

Analysing Growing Up in Scotland data by local authority – possible options

Working paper prepared as part of the GUS Review

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1. Introduction

Aims of GUS

GUS was designed as a *State of the Nation* type survey. Using participants selected from Child Benefit Records it tracks the lives of approximately 8,000 children¹ from the early years, through childhood and beyond. The original aims of the survey were:

- To provide evidence on the characteristics, circumstances and experiences of children (and their parents) in Scotland;
- To provide evidence on the needs of children and families and how well they are being met with the aim of improving outcomes;
- To improve understanding of the factors associated with differences in longer-term outcomes with reference to the role of individuals, families, communities and early years service provision.

New political context

Whilst the original aims of the survey still remain relevant the election of the Scottish National Party in 2007 has led to a changed political context. The signing of the Concordat between the Scottish Government and COSLA enhanced the role of local government. Whilst the Scottish Government will set the direction of policy and the overarching outcomes under the terms of the new relationship it now stands back from micro-managing service delivery with this responsibility now falling to LA's. There has also been a move to Single Outcome Agreements (SOA) with each council being required to submit a single annual report setting out progress and achievements towards national outcomes.

Implications for GUS

Consequently we have had to consider how GUS can develop to provide the evidence needs for this new political environment. This is an interesting conundrum for a national survey designed with a long-term perspective and with long-term returns in mind. The main need that has arisen is that for data at LA level to support SOA's. There is also a need to consider what role GUS can play in supporting the National Performance Framework.

The GUS project team has already produced a working paper offering guidance to LA's on how they can use the findings from the study: www.growingupinScotland.org.uk. This report builds upon this work.

Structure of this paper

The level at which we can report is affected by how the sample is selected. The key issues here are (1) the size of the sample and (2) the design of the sample (i.e. whether it is a random sample, clustered sample etc). In turn these issues are affected by cost implications and also the type of questions that are being asked and indeed answers sought.

This paper sets out the sample design used in GUS. It then discusses what this means for reporting at LA level. This section concludes that true LA level reporting is not currently possible with GUS data, although it is worth stressing that GUS was not designed for this purpose. The paper goes on to consider approaches used in other surveys (SG and international). The final section of the paper looks at options for the future development of GUS including the discussion of a statistical approach to modelling GUS data in order to produce 'synthetic' LA data.

¹ These 8,000 children are divided into two groups based on their ages when their parents were first interviewed. We have committed to tracking 5,000 of these children as they get older but have still to make a decision on the other group.

2. The GUS Sample Design

The GUS sample was drawn from Child Benefit Records (CBR) held by the Department of Work and Pensions, a sampling frame that has been widely used for other recent studies of this kind (including the Millennium Cohort Study and the Families and Children Survey). Since Child Benefit is both universal and has a very high level of uptake, (usually around 97%), it is widely considered to be the best available sampling frame for a study of this kind.

In order to accommodate a representative random sample of children which could be accessed efficiently by the interviewers from the study, a process known as Primary Sampling Units (PSUs) was selected. These units enable the fieldwork to be efficiently managed by the study's interviewers since the selected families are clustered in particular geographic areas.

The PSUs in GUS are based on aggregations of Data Zones which are newly geographic units being increasingly used as the basis of neighbourhood statistics in Scotland. Data Zones were aggregated to give an average of 57 births per area per year (based in the average number of births in each Data Zone for the preceding 3 years). The list of aggregated areas was then sorted by LA area and then by Scottish Index of Multiple Deprivation. 130 areas across Scotland were selected at random. Within these sample PSUs, all eligible children are then sampled for the 0-1 cohort and 3/5ths of all eligible children are selected for the 2-3 cohort. Where a 0-1 year old child has a sibling aged 2-3, one child is selected at random. The sampling of children was carried out on a month by month basis in order to ensure that the sample was as complete as possible at the time of interview.

GUS is currently based on two cohorts, both recruited at the same time. The first involves some 5,217 children born between June 2004 and May 2005 and who were aged approximately 10 months at the time of the first interview. It is envisaged that this group will form the basis of long-term follow-up. The second cohort was based on a sample of 2,859 children who were born June 2002 and May 2003 and aged approximately 34 months at the time of the first interview. This group have been followed up annually to the age of 5 and may be followed up at subsequent points.

The achieved numbers at sweep 1 reflect a design decision to aim for sample sizes of around 5000 for the birth cohort 3000 for the child cohort. Whilst larger sample sizes would undoubtedly be beneficial, there is a trade-off between the precision of estimates, the ability to do sub-group analyses, and cost. Sample sizes of 5000 in the birth cohort permit a difference of 2.8 percentage points (around an average of 50%) to be detected between any two cohorts². For sub-groups such as gender, which halve the sample size, a difference of four percentage points would still be detectable.

The design of the sample means that it is possible to explore differences by SIMD area (quintiles) and by SG Urban/Rural classification. The section below sets out what these numbers mean on a LA basis.

² With 80% power and assuming a 95% significance level.

3. Current LA sample sizes

The GUS sample was designed to be representative of children living in Scotland. The sample was selected in proportion to the eligible population, meaning the distribution of the selected sample across local authorities (LAs) reflects that of the population. The sample size varies greatly within each LA because of the large differences in the size of the LA populations. This makes the sample unsuitable for analysis by most LA's as the numbers in some are very small meaning that reporting at this level would lead to disclosure risks and may give misleading results.

Table 1 Actual sample sizes by local authority

Local Authority Name	Sample at Nov 2008		
	Total	Birth Cohort	Child cohort
Aberdeen City	222	145	77
Aberdeenshire	338	208	130
Angus	170	99	71
Argyll and Bute	127	75	52
Scottish Borders	124	85	39
Clackmannanshire	43	25	18
West Dunbartonshire	167	117	50
Dumfries and Galloway	258	169	89
Dundee City	128	86	42
East Ayrshire	156	99	57
East Dunbartonshire	181	108	73
East Lothian	116	79	37
East Renfrewshire	138	95	43
Edinburgh, City of	514	334	180
Falkirk	238	145	93
Fife	507	305	202
Glasgow City	485	311	174
Highland	331	224	107
Inverclyde	164	107	57
Midlothian	115	89	26
Moray	93	54	39
North Ayrshire	194	123	71
North Lanarkshire	468	299	169
Perth and Kinross	211	126	85
Renfrewshire	268	180	88
Shetland Islands	79	56	23
South Ayrshire	105	64	41
South Lanarkshire	403	261	142
Stirling	128	82	46
West Lothian	331	220	111
***Eilean Siar	2	2	0
Total	6804	4372	2432

Table 1 shows the actual sample sizes in each LA at November 2008 (this table includes all respondents at sweep 3, including the pilot samples, plus respondents from earlier waves who gave a 'sweep only' refusal at sweep 3 which retains them in the sample until the following sweep). The birth and child cohorts should always be analysed separately. The sample sizes for the birth cohort range from 334 in Edinburgh to 25 in Clackmannanshire, those for the child cohort range from 202 in Fife to 18 in Clackmannanshire. The two sample

members in Eilean Siar are respondents sampled at addresses on the Scottish mainland who moved during the course of fieldwork. No children were initially sampled on Eilean Siar or Orkney because of the very small eligible population living in these locations. Eligible population size reduces chance of selection, thus the random selection process did not select any children from these authority areas. As the sample was not required to be representative at LA level, this was not considered to be problematic.

Small sample sizes limit the analysis that can be carried out. If the sample sizes are small then only the most basic analyses can be carried out. This would mean analysing single variables separately (by generating simple frequencies and averages), rather than groups of variables (such as cross tabulations or regressions). Cross tabulating two variables with a small sample would result in tables with small cell sizes. Small sample sizes are also unsuitable for statistical tests, as the size affects the confidence with which results can be interpreted.

In addition to the sample size, the sample design will also affect the scope of the analysis. As discussed above, the GUS sample is geographically clustered; this reduces costs and makes fieldwork management easier. However, it also reduces the precision of the sample, as individuals within a cluster tend to be more alike. Sample precision can be measured by the size of confidence intervals and standard errors for the survey estimates; the wider the confidence intervals, the less certain we are about the accuracy of our estimates. The clustering will reduce the precision of the estimates in even the larger LAs. The SG is currently trying to move towards a position where all its surveys consist of unclustered random samples. As the current GUS sample is fixed (following the same children over their life course) this will not be applied retrospectively. However, whilst it is something that can be considered for the introduction of the new 2011 cohort, the logistics of surveying an unclustered sample of children born within a single year are significantly different from those associated with an unclustered sample of households or adults as in the other government surveys, as such cost is likely to be prohibitive.

Table 2 shows the estimated effective sample size for each local authority. This is the size a simple random sample³ would need to be to give estimates of the same precision as the clustered sample design. The closer the effective sample size is to the actual sample size, the more efficient the sample design. Hence for Aberdeen City, the actual sample size for the birth cohort is 145 but the effects of clustering mean the sample has the same level of precision as an unclustered sample of 69.

Table 2 also shows expected confidence intervals for estimates of 50%. The confidence intervals are based on the effective sample size, rather than the actual sample size, in order to demonstrate the effects of the clustering on sample precision. Looking again at the birth cohort in Aberdeen City; for an estimate of 50% we would expect the true value of the population to be within the interval 38%-62% (i.e. +/- 12%) on 95% of occasions. This interval is relatively wide due to the small effective sample size. In reality we would never expect differences between LA's or changes over time as big as this.

³ SRS is statistically the most efficient method of selecting samples, giving the most precise estimates. However, the method is not used in most real life situations as it is usually impractical. Complex samples are compared to SRS to evaluate their statistical efficiency and precision

Table 2 Actual and effective sample sizes by local authority

Local Authority Name	Sample at Nov 2008		Estimated effective sample size		95% CI for an estimate of 50%	
	Birth	Child	Birth	Child	Birth	Child
Aberdeen City	145	77	69	44	12	15
Aberdeenshire	208	130	99	75	10	11
Angus	99	71	47	41	14	15
Argyll and Bute	75	52	36	30	16	18
Scottish Borders	85	39	40	22	15	21
Clackmannanshire	25	18	12	10	28	30
West Dunbartonshire	117	50	55	29	13	18
Dumfries and Galloway	169	89	80	51	11	14
Dundee City	86	42	41	24	15	20
East Ayrshire	99	57	47	33	14	17
East Dunbartonshire	108	73	51	42	14	15
East Lothian	79	37	37	21	16	21
East Renfrewshire	95	43	45	25	15	20
Edinburgh, City of	334	180	158	103	8	10
Falkirk	145	93	69	53	12	13
Fife	305	202	145	116	8	9
Glasgow City	311	174	147	100	8	10
Highland	224	107	106	61	10	13
Inverclyde	107	57	51	33	14	17
Midlothian	89	26	42	15	15	25
Moray	54	39	26	22	19	21
North Ayrshire	123	71	58	41	13	15
North Lanarkshire	299	169	142	97	8	10
Perth and Kinross	126	85	60	49	13	14
Renfrewshire	180	88	85	51	11	14
Shetland Islands	56	23	27	13	19	27
South Ayrshire	64	41	30	24	18	20
South Lanarkshire	261	142	124	81	9	11
Stirling	82	46	39	26	16	19
West Lothian	220	111	104	64	10	12
Eilean Siar	2	0	n/a	n/a	n/a	n/a
Total	4372	2432				

4. What happens with other surveys?

Longitudinal studies explore various areas of an individual's life over their life course in order to develop an understanding of what affects positive and negative outcomes. Such studies are not normally designed for small scale area level analysis. For example, the Millennium Cohort Study was designed to provide usable data for sub-groups of children, in particular those living in advantaged and disadvantaged circumstances, and for children of ethnic minorities and those living in Scotland, Wales and Northern Ireland. For this purpose, a disproportionately stratified cluster sample design was used (Plewis, ed., 07)⁴.

The Scottish Government runs a number of surveys which can provide data at Local Authority level. However, it is important to note that none of these are longitudinal studies. This means that unlike GUS (which follows the same people) they can combine data over a

⁴ Ian Plewis (ed.) (2007) MCS Technical Report on Sampling, 4th edition. CLS.

number of years to give a potentially bigger sample size. They also survey a broader general population – often all those aged 16 or over, rather than a more defined group of individuals such as the children in GUS who all have birth dates within a certain period. GUS's unique contribution is that it can look at how different experiences and factors impact upon the same individual over their life. So for example, we can see what impact experiences in early years have on later life outcomes.

The **Scottish House Conditions Survey** officially reports at LA level every 3 years (though it can do larger LA's every 2 years). They have a sample size of 3,000 per annum.

The **Scottish Household Survey** is representative for larger LA's every year (that is those with an achieved sample size of 750 interviews per year) and for all LA's over a two year period. The overall design of the sample is to pursue a wholly random sample where fieldwork conditions allow - namely in areas of high population - and to cluster interviews in the remaining areas (also on a random basis). To allow sufficient disaggregation of the survey results at LA level, an achieved sample of approximately 31,000 households over two years is required.

Labour Force Survey: The LFS reports at Local Authority level with a target sample size of 875 in each LA. The sample size is 23,000 households per annum.

Scottish Health Survey: The main achieved sample size is around 6,400 adults and 2,000 children each year. With the three Health Board boosts, this gives a total of 7,000 adults and 2,000 children in the 2008 sample. The first national level results from the core survey will be published in mid 2009 (results for year 2008). Thereafter national level results from the core survey will be published annually. The first results for all NHS Boards from the core survey will be published in mid 2012 (results aggregated for years 2008/09/10/11). For larger NHS Boards, results might be available earlier. Results from the 2009 module will be available mid 2010. The next time that this module will be run is 2011, with results available in 2012. Sample sizes for the module responses will not be sufficient to provide results for all NHS Boards - although for the larger Boards there might be some scope to aggregate over 2 years worth of results to give some insight.

Scottish Crime and Justice Survey: The SCJS interviews approximately 16,000 people every year. The current sampling strategy is designed to provide data at national, police force and community justice area levels. Based on a net effective sample of 500 it would be possible to report for 9 LA's annually with a further 8 having a sufficient effective sample every two years.

5. Possible Options for Reporting at LA Level

This section considers the various options open to GUS:

- *Report on only larger LA's*
As the discussion of other SG surveys above indicates, some surveys report on larger LA's more regularly. It is generally taken that reporting at LA level requires a net effective sample size of approximately 400 to 500⁵. As illustrated in Table 2 above, illustrates of the LA's in GUS meet this criteria. Furthermore, because of its longitudinal nature, it is not possible to combine data from GUS over a number of sweeps.
- *Group LA's*

⁵ SHS uses 500; SSA uses 400.

Another option would be to group a number of LA's together. It is not clear what added value this would give above national level reporting as it would not aid the SOA process.

- *Introduce LA boosts to the sample*
This would be an option for the new 2011 cohort but not for the existing group of children as adding more children to the sample now would mean losing data on their early years period which is crucial to the objectives of GUS and to contributing towards understanding around the 'best start in life' national outcome in the performance framework. If this option was taken for the 2011 cohort boosts would most likely have to be funded by individual LA's. However, the likelihood of all LA's taking up this option is low with the result that there would be little data available for comparison between LAs.
- *Move to an unclustered design in the new cohort*
Options here include using a simple random sampling approach and increasing the sample size.
- *Use statistical modelling combining GUS and administrative LA data to produce synthetic estimates at LA level*
The detail and implications of this approach are outlined below.

6. A possible solution? The technicalities of producing synthetic local authority data

GUS collects much information of relevance to monitoring and evaluating performance against Single Outcome Agreements. However, as it is not designed for local authority level analysis a possible alternative is to generate 'synthetic estimates', whereby prevalence estimates of the pre-school and child health measures for *each local authority* would be generated using a statistical model that incorporates information from all of Scotland. This process is described in more detail below.

Synthetic estimates

Synthetic estimates use information that is available to predict measures that are not. In this instance population data would be used to predict the prevalence of a number of pre-school and health measures in different local authorities. Some examples of relevant possible estimates are given in Table 1.

The synthetic estimates for each local authority would be generated using a statistical model. For each pre-school and child health measure the association between the measure of interest and the characteristics of the local authority would be calculated. The resulting models would then be used to predict the prevalence of each pre-school and child health measure in each local authority, given its characteristics.

The modelling process would incorporate information from GUS (for example the pre-school and child health measures shown in Table 1) plus a number of area-level variables taken from the census 2001 and other administrative data sources, these variables would be merged onto the GUS data⁶. It is necessary that the area-level variables have total geographical and population coverage. Census data have these requirements but it is updated very infrequently; the Census was last carried out in 2001 and is thus becoming out

⁶ It is possible to match area-level data onto GUS data by postcode.

of date. Other potential candidates include administrative data, such as school data and other data collected by local authorities and health data. A full list of possible data sources is given in Appendix A.

Note that we would need to exclude any classifications that are created using any of the data listed above, due to the high level of correlation between these variables and the original source data. This means we would therefore be cautious about using indicators such as the Index of Multiple Deprivation and the Carstairs Index both of which are derived from a range of individual census and other administrative variables.

Table 1 Measures of pre-school and child health issues

	Average number of respondents per LA		Overall number of GUS respondents	
	Birth cohort	Child cohort	Birth cohort	Child cohort
Whether attended parenting classes/groups at sw1	174	95	5206	2841
Whether attended parenting classes/groups at sw2	150	83	4509	2498
Whether attended parenting classes/groups at sw3	140	78	4188	2331
Number of different fruits eaten per day at sw2	150	-	4508	-
Number of different veg eaten per day at sw3	150	-	4502	-
Parent views on choice of affordable childcare providers at sw1	101	71	3016	2115
Parent views on choice of affordable childcare providers at sw2	104	69	3119	2081
Parent views on choice of affordable childcare providers at sw3	51	28	1542	852
Parent views on ease of arranging childcare at sw2	43	42	1302	1249
Parent views on ease of arranging childcare at sw3	53	29	1576	881
Whether attended any mother & baby/toddler groups at sw1	174	95	5205	2842
Whether attended any mother & baby/toddler groups at sw2	150	83	4508	2499
Whether attended any mother & baby/toddler groups at sw3	140	-	4187	-
Whether smoked during pregnancy (asked at sw1)	170	93	5108	2783

- Question not applicable

Methods

The synthetic estimates are generated in the following steps:

1. The national prevalence of each measure of pre-school and child health is modelled using the area-level data. For each measure of interest, a final model is produced that best predicts the measure using the area-level data. Different area-level characteristics are likely to be associated with different pre-school and child health measures.
2. The actual population values from the census and/or administrative data for each local authority are entered into the prediction equation from the model derived at (1) to get the expected prevalence of each of measure of interest in each local authority given the characteristics of that local authority.
3. As a final step, an adjustment factor can be applied to each local authority estimate to ensure consistency with larger areas. This would mean the synthetic estimate for the whole of Scotland (taken across all local authorities) would match the direct estimate taken from GUS data.

A thorough validation process would be required to check the synthetic estimates are plausible. A comparison of the synthetic estimates to other data sources should be made wherever possible⁷; ideally this would include a comparison of the position of each local authority relative to others, as well as the actual values.

Discussion

It would be feasible to generate synthetic estimates of the pre-school and child health measures for local authorities. There is a substantial amount of relatively easily accessible local authority data available in Scotland which would permit the construction of an effective model. However, it should be noted that *synthetic estimates cannot be treated in the same way as direct estimates from survey data*; there are some restrictions on their use due to the way in which they are generated. If a set of estimates are developed then this would need to be made clear to users.

Synthetic estimates give the *expected* prevalence of a specific indicator for a local authority given the characteristics of its population, whereas survey estimates measure the *actual* prevalence within the local authority. The latter is more intuitive (and familiar), which can make synthetic estimates difficult for users to interpret. This feature also means that ranking the performance of local authorities according to their estimates is not recommended.

The synthetic estimates will allow the identification of local authorities which have an expected prevalence on a specific indicator that is significantly higher or lower than the national estimate as well as permitting some comparison between local authorities. The estimates may not be used to make comparisons within a single local authority over time. If the models are based overwhelmingly on census data then they cannot be updated.

The quality of the synthetic estimates depends largely on the quality of the model; a good set of estimates will be produced if the area characteristics explain a large proportion of the variation in the measures of interest. However, the models may exclude local factors that are unknown/not measured but impact on the true prevalence rate. If the model is poor then the estimates will be inaccurate. Even with a good model, the synthetic estimates will correlate with estimates produced by local surveys but will be unlikely to match exactly.

It is important to derive and publish confidence intervals and measures of precision for the estimates. Confidence intervals give the range in which the true population value is believed to lie and will enable users to compare estimates from different local authorities. The prevalence in local authority A could be said to be significantly different than local authority B if the confidence intervals for the two authorities do not overlap. They will also allow users to make judgements about the precision of the estimates.

⁷ For larger local authorities we could make a direct comparison with GUS data.

Appendix A: Local Authority Indicators related to Children & Young People

The following information is an example of that collated by each local authority in Scotland which could potentially be made available to append to GUS and thus contribute to the construction of LA models.

- Range of wider achievement recorded for pupils aged 3-18
- Number of children accessing Gaelic Medium Education (Annual/Council)
- % of half days attended in primary schools (Annual)
- % of half days attended in secondary schools (Annual)
- Reduction in numbers of primary pupils permanently excluded (where there has been a failure to readmit) (Annual)
- % of P1 to P3 classes of 18 or less in positive action² (PA) schools (Annual, C&F)
- % of Early Years and Childcare private sector and voluntary sector staff who meet SSSC requirements (Annual C&F)
- Percentage of Educational Establishments¹ achieving a Health Promoting School Award (Annual) Service Performance Report
- Percentage of primary schools providing 2 hours of PE per week (annual) Internal Statistics (North Ayrshire Council Educational Services, 2008)
- Percentage of secondary schools providing 2 hours of PE per week (annual) Internal Statistics (Council Educational Services, 2008)
- Percentage of children achieving appropriate levels for stages 5-14. (Annual/Council)
- % of schools with all P1-P3 classes of 18 or fewer pupils
Annual – Scottish Government
- Number of young people achieving youth accreditation (through a variety of awards schemes).
(Annual/Council)
- Number of young people actively participating in active citizenship activities
(Annual/Community Learning and Development Management Reporting/Council)
- Number of young people participating in flexible community based learning opportunities
(Annual/Community Learning and Development Management Reporting/Council)
- Number of young people participating in Council Youth Senate
(Annual, Council)
- Number of young people achieving Duke of Edinburgh Awards (Gold, Silver, Bronze and Sectional awards) (Annual, Council)
- Percentage of young people participating in initiatives that are supported to achieve external awards. Quarterly information – Local indicators and Community Learning and Development
- Respite Care for children 0-17 with disabilities – daytime respite hours
- Uptake of school meals
- 80% of all 3-5 year old children to be registered with an NHS dentist
(Annual, NHS)
- Percentage of school children in Primary 1 with no signs of dental disease.
(Annual/NHS Intelligence)
- Proportion of children in Primary 1 with their Body Mass Index outwith a healthy range
(Annual/CHP Profile)
- Obesity levels in P1 school children (ISD 06/07)
- % of low birth weight babies (Annual, ISD, NHS Scotland)
- % of low-birth weight babies in 20% most deprived areas compared to 20% least deprived areas (Annual, ISD, NHS Scotland)
- Childhood vaccinations (Annual/ NHS)
- % of children living in low income households (GRO Scotland)
- % of children living in households that are dependent on out of work benefits or Child Tax Credit more than the family element. (Annual, Scottish Government Statistics on Income and Poverty)
- Percentage of children living in workless households (Annual/Scottish Government)

- % of schools with breakfast clubs
- Increased proportion of newborn children exclusively breastfed at 6 -8 weeks (CHSP-PS, ISD Scotland - Annual)
- Increase by 10% women living in lowest deprivation category still breastfeeding at 6-8 weeks.
- Number of children taking up nutritious school meals (Annual, Council)
- School meals taken as % of school roll Primary/Secondary
- % of eligible children who take up free school meals- registered and present Primary/Secondary
- Uptake of 'Fruit Plus' free fruit provision in Glasgow primary schools (Council, Annual)
- Completion rates for child healthy weight intervention programme (5- 15 year olds and their families) (Annual, NHS)
- Young people reporting excessive alcohol consumption (SALSUS national report)
- Proportion of children achieving 1 hour physical activity per day
- % of children and young people under 25 who are involved in substance misuse has reduced
- Self-harm rate (per 100,000) among 10-24 year olds (Annual, ISD, NHS Scotland)
- Number of accident admissions to hospital (0 - 15 years) (NHS/HEAT)
- Infant deaths per 1000 (Annual/GRO, NHS Health Intelligence)
- Number of parents accessing parenting programmes (Annual, Council)
- The percentage of child population between 1 and 3 years old attending Parent and Toddler groups (Childcare Partnership)
- Maintain and enhance the availability and range of childcare and pre-school provision. SIC Children's Services Schools service
- % of pre-school and ante pre-school children in part time nursery provision (Annual, Council)
- Percentage of pre school children attending nursery provision. (Annual/Council)
- Average number of hours per week pre school provision provided for each child. (Annual/ Council)
- Increase the number of parents participating in funded parenting programmes (average of quarterly reports) Quarterly/Quantitative/
- % of primary 1 children who attended pre-school education
- % 3 and 4 year olds taking up entitlement to free nursery places (Council Annual Early Years Census)
- Provision of a suitable mix of affordable, accessible and high quality of early learning and child care (0-4)
 - (i) Pre-school education places;
 - (ii) toddlers places;
 - (iii) baby places
 - (iv) wraparound care
- Increase the % of pre-school assessments and plans that meet GIRFEC requirements (Annual, Council)
- Percentage of pre school establishments where children benefit from access to a qualified teacher. (Annual/ Council)
- Percentage of P1 pupils assessed as achieving "Mastery" in EYES baseline testing.(Annual/ Council)
- Number of children accessing the Early Years service.
- Percentage early education and childcare services managers with qualifications at degree level (Annual/Early Education and Childcare Workforce Audit)
- % of nurseries Smile Too accredited (Annual, Council)
- Training participation figures for SAI/head professionals from staff with responsibilities for 0-5s
- All staff and parents have a clear understanding of the responsibilities of universal services for 0-3 and 3-5 year olds
- Senior staff in all agencies increase their knowledge of the implications for their service in the full implementation of SAI/lead
- Staged intervention in early years establishments to identify needs of the 'whole child' and family/carer (Annual/Council)

- Vulnerable 2s initiative in targeted areas of the city based on staged intervention (Annual/Council)
- At least one wrap around child care provider to be available within each of the 29 Associated School Groups (ASG). Annual
- 90% of the targets in the Highland Play Strategy delivered by 2011 Annual / Quantitative
- Number of priority nursery places available to vulnerable children² aged 0-3 years (annual) Childcare Partnership Internal Statistics
- Number of day care places available to vulnerable children aged 0-3 years (source as above)
- Number of registered childminders per 1000 population (Scottish Government/Care commission)
- Number of pre-school centres receiving positive inspection reports (HMIE reports / local data/Care Commission Reports).