

Enrolments, staffing, financing and the quality of service delivery in early childhood institutions

29 April 2017

Executive summary

The current report explores numbers, from a wide variety of sources, needed to inform the planning of pre-Grade 1 early childhood development (ECD), in particular planning in relation to the teachers, or 'ECD practitioners', within this service. The aim of the report is both to paint the picture of the base scenario, and to examine the nature and quality of existing information systems.

Two policy pressures stand out. Firstly, the quality of Grade R, which around 72% of children now access through ordinary schools, needs to be strengthened. Secondly, all children should eventually have access to a year of education in the year preceding Grade R. The second of these priorities implies a number of complexities, explained below, which appear not to have received enough attention to date.

In the existing system, government funds ECD centres catering for around 685,000 children. Only around 240,000 of these children are in the pre-Grade R stage, meaning children who will enter Grade R in the next year. Most of the remaining 445,000 children are younger than this level. The 240,000 figure translates to 23% of an age cohort. Thus 77% of the target population for a year of pre-Grade R education are not funded by the state. About 26% of the target population are not enrolled anywhere, whilst 51% are enrolled but not funded by the state. This breakdown is critical for understanding the current situation of the target population, or the population of children in the year before they enter Grade R: 23% are funded by the state, 51% are enrolled but not funded by the state, 26% are not enrolled (the total is 100%). What the current report does not examine is how levels of poverty correlate with these categories. More work on this question is needed, and relatively good data exist, but one can be highly certain that in general the poorer the household, the lower the access to an ECD service. It may even be that public funding systems fail to target the poorest.

An obvious question is whether the state should fund children below the age of the target population (the target population being approximately age 3.5 to 4.5 at the start of the school year) when funding is limited and many in the target population who should be funded, are not funded. Removing the funding of younger children where this already exists may not be politically palatable. However, what may be possible and optimal is for *expansion* in the public funding system to target only those in the pre-Grade R year.

In moving forward, difficult choices will have to be made in relation to limiting unit cost increases and, probably, reducing class sizes, particularly in Grade R, by reducing child-to-teacher ratios.

In Grade R, each teacher costs around 40% of what a teacher in the other school grades costs. However, Grade R teachers are relatively unqualified. Roughly a third have not successfully completed Grade 12 and only around one-fifth hold a degree. Raising qualifications levels inevitably means the average cost of a Grade R teacher will increase over time. Better qualifications can improve the quality of teaching and learning, if the conditions in classrooms are right and adequate incentives exist for teachers to perform well. Another way one might improve the quality of Grade R is by reducing class sizes, which at an average of 37 seem high. In general, South Africa's class sizes are large even by developing country standards. Again, reducing class sizes is not a guarantee that quality will improve. This depends on a number of related factors. From a budget perspective it may not be possible to

reduce class sizes and raise qualifications levels to a substantial extent at the same time. The organisations of existing Grade R teachers are likely to favour improvements in qualifications and salaries. This political dynamic will have to be taken into account, but it should not be the only consideration. Clearly, the choices are difficult. The aim of this report has been to compile the basic numbers to facilitate an informed debate, and informed future scenarios.

At the pre-Grade R level the average cost of a teacher, or practitioner, is even lower, amounting to as little as one-tenth of the cost of a grades 1 to 12 teacher according to some sources. Yet the qualifications of these practitioners are not much lower than practitioners teaching Grade R in schools (as already mentioned, a third of the latter group has not completed Grade 12). The good story about pre-Grade R classes is that they are considerably smaller than Grade R classes, the average being 22. It is possible that learners in the year before Grade R (aged 3.5 to 4.5 at the start of the year) experience somewhat larger classes, but they would still be considerably smaller than Grade R classes. The planning dynamics for a year of education preceding Grade R are in some ways more straightforward than those governing Grade R in schools. Virtually all practitioners teaching this level are employed by ECD centres, which in turn may be funded through a public subsidy. In contrast, over two-thirds of Grade R teachers in schools are provincial employees (the exact percentage is not readily available), which implies far more centralised negotiation around salaries.

The figures that have been provided above are roughly accurate, and often more accurate than figures provided in other reports which have only used one data source at a time. However, much needs to be done to improve the information systems relating to ECD. Many of the challenges are not specific to ECD and relate to general weaknesses in government around the capacity to plan, a matter that is dealt with extensively in the National Development Plan.

In the area of ECD three relatively easy tasks should be tackled more decisively.

Firstly, eighteen provincial government departments fund ECD. The documents of four of these departments were examined for this report. To varying degrees of success, the provincial departments report on how ECD money is spent: on how many children of specific ages and education levels, on how many institutions, and so on. Nationally agreed upon sets of indicators seem to exist. What does not appear to exist is collation at one national point (this could be either the Department of Basic Education or the Department of Social Development) of key figures from the provincial reports, together with some commentary on the validity and comparability of the provincial statistics. Moreover, what is lacking in the provincial and national planning documents is a focus on the management of cost drivers such as per child costs, per teacher costs and class sizes, ratios which are intimately linked to the quality of services, but also the scope for expanding them. Improvements in these reporting systems need not be costly, yet they could greatly assist planning and the policy discourses relating to ECD.

Secondly, the DBE implicitly acknowledges that an annual survey of ECD centres is necessary. The DBE has run such a survey, but it covers a small fraction (definitely less than 24%) of the institutions it should cover, meaning the few statistics from the survey which are calculated and published are clearly under-estimates. How institutions become excluded from the survey is not clear. The DBE's survey appears to be an asset within the overall monitoring system which should be properly funded and planned for, so that it can produce data needed for planning.

Thirdly, Statistics South Africa household data should be used to a larger extent to monitor key questions, in particular the question of who is currently not funded publicly when it comes to a year of pre-Grade R schooling. Are there important geographical disparities? To what extent do the very poorest households account for the 77% of children not funded currently?

1 Introduction

This report¹ presents and discusses key numbers with respect to **enrolments, staffing, and the financing of service delivery in early childhood institutions** using mostly publicly available information. The focus is on the situation in 2016, or as recently as possible before then, but there is also some discussion of the trends over the last decade or so. The scope of the analysis is Grade R and all institutionalised clearly childhood development (ECD) below this level.

The focus of the report is in particular on numbers which are needed for **cost and service expansion scenarios**. Unit costs, in terms of learners and employees, would be of special importance in this regard. Of special concern is the demand for what the *National integrated early childhood development policy* refers to as ‘**early childhood development practitioners**’, meaning essentially educators trained specifically to work with young children at the pre-school, and specifically pre-Grade 1, level. The policy is especially relevant as it offers South Africa’s more recent comprehensive vision of the future of ECD².

Government targets are to some extent discussed, in particular insofar as their correspondence to existing statistics is concerned. Specifically it is important, where targets have been published, to establish what existing indicators are relevant. As will be seen, this matter is not always straightforward.

A concrete aim of the report is to produce a set of tables with **statistics at the province level**, which can then be used to calculate ratios that are needed for planning. To some extent, there is some drilling down into the reporting systems of two provinces: KwaZulu-Natal and Western Cape. The first of these provinces points to challenges and opportunities associated with service delivery in rural areas, whilst the second province points to possibilities in a more urban context with a relatively developed and well-resourced bureaucracy³.

Given the weaknesses of existing **information systems** relating to ECD, and discrepancies in the available statistics, considerable emphasis is placed on explaining serious discrepancies and suggesting how information systems could improve. Clearly, suggestions around systems improvements need to be sensitive to cost.

To some extent statistics reflecting the quality of ECD services are discussed, but here the discussion is largely about what monitoring should exist, as opposed to what actually exists.

Policy priorities, and indicators considered important by government, inform the focus of the analysis. The following stand out:

- Government’s Medium Term Strategic Framework (MTSF)⁴ emphasises a move towards universalising enrolment not just in Grade R (a goal which has existed for around fifteen years), but also in the year preceding Grade R. The Department of Social Development is seen as mainly responsible for developing policies and strategies in this regard. Clearly the current report should feed into that process.
- In the MTSF, the quality of ECD is viewed in terms of the availability of quality learning materials, adequate qualifications for teachers and the competencies acquired by children according to standardised assessment systems. The latter is still in its infancy in South Africa, so reliable and representative statistics on competencies are not currently

¹ Produced by Martin Gustafsson (mgustafsson@sun.ac.za).

² Department of Social Development, 2015.

³ See for instance Levy *et al* (2016) for an account of the Western Cape bureaucracy.

⁴ See Appendix 1 to Presidency (2014).

available. The analysis that follows will discuss what types of systems would be feasible to generate the required statistics.

2 Enrolments

Baselines and targets. The MTSF for basic education recognises a 95% Grade R coverage ratio for 2013, and envisages 100% coverage by 2014/15. With respect to the goal that all children also receive a year of education prior to Grade R, there are no time-bound targets. Interestingly, there is no actual baseline figure for this goal, in either the MTSF, the National Development Plan or the plans of the Department of Social Development (DSD).

Population estimates. We begin with the size of birth cohorts in the child population, because this is a basis for estimating demand for ECD, and because there are important discrepancies in the available population numbers. The NDP makes the common assumption that there are about a million children of each age⁵. The *National integrated early childhood development policy*, henceforth referred to as the 2015 ECD policy refers to age cohorts of almost 1.2 million⁶. The first column of Table 1 below reflects what appears in the mid-year population estimates of Statistics South Africa (Stats SA)⁷. (Headings such as ‘PM’ appear across the tables to assist in the cross-referencing.) It has been argued, on the basis of comparisons to school enrolment statistics, that the official population estimates for children have in recent years been around 15% too high⁸. The second column provides an alternative, using birth registrations data compiled by the Department of Home Affairs and then Stats SA. The total in the first column is 13% higher than the total in the second column. The third column provides a further plausible estimate of one age cohort, namely the number of seven-year-olds in the schooling system⁹. Given that virtually all seven-year-olds are enrolled, this approach is feasible. The third total is close to the second total. Some of the province-level discrepancies are particularly noteworthy, for instance the fact that whilst the official population estimates point to an age cohort of around 270,000 in KwaZulu-Natal, the education data suggest the figure is closer to 214,000. Ideally, one should not see such discrepancies, even if different (but fairly close) birth years are assumed. The number of children born per year does not change much, in general¹⁰.

⁵ National Planning Commission, 2012: 300.

⁶ Department of Social Development, 2015: 40.

⁷ Statistics South Africa, 2016.

⁸ Gustafsson, 2012, 2015.

⁹ Obtained from Excel files accompanying Gustafsson (2017).

¹⁰ It seems South Africa has been rather exceptional in this regard, however. Between 2003 and 2005 births (or surviving infants born between those years) increased dramatically, by around 10%, according to both birth registrations and enrolment data. See Gustafsson (2014).

Table 1: Population values (thousands)

	Stats SA mid-year population estimates: Ages 0 to 4 divided by 5 (2016)	Stats SA birth registrations data: Births per year 2010-12	Number of learners in ordinary schools aged 7 at the start of the year
	PM	PB	P7
EC	170	127	155
FS	55	55	55
GP	245	205	204
KN	270	222	214
LP	134	131	129
MP	89	88	81
NC	21	25	24
NW	81	81	67
WC	108	106	103
SA	1,173	1,041	1,032

Education department Grade R numbers. Table 2 below looks at enrolments. The first and second columns reflect the number of Grade R learners in schools and is reliable¹¹. The 813,000 total for 2016 compares with 442,000 in 2006. This trend of a dramatic rise in schools-based Grade R is one of the most significant developments in the schooling system in recent years. There is an important proviso, however. Enrolment numbers *minus grade repeaters* indicates how many children reach that grade. Knowing the extent of grade repetition is important. A 2015 sector review by the Department of Basic Education (DBE)¹² points to 8% of Grade R learners being repeaters¹³. This implies that schools-based Grade R has recently been accommodating around 748,000 (not 813,000) *first-time* learners. If one compares this 748,000 to the population estimates of Table 1, it is possible to conclude that in 2016, 72% of children were being offered Grade R *in an ordinary school*. The enrolment ratios in the third column have been calculated by the DBE, using household data and taking into account grade repetition¹⁴. Though the value for Gauteng seems low, the source report argues that this is not a reflection of a real under-enrolment problem, but rather more stringent criteria in defining who is a Grade R learner in an institution other than an ordinary school.

General Household Survey enrolment ratios. The middle panel of Table 2 contains enrolment ratios, with age being that on the day of the General Household Survey (GHS) visit to the household, in around the middle of the year¹⁵. Here enrolment in any kind of education or care institution is counted. The situation for all ages in the range 0 to 8 (but for the years 2012 to 2014) is illustrated in Figure 1. But what does age mean in terms of grade? As seen in Figure 2, in recent years there has been a fairly tight correspondence between age and grade. In 2015 it was rare to find Grade R learners below 4.5 years of age *at the start of the calendar year* and only a few above age 5.5 years (so five years and six months), again at the start of the calendar year, were found (and it is likely that those would be repeaters – see the left-hand area B). By implication, it appears children aged 3.5 to 4.5 years at the start of the year should be targeted for a year of pre-Grade R schooling. This would be in line with policies on Grade 1 entry, which state that a child should be between 5.5 years and 7.0 years on starting Grade 1. It would also be in line with the assumption that households are trying to enter children as early as legally possible in schools, so if the child is between 5.5 and 6.5 at the start of the year. So which of the three columns in the middle panel of Table 2 represents the pre-Grade R year? If one is looking at children aged between 3.5 and 4.5 at the start of the year, in the

¹¹ Department of Basic Education, 2016b.

¹² Department of Basic Education, 2016a: 14.

¹³ To compare, 15% of Grade 1 learners, but around 8% of Grade 3 learners are repeaters.

¹⁴ Department of Basic Education, 2016a: 58.

¹⁵ Microdata obtained from <https://www.datafirst.uct.ac.za> analysed.

middle of the year they should mostly be aged 4. The GHS thus suggests that around 74% of children who should be a pre-Grade R year already do so.

Free State’s remarkably high enrolment levels. One very noteworthy pattern seen in Table 2 and Figure 1 is the high levels of enrolment in Free State in the age range 1 to 4. Whilst Gauteng can be expected to display this pattern, due to higher household incomes, it is remarkable that a province such as Free State should display this pattern.

Numbers from the recent ECD audit. The last four columns of Table 2 draw from the ECD audit of the Department of Social Development (DSD). This audit collected data from 17,846 ECD centres which are not schools in the sense that they do not offer Grade 1 (they might be called ‘pre-schools’ and offer education up to Grade R, however). The audit report is not an easy source to use, partly because statistics were not compiled to inform specific planning questions, but also because the meaning of age is not very clear in the report. Age does reflect age on the day of the site visit, but given that visits occurred over several months¹⁶, the meaning of, say, ‘the number of five-year-olds’ would be slightly different for different sites. The ideal would have been if the audit had asked not how many children there were of age X, but rather how many children there were born in year Y. The values seen in Table 2 make use of a table on page 104 of the audit report, which gives an overall total number of enrolled children of around 917,000. However, page 104 of the audit report provides a substantially lower total enrolment figure of 823,673. This discrepancy is worrying. (The audit report indicates¹⁷ that an earlier 2001 audit counted around a million enrolled children. A key reason why the 2001 figure would be so high is that schools-based Grade R was at the time still quite low, meaning ECD centres largely provided this service.) Whilst the audit report does not provide Grade R enrolment figures, it does indicate that around a third of the audited ECD centres offered Grade R¹⁸.

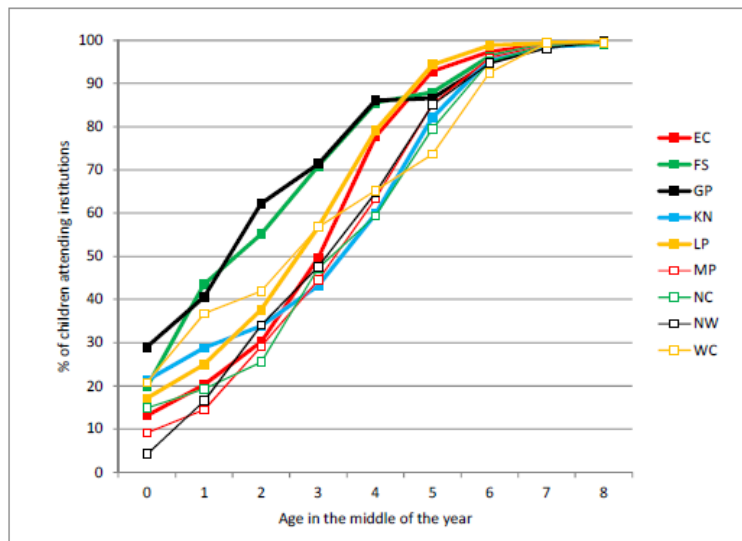
¹⁶ Department of Social Development (2014b: 44) indicates that around a third of the audited centres were visited in the 2012/13 financial year, with a further two-thirds being visited in the following financial year.

¹⁷ Department of Social Development, 2014a: 45.

¹⁸ Department of Social Development, 2014a: 131

Figure 1: Enrolment by age and province

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

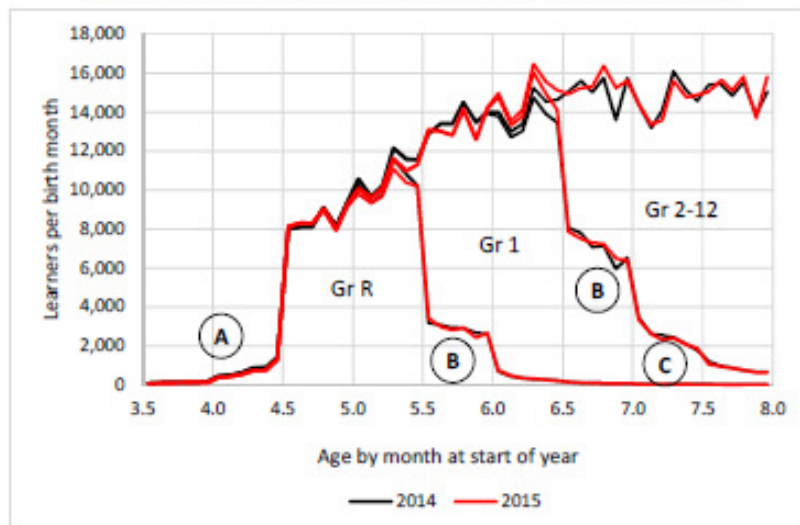


Source: General Household Survey datasets 2012 to 2014.
 Note: Each point in the graph is the average across the 2012, 2013 and 2014 statistics.

Source: Department of Basic Education, 2016a: 13.

Figure 2: Age versus educational level

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.

Source: Department of Basic Education, 2016: 55.

Table 2: Enrolment numbers (thousands) and ratios

	Number of Grade R learners in all ordinary schools 2016	Number of Grade R learners in independent ordinary schools 2016	DBE estimate of % of children going through Grade R (2015)	GHS % of children enrolled age 3 in middle of year (2013- 2015)	GHS % of children enrolled age 4 in middle of year (2013- 2015)	GHS % of children enrolled age 5 in middle of year (2013- 2015)	ECD centre enrolments in 2013-14 audit	ECD centre enrolments in 2013-14 audit: age 3	ECD centre enrolments in 2013-14 audit: age 4	ECD centre enrolments in 2013-14 audit: age 5 and older
	ER	EIR	EE	EG3	EG4	EG5	EA	EA3	EA4	EA5
EC	136	4	100	51	76	87	75	23	14	7
FS	38	1	96	66	82	90	100	25	25	15
GP	120	17	79	62	81	84	171	44	40	22
KN	192	5	90	55	72	85	109	34	25	9
LP	126	4	100	54	73	90	162	56	42	8
MP	65	2	95	47	67	86	94	28	24	12
NC	19	0	95	59	70	86	27	8	7	3
NW	51	2	88	46	65	84	47	14	12	7
WC	68	4	100	59	71	81	132	35	33	15
SA	813	39	96	56	74	85	917	267	222	99

Substantial discrepancies between households and institutional audit data. Table 3 below provides some vital consistency checks. The right-hand panel of this table points to the GHS enrolment estimates for children aged four being a staggering 3.5 times higher than what is suggested by the DSD’s ECD audit. So where the first source suggests 766,000 children are enrolled, the audit figure is 222,000. How can one explain the 544,000 gap, a gap representing around half of the entire age cohort? Around 93,000 of the gap is likely to be a result of the fact that the GHS statistics reported here include the category ‘day-mother/gogo’, whilst the ECD audit would have excluded this (see Table 4 below – 9% translates into around 93,000 children). Some of the discrepancy would be the result of the fact that the ECD audit would not have counted four-year-olds enrolled *in schools in Grade R* (this dynamic is the likely explanation for the fact that the ECD audit found more three-year-olds than four-year-olds – see Table 2). This part of the discrepancy might amount to 83,000 children – see the 8% in the last column of Table 4. The audit report says that 4% of the ECD centres it intended to visit were not visited¹⁹ – this translates to around 9,000 missed learners. Finally, DBE reports indicate that around 34,000 *pre-Grade R* children are enrolled in schools²⁰. But this still leaves us with an unexplained discrepancy of 325,000. What probably explains much of this is ECD centres not appearing in the DSD’s list of centres used for the audit. These are more likely to be unregistered centres. These calculations must be considered rough. However, the conclusion that many ECD centres are not on the ‘radar’ of the DSD and the DBE seems inescapable.

Table 3: Derived statistics on enrolment

	Number of children enrolled using Stats SA ratios: age 3	Previous column over EA3	Number of children enrolled using Stats SA ratios: age 4	Previous column over EA4
	$EG3 / ((PB + P7) / 2)$		$EG4 / ((PB + P7) / 2)$	
EC	72	3.1	107	7.6
FS	37	1.4	45	1.8
GP	128	2.9	166	4.1
KN	119	3.5	156	6.3
LP	70	1.3	94	2.3
MP	40	1.4	57	2.4
NC	14	1.9	17	2.4
NW	34	2.5	49	4.1
WC	61	1.7	75	2.3
SA	575	2.2	766	3.5

Table 4: ECD enrolment by age and type (2015)

	0	1	2	3	4
Grade R	0	1	1	2	8
Pre-school/nursery school/Grade 00/Grade 000	1	3	6	12	17
Creche/educare centre	4	12	22	31	36
Day-mother/gogo	18	17	14	8	9
Other	0	1	0	0	1
None	74	64	55	44	27
Do not know	0	0	0	0	0
Unspecified	2	2	2	2	3
	100	100	100	100	100

Source: Own analysis of General Household Survey 2015 data, available at <https://www.datafirst.uct.ac.za>. Age is age on the survey day, which was in the middle of the year.

¹⁹ See Department of Social Development (2014: 22). Non-surveyed but existing institutions would be the sum of the categories ‘access denied’, ‘not found’, and ‘unconfirmed registration status’.

²⁰ Department of Basic Education, 2016b: 2.

A third of pre-Grade R of age 4. There is a policy contradiction in the sense that DSD policies favour the different ages in the range 0 to 4 equally when it comes to public subsidies, whilst the NDP clearly favours older children in that range, specifically children who are eligible for Grade R in the next year. This makes the statistics in the following table important. Nationally, around 35% of those children aged 0 to 4 who are enrolled somewhere (even with the ‘day-mother/gogo’) are in the age 4 category. It is this 35% which, according to the NDP, should receive a high priority at least as far as the expansion of publicly funded ECD is concerned.

Table 5: Age 4 amongst pre-Grade R

	% of enrolled children aged 0 to 4 who are age 4 (GHS 2015)
EC	40
FS	23
GP	39
KN	40
LP	37
MP	38
NC	13
NW	34
WC	31
SA	35

DBE annual survey for ECD centres. The Department of Basic Education, on its website, has a questionnaire for a survey titled *Annual survey for early childhood development*²¹. The 2014 version of the survey is uploaded, as well as instructions for the completion of the questionnaire²². The instructions indicate the survey is targeted at all institutions offering Grade R or pre-Grade R, but not Grade 1 and above, regardless of which government entity the institution is registered with. The DBE’s annual statistical report titled *Education statistics in South Africa*, available on the DBE website for all the years 2008 to 2014 (but not beyond 2014) provides a global enrolment figure for non-school ‘ECD’. In the 2014 report²³, the total enrolment was 295,942, found in 4,312 institutions, compared to the ECD audit’s 917,000 children in 17,846 institutions. Presumably the institutions the DBE considers are a sub-set of the institutions DSD would consider. It is possible that the DBE’s survey pays particular attention to those institutions receiving education department (as opposed to, say, DSD) funding²⁴. What is not clear is whether it is the DBE’s annual survey for ECD institutions which is the source for the DBE’s data, but presumably it is. As seen in Table 6 below, the DBE’s reported institutions come to around a quarter of the DSD’s audited institutions, though this ratio varies enormously by province, from 66% in Limpopo to 3% in KwaZulu-Natal. Whilst having an annual survey for ECD centres can be considered important, a survey with such incomplete coverage is probably not useful.

²¹

<http://www.education.gov.za/Portals/0/Documents/Forms/ECD%20Annual%20survey%202014.pdf?ver=2015-01-29-154613-313>

²²

<http://www.education.gov.za/Portals/0/Documents/Publications/NATIONAL%20GUIDELINE%20ON%20ECD%20Survey%202014.pdf?ver=2015-01-29-160409-553>

²³ Department of Basic Education, 2016c.

²⁴ UNICEF (2010: 19) points out that historically many ECD centres have received funding from just and education department, or from both an education department and DSD.

Table 6: ECD numbers published by DBE (2014)

	Learners (thousands)	Institutions	Learners per institution	DBE's reported institutions as a % of ECD audit institutions
EC	7	105	67	6
FS	27	343	79	23
GP	79	1,044	76	32
KN	5	54	93	3
LP	123	2,007	61	66
MP	16	152	105	9
NC	4	36	111	8
NW	8	176	45	19
WC	27	395	68	13
SA	296	4,312	69	24

Provincial monitoring. The following indicators are reported on in the KwaZulu-Natal Department of Social Development annual performance plan published in 2016²⁵. Values appearing in the list are the 2016 values appearing in the plan.

- Number of fully registered ECD centres – 1,003
- Number of conditionally registered ECD centres – 1,619
- Number of children accessing fully registered ECD programmes – 94,146
- Number of subsidised children accessing registered ECD programmes – 71,449
- Number of ECD practitioners in funded ECD centres meeting minimum qualification requirements – 2,655
- Number of child and youth care centres – 52

The above figures display a high degree of correspondence with the ECD audit figures. For instance, 94,147 learners in registered centres is close to the audit's 82,000²⁶. What seems to be excluded from the KwaZulu-Natal department plan is learners in conditionally registered and unregistered centres. According to the audit, around 27,000 learners are found there. The above list of indicators, with a couple differences in the wording, appears in the Western Cape Department of Social Development's annual plan²⁷, but few statistics are given in the Western Cape plan, apparently due to disagreements with the national level around recent changes to indicator definitions. The bottom line is that the KwaZulu-Natal plan provides a better picture of the ECD landscape than the Western Cape report.

Turning to the annual performance plans of the education departments, again the two provinces in question take rather different approaches. The Western Cape plan indicates that 70% of Grade 1 learners are receiving a prior year of Grade R²⁸. This contrasts with the 100% seen in the third column of Table 2 above. What is clearly happening is that Western Cape is not counting Grade R offered in non-school institutions, though they ought to count this. The KwaZulu-Natal education plan²⁹ provides a statistic of 97%, presumably because Grade R outside schools *is* counted.

What does not seem to occur in the case of either of the two national departments (Department of Social Development and Department of Basic Education) is a collation of key ECD service delivery statistics published by provinces, with comments on the validity and

²⁵ KwaZulu-Natal Department of Social Development, 2016: 40.

²⁶ Department of Social Development, 2014a: 295.

²⁷ Western Cape Government: Social Development, 2017: 155.

²⁸ Western Cape Government: Education, 2016: 63.

²⁹ KwaZulu-Natal Department of Education, 2016.

comparability of these statistics. The DBE does publish sector reviews with details on, in particular, the Grade R numbers, without comparing these to what provinces publish. DSD has of course published the ECD audit report, but as alluded to above, a key weakness of this report is uses just one data source and does not examine the correspondence of this source to statistics emerging from other sources.

3 Institutions

Schools with Grade R. Table 7 and Table 8 below indicate that 7% of ordinary schools with Grade 1 do not offer Grade R (100% minus 93% from Table 8)³⁰. This percentage would be 6% if one considers only public ordinary schools³¹. Arguably, all *public* schools offering Grade 1 should also offer Grade R. A further important indicator in this regard is that the average number of Grade R learners per school is 47 (counting only those schools offering Grade R), whilst the figure for Grade 1 is 67, giving a ratio between the two figures of 0.70 (Table 8). As the plan has been for some Grade R to be offered outside schools, in ECD centres, this ratio of 0.70 is arguably not problematic. Interestingly, two provinces with high levels of pre-Grade R access according to household data, Free State and Gauteng (see Figure 1), have low values for indicators of Grade R in schools access: in Free State only 71% of schools with Grade 1 offer Grade R, and in Gauteng the average Grade R group in schools is only 58% of the average Grade 1 group size.

Table 7: Institutions

	Number of all ordinary schools with Grade R (2015)	Number of independent ordinary schools with Grade R (2015)	Number of all ordinary schools with Grade 1 (2015)	Average Grade 1 learners per ordinary school	ECD centres in 2013-14 audit
	IR	IIR	I1	IA1	IAU
EC	4,574	144	4,699	42	1,833
FS	684	50	963	69	1,520
GP	1,762	441	1,963	117	3,230
KN	4,128	158	4,273	63	2,136
LP	2,468	127	2,546	60	3,028
MP	1,122	81	1,281	82	1,706
NC	403	21	431	68	478
NW	967	39	1,084	74	911
WC	1,079	126	1,271	88	3,004
SA	17,187	1,187	18,511	67	17,846

³⁰ 2015 Snap Survey microdata available at <https://www.datafirst.uct.ac.za> were analysed for this.

³¹ If one considers *learner-weighted* public schools, the percentage drops to 5%, meaning 5% of Grade 1 learners in public schools are in schools which do not offer Grade R.

Table 8: Derived statistics on institutions

	Ratio of schools with Grade R to schools with Grade 1	Ratio of average Grade R size to average Grade 1 size (all schools-based) (ER × 1000 / IR)	Ratio of ECD centres to schools with Grade 1	Average enrolment per ECD centre
	IR / I1	/ IA1	IAU / I1	EA × 1000 / IAU
EC	0.97	0.70	0.39	41
FS	0.71	0.79	1.58	66
GP	0.90	0.58	1.65	53
KN	0.97	0.74	0.50	51
LP	0.97	0.85	1.19	54
MP	0.88	0.70	1.33	55
NC	0.94	0.67	1.11	56
NW	0.89	0.72	0.84	52
WC	0.85	0.72	2.36	44
SA	0.93	0.70	0.96	51

Number of ECD centres. The ratio of ECD centres³² to schools with Grade 1, 0.96, is slightly higher than the ratio of Grade R in schools to schools with Grade 1. At face value, the 17,846 ECD centres surveyed in the 2013-14 audit is a satisfactory number. However, the province-level ratios of ECD centres to schools with Grade 1 vary hugely, from 0.39 in Eastern Cape to 2.36 in Western Cape. This does not seem to be mainly driven by differences in the sizes of ECD centres – size in terms of average enrolment seems consistent across provinces (last column of Table 8). A large part of the explanation for the across-province variance in the second-last column of Table 8 seems to be coverage of the population. Free State and Gauteng both display high levels of coverage according to the household data, whilst also displaying high ratios of ECD centres to schools. KwaZulu-Natal does not fare well according to the household data (Figure 1, especially ages 3 to 4), and has just one ECD centre for every two schools.

Estimated under-count of ECD centres. Some of the inter-provincial disparities are also likely to be driven by differences in the coverage of the audit. To provide a very rough idea of the audit's under-count, if we take the 325,000 unaccounted for children referred to in section 2, and divide this by the average ECD centre size of 51 seen in Table 8, we obtain 6,325 unaccounted for ECD centres. These centres would not be 'day-mother/gogo' centres insofar as the 325,000 figure has already excluded children in such places.

Provincial monitoring. The number of fully registered and conditionally registered ECD centres in KwaZulu-Natal, according to that province's DSD, was 2,622 in 2016 (see the sum of two figures from section 2). This contrasts with the 1,636 centres with full or conditional registration in 2013-14 according to the ECD audit (this number is 2,136 in Table 7 because 500 non-registered centres are included in this number). The gap between 2,622 and 1,636 (or even 2,136) is indicative of the problems around identifying centres. The difference is almost certainly not the result of actual growth between the two time periods, though some of the difference could be due to the fact that unregistered centres became registered.

4 Staffing

Confusing statistics on staff in the ECD audit. The ECD audit report is unfortunately confusing with regard to staffing numbers at ECD centres, with very different staffing numbers (and child-to-teacher ratios) emerging, depending on how one interprets the report. The problem seems to have begun with the questionnaire. Within the main 'audit instrument' directed at one person in the centre was a 'staff profile' questionnaire directed at individual

³² Number of centres in the table from Department of Social Development (2014a: 20).

staff members (both appear in the addendum³³). The staff questions in the main instrument which would be directed at one person (presumably the principal in many instances) are reproduced below. The concern is what happens if the same practitioner teaches children in more than one age group. Is the same practitioner then counted twice (or even more times)? The statistics appearing in the report suggest that there was multiple counting of the same person. The questions appearing below produce a total number of 66,759 ‘available’ practitioners, of whom 59,857 are ‘present’. The figures for assistant practitioners are 21,983 available and roughly 21,000 present (the latter figure can be seen in a graph)³⁴. On the other hand, the numbers of practitioners and assistant practitioners seen in the staff profiles are 27,364 and 3,027 respectively. These figures appear in Table 9 below³⁵. There were thus 2.2 times as many practitioners based on the questions reproduced below (counting those ‘present’) as in the staff profiles, and seven times as many assistant practitioners. One would expect a bit of a gap between the sources as staff profiles were collected only from 16,806 centres, or 94% of the 17,846 centres visited. Moreover, there is the risk that some centres would produce some but not all the completed staff profiles. Even with the questionnaire design problems, it should be possible to eliminate much of the duplicate employee problem through careful analysis of the original data, and this should have been attempted in producing the audit report³⁶.

3.8 How many practitioners and assistants are normally available for each of the following age groups?		Number	Number
		Practitioners	Assistants
3.8.1	Age group birth up to and including 18 months	<input type="text"/>	<input type="text"/>
3.8.2	Age group 19 months up to and including 36 months	<input type="text"/>	<input type="text"/>
3.8.3	Age group 37 months up to and including 48 months	<input type="text"/>	<input type="text"/>
3.8.4	Age group 49 months up to and including 60 months	<input type="text"/>	<input type="text"/>
3.8.5	Age group 61 months and older	<input type="text"/>	<input type="text"/>
3.8.6	Total number	<input type="text"/>	<input type="text"/>
3.9 How many of the practitioners and assistants were present on the day of the audit for each of the following age groups?		Number	Number
		Practitioners	Assistants
3.9.1	Age group birth up to and including 18 months	<input type="text"/>	<input type="text"/>
3.9.2	Age group 19 months up to and including 36 months	<input type="text"/>	<input type="text"/>
3.9.3	Age group 37 months up to and including 48 months	<input type="text"/>	<input type="text"/>
3.9.4	Age group 49 months up to and including 60 months	<input type="text"/>	<input type="text"/>
3.9.5	Age group 61 months and older	<input type="text"/>	<input type="text"/>
3.9.6	Total number	<input type="text"/>	<input type="text"/>

Ratios of children to practitioners. One thing that seems to confirm the greater reliability of the staff numbers collected from the staff profiles (as opposed to questions 3.8 and 3.9) is that resultant child-to-teacher ratios are more credible and in line with what has been found in other studies. If one uses the staff figures derived from the above questions, one obtains a ratio of 15.3 (including assistant practitioners) or 11.3 (excluding assistants). Using the education staff numbers collected through the staff profiles (here education staff is anyone who is not ‘support staff’) one obtains ratios of 20.6 (with assistants) and 22.3 (without assistants)³⁷. A 2009 survey of ECD centres in three provinces arrived at a child-to-teacher ratio of 21.0³⁸. Moreover, the DBE’s annual survey for ECD centres discussed in section 2 produces a child-to-teacher ratio of 23.4³⁹. The bottom line is that it seems the ECD audit figures derived from the staff profiles are sufficiently reliable, whilst those from questions 3.8

³³ The staff profile must be section 2.2.1 of the instrument.

³⁴ Department of Social Development, 2014a: 115-116.

³⁵ The table draws from the tables on p. 280 of the report.

³⁶ In particular, the figures entered as ‘Total number’ in questions 3.8.6 and 3.9.6 should have been analysed and compared to other figures. It appears this was not done for the audit report.

³⁷ Here 94% of the total child count was used as the staff profiles were not completed in 6% of centres.

³⁸ UNICEF, 2010: 27.

³⁹ Using figures in Department of Basic Education (2016c: 19)

and 3.9 are not. Hence Table 9 presents only figures from the staff profile source. Very importantly, if the conclusion drawn here is correct, then substantial discussions in the ECD audit report of child-to-teacher ratios (ratios which are considerably lower than what one sees in other publications) are largely invalid. All the ratios discussed in the ECD audit report use data from questions 3.8 and 3.9.

Different average salary costs implied by different staff numbers. What further suggests that the lower staff counts from the staff profile should be used is that these numbers produce monthly salaries which are more believable than those produced using the higher staff counts. The average per-child salary cost was around R92⁴⁰. If one assumes that support staff earn half of what practitioners earn, then the monthly salary for a practitioner comes to R991 using the higher staff counts from questions 3.8 and 3.9, but R1,790 using the lower staff profile numbers. Unfortunately, the average salary of practitioners according to the staff profile (which includes a question on salary) is not reported on in the audit report, meaning the report provides no benchmark for assessing the credibility of the R991 and R1,790 values. However, the 2009 ECD survey referred to above⁴¹ cites an average monthly salary in ECD centres of R2,383, implying that the R1,790 figure derived from the 2013-14 audit is the more plausible one.

Table 9: Staff numbers in ECD centres (2013-14)

	Principal or matron in 2013-14 ECD audit	Supervisor in 2013-14 ECD audit	Practitioner in 2013-14 ECD audit	Assistant practitioner in 2013-14 ECD audit	Support staff in 2013-14 ECD audit	Total staff in 2013-14 ECD audit
	SAM	SAS	SAP	SAA	SAX	SA
EC	605	347	1,339	308	1,018	3,616
FS	918	42	3,145	173	1,478	5,757
GP	1,539	153	6,363	554	2,258	10,868
KN	484	589	3,083	324	2,411	6,890
LP	2,229	277	4,010	290	4,062	10,867
MP	1,146	70	2,910	254	1,891	6,271
NC	287	121	754	105	541	1,807
NW	202	488	1,346	53	836	2,924
WC	1,702	173	4,414	965	1,392	8,646
SA	9,109	2,260	27,364	3,027	15,886	57,646

Sizes of Grade R classes in schools. A dated but important (and unpublished) Unicef-funded report drawing from a national sample of around 500 schools in 2009 provides key figures on Grade R class sizes. Class sizes in quintiles 1 to 4 schools were found to be large, the value experienced by the median learner being around 40, and 24% of learners experiencing a class size exceeding 50 learners⁴². An important finding was that class sizes tended to be larger in schools with more costly provincial employees teaching Grade R, compared to schools where the school governing body employs the teacher using a subsidy. The former category of schools accounted for 65% of publicly funded Grade R learners in 2009, whilst the latter category accounted for just 13% (the remaining 22% were in schools where both approaches were employed simultaneously). The 2009 ECD survey covering three provinces (also funded by Unicef) reaches similar conclusions regarding class sizes in schools-based Grade R. The class size experienced by the median learner was around 35 according to the data from that survey. The median *institution* (or school) experienced a class size of around 28, but in examining class size one should be more concerned with what the median learner

⁴⁰ Obtained by using the national distributions seen in Department of Social Development (2014a: 271). These distributions are from a straightforward section of the main instrument which simply asks centres how much they spend per month on salaries.

⁴¹ UNICEF, 2010: 35.

⁴² Gustafsson, 2009: 75.

experiences⁴³. What about more recent statistics? Published and recent statistics on Grade R class sizes in schools (and, by implication, the number of Grade R teachers in schools) do not seem to exist. The Snap Survey of the DBE is probably not a good data source to obtain these statistics, given difficulties around attributing teachers to Grade R, as opposed to other grades, using this survey's data⁴⁴. However, the Annual Survey of Schools (ASS) data, for which the questionnaire is available on the DBE website⁴⁵, seems adequate to calculate the average Grade R class per school. Access was obtained to the 2013 ASS and average class sizes for public schools were calculated. The average was found to be 37 for Grade R, with the median being 34 (for both these statistics learners were used as weights in line with the methodological concerns discussed above)⁴⁶. The ASS data, which cover all schools, thus provide values which are in line with what has been seen in samples of schools. To compare, for Grade 1 the ASS analysis produced a mean of 42 and a median of 40, so Grade R classes are smaller than Grade 1 classes by around five learners. The provincial values are given below.

Table 10: Grades R and 1 class sizes in public schools (2013)

	Grade R		Grade 1	
	Mean	Median	Mean	Median
EC	37	34	44	40
FS	33	34	39	40
GP	34	33	43	42
KN	35	33	41	40
LP	48	45	45	43
MP	34	31	42	41
NC	33	32	37	37
NW	40	40	42	41
WC	30	30	37	37
SA	37	34	42	40

Large classes in an international context. Research from around the world will not commonly identify a reduction in class sizes as a route to improving the quality of education. In general, the research tends to find other more cost-effective ways of enhancing quality. However, much of the research that has informed the policy debates is from countries where classes are not as large as in South Africa⁴⁷. The bottom line is that there is no good research into what the class size thresholds are in South Africa, at which noteworthy reductions in the quality of schooling are brought about. Such thresholds must exist, in part because of the very physical limitations of classrooms.

Qualifications of Grade R teachers in schools. The qualifications, and more generally the teaching skills, of Grade R teachers, and teachers in ECD centres, has been an ongoing policy concern. The MTSF includes targets for the percentage of 'GR R practitioners with

⁴³ The values 35 and 28 were obtained by examining the graph at UNICEF (2010: 16). In arriving at the 35 value, it was assumed that each school had just one Grade R class (which would be the equivalent of assuming that the number of classes did not vary considerably according to class size). Clearly, the 35 value needs to be considered a rough estimate. The reason why the median learner is arguably what one should be concerned about is that averages or medians at the school level are deceptive insofar as small schools are likely to bias the statistics downwards.

⁴⁴ See Gustafsson (2016a: 39-41).

⁴⁵

<http://www.education.gov.za/Portals/0/Documents/Forms/ASS%20Ordinary%20Schools%202014.pdf?ver=2015-01-29-154614-403>

⁴⁶ Perhaps to simplify the explanation, using learner-weighted schools is the equivalent of dividing all learners by all teachers, so obtaining the learner-educator ratio (the proviso being that an 'administrative class' is considered to represent one teacher).

⁴⁷ Gustafsson and Patel (2008: 26) found South Africa's class sizes to be exceptionally large, even relative to other developing countries, using TIMSS data.

appropriate qualification'⁴⁸. What exactly this means and what the baseline figure is, is not explained. However, very modest targets of 10% for 2014 and 30% for 2018 are given. The aspirations implied by indicators in the education department plans of KwaZulu-Natal and Western Cape seem less ambitious than those of the MTSF. In both provincial plans, for 2016/17, the indicator 'Percentage of employed ECD practitioners with NQF⁴⁹ level 4 and above' appears (NQF level 4 is the equivalent of Grade 12). KwaZulu-Natal puts the indicator value at 50% in 2015⁵⁰ (Western Cape does not provide any numbers). Table 11 below provides the distribution of schools-based Grade R teachers in three provinces, according to the 2009 ECD survey⁵¹. The category 'Diploma', accounting for 35% of teachers, is almost certainly to a fairly large degree not an NQF level 5 diploma, given that the 2009 survey report indicates that 39% of Grade R teachers have less than a Grade 12 certificate⁵².

Table 11: Grade R teacher qualifications (2009)

Qualification level	%
Graduate	22
Diploma	35
Level 5 (Grade 12 plus one year)	13
Level 4 (Grade 12 level)	12
Other (could to a large extent be less than level 4)	17
Total	100

Qualifications of ECD centre practitioners. Turning to the qualifications of practitioners based in ECD centres, the 2013-14 ECD audit report provides a series of tables indicating the qualifications levels, and the type of ECD qualification held, of 41,760 education-focussed staff (all except the support staff shown in Table 9). The qualification levels of these staff is not that different from that of Grade R staff in 2009 if one considers that roughly 45% of them had less than a Grade 12 qualification⁵³.

5 Financing

Official budget figures. Annual performance plans from Western Cape and KwaZulu-Natal⁵⁴, for the education and social development sectors, were analysed to obtain a picture of what statistics might be relevant for the current analysis. It became clear that in the **social development sector, budget programme 3**, titled '**Children and families**', deals with the funding of ECD centres. Four financial statistics under programme 3 seemed particularly important:

- The total for programme 3.
- The part spent on **transfers and subsidies to non-profit institutions**. The institutions in question are mostly or all ECD centres.
- The part spent on **compensation of employees**. This is more difficult to understand, but the variation across the two provinces was large, suggesting very different approaches to the staffing of services.

⁴⁸ Page 9 in Appendix 1 to Presidency (2014).

⁴⁹ National Qualifications Framework.

⁵⁰ KwaZulu-Natal Department of Education, 2016: 88.

⁵¹ UNICEF, 2010: 15.

⁵² UNICEF, 2010: 14.

⁵³ See Social Development (2014a: 290). The category 'ABET Level 1-4' would be ambiguous in terms of whether Grade 12 had been attained.

⁵⁴ Western Cape Government: Social Development (2017), Western Cape Government: Education (2016), KwaZulu-Natal Department of Social Development (2016) and KwaZulu-Natal Department of Education (2016).

- The total spent on sub-programme 3.4, titled ‘**ECD and Partial care**’, and described as the sub-programme dealing with ECD centres.

With respect to the **education sector**, in **programme 5**, titled ‘**Early childhood development**’, the following seemed important:

- The total for programme 5.
- The part spent on **transfers and subsidies to non-profit institutions**.
- The part spent on **compensation of employees**.
- The total spent on sub-programme 5.1, titled ‘**Grade R in public schools**’.
- The total spent on sub-programme 5.2, titled ‘**Grade R in early childhood development centres**’.
- The total spent on sub-programme 5.3, titled ‘**Pre Grade R training**’. Despite the title, it seemed this sub-programme could be used to pay the salaries of ECD practitioners working in pre-Grade R, presumably outside schools and in centres.

Table 12 below includes the categories listed above, and financial values for the 2016/17 financial year taken from the ‘EPRE spreadsheets’ published by National Treasury, which consolidate figures published in provincial financial statements⁵⁵.

KwaZulu-Natal details. From the KwaZulu-Natal **social development plan** it seems like R358 million is transferred to non-profit institutions which are ECD centres, and that the number of targeted children in these centres is 71,449⁵⁶. This provides an annual per child subsidy of R5,010. As a daily rate, assuming what appears to be the official 264 days a year, the figure becomes R19 a day⁵⁷. This is essentially equal to the approximately R18 a day that provinces should have officially funded children in 2016⁵⁸. The R5,010 annual figure is much higher than the per child subsidy for KwaZulu-Natal reported in the 2013-14 audit. The latter comes to around R200 per month, or R2,400 per year⁵⁹. If we inflate this figure by the consumer price index difference between 2013 and 2016, we obtain R2,831. The per child average obtained in the audit is thus around 45% lower than what it should be. The explanation for this disparity is probably mostly mundane. For instance, if the mean subsidy per child in the ECD audit data (this mean does not appear in the report), is substantially higher than the median, then that would explain some of the gap. Importantly, a key aim of the 2009 ECD audit was to conduct a partial public expenditure tracking analysis. Such analyses help to establish the degree to which there are ‘leakages’ in the funding chain. The 2009 audit report concludes that there was no evidence of major leakages between the department of social development and the ECD centre⁶⁰. In other words, on the whole the centres receive the money they should receive.

⁵⁵ The Estimates of Provincial Revenue and Expenditure (EPRE) files were obtained from <http://www.treasury.gov.za/documents/provincial%20budget/2016/7.%20EPRE%20standardised%20tables%20in%20Excel%20format/Default.aspx>.

⁵⁶ It is not possible to establish, from the plan, whether all of the R358 million flowing to ECD and partial care is transfers to non-profit institutions, but it seems as if this is the case.

⁵⁷ 264 days is from the Parliamentary Monitoring Group website, specifically <https://pmg.org.za/committee-meeting/15528>.

⁵⁸ This is the R15 for 2013 inflated by the consumer price index.

⁵⁹ Department of Social Development, 2014a: 274.

⁶⁰ UNICEF, 2010: iv.

As seen in Table 13, in all provinces except Western Cape, between a quarter and a half of the programme 3 budget (Children and families) goes to **provincial employees**. In Western Cape almost no money goes to such employees. To provide a sense of magnitudes, if we take the R476 million spent on employees by KwaZulu-Natal and divide this by an annual salary in 2016 of R40,000, roughly what one gets for ECD centre practitioners according to figures seen in section 4, one obtains around 12,000 employees. This is at least twice as great as the number of practitioners found in the province by the 2013-14 audit, practitioners who, insofar as they were funded by the state, would be funded through the subsidy (see Table 9). Further analysis should attempt to establish what types of employees are funded through ‘compensation of employees’ in Children and families, keeping in mind that the purpose of the budget programme is ‘to provide comprehensive child and family care and support services to communities in partnerships with stakeholders and civil society organizations’⁶¹.

Within KwaZulu-Natal’s **education plan**, expenditure on sub-programme 5.1 divided by the number of Grade R learners in public schools should indicate the spending per learner. One gets an average spending of R3,761 using the KwaZulu-Natal figures. To compare, figures in the plan suggest that around R13,500 is spent per learner in grades 1 to 12 in the province. If one assumes that around 80% of per learner spending in Grade R goes to personnel, and that there are on average 35 learners for every practitioner (see Table 10), one gets a per practitioner cost of R105,000 a year or around R9,000 a month. This is of course a very rough assumption, but is this credible? A news site⁶² indicates that a minimum monthly salary of R6,000 applied at the start of 2017 in the province. This is a minimum amount, so the R9,000 estimate seems plausible, and thus the KwaZulu-Natal Grade R figures do roughly seem to add up. In KwaZulu-Natal, 79% of the programme Early childhood development goes to compensation of employees, and the sub-programme 5.1 total of R701 million is close to the programme 5 compensation of employees total of R635 million. All this suggests that the bulk of schools-based Grade R funding occurs through the payment of practitioners on the provincial payroll system, and not through transfers to schools.

It appears that R96 million of **education funding in KwaZulu-Natal goes to ECD centres**⁶³. This is fairly substantial, amounting to a quarter⁶⁴ of what the province’s social development department spends on ECD centres. This type of arrangement should ideally be taken into account when estimating the global public funding of ECD centres.

Western Cape details. As already mentioned, Western Cape has very little compensation of employees within the **social development** sub-programme dealing with the financing of ECD centres (ECD and partial care). However, it should be pointed out that for the social development department as a whole, the situation in Western Cape is not that strange: 35% of the overall department spending goes to compensation of employees in Western Cape, as opposed to 48% in KwaZulu-Natal. The 3% seen in the first column of Table 13 for Western Cape might thus be largely a matter of different accounting practices in this province. The R290 million allocated to sub-programme 3.4 seems targeted at 87,000 children⁶⁵. This provides an average of R3,333 per child, a much lower figure than that the R5,010 seen in KwaZulu-Natal, and by implication a figure that does not reach the R18 a day subsidy level. Again, there are probably fairly mundane reasons for this discrepancy. A large portion of the ‘Transfers and subsidies to non-profit institutions’ line in programme 3 clearly falls outside sub-programme 3.4, suggesting the R3,333 figure could be an under-estimate (if funding from sub-programmes other than 3.4 also goes to ECD centres). Moreover, spending on ECD

⁶¹ KwaZulu-Natal Department of Social Development, 2016: 35.

⁶² <http://www.iol.co.za/news/south-africa/kwazulu-natal/grade-r-teachers-get-r500-salary-boost-7417742>.

⁶³ Last two columns of Table 12.

⁶⁴ See 27% in Table 13.

⁶⁵ Western Cape Government: Social Development, 2017: 59.

centres from the education department in the case of Western Cape is relatively high (see the last column of Table 13).

Education department spending per schools-based Grade R learner seems high in Western Cape, at over R7,000 per learner, yet this is also a province with a rather low percentage of education programme 5 spending going to provincial employees (see 24% in Table 13). To an extent, something similar can be said of the other ‘rich province’, Gauteng.

Insufficient focus on unit costs in official plans. How good are official documents such as the annual performance plans of provinces at conveying the necessary financial information relating to ECD service delivery? On the positive side, the volume of financial information provided is fairly large, and categories, for both financial and non-financial information, are relatively standardised across provinces. What is missing, however, is a clearer sense of how departments are dealing with the central trade-offs between the quantity of services offered, the unit costs of those services, and their quality. There is enormous pressure to expand service delivery, and to increase its quality, for instance in the area of ECD. Expansions in the quantity of services are very sensitive to controlling, if not reducing, unit costs. However, the quality of these services is to some extent, though by no means entirely, driven by how much is spent per child. How each department deals with these dynamics should feature far more prominently in the plans and reports through which the departments are accountable to the nation.

Table 12: Financial values (in millions) for 2016/17 from 2016 EPRE Excel files

	Social development: Transfers and subsidies to non-profit institutions within Children and families (Prog. 3)	Social development: Compensation of employees within Children and families	Social development: Total for ECD and partial care (Sub-Prog. 3.4)	Education: Total for Early childhood development (Prog. 5)	Education: Transfers and subsidies within Early childhood development (Prog. 5)	Education: Compensation of employees within Early childhood development	Education: Total for Grade R in public schools (Sub-Prog. 5.1)	Education: Total for Grade R in early childhood development centres (Sub-Prog. 5.2)	Education: Total for Pre Grade R training (Sub-Prog. 5.3)	
	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
EC	648	267	365	240	631	21	385	604	0	25
FS	429	304	117	235	152	21	128	136	11	1
GP	2,081	1,084	735	434	811	240	410	731	17	48
KN	1,076	479	476	358	804	50	635	701	20	76
LP	704	399	288	269	174	2	111	69	55	35
MP	544	290	205	269	318	16	260	283	1	17
NC	249	121	91	79	95	13	72	87	6	2
NW	384	138	188	111	544	91	405	481	12	35
WC	615	588	20	290	665	446	162	467	74	113
SA	6,729	3,670	2,485	2,285	4,194	901	2,567	3,558	196	352

Table 13: Derived statistics on financing

	% going to compensation of employees within Children and families	% going to compensation of employees within Early childhood development	Per learner funding in schools-based Grade R	Education sub- programmes 5.2 and 5.3 over social development sub-programme 3.3 (%)	Minimum per teacher cost in schools-based Grade R	% going to compensation of employees within Children and families
	F3 / F1	F7 / F5	(F8 × 1,000) / (ER - EIR)	(F9 + F10) / F4	(F7 * 1,000) / ((ER - EIR) / 37)	F3 / F1
EC	56	61	4,581	10	108,402	56
FS	27	84	3,712	5	116,247	27
GP	35	51	7,117	15	136,966	35
KN	44	79	3,761	27	119,452	44
LP	41	64	566	33	43,501	41
MP	38	82	4,506	6	142,201	38
NC	37	75	4,770	11	128,417	37
NW	49	74	9,647	43	327,373	49
WC	3	24	7,236	64	75,513	3
SA	37	61	4,594	24	122,914	37

Limpopo as an outlier. How do provinces other than KwaZulu-Natal and Western Cape fare in terms of the indicators in Table 13? Limpopo's spending per Grade R learner is, at face value, an unbelievable R566. One might expect this province to have a relatively low per learner spending figure given its exceptionally high average class size for Grade R of 48 (Table 10). However, the R566 figure still seems strange. Virtually no education programme 5 funding is spent in the form of transfers to schools in Limpopo (just R2 million in Table 12). This was also found in a 2009 survey of 500 schools across the country. What seems to be happening in Limpopo is that Grade R is not separated from the rest of the school grades (so budget programme 2) as it should be. North West, on the other hand, displays a high per learner cost for schools-based Grade R, plus a rather high propensity to spend on provincial employees (the first and third columns of Table 13).

Estimating average Grade R teachers costs from the budget figures. The second-last column of Table 13 attempts to estimate the average cost of a Grade R schools-based practitioner using the budget figures from Table 12. For the numerator, education programme 5 spending going towards compensation of employees was used. It is likely that close to all of this money would go towards Grade R practitioners paid through the provincial payroll system. For the denominator, which must be the number of Grade R teachers, public school Grade R enrolments were divided by the average learner-educator ratio (or class size) seen in Table 10⁶⁶. If we take KwaZulu-Natal, the R119,452 figure translates to R9,954 per month, which is in line with the estimates for this province discussed earlier within this section. The Table 13 figures suggest KwaZulu-Natal is a fairly typical province with respect to the cost of a Grade R teacher. Of course much of the money that goes to paying schools-based Grade R practitioners comes from the subsidy given to the school, but this varies by province. This means the estimated per teacher costs in Table 13 must be seen as *minimum* values. To provide some context, in 2015 the national average cost of a grades 1 to 12 teacher was R310,879, meaning the cost of a Grade R teacher in 2016, at least in KwaZulu-Natal (but probably for many other provinces too), seems well below half of the cost of other teachers in the public system⁶⁷.

A basic accounting framework. The following equation offers a useful way of summing up the public financing of ECD, and ensuring that at least roughly the various financial values and cost drivers add up as they should. Total public annual expenditure on an ECD service, E , is the average annual teacher salary t multiplied by the number of children C receiving ECD multiplied by p , the percentage of children receiving public funding, divided by the child-teacher ratio r . All this is then multiplied by a factor which increases E by taking into account the percentage of the overall cost which is not related to personnel, n , and then by a factor f which decreases E by taking into account the percentage of the overall cost (for subsidised children) which is covered by private fees.

$$E = t \times \frac{C \times p}{r} \times \frac{1}{1-n} \times \frac{1-f}{1}$$

Table 13 below puts numbers to the above equation for three areas of service delivery referred to in the column headings, drawing to a large extent from the analysis provided in this report. A part of the aim of this exercise is to see whether the pay of practitioners referred to in various sources is credible within the bigger picture of total spending, enrolments and child-to-teacher ratios.

⁶⁶ Usually the learner-educator ratio and class size are completely distinct concepts with different values. However, in the case of one grade such as Grade R, where one teacher teaches a class and there are no direct grade-specific management overheads, the two concepts can be considered synonymous.

⁶⁷ Details on teacher costs in grades 1 to 12 available in Gustafsson (2016b: 9).

Table 14: Synopsis of annual figures around 2016

	Pre-Grade R in ECD centres	Grade R in ECD centres	Grade R in schools
E (in thousand Rands)	1,056,991	123,880	3,119,866
t (teacher pay)	25,341	25,341	122,914
C (enrolled children)	2,424,000	181,817	813,496
p (percentage of above publicly funded)	28	80	95
r (child to teacher ratio)	22	30	37
n (percentage spending not for teachers)	53	36	20
f (percentage of revenue from fees)	37	37	3
Target E (thous.)	2,285,000	196,000	3,558,000
Size of E under-estimate (%)	54	37	12
Maximum t	54,781	40,093	140,175
Number of funded children	685,511	145,454	774,561
Number of practitioners			
...in funded locations	31,160	4,931	20,934
...in all locations	110,185	6,163	21,986

- **Teacher pay t** for pre-Grade R is the R1,790 referred in section 4 increased by an inflationary amount and multiplied by 12 months. The same value was used for Grade R in ECD centres as there was no clear evidence that these teachers would be paid differently. The value for schools-based Grade R is taken from Table 13.
- **Enrolment C** for pre-Grade R is from Table 2, for ages 3 and 4. For ages 0 to 2 a similar analysis was undertaken, and the overall total for ages 0 to 4 was then around 2.4 million enrolled children. The schools-based Grade R figure is from the two relevant columns in Table 2. The figure in the middle column (181,817) uses the 96% Grade R coverage statistic from Table 2, applies this to an age cohort of the population (assumed to be the average of the last two columns in Table 1), and then subtracts schools-based Grade R enrolments.
- **The percentage publicly funded figure p** is, in the case of pre-Grade R, based on a figure of 685,511, said to be the number of funded ECD centre children, based on Department of Social Development data. This is from the 2015 ECD policy document⁶⁸. A comparable figure, for an earlier year, is the 400,000 funded children mentioned in the National Development Plan⁶⁹. The assumption was thus made that the DSD system only funds pre-Grade R children, and not Grade R learners in ECD centres. This is certainly the intention of the DSD system, which is said to target children aged 0 to 4. The 95% appearing in the third column is the percentage of schools-based Grade R in public, as opposed to independent, institutions. According to the policy, even public schools catering for better off communities receive some public funding for Grade R⁷⁰. The 80% of the middle column is an informed guess.
- **The child-to-teacher ratio r** of 22 for pre-Grade R is from the discussion of section 4 above. The value of 37 in the last column is also from section 4. The value of 30 in the middle column is the average between the other two figures.
- **The percentage n of all spending not devoted to teachers or practitioners** draws, in the case of pre-Grade R, from the 2013-14 audit, which says that 56% of spending goes to personnel⁷¹. In addition, the assumption was made that the ratio of support staff to

⁶⁸ Department of Social Development, 2015: 43.

⁶⁹ National Planning Commission, 2012: 299.

⁷⁰ Government Notice 26 of 2008.

⁷¹ Department of Social Development, 2014a: 72.

education staff is as shown in Table 9 and that support staff earn half of what the education staff earn. The 20% for schools-based Grade R is an informed guess, and the third figure is the average across the other two.

- **The percentage of total funding (in the case of institutions receiving some public funding) covered by private fees, or f ,** uses, in the case of pre-Grade R, values from the 2013-14 audit, specifically, the median fee of R67 per month and the median public subsidy value of R114 per month⁷². The 3% value for schools-based Grade R draws from figures appearing in the 2009 Unicef-funded review of school funding⁷³. The fee situation for Grade R in ECD centres was assumed to be the same as the situation for other children in ECD centres.
- **Target E** is what one might expect the result of the equation to be. The three figures are from the bottom line of Table 12, using the assumption that three budget sub-programmes correspond neatly to the three services they describe.

The figures from the top row of the Table 14 synopsis reflect the financial values obtained if one runs the equation. The estimates are all below the 'Target E ' values, suggesting that the cost drivers have not fully been accounted for. As is to be expected, the 'Grade R in schools' estimate diverges the least from the target, the gap being just 12%. We would expect this as we have already used the Table 12 financial values as a basis for estimating the average teacher salary. If we assume that all of the under-estimation of costs relates to the teacher salary, and there seem to be good reasons to believe teacher salaries have been underestimated, then we can obtain a maximum teacher salary figure by forcing this figure upwards until the calculated E equals the target E . 'Maximum t ' is what is then produced.

The row 'Number of funded children' makes explicit the values implied by the previous rows. An important question is how many of the 685,511 age 4, as opposed to age 0 to 3. Using the 35% from Table 5, one obtains 239,518 funded children aged 4.

The last two lines of Table 14 make explicit the number of practitioners produced by dividing enrolments by the child-to-teacher ratio. For the country as a whole, there seem to be around 138,000 ECD (or Grade R) practitioners, of whom around 57,000 are either employed by the province or paid by the institution using funds derived at least in part from the state.

⁷² Department of Social Development, 2014a: 74-75.

⁷³ Gustafsson, 2009: 73, 77.

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