely to yield different results. The DBE has started a review of the test design so that in future separate tests will be used to serve diagnostic and system purposes. On the one hand, tests for systemic assessment will be kept confidential so that the same test can be used over a number of years to track trends in performance. On the other hand, tests designed to provide diagnostic information may be kept open to exemplify best assessment practices. The current design of ANA limits the extent to which ANA results may be used. (Department of Basic Education, 2014b: 37)

Figure 21 below illustrates the problem for the average mark in Grade 6 mathematics. Similar patterns would be found if other grades and subjects were considered, whether one uses the average mark or percentage of learners achieving a mark of 50, and whether one uses verification ANA or universal ANA results. At face value, there was a large performance drop between 2011 and 2012, followed by a steep improvement. However, such large swings in performance are unlikely to be real. To illustrate, the Free State change between 2013 and 2014 of 8 marks, from 40 to 48, represents 0.42 of a standard deviation (the standard deviation for the 2013 Grade 6 mathematics marks was 19 percentage points). Trends in education systems around the world suggest that the best improvement one can hope for in an entire schooling system (or within a province) over a period of one year is 0.08 standard deviations. The Free State shift between 2013 and 2014 was thus five as times large as one could realistically expect. Many of the upward and downward shifts seen in Figure 21 exceed what one could realistically expect as actual improvements or deteriorations.

Figure 21: Grade 6 ANA mathematics average marks



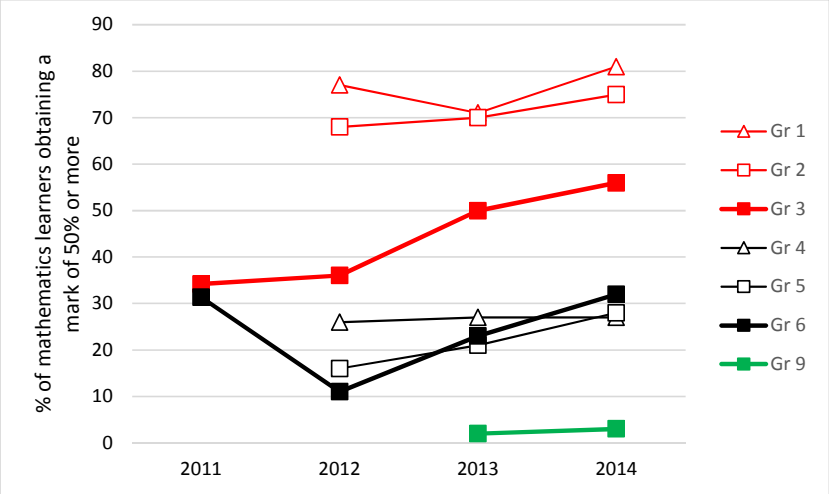
Note: For the years 2011, 2013 and 2014, verification ANA statistics are reflected. For 2012, when there was no verification ANA, universal ANA results are reflected. Even if universal ANA results are used for all four years, the general patterns remain unchanged, including the prominent dip in 2012.

Reasons for 'poorer' ANA results in the higher grades. A second issue relates to comparisons across grades using ANA results. As seen in Figure 22 below, the general tendency is for average results to 'worsen' the higher the grade. This is a typical pattern seen not just in South Africa. On average learners fall further and further behind relative to the skills they should have learnt, according to the curriculum, as they move up the grades. Even with grade repetition and remediation efforts this pattern is seen. It is thus not necessarily true that teaching in, say, Grade 9 (or Grade 6) is worse than teaching in Grade 1. Results in Grade 9 (or Grade 6) are worse than in Grade 1 largely because of competency gaps arising out of weaknesses in the learning processes during all preceding grades.

Grade 9 ANA standards issues. It is possible that ANA has been too demanding at the Grade 9 level than it should be. In 2013 only 2% of Grade 9 learners obtained a mark of at least 50%. In 2014 the figure was 3%. In contrast, according to the 2011 Grade 9 TIMSS results, 15% of learners surpassed a 'low international benchmark' of 400 TIMSS points[20], roughly the average in Saudi Arabia[21]. Moreover, 4% of youths get to obtain a relatively high pass in mathematics in Grade 12, allowing them entry into mathematically-oriented programmes at universities. Whilst both the TIMSS and Grade 12 figures also reflect a serious under-performance problem, a comparison of these two sources suggests that at the Grade 9 level, ANA has been particularly stringent.

[20] Reddy *et al*, 2012: 11.
[21] Mullis *et al,* 2012: 42.

Figure 22: Percentage of learners reaching a 'required level' in mathematics



Note: See the note for the previous graph on the use of universal ANA results for 2012. Points are missing for specific years (for instance Grade 1 in 2011) because the grade was not tested or reliable statistics are not available.

Broader role of ANA. The standardisation problems referred to above should not detract from the value of ANA as a programme able to bring a far greater awareness of national standards into schools than was the case previously, when no national testing occurred. Moreover, the evidence suggests that within a particular year, even universal ANA is relatively good at comparing performance across schools, districts and provinces, and allowing for the identification of pockets of excellence and, conversely, parts of the system requiring especially urgent attention. For instance, the relative performance levels of provinces are roughly similar in ANA as in the internationally standardised PIRLS and SACMEQ testing systems[22].

PIRLS 2011 results by province. Table 6 and Figure 23 below provide province-level results of the 2011 prePIRLS testing occurring in Grade 4 and involving a reading comprehension exercise with multiple-choice and free-response questions[23]. These figures are arguably the most rigorously derived ones from recent years reflecting performance at the primary level. When SACMEQ 2013 Grade 6 test results become available, the picture should become clearer including, crucially, progress reflected in the 2007 and 2013 SACMEQ results.

[22] The correlation, at the province level, between 2011 prePIRLS Grade 4 language results and 2007 SACMEQ language results is 0.90. The correlation between ANA Grade 6 average scores for the period 2011 to 2014 (the average across the four annual provincial averages) and prePIRLS is 0.91 and between these ANA figures and the SACMEQ figures 0.88.

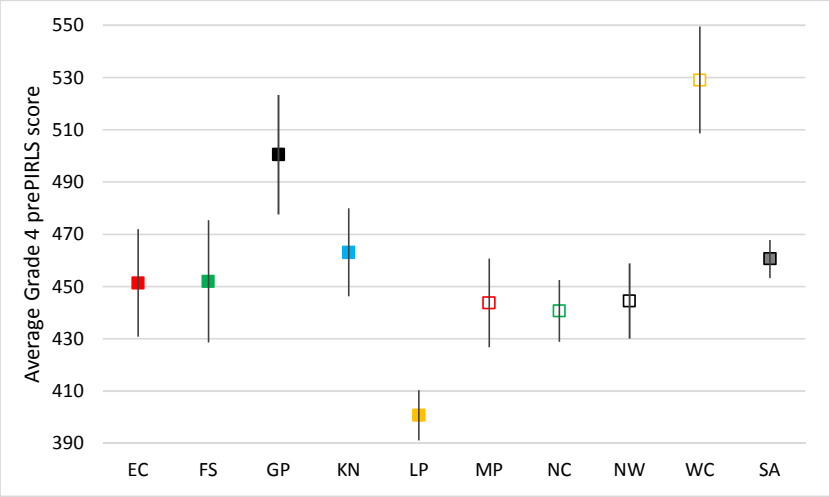
[23] See details in Howie *et al* (2012).

Table 6: Provincial averages in prePIRLS Grade 4 in 20114

	prePIRLS average	Confidence interval	
EC	451	431	472
FS	452	429	475
GP	501	478	523
KN	463	446	480
LP	401	391	410
MP	444	427	461
NC	441	429	453
NW	445	430	459
WC	529	509	550
SA	461	453	468

Source: Calculated from the learner-level prePIRLS microdata.
Note: Confidence intervals are calculated at the 5% level of significance.

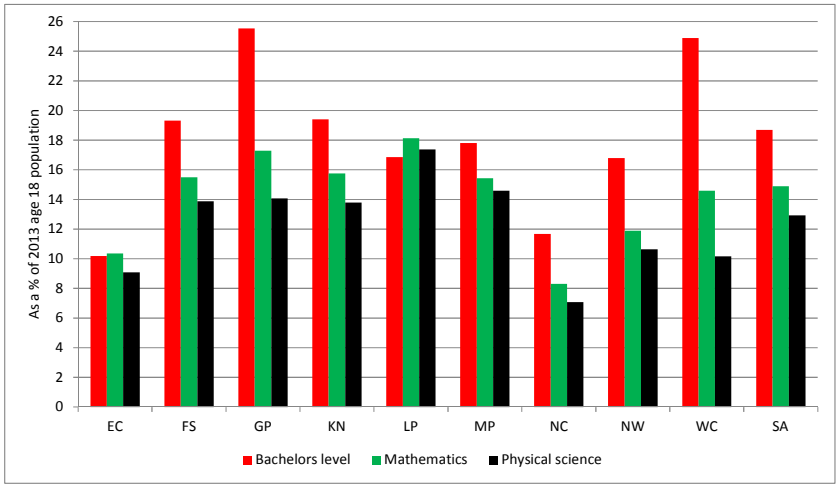
Figure 23: Provincial averages in prePIRLS Grade 4 in 2011



Note: Values reflected in the graph are from Table 6.

Grade 12 outputs relative to provincial youth population. Turning to the quality of outcomes at the Grade 12 level, the following graph presents achievements by province in terms of three indicators: learners obtaining a Bachelors-level pass, learners passing mathematics, and learners passing physical science. Here average indicator values across the years 2013 to 2015 were divided by the age 18 population in order to create a more comprehensive picture of outputs relative to demand (the youth population). The graph shows that the opportunities youths have for developing critical skills vary to a large degree by province. The best province often displays a situation that is twice that of the weakest province. For instance, learners with a Bachelors-level pass as a percentage of 18 year olds ranges from 26% in Gauteng to 10% in Eastern Cape. The figures for mathematics range from 18% for Limpopo to 8% in Northern Cape. In the case of WC there seems to be a physical science problem in the sense that passes in this subject are particularly low relative to the passes in mathematics.

Figure 24: Youths displaying critical skills in Grade 12 examinations (2013-2015)



Source: See Table 7 and Table 8 for numerator values, and column 'Denominator' in Table 20 for denominator.
Note: Learners are the averages across 2013 and 2015.

Discrepancies between different Grade 12 indicator trends. The next two tables provide the numerator values used in the previous graph, as well as growth statistics in percentage terms and in terms of additional learners per year. What is striking is how much larger the growth in Bachelors-level passes has been than growth in mathematics and physical science passes. In fact, the 2008 to 2015 trend for mathematics passes is slightly negative. This needs to be seen in the context of the discussion in section 3 of difficulties around the standardisation process. With respect to provincial trends, what seems particularly noteworthy is the fact that Northern Cape displayed the weakest percentage growth in Bachelor's level passes, despite having the second-lowest level in this regard in recent years (see the previous graph).

Five per cent of Bachelors level passes accounted for by IEB. Table 9 below presents figures for full-time learners participating in the examinations of the Independent Examinations Board (IEB). Relative to the public system, this system is small. For instance, only 5% of Bachelors-level passes nationally are accounted for by the IEB. But the particularly strong presence of the IEB in Gauteng means that 10% of Bachelors-level passes in this province are from the IEB. In 2014, 66% of IEB full-time examination candidates were white, against a figure of 7% for the public system (yet there were six times as many white candidates in the public system as in the IEB system).

Table 7: Grade 12 Bachelors-level passes (full-time students)

									Annual trend (uses linear slope)	
	2008	2009	2010	2011	2012	2013	2014	2015	Learners per year	% per year
EC	8,666	9,492	10,296	10,305	11,506	13,778	13,482	15,344	933	8.0
FS	6,286	6,030	5,863	6,854	7,008	9,009	8,035	9,333	487	6.7
GP	28,235	28,709	31,719	30,342	32,681	38,464	37,121	39,052	1,671	5.0
KN	24,656	26,287	31,826	27,826	35,011	47,588	36,212	35,226	2,120	6.4
LP	10,628	10,202	14,837	12,997	15,361	18,853	16,370	21,050	1,407	9.4
MP	5,335	6,556	8,275	8,898	9,516	13,009	11,269	13,545	1,141	11.9
NC	1,993	1,741	2,164	2,052	2,093	2,452	2,204	2,483	79	3.7
NW	6,333	6,356	8,068	7,224	7,512	10,220	8,568	8,926	428	5.4
WC	14,512	14,324	14,524	15,407	16,563	19,769	18,757	22,660	1,144	6.7
SA	106,644	109,697	127,572	121,905	137,251	173,142	152,018	167,620	9,411	6.9

Source: Official DBE examination reports.
Note: All figures refer to full-time students. Official supplementary examination results are included in the above figures, except for 2015 where year-end numbers were inflated by 0.8% in line with trends in the 2014 cycle.

Table 8: Grade 12 mathematics and physical science passes (full-time students)

									Annual trend (uses linear slope)	
	2008	2009	2010	2011	2012	2013	2014	2015	Learners per year	% per year
Mathematics										
EC	13,839	16,206	14,457	12,752	14,114	15,753	13,054	14,597	-62	-0.4
FS	11,426	7,066	5,321	5,395	6,167	6,847	6,665	7,646	-275	-3.9
GP	27,541	26,503	23,839	20,027	23,899	27,150	24,661	25,789	-91	-0.4
KN	36,030	33,247	31,407	24,284	30,408	39,151	29,188	28,265	-539	-1.7
LP	18,548	19,810	19,469	15,618	18,346	21,088	18,265	21,188	218	1.2
MP	9,578	9,612	10,007	9,199	9,998	11,301	10,050	11,441	237	2.4
NC	1,925	1,760	1,898	1,656	1,572	1,810	1,529	1,742	-33	-1.9
NW	8,056	7,124	6,782	5,282	6,160	7,350	5,846	6,416	-182	-2.7
WC	13,002	12,524	11,571	9,820	11,306	12,216	11,265	12,397	-85	-0.7
SA	139,945	133,852	124,751	104,033	121,970	142,666	120,523	129,481	-812	-0.6
Physical science										
EC	11,119	8,716	11,753	12,123	12,911	14,061	11,263	12,731	378	3.2
FS	7,870	4,789	4,656	5,466	5,820	6,280	5,959	6,709	35	0.6
GP	25,998	16,912	18,777	17,069	20,335	22,557	19,881	20,690	-92	-0.5
KN	26,774	19,822	23,856	23,516	26,783	33,442	25,177	25,988	635	2.5
LP	18,022	12,658	16,328	16,079	18,566	20,180	17,801	20,063	643	3.7
MP	9,667	5,987	8,352	9,025	10,426	11,104	8,921	10,981	399	4.3
NC	1,917	1,038	1,352	1,173	1,324	1,563	1,258	1,507	-12	-0.8
NW	8,768	4,594	5,662	4,853	5,769	6,686	5,243	5,639	-175	-3.0
WC	9,688	7,074	7,524	7,137	7,984	8,333	7,845	8,813	12	0.1
SA	119,823	81,590	98,260	96,441	109,918	124,206	103,348	113,121	1,824	1.7

Source: Official DBE examination reports.

Note: All figures refer to full-time students. Supplementary examination results are not *included in the above figures, due to difficulties in obtaining the relevant province-level statistics. Had the statistics been available, the differences in this table would not have been large. At the national level, in 2012 the supplementary examinations added 0.5% to the number of mathematics passes and 0.9% to the number of physical science passes.*

Table 9: Independent Examinations Board (IEB) results in 2014

	Wrote	Passes	Bachelors-level passes	Writing mathematics	Passing mathematics	Achieving 60 or more in mathematics	Writing physical science	Passing physical science	Achieving 60 or more in physical science
EC	481	467	397	278	263	191	204	187	116
FS	91	91	77	58	57	42	58	58	29
GP	5,035	5,003	4,440	3330	3263	2374	2664	2601	1567
KN	1,780	1,775	1,613	1097	1078	806	786	774	501
LP	280	269	194	132	130	80	114	103	41
MP	275	275	255	167	167	102	130	129	66
NC	26	26	20	17	15	5	9	9	2
NW	177	176	118	71	69	31	61	51	8
WC	650	648	579	378	377	282	292	281	188
SA	8,795	8,730	7,693	5,528	5,419	3,913	4,318	4,193	2,518

The following two tables (Table 10 and Table 11) provide provincial and national details behind the national trends seen in Figure 12 in a previous section. The adjustments referred to below are the adjustments discussed in section 3. These adjustments, which provide a more accurate and consistent picture of qualitative improvements in schools, result in a more positive trend for mathematics, and a less positive trend for physical science.

Table 10: High-level Grade 12 mathematics achievement 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015	Avg. annual % change
At face value, before adjustments									
Mark 50									
EC	5,363	4,935	4,469	4,170	4,599	5,626	4,672	5,018	0.0
FS	3,615	2,661	2,110	2,096	2,594	3,148	2,827	3,118	0.4
GP	15,310	12,862	11,958	10,092	12,291	13,882	12,481	12,623	-1.2
KN	15,037	11,814	11,343	8,015	11,165	16,016	10,397	10,188	-2.4
LP	7,298	6,775	6,694	5,451	7,219	8,701	6,886	7,922	2.1
MP	4,230	3,474	3,762	3,518	3,929	4,889	3,751	4,627	2.4
NC	899	607	765	639	661	770	658	732	-1.5
NW	3,604	2,890	2,709	2,058	2,417	3,103	2,369	2,379	-4.3
WC	8,032	6,606	6,600	5,737	6,385	7,018	6,456	6,983	-1.1
SA	63,388	52,624	50,410	41,776	51,260	63,153	50,497	53,590	-0.7
Mark 60									
EC	3,300	2,587	2,468	2,326	2,461	3,077	2,558	2,737	-0.9
FS	2,345	1,538	1,324	1,219	1,557	1,847	1,708	1,791	-0.8
GP	10,951	8,358	7,770	6,292	7,726	8,862	7,893	7,935	-2.7
KN	9,720	6,722	6,631	4,414	6,292	9,320	5,995	5,821	-3.6
LP	4,471	3,643	3,639	2,976	4,005	4,885	3,867	4,400	1.6
MP	2,672	1,994	2,196	1,928	2,184	2,810	2,054	2,677	1.3
NC	602	346	471	374	391	433	373	442	-3.0
NW	2,367	1,720	1,578	1,203	1,388	1,754	1,351	1,266	-6.7
WC	6,111	4,785	4,652	4,033	4,368	4,796	4,515	4,743	-2.5
SA	42,539	31,693	30,729	24,765	30,372	37,784	30,314	31,812	-2.0
Mark 70									
SA	25,665	18,089	17,995	13,393	15,912	19,854	16,495	17,453	-3.8
After adjustments									
Mark 50									
EC	3,483	4,044	4,219	4,695	4,599	5,626	5,186	5,279	5.7
FS	2,463	2,230	2,008	2,343	2,594	3,148	3,122	3,279	6.2
GP	11,382	11,271	11,455	10,932	12,291	13,882	13,521	13,141	3.1
KN	10,174	10,005	10,757	9,040	11,165	16,016	11,542	10,698	3.1
LP	4,758	5,660	6,309	6,148	7,219	8,701	7,694	8,332	7.5
MP	2,804	2,961	3,573	3,942	3,929	4,889	4,161	4,855	7.4
NC	632	515	724	698	661	770	710	763	3.5
NW	2,481	2,497	2,573	2,274	2,417	3,103	2,594	2,521	1.2
WC	6,285	6,001	6,389	6,095	6,385	7,018	6,877	7,219	2.4
SA	44,462	45,184	48,007	46,167	51,260	63,153	55,407	56,087	4.3
Mark 60									
EC	1,796	2,164	2,161	2,601	2,461	3,077	2,737	2,897	6.3
FS	1,401	1,257	1,192	1,363	1,557	1,847	1,805	1,896	6.5
GP	6,905	7,220	7,024	6,940	7,726	8,862	8,295	8,331	3.4
KN	5,756	5,656	5,916	4,975	6,292	9,320	6,333	6,168	3.4
LP	2,364	3,013	3,192	3,358	4,005	4,885	4,088	4,665	8.8
MP	1,450	1,638	1,950	2,163	2,184	2,810	2,190	2,824	8.3
NC	325	295	420	416	391	433	403	466	4.7
NW	1,404	1,437	1,397	1,333	1,388	1,754	1,435	1,360	0.7
WC	4,264	4,254	4,295	4,324	4,368	4,796	4,704	4,958	2.3
SA	25,665	26,934	27,547	27,473	30,372	37,784	31,990	33,565	4.5
Mark 70									
SA	16,231	14,829	15,974	15,236	17,092	21,345	17,673	18,631	3.4

Source: The current table and the next one are taken from a separate DBE report of 2015 titled Understanding trends in high-level achievement in Grade 12 mathematics and physical science.

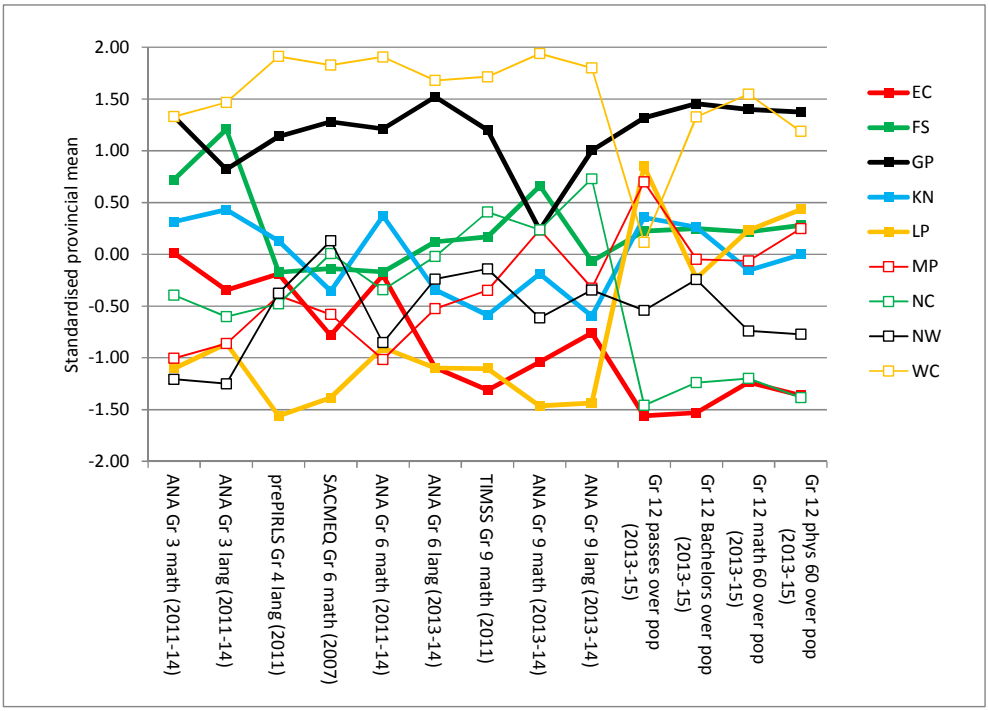
Table 11: High-level Grade 12 physical science achievement 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015	Avg. annual % change
At face value, before adjustments									
Mark 50									
EC	2,569	1,738	3,365	3,761	3,722	3,922	3,164	3,827	6.4
FS	2,062	1,233	1,787	2,057	2,311	2,416	2,194	2,518	5.8
GP	8,804	5,603	8,871	8,343	10,005	10,463	8,883	9,340	3.6
KN	7,159	5,117	8,613	7,873	9,515	12,156	8,174	8,741	5.5
LP	3,816	2,705	5,409	5,203	6,480	6,779	5,977	6,795	9.4
MP	2,285	1,362	2,987	3,442	4,235	3,985	3,080	4,053	9.3
NC	518	282	518	453	527	508	463	538	2.7
NW	2,103	1,260	2,102	1,863	2,183	2,406	1,754	1,808	1.0
WC	4,351	3,013	4,323	4,136	4,670	4,396	4,142	4,841	2.8
SA	33,667	22,313	37,975	37,131	43,648	47,031	37,831	42,461	5.4
Mark 60									
EC	1242	673	1829	1979	1921	1950	1679	2051	7.9
FS	996	587	1052	1212	1381	1304	1269	1417	7.5
GP	4813	2814	5672	5405	6419	6396	5515	5820	5.3
KN	3741	2219	5011	4287	5290	6697	4602	4934	6.8
LP	1589	1036	2922	2691	3424	3468	3249	3522	11.7
MP	1043	539	1716	1906	2392	2129	1697	2292	11.3
NC	250	130	305	269	315	288	236	300	4.0
NW	1064	553	1220	1097	1215	1258	967	949	1.7
WC	2760	1814	3124	3025	3286	2978	2922	3335	3.8
SA	17,498	10,365	22,851	21,871	25,643	26,468	22,136	24,620	6.9
Mark 70									
SA	7,874	4,226	12,719	12,098	13,632	13,589	11,970	13,175	8.5
After adjustments									
Mark 50									
EC	2,569	3,575	2,968	3,532	2,837	4,201	2,990	3,827	3.2
FS	2,062	2,253	1,599	1,964	1,890	2,559	2,088	2,518	2.9
GP	8,804	9,228	8,180	8,020	8,456	10,911	8,496	9,340	1.2
KN	7,159	9,445	7,772	7,405	7,599	12,892	7,758	8,741	2.5
LP	3,816	5,485	4,807	4,908	5,056	7,228	5,634	6,795	6.3
MP	2,285	2,707	2,681	3,266	3,443	4,219	2,922	4,053	6.8
NC	518	477	472	426	434	542	440	538	0.4
NW	2,103	2,299	1,900	1,749	1,731	2,551	1,657	1,808	-2.0
WC	4,351	4,225	4,068	4,023	4,083	4,554	3,995	4,841	1.1
SA	33,667	39,694	34,447	35,293	35,529	49,657	35,980	42,461	2.8
Mark 60									
EC	1486	1738	1588	1617	1348	1950	1592	2051	2.9
FS	1209	1233	949	1007	1000	1304	1194	1417	2.4
GP	5495	5603	5109	4646	4888	6396	5230	5820	1.0
KN	4281	5117	4421	3565	3901	6697	4349	4934	2.0
LP	1941	2705	2545	2177	2414	3468	3058	3522	6.9
MP	1241	1362	1502	1561	1713	2129	1613	2292	7.6
NC	299	282	269	214	241	288	218	300	-1.0
NW	1243	1260	1087	919	857	1258	907	949	-3.8
WC	3061	3013	2897	2706	2658	2978	2818	3335	0.5
SA	20,256	22,313	20,367	18,412	19,020	26,468	20,979	24,620	2.4
Mark 70									
SA	11,011	12,088	10,290	9,824	10,125	13,589	11,214	13,175	2.2

Continued and surprising high Grade 12 performance in Limpopo. Figure 25 below provides an overview of the relative positions of provinces with respect to learner performance at various levels of the schooling system. The graph is an update of a similar graph included in the 2013 sector review. Generally, the picture remains unchanged. One reason why the graph is important is that it brings to the fore anomalies with respect to certain indicators. One of several consistent patterns is the exceptionally poor performance of

Limpopo up to Grade 9, according to ANA, PIRLS, SACMEQ and TIMSS. Yet the remarkable fact that Limpopo does relatively well in the Grade 12 examinations, something also seen in the previous sector review, remains a reality. This intriguing pattern represents a challenge for researchers. Grade 12 statistics illustrated below are all relative to the population (see discussion in Appendix C), so the explanation is not that Limpopo excludes weaker learners from Grade 12 (in fact, Limpopo is relatively good at retaining learners up to Grade 12, as seen in Table 23). The Limpopo anomaly is not the result of a data problem. It is almost certainly a reality. Learners in this province perform exceptionally poorly up to at least Grade 9, after which the province succeeds in accelerating learning in ways not seen in other provinces. (The reason why the Grade 12 mathematics and physical science statistics for Limpopo in Figure 25 are not as impressive as those in the previous sector review is that in the previous review the focus was on passes relative to the population, whereas here the focus is on high-level passes at the 60% mark level relative to population.)

Figure 25: Overall view of learner performance by province



Sources: Figures reflected are standardised versions of original statistics, where standardisation involves making the mean across the nine provinces zero, and the standard deviation 1.0. Original ANA statistics are those appearing in Table 5. Where province-specific ANA averages spanning several years were calculated, these averages were first calculated, and then resultant statistics were standardised. Grade 12 original values are learner numbers divided by population using the methods for the latter described in Appendix C.

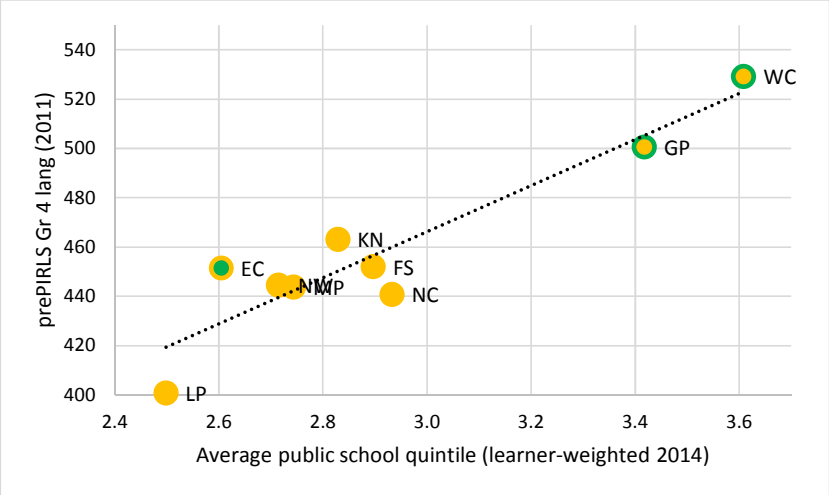
More stringent ANA Grade 9 in Gauteng. One statistic which does appear to be a measurement problem, and not an actual implementation problem, is the low figure for Gauteng with respect to the percentage of Grade 9 learners passing the ANA mathematics test. The overall picture, in particular the trend in TIMSS, suggests that Gauteng applied a more stringent standard in Grade 9 ANA mathematics, in both 2013 and 2014.

Learner retention problems in Northern Cape. In contrast to Limpopo, Northern Cape's Grade 12 results are much worse than one might expect, given the results up to Grade 9. This problem in Northern Cape is a longstanding one and is largely due to difficulties experienced in this province as far as keeping learners in school beyond Grade 9 is concerned (see for instance Table 23). A similar problem is found in Eastern Cape. What is noteworthy in

Western Cape is that although Grade 12 passes relative to the population are low by the province's pre-Grade 12 standards (and around average compared to other provinces), high-level achievement in Western Cape in Grade 12 is relatively high, on a par with that in Gauteng.

Provincial performance relative to socio-economic level. The following four graphs consider the quality of schooling, according to four indicators discussed elsewhere in the current report, relative to the average socio-economic status of learners in each province. For the latter, the average quintile per province derived from the official 'poverty table' was used[24]. This average quintile value correlates well with average household income per province[25]. The first of the four graphs, Figure 26, focusses on performance in Grade 4 reading in prePIRLS. Points which are green on the outside refer to provinces whose prePIRLS performance was high, without controlling for socio-economic status. Points which are green on the inside, so the point for Eastern Cape in Figure 26, refer to provinces *whose performance is high not necessarily in absolute terms, but in terms of what one would expect, given the province's level of poverty.* Thus although Eastern Cape did not perform well in prePIRLS 2011 in absolute terms, what appears noteworthy is that this province appeared in the middle of the performance ranking, though the province has the second-worst level of poverty after Limpopo. Put differently, the vertical distance between the trendline in the graph and the Eastern Cape marker is exceptionally large.

Figure 26: SES advantage and primary-level language by province



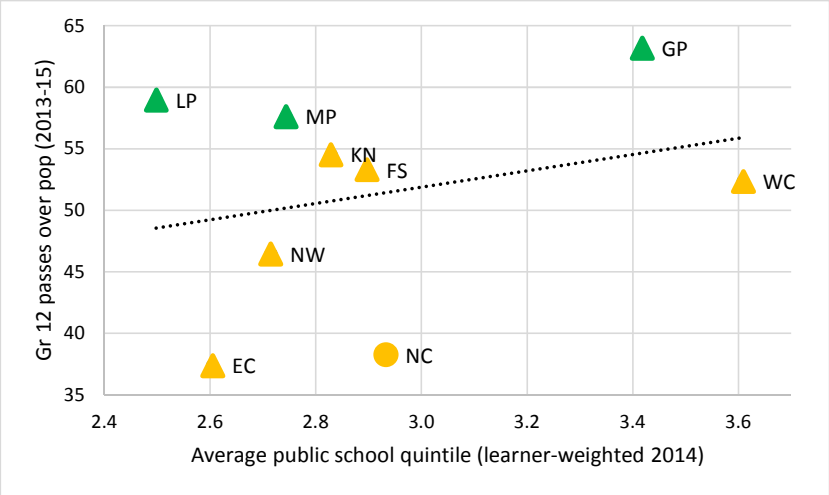
Source: prePIRLS values are those of Table 6.
Note: WC and GP are marked as noteworthy performers because they both display prePIRLS values which are at least 0.5 of a standard deviation above the mean across the nine provinces (where standard deviation is measured just across the nine provinces). EC is marked as a noteworthy performer because it is above the trendline by more than 0.5 of a standard deviation.

The next graph focusses on learners obtaining the National Senior Certificate relative to the number of 18 year olds. Here provinces with substantial improvements in the performance indicator in recent years are marked with an upward pointing triangle. In fact, all provinces except for Northern Cape have seen noteworthy improvements with respect to this indicator (see Table 24 in a subsequent section below). The three provinces with green markers display performance values which are high, whether one does a comparison of absolute values or a

[24] Government Notice 12 of 2014.
[25] The correlation, across the nine provinces, between average quintile and average household income as seen in the official Census 2011 publication of Stats SA is 0.96 (the revised Stats SA statistical release P0301.4 of 2012 used).

comparison that takes into account socio-economic status. The graph thus confirms some of what is seen in Figure 40, namely that Limpopo and Mpumalanga are provinces whose Grade 12 performance is easily under-rated if one looks only at the 'headline pass rate' (NSCs obtained over just Grade 12 examination candidates).

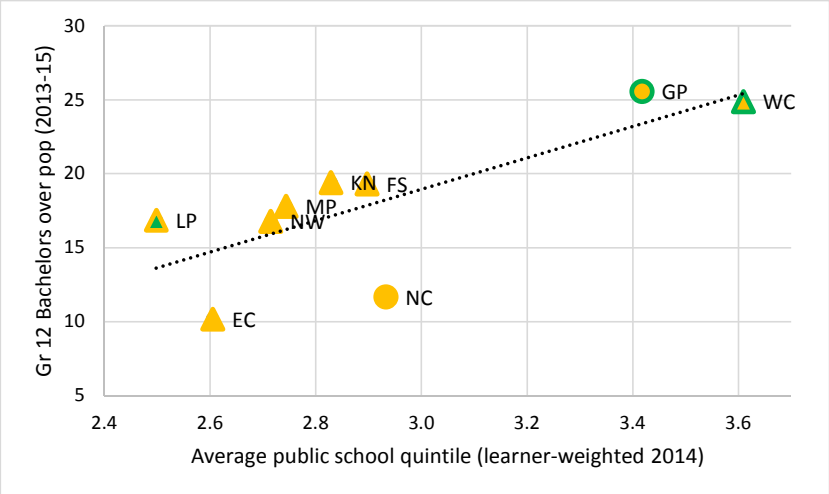
Figure 27: SES advantage and NSC attainment by province



Source: NSC attainment values are averages drawing from Table 20 and Table 23 figures.
Note: The same 0.5 of a standard deviation threshold for green as used for the previous graph, was used here.

Figure 28 focusses on attainment of a Bachelors-level NSC. The colours of the markers carry the same meaning here as in the previous two graphs. Limpopo's status as a province which performs well relative to its socio-economic status is confirmed.

Figure 28: SES advantage and Bachelors-level attainment by province

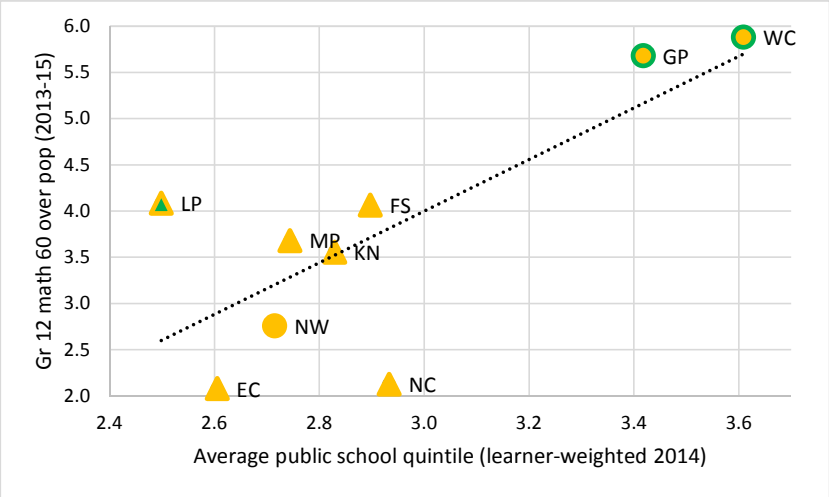


Source: Performance and trend values from Table 7 were used.
Note: Here a triangle was used for a province if its annual growth in Bachelors-level NSCs over the 2008 to 2015 period exceeded growth in the age 18 population by more than 5 percentage points (population trends from Table 21).

Finally, Figure 29 looks at the percentage of youths who became 'high-level' mathematics achievers, meaning they obtain a score of 60 or above (after the recalibrations described in

relation to Table 10 have been applied). As in the previous graph, Limpopo emerges as a province with a high indicator value relative to what one might expect, given socio-economic circumstances.

Figure 29: SES advantage and high-level mathematics attainment by province



Source: Performance and trend values from Table 10 were used.
Note: Here a triangle was used for a province if its annual growth in high-level mathematics achievers over the 2008 to 2015 period exceeded growth in the age 18 population by more than 3 percentage points.

The following table explains the district codes used in maps throughout this review.

Table 12: Education district codes used in maps

Prov.	Dist. code	District	Prov.	Dist. code	District
KN	AM	Amajuba	FS	MH	Motheo
NW	BJ	Bojanala	WC	MN	Metro North
MP	BO	Bohlabela	LP	MO	Mogalakwena
EC	BU	Butterworth	LP	MP	Mopani
LP	CA	Capricorn	WC	MS	Metro South
EC	CO	Cofimvaba	EC	MT	Mthatha
EC	CR	Cradock	NC	NA	Namakwa
WC	CW	Cape Winelands	EC	NB	Ngcobo
EC	DU	Dutywa	NW	NG	Ngaka Modiri Molema
EC	EA	East London	MP	NK	Nkangala
WC	ED	Eden and Central Karoo	WC	OV	Overberg
MP	EH	Ehlanzeni	KN	PI	Pinetown
GP	EN	Ekurhuleni North	EC	PO	Port Elizabeth
GP	ES	Ekurhuleni South	NC	PS	Pixley Ka Seme
FS	FE	Fezile Dabi	EC	QT	Queenstown
EC	FL	Mt Fletcher	EC	QU	Qumbu
EC	FO	Fort Beaufort	LP	RI	Riba Cross
NC	FR	Frances Baard	NW	RU	Dr Ruth Segomotsi Mompati
GP	GE	Gauteng East	GP	SE	Sedibeng East
GP	GN	Gauteng North	KN	SI	Sisonke
EC	GR	Graaff-Reinet	LP	SK	Sekhukhune
MP	GS	Gert Sibande	EC	ST	Sterkspruit
EC	GT	Grahamstown	GP	SW	Sedibeng West
GP	GW	Gauteng West	NC	SY	Siyanda
KN	IL	Ilembe	FS	TH	Thabo Mofutsanyana
GP	JC	Johannesburg Central	GP	TN	Tshwane North
GP	JE	Johannesburg East	LP	TP	Tshipise Sagole
GP	JN	Johannesburg North	GP	TS	Tshwane South
NC	JO	John Taolo Gaetsewe	GP	TW	Tshwane West
GP	JS	Johannesburg South	LP	TZ	Tzaneen
GP	JW	Johannesburg West	KN	UG	Ugu
NW	KE	Dr Kenneth Kaunda	EC	UI	Uitenhage
EC	KI	King Williams Town	KN	UK	Umkhanyakude
EC	LA	Lady Frere	KN	UL	Umlazi
LP	LE	Lebowakgomo	KN	UM	Umgungundlovu
EC	LI	Libode	KN	UT	Uthukela
FS	LP	Lejweleputswa	KN	UU	Uthungulu
EC	LU	Lusikisiki	KN	UY	Umzinyathi
EC	MA	Maluti	LP	VH	Vhembe
EC	MB	Mbizana	LP	WA	Waterberg
WC	MC	Metro Central	WC	WE	West Coast
WC	ME	Metro East	FS	XH	Xhariep
EC	MF	Mt Frere	KN	ZU	Zululand

APPENDIX B: FOCUS ON GRADE R PARTICIPATION

In this appendix a few details are provided around how the following sector indicator should be reported on and interpreted: *The percentage of Grade 1 learners who received Grade R*. Moreover, the reliability of previously published indicator values is interrogated, partly through comparison of enrolment by age patterns in the most widely used data source, the General Household Survey (GHS), against two other sources, the Annual Survey of Schools (ASS) and the National Income Dynamics Survey (NIDS). LURITS[26] data are used as a basis for further verification. It is concluded that the GHS does indeed provide a sufficient data source for measuring overall patterns in terms of this indicator, and for providing related information (such as age patterns) which assist in interpreting indicator values. It is re-emphasised that very small shifts in indicator values cannot be seen as reliable indications of actual trends, given the sample-based nature of the GHS data and the sizes of confidence intervals.

The value for the 2014 to 2015 period for this indicator is found to be around 95% to 96%, these two values being estimates obtained using two differing methods for analysing the GHS data.

Table 13 below sums up what the key published figures are in relation to the Grade R indicator. Five different methods lie behind the published figures. Method A involves the use of only Annual Survey of Schools (or EMIS[27]) data and has been referred to as an insufficient method which should be avoided[28]. Essentially the ASS data relating to past Grade R enrolment has been found to be inconsistent, with different schools responding in very different manners. The DBE plans to improve the survey instrument and collection systems so that more accurate data can be obtained. Until this occurs household data offer the best data source.

Method C, referred to in the final column of Table 13, involves comparing totals, in the form of weighted observations, across two years of the General Household Survey (GHS). This method is now generally considered inappropriate given problems around the comparability of GHS weights from one year to the next. For this reason, the discussion that follows will focus on the remaining three methods, B1, B2 and B3. Moreover, a further Method D, which also draws from GHS data and seems worth considering, is discussed.

Table 13: Published values for the Grade R indicator

Year described	Indicator values and source details		
	Sector plan documents, source is EMIS	Sector plan documents, source is GHS	DBE's GHS report, source is GHS
2009	**80** Department of Basic Education (2011: 199): Method A		
2010		**87** Department of Basic Education (2013a: 33): Method B1	**80.0** Department of Basic Education (2014a: 12): Method C
2011		**92** Department of Basic Education (2013a: 33): Method B2	**87.9** As above
2012		**94** As above	**93.9** As above
2013			**90.6** As above
2014		**96** Department of Basic Education (2015: 96): Method B3	

[26] Learner Unit Record Information Tracking System.
[27] Education Management Information System.
[28] Department of Basic Education, 2013a: 33.

How one understands the indicator is important for one's methodology. A key definitional question is how one defines 'received Grade R'. The following is proposed as a rule of thumb: *Any schooling taken for the whole year which immediately preceded the learner's first year in Grade 1 would be counted as Grade R.* This would of course be a wide definition. The objection could be made that this definition ignores the qualitative aspect of Grade R as it is possible that children receive schooling in the pre-Grade R year which does not follow the national Grade R curriculum. Of course the question around whether the schooling offered prior to Grade 1 was of a sufficient quality would apply to both formal schools and other institutions such as community centres. The justification for using the wide definition would be that it would be virtually impossible to bring a robust and workable quality criterion into the indicator definition. This is not a problem unique to Grade R. Even enrolment in, say, Grade 1 may be enrolment in a sub-standard learning environment. What would not be accepted, even within the wide definition, would be some schooling prior to Grade 1 which did not occur *immediately* before Grade 1. Thus if a child received a year of institutionalised care in 2013, no schooling in 2014, and then entered Grade 1 in 2015, what happened in 2013 could not be counted for the purposes of the indicator.

In referring to 'Grade 1 learners', the indicator definition can be considered to be referring to *non-repeating* Grade 1 learners in all schools, whether public or independent. As shown below, it is possible to isolate which Grade 1 learners are taking Grade 1 for the first time (so are non-repeaters). Considering just non-repeaters results in an indicator which is more specific to one point in time, which can be considered desirable.

Methods B1, B2 and B3 are explained in the following box.

Method B (variations 1, 2 and 3)

The formula is as follows:

$$i_y = \frac{R_{y-1} \times \frac{1 - r_{y-1}}{1}}{P_{y-1}}$$

Basically the formula says the indicator *i* for year *y* is calculated by using three values from the *previous* year. Grade R learners (*R*) with repeaters (represented by the percentage *r*) removed is divided by an age cohort in the population (*P*). The formula thus tries to establish what percentage of children participate in Grade R for the first time, and then assumes that for the following year this percentage is a sufficient indicator of having had Grade R with respect to non-repeating Grade 1 learners.

Here ***R*** is the sum of weighted observations in the GHS representing any person aged 1 to 12 whose response was 'Grade R/0' to the question 'Which Grade is … currently attending?' (question 1.20 in the 2014 GHS – question numbers from 2014 are used throughout here). For variation 3 of the method, ages considered would be 3 to 12 as opposed to 1 to 12. As will be seen below, extremely few children outside the age range 4 to 6 are reported as being in Grade R.

The variable ***r*** is a fraction from 0 to 1 representing the percentage of *R* who are repeating the current grade. This would then represent respondents with 'Yes' for the question 'Is … doing the same grade that he/she did last year or before (if there was a break in his/her education)?' and not 'No' (question 1.21). Indeterminate responses to the question would not be counted for the calculation of *r*.

The value of ***P*** would depend on whether variation 1, 2 or 3 of the method were being used. For 1 it is the population aged 6. For 2 it is the population aged 5. For 3 it is the average age cohort size across the population aged 4 to 6. For *P* anyone would be counted who has a non-missing response (or a response other than 'Do not know') for any of four questions. The four questions are 1.20 (described above), 1.6 ('Which of the following does the child currently attend'), 1.10 ('Is or will … attend an educational institution during this academic year?') and 1.12 ('Which of the following educational institutions does … attend?').

The following table presents the values one would obtain from methods B1, B2 and B3 using the GHS from the years 2009 to 2014 (indicator values *i* were multiplied by 100). Published values are marked in bold. *Very importantly, confidence intervals for the statistics are around 2 percentage points either way of the mean*, so for instance the 2013 value of 96% should be understood as an approximation where we can be highly certain that the true value lies between 94% and 98%. Thus a change from, say, 92% to 94% across two years may not be an improvement. It may simply be a question of variation arising from the fact that the GHS uses a sample. However, a change from 92% to 96% is almost certainly a reflection of a real upward change.

Why not use actual data on Grade R enrolments instead of the sample-based household data? The main problem here would be that there is no information system which comprehensively captures Grade R enrolment in non-school institutions. Thus for the time being household data offers the best, and arguably a relatively good, source of participation in Grade R.

Table 14: Values for the Grade R indicator using different GHS approaches

GHS year	B1	B2	B3
2009	**87**	85	85
2010	103	**92**	100
2011	98	**94**	101
2012	94	95	93
2013	94	103	**96**
2014	101	100	98

Note: The year being described would be one year later than the GHS year. For instance, the analysis using the 2010 GHS data would provide the indicator value for 2011.

Four risks are associated with all the three methods explained above. It is important to examine these risks in some depth and, if possible, to use the available data to gain a sense of how serious these risks are.

The first risk is that 'Grade R' would be understood by households and Stats SA fieldworkers in a manner that would be inconsistent with the definition outlined above of Grade R encompassing any schooling in the year prior to Grade 1. This risk could result in a final statistic that is too low or too high. The understanding of Grade R could be too wide, encompassing for instance schooling below the Grade R level. Or it could be too narrow, excluding some pre-Grade 1 education occurring outside a formal school, for instance.

Linked to the first risk is a second risk, namely that Grade R repetition will be under-stated in the GHS. It seems unlikely that it would be *over*-stated as repetition is seen as an undesirable thing which households would not easily admit to. Moreover, the value for *r* in the indicator formula has been low in recent years, between 0.02 (GHS in 2010) and 0.05 (2009). If *r* is lower than it should be, the indicator value *i* will be higher than it should be.

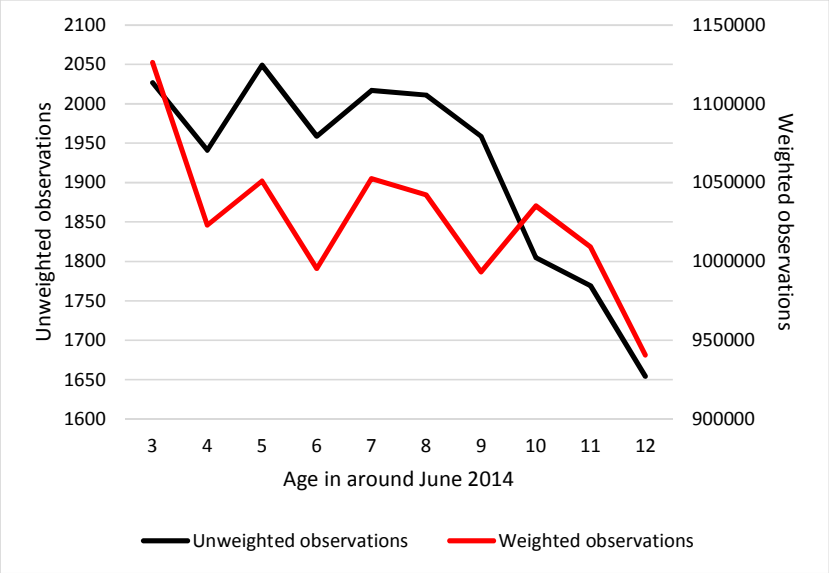
A third risk is that there would be surges and dips in the indicator value associated with shifts in the ages at which learners enter Grade R, something which would result in a situation

where the *i* did not represent accurately the proportion of Grade 1 learners who had received Grade R. To illustrate, in an extreme situation parents could suddenly decide it was better for their children to enter Grade R when they were aged four, as opposed to age five. One would then have a situation in which *both* children aged four and five would be entering Grade R at the same time, for just one year, and this would result in a surge in the value of *i*. In fact *i* would be much higher than 100%.

A fourth risk is that GHS weights will be irregular across ages, which could distort the final indicator value. For instance, if children aged four are over-weighted relative to children of other ages, whatever the Grade R participation is amongst four year olds will have an unduly large effect on the final statistic.

Below, some analysis is provided which sheds some light on the magnitude of the four risks. Figure 30 below describes the population figures in the GHS of 2014. Clearly the curves are 'bumpy'. One finds there are 6% more children aged 7 than aged 6, for example, if one uses the weighted observations. Such a large difference is unlikely to be a true reflection of the actual demographic profile. Clearly the fourth risk mentioned above is a real one.

Figure 30: Total population by age in the 2014 GHS



If the under-reporting of repetition of Grade R were a serious problem in the GHS, one would expect to find the same problem in other grades. One would then also expect indicator values exceeding 100% if one applied, say, Method B3 to other grades. The next table presents the results of such an application. Grades 2, 3 and 4 obtain indicator values which are indicative of relatively good data, and thus a reporting of grade repetition which is roughly correct. Ideally, values should be around 99% (we know that around 99% of children pass through grades 2, 3 and 4). The fact that they are slightly higher (by between 1 and 3 percentage points) suggests that grade repetition is slightly under-reported. The Grade 1 indicator value, on the other hand, suggests that grade repetition here is under-reported to a large degree. Around half of Grade 1 repeaters are reported as being non-repeaters, it seems. This Grade 1 reporting problem in the GHS has been noted previously. Annual Survey of Schools data confirm that repetition in Grade 1 is around twice what it is in grades 2 to 3[29]. Yet the overall picture emerging from Table 15 is that, say, Method B3 is valid and not overly sensitive to data problems.

[29] Department of Basic Education, 2013b: 20.

Table 15: Testing the same method for other grades (2014 GHS)

Grade	*r*	Enrolment (non-repeaters only)	Population	Indicator
Gr 1	0.09	1188693	1002114	108
Gr 2	0.09	1135619	1016071	102
Gr 3	0.10	1125455	1017780	100
Gr 4	0.08	1106874	1015157	101

Table 16 below, on the other hand, suggests that there is an over-stating of participation of Grade R, by on average 6 percentage points. To illustrate, one would expect the percentage of children aged 5 in Grade R in 2013 to be *lower* than the percentage of children aged 6 in Grade 1 in 2014, given that participation in Grade R is understood to be lower than participation in Grade 1. Yet the figures point to the reverse: 61% in Grade R against 57% in Grade 1. This unexpected pattern is repeated across several years.

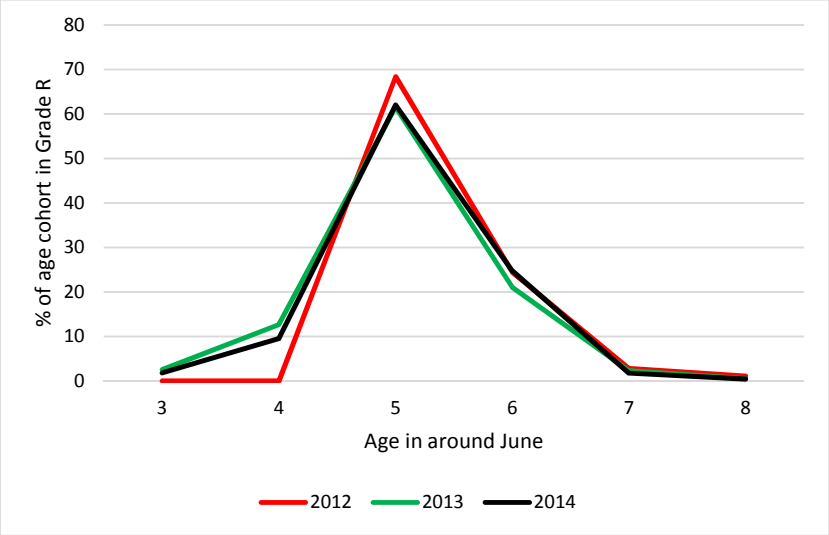
Table 16: Comparison of same birth cohort in different years

	% of children aged **5** in Grade **R** in **previous** year	% of children aged **6** in Grade **1** in **current** year
2011	67	61
2012	67	63
2013	68	59
2014	61	57

An under-statement of *r* in the GHS of around 6 percentage points is also suggested by Figure 5 in an earlier section, where the percentage of Grade R learners repeating in recent years appears to be around 9%.

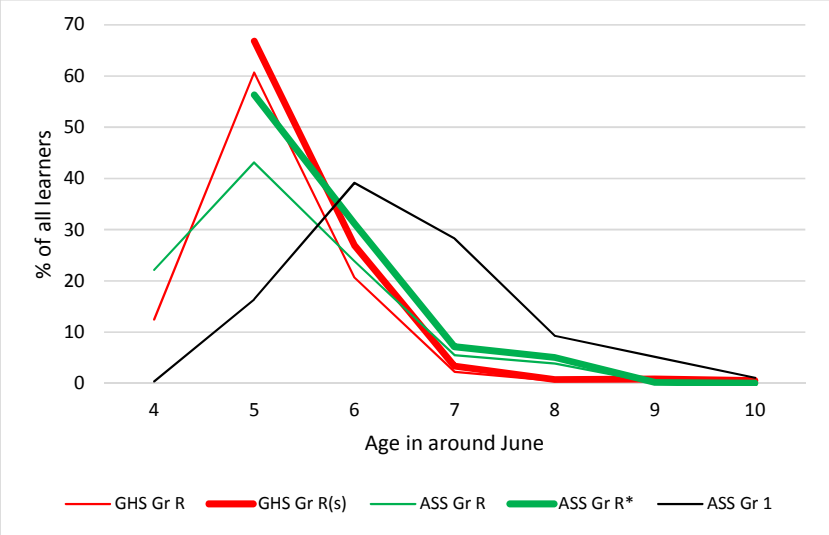
The 2013 GHS introduced the possibility of reporting a child below age five as being in Grade R. This was not possible before 2013. Not only did this result in the appearance of Grade R learners aged three and four in 2013 (see Figure 31 below), it also seems to have resulted in a *reduction* in the percentage of children aged five who were said to be in Grade R. The 2011 curve has been excluded because it is virtually the same as the 2012 curve in Figure 31. The percentage of children aged five in Grade R was 68% in 2011 and 2012, against 62% in both 2012 and 2013. This raises the question of whether the change in the questionnaire design changed the age five profile.

Figure 31: Percentage of each age cohort in Grade R



The next graph, Figure 32, assesses whether the age distribution of Grade R in the GHS matches the corresponding age distribution in the ASS. If the two match each other closely, this should reduce concerns that the GHS is counting many *pre*-Grade R learners as Grade R learners. The graph suggests that the two do in fact match each other closely. The most relevant comparison is the one between the two thick curves, 'GHS Gr R(s)' and 'ASS Gr R*'. The GHS, even after 2013, is designed in such a way that one cannot distinguish Grade R in a primary school from Grade R in some other institution below age 5. This is why 'GHS GrR(s)', where '(s)' refers to school, extends only to age 5. It is not possible in the GHS to be below this age and in a 'school'. A further complication in the GHS data is that in the case of children aged 5 and above, the numbers suggest that when the GHS asks about 'school', this term encompasses not just ASS-type schools but also other schools, specifically pre-schools offering education only below the Grade 1 level. The curve 'ASS Gr R*' displays the age distribution, according to the ASS, of just those Grade R children aged 5 and above. To illustrate the relative closeness of the two curves, according to the GHS data, 67% of Grade R learners aged 5 and above are aged 5. In the ASS, the figure is 56%. The GHS is moreover not odd insofar as it displays fairly large numbers of children aged 4 in Grade R: 12% of all Grade R learners (see 'GHS Gr R'). The figure for the ASS is in fact higher, at 22% ('ASS Gr R').

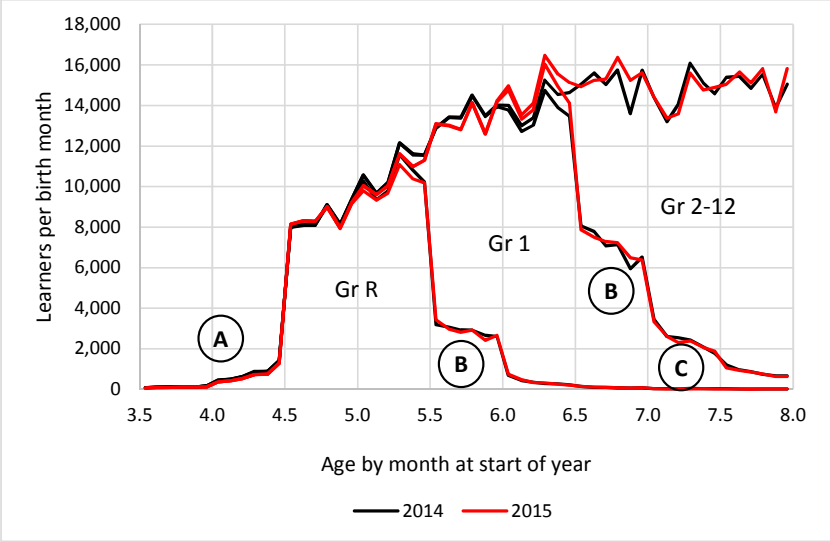
Figure 32: Age distributions in different datasets (2013)



Note: ASS ages were adjusted downwards to make them comparable to the GHS mid-year ages. Original ASS age values represent age at the end of the year. For instance, the new ASS figure for age 6 is half the original age 6 plus half the original age 7. The curve 'GHS Gr R' illustrates the age distribution of all Grade R learners according to the GHS. The curve 'GHS Gr R(s)' does the same, but counting only learners in 'school' (which could mean a pre-school with no Grade 1 learners) and whilst excluding age 4 given the limitations of the GHS data. 'ASS Gr R' is the age distribution of Grade R learners in ordinary schools (public and independent), according to the Annual Survey of schools. Finally, 'ASS Gr R' is like 'ASS Gr R', but with children aged 4 excluded to produce a curve roughly comparable to 'GHS Gr R(s)'.*

Figure 33 below uses data from the DBE's LURITS system, but for a selection of 2 253 schools deemed to have particularly reliable birth data and high levels of correspondence to Snap Survey totals. Whilst the patterns seen in the graph may differ slightly from patterns one would see in all schools offering Grade R and Grade 1, these differences are likely to be small as the 2 253 schools in question are relatively representative of the nine provinces and five quintiles. The LURITS system, once fully functional, will allow for a much better tracking of learners, and age distributions. What stands out in Figure 33 is the relatively high level of compliance with the age norms. By far most Grade R learners were aged 4,5 to 5,5 years at the start of the year, which is permitted in the policy. A few learners are between 5,5 and 6,0 years at the start of Grade R, which is also permissible (see the left-hand 'B' in the graph – essentially the window for enrolment into Grade R or Grade 1 is a 1,5 year window). There are some learners who are clearly under-aged within Grade R, but this number is relatively small (see 'A'). Over-aged enrolment due to grade repetition is barely visible in Grade R, though it does emerge clearly in Grade 1 (see 'C').

Figure 33: Age distributions in LURITS 2014 and 2015



Note: This graph is based on a reasonably representative sample of 2,253 schools (public and independent) displaying particularly consistent data in both 2014 and 2015.

Analysts in Stats SA have proposed an alternative approach to using the GHS data, which is described below as Method D.

Method D

The formula is as follows:

$$i_y = \frac{R_y}{G_y}$$

The formula says the indicator *i* for year *y* is calculated by using two values from the *current* year. Basically Grade 1 learners who say in year *y* that their highest grade attained is Grade R (these learners are represented by *R*) is divided by Grade 1 learners whose highest grade attained is reported as being either Grade R or 'No schooling'. The formula thus establishes the fraction of non-repeating Grade 1 learners whose response to the highest grade attained question is Grade R, as opposed to 'No schooling'.

Values using Method D are presented below in Table 17. These values are on average 4 percentage points lower than the corresponding Method B3 figures from Table 14 (keeping in mind that, for instance, the 2013 value in Table 14 should be compared to the 2014 value from Table 17). Why would this discrepancy occur? It seems likely that the Grade R past enrolment under-reporting problem seen in the ASS is being repeated in the GHS. Specifically it is possible that whilst for *current* Grade R enrolment respondents do not worry too much about where the Grade R is offered, for *past* Grade R participation they do in the sense that a Grade 1 learner would be said to have attained Grade R only if the child took Grade R in the *same* school. This is a problem that appears to exist in the ASS too.

Table 17: Indicator values using Method D

	Indicator value using Method D
2011	95
2012	92
2013	95
2014	95

The National Income Dynamics Survey (NIDS) dataset offers an alternative and non-Stats SA source which could be used to verify what has been seen in the GHS. NIDS is commissioned by Presidency and implemented by the Southern Africa Labour and Development Research Unit at the University of Cape Town. Data were collected from the same households in 2008, 2010 and 2012. Around 800 children of a single age cohort are covered in NIDS, making the NIDS sample just under half the size of the GHS sample. Figure 34 below suggests there is a good degree of correspondence between GHS and NIDS in terms of the enrolment patterns of young children. The largest difference in terms of Grade R is perhaps that whilst according to the GHS 81% of enrolled five year olds are in Grade R, the figure is just 62% in NIDS. NIDS is more inclined than the GHS to report children being enrolled in *pre*-Grade R.

Figure 34: NIDS and GHS age and grade distributions (2012)

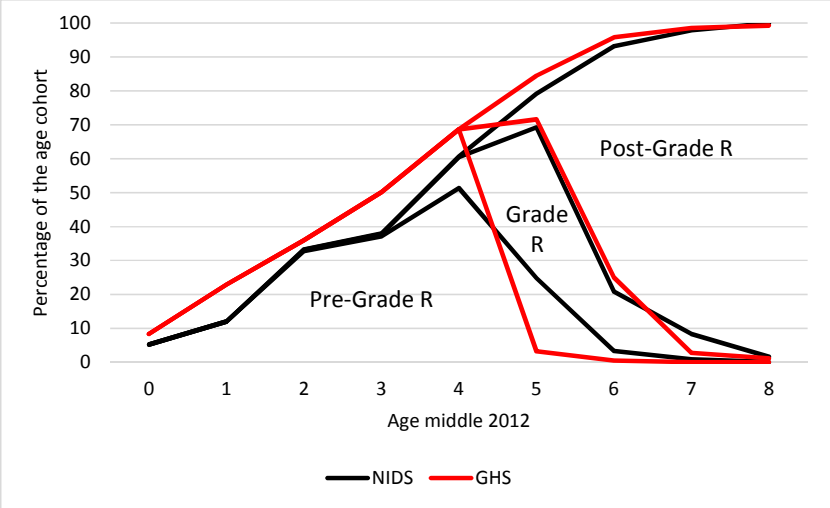


Table 18 below presents indicator values using the 2012 NIDS data. Three questions were used in the calculations:

- Question C2: Which of the following does this child currently attend? [Responses included: Primary school (Grade 1 or above); Grade R; Don't Know; Refused.]
- Question C19: What grade was the child enrolled in in 2011?
- What grade is or was the child enrolled in for 2012?

Percentages in the table use NIDS design weights. Had no weights been used, the results would have been virtually the same (93 instead of 94, 82 instead of 81). What the NIDS data confirm is that households do not consider all schooling occurring below Grade 1 as being 'Grade R'. Importantly, the 94% obtained from the NIDS data is not that different from the methods B3 and D figures discussed previously.

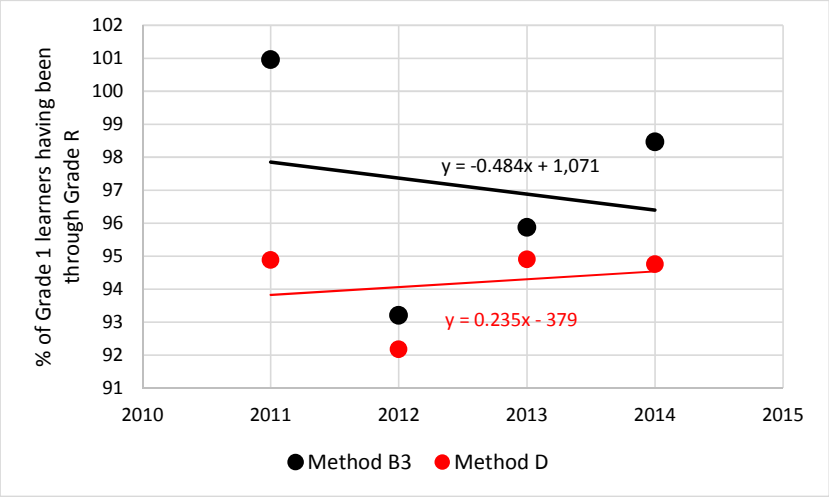
Table 18: 2012 statistics from NIDS data

Number of unweighted observations in denominator (non-repeating Grade 1 learners)	749
% of denominator who received any schooling in the previous year	94
% of denominator who received 'Grade R' in the previous year	81

A key reason why the panel nature of the NIDS data (the fact that the same households are covered in several waves) was not utilised for the current analysis is that NIDS was run every second year, whilst what is of interest here is what occurred in a current year plus the year immediately before that.

Figure 35 below plots the methods B3 and D values and establishes the trend across time. The trendlines produce a value of 96 in 2014 for Method B3 (meaning 96 would be applicable for the following year, 2015) and a value of 95 for Method D. *It is proposed that future reporting against the Grade R indicator should follow this approach and thus use the last predicted point based on four actual values from four consecutive years. Moreover, it is proposed that both methods B3 and D are used, with the difference between the two being explained.* This is probably the best solution until problems in the Annual Survey of Schools are resolved. Even when ASS problems are resolved, household data should continue to be an important source for monitoring Grade R.

Figure 35: Historical trends to produce indicator values



The box at the start of this appendix provides a summary of the above analysis, and the conclusions. The following table provides values for the provinces, following the approach illustrated in Figure 35 below. As already explained, method B3 using 2014 GHS data produces an indicator value for 2015, as the 2014 data are used to establish enrolments in the previous year. Method D, on the other hand, produces an indicator value for 2014 when 2014 GHS data are used as 2014 questions dealing with past Grade R participation are the focus of the analysis. The clearest pattern emerging from the data is that Gauteng has experienced exceptionally low levels of Grade R participation. As seen in Figure 36, the ratio of just schools-based Grade R to Grade 2 enrolment also puts Gauteng at the lowest position of all provinces. These figures need to be seen against the fact that the enrolment of children aged zero to four enrolled anywhere is especially high in Gauteng (see Figure 17 above) and about average for children aged five and above. What appears to be happening in Gauteng is high levels of pre-school enrolment outside of schools, even at the Grade R ages, combined with a

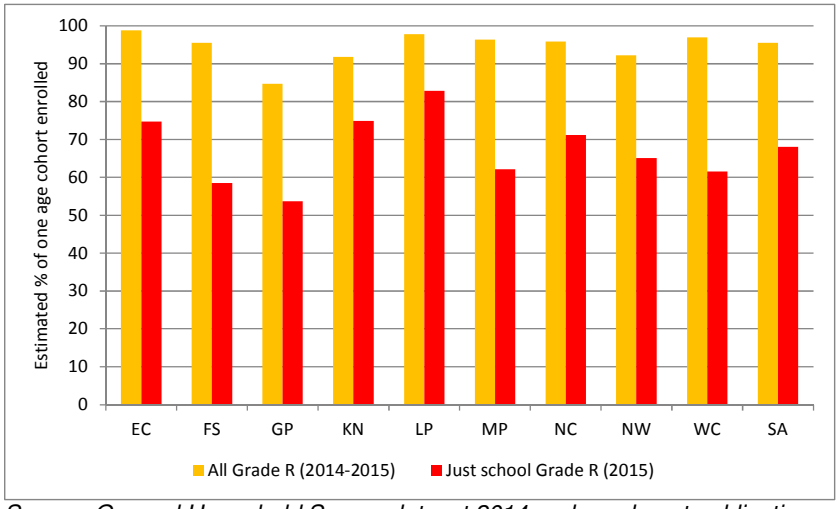
perception that much of the latter is not considered 'Grade R' because it is not offered in a school.

Table 19: Provincial values for Grade R coverage indicator

	Values using method B3					Values using method D				
	2011	2012	2013	2014	Final 2015	2011	2012	2013	2014	Final 2014
EC	104	107	123	111	100	98	97	98	97	98
FS	104	98	90	101	96	92	98	93	96	96
GP	107	85	78	86	79	92	81	94	91	91
KN	83	76	90	91	90	94	93	94	93	93
LP	99	106	100	106	100	96	95	97	95	96
MP	116	92	88	105	95	97	96	97	98	98
NC	81	89	98	90	95	95	92	97	96	97
NW	108	106	105	82	88	97	98	97	95	96
WC	115	102	101	114	100	93	91	90	96	94
SA	101	93	96	98	96	95	92	95	95	95

Note: Years other than 'Final' refer to the year of the GHS data used.

Figure 36: Provincial Grade R enrolment ratios



Source: General Household Survey dataset 2014 and enrolment publications of DBE.
Note: The 'All Grade R (2014-2015)' columns reflect the average across the two final columns in Table 19. The 'Just school Grade R (2015)' columns reflect 2015 Grade R enrolment over Grade 2 enrolment, in both public and independent schools. Grade 2 was considered a better denominator as Grade 1 is characterised by exceptionally high levels of grade repetition.

APPENDIX C: GRADE 12 ATTAINMENT RELATIVE TO POPULATION

This appendix deals with the question of the comparability of Department of Basic Education (DBE) enrolment figures and Statistics South Africa enrolment and population figures. The question is important for accurate monitoring of trends in the schooling sector. It is clear that there are problems with comparability across the two sources, with Stats SA figures being considerably higher than corresponding figures from DBE[30]. This means simple comparisons are misleading. Both sources offer valuable data which must be used, but adjustments are necessary. Importantly, discrepancies between population data and enrolment data are a common problem in developing countries. However, whilst the typical pattern is for enrolment figures to exceed what should be comparable population figures, in South Africa the reverse is found, namely population figures which appear high relative to enrolment figures.

The formula below explains the approach used here to calculate National Senior Certificates (NSCs) obtained as a percentage of 18 year olds. Essentially this indicator is the likelihood that youths will obtain an NSC from the schooling system. In a nutshell, the approach involves establishing the size of the age 18 cohort by using the number of enrolled 14 year olds, according to DBE school data, as an anchor. Stats SA data are used to establish what percentage of 14 year olds are enrolled in schools.

$$i = \left(F + S + P + I\right) \Big/ \left(A_{18} \times \frac{\left(L_{14} + M_{14}\right) \times \left(1/e_{14}\right)}{A_{14}} \right)$$

In the formula for the calculation of the indicator value *i* for a particular year, the numerator is the derived number of NSCs obtained in a year, and the denominator is the number of people aged 18 in the same year. Calculations by province for 2013, a year for which good age-specific school data were easily available, appear in the Table 20 below (which includes important notes on how figures were obtained). Strictly speaking, one should refer to the 2013 *examination cycle*, as NSCs are obtained through the 2013 year-end examination (though even here certificates are only issued in 2014) as well as supplementary examinations occurring in May of 2014. The number of full-time passes obtained at the end of each year, F, is a widely publicised figure, and is used extensively by researchers, yet it provides an incomplete picture of NSCs issued. Mainly this is because it excludes passes obtained after the supplementary examinations have been written (S), passes obtained by part-time examination candidates (P), around half of whom write their examinations at a school[31], and passes obtained by Independent Examinations Board (IEB) and (starting in 2012) South African Comprehensive Assessment Institute (SACAI) learners. Furthermore, the fact that a small number of learners re-obtain the NSC in a different year needs to be controlled for (see the note in this regard in Table 20).

Turning to the denominator in the formula, A_{18} is the number of 18 year olds in 2013, according to Excel files published by Stats SA in conjunction with its 2015 mid-year population estimates[32]. Because this value is clearly high relative to the DBE's enrolment figures, A_{18} is adjusted downwards (the nature and geographical distribution of these DBE-Stats SA discrepancies are discussed in more detail below). This downward adjustment occurs by assuming that the age 18 discrepancies are similar to the age 14 discrepancies. Age 14 serves as a useful anchor because virtually all children aged 14 are enrolled, according to Stats SA household surveys. L_{14} and M_{14} are learners in ordinary and special schools respectively, aged 14, counting both public and independent schools. This enrolment total is

[30] See for instance Gustafsson (2012).
[31] See Department of Basic Education (2013a).
[32] See http://www.statssa.gov.za.

then multiplied by the inverse of e_{14}, where e_{14} refers to percentage of 14 year olds enrolled in a school, according to Stats SA's 2013 General Household Survey. Nationally this percentage was 98%. Finally, A_{14} is the number of children aged 14 in 2013 according to Stats SA. As seen in Table 20, the final indicator value i is 53.4% for the country, and ranges from 35.7% for Eastern Cape to 63.4% for Gauteng. The inter-provincial inequalities emerge as larger than in earlier calculations of this indicator. For instance, *Action Plan to 2019* refers to a range of 33%, for Eastern Cape, to 49%, for Gauteng, KwaZulu-Natal and Mpumalanga. Those earlier figures used a denominator which was, fairly arbitrarily, the average between DBE and Stats SA values. The indicator values shown in Table 20 use for the denominator DBE data as the anchor for the population level.

Table 20: Calculation of NSCs over population for 2013

	Full-time pre-supp. passes (F)	Suppl-ementary passes (S)	Part-time passes (P)	IEB plus SACAI (I)	Numerator (sum of prev. 4 columns)	Stats SA age 18 (A_{18})	Stats SA age 14 (A_{14})	Learners in schools ($L_{14} + M_{14}$)	Stats SA age 14 enrolment ratio (e_{14})	Denom-inator	Final indicator value ×100 (i)
EC	46,404	1,669	1,263	532	49,869	148,494	139,021	127,165	0.97	139,648	35.7
FS	23,468	432	197	103	24,201	56,574	54,722	43,475	0.99	45,502	53.2
GP	84,329	1,965	2,547	5,955	94,797	201,456	198,569	146,988	1.00	149,616	63.4
KN	111,356	4,644	1,531	2,163	119,695	221,845	218,452	195,025	0.97	204,507	58.5
LP	58,633	3,552	1,045	260	63,490	131,127	122,686	103,351	0.99	111,284	57.1
MP	38,474	1,272	455	342	40,543	88,823	87,874	69,439	0.99	70,853	57.2
NC	7,677	304	108	27	8,116	23,576	23,637	20,239	0.99	20,396	39.8
NW	25,177	525	222	158	26,082	68,339	68,349	53,755	0.98	55,019	47.4
WC	40,164	667	668	777	42,276	103,691	103,760	78,774	0.96	81,976	51.6
SA	435,683	15,030	8,037	10,318	469,068	1,043,925	1,017,070	838,211	0.98	878,801	53.4

*Note: The total number of full-time passes is 4,096 lower than published figures. This 4,096 figure represents the number of learners who obtained an NSC in the 2013 cycle, but also obtained an NSC in either 2012 or 2011. The adjustment therefore eliminates most double-counting of NSCs (of the 4,096, 3,544 obtained another NSC in the previous year, so in 2012). The number of passes amongst part-time learners (*P*) is derived by assuming that in 2013 6.2% of part-time learners obtained an NSC in the 2013 cycle. The 6.2% value is derived from actual 2011 values. Values for* I *are based on 2014 reports as 2013 values were not available at the province level. IEB and SACAI results are unlikely to have changed substantially between 2013 and 2014. L_{14} values were derived by adjusting age-specific values from the ASS upwards to align age-specific values to official grade-specific values. This adjustment occurred at the province and grade levels and at the national level came to 2.8%. The adjustment is necessary as the age-specific values are missing for some schools.*

Table 21: Number of 18 year olds per province (from Stats SA)

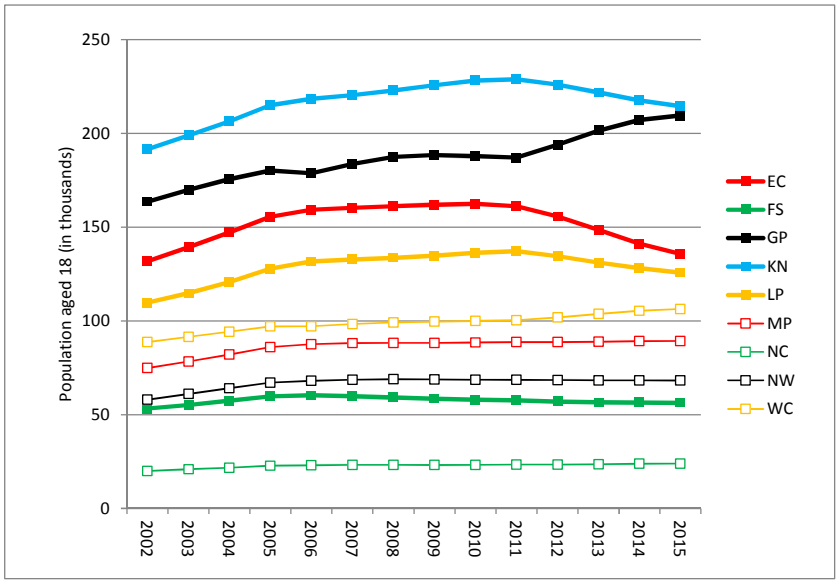
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EC	131,835	139,357	147,169	155,535	159,312	160,256	161,097	161,987	162,366	161,078	155,703	148,494	141,204	135,720
FS	53,288	55,217	57,379	59,737	60,297	59,900	59,205	58,453	57,940	57,627	56,955	56,574	56,427	56,231
GP	163,641	169,777	175,549	180,096	178,731	183,708	187,379	188,491	187,941	187,034	193,908	201,456	207,176	209,440
KN	191,584	198,790	206,293	214,960	218,357	220,348	222,877	225,703	228,112	228,870	226,006	221,845	217,610	214,539
LP	109,759	114,743	120,683	127,856	131,736	132,711	133,531	134,774	136,299	137,181	134,475	131,127	128,101	125,665
MP	74,899	78,357	82,039	86,028	87,522	88,132	88,277	88,282	88,480	88,765	88,684	88,823	89,175	89,321
NC	19,976	20,839	21,756	22,742	23,062	23,192	23,190	23,149	23,189	23,315	23,388	23,576	23,820	23,936
NW	58,032	60,982	64,063	67,143	68,026	68,632	68,838	68,779	68,685	68,526	68,445	68,339	68,255	68,170
WC	88,669	91,505	94,224	97,021	97,179	98,309	99,148	99,595	99,945	100,309	101,842	103,691	105,366	106,298
SA	891,682	929,567	969,154	1,011,118	1,024,222	1,035,189	1,043,544	1,049,213	1,052,958	1,052,704	1,049,406	1,043,925	1,037,134	1,029,319

Source: Statistics South Africa, 2015. See also preceding discussion.

Note: As discussed in for instance Department of Basic Education (2013a), the above figures display anomalies when compared to official enrolment figures which suggest that the above figures are substantially higher than they should be. Stats SA's province-level figures are based on current provincial boundaries. Changes in values are thus not influenced by past boundary changes.

The trends from the previous table are illustrated in Figure 37 below.

Figure 37: Youths aged 18 based on official Stats SA estimates



Source: Statistics South Africa, 2015.

The method used for the Table 20 calculations seems sufficient to produce indicator values which are meaningful for comparisons across provinces and for the policy discourse. However, more work needs to be done. Demographers and education planners need to collaborate to a greater extent to resolve worrying and large discrepancies across data sources. The DBE's LURITS data could be examined to establish the degree to which there is across-province migration of learners between ages 14 and 18, something which would affect the provincial calculations of Table 20.

The full-time passes, with supplementary results for all the years 2008 to 2015 are provided in the following table:

Table 22: Grade 12 passes per year (full-time students)

	2008	2009	2010	2011	2012	2013	2014	2015
EC	31,575	36,377	38,594	39,665	42,365	48,509	44,060	49,795
FS	22,183	21,158	19,980	20,139	20,377	24,121	22,382	25,977
GP	74,856	73,237	74,838	71,179	75,291	87,087	85,042	92,189
KN	85,721	85,605	90,576	87,837	96,696	117,047	100,695	102,371
LP	51,326	47,770	57,662	49,306	54,947	62,736	54,774	68,954
MP	29,254	26,990	31,083	32,364	34,744	40,108	36,187	43,923
NC	7,488	6,775	7,581	7,277	7,074	8,053	6,933	8,326
NW	23,379	21,413	22,376	20,261	22,276	25,939	22,465	27,615
WC	35,480	35,348	36,223	34,032	38,408	41,209	40,068	46,452
SA	361,262	354,673	378,913	362,060	392,178	454,809	412,606	465,601

Source: Official DBE reports on results after supplementary examinations. Additional passes arising out of the supplementary examinations in the 2015 cycle were imputed in line with the note for Figure 6. The above figures are not adjusted to take into account the same students who obtained the NSC more than once in different years, but as pointed out in the note for Table 20, repeat NSCs are uncommon (less than 1.0% of all passes).

The following table provides values for *i* for the years 2014 and 2015. A shortcut approach, relative to the formula explained above, was used. Essentially, NSCs obtained from the public system in 2013 were adjusted up or down in line with the trend for just full-time pre-supplementary passes. Moreover, the numbers for the non-public IEB and SACAI systems

were assumed to remain unchanged. For the denominator, the 2013 denominator value (from Table 20) was adjusted in line with the percentage change implied by official Stats SA age 18 population values (so the values seen in Table 21).

Table 23: NSCs over population for 2014 and 2015

	2014	2015
EC	35.1	41.2
FS	49.3	57.4
GP	61.0	65.1
KN	51.7	53.3
LP	52.5	67.3
MP	52.3	63.3
NC	34.1	40.8
NW	41.2	50.7
WC	49.1	56.3
SA	49.4	56.1

Table 24 below examines whether the 2010 to 2015 trend for each province represents progress. The column 'NCSs' reflects the average annual increase in the number of NSCs issued (specifically, the linear slope for post-supplementary full-time passes is shown). Clearly in all provinces the general trend has been for the number of NSCs issued to increase. However, the question is whether this increase has kept pace with population growth. As shown in the column 'Population', nationally the number of 18 year olds has *decreased* over the 2010 to 2015 period, by around 4 000 a year. Some provinces have experienced growth, others shrinkage. In all provinces except for Northern Cape growth in the number of NSCs has exceeded growth in the population. The last column in the table, which expresses the annual increase in NSCs as a percentage of the population, also points to weak improvements in the case of Northern Cape. The growth in NSCs shown below would be a slight under-estimate if one considers that part-time passes have not been included. Whilst the exact number of part-time passes for all years were not available when the current analysis was done, the numbers here would almost certainly have increased if one considers that nationally the number of part-time *candidates* rose from around 83 000 in 2010 to around 131 000 in 2015.

Table 24: 2010 to 2015 NSC and population trends

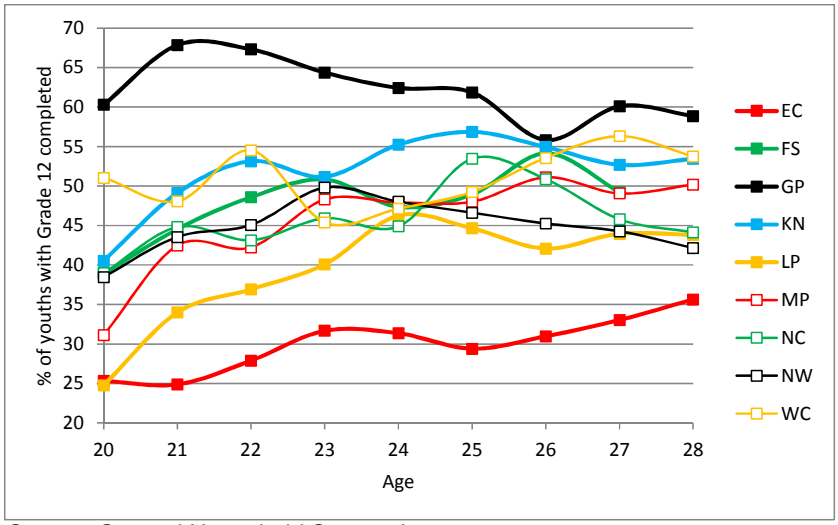
	Annual growth in NSCs	Annual growth in population	Difference	NSC annual growth over age 18 population (%)
EC	2,157	-5,376	7,533	1.5
FS	1,130	-288	1,418	2.5
GP	4,043	3,723	320	2.7
KN	3,382	-2,787	6,169	1.7
LP	2,311	-2,031	4,341	2.1
MP	2,321	127	2,194	3.3
NC	106	134	-29	0.5
NW	1,045	-80	1,126	1.9
WC	2,073	1,102	971	2.5
SA	18,567	-4,098	22,665	2.1

Note: The last column is the value from the first column (average annual increase in NCSs) divided by the estimated 2013 population aged 18 (column 'Denominator' in Table 20.

The following graph provides a view on the successful completion of Grade 12, but using completely different data. Here GHS data across three years are used to determine the percentage of youths with Grade 12 at various ages, by province. The question in the survey

form is 'What is the highest level of education that … has successfully completed?'. Respondents choose one of 26 categories. By selecting the options which imply that the respondent would have to have at least a Grade 12 pass, it is possible to obtain the statistics in the graph. It must be kept in mind that for each of the points in the graph, confidence intervals would be large, especially for provinces with lower populations. For instance, the age 28 value for Northern Cape of 44% has a confidence interval of 36% to 52%. For Gauteng the confidence interval would be a narrower 55% to 63%.

Figure 38: Youths having completed Grade 12 in GHS (2012-2014)

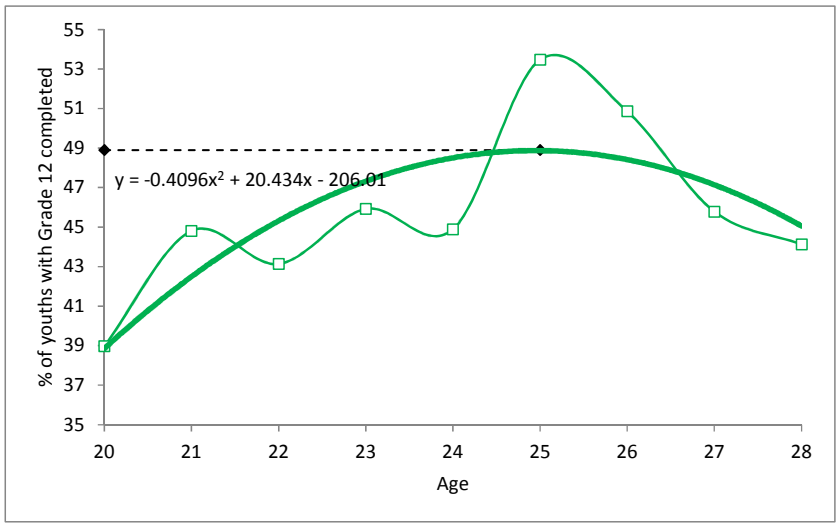


Source: General Household Survey datasets.
Note: Each point in the graph is the average across the three points for 2012 to 2014. Holders of FET college qualifications were all considered to have a Grade 12 certificate – see discussion for Figure 7.

A single value per province, using the points from the above graph, was calculated, using the same methodology used in the 2013 sector review[33]. The aim of the calculation is to determine what percentage of youths in the province get to obtain a Grade 12 qualification. This should be the highest point for each curve in Figure 38. Lower points would suggest youths are too young to have reached the point where they will receive a qualification, or so old that they will not receive a qualification, and belong to a birth cohort which enjoyed lower access to Grade 12. But instead of taking simply the maximum point in each original curve, a quadratic trendline is drawn over each curve, and the highest point on this trendline is then used. This helps to avoid a situation where a strangely high (or outlier) statistic is used. The next graph illustrates the approach for Northern Cape, where the final value is considered to be 48.9%.

[33] Department of Basic Education, 2013a.

Figure 39: Calculation of single value for Northern Cape



The values calculated for each province for the 2012 to 2014 period appear in the middle column of Table 25. A national value was also calculated, using the same method as for provinces. In the first column the corresponding figures for 2009 to 2011, as published in the 2013 sector review, are reproduced. One might expect the values in the middle column of Table 25 to correspond closely to the indicator values in the last column of Table 20. In some ways, the two do correspond. Gauteng's value is the highest in both sets of figures (64.5 and 63.9), and according to both tables KwaZulu-Natal emerges as having the second-highest value. The latter finding seems particularly important given that KwaZulu-Natal does not tend to display a high 'pass rate' in the sense of passes over candidates writing the examination (this is discussed in more depth below). Eastern Cape has the lowest value in both sources, though the levels differ by a large margin (43.2 against 36.0). Similarities between the two sets of figures seem noteworthy, given that they are generated using very different data and methods. Migration across provinces is likely to account for some of the differences seen. For instance, Eastern Cape may see a particularly high out-migration of youths with Grade 12. The large confidence intervals around any GHS values would be a further important explanatory factor. There is less correspondence across the two sources with respect to trends, as opposed to levels. For instance, Northern Cape displays the worst NSC growth over the 2010 to 2015 period according to Table 24, but the best growth according to the last column of Table 25.

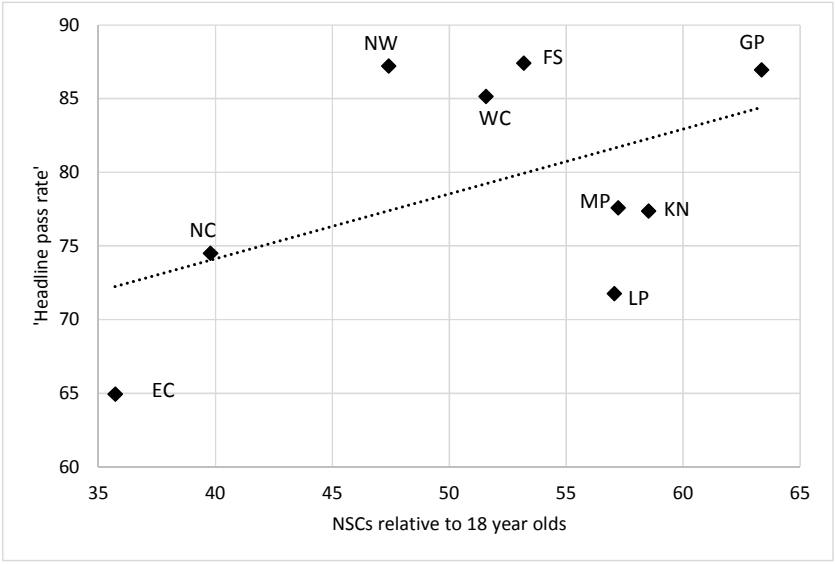
Table 25: Matriculants relative to population according to GHS

	% of youths who obtain Matric - average 2009-2011	% of youths who obtain Matric - average 2012-2014	Difference
EC	39.4	43.2	3.8
FS	48.2	51.2	3.1
GP	58.5	64.5	5.9
KN	49.0	56.0	6.9
LP	38.0	45.2	7.2
MP	45.4	50.6	5.2
NC	41.2	48.9	7.7
NW	41.3	48.1	6.8
WC	50.9	48.8	-2.0
SA	48.0	51.5	3.5

Source: See Figure 38.

Figure 40 below compares the indicator values from Table 20 to the widely publicised 'pass rates' of each province. Clearly Gauteng and Eastern Cape do exceptionally well and poorly, respectively, regardless of which set of figures one uses. What does stand out, however, is three provinces whose official 'headline pass rate' seems to over-state their achievement, namely North West, Western Cape and Free State. In the case of three other provinces, Mpumalanga, KwaZulu-Natal and Limpopo, the official pass rate seems to *under*-state actual achievement. These discrepancies are related to dropping out after age 14. To illustrate, the ratio of Grade 12 enrolment to 14 year olds in ordinary schools in 2013 was less than 0.64 in each of three provinces in the first group, and over 0.74 for each of the provinces in the second group. To a large extent, dropping out in this context would represent a form of education failure, but not always if one considers that some learners leave school to enter non-school forms of training.

Figure 40: Different 'pass rates' in 2013



Note: The horizontal axis represents the indicator i *according to Table 20, whilst the vertical axis refers to official pass rates (NSC passes over candidates who wrote the examination) as published in the official examinations report for 2013 of the DBE.*

APPENDIX D: COMPARING 2002 AND 2011 TIMSS RESULTS

The 2013 sector review and *Action Plan to 2019* both discuss the importance of the 2002 to 2011 TIMSS[34] trends, in mathematics and science, at the Grade 9 level. As argued in these documents, South Africa's TIMSS trends offer amongst the most compelling evidence that qualitative improvements have occurred within the schooling sector over the past decade and a half. The purpose of this appendix is to interrogate the TIMSS data in a few ways in order to test the reliability of the aggregate comparisons across the two years. The focus in on mathematics, but some further analysis suggests that patterns seen in the mathematics data are to a large degree replicated in the science data.

The aggregate mathematics values are provided below. Only in the case of public schools in Grade 9 is a comparison possible.

Table 26: Mean mathematics scores in TIMSS 2002 and 2011

	2002	2011
Grade 8 (just public schools)	264	Grade 8 not tested.
Grade 9 (just public schools)	285	348
Grade 9 (public and independent schools)	Independent schools not included.	352

Sources: Mullis et al *(2004); Mullis* et al *(2012); Reddy (ed.) (2006); Reddy* et al *(2012).*

The key focus in the analysis that follows is learner performance broken down by parent education. Research is very clear that learner performance is strongly correlated with parent education. This is because so much of a child's education happens in the home. Table 27 below shows the eight parent education levels used in the TIMSS background questionnaires. Learners were asked to fill in on a questionnaire the education of their parents. The values in the table indicate the percentage of Grade 9 learners with parents having this level of education. 'Highest' means the highest of the mother or father. In the questionnaires, 'stepmother' and 'female guardian' were given as alternatives to 'mother', and the same applied to father. The breakdown for the parents of Grade 9 learners was also found in the General Household Survey (GHS). What is clear is that parents appeared considerably more educated in the TIMSS sample than in the GHS sample. For instance, in 2011 in the case of 37% of TIMSS learners the highest level of education in the household was a post-Matric qualification. In the 2011 GHS the figure was a far lower 12%. This discrepancy is likely to be to a large degree the result of the over-statement of parent education by learners. Learners may be embarrassed to admit, even in an apparently anonymous questionnaire, that their parents are not as educated as they would like them to be. The discrepancy was similar across the nine provinces. Discrepancies remain roughly similar whether one uses the TIMSS sampling weight or not, and whether one imputes parent education values where they were missing in the data, on the basis of other related variables, in particular the presence of household goods.

[34] Trends in International Mathematics and Science Study.

Table 27: TIMSS learner distributions by parent education

General TIMSS categories expressed as ISCED[35] levels	Categories appearing on the South African learner questionnaire	2002						2011					
		TIMSS					GHS	TIMSS					GHS
		Mother	Father	Highest	Highest	Highest	Highest	Mother	Father	Highest	Highest	Highest	Highest
		No wgt.	No wgt.	No wgt.	With wgt.	With wgt. & imput.	With wgt.	No wgt.	No wgt.	No wgt.	With wgt.	With wgt. & imput.	With wgt.
1 or 2 or no schooling	Did not finish primary school or did not go to school	12	11	8	8	10	0	4	4	3	3	5	0
2	Finished Grade 7 (Standard 5)	13	10	9	10	12	22	6	8	6	7	10	14
3	Finished Grade 9 (Standard 7)	19	15	20	21	25	37	7	10	9	10	14	39
4	Finished Grade 12 (Matric)	20	19	24	24	28	30	19	23	24	25	34	35
5	Post Matric certificate	3	4	4	4	5	1	5	5	7	7	10	3
5B	Diploma or certificate	5	7	8	8	10	7	5	5	6	6	8	6
5A (first degree)	First degree	3	3	5	5	6	3	4	4	6	5	7	2
Beyond 5A (first degree)	Honour's degree or higher	2	3	5	5	5	1	8	7	11	9	12	1
Don't know		22	28	16	16	0	0	41	33	27	27	0	0
Total		100	100	100	100	100	100	100	100	100	100	100	100

Source: Analysis of the TIMSS microdata, obtained from http://timssandpirls.bc.edu, but also from the Human Sciences Research Council.
Note: Data from independent schools are included in the TIMSS 2011 columns here (and in the GHS columns, for both years). Independent schools accounted for just 3.2% of all TIMSS learners in 2011.

[35] International Standard Classification of Education.

The next table compares the presence of electricity in the home, in the TIMSS and GHS data. These figures suggest that there was no glaring sampling problem in the TIMSS data collection. For all three TIMSS-GHS comparisons, the confidence interval (the range between the lower and upper bounds) overlap at least slightly.

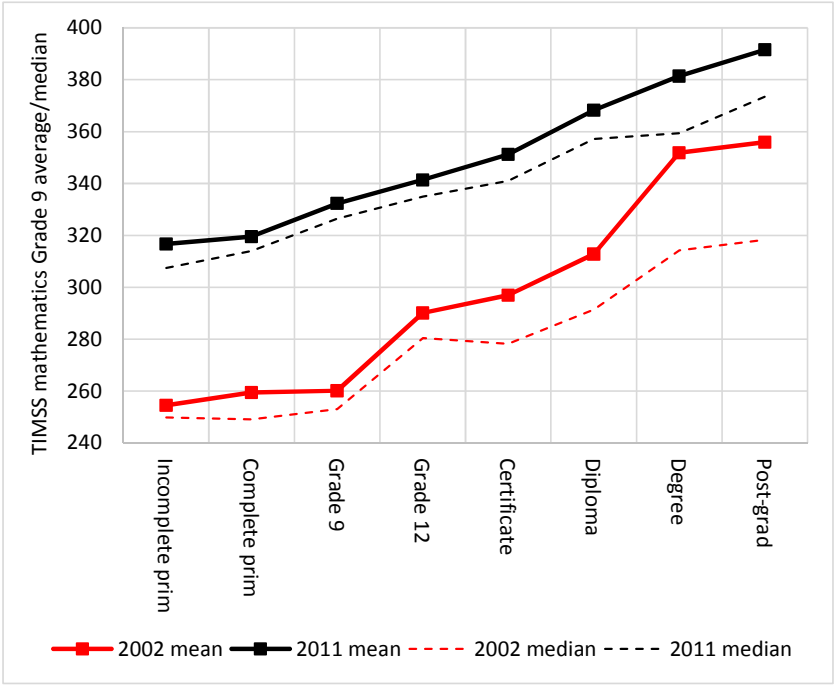
Table 28: Electricity at home statistics from TIMSS and GHS

	Mean	Lower bound	Upper bound	% missing
TIMSS 2002 Gr 8	75.8	71.8	79.8	4.8
GHS 2002 Gr 8	75.8	74.0	77.7	0.1
TIMSS 2002 Gr 9	80.0	76.3	83.8	7.4
GHS 2002 Gr 9	75.8	74.1	77.6	0.0
TIMSS 2011 Gr 9	86.6	83.7	89.4	3.1
GHS 2011	88.7	87.2	90.2	0.2

Note: No exclusions of independent school learners occurred. The lower and upper bounds use the 5% level of significance. Sampling weights are used throughout.

Figure 41 below indicates that at all levels of parent education, there was an improvement in the TIMSS mathematics score, whether one considers the mean or the median. Improvements were largest amongst the least advantaged segments of society. However, they were also substantial at higher levels, at least 30 TIMSS points (for the mean). This is important as TIMSS is more suited to differentiating between learners achieving around, say, 380 than around, say, 280, given that the tests in TIMSS are primarily designed for rich country contexts. Had there been no clear improvement between 2002 and 2011 at the higher socio-economic levels in South Africa, it could be concluded that improvements at lower socio-economic levels were simply reflecting the fact that TIMSS is not suited to measuring performance consistently at lower levels. Comparing median values is also important as this helps to reduce inconsistencies at the lower end of the performance spectrum. Median values improved by at least 45 TIMSS points (it was 45 at the 'Degree' level of parent education).

Figure 41: TIMSS learner performance by parent education



Note: The horizontal axis refers to the highest education level in the household. 2011 curves exclude *data from independent schools.*

Table 29 below provides mean TIMSS values for mathematics for Grade 9, for the two years 2002 and 2011. The mean values, calculated from the TIMSS microdata, agree with values published in Reddy *et al* (2012: 6). Sample size values are provided as these influence whether one can consider changes across the two years reliable. A difference-in-means test was run for each province, and for the country. The result was that for seven provinces, specifically those with values close to zero in the final column, differences are indeed statistically significant[36]. The differences across the two years in the case of Northern Cape and Western Cape were not statistically significantly different from zero, meaning that for these two provinces we cannot be certain that there was an improvement of deterioration.

Table 29: Reliability of differences in provincial TIMSS means

	2002		2011		
	Math. mean	Sample size	Math. mean	Sample size	Probability > F
EC	250	508	316	966	0.001
FS	291	405	359	821	0.000
GP	303	333	389	1579	0.000
KN	278	775	337	2083	0.000
LP	244	628	322	1139	0.000
MP	287	469	344	1581	0.001
NC	341	341	366	882	0.263
NW	280	435	350	895	0.000
WC	414	367	404	1103	0.737
SA	285	4261	348	11049	0.000

Note: Standard errors are calculated whilst taking into account the clustering of sampled learners in schools. For the 2011 statistics, independent schools were excluded. In 2002, independent schools were not included in the sample.

There is one important problem with the figures in Table 29. They ignore the possibility that the sample shifted between the two years, and came to represent more or fewer learners from socio-economically disadvantaged schools. This shift may have been larger than actual socio-economic shifts occurring in the province between 2002 and 2011. The analysis presented below does not attempt to take into account actual socio-economic changes between the two years. Instead, the question is asked: What would the improvement or deterioration in the TIMSS mathematics averages been if there had been no socio-economic shifts, measured in terms of parent education? Put differently, did improvements occur at the various parent education levels, regardless of whether certain parent education categories accounted for a larger percentage of the TIMSS sample in the later year? Table 30 presents the results of a regression analysis. Pooled data containing both 2002 and 2011 learners were used. Eight dummy (0-1) variables were regressed on the TIMSS score. Whether the result was a 2011 result was the first variable, and in addition seven of the eight parent education variables were used, the reference category being incomplete primary (the highest education level in the household was considered). The coefficients on all variables, except for complete primary carry statistically significant coefficients. Moreover, more parent education clearly translates into higher coefficients, or better mathematics results for learners. The coefficient on 'Is 2011' is 55 TIMSS points. What this means is that assuming the breakdown by parent education had been similar in the two years, the improvement would have been 55 points. This is lower than the 67 points at the national level implied by Table 29. Moreover, the *p* value of zero points to a high level of reliability for this value of 55. The regression analysis described in Table 30 was repeated for all provinces. For all provinces except for Western Cape and Northern Cape, a statistically significant coefficient, significant at the 1% level, is

[36] Specifically, a Wald test was run after the calculation of means. In this process, clustering of learners by school was taken into account.

found, meaning that for seven provinces even after one controls for parent education, robust gains between 2002 and 2011 were seen. Details appear in Table 31.

Table 30: National mathematics regression results in TIMSS Grade 9

	Coefficient	p value
Constant	257.9***	0.000
Is 2011	55.2***	0.000
Is complete prim.	3.2	0.405
Is Grade 9	8.8***	0.005
Is Grade 12	29.9***	0.000
Is certificate	38.1***	0.000
Is diploma	54.3***	0.000
Is degree	81.2***	0.000
Is post-grad.	85.1***	0.000
R^2		0.207
Observations		15296

*Note: Dependent variable is each learner's mathematics score. Clustering by school is taken into account in the calculation of p values. *** indicates that the estimate is significant at the 1% level of significance.*

Table 31: Provincial regression results

	Coeff. on 'Is 2011'	p value
EC	55.8***	0.001
FS	61.2***	0.000
GP	75.4***	0.000
KN	54.3***	0.000
LP	75.3***	0.000
MP	53.5***	0.001
NC	17.5	0.319
NW	63.8***	0.000
WC	-9	0.697
SA	55.2	0.000

APPENDIX E: SUMMARY OF INDICATOR VALUES

The table beginning on the next page sums up the situation with respect to the educational outcome indicators specified in the Action Plan, many of which also appear in Presidency's Medium Term Strategic Framework (MTSF). The numbering of the indicators in the table follows the numbering of the Action Plan.

WHAT ARE THE INDICATOR VALUES, HAS THERE BEEN PROGRESS AND HOW CAN WE IMPROVE MEASUREMENT? ***(** means indicator appears exactly like this in Presidency's MTSF, * means a very similar indicator appears)***			
Indicator description	***Recent values***	***Is there progress and movement towards targets?***	***Improving measurement of this indicator***
1.1.* Percentage of Grade 3 learners performing at the required *literacy* level according to the country's Annual National Assessment.	In the 2014 Annual National Assessments (ANA), 57% of Grade 3 learners obtained an 'acceptable' score for home language (see Table 5). This statistic draws from the verification ANA sample, which is constructed to be nationally representative and experienced particularly stringent controls in the testing approach. An acceptable score is 50 or more out of 100 in the test. Comparisons across provinces with respect to this indicator need to be made with care. Certain provincial averages are in line with what is seen in more rigorously standardised assessments, such as PIRLS. For instance, results in Western Cape and Gauteng are relatively good whilst those for Limpopo are relatively weak. However, the exceptionally high average for Free State could be due to measurement error (Figure 25).	For 2014, the target value for this indicator was 60%, according to the Action Plan. The actual value was thus slightly below the target value. However, for several of the other ANA indicators discussed below, actual performance was well below the target value. The large movements in the provincial ANA values between 2011 and 2014 confirm that any comparison of ANA scores across years should be undertaken with much care (see discussion following Table 5). This also applies to comparisons between actual and target values. Gaps between actual and target values at this stage should thus not necessarily be seen as reliable indications of which grades and subjects are stronger or weaker.	Both *Action Plan to 2019* and the NDP discuss improvements required in the ANA programme, improvements which should partly be aimed at improving the comparability of ANA statistics. Programmes such as ANA typically require several years of trial and error before they stabilise and are able to produce highly comparable statistics. In 2015 the DBE embarked on a consultation process with stakeholders aimed at clarifying the exact purpose of ANA, and strengthening its fitness for purpose.
1.2. Percentage of Grade 3 learners performing at the required *numeracy* level according to the country's Annual National Assessment.	In the 2014 Annual National Assessments (ANA), 56% of Grade 3 learners obtained an 'acceptable' score for mathematics (see Table 5). See the comments for indicator 1.1.	For 2014, the target value for this indicator was 60%, according to the Action Plan. The actual value was thus slightly below the target value. See the comments for indicator 1.1.	See the comments for indicator 1.1.
2.1. Percentage of Grade 6 learners performing at the required *language* level according to the country's Annual National Assessments.	In the 2014 Annual National Assessments (ANA), 46% of Grade 6 learners obtained an 'acceptable' score for language (see Table 5). See the comments for indicator 1.1.	For 2014, the target value for this indicator was 60%, according to the Action Plan. The actual value was thus considerably below the target value. See the comments for indicator 1.1.	See the comments for indicator 1.1.
2.2. Percentage of Grade 6 learners	In the 2014 Annual National Assessments (ANA), 32% of Grade 6 learners obtained an 'acceptable'	For 2014, the target value for this indicator was 60%, according to the Action Plan. The	See the comments for indicator 1.1.

WHAT ARE THE INDICATOR VALUES, HAS THERE BEEN PROGRESS AND HOW CAN WE IMPROVE MEASUREMENT? ***(** means indicator appears exactly like this in Presidency's MTSF, * means a very similar indicator appears)***			
Indicator description	***Recent values***	***Is there progress and movement towards targets?***	***Improving measurement of this indicator***
performing at the required *mathematics* level according to the country's Annual National Assessments.	score for mathematics (see Table 5). See the comments for indicator 1.1.	actual value was thus considerably below the target value. See the comments for indicator 1.1.	
3.1. Percentage of Grade 9 learners performing at the required *language* level according to the country's Annual National Assessments.	In the 2014 Annual National Assessments (ANA), 22% of Grade 9 learners obtained an 'acceptable' score for language (see Table 5). See the comments for indicator 1.1.	For 2014, the target value for this indicator was 60%, according to the Action Plan. The actual value was thus considerably below the target value. See the comments for indicator 1.1.	See the comments for indicator 1.1.
3.2.* Percentage of Grade 9 learners performing at the required *mathematics* level according to the country's Annual National Assessments.	In the 2014 Annual National Assessments (ANA), 3% of Grade 9 learners obtained an 'acceptable' score for mathematics (see Table 5). See the comments for indicator 1.1.	For 2014, the target value for this indicator was 60%, according to the Action Plan. The actual value was thus below the target value by an enormous margin. See the comments for indicator 1.1. The discussion around Figure 22 is also important, in particular the point that TIMSS Grade 9 and Grade 12 examinations results suggest that the ANA Grade 9 mathematics results under-state the actual level of performance in schools.	See the comments for indicator 1.1.
4.* Number of learners who become eligible for a Bachelors programme in the public national examinations.	The 2015 Grade 12 year-end examination produced around 166 000 Matriculants with a Bachelors-level pass. Once supplementary examination results are considered this would rise to around 168 000. The 2015 figure was the second-highest ever seen. In 2008, when the new NSC was introduced, around 107 000 Grade 12 learners obtained a Bachelors-level pass. If all Bachelors-level passes in the country are considered, including those of Independent Examinations Board (IEB) students, the annual figure	The 2008 to 2015 trend has been an average annual increase of 8,0% (see Table 7). This is in the context of virtually no change in the size of the age 18 population (Table 21). The recent trend appears compatible with the attainment of long-range targets (see Figure 11).	It remains a priority to establish a more integrated system of reporting on Grade 12 statistics which includes analysis of trends amongst part-time students and those participating in the private examinations.

WHAT ARE THE INDICATOR VALUES, HAS THERE BEEN PROGRESS AND HOW CAN WE IMPROVE MEASUREMENT? ***(** means indicator appears exactly like this in Presidency's MTSF, * means a very similar indicator appears)***			
Indicator description	***Recent values***	***Is there progress and movement towards targets?***	***Improving measurement of this indicator***
	rises typically by around 9 000 (Table 9). Eastern Cape and Northern Cape remain provinces where the number of Bachelors-level passes are particularly low, relative to the population (see Figure 24 and Table 7). Less than 12% of youths in these provinces obtain a Bachelors-level pass, compared to a national average of over 18%.		
5. Number of Grade 12 learners passing *mathematics*.	This indicator has started to show a clear upward trend, after considerable fluctuation following the introduction of the new examinations in 2008. By 2015 the number of passes in the public and private systems combined had reached around 135 000 (before supplementary examinations), and around 15% of 18 year olds (see Table 8, Table 9 and Figure 24). Relative to the population, mathematics passes continue to be high in Gauteng and Limpopo, but low in Eastern Cape and Northern Cape. A mark of 30 in mathematics is considered a pass. The Medium Term Strategic Framework emphasises the monitoring of students who achieve a mark of 50. The 60 and 70 mark thresholds are moreover important as they are used by universities to determine entry into key programmes. In 2015, learners reaching a mark of 50, 60 and 70 were about 54 000, 32 000 and 17 000 (Figure 12 and Table 10).	The overall trend with respect to mathematics passes in the 2008 to 2015 period has been a slightly negative one of minus 0,6% per year (Table 8). In 2015, the number of mathematics passes of around 135 000 (public plus private systems) was well below the *Action Plan to 2019* target of 198 000. However, trends in the most recent years for the indicator have been positive and attainment of long-range targets seems possible (Figure 11). More importantly, achievement at higher levels in mathematics, specifically at the mark levels 50, 60 and 70 has expanded to a large extent between 2008 and 2015. For instance, the number of learners achieving a mark of at least 60 has increased by 25% between 2008 and 2015, the increase for black African learners being 65% (Figure 12). These figures emerge after certain anomalies in the historical trends have been corrected, using methods explained in the current report. As argued in the report, the larger numbers of, in	Trends in the Grade 12 examinations data for specific subjects are difficult to interpret and more analysis is needed to inform the education discourse. As part of its efforts to widen the number of researchers accessing these data, the DBE has entered into an agreement with DataFirst at the University of Cape Town and has started making Grade 12 examinations data available through the online DataFirst portal.

WHAT ARE THE INDICATOR VALUES, HAS THERE BEEN PROGRESS AND HOW CAN WE IMPROVE MEASUREMENT? ***(** means indicator appears exactly like this in Presidency's MTSF, * means a very similar indicator appears)***			
Indicator description	***Recent values***	***Is there progress and movement towards targets?***	***Improving measurement of this indicator***
		particular, black African learners attaining skills levels required for university studies is one of the most encouraging trends occurring currently in the schooling system.	
6. Number of Grade 12 learners passing *physical science*.	Many of the patterns seen with respect to the previous indicator (indicator 5) are seen for the current physical science indicator too. By 2015 the number of passes in the public and private systems combined had reached around 117 000 (before supplementary examinations), and around 13% of 18 year olds (see Table 8, Table 9 and Figure 24). In 2015, learners reaching a mark of 50, 60 and 70 were about 42 000, 25 000 and 13 000 (Figure 12 and Table 11).	The overall trend with respect to physical science passes in the 2008 to 2015 period has been a slightly positive one of 1,7% per year (Table 8). In 2015, the number of passes of around 117 000 (public plus private systems) was well below the *Action Plan to 2019* target of 186 000. However, trends in the most recent years for the indicator have been positive and attainment of long-range targets seems possible (Figure 11). More importantly, achievement at higher levels in physical science, specifically at the mark levels 50, 60 and 70 has expanded to a large extent between 2008 and 2015. For instance, the number of learners achieving a mark of at least 60 has increased by 7% between 2008 and 2015, the increase for black African learners being 65% (Figure 12). These figures emerge after certain anomalies in the historical trends have been corrected, using methods explained in the current report.	Comments made for Indicator 5 apply here too.
7. Average score obtained in Grade 6 in *language* in the SACMEQ assessment.	The most recent publicly available figures from the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) are those of 2007. SACMEQ was run again in 2013 and the results of this run are expected to become	A comparison of the 2007 and 2013 results will provide vital insights into quality improvements at the primary level during the previous decade, and by implication the effectiveness of policies and interventions.	The development of a national sample-based testing system, similar to SACMEQ and linked to the Annual National Assessments programme, is seen as one way to

WHAT ARE THE INDICATOR VALUES, HAS THERE BEEN PROGRESS AND HOW CAN WE IMPROVE MEASUREMENT? ***(** means indicator appears exactly like this in Presidency's MTSF, * means a very similar indicator appears)***			
Indicator description	***Recent values***	***Is there progress and movement towards targets?***	***Improving measurement of this indicator***
	available during 2016.		obtain more frequent measures of progress in learning outcomes at the primary level.
8.* Average score obtained in Grade 6 in mathematics in the SACMEQ assessment.	See previous row.		
9. Average Grade 8 mathematics score obtained in TIMSS.	Further analysis of South Africa's 2002 and 2011 TIMSS data, provided in the current review (Appendix D), confirms that despite concerns around the applicability of TIMSS to the South African context, the strongly positive 2002 to 2011 trend is a real one. TIMSS testing was repeated in 2014 in South Africa, at the grades 5 and 9 levels, and results will become available in 2016.	A comparison of the 2011 and 2014 TIMSS results will provide vital insights into the continued strength of quality improvements at the Grade 9 level with regard to mathematics (and physical science).	Whilst TIMSS is a rigorous monitoring programme and the data can be considered reliable, what is needed is better use of the rich TIMSS dataset amongst South African researchers.
10. Percentage of 7 to 15 year-olds attending education institutions.	Values continue to be high across all provinces, in no case below 98.1% according to the 2014 General Household Survey. The national value was 99.0% in 2014 (see details in Table 3).	For the last decade or so this figure has remained close to 100%. The fact that it has not reached 100% means that around 57 000 children of aged 7 to 14 remain outside school (it is legally permissible for a child aged 15 to be outside school if her birthday occurred in the previous calendar year). Western Cape, which previously had the lowest indicator value of all provinces, had by 2014 reached more or less the national average.	The Learner Unit Record Information Tracking System (LURITS) is expected to provide better information on which learners drop out of school on a permanent or temporary basis. This will make it easier to target interventions aimed at retaining learners in the system.
11.* The percentage of Grade 1 learners who received Grade R.	The current report explains in more depth than previous reports issues around the calculation of this indicator. It is concluded that with the currently	Indicator values derived from household data move up and down considerably and seem risky to use for the determination of	The ASS questionnaire is being reviewed to ensure that definitions of Grade R received previously by

WHAT ARE THE INDICATOR VALUES, HAS THERE BEEN PROGRESS AND HOW CAN WE IMPROVE MEASUREMENT? ***(** means indicator appears exactly like this in Presidency's MTSF, * means a very similar indicator appears)***			
Indicator description	***Recent values***	***Is there progress and movement towards targets?***	***Improving measurement of this indicator***
	available data, it is safest to pursue two different methods, both using Stats SA household data, and to report both statistics. For the 2014-2015 period, one method yields a national value of 96%, whilst the other a value of 95%. Values for the same province vary to a much larger degree, depending on which method is used. Using either method, Gauteng emerges as a province with a rather low level of Grade R participation. As explained in the current report, the Gauteng figures appear to arise out of a different understanding of the term 'Grade R' in this province. Participation from age zero to five in any kind of institution is in fact exceptionally high in Gauteng. Details appear in Table 19.	trends over time. This is even true for the national level. More reliable is the trend based on school data of the number of Grade R learners in ordinary schools (which would exclude Grade R in other types of institutions). This school trend had been strongly positive up to 2010, and modestly positive (2% to 4% a year) in the years 2011 to 2014. 2015 saw a decline of 3% but analysis suggests this is driven by smaller birth cohorts in, above all, Eastern Cape. A decline in the absolute numbers seems not be associated with a decline in the indicator value, which is a percentage relative to the population.	learners are adequately dealt with. The ASS should be used for the monitoring of this indicator to a greater degree.
12.1. The percentage of children who turned 9 in the previous year and who are currently enrolled in Grade 4 (or a higher grade).	The national value for this indicator would have been around 73% in 2013. Put differently, 27% of children turning 9 in the previous year would be over-aged relative to their grade in 2013. More precisely, the indicator value would be around one percentage point below the 73% level seen in Table 4 because the Table 4 values do not take into account out-of-school children. Provincial figures for 2013 range from 63% in Northern Cape to 83% in Gauteng. The figures published in the current report are higher than previously published figures due to calculation problems with the earlier figures. The current report confirms that levels found in the General Household Survey are similar to those of the Annual Survey of Schools (the latter being the main data source used).	There has been no noticeable increase or decrease in this indicator in the 2010 to 2013 period. The Action Plan envisages improvements of around one percentage point per year.	Measurement of this indicator seems adequate for now, following the change in the Annual Survey of Schools in 2010 from age on survey day to year of birth. The ideal would still be to measure this indicator using household data, in order to properly cater for out-of-school children, but as the out-of-school phenomenon is small and as sample-based household surveys result in large confidence intervals, it seems optimal to rely on the ASS.

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Indicator description	***Recent values***	***Is there progress and movement towards targets?***	***Improving measurement of this indicator***
	The figures appearing in the current report also appear in *Action Plan to 2019.*		
12.2. The percentage of children who turned 12 in the previous year and who are currently enrolled in Grade 7 (or a higher grade).	The national value for this indicator would have been around 63% in 2013. Put differently, 37% of children turning 12 in the previous year would be over-aged in 2013. More precisely, the indicator value would be around one percentage point below the 63% level seen in Table 4 because the Table 4 values do not take into account out-of-school children. Provincial figures for 2013 range from 49% in Eastern Cape to 78% in Gauteng. See further comments in previous row.	The Action Plan envisages improvements of around one percentage point per year. Improvements in the 2010 to 2013 years have been modest, at around half a percentage points a year.	See comments above.
13.1. The percentage of youths who obtained a National Senior Certificate from a school.	The current report presents a comprehensive analysis which concludes that national values for this indicator were 53%, 49% and 56% for the years 2013, 2014 and 2015 (details in Table 20 and Table 23). To illustrate, the 2013 value is based on NSCs obtained during 2013 examination cycle, which includes the 2013 year-end examination, but also supplementary examinations written in the first half of 2014. These values are higher than previously published values for the same indicator, partly because the situation has improved, but partly because, as argued in the current report, the previous estimates appear to have been under-estimates. Previously published figures are thus not directly comparable with new figures presented in this report. Gauteng is the only province with values exceeding 60% for all the three years 2013, 2014 and 2015.	It seems clear that increases in the number of NSCs obtained has far exceeded growth in the number of 18 year olds in the population over the 2010 to 2015 period (population growth has in fact been slightly negative over the period). This means that indicator values would be rising. The trend is clearly visible in all provinces except for Northern Cape, where population growth (positive) exceeds growth in NSCs very slightly (see Table 24). If current trends are sustained, the 2029 target for this indicator of 75% seems easily attainable.	The current report presents arguably the most rigorous calculation to date of the ratio of NSCs to population. However, many measurement questions remain. Above all, large discrepancies between official enrolment and population figures need to be understood better. This is a matter which the DBE and Stats SA have been investigating jointly.

WHAT ARE THE INDICATOR VALUES, HAS THERE BEEN PROGRESS AND HOW CAN WE IMPROVE MEASUREMENT? ***(** means indicator appears exactly like this in Presidency's MTSF, * means a very similar indicator appears)***			
Indicator description	***Recent values***	***Is there progress and movement towards targets?***	***Improving measurement of this indicator***
	Three other provinces exceed 50% for all three years: KwaZulu-Natal, Limpopo and Mpumalanga. The four provinces mentioned here had the highest indicator values even in the previously published figures, where the denominator was more directly dependent on official population figures. KwaZulu-Natal's second place position in 2013 is noteworthy, given that according to the widely publicised 'pass rate' (NSCs over candidates who write), KwaZulu-Natal performs rather poorly.		
13.2. The percentage of youths who obtained any FET qualification.	This indicator is the value of the previous indicator (indicator 13.1) plus the percentage of youths obtaining their first FET qualification from outside a school, meaning essentially youths who leave schools before successful completion of Grade 12 and obtain an alternative and equivalent qualification in a college. The current report argues that this additional percentage has been 2% in recent years but that due to increases in TVET college enrolments is likely to reach 3% or 4% soon. To illustrate, the 2015 value for the indicator would be around 58% (56% for indicator 13.1 plus 2%).	As argued in the current report, recent trends suggest that long-range targets can be met. Opportunities for youths to obtain some FET (or NQF level 4) qualification outside schools are increasing rapidly. This has obvious implications for planning in schools, in relation to for instance career and further studies counselling.	There is a need for better comparison of student records from schools and FET colleges to examine how the two sectors complement each other and the nature of flows between schools and colleges.

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