Technical Report

Contributing to the Active Scotland Outcomes Framework

June 2020

Schools Survey

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[UNION DATA]

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Introduction

This technical report is based on the results of surveys that were undertaken to understand the contribution that **sport**scotland is making towards the Active Scotland Outcomes Framework (ASOF) for school pupils. The Active Scotland Outcomes Framework (ASOF) is the Scottish Government's policy framework for delivering a more active Scotland[1]. This framework defines the Scottish Government's key goals and targets for sport and physical activity over the next decade.

Responses

The 2019-2020 **sport**scotland Primary and Secondary schools surveys were conducted from December 2019 to March 2020. The survey was administered via the internet using SurveyMonkey. Ten Local Authorities (LAs) were selected for the surveys (Aberdeenshire, East Ayrshire, Falkirk, Glasgow City, North Ayrshire, Orkney Islands, Perth and Kinross, South Lanarkshire, West Dunbartonshire and West Lothian). The LAs selected have been chosen to be representative of the school population across Scotland. The same LAs were selected for both the Primary School survey and Secondary School survey. It is expected that LAs that are chosen to take part will be rotated in future surveys.

In Table 1 (below), the responses for each school survey are shown. The Primary School Survey received 5,999 responses while the Secondary School Survey received 5,052 responses. Responses levels for each LA were high across Primary and Secondary school surveys with the exception of West Dunbartonshire where only 51 responses were received for the Secondary survey.

Table 1: Primary and Secondary School Responses by Local Authority (LA)

LA	Primary School		Secondary School	
	n	*%*	*n*	*%*
Aberdeenshire	543	9.05%	829	16.41%
East Ayrshire	338	5.63%	286	5.66%
Falkirk	310	5.17%	350	6.93%
Glasgow City	1,230	20.50%	682	13.50%
North Ayrshire	777	12.95%	934	18.49%
Orkney Islands	222	3.70%	187	3.70%
Perth and Kinross	562	9.37%	1,046	20.70%
South Lanarkshire	1,164	19.40%	364	7.21%
West Dunbartonshire	340	5.67%	51	1.01%
West Lothian	513	8.55%	323	6.39%
Total	**5,999**	**100.00%**	**5,052**	**100.00%**

Table 1: Survey Data Sources

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[1] See http://www.gov.scot/About/Performance/scotPerforms/partnerstories/Outcomes-Framework

Survey Design

The Primary and Secondary pupils received different questionnaires that were designed specifically for the different age groups in each survey. The question sets followed a similar design to the Clubs survey with a set of questions for those aged 12-17 years old and child survey questions for those aged 8-11 years old. Both the Primary and Secondary schools surveys had very similar question sets with some questions omitted or simplified for Primary School aged children compared to the Secondary School version of the survey.

Physical activity levels are calculated differently for children than they would be for adults. This meant using a specifically tailored question set to calculate activity levels. Survey questions regarding sensitive issues such as disability were asked differently in the schools surveys compared to the way they were asked in the Adult Club survey.

A key challenge in the research was pupils' ability to understand and identify Active Schools activities. The way that Active Schools activities were identified in the survey was to ask the location where the pupil undertook their sport or physical activity. The survey option used to identify Active Schools activities is whether the pupil had taken part in activity 'at a club before school, lunchtime or at an after school club'.

Previous research tested different approaches for identifying an Active Schools participant. This research identified a strong correlation between Active Schools participants and a positive response to participating 'at a club before school, lunchtime or at an after school club'. Whilst it is recognised that not all activities undertaken at this time will be run by Active Schools, this is the description that best fits the majority of activities held that are currently being organised through the Active Schools program.

Survey Weighting

Survey weighting for the schools surveys required a number of stages and create a number of different weights. To adjust for relative over and under sampling, the weighting values chosen were:

- Scottish Index of Multiple Deprivation (SIMD) Quintile[2]
- Gender[3]
- Urban/Rural split[4] (Rurality)
- Active Schools participation[5]

Both SIMD and Gender population counts were extracted from a National Records of Scotland (NRS) dataset using age groups based upon the survey age groupings (8 to 11 years old for Primary and 12 to 17 years old for Secondary). This data source contained 2016 population estimates.

Urban/Rural splits in each LA and for Scotland were estimated from postcode level 2011 census counts contained in the NRS postcode extract data source. Active Schools participation by Local Authority was supplied by **sport**scotland.

Data has been appended to the survey data in a number of different ways. The information regarding LA was available from the SurveyMonkey collector as each LA for both the Primary and Secondary surveys had been provided with different collectors. Gender and age group were also available from the survey responses. Active Schools figures were calculated from whether the respondent indicated in the survey that they took did at least 15 minutes of sport at a club or school club in a week based on the question: *In a typical week how much sport and physical activity do you do at a club before school, lunchtime or at an after school club?*

Rurality and SIMD were appended based on postcode. The postcode of the respondent was available from three possible sources in the data: Their personal postcode, their school's postcode or their sports club postcode. Where the respondent had supplied a postcode, this was used as the main postcode, where it was missing, the school postcode was used instead. However, the club postcode was not used to append data. The use of the postcode allowed the NRS postcode extract to be appended that includes information regarding the datazone[6]. This allowed anonymised data regarding Urban/Rural splits to be appended to the data[7]. SIMD was appended at the postcode level using the postcode lookup tool[8].

The weighting was implemented over several stages. The purpose of each of these stages is to bring the data as close to the census/data source population percentages using weights while minimising

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[2] https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/2011-based-special-area-population-estimates/population-estimates-by-simd-2016
[3] https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/2011-based-special-area-population-estimates/population-estimates-by-simd-2016
[4] https://www.nrscotland.gov.uk/statistics-and-data/geography/nrs-postcode-extract For definitions see:https://www.gov.scot/publications/scottish-government-urban-rural-classification-2016/pages/2/
[5] Supplied by **sport**scotland.
[6] https://www.nrscotland.gov.uk/statistics-and-data/geography/nrs-postcode-extract
[7] https://www.opendata.nhs.scot/mn_MN/dataset/urban-rural-classification/resource/c8bd76cd-6613-4dd7-8a28-6c99a16dc678 Note this is a source at the datazone rather than postcode level although the NRS postcode extract also contains two Urban/Rural splits at the postcode level as well as other data used in other reporting such as longitude and latitude (used at an aggregated level in some survey reports).
[8] https://www.gov.scot/publications/scottish-index-of-multiple-deprivation-2020v2-postcode-look-up/

the size of weightings. This is because the inclusion of large or 'extreme' weights greatly increases the possibility of increasing errors in the final displayed results. For instance, a weight of 10 would, in effect, mean that one survey respondent was representing ten people. If that respondent were not representative of their weighted group, then that would have a large impact on the final weighted survey results. This can be problematic if that person has unusual views or habits.

For example, in a survey about exercise participation of ordinary people, we may find that a person in an underrepresented age group e.g. 18-35 is a regular marathon runner. If this person was to receive a weight of 10 or more, then this respondent would very heavily represent the exercise activities of males aged 18-35. Results would, therefore, be skewed to presenting males aged 18-35 as more active than they are in reality. For this reason, it is important that weights should not try to correct for these imbalances by effectively expecting that someone's demographic fit for a set of characteristics means that are otherwise typical for that category.

Although the above is an extreme example, it is not atypical in surveys to have respondents that aren't entirely typical of the population. Moreover, people that will take part in surveys may be different to the population in general due to having more time available or, in the case where surveys are incentivised, they may tend to need the financial reward more. This is before even considering the gender biases and age biases typical of most surveys. Weighting can alleviate some of these biases but it will always produce some degree of additional error – albeit ostensibly offset by the sampling error it is correcting for. However, the use of large or extreme weights could make the effect of the weighting worse than the issue being corrected. Consequently, it is important that this factor is mitigated as much as possible.

Additional Considerations

Weighting was carried out at three levels with the Primary and Secondary schools surveys weighted separately. These weights were at the LA level, the **sport**scotland Region[9] level and the national level. At the LA level, the percentages of SIMD, Gender, Rurality and Active Schools participation within the particular LA are used. At the regional level, specific LAs make up each region in Scotland, therefore the overall percentages of SIMD, Gender, Rurality and Active Schools participation can be calculated from aggregating these LAs. However, as not all LAs were surveyed, there is the added complication that only the sampled LAs within a region can be used to represent a region overall.

For the whole of Scotland, a simplified weighting was used where the geographic effect of each LA was ignored. Therefore, the percentages of SIMD, Gender, Rurality and Active School for the whole of Scotland were compared to the survey sample regardless of where the respondent was located. This approach has some advantages as weights are less likely to be extreme. However, the main weakness is that it will not account for any geographic sampling biases other than the Urban/Rural split contained in the weighting. In comparison, had every LA been surveyed, the weight for the whole of Scotland could have been calculated by simply adjusting each LA weight for the relative population size of each LA.

It should be noted that, while the data contains four weighting variables (SIMD, Gender, Rurality and Active Schools), two of these (Gender and SIMD) were combined for analysis at the rake weighting stage where possible and at the post-raking adjustment stage. This means that the gender of males and females within each SIMD quintile was taken into account in the weighting and should make the

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[9] This reporting level is not currently used for schools data.

weighting for these two groups more reflective of the population. This is because the weighting is adjusting for both gender and SIMD simultaneously (as opposed to independently). However, it also requires that there are sufficient numbers of males and female respondents in each quintile to be able to weight robustly.

The consideration of having sufficient samples of each characteristic to weight is not restricted to gender and SIMD. If each weighting value is regarded as a 'cell', then it is necessary for each cell to be sufficiently sampled in order to be weighted. For example, if an LA contains both an Urban and Rural population, then the sample must contain sufficient Urban and Rural responses in each LA to be able to weight to these proportions.

Larger samples are preferred in each cell as the risks of excessive weighting will be greater where the cells contain less than ten respondents[10]. However, this consideration also has to be balanced against how many respondents the weighting will make that cell represent in the weighted results. For instance, a cell containing five respondents that may only represent ten people in the final weighted survey results is unlikely to result in an extreme weight or greatly increased error.

Where cell counts are found to be low, typically it is best practice is to merge adjacent cells. In the case of Rurality, this would effectively mean ignoring this factor in weighting as there are only two cells: Urban and Rural. However, for items such as SIMD, if cell counts are found to be low it is possible to merge neighbouring SIMD quintiles e.g. four and five on both the survey data and census data to create a viable weighting group.

Weighting Stages

The weighting stages can be described as:

Stage 1

The counts of the data that have been collated data from the various government and **sport**scotland sources were compared to the Primary and Secondary school survey data. This was to ensure that all survey subgroups to be weighted were sufficiently populated. If this was not found to be the case, then it was necessary to combine groupings until a sufficient sample in each subgroup is achieved. Note that this requires grouping both the survey and census data identically so that the next stages can be run.

Some areas had insufficient SIMD data to process in some quintiles. This meant that it was necessary andato collapse quintile groups e.g. merge quintiles 4 and 5 or 1 and 2. Other local authorities did not have sufficient coverage of urban and rural areas.

Stage 2

The cell percentages data was passed through a rake weighting algorithm[11]. This algorithm goes through an iterative process of adjusting the size of weights so that weighted percentages of each

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[10] Ten is typically a value cited as the minimum to start seeing the effects of the Central Limit Theorem in statistics although this effect is not fully recognised until a sample size reaches 30.
[11] The macro used is described in this SAS paper:
https://support.sas.com/resources/papers/proceedings/proceedings/sugi29/207-29.pdf

item to be weighted for (in this case SIMD x Gender, Rurality and Active Schools) gets as close as possible to the actual percentages of these values.

It should be noted that the reason for this process is that normally only one or two items can be weighted for *exactly* unless there is a very large sample. This is because the cell values would need to be known for all the weighting variables *dependently* to be weighted *exactly*. Even for the four variables in this analysis, this approach would create a large numbers of cells 5 SIMD x 2 Gender x 2 Rurality x 2 Active Schools = 40 cells. Another alternative is to go through weighting stages where each of these factors is adjusted for with only the last being an exact match in terms of weighting[12].

The rake weighting method is more sophisticated than the above approach as 40 cells are not required to get an exact weighting for each item. Instead, each item being weighted for remains independent. Incremental simultaneous adjustments are made to the weights of respondents to bring each weighted percentage close to the target amounts. Once within a set of accuracy parameters e.g. within 0.01%, the algorithm stops (converges).

In this process, it is possible that there is not enough data for the algorithm to converge. Where this is the case, it may be necessary, use simpler categorisations for weights.

As was discussed previously, Gender and SIMD were combined, where possible, to produce more precise weights. However, where this was not possible due to cell size considerations, Gender and SIMD were weighted separately in the rake weighting.

It should also be noted that the Secondary sample for West Dunbartonshire failed to converge due to the very small sample (51 respondents). However, the stages following the raking process largely adjusted for the lack of weighting in this LA (although reporting at this LA level is unlikely).

Stage 3

The resulting weighting from the raking solution was checked for extreme weights. One rule of thumbs is that it is best practice to avoid weights greater than five. Effectively, a weighting can be thought of as the amount of people someone will represent in the final survey results. Therefore, if someone were to receive a weight of say 20, this means that one person would represent 20 people in the final results. Thus, it is undesirable to have such extreme weights.

In the Primary School survey data, the raking algorithm was achieving weights of up to 92 due to the survey sample being quite different to the census/**sport**scotland population estimates. For this reason, it was necessary to trim the weights back and reweight the data to reduce the effect of extreme weights.

The procedure used was to cap weights at the 95th percentile and reweight the data for Gender and SIMD only. This, effectively, 'steals' some of the weight back from Urban/Rural and Active School classifications. As a result, the weight will match SIMD and Gender perfectly (where possible) but may not be perfectly matched with Urban/Rural and Active School classifications. However, both these classifications will still match better to the census/**sport**scotland figures than if they were not weighted. Consequently, how well the final weights match Urban/Rural and Active School splits will

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[12] If this method was used on the data, the procedure would be something like weighting for active schools first, using that weight to then see how that matched Rurality, adjusting the original weight to match Rurality then using this weight to match to the values of SIMD Quintile by Gender. In this process, only SIMD x Gender would be weighted for exactly but the preceding items of Active Schools and Rurality will still have been adjusted for albeit with less precision due to the effect of the additional weighting steps.

be somewhat related to how well the SIMD and Gender profiles of a survey sample in an LA matched the census based SIMD and Gender profiles.

There was a requirement for reporting to be able to show both the Primary and Secondary survey results together. As the data for Primary and Secondary schools was weighted independently, it was necessary to adjust the data to the proportions of the respective age groups where these results were to be displayed together. This was to ensure that each set of age groups was represented as they are in the relevant geographic areas.

Weighting Results

Primary School Weights

Table 2 on the following page shows the raw survey percentages. The proportions expected based on the Scottish population and **sport**scotland figures are shown in Table 3. Differences between these two tables are shown in Table 4.

It is of note that there are quite large differences between these sets of figures as indicated by the figures in Table 4. The most major differences are the levels of Active School participation (as high as 56% in Aberdeenshire). Aberdeenshire also indicates a much lower percentage of those resident in Urban areas for Rurality and in SIMD Quintile 5 than would be expected in the population estimates. It is possible this is due to an overrepresentation of non-Suburban ('Greater Aberdeen') areas in Aberdeenshire than would be expected.

In general, the survey at a Scotland level has an overrepresentation of those from disadvantaged backgrounds, more females than expected, more rural than expected and more active school pupils than expected. There is particularly an underrepresentation of those in SIMD Quintile 5. However, this quintile is likely to be more represented by the private schooling sector which is not accounted for in these figures.

Table 2: Primary School Survey: Raw Survey Percentages

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,999	23.2%	22.7%	19.3%	26.2%	8.6%	56.2%	43.8%	34.3%	65.7%	15.6%	84.4%
Central	310	13.2%	11.6%	11.6%	47.4%	16.1%	60.0%	40.0%	1.6%	98.4%	12.9%	87.1%
East	513	40.5%	21.4%	6.8%	11.5%	19.7%	57.5%	42.5%	8.8%	91.2%	32.2%	67.8%
Grampian	543	0.4%	6.6%	37.8%	42.2%	13.1%	56.4%	43.6%	88.6%	11.4%	12.9%	87.1%
Highlands and Islands	222		13.1%	10.4%	76.1%	0.5%	52.3%	47.7%	100.0%		27.9%	72.1%
Tayside and Fife	562	1.4%	16.0%	33.6%	41.8%	7.1%	56.2%	43.8%	72.4%	27.6%	16.2%	83.8%
West	3,849	29.4%	27.6%	17.4%	19.0%	6.6%	56.0%	44.0%	23.4%	76.6%	13.2%	86.8%
Aberdeenshire	543	0.4%	6.6%	37.8%	42.2%	13.1%	56.4%	43.6%	88.6%	11.4%	12.9%	87.1%
East Ayrshire	338	47.3%	27.2%	16.3%	7.7%	1.5%	60.4%	39.6%	63.9%	36.1%	10.4%	89.6%
Falkirk	310	13.2%	11.6%	11.6%	47.4%	16.1%	60.0%	40.0%	1.6%	98.4%	12.9%	87.1%
Glasgow City	1,230	43.5%	26.1%	16.7%	11.6%	2.0%	55.0%	45.0%	0.2%	99.8%	13.7%	86.3%
North Ayrshire	777	21.2%	35.5%	16.2%	25.1%	1.9%	55.5%	44.5%	28.2%	71.8%	15.4%	84.6%
Orkney Islands	222		13.1%	10.4%	76.1%	0.5%	52.3%	47.7%	100.0%		27.9%	72.1%
Perth and Kinross	562	1.4%	16.0%	33.6%	41.8%	7.1%	56.2%	43.8%	72.4%	27.6%	16.2%	83.8%
South Lanarkshire	1,164	11.7%	24.4%	21.9%	24.4%	17.6%	57.0%	43.0%	38.4%	61.6%	12.9%	87.1%
West Dunbartonshire	340	39.7%	26.5%	7.9%	24.4%	1.5%	52.9%	47.1%	4.7%	95.3%	10.0%	90.0%
West Lothian	513	40.5%	21.4%	6.8%	11.5%	19.7%	57.5%	42.5%	8.8%	91.2%	32.2%	67.8%

Table 2: Primary School Survey: Raw Survey Percentages

Table 3: Primary School Survey: Census/sportscotland Population Percentages

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,999	21.3%	18.9%	18.6%	19.6%	21.5%	49.1%	50.9%	29.5%	70.5%	44.3%	55.7%
Central	310	15.5%	23.0%	17.6%	21.5%	22.5%	49.5%	50.5%	29.9%	70.1%	33.5%	66.5%
East	513	14.4%	19.6%	17.3%	19.1%	29.6%	49.3%	50.7%	21.9%	78.1%	52.2%	47.8%
Grampian	543	4.5%	12.7%	18.1%	28.0%	36.8%	48.8%	51.2%	44.1%	55.9%	63.0%	37.0%
Highlands and Islands	222	6.5%	16.8%	32.3%	35.1%	9.4%	48.0%	52.0%	76.4%	23.6%	40.3%	59.7%
Tayside and Fife	562	20.3%	17.2%	19.9%	22.0%	20.6%	49.0%	51.0%	34.0%	66.0%	49.1%	50.9%
West	3,849	31.4%	20.5%	17.2%	14.8%	16.1%	49.1%	50.9%	21.5%	78.5%	37.3%	62.7%
Aberdeenshire	543	2.1%	6.1%	18.0%	33.9%	39.9%	48.5%	51.5%	69.5%	30.5%	69.0%	31.0%
East Ayrshire	338	34.1%	23.4%	16.0%	15.0%	11.6%	48.8%	51.2%	58.5%	41.5%	46.0%	54.0%
Falkirk	310	14.0%	26.6%	19.3%	18.9%	21.1%	49.8%	50.2%	10.2%	89.8%	41.2%	58.8%
Glasgow City	1,230	54.1%	15.6%	12.1%	9.7%	8.5%	49.2%	50.8%	0.4%	99.6%	33.7%	66.3%
North Ayrshire	777	44.1%	21.9%	12.6%	11.9%	9.4%	49.0%	51.0%	28.4%	71.6%	40.8%	59.2%
Orkney Islands	222	0.0%	12.1%	27.5%	49.4%	10.9%	48.7%	51.3%	100.0%	0.0%	47.5%	52.5%
Perth and Kinross	562	5.8%	10.3%	21.3%	41.4%	21.2%	48.4%	51.6%	66.7%	33.3%	49.2%	50.8%
South Lanarkshire	1,164	19.8%	23.7%	17.8%	22.8%	15.9%	49.4%	50.6%	21.6%	78.4%	32.8%	67.2%
West Dunbartonshire	340	44.9%	27.6%	12.9%	11.5%	3.1%	48.9%	51.1%	1.2%	98.8%	26.6%	73.4%
West Lothian	513	16.8%	26.2%	18.6%	18.8%	19.5%	48.6%	51.4%	18.1%	81.9%	54.4%	45.6%

Table 3: Primary School Survey: Census/**sport**scotland *Population Percentages*

Table 4: Primary School Survey: Difference between Census/sportscotland **Figures and Raw Survey Data**

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,999	-1.8%	-3.8%	-0.7%	-6.5%	12.9%	-7.2%	7.2%	-4.9%	4.9%	28.7%	-28.7%
Central	310	2.3%	11.4%	6.0%	-25.9%	6.3%	-10.5%	10.5%	28.3%	-28.3%	20.6%	-20.6%
East	513	-26.2%	-1.8%	10.5%	7.6%	9.9%	-8.2%	8.2%	13.2%	-13.2%	20.0%	-20.0%
Grampian	543	4.1%	6.0%	-19.7%	-14.2%	23.7%	-7.6%	7.6%	-44.5%	44.5%	50.1%	-50.1%
Highlands and Islands	222	6.5%	3.7%	21.9%	-41.0%	9.0%	-4.2%	4.2%	-23.6%	23.6%	12.4%	-12.4%
Tayside and Fife	562	18.8%	1.2%	-13.7%	-19.8%	13.5%	-7.2%	7.2%	-38.4%	38.4%	32.9%	-32.9%
West	3,849	2.0%	-7.1%	-0.2%	-4.2%	9.4%	-6.9%	6.9%	-1.9%	1.9%	24.1%	-24.1%
Aberdeenshire	543	1.7%	-0.5%	-19.7%	-8.3%	26.9%	-7.9%	7.9%	-19.1%	19.1%	56.1%	-56.1%
East Ayrshire	338	-13.3%	-3.8%	-0.3%	7.3%	10.1%	-11.6%	11.6%	-5.4%	5.4%	35.6%	-35.6%
Falkirk	310	0.8%	15.0%	7.7%	-28.5%	5.0%	-10.2%	10.2%	8.6%	-8.6%	28.3%	-28.3%
Glasgow City	1,230	10.6%	-10.5%	-4.6%	-2.0%	6.5%	-5.8%	5.8%	0.2%	-0.2%	20.1%	-20.1%
North Ayrshire	777	22.9%	-13.7%	-3.6%	-13.2%	7.5%	-6.4%	6.4%	0.2%	-0.2%	25.4%	-25.4%
Orkney Islands	222	0.0%	-0.9%	17.2%	-26.7%	10.4%	-3.5%	3.5%	0.0%	0.0%	19.6%	-19.6%
Perth and Kinross	562	4.3%	-5.7%	-12.4%	-0.4%	14.1%	-7.8%	7.8%	-5.7%	5.7%	33.0%	-33.0%
South Lanarkshire	1,164	8.1%	-0.7%	-4.1%	-1.6%	-1.7%	-7.5%	7.5%	-16.8%	16.8%	19.9%	-19.9%
West Dunbartonshire	340	5.2%	1.2%	5.0%	-12.9%	1.6%	-4.1%	4.1%	-3.5%	3.5%	16.6%	-16.6%
West Lothian	513	-23.7%	4.8%	11.8%	7.3%	-0.2%	-8.9%	8.9%	9.3%	-9.3%	22.3%	-22.3%

Table 4: Primary School Survey: Difference between Census/**sport**scotland *Figures and Raw Survey Data*

Table 5 shows the initial rake weighted solution while Table 6 shows the differences between the initial rake weighted solution and the census/**sport**scotland figures.

It should be noted that it was necessary to group SIMDs in some LAs and Regions due to very low cells counts. Therefore, the cells in the weighted figures will not match the census figures unless all collapsed categories are added together.

Another factor in the weighting was that there was insufficient rurality data in Falkirk and Orkney (in Orkney this was actually due to government estimates) as well as the Central and Highland regions where these LAs were the only representative LAs of each Region. In effect, there is no weighting for Rurality in these areas.

Table 5: Primary School Survey: Initial Rake Weighted Solution

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,999	21.3%	18.9%	18.6%	19.6%	21.5%	49.1%	50.9%	29.6%	70.4%	44.3%	55.7%
Central	310	15.5%	23.0%	17.6%	21.5%	22.5%	49.5%	50.5%	2.8%	97.2%	33.5%	66.5%
East	513	14.4%	19.6%	17.3%	19.1%	29.6%	49.3%	50.7%	21.9%	78.1%	52.2%	47.8%
Grampian	543	3.3%	13.9%	18.1%	56.9%	7.9%	48.8%	51.2%	44.1%	55.9%	63.0%	37.0%
Highlands and Islands	222		23.2%	32.3%	44.5%	0.0%	48.0%	52.0%	100.0%		40.3%	59.7%
Tayside and Fife	562	3.6%	33.8%	19.9%	22.0%	20.6%	49.0%	51.0%	34.0%	66.0%	49.1%	50.9%
West	3,849	31.4%	20.5%	17.2%	14.8%	16.1%	49.1%	50.9%	21.5%	78.5%	37.3%	62.7%
Aberdeenshire	543	0.6%	7.6%	18.0%	59.2%	14.6%	48.5%	51.5%	69.5%	30.5%	69.0%	31.0%
East Ayrshire	338	34.1%	23.4%	29.8%	10.6%	2.2%	48.8%	51.2%	58.5%	41.5%	46.0%	54.0%
Falkirk	310	14.0%	26.6%	19.3%	18.9%	21.1%	49.8%	50.2%	3.1%	96.9%	41.2%	58.8%
Glasgow City	1,230	54.1%	15.6%	12.1%	9.7%	8.5%	49.2%	50.8%	0.4%	99.6%	33.7%	66.3%
North Ayrshire	777	44.1%	21.9%	12.6%	11.9%	9.4%	49.0%	51.0%	28.4%	71.6%	40.8%	59.2%
Orkney Islands	222		12.1%	27.5%	60.1%	0.2%	48.7%	51.3%	100.0%		47.5%	52.5%
Perth and Kinross	562	1.6%	14.5%	21.3%	41.4%	21.2%	48.4%	51.6%	66.7%	33.3%	49.2%	50.8%
South Lanarkshire	1,164	19.8%	23.7%	17.8%	22.8%	15.9%	49.4%	50.6%	21.6%	78.4%	32.8%	67.2%
West Dunbartonshire	340	44.9%	27.6%	12.9%	13.8%	0.8%	48.9%	51.1%	1.2%	98.8%	26.6%	73.4%
West Lothian	513	16.8%	26.2%	18.6%	18.8%	19.5%	48.6%	51.4%	18.1%	81.9%	54.4%	45.6%

Table 5: Primary School Survey: Initial Rake Weighted Solution

Table 6: Primary School Survey: Difference between Census/sportscotland **Figures and Initial Rake Weighted Solution**

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
Central	310	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**27.1%**	**-27.1%**	0.0%	0.0%
East	513	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grampian	543	**1.3%**	**-1.3%**	0.0%	**-28.9%**	**28.9%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Highlands and Islands	222	**6.5%**	**-6.5%**	0.0%	**-9.4%**	**9.4%**	0.0%	0.0%	**-23.6%**	**23.6%**	0.0%	0.0%
Tayside and Fife	562	**16.6%**	**-16.6%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
West	3,849	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Aberdeenshire	543	**1.5%**	**-1.5%**	0.0%	**-25.3%**	**25.3%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
East Ayrshire	338	0.0%	0.0%	**-13.8%**	**4.4%**	**9.4%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Falkirk	310	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**7.1%**	**-7.1%**	0.0%	0.0%
Glasgow City	1,230	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
North Ayrshire	777	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Orkney Islands	222	0.0%	0.0%	0.0%	**-10.7%**	**10.7%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Perth and Kinross	562	**4.2%**	**-4.2%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
South Lanarkshire	1,164	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
West Dunbartonshire	340	0.0%	0.0%	0.0%	**-2.3%**	**2.3%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
West Lothian	513	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

*Items in bold are where SIMDs had to be grouped due to very low cells counts. Therefore, the cells per SIMD will not be accurate but are accurate when added together.

** Note there was insufficient urban/rural data in Falkirk and Orkney causing the Central and Highland regions to be weighted imperfectly for these items.

Table 6: Primary School Survey: Difference between Census/**sport**scotland *Figures and Initial Rake Weighted Solution*

Table 7: Primary School Survey: Final Weighting Solution after correction for Extreme Weights

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,999	21.3%	18.9%	18.6%	19.6%	21.5%	49.1%	50.9%	31.3%	68.7%	39.2%	60.8%
Central	310	15.5%	23.0%	17.6%	21.5%	22.5%	49.5%	50.5%	2.8%	97.2%	29.9%	70.1%
East	513	14.4%	19.6%	17.3%	19.1%	29.6%	49.3%	50.7%	19.9%	80.1%	50.3%	49.7%
Grampian	543	2.7%	14.5%	18.1%	56.9%	7.9%	48.8%	51.2%	61.0%	39.0%	49.6%	50.4%
Highlands and Islands	222		23.2%	32.3%	44.4%	0.1%	48.0%	52.0%	100.0%		34.7%	65.3%
Tayside and Fife	562	3.5%	33.9%	19.9%	22.0%	20.6%	49.0%	51.0%	39.3%	60.7%	45.0%	55.0%
West	3,849	31.4%	20.5%	17.2%	14.8%	16.1%	49.1%	50.9%	21.7%	78.3%	34.5%	65.5%
Aberdeenshire	543	0.8%	7.3%	18.0%	59.2%	14.6%	48.5%	51.5%	74.0%	26.0%	48.9%	51.1%
East Ayrshire	338	34.1%	23.4%	29.8%	10.5%	2.3%	48.8%	51.2%	59.9%	40.1%	33.3%	66.7%
Falkirk	310	14.0%	26.6%	19.3%	18.9%	21.1%	49.8%	50.2%	3.3%	96.7%	32.0%	68.0%
Glasgow City	1,230	54.1%	15.6%	12.1%	9.7%	8.5%	49.2%	50.8%	0.4%	99.6%	31.5%	68.5%
North Ayrshire	777	44.1%	21.9%	12.6%	11.9%	9.4%	49.0%	51.0%	30.5%	69.5%	33.4%	66.6%
Orkney Islands	222		12.1%	27.5%	60.1%	0.2%	48.7%	51.3%	100.0%		44.1%	55.9%
Perth and Kinross	562	1.6%	14.5%	21.3%	41.4%	21.2%	48.4%	51.6%	69.7%	30.3%	42.1%	57.9%
South Lanarkshire	1,164	19.8%	23.7%	17.8%	22.8%	15.9%	49.4%	50.6%	22.6%	77.4%	29.6%	70.4%
West Dunbartonshire	340	44.9%	27.6%	12.9%	13.8%	0.8%	48.9%	51.1%	1.2%	98.8%	26.1%	73.9%
West Lothian	513	16.8%	26.2%	18.6%	18.8%	19.5%	48.6%	51.4%	16.9%	83.1%	52.1%	47.9%

Table 7: Primary School Survey: Final Weighting Solution after correction for Extreme Weights

Table 8: Primary School Survey: Difference between Census/sportscotland Figures and Final Weighted Solution

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.9%	1.9%	5.2%	-5.2%
Central	310	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.1%	-27.1%	3.6%	-3.6%
East	513	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	-2.0%	1.8%	-1.8%
Grampian	543	**1.8%**	**-1.8%**	0.0%	**-28.9%**	**28.9%**	0.0%	0.0%	-16.9%	16.9%	13.5%	-13.5%
Highlands and Islands	222	**6.5%**	**-6.5%**	0.0%	**-9.3%**	**9.3%**	0.0%	0.0%	-23.6%	23.6%	5.7%	-5.7%
Tayside and Fife	562	**16.7%**	**-16.7%**	0.0%	0.0%	0.0%	0.0%	0.0%	-5.3%	5.3%	4.0%	-4.0%
West	3,849	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	0.3%	2.8%	-2.8%
Aberdeenshire	543	**1.2%**	**-1.2%**	0.0%	**-25.3%**	**25.3%**	0.0%	0.0%	-4.5%	4.5%	20.1%	-20.1%
East Ayrshire	338	0.0%	0.0%	**-13.8%**	**4.5%**	**9.3%**	0.0%	0.0%	-1.4%	1.4%	12.7%	-12.7%
Falkirk	310	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.9%	-6.9%	9.1%	-9.1%
Glasgow City	1,230	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	-2.3%
North Ayrshire	777	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-2.1%	2.1%	7.4%	-7.4%
Orkney Islands	222	0.0%	0.0%	0.0%	**-10.7%**	**10.7%**	0.0%	0.0%	0.0%	0.0%	3.4%	-3.4%
Perth and Kinross	562	**4.2%**	**-4.2%**	0.0%	0.0%	0.0%	0.0%	0.0%	-3.0%	3.0%	7.1%	-7.1%
South Lanarkshire	1,164	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.0%	1.0%	3.2%	-3.2%
West Dunbartonshire	340	0.0%	0.0%	0.0%	**-2.3%**	**2.3%**	0.0%	0.0%	0.0%	0.0%	0.5%	-0.5%
West Lothian	513	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	-1.2%	2.3%	-2.3%

*Items in bold are where SIMDs had to be grouped due to very low cells counts. Therefore, the cells per SIMD will not be accurate but are accurate when added together.

Table 8: Primary School Survey: Difference between Census/**sport**scotland *Figures and Final Weighted Solution*

Tables 7 and 8 on the preceding pages shows the results of adjusting for extreme weights. These weightings are show below as the 'Initial Maximum Weights'. Note that Grampian was very extreme due to being represented solely by Aberdeenshire.

These extreme weights are the result of trying to weight the survey to census and **sport**scotland figures that the survey sample was strongly divergent from. As such, weighting for a large number of divergences at once can cause very extreme weights.

The weights are adjusted by capping the weights at the 95th percentile and reweighting the capped weights by only adjusting for Gender by SIMD. The result of this process is that the extremity of the weights is greatly reduced. However, this improvement comes at the expense of reduced accuracy for Rurality and Active Schools. This effect can be seen clearly in Table 8.

Table 9: Primary School Survey: Weights Pre and Post Trimming

Area	Base	Initial Mean Weight	Initial Maximum Weight	Final Mean Weight	Final Maximum Weight
Scotland	5,999	1	7.55	1	4.02
Central	310	1	6.91	1	3.66
East	513	1	7.18	1	4.15
Grampian	543	1	92.00	1	9.07
Highlands and Islands	222	1	12.82	1	6.41
Tayside and Fife	562	1	12.75	1	4.91
West	3,849	1	8.91	1	3.99
Aberdeenshire	543	1	43.89	1	7.55
East Ayrshire	338	1	16.94	1	4.97
Falkirk	310	1	10.36	1	4.06
Glasgow City	1,230	1	10.02	1	4.66
North Ayrshire	777	1	15.60	1	4.92
Orkney Islands	222	1	6.54	1	3.85
Perth and Kinross	562	1	18.68	1	4.11
South Lanarkshire	1,164	1	6.01	1	3.85
West Dunbartonshire	340	1	3.82	1	3.27
West Lothian	513	1	5.91	1	4.41

Table 9: Primary School Survey: Weights Pre and Post Trimming

Secondary School Weights

Table 10 on the following page shows the raw survey percentages. The proportions expected based on the Scottish population and **sport**scotland figures are shown in Table 11. Differences between these two tables are shown in Table 12.

As with the Primary survey, there are large differences between the survey figures and the census estimates**/sport**scotland figures as indicated by the figures in Table 12. The most sizeable differences are the levels of Active School participation (as high as 55.9% in East Ayrshire and 56% in Aberdeenshire). East Ayrshire also indicates a much lower percentage of those coming from Urban areas for Rurality than would be expected in the population estimates. The samples from Glasgow City and East Ayrshire also show an overrepresentation of those from the least advantaged SIMD 1 Quintile

In general, the survey at a Scotland level has an underrepresentation of those from most disadvantaged backgrounds and least disadvantaged backgrounds. Notably though, the official figures for the most deprived quintile in these LAs is very high (nearly 54% in Glasgow City and 41.0% in North Ayrshire).

A further difference is that the survey is quite biased towards females with responses 55%-65% female. As expected, the official figures indicate a split of close to half and half. It is of note that there are more young males than females in the population[13].

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[13] This difference has been noted in Scottish government publications: "Scotland had a relatively even split between sexes in 2017, with 51% females and 49% males, although this varied amongst age groups. The youngest age groups had a higher male to female ratio as more male babies are born than female, whilst the oldest age groups had a lower male to female ratio as females have longer life expectancy in Scotland." See: https://www2.gov.scot/Topics/People/Equality/Equalities/PopulationMigration

Table 10: Secondary School Survey: Raw Survey Percentages

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,052	13.6%	13.2%	21.1%	37.8%	14.3%	59.1%	40.9%	38.0%	62.0%	23.8%	76.2%
Central	350	18.3%	13.7%	12.3%	18.6%	37.1%	58.0%	42.0%	**12.0%**	**88.0%**	28.0%	72.0%
East	323	4.3%	23.2%	42.7%	15.8%	13.9%	58.5%	41.5%	4.6%	95.4%	24.1%	75.9%
Grampian	829	**0.8%**	**8.4%**	26.5%	**44.3%**	**19.9%**	59.1%	40.9%	73.0%	27.0%	21.4%	78.6%
Highlands and Islands	187	**0.5%**	**18.7%**	8.6%	**71.7%**	**0.5%**	56.7%	43.3%	**100.0%**		21.4%	78.6%
Tayside and Fife	1,046	**2.7%**	**8.0%**	17.0%	61.6%	10.7%	59.9%	40.1%	55.3%	44.7%	24.3%	75.7%
West	2,317	24.8%	15.4%	20.2%	28.1%	11.5%	59.2%	40.8%	21.2%	78.8%	23.9%	76.1%
Aberdeenshire	829	**0.8%**	**8.4%**	26.5%	**44.3%**	**19.9%**	59.1%	40.9%	73.0%	27.0%	21.4%	78.6%
East Ayrshire	286	32.5%	7.0%	**8.0%**	**35.3%**	**17.1%**	56.3%	43.7%	76.9%	23.1%	17.8%	82.2%
Falkirk	350	18.3%	13.7%	12.3%	18.6%	37.1%	58.0%	42.0%	**12.0%**	**88.0%**	28.0%	72.0%
Glasgow City	682	32.4%	27.7%	11.3%	17.7%	10.9%	64.5%	35.5%		100.0%	24.6%	75.4%
North Ayrshire	934	18.1%	5.2%	35.3%	35.8%	5.6%	57.0%	43.0%	21.8%	78.2%	26.2%	73.8%
Orkney Islands	187	0.5%	18.7%	8.6%	**71.7%**	**0.5%**	56.7%	43.3%	100.0%		21.4%	78.6%
Perth and Kinross	1,046	**2.7%**	**8.0%**	17.0%	61.6%	10.7%	59.9%	40.1%	55.3%	44.7%	24.3%	75.7%
South Lanarkshire	364	20.9%	22.3%	9.9%	22.3%	24.7%	56.9%	43.1%	18.7%	81.3%	23.1%	76.9%
West Dunbartonshire	51	29.4%	33.3%	5.9%	**27.5%**	**3.9%**	60.8%	39.2%		100.0%	11.8%	88.2%
West Lothian	323	4.3%	23.2%	42.7%	15.8%	13.9%	58.5%	41.5%	4.6%	95.4%	24.1%	75.9%

*Items in bold represent low cell counts.

Table 10:Secondary School Survey: Raw Survey Percentages

Table 11: Secondary School Survey: Census/sportscotland Population Percentages

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,052	20.7%	18.6%	18.7%	20.3%	21.7%	48.9%	51.1%	29.5%	70.5%	69.5%	30.5%
Central	350	15.2%	21.7%	17.2%	22.3%	23.7%	48.6%	51.4%	**29.9%**	**70.1%**	60.8%	39.2%
East	323	13.7%	19.2%	17.4%	18.8%	30.9%	48.6%	51.4%	21.9%	78.1%	66.3%	33.7%
Grampian	829	3.8%	12.2%	18.3%	29.1%	36.6%	48.7%	51.3%	44.1%	55.9%	75.2%	24.8%
Highlands and Islands	187	5.9%	16.2%	32.5%	36.5%	9.0%	49.2%	50.8%	76.4%	23.6%	61.3%	38.7%
Tayside and Fife	1,046	19.5%	16.8%	19.4%	24.0%	20.3%	48.6%	51.4%	34.0%	66.0%	67.3%	32.7%
West	2,317	30.3%	20.4%	17.5%	15.2%	16.6%	49.0%	51.0%	21.5%	78.5%	72.3%	27.7%
Aberdeenshire	829	1.8%	6.0%	19.2%	34.6%	38.4%	48.6%	51.4%	69.5%	30.5%	77.4%	22.6%
East Ayrshire	286	32.5%	24.2%	16.6%	14.3%	12.4%	50.0%	50.0%	58.5%	41.5%	73.7%	26.3%
Falkirk	350	14.0%	26.5%	19.5%	18.6%	21.4%	48.5%	51.5%	10.2%	89.8%	67.9%	32.1%
Glasgow City	682	53.7%	15.2%	12.6%	9.6%	8.9%	48.5%	51.5%	0.4%	99.6%	70.3%	29.7%
North Ayrshire	934	41.0%	21.8%	12.9%	14.0%	10.3%	48.7%	51.3%	28.4%	71.6%	66.4%	33.6%
Orkney Islands*	187	**0.0%**	13.5%	24.7%	52.0%	9.8%	50.6%	49.4%	**100.0%**	0.0%	53.9%	46.1%
Perth and Kinross	1,046	5.2%	9.8%	19.3%	46.3%	19.5%	49.3%	50.7%	66.7%	33.3%	57.8%	42.2%
South Lanarkshire	364	20.1%	23.9%	18.6%	22.7%	14.7%	49.7%	50.3%	21.6%	78.4%	77.4%	22.6%
West Dunbartonshire	51	43.0%	27.8%	13.1%	11.2%	4.9%	49.6%	50.4%	1.2%	98.8%	81.9%	18.1%
West Lothian	323	16.9%	25.6%	18.5%	17.6%	21.4%	49.4%	50.6%	18.1%	81.9%	72.5%	27.5%

*The postcode based census counts indicated no SIMD1 or Urban data for Orkney. In the case of rurality, this is likely due to suppressions.

Table 11: Secondary School Survey: Census/**sport**scotland *Population Percentages*

Table 12: Secondary School Survey: Difference between Census/sportscotland Figures and Raw Survey Data

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,999	7.0%	5.4%	-2.3%	-17.6%	7.5%	-10.3%	10.3%	-8.5%	8.5%	45.7%	-45.7%
Central	310	-3.1%	7.9%	4.9%	3.7%	-13.5%	-9.4%	9.4%	17.9%	-17.9%	32.8%	-32.8%
East	513	9.4%	-4.0%	-25.3%	3.0%	17.0%	-9.9%	9.9%	17.3%	-17.3%	42.1%	-42.1%
Grampian	543	3.0%	3.7%	-8.2%	-15.2%	16.7%	-10.4%	10.4%	-28.9%	28.9%	53.9%	-53.9%
Highlands and Islands	222	5.4%	-2.6%	23.9%	-35.1%	8.4%	-7.5%	7.5%	-23.6%	23.6%	39.9%	-39.9%
Tayside and Fife	562	16.8%	8.8%	2.4%	-37.6%	9.6%	-11.3%	11.3%	-21.3%	21.3%	43.0%	-43.0%
West	3,849	5.5%	5.0%	-2.7%	-12.9%	5.1%	-10.1%	10.1%	0.2%	-0.2%	48.4%	-48.4%
Aberdeenshire	543	1.0%	-2.4%	-7.3%	-9.7%	18.5%	-10.6%	10.6%	-3.5%	3.5%	56.0%	-56.0%
East Ayrshire	338	0.0%	17.2%	8.6%	-21.1%	-4.7%	-6.3%	6.3%	-18.4%	18.4%	55.9%	-55.9%
Falkirk	310	-4.3%	12.7%	7.2%	0.0%	-15.8%	-9.5%	9.5%	-1.8%	1.8%	39.9%	-39.9%
Glasgow City	1,230	21.3%	-12.5%	1.3%	-8.2%	-2.0%	-16.0%	16.0%	0.4%	-0.4%	45.7%	-45.7%
North Ayrshire	777	22.9%	16.5%	-22.4%	-21.8%	4.8%	-8.2%	8.2%	6.5%	-6.5%	40.2%	-40.2%
Orkney Islands	222	-0.5%	-5.2%	16.2%	-19.6%	9.2%	-6.1%	6.1%	0.0%	0.0%	32.5%	-32.5%
Perth and Kinross	562	2.6%	1.7%	2.2%	-15.3%	8.8%	-10.7%	10.7%	11.4%	-11.4%	33.5%	-33.5%
South Lanarkshire	1,164	-0.8%	1.7%	8.7%	0.4%	-10.0%	-7.2%	7.2%	2.9%	-2.9%	54.4%	-54.4%
West Dunbartonshire	340	13.6%	-5.6%	7.2%	-16.3%	0.9%	-11.2%	11.2%	1.2%	-1.2%	70.2%	-70.2%
West Lothian	513	12.6%	2.3%	-24.2%	1.8%	7.4%	-9.1%	9.1%	13.4%	-13.4%	48.4%	-48.4%

*Table 12: Secondary School Survey: Difference between Census/**sport**scotland Figures and Raw Survey Data*

Table 13 shows the initial rake weighted solution while Table 14 shows the differences between the initial rake weighted solution and the census/**sport**scotland figures.

It was necessary to group SIMDs in some LAs and Regions due to very low cells counts. Therefore, the cells in the weighted figures will not match the census figures unless all collapsed categories are added together.

Another factor in the weighting was that there was insufficient rurality data in North Ayrshire, West Dunbartonshire and Orkney (in Orkney this was actually due to government estimates) as well as the Highland regions where Orkney was the only representative LAs in that Region. In effect, there is no weighting for Rurality in these areas.

West Dunbartonshire is also notable due to the very low sample size. The raking algorithm failed to converge due to the low sample size and, as a result, the weighting did not complete at this stage.

Table 13:Secondary School Survey: Initial Rake Weighted Solution

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,052	20.7%	18.6%	18.7%	20.3%	21.7%	48.9%	51.1%	30.8%	69.2%	69.5%	30.5%
Central	350	15.2%	21.7%	17.2%	22.3%	23.7%	48.6%	51.4%	**29.9%**	**70.1%**	60.8%	39.2%
East	323	13.7%	19.2%	17.4%	18.8%	30.9%	48.6%	51.4%	21.9%	78.1%	66.3%	33.7%
Grampian	829	**2.1%**	**13.9%**	18.3%	**29.1%**	**36.6%**	48.7%	51.3%	44.1%	55.9%	75.2%	24.8%
Highlands and Islands	187	**0.3%**	**21.8%**	32.5%	**44.8%**	**0.7%**	49.2%	50.8%	**100.0%**		61.3%	38.7%
Tayside and Fife	1,046	**8.9%**	**27.3%**	19.4%	24.0%	20.3%	48.6%	51.4%	34.0%	66.0%	67.3%	32.7%
West	2,317	30.3%	20.4%	17.5%	15.2%	16.6%	49.0%	51.0%	21.3%	78.7%	72.3%	27.7%
Aberdeenshire	829	**0.4%**	**7.4%**	19.2%	**34.6%**	**38.4%**	48.6%	51.4%	69.5%	30.5%	77.4%	22.6%
East Ayrshire	286	51.7%	5.0%	**16.6%**	**9.9%**	**16.8%**	50.0%	50.0%	58.5%	41.5%	73.7%	26.3%
Falkirk	350	14.0%	26.5%	19.5%	18.6%	21.4%	48.5%	51.5%	**10.2%**	**89.8%**	67.9%	32.1%
Glasgow City	682	53.7%	15.2%	12.6%	9.6%	8.9%	48.5%	51.5%		100.0%	70.3%	29.7%
North Ayrshire	934	41.0%	21.8%	12.9%	14.0%	10.3%	48.7%	51.3%	28.4%	71.6%	66.4%	33.6%
Orkney Islands	187	0.2%	13.3%	24.7%	**60.9%**	**0.9%**	50.6%	49.4%	100.0%		53.9%	46.1%
Perth and Kinross	1,046	**3.6%**	**11.4%**	19.3%	46.3%	19.5%	49.3%	50.7%	66.7%	33.3%	57.8%	42.2%
South Lanarkshire	364	20.1%	23.9%	18.6%	22.7%	14.7%	49.7%	50.3%	21.6%	78.4%	77.4%	22.6%
West Dunbartonshire	51	49.8%	32.1%	8.1%	**8.8%**	**1.2%**	45.1%	54.9%		100.0%	81.9%	18.1%
West Lothian	323	16.9%	25.6%	18.5%	17.6%	21.4%	49.4%	50.6%	18.1%	81.9%	72.5%	27.5%

*Items in bold represent low cell counts or data no present on official sources. Cells were collapsed in these instances.

Table 13: Secondary School Survey: Initial Rake Weighted Solution

Table 14: Secondary School Survey: Difference between Census/sportscotland Figures and Initial Rake Weighted Solution

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,052	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**-1.3%**	**1.3%**	0.0%	0.0%
Central	350	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
East	323	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grampian	829	**1.8%**	**-1.8%**	0.0%	**0.0%**	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Highlands and Islands	187	**5.6%**	**-5.6%**	0.0%	**-8.3%**	**8.3%**	0.0%	0.0%	**-23.6%**	**23.6%**	0.0%	0.0%
Tayside and Fife	1,046	**10.5%**	**-10.5%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
West	2,317	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	0.0%
Aberdeenshire	829	**1.4%**	**-1.4%**	0.0%	**0.0%**	**0.0%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
East Ayrshire	286	**-19.2%**	**19.2%**	**0.0%**	**4.3%**	**-4.3%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Falkirk	350	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	**0.0%**	0.0%	0.0%
Glasgow City	682	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	-0.4%	0.0%	0.0%
North Ayrshire	934	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Orkney Islands	187	**-0.2%**	**0.2%**	0.0%	**-8.9%**	**8.9%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Perth and Kinross	1,046	**1.6%**	**-1.6%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
South Lanarkshire	364	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
West Dunbartonshire***	51	**-6.8%**	**-4.4%**	5.0%	**2.4%**	**3.7%**	4.5%	-4.5%	1.2%	-1.2%	0.0%	0.0%
West Lothian	323	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

*Items in bold are where SIMDs had to be grouped due to very low cells counts. Therefore, the cells per SIMD will not be accurate but are accurate when added together.

** Note there was insufficient urban/rural data in Falkirk and Orkney causing the Central and Highland regions to be weighted imperfectly for these items.

***West Dunbartonshire did not converge with algorithm due to very small sample.

*Table 14: Secondary School Survey: Difference between Census/**sport**scotland Figures and Initial Rake Weighted Solution*

Table 15: Secondary School Survey: Final Weighting Solution after correction for Extreme Weights

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,052	20.7%	18.6%	18.7%	20.3%	21.7%	48.9%	51.1%	31.0%	69.0%	66.6%	33.4%
Central	350	15.2%	21.7%	17.2%	22.3%	23.7%	48.6%	51.4%	**26.4%**	**73.6%**	57.9%	42.1%
East	323	13.7%	19.2%	17.4%	18.8%	30.9%	48.6%	51.4%	15.1%	84.9%	58.4%	41.6%
Grampian	829	**1.6%**	**14.4%**	18.3%	**29.1%**	**36.6%**	48.7%	51.3%	52.2%	47.8%	68.4%	31.6%
Highlands and Islands	187	**0.3%**	**21.8%**	32.5%	**44.8%**	**0.7%**	49.2%	50.8%	**100.0%**		52.3%	47.7%
Tayside and Fife	1,046	**9.0%**	**27.3%**	19.4%	24.0%	20.3%	48.6%	51.4%	37.4%	62.6%	58.6%	41.4%
West	2,317	30.3%	20.4%	17.5%	15.2%	16.6%	49.0%	51.0%	21.2%	78.8%	70.4%	29.6%
Aberdeenshire	829	**0.4%**	**7.4%**	19.2%	**34.6%**	**38.4%**	48.6%	51.4%	68.6%	31.4%	71.7%	28.3%
East Ayrshire	286	50.3%	6.4%	**16.6%**	**11.7%**	**15.0%**	50.0%	50.0%	68.1%	31.9%	65.5%	34.5%
Falkirk	350	14.0%	26.5%	19.5%	18.6%	21.4%	48.5%	51.5%	**12.5%**	**87.5%**	64.9%	35.1%
Glasgow City	682	53.7%	15.2%	12.6%	9.6%	8.9%	48.5%	51.5%		100.0%	67.4%	32.6%
North Ayrshire	934	41.0%	21.8%	12.9%	14.0%	10.3%	48.7%	51.3%	24.2%	75.8%	58.0%	42.0%
Orkney Islands	187	0.2%	13.3%	24.7%	**60.9%**	**0.9%**	50.6%	49.4%	100.0%		50.5%	49.5%
Perth and Kinross	1,046	**3.7%**	**11.3%**	19.3%	46.3%	19.5%	49.3%	50.7%	64.5%	35.5%	55.7%	44.3%
South Lanarkshire	364	20.1%	23.9%	18.6%	22.7%	14.7%	49.7%	50.3%	19.3%	80.7%	73.7%	26.3%
West Dunbartonshire	51	43.0%	27.8%	13.1%	**12.8%**	**3.3%**	49.6%	50.4%		100.0%	70.8%	29.2%
West Lothian	323	16.9%	25.6%	18.5%	17.6%	21.4%	49.4%	50.6%	11.4%	88.6%	65.7%	34.3%

*Items in bold are where SIMDs had to be grouped due to very low cells counts. Therefore, the cells per SIMD will not be accurate but are accurate when added together.

Table 15: Secondary School Survey: Final Weighting Solution after correction for Extreme Weights

Table 16: Secondary School Survey: Difference between Census/sportscotland Figures and Final Weighted Solution

Area	Base	SIMD 1	SIMD 2	SIMD 3	SIMD 4	SIMD 5	Female	Male	Rural	Urban	Not Active	Active
Scotland	5,052	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.6%	1.6%	2.9%	-2.9%
Central	350	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	-3.5%	2.9%	-2.9%
East	323	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.8%	-6.8%	7.9%	-7.9%
Grampian	829	**2.2%**	**-2.2%**	0.0%	**0.0%**	**0.0%**	0.0%	0.0%	-8.1%	8.1%	6.8%	-6.8%
Highlands and Islands	187	**5.6%**	**-5.6%**	0.0%	**-8.3%**	**8.3%**	0.0%	0.0%	-23.6%	23.6%	8.9%	-8.9%
Tayside and Fife	1,046	**10.4%**	**-10.4%**	0.0%	0.0%	0.0%	0.0%	0.0%	-3.4%	3.4%	8.6%	-8.6%
West	2,317	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	-0.3%	1.9%	-1.9%
Aberdeenshire	829	**1.4%**	**-1.4%**	0.0%	**0.0%**	**0.0%**	0.0%	0.0%	0.9%	-0.9%	5.6%	-5.6%
East Ayrshire	286	**-17.7%**	**17.7%**	**0.0%**	**2.6%**	**-2.6%**	0.0%	0.0%	-9.6%	9.6%	8.2%	-8.2%
Falkirk	350	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-2.3%	2.3%	3.0%	-3.0%
Glasgow City	682	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	-0.4%	2.9%	-2.9%
North Ayrshire	934	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	-4.1%	8.4%	-8.4%
Orkney Islands	187	**-0.2%**	**0.2%**	0.0%	**-8.9%**	**8.9%**	0.0%	0.0%	0.0%	0.0%	3.5%	-3.5%
Perth and Kinross	1,046	**1.5%**	**-1.5%**	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	-2.2%	2.1%	-2.1%
South Lanarkshire	364	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	-2.3%	3.7%	-3.7%
West Dunbartonshire***	51	0.0%	0.0%	0.0%	**-1.6%**	**1.6%**	0.0%	0.0%	1.2%	-1.2%	11.1%	-11.1%
West Lothian	323	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	-6.7%	6.8%	-6.8%

*Items in bold are where SIMDs had to be grouped due to very low cells counts. Therefore, the cells per SIMD will not be accurate but are accurate when added together.

***West Dunbartonshire did not converge with algorithm due to very small sample so was 'force' weighted at this stage.

*Table 16: Secondary School Survey: Difference between Census/**sport**scotland Figures and Final Weighted Solution*

Tables 15 and 16 on the preceding pages shows the results of adjusting for extreme weights. These weightings are show below as the 'Initial Maximum Weights'. It is notable that these initial weights were quite large but did not contain as many very extreme weights as seen with the Primary school survey.

Despite the absence of very large weights, the rake weightings were still quite high as a result of trying to weight the divergent survey to census and **sport**scotland figures. This is the outcome of, weighting for a large number of divergences simultaneously.

The weights were capped at the 95th percentile and the weights were readjusted for Gender by SIMD. This process reduced the extremity of the weights. This capping and readjustment comes at the expense of reduced accuracy for Rurality and Active Schools. This effect can be seen clearly in Table16.

The final maximum weightings shown in the table below are not ideal. They tend to be above five (results from West Dunbartonshire are unlikely to be used alone so is less of an issue). A point to note, however, is that the size of the sample is likely to less of a cause of large weights in comparison to how well the sample matches the population to begin with. A survey sample that is a close match to the population percentages will require less weighting. For example, while the sample for Falkirk is small, the weighting effect is not large as the sample was close to the actual population. In comparison, the larger sample for North Ayrshire required a much larger weighting as it was less representative of the population.

Table 17: Secondary School Survey: Weights Pre and Post Trimming

Area	Base	Initial Mean Weight	Initial Maximum Weight	Final Mean Weight	Final Maximum Weight
Scotland	5,052	1	**5.84**	1	**4.76**
Central	350	1	**8.55**	1	**5.04**
East	323	1	**16.08**	1	**8.03**
Grampian	829	1	**11.66**	1	**6.57**
Highlands and Islands	187	1	**11.64**	1	**7.29**
Tayside and Fife	1,046	1	**11.73**	1	**6.56**
West	2,317	1	**6.52**	1	**5.23**
Aberdeenshire	829	1	**9.19**	1	**6.18**
East Ayrshire	286	1	**21.24**	1	**6.16**
Falkirk	350	1	**8.01**	1	**5.03**
Glasgow City	682	1	**5.24**	1	**4.74**
North Ayrshire	934	1	**20.29**	1	**6.65**
Orkney Islands	187	1	**7.34**	1	**5.19**
Perth and Kinross	1,046	1	**8.01**	1	**5.07**
South Lanarkshire	364	1	**9.70**	1	**5.85**
West Dunbartonshire	51	1	**9.60**	1	**10.82**
West Lothian	323	1	**14.86**	1	**7.39**

Table 17: Secondary School Survey: Weights Pre and Post Trimming

Combined School Weights

The table on the following page shows the combined survey weightings. The weighted percentage contributions of each survey are compared to the population estimates for those aged 8 to 11 and 12 to 17 in each area. It should be noted that in this analysis that those surveyed at Primary school age only represent older children in these schools whereas Secondary aged respondents cover the whole of the Secondary age range.

Due to this factor, the number of children in the population each group will represent will be heavily skewed towards Secondary age pupils. However, in the survey, there were 5,999 Primary school pupils surveyed compared to 5,052 Secondary school pupils. As a percentage, the combined sample of both groups contains 54.28% Primary age children and 45.72% Secondary age children. In the population in Scotland as a whole based on relevant age bands, the percentages are 41.84% Primary age and 58.16% Secondary age. Thus, when the surveys are combined, Secondary age pupils are underrepresented in the data.

This becomes an issue when an adjustment is made for this imbalance. Over the whole of Scotland, an average weighting adjustment of 1.27 has to be made for Secondary age pupils. In regions and LA the effect is often even larger (although in some LAs, the percentage of Secondary age pupils was actually higher than Primary age pupils). This will mean that weights that are already large in some cases will become inflated.

Unfortunately, there is no simple solution to this issue since the weightings for Primary and Secondary pupils are independent from one another. Furthermore, excess weightings for Primary and Secondary have been reduced as much as possible in previous stages of weighting.

Where maximum weights have crept up to over 10, this may create some error in the results i.e. some pupils will be excessively relied upon in the findings. However, the only reporting output where both values are likely to be shown together are physical activity levels and equalities data. This is because most questions about feelings and orientations towards sports were asked only to Secondary aged children. Where these results are shown for items related to Secondary pupils only, the relative percentages do not change from the initial weighting.

Table 18: Primary and Secondary School: Combined Survey Weighting

Area	Survey Base	Unweighted/ Scotland Weight/ Region Weight/ LA Weight/ Region Weight*				Combined Survey Post-Weighting Adjustment				Population Estimate**				Maximum Weights		
		Primary Age (8-11)		Secondary Age (12-17)		Primary Age (8-11)		Secondary Age (12-17)		Primary Age (8-11)		Secondary Age (12-17)		Primary Weight	Secondary Weight	Combined Weight
	n	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*Max*	*Max*	*Max*
National																
Scotland	11,051	5,999	**54.28%**	5,052	**45.72%**	4,624	**41.84%**	6,427	**58.16%**	238,849	**41.84%**	332,029	**58.16%**	4.02	4.76	6.06
Regions																
Central	660	310	**46.97%**	350	**53.03%**	272	**41.26%**	388	**58.74%**	13,966	**41.26%**	19,883	**58.74%**	3.66	5.04	5.59
East	836	513	**61.36%**	323	**38.64%**	359	**42.97%**	477	**57.03%**	44,000	**42.97%**	58,395	**57.03%**	4.15	8.03	11.85
Grampian	1,372	543	**39.58%**	829	**60.42%**	592	**43.17%**	780	**56.83%**	26,313	**43.17%**	34,633	**56.83%**	9.07	6.57	9.89
Highlands and Islands	409	222	**54.28%**	187	**45.72%**	166	**40.70%**	243	**59.30%**	13,683	**40.70%**	19,939	**59.30%**	6.41	7.29	9.46
Tayside and Fife	1,608	562	**34.95%**	1,046	**65.05%**	667	**41.45%**	941	**58.55%**	34,555	**41.45%**	48,807	**58.55%**	4.91	6.56	5.91
West	6,166	3,849	**62.42%**	2,317	**37.58%**	2,554	**41.42%**	3,612	**58.58%**	106,332	**41.42%**	150,372	**58.58%**	3.99	5.23	8.16
Local Authorities																
Aberdeenshire	1,372	543	**39.58%**	829	**60.42%**	592	**43.13%**	780	**56.87%**	13,210	**43.13%**	17,419	**56.87%**	7.55	6.18	8.23
East Ayrshire	624	338	**54.17%**	286	**45.83%**	258	**41.38%**	366	**58.62%**	5,411	**41.38%**	7,666	**58.62%**	4.97	6.16	7.88
Falkirk	660	310	**46.97%**	350	**53.03%**	282	**42.70%**	378	**57.30%**	7,625	**42.70%**	10,233	**57.30%**	4.06	5.03	5.43
Glasgow City	1,912	1,230	**64.33%**	682	**35.67%**	809	**42.34%**	1,103	**57.66%**	24,132	**42.34%**	32,870	**57.66%**	4.66	4.74	7.67
North Ayrshire	1,711	777	**45.41%**	934	**54.59%**	696	**40.68%**	1,015	**59.32%**	6,045	**40.68%**	8,815	**59.32%**	4.92	6.65	7.23
Orkney Islands	409	222	**54.28%**	187	**45.72%**	170	**41.65%**	239	**58.35%**	973	**41.65%**	1,363	**58.35%**	3.85	5.19	6.63
Perth and Kinross	1,608	562	**34.95%**	1,046	**65.05%**	646	**40.16%**	962	**59.84%**	6,480	**40.16%**	9,656	**59.84%**	4.11	5.07	4.72
South Lanarkshire	1,528	1,164	**76.18%**	364	**23.82%**	634	**41.51%**	894	**58.49%**	14,251	**41.51%**	20,081	**58.49%**	3.85	5.85	14.36
West Dunbartonshire***	391	340	**86.96%**	51	**13.04%**	167	**42.60%**	224	**57.40%**	4,149	**42.60%**	5,590	**57.40%**	3.27	10.82	47.62
West Lothian	836	513	**61.36%**	323	**38.64%**	354	**42.31%**	482	**57.69%**	9,487	**42.31%**	12,937	**57.69%**	4.41	7.39	11.04

*Note that the weighted and unweighted values for each of these items will be identical. This is because the weights do not change the observed survey totals.

**https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/2011-based-special-area-population-estimates/population-estimates-by-simd-2016

***West Dunbartonshire had a very low sampling of Secondary Age pupils. Therefore, the weightings are unreliable.

Table 18: Primary and Secondary School: Combined Survey Weighting