

Fraser of Allander Institute

A scoping study on data and information that describes poverty and educational attainment in the Northern Alliance Regional Improvement Collaborative area

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SUMMARY

In Scotland, measures of educational attainment commonly use the Scottish Index of Multiple Deprivation (SIMD). The 'attainment gap' measures the difference in attainment between SIMD quintile one and SIMD quintile five (representing the least and most deprived areas respectively).

Education practitioners in the Northern Alliance RIC describe using the SIMD to analyse the poverty-related attainment gap as problematic, particularly in rural areas. This is due to both the large geographical areas that SIMD relates to in rural areas and the relevance of the information captured within the measure.

The Northern Alliance Regional Improvement Collaborative has initiated this scoping study to look at other data and information that could help local authorities and schools better understand how poverty and deprivation affect educational attainment.

This report looks across a wide range of data, some of which are rural specific, to scope out alternative evidence that could be used by schools and local authorities to identify issues that may be impacting attainment. A range of data sources are identified for further analysis.

An accompanying report presents a framework for looking at the correlation between indicators of poverty and educational attainment. The next stage of the analysis will involve analysing the data further for checks on robustness and coverage and then using our framework to analyse their predictive power in terms of attainment.



INTRODUCTION

This report summarises the work completed to scope out data and evidence relating to poverty and attainment in the Northern Alliance Regional Improvement Collaborative (RIC). It was initiated by the RIC and commissioned by the Data for Children Collaborative.

The Northern Alliance RIC area comprises eight local authority areas, covering 60% of Scotland's landmass. The schools situated within the Collaborative span mainland and island rural communities and a number of urban towns and cities.

Education practitioners in the Northern Alliance RIC describe using the Scottish Index of Multiple Deprivation (SIMD) to analyse the poverty-related attainment gap as problematic in rural areas. This relates to the geographical areas over which the index is calculated and the differential experience of poverty in rural areas compared to towns and cities. While it is not necessarily argued that poverty and deprivation are worse in rural areas, the challenges associated with low income are likely to be different and, therefore, may affect attainment via different pathways.

For policymakers and teachers, understanding the causes and potential solutions is very important for all children in both rural and urban areas.

Known issues with the Scottish Index of Multiple Deprivation

In Scotland, the attainment gap measures the difference in attainment between SIMD quintile one and SIMD quintile 5 (representing the least and most deprived individuals).

There are two critical issues with SIMD in rural areas.

1. **Relevance:** The data used to compile SIMD can feel less relevant in rural areas where issues such as higher costs of goods and services and long travelling distances mean that the rural experience of poverty can be very different from urban areas.



2. **Population density:** SIMD uses a unit of measurement called a ‘datazone.’ This is based on dividing Scotland into a series of areas based on population: each datazone has between 500 and 1000 inhabitants. In cities, a datazone can often contain just a few streets to pinpoint SIMD rankings to a relatively small geographical area. However, the area covered by a datazone may be vast due to sparser population density in rural areas. The larger the datazone, the less confident we can be that the SIMD ranking adequately reflects the environment in which a child grows up.

These issues have long been recognised, but producing an alternative to the SIMD is not straightforward. There are challenges in terms of data availability and reliability at small geographical levels and ethical constraints in the sharing and using data that could potentially identify individuals.

As part of this project, we have looked at both the potential for analysis of individual-level data (for example, by linking household data to pupil identifier and looking for correlation with attainment) to try and overcome the issues related to low population density. We have also looked at improving the data available at higher aggregations to understand attainment issues better.

The Northern Alliance contains both rural and urban areas. However, it is rural areas where the most significant concerns with SIMD are found. This report has a particular focus on data that can be used to assess rural disadvantage. Still, we are mindful that any future analysis will need to work for rural and urban areas.



DEFINITIONS

Many terms are used when describing poverty and attainment. Here we provide an overview of what these terms are.

Poverty, deprivation, socioeconomic status

This report uses the terms poverty, deprivation, and socioeconomic status. The definition of poverty we are using here is income poverty, so directly related to household income. Income can be measured in a number of different ways. Still, the most commonly used method defines low income for households in relation to the typical household income (using the median as the marker of 'typical' income, and equivalising income so that the income levels of different types of household can be compared) – this is known as relative income poverty (Scottish Government, 2021).

We use the term deprivation to include a broader range of factors, such as those in the Scottish Index of Multiple Deprivation (SIMD), which may not always directly link to income poverty.

The SIMD is a weighted average across a number of aspects of deprivation based on 33 indicators across the domains of income, health, education, employment, crime, housing, and geographical access to services. It uses robust data and quality assured processes and is available at the datazone level, which equates to geographical areas of between 500 – 1000 people. (Scottish Government, 2020)

In addition to poverty and deprivation, Researchers often use a measure called socioeconomic status (SES) rather than poverty or deprivation. Usually, definitions of SES include measures related to financial capital, social capital, and human capital, but often not all of these are captured in data used to measure SES (Bradley and Corwyn, 2002).



Attainment gap definitions and measurement

In Scotland, the attainment gap measures the difference in attainment between SIMD quintile one and SIMD quintile 5 (representing the least and most deprived individuals). Attainment is measured in several ways at different stages of education, including:

- Early years: percentage of pupils with no developmental concerns across all domains
- Primary 1, Primary 4, Primary 7: percentage of pupils attaining expected Curriculum for Excellence (CfE) levels in Listening and Talking, Literacy, Numeracy, Reading, and Writing
- S3 (third year of secondary school): percentage of pupils attaining Curriculum for Excellence (CfE) 3rd level or better and percentage of pupils achieving CfE 4th level in Listening and Talking, Literacy, Numeracy, Reading, and Writing
- School leavers: percentage of pupils who have achieved one or more qualifications at SCQF level 3 or better, 4 or better, 5 or better, 6 or better, and level 7 (Scottish Government, 2021).
- The years P1 to S3 are often referred to as Broad General Education.

There are reasons why success at school should be broader than these indicators, not least because the CfE sets itself up to produce successful learners and confident individuals, responsible citizens, and effective contributors (Education Scotland, 2021). As noted in the recent OECD review of the CfE, there is a mismatch between the data currently collected and monitored and the aspirations of CfE (OECD, 2021). Nevertheless, we focus on those attainment measures captured by these indicators for this project.



EXISTING EVIDENCE ON POVERTY AND ATTAINMENT

There is a plethora of evidence that links poverty to poor attainment, both in the UK and across the world. We do not seek to provide a full review of the literature here and instead highlight a small number of recent studies that are particularly relevant to this project. This summary offers enough context to understand the relevance of the data mapped later in this report.

The Poverty-Related Attainment Gap: A review of the evidence (McHardy and Robertson, 2021)

This review from the Scotland based Poverty Alliance of the causal links between poverty and attainment notes that research tends to be focused at three different levels:

- The micro-level (individual learner characteristics and relationships)
- The meso-level (immediate social contexts such as families, communities and schools)
- The macro-level (social structure, power and inequality).

The review notes that it can be challenging to prove the causal relationship between poverty and lower educational attainment since lower educational attainment can also contribute to poverty. However, even if the full impact cannot be isolated, there is evidence that low income impacts attainment (see the section on Cooper and Stewart 2013, 2017 for more information).

On top of the well-documented negative impacts of poverty, children in poverty are also more likely to experience Adverse Childhood Experiences (ACEs).

The key mitigating factors listed by the authors are:

- Positive social environment within schools
- Strong family relationships
- Supportive parenting
- A rich home learning environment
- Participating in out of school activities



They also cite studies that found evidence to suggest that higher quality pre-school education can positively impact attainment.

In studies considering higher than expected achievement by children from socioeconomic disadvantage, several factors seemed to be correlated with higher-than-expected achievement:

- A mother with a university degree
- A 'good' home environment during early years
- Opportunity to attend enriching activities, e.g. sports
- At the secondary school level, quality of pupil learning is rated by Ofsted.

A critical gap noted by the authors is a lack of understanding of the geography of educational inequality and attainment gaps in Scotland.

Children's social circumstances and educational outcomes (White, 2018)

Dr Jane White's report for NHS Health Scotland in 2018 provides a more detailed look at the connections between poverty and disadvantage and attainment. As shown in Figure 1, White groups evidence into three separate categories: physical, social, and family characteristics.

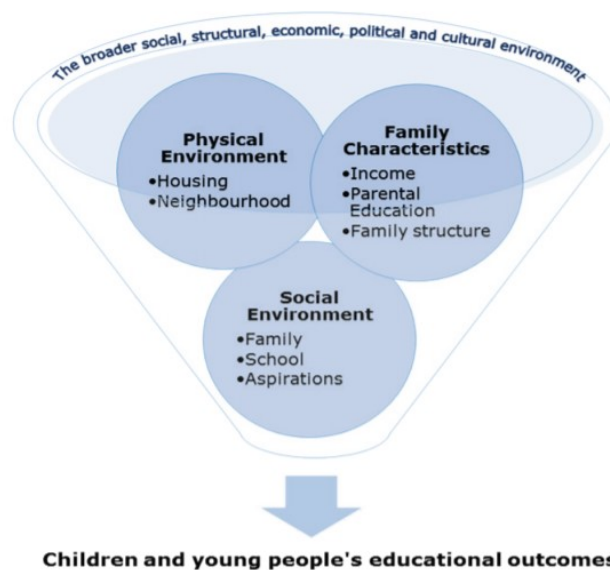


Figure 1: Children's social circumstances and educational outcomes (White 2018)



The report states that resources have both a direct and indirect impact on attainment. For example, children require transport to school, books and papers to use at school and at home, internet access at home, equipment for specialist classes and out of school activities, and much more. Resources also impact attainment more indirectly by causing stress in low-income households.

The report finds that this is a critical factor in children's ability to learn at home includes heating and lighting, a big enough house for the entire family, and a safe neighbourhood.

As also mentioned by Robertson & McHardy, the report finds that parental education and family structure may also impact attainment. However, the latter is thought to be more likely related to high poverty levels in, for example, single-parent households rather than an independent causative impact.

Furthermore, the report states that children's aspirations are shaped by their environments. Children require several factors to be in place to have high aspirations and the ability to achieve them, including accurate information, sufficient self-esteem, inspiration from people and experiences, and self-efficacy.

The author discusses aspirations and the complex interaction of factors that can affect aspirations and attainment, some of which are likely to be related to socioeconomic status, but notes evidence to support that it is not the case that more disadvantaged parents have lower aspirations for their children.

Does money affect children's outcomes? A systematic review (Cooper and Stewart, 2013) & Does money affect children's outcomes? An update (Cooper and Stewart, 2017)

Cooper and Stewart undertook a systematic review of the causal links between low income and the attainment gap. They first completed their research in 2013 and updated their findings in 2017.

Cooper and Stewart's review found strong evidence that money directly impacts educational attainment, cognitive development, and social, behavioural and emotional development. They also looked for evidence of specific pathways



between income and attainment, including the Investment Model (Figure 2) and the Family Stress Model (Figure 3).

The review also found evidence of the following:

- The effect of money on families is non-linear – households with low incomes benefit much more from an increase in their funds compared to households of higher income
- Long term poverty is more highly correlated with decreased childhood outcomes, but evidence suggests that even a short-term spell of poverty can have a negative impact on outcomes.

In the 2017 update of their systematic review, Cooper and Stewart found further evidence confirming the findings of the 2013 review. They also found more research on intermediate outcomes, strengthening the validity of the Investment Model and the Family Stress Model.

The Investment Model

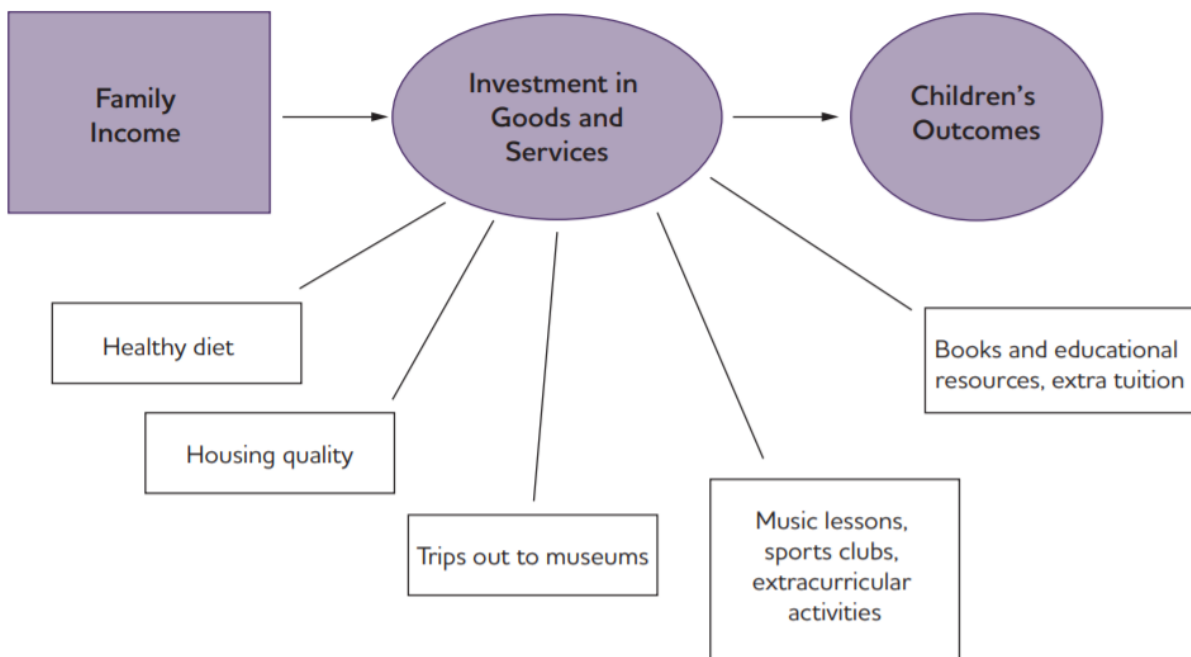


Figure 2: The Investment Model (Cooper and Stewart 2013)



The Family Stress Model

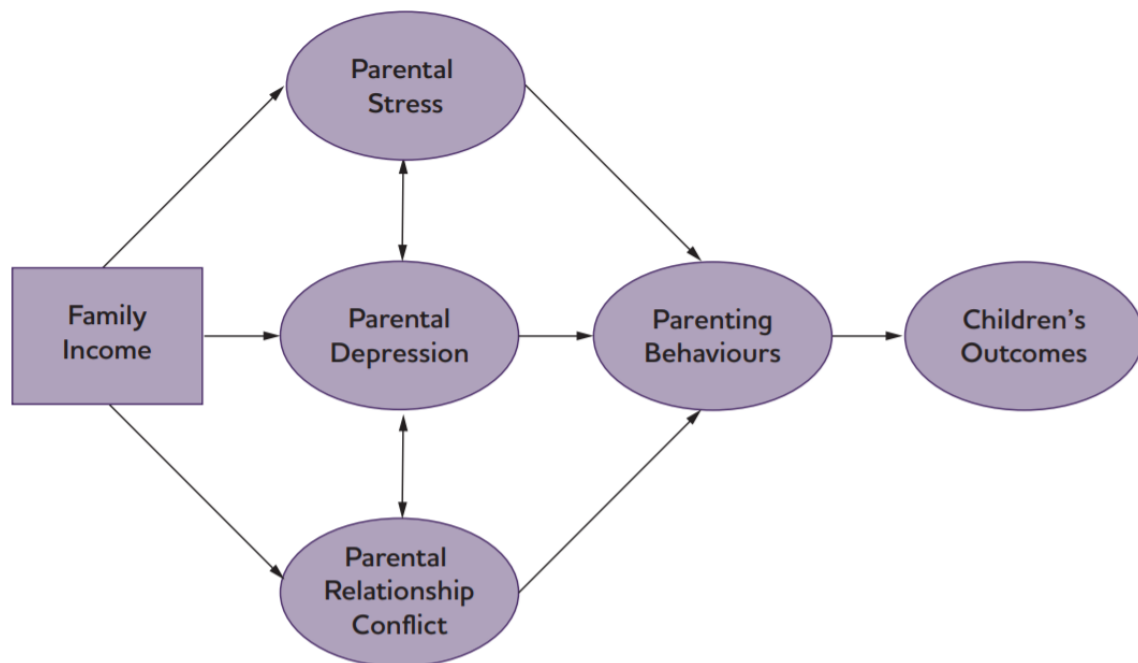


Figure 3: The Family Stress Model (Cooper and Stewart 2013)

The Pathways Between Socioeconomic Status and Adolescent Outcomes: A Systematic Review (Devenish et al., 2017)

This systematic review focused on the pathways between socioeconomic status (SES) and adolescent outcomes. Similar to the micro, meso and macro-level pathways mentioned by Robertson and McHardy, this review groups the risk factors they found correlated to outcomes into individual-level factors, family-level factors and neighbourhood-level factors. Some of these factors are related directly to educational attainment, while others are connected to factors that influence attainment, such as delinquency, substance abuse, aspirations, etc.

Individual-level factors noted in the studies included gender, race, individual differences in temperament, capacity to cope with stress, expectations, abilities, and skills.

Family-level pathways included parent involvement and expectations, parent psychopathology, parent conflict, parenting style, home environment, and violent victimisation.



Neighbourhood-level pathways were split into peer, school, and broader neighbourhood factors. Evidence was found of peer factors mediating academic achievement and internalising and externalising emotional and behavioural issues. School atmosphere was found to mediate the relationship between SES and academic achievement in one study. In the wider neighbourhood, neighbourhood violence, perceived safety, and overall area SES were correlated with educational outcomes and high-school graduation.



Summarising the impact pathways

Using the evidence explored in Section 3, Figure 4 shows a breakdown of relevant factors linked to attainment and poverty.

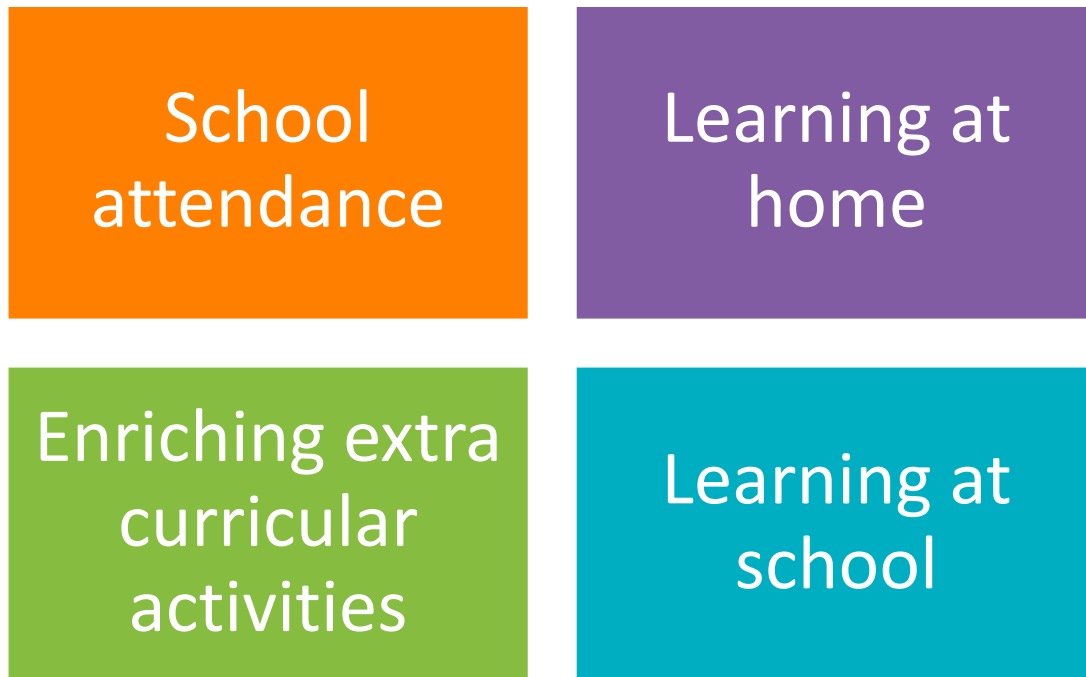


Figure 4: Factors linked to poverty, deprivation and attainment

School Attendance

First and foremost, attending school regularly is critical for high educational attainment. School is compulsory in Scotland until age 16. However, pupils may still miss significant amounts of school due to illness, exclusion, peer pressure and many other factors, many of which can be linked to, directly or indirectly, poverty and deprivation.

Learning at School

Regular school attendance does not automatically lead to a pupil performing to the best of their ability. There will be factors affecting students, many of which may be linked to deprivation that affects their learning at school. The quality of the learning environment is also in scope here- for example, whether or not the school



environment feels secure for children and whether it facilitates the development of positive relationships with peers and teachers.

Learning at Home

Studies have found that learning outside the formal curriculum is highly beneficial to children's educational achievement (Malone, 2008). The literature referenced in the previous section discussed issues with learning at home, such as heating and internet connectivity being of particular concern for children in lower income households. The home environment and neighbourhood effects are also in scope here.

Enriching Extra-Curricular Activities

Lastly, evidence shows that enriching extracurricular activities such as afterschool clubs, sports, and other hobbies are beneficial to attainment (Chanfreau et al., 2016). It has been found that children from lower income families attend such activities much less regularly than their peers (White, 2018).

These themes helped shape the next stage of the research. We engaged with teachers and education officials to fill in additional gaps that are particularly relevant or may have been overlooked in rural areas.

Workshops were held in mid-May 2021. We asked participants to reflect on possible pathways that link poverty and attainment that were particularly important in the Northern Alliance area, using Figure 4 as anchor points to connect to attainment.

The key findings are shown in Table 1. There is a mixture of overlap with the existing literature we reviewed and new insights from the workshop discussions.

Not all insights are directly related to poverty, deprivation or socioeconomic status but the issues identified could augment the challenges faced by those already living in disadvantaged circumstances.



Table 1: Rural specific issues that affect attainment

		School attendance	Learning at school	Learning at home	Extra-curricular activities
Cost of living					
Higher cost of food	Nutritional needs are not met, and this affects learning				
Higher cost of fuel	Limits private transport				
	Ability to heat home constrained				
Lack of homes to rent	The higher cost of housing constrains spending				
	May have to live in a sub-optimal location				
Digital Infrastructure	Less reliable broadband				
Distance to school/work/services	Long commute to and from school				
	Long commute for parents constraining their time at home before and after school				
	Issues with having to board on the mainland				
	Longer distances and poorer public transport impact on access to services				
Living in sparsely populated areas	Feelings of isolation and constraints on social life lead to lower wellbeing (children and parents)				
Seasonality of work	Fluctuating income and times of the year when parents will be at work for long hours				
Small schools	Multiple year groups in one class and difficulties in pitching lessons at the right level for all*				
Stigma	Small, often relatively homogenous, communities mean any difference is more likely to stand out				
	People may be less likely to take support offered, for example, Free School Meals, because issues will become known to the broader community				

*It was noted that composite classes are not only a rural phenomenon, and even in single year classes, teachers will need to adapt to a range of ability



Box 1: Focus on the distance to school, work and services

Workshop participants often raised the issue of long travelling distances, and here we expand on some of the issues flagged in Table 1.

In rural areas, schools may be a long distance from home. Secondary schools, in particular, are likely to be in the nearest largest town, with school buses being used to transport children to and from school.

In rural areas, buses will often be provided free for children of school age where walking is not an option, but often there is no alternative to the scheduled bus to and from school. The journeys can be long, and buses can leave very early.

Where children from the same family attend different educational settings (for example, Early Learning, childcare setting, primary school or secondary school), it is possible that children will not share the same transport. Parents may also have to arrange private transportation for children of pre-school age.

There may not be other means of transporting children to school if the bus is missed, or parents may not be available to do so because of work commitments.

The bus journey to school may add considerable length to the school day. Workshop participants thought this could link to children having difficulty learning at school due to being tired and having trouble learning at home due to tiredness and having less time to complete homework than those who live closer to the school.

Some children will live in areas where there is no possibility of a later bus home because they are outwith public transport routes. If private transport is not available, they may not attend extra-curricular activities or only do so irregularly. Even where parents can manage the time and costs involved in transporting their child to/from school, this can impact other children in the household who either have to travel with the sibling and parent or spend less time at home with their parent(s). Both can affect learning at home.

Children who travel from remote areas to secondary school may have to board. This enforced time away from parents was thought to link to children having difficulty learning at school and having trouble learning at home due to the impact on the wellbeing of some children who do not adjust well to being away from their family.

As well as the distance to school, distance to other services was spoken about at the workshops. One example discussed was Braemar, where the nearest main services are an hour and a half away in Aberdeen.



One specific example given is accessing child and family and mental health services. Combined with poor public transport and low income increases the likelihood of not being able to afford private transport, families facing poverty are even more likely to struggle to access the help they require. Even visits to 'routine' services such as dentists and opticians bring considerable costs in rural areas, both financial and in terms of time needed. This could mean that these services are not accessed as often as in urban areas.



DATA MAPPING

Data mapping and gap analysis followed this data gathering process, both from the established literature and engagement with practitioners in the Northern Alliance.

Types of data

There are many 'types of data that are in scope here. We have encountered the three main ones: administrative data, survey data, and information recorded within schools on education management systems.

Administrative data

Administrative data is collected as part of administrative systems, such as tax collection or benefit applications, and is held on public systems in a record linked to an individual or household. Administration records, either in their raw form or those made public as anonymised records, are likely to be the most reliable type of data as they are based on 100% of all documents. Therefore, they are not compromised by issues relating to surveys, such as sampling bias.

Survey data

Survey data comes from either sample or whole-population surveys, often initiated by public authorities, to capture people's wide range of information. Surveys do have shortcomings as they rely on recollection. Since sample surveys are not based on the total population, they may suffer from sampling bias, meaning they are not fully representative of the people they seek to present. However, they can provide data across a wide range of issues beyond the reach of administrative and management information and provide helpful information if used with care.

Management information

The third type of data potentially in scope for future analysis is information recorded in schools on information management systems such as SEEMIS. These systems allow schools to note particular issues of relevance to pupils. This data is



confidential and only accessible to a limited group of people. It will potentially be a rich source of information but may not be complete (the same information may not be recorded across all students or all schools) and may be subjective (e.g. based on teacher judgement of whether an issue is worthy of note). This information could be used in a couple of ways: those with access to SEEMIS could be guided by researchers to analyse the SEEMIS data themselves, or there may be an option to aggregate SEEMIS data for researchers to work on.

Availability of data and aggregation of data

Whether administrative, survey or management information, all data links to an individual or a household. However, only the data owner would have an identifier related to the data subject in most cases.

Linking individual records using common identifiers

In some situations, data can be linked to other data using common identifiers (for example, CHI number). Still, this process has to be highly controlled with many safeguards to ensure that private information is not disclosed. There are GDPR laws that safeguard data subjects. Data sharing can be at the owner's discretion and will also depend on whether data subjects have given consent for data linkage and other ethical considerations. Even after data linkage, there can be limits on how data is used if, for example, the linked data provides information that could be used to identify individuals (known as disclosure).

Linking aggregated data using spatial identifiers

Data collected by the public sector is usually published in an aggregated form at a level where disclosure is not possible. The level usually corresponds to a unit of 'statistical geography'.

Datazones, one of the lowest statistical geographies used in Scotland, breaks down the country into relatively equal-sized (between 500 and 1000) population units. As already noted, even this relatively small unit can cover large distances in some parts of rural Scotland where populations are spread out. However, they can still produce beneficial insights for policymakers and practitioners if used carefully.



Datazone level data is usually based on admin records of complete population surveys. Sample survey data usually cannot be broken down below local authority or even Scotland level, depending on the sample's size and representativeness. Admin data could be linked to survey data to improve the quality of the survey data (i.e. where self-reporting is unreliable), but this would not alter the level at which the survey data could be published.

Table 2 summarises critical data that could be used in further work to understand attainment and poverty in the Northern Alliance. Most data we have identified could theoretically be linked to pupils, but whether this would happen is dependent on a range of factors. Some data is already available at aggregated levels, such as an existing part of SIMD.

It should be noted that no data has been gathered and analysed during this part of the project. Therefore there remain unknowns regarding whether the data will be appropriate and robust for the issues they have been related to.



Table 2: Data identified as part of Data Mapping exercise

	Data owner		Possibility of individual linkage?	If not, the possibility of spatial linkage?
Education Data				
Pupil census	Scottish Government	A record of all Scottish primary and secondary school pupils with information on gender, ethnicity and refugee status, any additional needs of children, and whether pupils are registered for free school meals	Proven using Scottish Candidate Number	
Attainment	Schools/Local Authority	Whether a child is performing at- or above-level for their age/year group.	Proven using Scottish Candidate Number	
Exam Results	SQA	Attainment data in the form of exam results	Proven using Scottish Candidate Number	
Positive Destinations	Scottish Government	Percentage of school leavers going to a 'positive destination' on leaving school. Positive destinations include higher education, further education, training, voluntary work, employment, activity agreements.	Proven using Scottish Candidate Number	



Standardised Assessments	Schools/Local Authority	Students in P1, P4, P7 and S3 complete online standardised assessments in literacy and numeracy	Possible using Scottish Candidate Number if LA agrees.	
Parental Involvement and Engagement Census	Scottish Government	The Parental Involvement and Engagement Census is a survey distributed to parents of schoolchildren annually. The census asks questions about parents' involvement with their children's schooling and satisfaction with their child's educational experience.	Possible either via SG or LA	
School attendance			Possible using Scottish Candidate Number if LA agrees.	Part of SIMD
Extra-curricular activity	Sports Scotland	Involvement in Sports Scotland activities	Likely to be possible	
Health and wellbeing Census	Schools/Local Authority	New Health and Wellbeing (HWB) Census starting in the 2021/22 academic year	Possible using Scottish Candidate Number if LA agree	



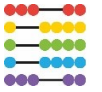
Income Data				
Free School Meals	Schools/LA/Scottish Government	Secondary school-age children will continue to receive if eligible (on UC and legacy benefits). Not all eligible families are registered for free school meals.	Also recorded in pupil census. Schools may also have additional records.	
Children in Low Income Families (CLIF)	DWP, UK Government	Draws on admin data from DWP and HMRC records. It provides a count of the number of children in poverty, based on the relative and absolute measure of income poverty, before housing costs.	Unlikely as DWP	Complete data available at Intermediate Zone in Scotland
Scottish Child Payment (SCP) and Best Start Grant (BSG)	Scottish Government	Both the Scottish Child Payment and the Best Start Grant are available for children in receipt of low-income benefits	Unknown – awaiting clarification from Scottish Government	Unknown at what level statistics will be produced
School clothing grand and Educational Maintenance Allowance	Local Authorities	Similar to the Scottish Child Payment and the Best Start Grant, these are available to low income families but are administered at the local level. Conversations with local authorities have suggested that this information is on the management information system SEEMIS.	It should be possible depending on LA approval.	



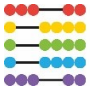
Crisis situations				
Benefit Sanctions	DWP	Benefit sanctions are reductions in payments that occur when a claimant is deemed in contravention of the rules for the benefit in question. These are present in the reserved benefit system for many means-tested benefits. Deductions, or removal, of benefit payments, could signal a potential financial crisis in the household due to the loss of income.	Unlikely as DWP	DWP publish a count of people on UC and is being sanctioned, broken down to postcode district (i.e. first half of the postcode) and output area.
Homelessness Applications/Evictions/Temp Accommodation and Rent Arrears/Housing lists	Local Authorities (as reported by Argyll and Bute), but the practice may be variable across Scotland.	Local authorities' housing departments records of the number of homelessness applications, evictions from housing, and the number of families in temporary accommodation following a homelessness application.	It should be possible depending on LA approval and local practice.	
Crisis Grant Take Up (i.e. Scottish Welfare Fund)	Local Authorities, but practice will be variable.	Crisis grants are one-off payments that families can apply for in crisis via local councils in Scotland. Applicants must be on a low income to receive a grant. The grant can be used to help with unexpected drops in income due to redundancy, job change, benefit gaps, fleeing domestic abuse, fires,	It should be possible depending on LA approval and local practice.	



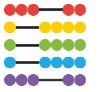
		floods, and other crises. The grant helps families cover essential living costs such as food and heating bills.		
Foodbank Usage	Local Authorities (as reported by Aberdeenshire)	Some local authorities collect additional data to help them understand the situations of low-income residents. Aberdeenshire Council gathers data on the usage of local food banks and the number of residents accessing financial resources such as citizen's advice and the Scottish Welfare Fund.	Unknown if any identifiers were collected or just a count of those accessing help	
Flexible Food Fund and Food Forum	Argyll and Bute	The Flexible Food Fund provides grant payments to individuals to help with food and fuel costs. Other local authorities may have similar schemes.	It should be possible depending on LA approval.	
Home and Local Environment				
Prepayment Meters	BEIS, UK Government	The number of prepayment meters installed and the total amount of energy used by these meters. Prepayment meters are often installed when there have been previous issues with paying for utilities. The energy is more expensive than provided through non-pre-payment meters.	Unlikely	Datazone/lower super output area level



Home analytics Scotland	Energy Savings Trust	Data is provided down to the address level and includes EPC and Home Energy Efficiency Data.	They are already linked to addressing. It could feasibly be linked to SPN if the school has an address.	Address level
Working-age people with no qualifications	NRS	This measure indicates the level of education per datazone.	Possible as taken from Census but only collected every ten years	Part of SIMD
Hospital stays due to alcohol and drug use	NHS Scotland	Severe alcohol and drug use in the household is very likely to impact the children in that household.	Possible though NHS data-sharing, although likely to be strict conditions	Part of SIMD
Emergency stays in hospital	NHS Scotland	This may provide an indicator of ongoing or sudden health issues in families, which could have an impact on family stability and care arrangements	Possible though NHS data-sharing, although likely to be strict conditions	Part of SIMD
Households without central heating	NHS Scotland	Heating a home without central heating may be more costly to families and may indicate	Possible as taken from Census but	Part of SIMD



		insufficient comfort in the home, which relates to children's ability to learn at home.	only collected every ten years	
Overcrowded households	NRS	Provides the proportion of families living in overcrowded households by comparing the actual number of rooms in the home with the number of rooms required by the occupants, based on the relationships between them and their ages.	Possible as taken from Census but only collected every ten years	Part of SIMD
Recorded Crime Data	Police Scotland	Provides the total number of crimes recorded per datazone as part of the SIMD. These crimes are split into categories that could analyse neighbourhood safety, although datazone issues may limit usefulness in rural areas.	It could be possible, although likely to be strict conditions	Part of SIMD
Rural specific				
Distance to services	Scottish Government	The SIMD provides subdomains indicating the drive time and public transport time to various services. This provides an approximation of geographic access.	It could be recreated at the household level	Part of SIMD
School Transport Information	Local Authorities	Each local authority should have a school transport coordinator who has information on bus schedules and other transport for each school in their council area. This could be used to estimate the time it takes to reach school.	It should be possible depending on LA approval.	



Boarding	Local Authorities	The education department in local authorities is responsible for boarding and should have records.	It should be possible depending on LA approval.	
Broadband connectivity	Ofcom	Homes that have broadband connectivity, and the services available (e.g. superfast)	Unknown	Part of SIMD
Cost of fuel	Experian	Data on fuel prices at every forecourt in the UK		Location of petrol station is given.



Overlaying rural issues onto data mapping and understanding data gaps

Existing data could go a long way towards being able to help better understand the situation of pupils. The primary need for this data is to help schools better identify issues associated with poverty and deprivation that pupils may be facing. Secondary use of this data could be for research purposes to allow more analysis of how different factors impact attainment and which are the most important for policy to focus on alleviating.

Table 3 shows how the mapping links to the rural specific issues raised through the workshops. Again, further work will be required to assess the overall quality and robustness of the data before it can be used with confidence.

Table 3: Overlaying rural issues with data mapping

	Data	Notes
Cost of living		
Higher cost of food	Aberdeenshire Council and Argyll and Bute Council have data that could help identify where children are at risk of not having enough to eat. However, it will be challenging to understand whether this is due to the higher cost of living or low income in general.	Analysis of distance to the supermarket could help identify those who rely on local shops entirely. Even then, home delivery may still mean that supermarket food is 'accessible.'
Higher cost of fuel: transport	Data from Experian on fuel prices at forecourts.	It could help provide indicative fuel costs at the nearest forecourt to home or average within a specific ratio.
Higher cost of fuel: energy	Energy Saving Trust 'Home Analytics' service may provide information on fuel poverty risk.	Should be able to provide information on fuel poverty risk.
Lack of homes to rent	Information that local authorities hold on housing lists and homeless applications could provide information on the number of families in	Data is understood to be variable across Scotland and may not be a robust enough indicator of underlying need.



	difficult situations due to low numbers of suitable rental homes.	
Digital Infrastructure	Ofcom data should be able to provide this. Unclear if available publicly/without cost at address level.	
Distance to school/work/services		
Long commute to and from school	School transport information exists within local authorities	Dependent on the extent of the data available, it may be possible to match journey times to pupils.
Long commute for parents constraining their time at home before and after school		It would need to be collected from parents directly – potentially through the parental engagement survey? Possibly seen as too intrusive.
Issues with having to board on the mainland	Local authorities know how many children board.	Additional information is required to understand if boarding creates issues for the child.
Longer distances and poorer public transport impact on access to services	Captured in SIMD, although the issue may be better or worse depending on which part of the datazone the child lives in.	SIMD methodology could be used based on individual postcodes, rather than data zones, to give a more personal measure of distance from services by private and public transport.
Living in sparsely populated areas – feelings of isolation		Would need to be collected – not in Health and Wellbeing Census.



Seasonality of work	HMRC data on real time earnings could help	Accessing this data is not likely to be possible at the moment.
Small schools and teaching mixed ability	Data on school and class sizes do exist	
Stigma – protected characteristic	Pupil census will include some information on protected characteristics	
Stigma – low income		If data on income is available, it may be possible to determine whether people are taking up eligible benefits like free school meals



CONCLUSIONS

This project has thrown up many insights and data sources that may help schools and local authorities better understand the issues that children in their schools are facing.

The next stage of the analysis will involve analysing these datasets to understand their robustness and strength in predicting attainment outcomes, using the modelling infrastructure set up for this project as described in the accompanying report.

Several options are available, depending on the data and who carries out the analysis.

1. Refining the analysis, either by improving the existing data or incorporating new data. The latter necessitates linking data at the individual level, depending on whether permission to do this analysis is granted and whether this is within or between local authorities. This could be based on data shared directly by local authorities or data held by the Scottish Government and Research Data Scotland (or a mixture of both). Individual level is likely to be the most useful data for teachers, although ethical considerations may limit what can be disclosed.
2. Analysis could also be considered at an aggregated level. For example, we could use the weighted average of indicators available at the datazone level and look at correlation with attainment in the corresponding school. This may help schools and local authorities understand which indicators are important in their area and worth tracking over time.
3. Both 1 and 2 rely on correlation, which does not necessarily imply causation. There would be the possibility that we could work with a school or local authority to evaluate an intervention, for example, shortening bus times to school. This would provide a more solid understanding of causal relationships and 'what works in improving attainment in the Northern Alliance.



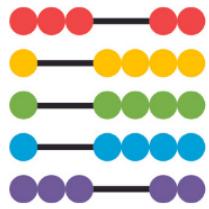
These conclusions relate to analysis of the data. There has been a parallel piece of work ongoing during this scoping study that has looked at a software platform to bring together data and insights for users of the data. Ensuring that users of the data can interpret and replicate analysis independently will need to be a key consideration of the 'final product'.

It is hoped the next stage of the work will commence in 2022.



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CONTACT US:



@dataforchildren



Data for Children Collaborative



Hello@dataforchildren.ed.ac.uk

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