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Depicting Rural Deprivation in a Higher Education Context: A Scottish Case Study

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Abstract

This paper addresses educational inequality of access to higher education for Scottish rural communities. Inequality results from the sole use of a national socio-economic index in order to meet a key milestone for higher education goal. I show (1) how the use of this index can have adverse effects on these communities and (2) how contextual considerations of rural education research could mitigate these effects and enrich policy-making.

Keywords: Rurality, deprivation, higher education, Scotland

Introduction

The purpose of this paper is to explore how the integration of some contextual considerations of rural education research may foster the development of indexes that are applicable to both urban and rural deprivations. By doing so, it challenges the current use of national socio-economic indexes aimed to address inequality in education policy. I show how these contextual considerations could mitigate the adverse effects of the use of these indexes on rural communities and enrich policy-making. My arguments are presented from the examination of a case study, the access to higher education for Scottish rural communities.

In Scotland, access to higher education is competitive, heavily depends on prior attainment and is unequal. Places at university are funded for Scottish domiciled students and therefore limited. Almost 40% of secondary school leavers transit from secondary education to higher education. It is well documented that Scottish students from affluent backgrounds are over-represented in Scottish universities (Croxford & Raffe, 2013; Raffe & Croxford, 2015). Young people from the 20% most deprived areas were six times less likely to go to higher education than those from the 20% least deprived areas in 2006 and four times ten years later (Commission on Widening Access, 2016a; Commissioner for Fair Access, 2019).

A Scottish deprived area is measured from a statistical tool, the Scottish Index of Multiple Deprivation (SIMD, see Appendix A). If an area is 'deprived', this means that people living in that area are experiencing disadvantage across different aspects of their lives (e.g. lower incomes, higher crime, fewer resources or opportunities such as access to services). This measure, well-known to stakeholders, including policy-makers and the press, is often associated with wording such as the 20% poorest areas in Scotland.

In the light of this sustained unequal access to higher education, in 2014, the Scottish government made the bold decision to have students from the 20% most deprived communities representing 20% of all entrants to higher education by 2030 (Scottish Government, 2014). The policy has put pressure on universities to recruit more students from the most deprived

communities. It has raised concerns that interventions in widening access to, and participation in higher education would focus on schools located in those communities, mostly located in urban areas (Lasselle & Johnson, 2021; Universities Scotland, 2016). In this paper, I will document that a school located in an urban area is twelve times as likely to have at least 22% of its pupils living in the 20% most deprived areas as a school located in a rural area (22% being the Scottish national average). However, when some contextual considerations of rural education research are taken into account to mitigate these effects, I will show that twelve drops to 1.5.

Rural is frequently viewed as the dual of urban. Rural areas often are in large territories with sparse population and examined from a deficit lens through which they are perceived as problems (see for instance the short papers challenging the deficit view of remote and rural health by Bourke *et al.* (2010) or on rural education by Roberts and Green (2013)). Rural deprivation is felt by a non-homogeneous population located in small areas and/or on matters not experienced in urban areas, such as access to amenities or higher fuel costs (Burke & Jones, 2019; Clelland, 2021). This paper explores how this deficit view can be surmounted. Specifically, from a case study, it investigates how a national deprivation index could be combined with a rural deprivation index to alleviate the effect of this national index on rural communities.

My approach is Scottish-based but can be replicated elsewhere. First of all, I do not argue the definition of 'rural', I am making use of the Scottish 6-fold urban rural classification accepted by all stakeholders. This classification is based on population size and proximity to large settlements (see Appendix A). It allows me to go beyond the traditional urban-rural dichotomy that often prevails in education research. Secondly, my methodology is simple. It is based on the use of average and publicly available school statistics. Finally, I make the case that it is by combining statistics and some contextual considerations of rural education research that I am able to propose an index that can capture deprivation for both urban and rural areas. In other words, anyone wishing to replicate my methodology should work with an official disaggregated urban-rural classification and select the most suitable corresponding statistics and contextual considerations in their domain.

This paper is organised as follows. Section 2 provides some background information. Section 3 presents data extracted from two datasets publicly available from the Scottish government's website (*School Level Summary Statistics* (<https://www.gov.scot/publications/school-level-summary-statistics/>) and *School Information Dashboard – Secondary* (<https://public.tableau.com/app/profile/sg.eas.learninganalysis/viz/SchoolInformationDashboard-Secondary/Introduction>)). I then introduce my methodology derived from that developed by Lasselle and Johnson (2021). I first indicate how I evaluate the level of rurality within a school. I then define a series of indicators measuring relative deprivation. By combining these indicators, I create a school marker encapsulating rural deprivation in a national deprivation index (my so-called 'school marker' in my case study). This school marker acts as a national index capturing whether a school faces a higher than average level of relative deprivation. In Section 4, I gather my research findings and discuss them. In particular, I elaborate on (1) how my marker could minimise the effect of the sole use of national index of deprivation in the current access to higher education policy and (2) why my approach goes in the right direction towards levelling the playing field between rural schools and nonrural schools as advocated by Lasselle and Johnson (2021). Section 5 concludes.

Background

There is a growing literature challenging the 'deficit' view of rurality (Bourke *et al.*, 2010; Cuervo, 2016; Roberts & Green, 2013). This view considers a binary relationship between rural and urban in which rural is examined from the disadvantage lens and urban is the norm. It fails to highlight the specificities of rural areas and contributes to the stereotype of problematic rural environments, such as the difficulties to recruit teachers or medics, the chronic shortage of

housing, or the lack of opportunities for young people. This dichotomy is particularly detrimental for remote or rural communities in educational policy-making and can be mitigated by disaggregating rural in school data (Thier et al., 2020; Roberts & Thier, 2021). This growing literature also challenges the use of national deprivation national indexes. Deprivation indexes are widely used in policy-making. On the one hand, they help policy-makers to identify the communities that most need support. On the other hand, they help them to measure the impact of policies on crime, education, health or transport. By definition, these indexes always aggregate multidimensional aspects of deprivation, but they are known to be more able to describe the nature of deprivation in urban areas than in rural areas leading some to propose alternative measures of rural deprivation (Skerrat et al., 2014; Fecht et al., 2017; Burke & Jones, 2019; Clelland, 2021). This paper sits within this rural perspective, suggesting that considerations of rural education research, in particular disaggregation, may foster the development of indexes capturing deprivation in both rural and nonrural (urban) areas.

Education is one of the areas devolved to the Scottish government. It is compulsory to all children up to 16. Publicly funded schools (denominated as ‘state schools’) are managed by local authorities and are attended by the vast majority of pupils. A minority of pupils attend independent schools (‘private schools’). They are more likely to reside in affluent areas and to pursue their study at university. In 2014, the Scottish government made the bold ambition to equal access to university from 2030, putting pressure on Scottish HE institutions in terms of recruitment. It gave to these institutions clear recruitment targets of entrants from the 20% most deprived areas in Scotland. These areas are gathered by the first quintile of the SIMD (see Appendix A). In practice, all the education sector has served this ambition. In 2015, the government launched the Scottish Attainment Challenge, ‘*aimed to raise the attainment of children and young people in deprived areas in order to close the equity gap*’ (<https://education.gov.scot/improvement/learning-resources/scottish-attainment-challenge/>). This policy has allocated significant resources to schools according to two indicators of deprivation, i.e. the first SIMD quintile and the free school meals (FSM) registration, a well known proxy for low household income (Mowat, 2018). As highlighted by Lasselle and Johnson (2021), “*some fear that these resources were not reaching pockets of poverty due to the urban bias of the SIMD measure*” (p. 454). For instance, it is well known that some rural areas in Scotland, in particular in the islands, have no zones in the first SIMD quintile (Commissioner for Fair Access, 2019). It led the parliament to recommend investigating how communities can be affected by the use of these two indicators. Following this line of inquiry, Lasselle and Johnson (2021) inferred that pupils from these regions may become overlooked by higher education institutions if the ambitious access to higher education policy is influenced by the sole use of the national deprivation index. They reminded that outreach officers were very likely to work with schools with large proportions of pupils living in the first SIMD quintile. They showed that a school located in an urban area is five times as likely to have over 20% of pupils living in the 20% most deprived areas in Scotland as a school in a remote area (20% being the then Scottish national average). In the spirit of reducing this imbalance, they built a school marker that identifies schools facing higher levels of relative deprivation than the Scottish average.

Fostering access to higher education for Scottish rural communities is needed. Education attainment and progression to higher education in rural Scotland continues to be an issue as the annual release of Rural Scotland: Key Facts by the Scottish government (2021) keeps reminding us. In this publication, three geographical areas are distinguished according to the 6-fold urban rural classification: ‘Remote rural’, ‘Accessible rural’ and ‘Rest of Scotland’. At Higher or equivalent, there is no large discrepancy between the three proportions of population aged 16 to 64 holding that qualification (22% - 26%). A much larger discrepancy occurs at Degree Level or equivalent. Only 26% of the population living in ‘Remote rural’ gained this qualification against 33% and 31% for the other two categories.

This paper follows the line of inquiry of the Scottish parliament (2018) and pursues the exploration started by Lassel and Johnson (2021). In the case of the former and in contrast to the latter, I limit my exploration to two indicators: the first SIMD quintile and the FSM registration. However, I question the sole use of the SIMD because of its effect on rural communities. The simplicity of their convincing approach is attractive and allows me to investigate whether the government policy continues to impair the rural communities in a similar way. To do so, my methodology is similar to theirs. I first intersect a 'location' indicator to the two above measures. I then aggregate a series of indicators derived from these measures allowing me to create a school marker that encapsulates rural deprivation in urban deprivation. However, my location indicator is different from theirs due to new data availability. At the time of their research, their location indicator was related to the size of the population the schools were in and the drive time to a settlement of 10,000 or more (as per the 6-fold urban rural classification). Since 2020, the Scottish government has enlarged the collection of school data available to the public. In particular, for each state school, everyone can access the estimated proportions of its pupils residing in a 'rural' area. This allows me to propose a more accurate location indicator. I show that the sole use of the national deprivation index is still detrimental to schools in rural areas. When this indicator is combined with a series of indicators elaborated from the proportion of pupils living in the first SIMD quintile and/or registered to FSM, the effect on rural schools can be alleviated. The simplicity of my approach allows immediate application while sophisticated indexes are developed.

Data and Research Methods

My work rests on the examination of four statistics of 347 state secondary schools. I extracted these statistics from an Excel spreadsheet publicly available on the Scottish government website (*School Level Summary Statistics*). This spreadsheet contains data from the annual pupil and teacher census conducted in September 2019. In practice, it gathers data for all publicly funded schools, including the 358 state secondary schools. From this data, I picked all secondary schools. I then excluded all junior high schools and a newly created school. At the time of the census, none of their pupils could progress to higher education as these schools had no pupils in the final two years of secondary education.

For each of the 347 schools, I selected the following four statistics: the total number of its pupils, the number of its pupils living in an area belonging to the first SIMD quintile, the percentage of its pupils registered for FSM and the approximate percentage of its pupils residing in a rural area. The latter is evaluated from the number of its pupils staying in either an 'accessible rural area', or a 'remote rural area' as per the 6-fold urban rural classification. I call this percentage 'approximate' as the data only indicates the percentage according to a ten percentage point (pp) band (e.g. 0% - 10%, 10% - 20% etc.)

My methodology is derived from Lassel and Johnson (2021). I constructed a marker identifying schools facing relatively high levels of relative deprivation from well known statistics capturing income inequality and socio-economic and geographical deprivations. I departed from them on three accounts.

Firstly, I only used publicly available data in my work. This led me to drop one statistics, the school's progression rate to HE. By doing so, I was aware that my marker would not have an educational relative deprivation dimension anymore. However, it would have the advantage to focus on the two indicators selected by the Scottish government and the Scottish parliament to measure deprivation in schools and child poverty: the first SIMD quintile and the FSM registration.

Secondly, I did not consider their 'location indicator' determining whether a school is 'Urban', 'Remote, or 'Rural'. Their indicator was based on the size of the population the school is. I

established my own, namely the ‘rurality intensity’ of a school from the proportion of its pupils living in a rural area. This second departure allows me to have all the indicators of my school marker based on pupils’ residence.

Finally, by considering contextual elements of rural education research, my marker allows the examination of rural and nonrural relative deprivation. When the national deprivation index is felt not reflecting the ‘local’ deprivation, it is substituted by another indicator.

Indicators from publicly available statistics

The rurality intensity of a school is based on the statistics indicating the proportion of its pupils living in a rural area. It has four categories. The first category gathers all school whose proportions are within the 50% - 60% band or any above bands. These schools are labelled ‘Rural’ schools. 42 schools (12% of my dataset) meet this requirement. The second category groups all school whose proportions are in either the 30% - 40% band, or the 40% - 50%. Both bands signal a substantial proportion of rural youth. I have 63 ‘SignRural’ schools (18%) in my dataset. The third category puts together all schools whose proportions are in the 20% - 30% band. A school in this category is a ‘MinRural’ school since only a minority of pupils are from a rural area. They represent 10% of my dataset (35 schools). Finally, the 207 remaining schools (60%) are classed as ‘NonRural’ schools.

From the three other statistics¹ I extracted from the Excel spreadsheet, I constructed a series of indicators (see Table 1). All of them typify relatively high levels of deprivation due to statistics percentages above thresholds of pupils registered for FSM or living in the first SIMD quintile. When the threshold is the national average, the indicators are labelled ‘Above – Nat average FSM’ or ‘Above – Nat average SIMD1’. When this threshold refers to the average of the rurality category, they are denoted ‘Above – average Cat FSM’ or ‘Above – average Cat SIMD1’.

This series allows me to characterise each school in two ways. On the one hand, I can quickly compare the school percentage of pupils registered for FSM or residing in the first SIMD quintile to the national average. If the percentage of the school statistics is equal or above the national percentage publicly available in *School Information Dashboard – Secondary*, I say that the school faces a relatively high level of deprivation by comparison to all schools in the dataset. On the other hand, I can contrast the same school statistics with those of its counterparts belonging to its rural category. If the percentage of the school statistics is equal or above the average percentage² of all schools within this category, I say that the school faces a relatively high level of deprivation by comparison to all schools belonging to this category.

This series of indicators also allows me to compare the four rurality categories. For instance, if the proportion of ‘Rural’ schools in the ‘above-average Nat FSM’ indicator is smaller than that of all schools, I can say that the ‘Rural’ schools are under-represented in this indicator.

¹ These statistics are the total number of pupils in the school, the percentage of its pupils registered for FSM and the number of its pupils residing in an area belonging to the first SIMD quintile. For each school, I calculated the proportion of its pupils residing in the 20% most deprived communities by dividing the number of its pupils residing in these areas by the total number of its pupils. When the former was not reported due to a figure less than 5, I considered the highest possible number (4) to estimate the proportion.

² I simply take the average of the percentages of all schools belonging to the rurality category.

Table 1: The Indicators

| Notation of the indicator | Level | Definition |
|---------------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Above – Nat average FSM | National level | The percentage of pupils within the school registered for FSM is equal or above the national average of 15%. |
| Above – Nat average SIMD1 | National level | The percentage of pupils attending the school and living in the first SIMD quintile is equal or above the national average of 22%. |
| Above – Cat average FSM | Four indicators: one for each rurality category | The percentage of pupils within the school registered for FSM is equal or above the category average. ‘NonRural’ category average: 18.8% ‘MinRural’ category average: 12.5% ‘SignRural’ category average: 10.7% ‘Rural’ category average: 9.1% |
| Above – Cat average SIMD1 | Four indicators: one for each rurality category | The percentage of pupils attending the school and living in the first SIMD quintile is equal or above the category average. ‘NonRural’ category average: 30.6% ‘MinRural’ category average: 10% ‘SignRural’ category average: 5.6% ‘Rural’ category average: 3.0% |

Notes: Nat for national, Cat for the considered rural category, SIMD for Scottish Index of Multiple Deprivation, SIMD1 for the first SIMD quintile, FSM for Free school meals.

Construction of a marker capturing rural and nonrural deprivation

The school marker I built has the national deprivation index at its heart. This paper does not refute that the success of the access to higher education policy has to be measured in terms of this index. It implies that all schools meeting the requirement of the ‘Above – Nat average SIMD1’ indicator are flagged by the marker. This paper advocates that the index must be nuanced for schools located in rural areas because of the evidence-based research on rurality. In other words, when the information issued from the national index is notoriously biased towards urban areas, it has to be complemented by the information derived from another indicator.

Key Findings and Discussion

My results are twofold. Firstly, I show that the use of the national deprivation index could be detrimental for rural communities. Secondly, I propose a school marker that may take into account a form of rural deprivation without impacting nonrural communities.

First set of findings issued from the classification of schools

Table 2 below classifies all schools of my dataset according to the rurality intensity and the relative-deprivation indicators.

Table 2. Distribution of Schools per Relative-deprivation Indicator

| Rurality intensity Indicator | 'NonRural' 207 schools | 'MinRural' 35 schools | 'SignRural' 63 schools | 'Rural' 42 schools | Total 347 schools |
|-----------------------------------------|-----------------------------------|----------------------------------|-----------------------------------|-------------------------------|------------------------------|
| Above – Nat average FSM | 128 (62%)* | 12 (34%) | 10 (16%) | 3 (7%) | 153 (44%) |
| Above – Nat average SIMD1 | 123 (59%) | 7 (20%) | 7 (11%) | 2 (5%) | 139 (40%) |
| Above – Cat average FSM | 89 (43%) | 16 (46%) | 31 (49%) | 18 (44%) | 154 (44%)+ |
| Above – Cat average SIMD1 | 92 (44%) | 11 (31%) | 16 (25%) | 3 (7%) | 122 (35%)+ |

Notes: Notes: Nat for national, Cat for the considered rural category, SIMD for Scottish Index of Multiple Deprivation, SIMD1 for the first SIMD quintile, FSM for Free school meals.

(x%) italic indicates an under-representation of the 'category' schools in the relative-deprivation indicator.

*128 schools in the 'NonRural' category, a total of 62% in this category satisfy the 'above-average Nat FSM' indicator.

+ The figures of both cells are different from the figures of the two above cells for a simple reason: my dataset is not identical to the Scottish government dataset. In my case, the FSM registration average is 15.5% and the SIMD1 average is 20.6%. The official figures are respectively 15% and 22% (see School Information Dashboard – Secondary).

Let me first examine the outcomes of the 'Above – Nat average' indicators.

In the case of FSM, there are 153 schools out of our 347 schools whose percentages of pupils registered for FSM are at least equal to the Scottish national average. This represents a percentage of 44% of all schools. This percentage is higher for the 'NonRural' schools (62% of all 'NonRural' schools), i.e. 3 in 5 'NonRural' schools. As the rurality intensity increases, this proportion decreases: 1 in 3 'MinRural' schools, 1 in 6 'SignRural' schools and 1 in 14 'Rural' schools. In other words, a 'NonRural' school is almost nine times as likely to have at least 15% of its pupils registered for FSM as a 'Rural' school.

In the case of the first SIMD quintile, there are 139 schools out of our 347 schools whose percentages of pupils living in the first SIMD quintile are at least equal to the Scottish national average, i.e. 40% of all schools. This percentage is higher for the 'NonRural' schools (59% of all 'NonRural' schools), i.e. 3 in 5 'NonRural' schools. As the rurality intensity increases, this proportion decreases: 1 in 5 'MinRural' schools, 1 in 10 'SignRural' schools and 1 in 20 'Rural' schools. In other words, a 'NonRural' school is almost twelve times as likely to have at least 22% of its pupils living in the first SIMD quintile as a 'Rural' school.³

For both indicators, the under-representation is more and more pronounced as the rurality intensity increases. The pp difference between the 'NonRural' schools and one of the other three categories simply widens (note that all percentages in Table 1 for 'MinRural', 'SignRural' and 'Rural' schools are in italics, highlighting this under-representation). This under-representation of 'SignRural' schools and 'Rural' schools (and to a lesser extent 'MinRural' schools) is not surprising. It was already pointed out by Lasselle and Johnson (2021) with their location indicator.

³ A 'NonRural' school is almost three times as likely to have at least 22% of its pupils living in the first SIMD quintile as a 'MinRural' school and six times as a 'SignRural' school.

Their explanation is applicable in my context. As far as the FSM indicator is concerned, this could be linked to the fear of stigma. Stigma is of course not specific to rural communities, but it could be perhaps greater in these (Scottish Parliament, 2018; Bridge Group, 2019). Regarding SIMD, I suspected that this national index does not capture well rural deprivation. The recent dataset released by the Scottish government confirms this suspicion. Indeed, $\frac{3}{4}$ of the 'Rural' schools (32 schools) have no pupils at all living in the first SIMD quintile.

I now examine the outcomes of the 'Above – Cat average' indicators. They are not entirely similar.

In the case of FSM, there are 154 schools out of our 347 schools whose percentages of pupils registered for FSM are at least equal to 15.5% (see '+' in Table 2), i.e. a percentage of 44% of all schools. As the rurality intensity increases, the average category percentage decreases going from 18.8% for 'NonRural' schools to 9.1% for 'Rural' schools (see Table 1). I provide evidence that the proportion of schools whose FSM registration percentage is at least equal to each category average does not vary much (see Table 2). All are within six pp. Parity across the different rurality categories is almost achieved. Nevertheless, the fear of stigma could be confirmed as the category average percentage is lower as the rurality intensity increases.

In the case of the first SIMD quintile, there are 122 schools out of our 347 schools whose percentages of pupils living in the first SIMD quintile are above 20.6% (see '+' in Table 2), i.e. 35% of all schools. As the rurality intensity increases, we document two facts. Firstly, the average category percentage decreases going from 30.7% for 'NonRural' schools to 3.0% for 'Rural' schools (see Table 1). Secondly, the proportion of schools whose percentage of students residing in the first SIMD quintile is at least equal to each category average decreases (see Table 2): 2 in 5 'NonRural' schools, 1 in 3 'MinRural' schools, 1 in 4 'SignRural' schools and 1 in 20 'Rural' schools. In other words, a 'NonRural' school is almost six times as likely to have over the category average of its pupils living in the first SIMD quintile as a 'Rural' school. Parity across the different rurality categories is not achieved in the case of this series of indicators, although the discrepancy between the categories is far from being as large as the one highlighted at the national level.

The use of the rurality intensity indicator has allowed to record the detrimental effect of the sole use of the national index. This set of findings hints me that I could use the 'cat' indicators (in particular for FSM registration) as an alternative deprivation measure to mitigate this effect.

Second set of findings issued from the use of a school marker

I construct a school marker aimed to flag all schools facing relative deprivation. It is built from a combination of indicators introduced in the previous section. The criteria choice is guided from the above first set of findings.

Due to the policy-making environment of this paper, I do not contest the use of the national deprivation index. The threshold set by the national average of proportion of pupils residing in the first SIMD quintile has to be one of the criteria. However, as documented above, this does not serve well the rural areas. A first alternative criterion can be to consider the category averages of this indicator for each of the remaining categories of schools, i.e. 'MinRural', 'SignRural' and 'Rural' schools. Unfortunately, this is not suitable for more than $\frac{3}{4}$ of 'Rural' schools. These do not have significant proportions of pupils residing in the 20% most deprived areas due to either no areas belonging to the first SIMD quintile in their catchment area, or the size of the school. A second alternative criterion can then be to consider the proportion of pupils registered for FSM.

In summary, the marker (denoted by 'Basket' thereafter) gathers any schools meeting at least one of the following criteria:

- All schools meeting the 'Above – Nat average SIMD1' indicator or

- All schools meeting the ‘rural deprivation’ requirement:
 - All ‘MinRural’, ‘SignRural’ and ‘Rural’ school meeting the requirement of the ‘Above – Cat average SIMD1’ indicator;
 - All ‘Rural’ school or ‘SignRural’ school with less than 5 pupils living in the first SIMD quintile which:
 - do not meet the requirements of the ‘Above – Nat average SIMD1’ and the ‘Above – Cat average SIMD1’ indicators and
 - meet the requirement of the ‘Above – Cat average FSM’ indicator.

The first criterion is particularly key for the ‘NonRural’ schools. As far as the SIMD is concerned, the category average is even higher than the national average. The second criterion targets schools whose proportions of pupils living in rural areas start to be noticeable and do not meet the requirement of the ‘Above – Nat average SIMD1’ indicator. This is the signal that the national deprivation does not serve well rural communities in the context of my case study. This leads me to suggest a rural deprivation index resting on two alternatives. The first alternative distinguishes all non ‘NonRural’ schools whose proportion of pupils residing in areas belonging to the first SIMD quintile is above the average of their rurality category. The second alternative is applicable to all ‘SignRural’ and ‘Rural’ schools with a catchment area of at most four pupils living in the 20% most deprived areas. These schools need to meet the requirement of the ‘Above – Cat average FSM’ indicator. In other words, I am taking into account contextualised information from rural education research to propose a more appropriate deprivation measure: either the cat average, or the FSM registration. This is based on my evidence (see the first set of findings above). I do not reject SIMD, I simply supplement it by contextualised information with reference to rurality intensity. When SIMD becomes less meaningful due to the catchment area, I integrate information issued from FSM.

Table 3 below gathers the distribution of schools of my dataset according to the rurality intensity and two markers. The first marker, my ‘Above-average Nat SIMD1’ indicator, is my benchmark. This benchmark is issued from the current policy based around the use of the national deprivation index and the emphasis on the first SIMD quintile. The second marker is the one I have just created according to the requirements described above. It includes all schools already identified by the first marker to which are added all schools flagged by the rural deprivation requirements.

Table 3: Distribution of Schools per School Marker

| Rurality intensity Indicator | ‘NonRural’ 207 schools | ‘MinRural’ 35 schools | ‘SignRural’ 63 schools | ‘Rural’ 42 schools | Total 347 schools |
|-----------------------------------------|-----------------------------------|----------------------------------|-----------------------------------|-------------------------------|------------------------------|
| Above – Nat average SIMD1 | 123 (59%) | 7 (20%) | 7 (11%) | 2 (5%) | 139 (40%) |
| Basket | 123 (59%) | 11 (31%) | 31 (49%) | 17 (40%) | 182 (52%) |

There are 182 schools out of our 347 schools meeting the requirement of the ‘Basket’ (including 59 schools⁴ whose proportion of pupils residing in a rural area is at least 20%). This represents 52% of all schools. The Basket flags 3 in 5 ‘NonRural’ schools (59% of all ‘NonRural’ schools). These are identical to those flagged by the ‘Above – Nat average SIMD1’ indicator. As the rurality intensity increases, the Basket always flags more schools than the benchmark: 1 in 3 ‘MinRural’ schools

⁴ 42% of schools within this category merging ‘MinRural’, ‘SignRural’ and ‘Rural’ schools. The 16 schools flagged in the benchmark case only represent 11% of schools.

(instead of 1 in 5), 1 in 2 ‘SignRural’ schools (instead of 1 in 10) and 2 in 5 ‘Rural’ schools (instead of 1 in 20).

‘NonRural’ schools are still over-represented in this Basket, but the pp range is much smaller (from 56pp between ‘NonRural’ schools and ‘Rural’ schools in the benchmark case to 19 in the Basket case). Specifically, a ‘NonRural’ school is less than 1.5 times as likely to meet the requirement of this Basket as a ‘Rural’ school (instead of 12).⁵

Discussion

My first set of findings shows that the sole use of the national deprivation index could be detrimental for state secondary schools located in rural communities. This detrimental effect could be mitigated by the use of another index aggregating multiple dimensions of relative deprivation and intersecting it with a ‘rurality’ indicator. This is in line with the findings of Lasselle and Johnson (2021). The main differences rest on the data availability and this location indicator. In this paper, I am not able to level the playing field between rural and urban schools in a HE context. I simply reduce the imbalance in favour of ‘NonRural’ schools (from 12 times as likely to 1.5) and therefore pupils in these schools. Recall that the ‘Basket’ has no detrimental effect on ‘NonRural’ schools. All ‘NonRural’ schools flag by the benchmark marker are also flagged by the Basket. However, this paper allows to have a better understanding of deprivation in all schools by focusing on the two policy-makers’ preferred indicators (first set of findings) leading me to propose a new marker (second set of findings).

This second set of findings shows the value of considering outcomes of rural education research when deprivation is examined. On the one hand, there is a growing literature challenging the use of national indexes for rural areas (and the deficit view of rurality). On the other hand, the level of rurality in an area may be of significance in the domain considered. My case study highlights why and how the sole use of the national deprivation index is detrimental for rural communities. It also shows the importance of the number of categories describing rurality. In the case of the rural urban dual examination, it is well known that the average of a statistics will be between the rural average and the urban average and leading towards the urban dimension. In my case, I show that my statistics average values decrease as the rurality intensity increases. So having four categories describing the level of rurality allows me to have a better picture of rural deprivation. It has also helped me in the criteria choice of the school marker. This result is not new in the growing literature. As highlighted by Fecht et al. (2017), Roberts and Green (2013) or Roberts and Fuqua (2021) among others, using information from rural education research can lead to new insights. In a sense, I am in line with those developed by Thier et al. (2020) and Roberts et al. (2021) in which the disaggregation of data categories highlights the misleading insights from the rural urban dual examination.

The case study shows the possible impact in terms of policy-making by using publicly available data. From the first set of results, I can show the detrimental effect of the sole use of the national indicator on either the access to HE policy, or the Attainment Challenge. For the former, outreach officers could interact with a limited number of schools, mostly located in urban areas. For the latter, resources could be directed to the same set of schools. The effect on rural communities could be long lasting and hidden by the success of these educational policies at the national level (the urban areas would drive their impact). From the second set of results, I can propose a remedy to this effect. By enlarging the criteria, the matter could be softened while a more sophisticated approach is agreed. This suggestion is applicable to other policy domains. One simply needs to replace the FSM registration by the suitable statistics. The message from this

⁵ A ‘NonRural’ school is almost twice times as likely to have over 20% of its pupils living in the first SIMD quintile as a ‘MinRural’ school (instead of thrice) and 1.2 times as a ‘SignRural’ school (instead of six).

paper is simple: publicly available data can be used to nuance the notion of deprivation for rural communities.

Finally, my approach to challenge the national deprivation index is more about finding a compromise than opposing it. A government makes a bold decision in policy-making and uses its own national indicator to measure its success (Clelland, 2021). Unfortunately, at the local level, there could be unintended consequences for some. In my case study, the indicator is not about reducing the nature of the deprivation of the area, it is about making sure that every child has the same opportunity to continue their education. For those cases, Clelland suggested to look for alternatives at local level. In addition, the FSM registration statistics is not without its own criticism (see Gorard, 2012; Commission on Widening Access, 2016b; Ille et al., 2017; Lasselle & Johnson, 2021). However, in terms of publicly available data, this is the only one accessible. My compromise is to intersect the location indicator, named 'rurality intensity' with the two approved measures of child deprivation. I did not examine the indicators alongside one another, I aggregated them. My objective was not to propose a new definition of rural. As Lasselle and Johnson (2021, p. 445), I simply '*propose a way to move forward before a more sophisticated approach is developed (Commissioner for Fair Access, 2019; Scottish Parliament, 2018)*'.

Concluding Comments

This paper explored how some contextual considerations of rural research may foster the development of indexes applicable to both urban and rural deprivations. I suggested a simple methodology that could integrate rural deprivation alongside urban deprivation encapsulating deprivation in the context of access to higher education for Scottish rural communities. This methodology rested on the use of publicly available data and an elementary statistics tool, namely the average. The proposed marker could be agreeable to many because of this simplicity. It could also be extended in other contexts or policy-making. On the one hand, my straightforward approach provides a good starting point when considering rurality in index of multiple deprivation. One simply needs to disaggregate 'rural' along a spectrum of the most suitable statistics and intersect the resulting disaggregated data with relevant statistics. On the other hand, it contributes to the path initiated by many, including Thier et al. (2020) and Roberts and Fuqua (2021) highlighting the importance of the geographic locale in education research. The simplistic urban/rural dichotomy impairs policy and is detrimental for rural communities. Considering multiple layers of rurality can mitigate the effects of this dichotomy for these communities.

Nevertheless, this paper has at least two shortcomings.

Firstly, as noted already by Lasselle and Johnson (2021), using the average as a threshold can be limited. On the one hand, a school whose proportion of pupils living in the first SIMD quintile is 25% and a school whose proportion is 85% are treated the same way. On the other hand, this may be an issue for the 'cat' indicators. The number of 'MinRural', 'SignRural' and 'Rural' schools is relatively small. Any change in category bands may have a large effect in terms of percentage due to this small number. My response to this shortcoming follows the response given by Lasselle and Johnson (2021): the simplicity of the approach outweighs it.

Secondly and more importantly, *School Level Summary Statistics* give the information on pupils' residence according to three categories: 'Urban', 'Rural' and 'Small towns'. The 'Rural' category may be misleading in my context. Recall it gathers the 'remote rural areas' and the 'accessible rural areas'. The 'Small towns' category has two sub-categories: 'accessible small towns' and 'remote small towns'. Although the town size range is the same in both sub-categories, remoteness is a dimension that should be considered in the context of access to HE. The catchment area of a secondary school located in a remote small town is different from that of a secondary school located in an accessible small town. Pupils' travel journey between home and

secondary school may be longer for pupils residing in 'remote small towns'. Transition from secondary education to university is known to be different. Indeed, according to recent government statistics, only 34.5% of students from remote small towns enter to HE. They are 41.5% when they are from accessible small towns. My response to this shortcoming is straightforward: the proportions of pupils in both sub-categories for each school are not currently publicly available.

I am in the process of expanding this exploration in two directions. On the one hand, I continue to work on a more extended marker that aims to take into account the educational deprivation dimension and to have more information from the national deprivation indicator. Information on school attainment may be possible from the *School Information Dashboard – Secondary*. By doing so, I would follow the line of inquiry of Roberts and Fuqua (2021). I could complement it by additional information issued from the second quintile of SIMD. This information can be extracted from *School Level Summary Statistics*. I could then mimic another element of Lasselle and Johnson (2021). They showed that by adding this information the effect of the use of the national deprivation index is less detrimental on rural communities. On the other hand, accessing the full 6-fold urban rural classification for each school could refine the rurality intensity suggested in this paper. These two directions would allow me to have a more accurate picture of deprivation in rural communities.

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Appendix 1: Clarification of Some Terms

Scottish index of multiple deprivation (SIMD) (more information at <https://simd.scot/#/simd2020/BTTTT/9/-4.0000/55.9000/>)

In Scotland, deprivation is measured by the Scottish index of multiple deprivation. Scotland is divided in datazones. Each zone gathers between 700 and 800 people and measures the level of deprivation according to different factors, including employment, health, education, geographical access to basic public services or crime. All zones are aggregated by quintile from the 20% most deprived zones (the so-called first SIMD quintile) to the 20% least deprived zones (the fifth SIMD quintile).

Scottish Government 6-fold Urban Rural Classification (more information at <https://www.gov.scot/publications/scottish-government-urban-rural-classification-2016/pages/2/>)

The definition of rural and remote areas in this paper follows the 6-fold Urban Rural Classification.

- 1 - Large Urban Areas: Settlements of 125,000 or more people.
- 2 - Other Urban Areas: Settlements of 10,000 to 124,999 people.
- 3 - Accessible Small Towns: Settlements of 3,000 to 9,999 people and within a 30 minute drive time of a settlement of 10,000 or more.
- 4 - Remote Small Towns: Settlements of 3,000 to 9,999 people and with a drive time of over 30 minutes to a settlement of 10,000 or more.
- 5 - Accessible Rural: Areas with a population of less than 3,000 people, and within a 30 minute drive time of a settlement of 10,000 or more.
- 6 - Remote Rural: Areas with a population of less than 3,000 people, and with a drive time of over 30 minutes to a settlement of 10,000 or more.