





Mapping Rural Socio-Economic Performance (SEP)

Report for Rural Communities Team, Food, Drink and Rural Communities Division, The Scottish Government

May 2015

Andrew Copus and Jonathan Hopkins

Social, Economic and Geographical Sciences Group The James Hutton Institute, Craigiebuckler, Aberdeen

Contact: and rew.copus@hutton.ac.uk

Funding: J101915 – PAWSA Support Delivery of LEADER

This work was funded by the Scottish Government. However, the views expressed in this report are those of the researchers and do not necessarily represent those of the Scottish Government or Scottish Ministers.

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EXECUTIVE SUMMARY

Background and context

There is both an immediate policy context, and a broader background for this report. Its commissioning was prompted by the need for an evidence base, in terms of rural socio-economic performance, to support decisions about how to target support to small businesses in different parts of rural Scotland, through the 2014-20 LEADER programme. From a broader perspective the indicators, maps and analysis provide a series of snapshots of different aspects of rural and small-town Scotland at the beginning of the second decade of the twenty-first century. They show that rural areas and small towns display complex patterns of performance, rather different from the stereotypical view of lagging uniformity. There are many kinds of rural area in Scotland, each with a different mix of local assets and consequently different socio-economic performance profiles. This does not mean, however, that it is impossible to generalise. The most important dimension of differentiation is between rural areas and small towns which are accessible to major urban areas, and those which are more remote.

Key Findings:

- The strategic objectives of the National Performance Framework are the starting point for a socio-economic performance (SEP) index of rural and small town data zones. The index combines 20 indicators, mostly dated 2011, in a relatively simple and transparent way. Thematic indices for the first four strategic objectives (wealthier/fairer, healthier, safer/stronger, and smarter) are also estimated and mapped at the data zone level.
- All four thematic indices are positively related to each other to some extent; they do not cancel each other out. However the pattern of inter-relationships is interesting. The wealthier/fairer and smarter thematic indices are relatively strongly correlated i.e. data zones with a more highly educated population tend to be wealthier and to have lower levels of inequality. Data zones with healthier populations tend to perform better on the safer/stronger objective, suggesting a nexus of well-being. However neither aspect of well-being is closely related to the wealthier/fairer index; i.e. well-being is to some extent independent of economic performance.
- Using the 6-fold urban-rural classification of data zones as a "filter" reveals two kinds of geographic pattern among the four thematic indices. The wealthier/fairer index shows higher performance in small towns than in rural areas, and higher performance in accessible data zones (whether small town or rural) compared with remote ones. For the remaining three strategic objectives (healthier, safer/stronger and smarter), the rural/small town difference is reversed

(i.e. rural data zones tend to outperform those of small towns), though accessible data zones of both types still perform better than remote ones. One way to characterise this pattern is that in hard economic terms small towns out-perform rural areas, but in softer aspects of health, human and social capital, rural areas seem to have the edge. Underlying both these contrasts is the pervasive advantage of accessibility. As the unweighted average of the four strategic objective indices, the overall SEP Index exhibits a hybrid pattern. The strongest performing group of data-zones are the accessible rural ones. At the other extreme, the poorest performance is associated with remote small towns. The accessible small towns and the remote rural data zones occupy intermediate positions.

- The maps of the four strategic objective indices all (though to differing degrees) reveal bands of higher performing data zones surrounding the Central Belt, Aberdeen and Inverness. Poor performing data zones are generally found in the Northern and Western Isles and in the NW Highlands, but also (conspicuously) in Dumfries and Galloway. Pockets of poor performance are found in the former coalfield and heavy industrial areas of the Central Belt, Lanarkshire, Ayrshire and Fife. The overall SEP Index map thus captures two dimensions of spatial variation in performance; accessibility-remoteness and structural legacy effects.
- Aggregation of the performance scores to the 21 LEADER Programme Local Action Group (LAG) areas has been carried out by calculating (population) weighted averages. The best performing LAG areas were found to be Aberdeenshire South, Greater Renfrewshire and Inverclyde, Forth Valley and Lomond, Rural Perth and Kinross and Aberdeenshire North. At the other end of the distribution were Ayrshire, Dumfries and Galloway, Outer Hebrides, West Lothian and Argyll and the Islands. All these low performing LAGS have more than 65% of their population living in data zones which scored 5 or less on the overall SEP Index.

Conclusions

In terms of the immediate policy requirement, for a basis for allocating LEADER funds according to current performance, the SEP Index represents a simple, transparent, but nevertheless robust, evidence-grounded means of comparing the 21 Leader LAG areas. Expressed in the form of the percentage of population living in data zones with lower scores the index may readily be incorporated into a funding distribution formula.

The analysis also suggests conclusions about the geography of rural performance, involving a combination of legacy effects and new trends, which are significant in themselves. The former relate both to peripheral, insular and sparsely populated areas, and to mining/industrial areas still facing a need to restructure their economies. At the other extreme is the strong positive performance of

accessible rural areas, many of which are out-performing the larger urban areas of Scotland. It is not clear whether this is due to "spread" effects due to congestion in nearby urban areas, or to the intrinsic attractiveness of accessible rural areas in terms of well-being and access to countryside public goods. It is important to distinguish these processes since they point to different policy responses.

Introduction

This report presents the findings of a Scottish Government funded exercise by staff of the Social Economic and Geographical Sciences Group (SEGS) of the James Hutton Institute to develop a multivariate index of socio-economic performance (SEP), at a micro-geographical level, for rural and small town Scotland, centred on the year 2011. This builds upon previous work (Thomson et al 2014) funded by Rural and Environment Science Analytical Services (RESAS) programme¹.

The SEP Index is designed to maximise sensitivity to variation in socio-economic characteristics across rural and small town areas of Scotland (i.e. categories 3-6 in the Scottish Government urban/rural classification), and in order to achieve this it excludes Scotland's urban areas (categories 1 and 2).

It is anticipated that such an index will provide an improved understanding of the main dimensions of contemporary geographical variation in socio-economic characteristics, which in many (often subtle) ways are moving beyond twentieth century rural/regional development stereotypes. Refreshing the evidence base in this way will bring useful insights and tools for those responsible for the design and implementation of rural development interventions under the 2014-20 EU funding period, and the new LEADER programme in particular.

The early sections of the report briefly review conceptual and methodological considerations, describe similar mapping exercises carried out in Scotland and further afield, and ground the current analysis in the Scottish Governments National Performance Framework (NPF). A description of the database constructed to support the SEP index is followed by a presentation of each of the 20 indicators, including a map, a graph showing variation across the four rural and small town categories, and a brief commentary. This lays the foundation for a presentation of the SEP index, and four components which link to the first four strategic objectives of the NPF. The penultimate section presents the aggregation of SEP Index scores to the 21 Local Action Group (LAG) areas of the 2014-20 LEADER programme. The report concludes with some reflections on the broad implications of the patterns of performance revealed by the SEP Index, and some suggestions for future research.

¹ Theme 8.1 - Vibrant Rural Communities: The relationship between economic performance and social outcomes in rural communities.

Key conceptual and methodological issues

The key conceptual/methodological questions which played an important role in framing the analysis described in this report are:

- (i) How should socio-economic performance be defined?
- (ii) Can the performance indicator be designed in such a way that maximises transparency and accessibility to a range of users?

The Scottish National Performance Framework: The starting point for the SEP methodology

Socio-economic performance is a difficult concept to tie down. There will always be a range of perspectives on this from the different "stakeholders" of rural policy. Clearly the authors cannot claim that the SEP index presented in this report is the last word on the geography of socio-economic performance in rural Scotland. However subjectivity can perhaps be minimised by starting from a widely accepted goal framework which already forms a paradigm for policy. A number of such starting points exist, such as (in the EU context) the 11 Strategic Objectives of the European Structural and Investment Funds (ESIF) Common Strategic Framework (CSF)², or the six objectives of the EU Rural Development Programme (CAP Pillar 2)³. However, building on previous work (Thomson et al 2014), and reflecting the specificities of the Scottish policy context, the Scottish Government's National Performance Framework (NPF) seems the best option here. The NPF provides a quasi-objective definition of rural socio-economic performance which can help us decide how broad or narrow the concept of performance should be, what it includes, how it is structured, and ultimately which proxy variables are appropriate.

The Scottish Government's National Performance Framework (NPF), introduced in 2007 and extended in 2011, provides strategic steer and a basis for assessing the impact of the full range of policies within its devolved powers. The starting point is the *core purpose* "to create a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth..." Nested beneath this are five *strategic objectives* sixteen *national outcomes*, and fifty *national indicators*, all monitored and reported via the "Scotland Performs" website.

The NPF is, as its name implies, implemented at the national level. In the context of the current research the aim is to consider geographical variations in performance, especially in the rural and small town areas of the country, and to create an overall "Socio-Economic Performance" (SEP) index.

² <u>http://ec.europa.eu/regional_policy/what/future/index_en.cfm</u>

³ <u>http://enrd.ec.europa.eu/enrd-static/policy-in-action/cap-towards-2020/rdp-programming-2014-2020/rural-</u> <u>development-priorities/en/knowledge-transfer_en.html</u>

Unfortunately this is not simply a question of manipulating regional or small area data for the fifty national indicators. Data availability is inevitably a key driver in the development of the SEP index, and the majority of the indicators are indirect proxies, relating to the strategic objectives, which structure the SEP index. The five strategic objectives are

- Wealthier and Fairer: Enabling businesses and people to increase their wealth and more people to share fairly in that wealth.
- **Healthier**: Helping people to sustain and improve their health, especially in disadvantaged communities, ensuring better, local and faster access to health carey
- **Safer and Stronger**: Helping communities to flourish, becoming stronger, safer places to live, offering improved opportunities and a better quality of life.
- **Smarter**: Expanding opportunities to succeed from nurture through to lifelong learning ensuring higher and more widely shared achievements.
- **Greener**: Improving Scotland's natural and built environment and the sustainable use and enjoyment of it.

The SEP incorporates the first four strategic objectives only, the fifth is environmental, and would take us beyond the socio-economic sphere. The decision to work with the first four strategic objectives only was influenced by several considerations, including: (a) The fact that these four are all quite easily reconciled to the overall concept of socio-economic performance, whilst it is less straightforward to incorporate the "Greener" objective into the same scheme. (b) The difficulty of obtaining data on environmental indicators at data zone level, which forms the building block for the index. (c) The immediate policy context for the development of the index relates to business support and economic development in rural areas, and whilst environmental sustainability has substantial indirect impacts in this arena, the primary interest is upon socio-economic aspects.

Methodological Issues

If we reject the use of a single indicator, as in the role of GDP per capita for designating regions eligible for ESIF funding, the next challenge is how to synthesise a range of indicators, many of them proxy variables, into a meaningful and representative "index". There is a range of more or less sophisticated ways to do this. Different approaches have originated, and been developed, in several contexts over the last two or three decades. The first of these is spatial epidemiology, where the research question concerns the link between spatial clusters of deprived people and morbidity or mortality rates. The second is a more direct interest in patterns of deprivation in the context of urban or regional policy. The third originated in an international development context, triggered by dissatisfaction with simple indicators such as GDP per capita.

One of the simplest and most transparent approaches to combining individual indicators into a single index may be described as "multi-criteria analysis". This involves setting critical thresholds for each indicator and either counting the number of indicators which exceed these, or replacing raw data values with simple scores (e.g. 1-5) which are then added together. The HIE Fragility Index (see below) is of this type.

Another group of relatively straightforward approaches involves transforming the raw data in some way, so that they are in comparable units which may be added together or averaged. The seminal work of Townsend and Morris (1988) and Carstairs et al (1991) fall into this group. A more recent example is the index developed to support micro-regional targeting under the 2007 Hungarian National Spatial Development Concept (Tagai et al 2014).

Essentially the challenge is one of combining apples and pears, different raw variables with different distributions which mean that they cannot simply be added together. The range and variety of solutions is very substantial. Usually, part of the solution is either to standardise the variables (e.g. express them as Z scores, or use a "max-min" method (OECD 2014)), or convert them to ranks, or to scores derived from percentiles (e.g 1-10 scores based on deciles). Although this puts the indicators on a common scale it may transform them from ratio to ordinal data, and in addition it does not address the issue of the appropriate weight each transformed indicator should have within the composite index. Sometimes this is resolved by a subjective decision, relating to the (policy) context for the analysis.

The most common approach in academic studies is to use principal components analysis (PCA) to merge variables into one or more summary "components", based upon the pattern of correlations in the raw data (Messer et al 2006, Rey et al 2009, Harvard et al 2008, Atkinson et al 2014). This approach is popular because it is considered more objective, because the components are defined by patterns within the data. In fact the objectivity may be somewhat weakened by the operator's choice of input variables, and many small decisions over options in the analysis. Furthermore the outcome may not be so easy to explain in layman's terms, and this makes the approach less attractive in a pragmatic policy context.

Haase and Pratschke (2012) have used a variant of Factor Analysis (Confirmatory Factor Analysis) which allows the factors to be developed around theoretical principles, rather than being driven by patterns in the data. This has been used to develop a small area deprivation index for Ireland.

In another recent innovation, (Murias et al 2006), Data Envelopement Analysis (DEA) has been used to create synthetic indices of "economic wellbeing" for the Spanish Provincias. The advantage of DEA lies in providing an objective way to select weights for the individual variables. In fact it assigns a different set of weights to each region or area.

Some examples of synthetic indices of socio-economic performance, fragility, and disadvantage

In the Scottish context there have been a number of attempts to identify low performing or deprived areas using multivariate indices, beginning with Carstairs in the early 1990. Probably the most influential in recent years are the Scottish Index of Multiple Deprivation (SIMD), and HIE's Fragile Areas map. Highland Council has also experimented with rural fragility maps. Similar exercises are, as might be anticipated, not uncommon in other European countries, and this section will conclude with a brief review of some examples.

The SIMD

Pioneering work on indicators of multiple deprivation was carried out by a team led by Prof Michael Noble (Oxford) at the end of the 1990s. By the beginning of the current decade Indices of Multiple Deprivation (IMD) had been produced for all four countries of the UK. Since then they have been adopted by the UK Department for Communities and Local Government and the devolved administrations, and regularly updated.

The IMDs are generated for very small areas; in Scotland the 6,505 data zones, which have populations of 500-1,000 persons. They utilize a range of raw data, mainly from the population census, and from government administrative databases. The overall index is built up from a series of 'domains'. In England, for example the domains are: income, employment, health and disability, education skills and training, housing and services, living environment, and crime. In Scotland the list is similar, although 'living environment' is omitted and a set of indicators relating to geographical accessibility to services is added. In all the variants domains are combined, to form a single weighted average index of disadvantage for each small area. For larger areas (such as Local Government areas) the results are often presented in terms of counts/proportions of small areas falling within the most deprived quintile. The IMDs are quite widely used to support bids for spatially targeted policy expenditure.

One of the most striking features of the IMD maps is the concentration of deprivation in urban areas, and the scattered/diffuse nature of deprivation in rural areas. Table 1 shows the distribution of deprivation across the 6,505 Scottish 'data zones' classified into six urban and rural categories. In the four major cities (Glasgow, Edinburgh, Dundee and Aberdeen) almost one third of the data zones are in the most deprived quintile in terms of their overall SIMD score. In other (smaller) urban areas the share of most deprived data zones is equal to the Scottish average. In small towns the

proportion of data zones in the most deprived quintile falls below 15%, and in rural areas it averages less than 4%.

	Data zones in most	Total Number of data	% of data zones in	
	deprived quintile	zones.	most deprived quintile	
Large Urban Areas	744	2,456	30.29	
Other Urban Areas	407	2,035	20.00	
Accessible Small	82	583	14.07	
Towns				
Remote Small Towns	28	255	10.98	
Accessible Rural	25	739	3.38	
Remote Rural	15	437	3.43	
Scotland	1,301 6,505 20.00		20.00	

 Table 1: Scottish Index of Multiple Deprivation: Most deprived quintile of data zones by Scottish urban–rural classification

However, there have been frequent suggestions that the choice of variables, and of weights, causes an urban bias. Supplementary analysis, (Scottish Government 2011) carried out by Scottish Government Statisticians, including only the employment, income and access domains, and excluding urban data zones, has illustrated patterns of deprivation in rural Scotland more clearly.

The HIE and Highland Council Fragile Areas

The HIE Fragile areas mapping exercise is not directly comparable with the SIMD. For example, the objective is different; economic fragility is a different phenomenon from multiple deprivation, although of course there is probably a relationship between the two. The HIE's methodology uses a multi-critera approach to combine four indicators (the SIMD uses 38). The four indicators in the 2011/12 version were; population change, drive time to a mid-sized service centre, median income per household resident, and unemployment rate. Each of these was converted to a score of 1-5, using subjectively determined thresholds, and the four scores added together. Data zones scoring 7 or more were designated as fragile. Further adjustments to the map of fragile areas were subsequently carried out, both on the basis of supplementary indicators, and by introducing areas smaller than data zones.

The Highland Council fragile areas is similar, but with an extended list of variables, including population density, age structure, benefit recipients, and different measures of accessibility. The methodology is slightly different too, replacing subjective thresholds with scores based on the deciles in the distribution of each variable.

LEADER eligibility in England

Recent work by the Rural Statistics Team in the Defra Rural Communities Policy Unit (Hall no date) has sought to establish firm criteria for LEADER funding eligibility in England. This has involved updating the rural-urban classification of output areas and (in an ongoing project by Sheffield University) local authority areas. An innovative element of the work has been to identify "hub towns", which are closely tied by economic linkages to the surrounding rural areas. The exercise is based not only on the presence of key services in the towns, but characteristics of the surrounding hinterland, more specifically the "distance decay" in the density of residential and business populations. This work is slightly different in focus to that of this report in that it is intended to provide an objective basis upon which to determine LEADER eligibility, in a black and white, "in or out" sense, rather than the relative need of different rural areas.

Some examples from further afield

The following examples are not intended to constitute a comprehensive review of what is a vast literature, rather they will hopefully convey a flavour of the kind of work which has recently been carried out around the world, and which may offer ideas for further development of the Scottish SEP.

	Topics	Indicators			
al 1s	Income	Household disposable income per capita (in real USD PPP)			
Materi nditio	Jobs	Employment rate (%) Unemployment rate (%)			
- 8	Housing	Number of rooms per person (ratio)			
	Health	Life expectancy at birth (years) Age adjusted mortality rate (per 1 000 people)			
fe	Education	Share of labour force with at least secondary education (%)			
ty of li	Environment	Level of air pollution, PM2.5 (µg/m ³) experienced on average by the regional population			
iler	Safety	Homicide rate (per 100 000 people)			
ð	Civic engagement	Voter turnout (%)			
	Accessibility of services	Share of households with broadband access (%)			

Table 2: The OECD Well-being Index, Topics and Indicators

Source: OECD 2014 Table 2

In an international context one of the best known indices is the UNDP's Human Development Index (HDI)⁴. This is a relatively simple composite of education, life expectancy and income indicators, designed to facilitate comparisons across a broad range of developed and less developed countries.

⁴ See <u>http://hdr.undp.org/en/content/human-development-index-hdi</u> [accessed 4th December 2014]

The HDI has recently been adapted for the EU context at regional (NUTS 2) level (Bubbico and Dijkstra 2011). More recently the OECD has explored the issue of regional and local well-being on the basis of a range of indicators, covering material conditions and quality of life through nine different topics (Table 2), which are combined by calculating a simple average after normalisation of the raw variables using a "max-min" method.





Interest in more sophisticated synthetic indices of deprivation at a micro-regional scale is evident in France (Harvard et al 2008, Rey et al 2009), Spain (Murias et al 2006), the USA (Messer et al 2006), Ireland (Haase and Pratschke 2012) and New Zealand (Atkinson et al 2014). The first three of these studies are mainly academic, whilst the last two come from a practical policy context, and are used in various forms of policy targeting. Both the Irish and New Zealand approaches use forms of PCA or Factor Analysis, and may offer models for further experimentation with the SEP database developed for this report. Interestingly, Haase and Pratschke pay particular attention to capturing rural deprivation. The Irish "POBAL" index is based upon a database of Census data structured around three "dimensions"; Demographic Profile, Social Class Composition and Labour Market Situation (Figure 1). The New Zealand analysis is based upon eight dimensions, and nine indicators (Table 3).

Dimension of deprivation	Description of variable (in order of decreasing weight in the index)
Communication	People aged <65 with no access to the Internet at home
Income	People aged 18-64 receiving a means tested benefit
	People living in equivalised households with income below an income
	threshold
Employment	People aged 18-64 unemployed
Qualifications	People aged 18-64 without any qualifications
Owned home	People not living in own home
Support	People aged <65 living in a single parent family
Living space	People living in equivalised households below a bedroom occupancy
	threshold
Transport	People with no access to a car

Table 3: The New Zealand Index of Deprivation (NZDep2013): Dimensions and variables

Source: Atkinson 2014 p8

Another example of a synthetic index of overall socio-economic performance from a policy context is that developed by the Hungarian government in 2007 as a basis for targeting of micro-regional development assistance. The index is composed of more than 30 indicators, and is structured around five domains;

- 1. economic development (public and private economy, business environment 8 indicators),
- 2. infrastructure (communal infrastructure, ICT, accessibility 9 indicators),
- 3. demography and housing (income, dwellings, mortality, migration, urban/rural position 6 indicators),
- 4. social environment (ageing, educational attainment, social support 5 indicators),
- 5. employment ([long-term] unemployment, activity 3 indicators).

Each of the indicators was expressed as a rank, and average ranks for each of the five domains for each of 3,154 "Települések" micro-regions. The overall synthetic index for each of these micro regions was then calculated as the unweighted average of the five domain ranks. The index was used directly to allocate budget allocations for each micro region under the auspices of the National Spatial Development Concept.

The SEP Indicator Database

Data sources

The full list of 20 indicators which contribute to the SEP Index are listed in Table 4. More detailed information regarding exact definitions, sources etc. is provided immediately after each of the maps below.

The indicators are not necessarily those specified by the National Performance Framework. Rather they reflect the range of appropriate indicators currently available at the data zone level. They derive from three principal sources; the Scottish Neighbourhood Statistics (SNS), the background datasets for the Scottish Index of Multiple Deprivation (SIMD), and the 2011 Population Census. One indicator, the percentage change in the number of business sites derives from the Interdepartmental Business Survey (IDBR), though the data is available from the SNS. All of the raw data is in the public domain.

With one exception all the indicators are available for the 6,505 Scottish data zones. The exception is the business sites indicator, which (due to disclosure constraints) is only available at the intermediate geography level. In this case the intermediate level values are applied to all constituent data zones.

The analysis which follows focuses upon the 2,014 data zones situated in small towns or rural areas according to the Scottish Government's urban-rural classification (Map 1). The population of these zones ranges from about 360 to 2,800; whilst the average is a little over 800.

A deliberate decision was taken to explore patterns of performance across rural and small town areas of Scotland. This was motivated by the view that the economies and society of small towns are closely bound by a range of interactions with their surrounding rural areas. Nevertheless there is a degree of functional distinctiveness between them, which explains why each of the maps in the report is followed by a graph showing small towns and rural areas separately. Similarly remote rural areas and small towns tend to exhibit different characteristics from those within the sphere of influence of cities and larger towns, and for this reason all the graphs distinguish remote and accessible rural areas and small towns.

Error bars on the graphs show one standard deviation above and below the mean.

Table 4: The SEP Indicators

Strategic			
Objective		Indicator	Source
	1	Median net equivalent household income after housing costs per week (£), 2008-9.	SNS
	2	Per cent of families on low income (less than 70% median) and materially deprived, 2008-09	SNS
Wealthier/	3	Per cent of population dependent on benefits (SIMD Income deprivation rate) 2012	SIMD
Fairer	4	Unemployed as per cent of all people aged 16-74 2011	Census 2011
	5	Average drivetime to key services (GP, petrol station, post office, primary school, secondary school, retail centre) 2012	SNS/SIMD
	6	Average travel time by public transport to key services (GP, post office, retail centre) 2012	SNS/SIMD
	7	Per cent of all people with one or more long term health conditions 2011	Census 2011
Healthier	8	Per cent of all people assessing their general health as 'very good' or 'good' 2011	Census 2011
incutinei	9	Per cent of all people whose day-to-day activities are limited by a long-term health problem or disability 2011	Census 2011
	10	Comparative illness factor: standardised ratio 2011	SNS/SIMD
	11	Population change, 2001-2011 (% change)	Census 2001, 2011
	12	Change in the economically active population, 2001-2011 (% change)	Census 2001, 2011
Safer/ Stronger	13	Old Age Dependency Ratio (persons 65+ as per cent of persons 16-64) 2011	Census 2011
	14	Per cent change in the number of business sites 2008-13 (Intermediate geography)	SNS/IDBR
	15	SIMD Crimes per 10,000 total population, 2010-2011.	SIMD
	16	Rate of emergency stays in hospital 2007-10 (Scotland = 100)	SIMD
	17	All people aged 16 and over: No qualifications. Expressed as % of expected count	SNS/SIMD
Smartar	18	Percentage of 16-19 year olds not in education or training 2009-11	SNS
Smarter	19	Per cent of population 16-74 who have level 4 qualifications or higher 2011	Census 2011
	20	Per cent of population 16-74 who are in occupation groups 1- 3 2011	Census 2011

Scottish Government Urban/Rural Classification, 2011-2012

6 Fold Classification

Large Urban Areas (with a population of over 125,000)
 Other Urban Areas (with a population of 10,000 to 125,000)
 Accessible Small Towns (with a population of 3,000 to 10,000)
 Remote Small Towns (with a population of 3,000 to 10,000)
 Accessible Rural (with a population of less than 3,000)
 Remote Rural (with a population of less than 3,000)



Accessible Areas are defined as those areas that are within a 30 minute drive time from the centre of a Settlement with a population of 10,000 or more, while Remote Areas have a drive time which is greater than 30 minutes.

Note:

Map 1: Scottish Government Urban-Rural Classification 2011-12

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Objective 1: Wealthier and Fairer

The Wealthier and Fairer objective is represented by six indicators. The first four of these relate to income, deprivation, or economic inequalities. The final two indicators relate to access to services, which is widely perceived as a source of inequality for rural people.

The correlation matrix (Table 5) shows that indicators 1 (net income), 2 (income/deprivation) and 4 (unemployed) are closely related, whilst indicator 3 (benefits) is surprisingly independent of the other indicators. Whilst closely related to each other, the two accessibility indicators are not closely related to the first four indicators.

Three of the Wealthier/Fairer indicators (net incomes, income/deprivation and unemployed) are closely correlated to both the Health and the Smarter objective indicators. Two of the Stronger/Safer indicators (crime and hospital emergency admissions) are also closely correlated with these three Wealthier/Fairer indicators.

		Net	Income/	Bonofits	Unemployed	Car	Public
1	Net Income	1 00	deprivation	Denents	Onemployed	accessionity	transport
2	Income/denrivation	_0.92	1 00				
2	Bonofite	-0.03	1.00	1 00			
5	Denents	-0.03	0.04	1.00			
4	Unemployed	-0.69	0.72	-0.03	1.00		
5	Car accessibility	0.15	-0.20	0.40	-0.24	1.00	
6	Public transport	0.23	-0.28	0.40	-0.30	0.86	1.00
7	Long term health	-0.52	0.54	-0.04	0.36	-0.12	-0.21
8	Subjective health	0.72	-0.73	0.01	-0.58	0.18	0.27
9	Health limitations	-0.62	0.65	0.00	0.46	-0.13	-0.22
10	Illness factor	-0.60	0.66	0.01	0.55	-0.22	-0.28
11	Population change	0.23	-0.16	0.09	-0.15	0.04	0.09
12	Econ. active change	0.10	-0.03	0.11	-0.04	0.02	0.06
13	Old age dependency	-0.06	0.10	0.02	-0.12	0.02	-0.08
14	Business sites	0.29	-0.23	-0.06	-0.20	0.03	0.08
15	Crime	-0.44	0.52	-0.11	0.55	-0.29	-0.30
	Hospital						
16	emergencies	-0.61	0.63	-0.01	0.58	-0.23	-0.28
17	No qualifications	-0.81	0.79	0.00	0.61	-0.18	-0.24
18	NEETS	-0.56	0.60	-0.04	0.66	-0.23	-0.27
19	Graduates	0.79	-0.75	0.06	-0.62	0.25	0.27
20	Professionals	0.82	-0.75	-0.05	-0.57	0.10	0.12

Table 5: Correlation matrix: Wealthier/Fairer indicators

All correlations except those shaded blue are significant at 0.01 level (2 tailed). Bold - >0.5

Indicator 1: Median net household income after housing costs per week 2008-09



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Map 2: Median net household income per week 2008-09

Source:

Scottish Neighbourhood statistics (http://www.sns.gov.uk/Downloads/DownloadHome.aspx)

Variable name: Estimated median net equivalent household income after housing costs (AHC) per week

Urban-Rural Distribution



Figure 2: Median net household income per week 2008-09, by urban-rural category

Comments

The map shows relatively high household incomes in the hinterlands of the Central Belt, Aberdeen, Inverness and even Fort William. Small pockets of relative prosperity are even found in Caithness, Orkney mainland, and Shetland (south of Lerwick). The lowest median income is found both in remote and insular areas (Lewis and Harris, the Argyll Islands and Dumfries and Galloway), but also in the former coalfield and heavy industrial areas between Glasgow and Edinburgh, and in Fife.

In terms of the urban-rural categories median income is substantially higher in rural areas than either urban areas or small towns. Across both rural areas and small towns the accessible data zones exhibit substantially higher incomes than the remote ones.

Indicator 2: Per cent of families on low income and materially deprived 2008-09



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Map 3: Per cent of families on low income and materially deprived 2008-09

Source:

Scottish Neighbourhood statistics (http://www.sns.gov.uk/Downloads/DownloadHome.aspx)

Variable name: Estimated percentage of families on low income (less than 70% median) and materially deprived

Urban-Rural Distribution



Figure 3: Per cent of families on low income and materially deprived 2008-09, by urban-rural category

Comments

The top quartile (dark green) data zones extend much further into the Highlands and the Borders than was the case for the previous indicator. At the other extreme data zones with between a quarter and half their families on low income and materially deprived cover larger parts of the Western Isles, and the outer Isles of Orkney. There are also a number of enclaves in Dumfries and Galloway. Again the former heavy industrial areas in the Central Belt and Fife show high levels of poverty according to this measure. There are pockets around Dundee, near Peterhead, and in Easter Ross.

Figure 3 shows that this indicator is generally lower in rural and small town data zones, but that remote areas exhibit more poverty than accessible ones.

Indicator 3: Percentage of population dependent on benefits (SIMD Income deprivation rate) 2012



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Map 4: Percentage of population dependent on benefits (SIMD Income deprivation rate) 2012

Source:

Scottish Index of Multiple Deprivation

(http://www.scotland.gov.uk/Topics/Statistics/SIMD/DataAnalysis)

Variable definition: The percentage of the population who are in receipt of, or dependent upon someone in receipt of, Income Support, Employment and Support Allowance, Job Seekers Allowance, Guaranteed Pension Credits, and Child and Working Tax Credits.

Urban-Rural Distribution



Figure 4: Percentage of population dependent on benefits 2012 by urban-rural category

Comments

The map of this indicator is rather similar to that of the previous indicator. The green shaded areas (low dependence on benefits) are slightly more fragmented than in Map 3. The areas of high benefit dependency, (the Western Isles. Caithness and Sutherland, Dumfries and Galloway and Ayrshire) are broadly the same.

However Figure 4 reveals a much more even distribution between the rural and small town data zones. It also shows that rates of benefit dependence are lower in the rural and small town areas than in the "other urban" category. However, unlike in the previous indicator, Large City data zones have the lowest rate of benefit dependence.

Indicator 4: Unemployed as proportion of all people aged 16-74



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Map 5: Unemployed as proportion of all people aged 16-74 2011

Source:

2011 Census (<u>http://www.scotlandscensus.gov.uk/</u>) Table KS601SC - Economic activity.

Definition: Unemployed as a percentage of the population aged 16-74.

Urban-Rural Distribution



Figure 5: Unemployed as a proportion of all people aged 16-74 by urban-rural category

Comments

Although the broad pattern is similar to the preceding maps, with lower unemployment rates around Aberdeen, and patches of good performance around Dundee, the Central Belt, and Inverness, the pattern is rather fragmented. There is a surprisingly extensive area of low unemployment in Lochaber and Skye and Lochalsh, and others in the Borders and around Dumfries. Some of the islands, Coll, Tiree, Rum, Orkney and Shetland Mainland) have low unemployment rates. It should be remembered that the Census unemployment count is based on "self declaration" and may hide levels of underemployment or seasonal unemployment. Pockets of high unemployment are scattered across the Highlands and Islands (Lewis, Caithness and Sutherland, Strathspey, Argyll) across Dumfries and Galloway, Ayrshire and Borders, and in the former industrial and mining areas of Lanarkshire, Falkirk, West Lothian, Clackmannan and Fife.

Indicator 5: Average drivetime to key services 2012



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Scottish Index of Multiple Deprivation

(http://www.scotland.gov.uk/Topics/Statistics/SIMD/DataAnalysis)

Variable definition: Mean drivetime to key services calculated from the estimated drivetime (in minutes) to each of six key services (GP, petrol station, post office, primary school, retail centre).



Urban-Rural Distribution

Figure 6: Average drivetime to key services by urban-rural category

Comments

This map (and the following one) does not use quartiles as a basis for the four shading categories. This is because the bottom quartile (lowest drivetimes) is associated with very small data zones on the urban fringe. Their small size means that they become difficult to see if a quartile classification is used. A "user defined" classification is therefore adopted.

As might be anticipated the pattern of drivetimes reflects the settlement pattern and communications network. The dark purple shading associated with the poorest access to services extends through the Argyll Islands, the NW Highlands, the Western Isles (except for a small area around Stornoway), and the outer isles of Orkney and Shetland. Another band of poor accessibility occupies the more mountainous areas east of the Great Glen. The Cairngorms, the Angus Glens, and parts of the Southern Uplands all show up as areas of dark purple.

Interestingly Figure 6 shows that the small towns (even the remote ones) have accessibility to services equivalent to that of the two urban categories (average drivetime of about four minutes). The accessible rural areas have a substantially higher average drivetime (about seven minutes, whilst in the remote rural areas the average rises to about twelve minutes.

Indicator 6: Average travel time by public transport to key services 2012



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Map 7: Average travel time by public transport to key services 2012

Source: Scottish Index of Multiple Deprivation (http://www.scotland.gov.uk/Topics/Statistics/SIMD/DataAnalysis)

Variable definition: Mean public transport travel times to key services calculated from the estimated travel time (in minutes) to each of three key services (GP, post office, retail centre).

Urban-Rural Distribution



Figure 7: Average travel time by public transport to key services 2012 by urban-rural category

Comments

Like the previous one this map does not use quartiles as a basis for the four shading categories. This is because the bottom quartile (lowest travel times) is associated with very small data zones on the urban fringe. Their small size means that they become difficult to see if a quartile classification is used. A "user defined" classification is therefore adopted.

Again the pattern of travel times reflects the settlement pattern and communications network. However on this map the dark purple shading associated with the poorest access to services extends further out, and average travel times are higher than the drivetimes of the previous map.

Again Figure 7 shows that the small towns (even the remote ones) have accessibility to services roughly equivalent to that of the two urban categories (average travel time of about nine minutes). The accessible rural areas have a substantially higher average travel time (about twenty minutes, whilst in the remote rural areas the average rises to more than thirty minutes.

Objective 2: Healthier

The Healthier strategic objective is represented by four variables, which seek to capture both objective and subjective assessments of wellness, disability, and the degree to which long term illness is a hindrance to normal activity.

The first three indicators derive from the 2011 Census of Population, and are simple counts expressed as a percentage of the total population. The fourth indicator, the Comparative Illness Factor derives from the SIMD, and is based on benefits data, counting people claiming various benefits relating to illness and disability. These counts have been indirectly age sex standardised and are expressed relative to Scotland which has a value of 100. This adjustment takes away the effect of rural age structures, which (arguably) is a component of performance under the "Healthier" objective.

All four indicators are closely correlated with each other (Table 6). As noted above, they are also closely related to three of the Wealthier/Fairer indicators. Not surprisingly the two of the health indicators (subjective health, and illness factor) are closely correlated with the rate of emergency admissions to hospital (Stronger/Fairer objective). Interestingly all the health indicators correlate closely with the no qualifications indicator, and three of them also closely related to the other two Smarter indicators.

Table 6: Correlation matrix: Health indicators

		Long term health	Subjective health	Health limitations	Illness factor
1	Net Income	-0.52	0.72	-0.62	-0.60
2	Income/deprivation	0.54	-0.73	0.65	0.66
3	Benefits	-0.04	0.01	0.00	0.01
4	Unemployed	0.36	-0.58	0.46	0.55
5	Car accessibility	-0.12	0.18	-0.13	-0.22
6	Public transport	-0.21	0.27	-0.22	-0.28
7	Long term health	1.00			
8	Subjective health	-0.85	1.00		
9	Health limitations	0.93	-0.94	1.00	
10	Illness factor	0.56	-0.74	0.69	1.00
11	Population change	-0.38	0.30	-0.32	0.07
12	Econ. active change	-0.33	0.21	-0.25	0.16
13	Old age dependency	0.63	-0.39	0.56	0.14
14	Business sites	-0.27	0.26	-0.28	-0.16
15	Crime	0.29	-0.43	0.35	0.41
16	Hospital emergencies	0.34	-0.53	0.45	0.54
17	No qualifications	0.64	-0.83	0.76	0.67
18	NEETS	0.33	-0.51	0.41	0.47
19	Graduates	-0.40	0.66	-0.53	-0.58
20	Professionals	-0.43	0.63	-0.53	-0.50

All correlations *except* those shaded blue are significant at 0.01 level (2 tailed). Bold - >0.5

Indicator 7: Proportion of all people with one or more long term health conditions 2011



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Map 8: Per cent of all people with one or more long term health conditions 2011

2011 Census (<u>http://www.scotlandscensus.gov.uk/</u>) Table QS304SC - Long-term health conditions.

Definition: Percentage of the population with one or more long-term health conditions.

Urban-Rural Distribution



Figure 8: Per cent of all people with one or more long term health conditions 2011 by urban-rural category

Comments

Two different patterns emerge from the map and the graph. In the map we may recognise the usual cluster of high performing data zones (where the population has relatively low incidence of long term health conditions in the commuting areas around Aberdeen and south of Edinburgh. Five main areas of poor performance are evident; in Caithness and Sutherland, Ayrshire and Dumfries and Galloway, Lorne and the Mull of Kintyre, the Islands (the Outer Isles of Orkney, Yell and Unst in Shetland, and parts of Lewis and Harris), and the old industrial areas of the Central Belt and Fife.

The graph, on the other hand, reveals something that it is not easy to pick out on the map, the fact that small towns, both in the remote and accessible parts of Scotland, contain concentrations of people with long term health conditions, whilst the adjacent rural areas have lower rates. Rates are on average higher in remote data zones (whether rural or small towns) than in accessible ones. This pattern is probably a consequence of two processes, selective migration of younger people from remoter areas which results in an ageing population, (see Indicator 13 below) and then secondly, the tendency of older people and those with long term health conditions to move into the small towns, where services are more accessible, and sheltered accommodation may be provided.

Indicator 8: Per cent of all people assessing their general health as 'very good' or 'good' 2011



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2011 Census (<u>http://www.scotlandscensus.gov.uk/</u>) Table QS302SC - Self assessment of general health.

Definition: Percentage of the population assessing their health as good or very good.

Urban-Rural Distribution



Figure 9: Per cent of all people assessing their general health as 'very good' or 'good' 2011 by urban-rural category

Comments

This variable shows a very similar pattern to the previous one, the same five areas of poor performance and the same relationship between rural and small town data zones (though the indicator is the other way around – this time a large percentage indicates good health/performance and vice versa).

Indicator 9: Per cent of all people whose day-to-day activities are limited by a long-term health problem or disability 2011



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Map 10: Per cent of all people whose day-to-day activities are limited by a long-term health problem or disability 2011

2011 Census (<u>http://www.scotlandscensus.gov.uk/</u>) Table QS303SC – Long term health problems or disability which limits day to day activity.

Definition: Per cent of all people whose day-to-day activities are limited by a long-term health problems or disability 2011.

Urban-Rural Distribution



Figure 10: Per cent of all people whose day-to-day activities are limited by a long-term health problems or disability 2011, by urban-rural category

Comments

Again the map picks out the same five areas of poor health/performance. The graph is similar to Figure 8 (Long term health conditions), though for this indicator the urban rates are rather higher relative to the rural and small town ones. This is difficult to interpret. One possibility is that the group identified by this indicator are more seriously affected by their illness than those shown in Figure 8, and that these are slightly more likely to move to larger urban areas, where they can access treatment and care more easily.

Indicator 10: Comparative illness factor: standardised ratio 2011



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Map 11: Comparative illness factor: standardised ratio 2011

Scottish Index of Multiple Deprivation

(http://www.scotland.gov.uk/Topics/Statistics/SIMD/DataAnalysis)

Variable definition: A count of people claiming Disability Living allowance, Attendance Allowance, Incapacity Benefit and Severe Disablement Allowance. The counts were indirectly age and sex standardised and are expressed as a percentage of the Scottish average.

Urban-Rural Distribution



Figure 11: Comparative illness factor: standardised ratio 2011 by urban-rural category

Comments

Despite being based upon benefits data rather than the census the same pattern emerges as was described by the previous three maps. However the old industrial areas of the Central Belt and Fife are more conspicuous here.

The graph shows a slightly different distribution between urban, small town and rural areas. Rates of (health related) benefit claiming seem to be lower in the small towns than in urban areas, and even lower in the rural data zones. The remote/accessible difference is not evident in this indicator. This pattern is likely to be the result of the fact that the effect of differences in age structure has been removed from this dataset.

Objective 3 Stronger/Safer

The Stronger/Safer objective is represented by six indicators. Stronger is interpreted in terms of social and economic change, as measured by population growth, change in the number of economically active persons, demographic ageing, and the number of business sites. Safety is reflected in indicators of crime rates and the frequency of emergency hospital admissions.

In terms of the degree of interrelatedness of the indicators (Table 7) this is the least coherent of the four objectives. Only population change and the change in economic activity are closely correlated. Crime and hospital admissions show a moderate correlation. Old age dependency is closely correlated with indicators of long term health and limitations to activity in the Health objective. The crime rate indicator is fairly closely related to the NEET indicator in the Smarter objective.

			Econ.				
		Population	active	Old age	Business		Hospital
		change	change	dependency	sites	Crime	emergencies
1	Net Income	0.23	0.10	-0.06	0.29	-0.44	-0.61
2	Income/deprivation	-0.16	-0.03	0.10	-0.23	0.52	0.63
3	Benefits	0.09	0.11	0.02	-0.06	-0.11	-0.01
4	Unemployed	-0.15	-0.04	-0.12	-0.20	0.55	0.58
5	Car accessibility	0.04	0.02	0.02	0.03	-0.29	-0.23
6	Public transport	0.09	0.06	-0.08	0.08	-0.30	-0.28
7	Long term health	-0.38	-0.33	0.63	-0.27	0.29	0.34
8	Subjective health	0.30	0.21	-0.39	0.26	-0.43	-0.53
9	Health limitations	-0.32	-0.25	0.56	-0.28	0.35	0.45
10	Illness factor	0.07	0.16	0.14	-0.16	0.41	0.54
11	Population change	1.00					
12	Econ. active change	0.95	1.00				
13	Old age dependency	-0.27	-0.31	1.00			
14	Business sites	0.23	0.20	-0.18	1.00		
15	Crime	-0.08	-0.01	-0.05	-0.13	1.00	
	Hospital						
16	emergencies	-0.08	0.02	-0.07	-0.13	0.49	1.00
17	No qualifications	-0.26	-0.15	0.21	-0.26	0.41	0.56
18	NEETS	-0.08	0.00	-0.06	-0.15	0.50	0.49
19	Graduates	0.16	0.05	0.10	0.19	-0.41	-0.56
20	Professionals	0.21	0.10	0.01	0.23	-0.36	-0.51

Table 7: Correlation matrix: Stronger/Safer indicators

All correlations except those shaded blue are significant at 0.01 level (2 tailed). Bold - >0.5

Indicator 11: Population change, 2001-2011 (% change)



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Map 12: Population change, 2001-2011 (% change)

Source: 2001 Census: Scottish Neighbourhood statistics (http://www.sns.gov.uk/Downloads/DownloadHome.aspx)

2011 Census (<u>http://www.scotlandscensus.gov.uk/</u>) Table KS101SC – Resident population.

Definition: Percentage change in normally resident population.

Urban-Rural Distribution



Figure 12: Population change, 2001-2011 (% change), by urban-rural category

Comments

A fragmented pattern in the North East, but two areas of population growth are conspicuous, around Inverness and in East Lothian and Borders. The largest percentage losses of population are not in the extreme north and west, but in Argyll, Dumfries and Galloway/Ayrshire, and along the border with England.

Figure 12 shows a very strong contrast between the relative stability in population of the small towns (<3%), and the much more rapid growth of the rural data zones, especially in accessible areas, where the average increase between 2001 and 2011was almost 15%.

Indicator 12: Change in the economically active population, 2001-2011 (% change)



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Map 13: Change in the economically active population, 2001-2011 (% change)

2001 Census: Casweb: http://casweb.mimas.ac.uk/ Table KS0009a

2011 Census (http://www.scotlandscensus.gov.uk/) Table KS601SC – Economic Activity.

Definition: Percentage change in economically active population.

Urban-Rural Distribution



Figure 13: Change in the economically active population, 2001-2011 (% change), by urban-rural category

Comments

A broadly similar pattern to that of the previous indicator. However the urban areas seem to be performing relatively more strongly in terms of economically active population (Figure 13) presumably due to selective migration of younger economically active adults and families into the cities.

Indicator 13: Old Age Dependency Ratio (persons 65+ as per cent of persons 16-64) 2011



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2011 Census (<u>http://www.scotlandscensus.gov.uk/</u>) Table KS102SC – Age structure.

Definition: Population aged 65+ as a percentage of the population aged 16-64.

Urban-Rural Distribution



Figure 14: Old Age Dependency Ratio (persons 65+ as per cent of persons 16-64) 2011, by urbanrural category

Comments

The most conspicuous areas with ageing populations (Map 14) are in the Western Isles, Caithness and Sutherland, the outer isles of Orkney and Shetland, Argyll, the Angus Glens, Dumfries and Galloway and Ayrshire, and parts of the Borders. Lower old age dependency ratios characterise the Aberdeen hinterland and the fringes of the Central Belt, especially to the South.

Figure 14 reveals very clearly the difference between accessible and remote data zones. Demographic ageing is shown to be very much an issue of remote areas, whether a data zone is rural or in a small town makes little difference.

Indicator 14: Per cent change in the number of business sites 2008-13



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Map 15: Per cent change in the number of business sites 2008-13

Scottish Neighbourhood statistics (http://www.sns.gov.uk/Downloads/DownloadHome.aspx)

Variable name: Total number of business sites (2008, 2013)

Urban-Rural Distribution





Comments

Map 15 is more "course grained" because it is based upon Intermediate Geography data. Several areas have relatively high positive changes in the number of business sites: The area around Aberdeen is as expected. SE Sutherland is more unexpected, and it is of course based upon very small numbers. High rates of growth are shown in two areas east and south-west of Edinburgh. Surprisingly the only evidence of rapid growth near Inverness is along the Moray Coast (Nairn, Forres, Elgin). Substantial reductions in the number of business sites are shown in Orkney, Lochaber Angus, Fife, Arran and Lorne, and in a large swathe from Dumfries into the Borders.

Figure 15 shows that the largest positive changes in the number of business sites took place in the large cities and accessible rural data zones. Other urban data zones also showed quite positive trends. Remote small towns suffered a reduction of business sites, whilst accessible small towns and remote rural showed only very small increases.

This pattern is less reliable than most of the others we have shown in this report, due to the relatively small numbers involved, and the use of intermediate geography data.

Indicator 15: SIMD Crimes per 10,000 total population, 2010-2011



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Map 16: SIMD Crimes per 10,000 total population, 2010-2011

Scottish Index of Multiple Deprivation (http://www.scotland.gov.uk/Topics/Statistics/SIMD/DataAnalysis)

Variable definition: SIMD crimes per 10,000 total population

Urban-Rural Distribution



Figure 16: SIMD Crimes per 10,000 total population, 2010-2011, by urban-rural category

Comments

The relatively small area of dark purple on Map 16 is due to the fact that higher crime rates are generally characteristic of small (in area) data zones, close to major cities. On the other hand dark green shading (low crime rates) is relatively common even in the rural areas which previous maps have shown to be poor performers on other indicators, such as NW Sutherland, and the Borders. Figure 16 reveals an interesting contrast between small towns and rural areas, crime rates being higher in the former, especially in remote small towns where the crime rate equals that of the other urban category.

Indicator 16: Rate of emergency stays in hospital 2007-10 (Scotland = 100)



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Map 17: Rate of emergency stays in hospital 2007-10 (Scotland = 100)

Source: Census SIMD

Scottish Index of Multiple Deprivation

(http://www.scotland.gov.uk/Topics/Statistics/SIMD/DataAnalysis)

Variable definition: Emergency stays in hospital: standardised ratio 2007-10 (Scotland = 100)

Urban-Rural Distribution



Figure 17: Rate of emergency stays in hospital 2007-10 (Scotland = 100), by urban-rural category

Comments

A slightly different pattern to the previous map. High rates of emergency hospital admissions in parts of the Western Isles, Skye, and Caithness, are difficult to explain. Interestingly Figure 17 shows that the remote small towns have a much higher rate of emergency admissions to hospital than the accessible small towns. Rural areas have very low rates of emergency admissions, about 15 percentage points below the Scottish average. Perhaps this reflects the tendency for less serious cases to be dealt with by GPs.

Objective 4: Smarter

The Smarter Objective is represented by four indicators which relate to qualifications, training and professional status. They are all closely interrelated with each other (Table 8). As might be expected, they are also strongly correlated with the labour market indicators in the Wealthier/Fairer objective (the exception, again, being the benefits indicator). The No qualifications indicator is strongly related to all the health indicators, and the Graduates indicator is closely correlated with three out of four. NEETS and professionals correlate with one and two Health indicators respectively. All the "Smarter" indicators have fairly strong relationships with the rate of emergency admissions to hospital. We have already noted the moderate correlation between the incidence of "NEETS" and the crime rate.

		No			
		qualifications	NEETS	Graduates	Professionals
1	Net Income	-0.81	-0.56	0.79	0.82
2	Income/deprivation	0.79	0.60	-0.75	-0.75
3	Benefits	0.00	-0.04	0.06	-0.05
4	Unemployed	0.61	0.66	-0.62	-0.57
5	Car accessibility	-0.18	-0.23	0.25	0.10
6	Public transport	-0.24	-0.27	0.27	0.12
7	Long term health	0.64	0.33	-0.40	-0.43
8	Subjective health	-0.83	-0.51	0.66	0.63
9	Health limitations	0.76	0.41	-0.53	-0.53
10	Illness factor	0.67	0.47	-0.58	-0.50
11	Population change	-0.26	-0.08	0.16	0.21
12	Econ. active change	-0.15	0.00	0.05	0.10
13	Old age dependency	0.21	-0.06	0.10	0.01
14	Business sites	-0.26	-0.15	0.19	0.23
15	Crime	0.41	0.50	-0.41	-0.36
	Hospital				
16	emergencies	0.56	0.49	-0.56	-0.51
17	No qualifications	1.00			
18	NEETS	0.54	1.00		
19	Graduates	-0.87	-0.53	1.00	
20	Professionals	-0.84	-0.48	0.90	1.00

Table 8: Corelation Matrix; Smarter Indicators

All correlations *except* those shaded blue are significant at 0.01 level (2 tailed). Bold - >0.5

Indicator 17: All people aged 16 and over: No qualifications



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Map 18: All people aged 16 and over: No qualifications

Scottish Index of Multiple Deprivation (http://www.scotland.gov.uk/Topics/Statistics/SIMD/DataAnalysis)

Variable definition: Population aged 16 or over with no qualifications (% of expected count)

Urban-Rural Distribution



Figure 18: All people aged 16 and over: No qualifications, by urban-rural category

Comments

Well performing (qualified) areas include the area immediately south of Edinburgh, an area stretch westwards from North Fife towards Argyll, and northwest towards Oban and Fort William, the Aberdeen hinterland, and an area stretching south from Inverness towards Speyside. Southern Skye has a high level of qualification, presumably due to the presence of a UHI campus. Areas with a high proportion of adults with no qualifications include the Western Isles, Caithness, the Outer Isles of Orkney, the Moray Coast, the immediate environs of Fort William, Dumfries and Galloway and Ayrshire, and the SW corner of Scottish Borders.

According to Figure 18 the urban and small town data zones have similar levels of qualification, but the rural areas have a lower proportion of unqualified adults.

Indicator 18: Percentage of 16-19 year olds not in education or training 2009-11



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Map 19: Percentage of 16-19 year olds not in education or training 2009-11

Scottish Index of Multiple Deprivation

(http://www.scotland.gov.uk/Topics/Statistics/SIMD/DataAnalysis)

Variable definition: Percentage of people aged 16-19 not in full time education, employment or training rate.

Urban-Rural Distribution



Figure 19: Percentage of 16-19 year olds not in education or training 2009-11, by urban-rural category

Comments

A similar, but more fragmented pattern to that of the previous indicator. Once again rural areas have a smaller percentage of NEETS compared with urban and small town areas.

Indicator 19: Per cent of population 16-74 who have level 4 qualifications or higher 2011



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Map 20: Per cent of population 16-74 who have level 4 qualifications or higher 2011

2011 Census (<u>http://www.scotlandscensus.gov.uk/</u>) Table KS501SC – Qualifications and students.

Definition: Per cent of population 16-74 who have level 4 qualifications (first degree) or higher.

Urban-Rural Distribution



Figure 20: Per cent of population 16-74 who have level 4 qualifications or higher 2011, by urbanrural category

Comments

The relatively small areas of dark purple on Map 20 are due to the concentration of data zone with poorly qualified populations in the Central Belt, where data zones are smaller. The map to some extent reflects the locations of the Scottish universities. Less well qualified populations are found in Dumfries and Galloway, Ayrshire, Lanarkshire, along the Moray coast, in Caithness and in Shetland. Figure 20 suggests that rural areas tend, on average to have populations with a higher incidence of degree level qualifications than small towns.

Indicator 20: Per cent of population 16-74 who are in occupation groups 1-3 2011



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Map 21: Per cent of population 16-74 who are in occupation groups 1-3 2011
Source:

2011 Census (<u>http://www.scotlandscensus.gov.uk/</u>) Table KS608SC – Occupations.

Definition: Per cent of population 16-74 in occupational groups 1-3.

Urban-Rural Distribution



Figure 21: Per cent of population 16-74 who are in occupation groups 1-3 2011, by urban-rural category

Comments

Professional occupations account for a larger share of the adult population in the area immediately south of Edinburgh, the area stretching west from North Fife, Renfrew, North Ayrshire the Aberdeen commuting zone, and the Moray and Black Isle coast. A lower incidence of the top three occupational groups characterises Dumfries and Galloway, Ayrshire, parts of the Borders, the interior of the Highlands, the Western Isles, Argyll Islands, Orkney's outer isles, and Shetland. To some extent this pattern reflects the economic structure of the remoter parts of Scotland, with fewer of the service industries which are associated with professional occupations.

Figure 21 shows that rural data zones tend to have slightly higher incidence of professionals than small towns. Accessible rural areas have the highest proportion of professionals, reflecting their tendency to commute to urban areas from adjacent rural areas.

The Synthetic Performance Index

Three main considerations are reflected in the simple methodology developed to combine the 20 indicators into a single index:

- Simplicity and transparency. There should be no statistical manipulation which could create a "black box" which obliges "lay" users to take the results on trust, without being able to understand or reproduce the intervening steps.
- 2. **Meaningful units.** It was also considered important that the index should be expressed in units which can easily be explained, and related in some way to the original indicators. This implies that transformations, such as conversion to Z scores, or logarithmic transformations, must be avoided. Less obviously, conversion to ranks can be misleading, since adjacent ranks may be separated by either small or large intervals in terms of the original measurement unit.
- 3. **Implicit weighting.** It is impossible to avoid the implicit weighting of different aspects of socioeconomic performance associated with the number and choice of indicators. However additional subjective weighting of individual indicators should be avoided. The influence of differential availability of indicators for different aspects of performance should be managed by an implicit weighting structure reflecting the (assumed) equal importance of the four NPF strategic objectives.

On the basis of these considerations the following procedure was adopted (for each of the rural or small town data zones):

- Convert each indicator to a score, on a scale of 1-10, (where 10 equals top performance, and 1 the very worst performance) based upon deciles of the raw data distribution.
- 2. Calculate a simple unweighted average of the individual indicator scores for each strategic objective.
- 3. Calculate a simple unweighted average of the four strategic objective scores.

Both the strategic objective scores (2) and the SEP index (3) are expressed as scores on a scale of 1-10, (where 10 equals top performance, and 1 the very worst performance).

_	Wealthier/Fairer	Healthier	Safer/Stronger	Smarter	SEP Index
Wealthier/Fairer	1.00				
Healthier	0.38	1.00			
Safer/Stronger	0.18	0.54	1.00		
Smarter	0.57	0.55	0.48	1.00	
SEP Index	0.69	0.77	0.70	0.90	1.00

 Table 9: Correlation matrix, showing the relationships between the four Strategic Objective Scores

 and the SEP Index

Note: All coefficients significant at 0.01 level (2 tailed)

Table 9 suggests that although all the strategic objective scores are positively correlated to some extent, they each have fairly distinctive patterns. The closest relationship between objectives is between Wealthier/Fairer and Smarter, demonstrating the fact that a more highly qualified workforce tends to mean increased levels of wealth. Data zones which have higher scores for healthier objective are likely to have relatively high scores for Safer/Stronger objectives, suggesting a nexus of well-being. However, both Safer/Stronger and Health have relatively low correlations with Wealthier/Fairer, indicating that such well-being is not necessarily linked to human capital or economic performance. This pattern of correlations is interpreted as being evidence to support the retention of separate strategic objective scores, as providing information about different aspects of performance. However it also suggests that since the four objective scores are positively correlated to some degree, combining them is unlikely to create too many problems in terms of the scores "cancelling out" each other.

The geography of the SEP Index and the four intermediate Objective scores are shown in Figure 22 and Figure 23, and in Maps 22-26 (below).





The distribution of strategic objective scores by small town and rural type are shown in Figure 22. Broadly speaking two distinct kinds of distribution are revealed. The first relates only to the Wealthier/Fairer objective. Here the small towns show higher average scores than the rural areas, with the accessible towns performing better than the remote ones. Accessible rural areas have an average score not far behind the remote small towns, but the remote rural data zones have a substantially lower average score. For the other three objectives (healthier, safer/stronger and smarter) the rural areas show higher average scores, with the accessible rural areas consistently the best performing type. At the other extreme the remote small towns are consistently the worst performing group. In other words, in terms of "hard" economic characteristics (labour market, income, access to services) the small towns tend to outperform the rural areas, whilst in terms of the "softer" health, community strength and education/training characteristics rural areas perform better. Underlying both these distributions is a persistent difference between accessible and remote areas.

Figure 23 shows the result of averaging the four strategic objective scores for each data zone. The best performing group is accessible rural, the worst is remote small towns. Remote rural and accessible small towns both have an average score of slightly less than 5. This "hybrid" pattern is perhaps best understood in terms of a combination the two kinds of pattern described above.



Figure 23: SEP Index score by small town and rural type

The maps below (Maps 22-26) broadly confirm this characterisation, but also show some interesting locally specific features. Thus the Wealthier/Fairer map (Map 22) shows the clearest performance gradient from accessible data zones which are fairly consistently green to the most peripheral, which are purple. Thus the Western Isles (with the exception of Stornoway), is entirely dark purple. The Skye the Argyll Islands and Aran are mostly purple, except for a small area around Brodick. Orkney and Shetland show contrasts between low performing outer isles and moderately well performing areas around Kirkwall and Lerwick. Patches of dark purple are scattered across the most inaccessible parts of the Highlands and mainland Argyll. Inverness and Fort William show up as "oases" of better performance. Perhaps less expected are the large areas of dark purple in the Borders and Dumfries and Galloway, suggesting that these areas have similar levels of performance in terms of the wealthier/fairer objective to the poorest parts of the Highlands and Islands. Nevertheless the larger towns stand out as having better performance. The Central belt is mostly surrounded by well performing data zones, except in the former coalfield and heavy industrial areas. Further North the east coast lowlands contain some well performing areas, especially close to Dundee and extending out from Aberdeen southwards towards Montrose, and Northwards towards Peterhead. To the west the dark green shading reaches out to Huntly and Alford, roughly coinciding with the limits for commuting.

The Healthier map shows a more fragmented pattern. The major cities are still surrounded by extensive well performing areas, but patches of dark green are also found in the Borders, scattered across the Highlands and even in the Islands Areas (South Uist, South Ronaldsay and the Southern part of Shetland). At the bottom end of the performance range Dumfries and Galloway is conspicuous, as is Harris, Caithness and East Sutherland and the outer isles of Orkney and Shetland.

The pattern of scores for the Safer/Stronger objective (Map 24) is dominated by the extensive area of high performance around Aberdeen, together with smaller bands around Dundee, to the South of the Central Belt and around Inverness. Interestingly the mainlands of Orkney and Shetland also exhibit high performance according to this objective. There are also patches of green in NW Sutherland Skye, Mull and Harris. At the other extreme the areas of dark purple (low performance) are rather fragmented in comparison with the two preceding objectives. This probably reflects the low level of correlation between the variables (as noted above), different indicators tending to cancel each other out, and create a more random pattern.

The Smarter Objective map (Map 25) is similarly fragmented. Areas within commuting distance of the cities, universities, and other education or research centres show the highest performance. At the other end of the scale areas with low scores are also found in the Central Belt in Dumfries and Galloway, and the Borders. However relatively few data zones in the Highlands and Islands have scores in the lowest quartile, whilst parts of Skye, Rhum and Eigg, Mull and the southern part of Shetland are in the top quartile. To some extent these patterns reflect the presence of the UHI, but in some other cases they may simply be caused by in-migration of well-educated people into areas where the total population is small.



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Map 22: Average score for the wealthier and fairer objective



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Map 23: Average score for the healthier objective



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Map 24: Average score for the safer and stronger objective



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Map 25: Average score for the smarter objective



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Map 26: Socio-Economic Performance (SEP) Index (average of the four objective scores)

The overall SEP Index (Map 26) shows a fairly consistent relationship between performance and accessibility, but disrupted by specific localities with structural legacy issues. Once again the Aberdeen hinterland stands out as a well performing area. Around Inverness the pattern seems to be disrupted by the physical geography of the area, and the shape of the data zones. The southward extension of high performance coincides roughly with the more populated area along the A9 trunk road. Other "salients" extend westward towards Mallaig, and northwards across the Black Isle towards Dingwall. A patchwork of better performance extends southwest from Arbroath towards Lomond, whilst south of the Central Belt the pattern is also somewhat fragmented. A linear feature extending to the English border appears to follow the A1.

The largest area of poor performance is in Dumfries and Galloway and South Ayrshire. The Mull of Kintyre, Jura, part of Islay, Fort William, Harris, the Outer Isles of Orkney, eastern Caithness, and the former fishing villages of the Moray Coast are other areas of poor performance. Less conspicuous on the map, but more "weighty" in terms of population are the small areas of poor performance scattered across Lanarkshire, Falkirk, West Lothian and Fife.

Aggregation to the 21 Scottish Local Action Group areas

The 21 Local Action Groups within which the 2014-20 LEADER programme will be implemented are shown in Map 27⁵. These areas are defined in terms of data zones, and are mostly comprised of data zones in the small town and rural categories. It is therefore possible to aggregate the rural/small town data zone scores shown in Maps 22-26 to these LAG areas. It is important to stress that the SEP Index has been calculated for small town and rural data zones. In order to ensure that each data zone score within a LAG area contributes to the overall average in proportion to the number of persons living there, the averages were weighted according to the 2011 (rural/small town) resident population.

⁵ The LAG areas for the 2014-20 Scottish LEADER programme exclude the four city Council Areas (Edinburgh, Glasgow, Dundee and Aberdeen). LAG area boundaries elsewhere generally (but not consistently) exclude data zones in which are classified as urban (1 or 2) in the Scottish Government Urban Rural classification. Furthermore since each LAG defined its own area, and in a few instances by the use of wards rather than data zones, a small number of rural and small town data zones fell outside LAG area boundaries. For the purpose of this study some adjustments have been made, to ensure that all small town and rural data zones (except for small number falling within the boundaries of the four city Council Areas) have been included within the closest LAG area.



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Map 27: The LAG areas of the 2014-20 Scottish LEADER Programme

Table 10 presents the weighted average strategic objective and SEP Index scores for the rural and small town portions of the 21 LAG areas. Aberdeenshire South is the top LAG area in terms of performance for three out of the four strategic objectives, and is in first place overall. Greater Renfrewshire and Inverclyde is in second place overall, followed by Angus, Aberdeenshire North and Rural Perth and Kinross. The LAG area with the lowest overall score is Ayrshire, followed by Dumfries and Galloway, the Outer Hebrides, West Lothian, and Argyll and the Islands.

LAG No	LAG Name	Wealthier	Healthier	Stronger/	Smarter	SEP
		/ Fairer		Safer		Index
1	Aberdeenshire North	5.70	5.44	6.52	5.26	5.73
2	Aberdeenshire South	6.67	6.51	7.32	7.55	7.01
3	Angus	5.75	5.08	6.19	5.93	5.74
4	Argyll and Islands	4.34	4.46	4.33	5.34	4.62
5	Ayrshire	4.50	4.31	4.56	3.72	4.27
6	Cairngorms	4.59	5.58	5.31	6.34	5.46
7	Dumfries and Galloway	4.48	4.31	4.78	3.80	4.34
8	Fife	5.31	4.49	4.95	6.04	5.20
9	Forth Valley and Lomond	5.49	5.35	5.25	6.50	5.65
10	Greater Renfrewshire and Inverclyde	6.56	5.63	5.74	7.74	6.42
11	Highland	4.29	4.85	5.61	4.98	4.93
12	Kelvin Valley and Falkirk	4.81	4.74	5.30	4.35	4.80
13	Moray	4.53	5.00	5.63	4.85	5.00
14	Orkney	4.75	4.84	5.88	4.75	5.06
15	Outer Hebrides	2.97	4.73	5.14	4.82	4.42
16	Rural Perth and Kinross	5.48	4.88	5.72	6.76	5.71
17	Scottish Borders	4.94	4.97	5.27	5.71	5.22
18	Shetland	5.11	5.44	6.19	5.33	5.52
19	South Lanarkshire	4.83	4.70	5.46	4.49	4.87
20	Tyne Esk	5.49	4.98	5.84	5.46	5.44
21	West Lothian	4.64	4.58	4.90	3.82	4.48

Table 10: Weighted aver	age scores for the fo	our objectives and the SE	P Index, by LAG area
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Note: Average data zone scores have been weighted by population (2011 census)

Figure 24 shows the distribution of individual (rural/small town) data zone SEP Index scores for each of the 21 LAG areas. Clearly these are all very individual. Some of the best performing areas, including Aberdeenshire South, and Greater Renfrewshire and Inverclyde have distributions skewed to the right. The three other areas in the top five (Angus, Aberdeenshire North and Rural Perth and Kinross) have more balanced distributions. These have their rankings boosted because their best performing data zones have large populations, and receive a higher weight in the averages shown in Table 10. Similarly, at the other end of the rankings, the Ayrshire and Dumfries and Galloway distributions have a strong skew to the left, whilst the other poor performing LAG areas mentioned

above have less obviously skewed distributions. One LAG (Kelvin Valley and Falkirk) has a strongly skewed distribution, but population weighting means that it ranks just outside the five lowest performing areas.



Contains data derived from Data Zone Boundaries 2001. Copyright Scottish Government, contains Ordnance Survey data © Crown copyright and database right (2015). Other data: Local Action Group Areas derived from Data Zone Boundaries, information provided by the Scottish Government, and Urban-Rural Classification 2011-2012 (sourced from Scottish Neighbourhood Statistics. © Crown copyright. Contains public sector information licensed under the Open Government Licence v2.0). Further details of SEP Index data sources described within introduction to the SEP Indicator Database and following maps within this document. Weighting by population data: 2011 Census data (downloaded from http://www.scotlandscensus.gov.uk/). © Crown copyright. Data supplied by National Records of Scotland.

Map 28: SEP Index scores by LAG area



Figure 24: Distribution of population (2011) by SEP Index score, by Scottish LAG area



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Figure 25: Percentage of population living in data zones with a SEP Index score of 5 or less, by Scottish LAG area

Figure 25 is an alternative way to illustrate the relative performance of the 21 LAG areas. The Outer Hebrides, West Lothian, Dumfries and Galloway and Ayrshire all have more than 70% of their (rural/small town) population living in data zones with a SEP Index score of 5 or less. Argyll and the Islands is close behind, with a respective figure of 65%. At the other end of the performance spectrum, Aberdeenshire South has only 10% of its population living in data zones with scores of 5 or

less. In Greater Renfrewshire and Inverclyde the proportion is about 19%. In Angus, Cairngorms, Rural Perth and Kinross and Shetland, the proportion is less than 30%.



Figure 26: Population living in data zones with a SEP Index score of 5 or less, by Scottish LAG area

A word of caution is necessary, however, regarding the potential use of the SEP Index as a basis for policy resource allocation. Comparison of Figures 25 and 26 shows very clearly that variation in the population size of the LAGs means that the percentage of (small town/rural) population living in poorly performing data zones is a poor guide to the relative scale of the problem in different LAGs. Two examples will suffice to illustrate this point. Compared with all LAGs areas, the Outer Hebrides

has the second highest percentage of its rural/small town population living in poorly performing data zones – more than 74%. However, due to its relatively small rural/small town population it ranks 15th in terms of the absolute number of persons living in poorly performing data zones. Similarly, West Lothian ranks at number 3 on the percentage indicator, but number 13 in terms of absolute numbers of population. On the other hand, Dumfries and Galloway ranks highly in terms of both percentage and absolute population numbers in poorly performing data zones, whilst Ayrshire and Highland have significantly higher ranks in terms of absolute numbers than in terms of percentage share.

When comparing LAG performance, the relative "intensity" of poor performance should not be confused with its absolute scale or "volume". In our view the absolute number of persons living in poorly performing data zones (Figure 26) is a truer guide to the scale of the performance deficit to be addressed by policy in any particular LAG area, than either the percentage share of population in poorly performing data zones (Figure 25) or the average SEP index score for each LAG (Map 28).

Discussion and Reflections

The analysis presented in this report prompts reflections on three separate levels; firstly regarding the suitability and validity of the SEP Index methodology, secondly in relation to the implications for the LEADER programme, and thirdly in terms of what it suggests about the changing geography of economic activity and social well-being in rural and small town Scotland.

Suitability and validity of the methodology

The robustness of the SEP methodology is strengthened in several ways:

- Firstly, it is linked to an official "definition" of socio-economic performance (the National Performance Framework) from which, (it is intended), it draws legitimacy and a conceptual structure.
- Secondly, it combines a relatively large number of indicators in an attempt to reduce the effect of "local distortions" in any single variable.
- Its fourfold structure, linked to the four strategic objectives provides a default weighting system, avoiding the risk of giving greater weight to aspects for which there is a greater choice of indicators.
- Of the four groups of indicators the Wealthier/Fairer, Healthier and Smarter objectives are very coherent, in that their constituent indicators are correlated with each other. The Stronger/Safer group is more disparate.

- Nevertheless the four Strategic Objective scores have been shown to be positively correlated with each other, in other words they do not tend to cancel each other out, and combining them in the SEP tends to accentuate differences between data zones, or LAG areas.
- The SEP's simple transparent methodology and meaningful scoring system is intended to maximise accessibility to the "lay" user.

The above characteristics lend confidence to the overall scores when averaged over the LAG areas. Indeed the ranking of the LAGs is rather consistent across the strategic objectives.

Spatial patterns of performance

Although every indicator presents individualities, taken overall the maps presented in this report have shown a fairly consistent pattern of socio-economic performance across rural and small town Scotland. Further detail, difficult to distinguish in the maps, is added by the graphs showing the differences in terms of individual variables between the six urban-rural categories, and the graphs showing the four objective scores and the overall SEP Index for the rural and small town data zones. Broadly speaking the general pattern shows high levels of performance around the fringes of the Central Belt, (extending further to the south than to the north) and around two "sub-poles" of Aberdeen and Inverness. There is some evidence to suggest that accessible rural areas are currently the most favourable environments in terms of the aspects of socio-economic performance covered by the SEP Index. There are a number of examples of accessible rural areas outperforming all other urban-rural zones, including the urban areas. The recurrent patterns in terms of poor performance show that whilst the extremely remote areas of the Highlands and Islands are still facing big challenges, they are joined by south-west Scotland (Dumfries and Galloway and Ayrshire), and parts of the Borders. More difficult to see on the maps because of their small spatial extent, but nevertheless containing substantial populations, are the old mining and industrial areas including Lanarkshire, Falkirk, West Lothian, and Fife, creating a complex pattern of high and low performance within the Central Belt.

What do these patterns suggest in terms of broad spatial trends and policy?

The broad patterns described above suggest some tentative speculations about the changing geography of Scotland and implications for rural/regional policy.

• First of all, the complexity of the pattern suggests that the processes of change combine both legacy effects and new trends. Structural differences established over at least a century still affect the performance of both the old industrial areas and the remote areas. At the same time the accessible rural areas are both benefitting, and under pressure, from rather rapid positive changes.

- Whether the dynamism of the accessible rural areas is due to "spillover" effects and congestion in the urban areas, or rather to their intrinsic attractions in terms of well-being and access to countryside public goods is not possible to establish on the basis of the SEP index. It would not therefore be legitimate to argue that the findings presented in this report furnish evidence to support city region concepts, or the efficacy of simplistic growth-pole strategies.
- However, what is clear is that the needs and potentials of poor performing areas in different parts of the country are likely to be quite different. For example the strategy required in the poorest performing parts of the Highlands and Islands is likely to be quite different from that which is appropriate in the south-west, or in the areas requiring restructuring in the Central Belt. This is a very clear indication of the validity of the place-based approach synonymous with successive LEADER programmes.

Further Research

Although, due to the incorporation of some indicators which are not available for 2001, it will probably not be feasible to produce a SEP index for 2001 which is fully comparable to the one presented above, it may well be possible to produce a "lite" version, with fewer indicators, for both years, which could provide a platform for examining trends and geographical shifts over the past decade.

The SEP Index presented in this report is designed to meet the needs of the policy context in terms of transparency and easy interpretation. From a more theoretical perspective there would appear to be merit in exploring some of the more sophisticated statistical methodologies which have been developed in recent years, particularly Confirmatory Factor Analysis and Data Envelopment Analysis. These have the potential to deepen our understanding of the way in which different aspects of socio-economic performance interact, and the processes of structural change taking place in different kinds of rural areas and small towns. Such analysis would strengthen the evidence base for territorial rural policy to support the range of different rural/small town environments across Scotland.

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Appendix 1: Individual indicator scores by LAG area and by Strategic Objective

Note: The indicator scores in the following tables are weighted by (2011) population, so that each data zone in a LAG area contributes to the LAG average in proportion to its population.

LAG	LAG Name	Net	Income/	Benefits	Unemployed	Car	Public
No		Income	deprivation			accessibility	transport
1	Aberdeenshire North	7.54	5.28	6.10	7.04	4.32	3.93
2	Aberdeenshire South	8.85	7.48	7.36	8.37	4.17	3.79
3	Angus	6.87	5.70	7.57	6.12	4.37	3.89
4	Argyll and Islands	4.14	4.19	3.77	4.69	4.29	4.99
5	Ayrshire	4.10	3.81	4.54	3.16	5.60	5.80
6	Cairngorms	6.40	4.64	1.59	5.70	3.91	5.26
7	Dumfries and						
	Galloway	3.88	3.49	5.22	4.82	4.82	4.66
8	Fife	5.55	5.48	7.03	4.41	4.45	4.94
9	Forth Valley and						
	Lomond	6.53	6.13	4.49	4.94	5.05	5.76
10	Greater Renfrewshire						
	and Inverclyde	8.43	7.62	6.60	6.12	5.20	5.39
11	Highland	5.28	3.99	3.18	4.67	4.49	4.10
12	Kelvin Valley and						
	Falkirk	5.27	4.23	5.78	2.98	5.70	4.92
13	Moray	5.41	3.71	3.61	4.75	5.47	4.25
14	Orkney	5.76	3.83	3.35	7.34	4.50	3.70
15	Outer Hebrides	3.65	2.14	2.93	3.84	2.65	2.64
16	Rural Perth and						
	Kinross	7.52	5.93	3.25	6.56	4.72	4.91
17	Scottish Borders	5.19	5.38	3.46	5.38	5.07	5.18
18	Shetland	6.60	6.05	3.14	8.14	3.53	3.21
19	South Lanarkshire	5.50	4.63	4.04	3.56	5.71	5.54
20	Tyne Esk	5.62	4.47	5.54	4.49	6.30	6.51
21	West Lothian	4.89	3.89	3.47	3.16	5.76	6.68

Table 11: Weighted average scores for Wealthier/Fairer Indicators by LAG area

Table 12: Weighted	average scores	for Healthier	Indicators by	/ LAG area
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LAGNo	LAG Name	Long term health	Subjective health	Health limitations	Illness factor
1	Aberdeenshire North	6.12	3.72	6.40	5.50
2	Aberdeenshire South	8.06	2.05	8.34	7.58
3	Angus	5.67	3.38	6.20	5.05
4	Argyll and Islands	3.76	6.04	3.91	4.14
5	Ayrshire	4.06	6.81	3.60	2.75
6	Cairngorms	6.52	2.92	6.61	6.29
7	Dumfries and Galloway	3.64	6.77	3.32	3.50
8	Fife	3.56	5.25	4.36	4.79
9	Forth Valley and Lomond	5.90	4.08	6.10	5.32
10	Greater Renfrewshire and Inverclyde	6.62	3.35	6.63	5.92
11	Highland	4.94	4.88	4.96	4.62
12	Kelvin Valley and Falkirk	5.22	6.33	4.46	2.93
13	Moray	5.39	3.79	5.64	5.18
14	Orkney	5.62	3.02	5.19	5.54
15	Outer Hebrides	5.52	6.24	3.89	3.28
16	Rural Perth and Kinross	5.42	3.43	5.91	4.74
17	Scottish Borders	5.46	4.18	5.67	4.57
18	Shetland	6.37	3.57	5.92	5.92
19	South Lanarkshire	5.10	6.35	4.35	3.03
20	Tyne Esk	5.58	4.70	5.47	4.17
21	West Lothian	4.78	6.54	4.26	2.74

LAG	LAG Name	Population	Econ. active	Old age	Business	Crime	Hospital
No		change	change	dependency	sites		emergencies
1	Aberdeenshire North	6.54	6.34	6.83	7.91	5.14	6.36
2	Aberdeenshire South	7.23	7.18	7.14	8.92	6.30	7.15
3	Angus	7.42	5.16	6.67	6.25	5.75	5.88
4	Argyll and Islands	4.34	3.51	4.65	4.19	4.90	4.37
5	Ayrshire	5.23	5.40	5.74	4.98	3.54	2.49
6	Cairngorms	7.37	4.16	7.10	4.00	4.17	5.03
7	Dumfries and Galloway	5.59	3.05	5.41	3.67	5.27	5.70
8	Fife	4.82	4.65	4.62	5.11	5.01	5.51
9	Forth Valley and Lomond	5.17	5.14	5.01	5.53	4.59	6.08
10	Greater Renfrewshire and						
	Inverclyde	5.30	5.83	4.56	6.49	6.08	6.21
11	Highland	6.85	4.60	6.59	6.31	4.89	4.41
12	Kelvin Valley and Falkirk	5.26	7.10	5.97	5.91	3.81	3.74
13	Moray	6.56	4.88	6.57	5.53	4.32	5.94
14	Orkney	7.70	4.42	7.30	4.13	6.44	5.28
15	Outer Hebrides	6.04	3.88	6.58	5.65	5.71	2.99
16	Rural Perth and Kinross	6.90	4.06	6.60	4.70	6.40	5.64
17	Scottish Borders	6.62	3.86	5.83	5.10	6.62	3.58
18	Shetland	6.20	6.65	6.59	5.86	6.39	5.47
19	South Lanarkshire	5.94	6.50	6.63	6.08	3.53	4.06
20	Tyne Esk	5.90	5.70	5.88	7.24	4.45	5.89
21	West Lothian	6.15	7.34	5.83	4.22	3.54	2.32

Table 13: Weighted average scores for Stronger/Safer Indicators by LAG area

Table 14: Weighted	average scores	for Smarter	Indicators	by LAG	area
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LAGNo	LAG Name	No qualifications	NEETS	Graduates	Professionals
1	Aberdeenshire North	5 12	5.96	1 00	5.05
2	Aberdeenshire South	7 01	7 15	4.50	7.56
2		7.01	5 11	6.15	6.79
<u>з</u> 4	Argyll and Islands	5.00	J.11 1.69	6.17	0.78 E 29
	Avrshire	3.12	4.00	0.17	5.50
5	Cairngorms	3.44	3.24	3./1	4.48
7	Dumfrias and Calloway	6.02	6.63	7.30	5.42
/		2.79	4.46	4.32	3.62
8		5.98	4.85	6.56	6.76
9	Forth Valley and Lomond	6.52	5.10	7.15	7.24
10	Greater Renfrewshire and Inverclyde	7.71	6.23	8.11	8.90
11	Highland	4.80	4.31	5.54	5.29
12	Kelvin Valley and Falkirk	4.62	3.27	4.27	5.25
13	Moray	5.00	4.88	4.74	4.78
14	Orkney	4.03	5.36	5.84	3.78
15	Outer Hebrides	3.42	5.55	5.80	4.50
16	Rural Perth and Kinross	6.64	5.60	7.65	7.17
17	Scottish Borders	5.26	4.80	6.65	6.12
18	Shetland	5.76	5.78	5.77	4.02
19	South Lanarkshire	4.01	3.53	4.61	5.81
20	Tyne Esk	5.63	3.97	5.97	6.26
21	West Lothian	3.78	3.79	3.24	4.46