Factors which nurture geographical resilience in Britain

Factors which nurture geographical resilience in Britain: a mixed methods study

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ABSTRACT

Objectives: To identify plausible mechanisms by which resilience (low mortality rates despite persistent economic adversity) was achieved in some areas in Britain between 1971 and 2001

Methods: Mixed method observational study, combining quantitative analyses of cause and age group specific mortality rates, and area socio-demographic and environmental characteristics, with case studies of resilient areas which included in-depth interviews.

Results: The causes of death, and age groups, contributing most to resilience varied markedly between the 18 resilient areas; since disease aetiology varies, a range of protective processes must be in operation. Four area characteristics, which plausibly contributed to resilience, emerged from the in-depth interviews: population composition; retaining or attracting population; environment and housing; and social cohesion. Quantitative analyses demonstrated significant difference between resilient and non-resilient areas in retaining or attracting population only.

Conclusions: Whilst we identified plausible area characteristics through which resilience was achieved, there does not appear to be a definitive set which reliably produces resilience, and resilient and non-resilient areas did not differ significantly in their possession of most of these characteristics. If such characteristics do have a role in creating resilience, but are present both in resilient and non-resilient areas, further work is needed to explore what makes them ‘successful’ in some areas, but not in others.

Keywords: quantitative, qualitative, place, health inequalities, resilience

Resilience research focuses on people or places who are apparently ‘doing well’, or ‘staying healthy’ in circumstances in which they would normally be expected to ‘do badly’ or ‘become ill’.[1-5] Resilience is an emerging term in the wider public health literature, and its definition is contested.[6,7] The term is applied both to the achievement of a ‘good outcome’ in the face of adversity, and the processes by which adaptation or adjustment to the adversity might be achieved.[7]

There is a considerable body of work on resilience in individuals (see for example [1,3,6-12]), but fewer studies of resilient places.[5,13-15] Resilience research, at both individual and ecological level, requires a definition of both ‘adversity faced’ and the unexpected ‘successful adaptation or outcome’. These definitions vary markedly from study to study and it is thus difficult to generalise findings.[7] One finding which does seem common is the significance of the social environment. Gilligan comments *“The degree of resilience displayed by a person in a certain context may be said to be related to the extent to which that context has elements that nurture this resilience.” p94.[6]* Cohesive, supportive, opportunity rich environments appear to nurture resilience.[5,12-14]

In a previous study [2] we systematically examined 54 parliamentary constituencies in Britain which were economically disadvantaged between 1971 and 2001. We identified 18 ‘resilient’ areas which had significantly lower mortality rates than the other 36, across a range of ages and over time (table 1).

Table 1: British Parliamentary constituencies identified as resilient in a previous study (1971 – 2001).

Constituency Name
Birmingham, Sparkbrook and Small Heath
Bootle
South Shields
Rhondda
Sunderland North
Liverpool, Walton
Birmingham, Hodge Hill
Liverpool, West Derby
Bethnal Green and Bow
Blaenau Gwent
Liverpool, Garston
North Southwark and Bermondsey
Nottingham North
Birmingham, Ladywood
Hackney North and Stoke Newington

Barnsley East and Mexborough
Liverpool, Wavertree
Cynon Valley

In this study we combined quantitative and qualitative methods to ask “to what factors in these areas could their resilience be plausibly attributed?”.

METHODS

We combined secondary data analysis comparing the 18 disadvantaged but resilient areas to the 36 disadvantaged and non-resilient areas, with case studies of resilient areas which included in-depth interviews with local informants.

We began by identifying the causes of death and age groups which appeared to contribute most to resilience, comparing the 18 resilient areas with the 36 non-resilient areas. We examined patterns in death rates for suicide, other injuries, alcohol and drug related causes, cancers associated with high socio-economic position (including breast and colon), cancers associated with low socio-economic position (including lung and stomach), coronary heart disease, stroke, chronic obstructive pulmonary disease, pneumonia and all other deaths, across time (1971-2001), using data from the Office for National Statistics, General Registrar Office (Scotland) and UK decennial censuses. We also compared population composition in the resilient and non-resilient areas, particularly ethnic origins and religious affiliation, using UK decennial census data.

Four resilient constituencies were selected as case studies. The selection purposefully captured a range of area types; those with very strong and less strong evidence of resilience, ex-industrial, rural and inner-city areas, those with a large minority ethnic population, and those dominated by a white population. Data from both in-depth interviews and secondary sources (including census data, local histories and online resources) were used in the case-studies. We felt it important to gather perspectives on day-to-day life *and* health-related service and policy in the areas. Interviewees were therefore drawn from local councils, the NHS, the police service, university research teams, housing associations, community development organisations and the citizens’ advice bureau. The interviewees were balanced evenly between senior and junior staff, and included volunteers. All had long standing experience of their case study area.

Some interviews took place with multiple interviewees; in total there were 18 tape-recorded sessions and 30 interviewees. The topic guide included issues common to all interviews, and those specific to the case study area. All interview transcripts were thematically coded by Gibbs (using NVivo) and, independently, by Mitchell. We moved iteratively between quantitative and qualitative analyses, using each to pose questions of the other. For example, we asked informants about aspects of their area's character which had been revealed by the secondary data. We also undertook quantitative analysis to determine whether characteristics of the case study areas, suggested by informants as being important for resilience, were found in other resilient and non-resilient areas. We were not trying to quantitatively 'test' ideas about resilience which emerged from the qualitative data. Rather, we drew upon both sets of data to increase our understanding of community history and characteristics, and patterns of mortality, in resilient and non-resilient areas.

To preserve confidentiality for our informants when reporting our results we have anonymised their identities and the case study locations. The case study areas are referred to as 'Welsh', 'West Midlands', 'North West' and 'London', identifying their region of origin. Excerpts from interviews are attributed to interviewees by a code system combining the case study location initial letter, occupation initial letter and a number. For example, Welsh housing officers interviewed are denoted by WH, and then a number.

RESULTS

Which age groups and causes of death contributed most to resilience?
Figure 1 shows an illustrative subset of the cause and age-group specific mortality rates examined for the resilient and non-resilient constituencies. We emphasise that this is an illustrative *subset*.

Figure 1: Average mortality rates, per 100,000 population, by cause and age group for resilient and non-resilient persistently economically disadvantaged parliamentary constituencies, Britain (1996-2001)

[FIGURE 1 about here]

Although figure 1 suggests that when considered as a *group*, the resilient constituencies had lower rates for most causes, at most ages, in fact the causes of death and age groups contributing most to resilience varied very markedly between the 18 resilient constituencies. For example, in the North West case study, mortality among young adults was particularly low; about 50 per 100,000 25-29 year olds, 1996-2001, compared with 83 per 100,000 among the 54 poor constituencies (rates have been rounded to preserve case study anonymity). This was due to low rates of death from suicide, alcohol and drugs and other injuries compared to the other 36 areas with similarly disadvantaged economic histories. In contrast, in the West Midlands case study, rates of cancer were low, and this reduced mortality rates at ages greater than 45. We found no evidence that local health service priorities influenced these variations in mortality rate. It was not the case, for example, that the West Midlands case study area had prioritised cancer services more than the other non-resilient areas. Since different diseases have different aetiologies, we assumed at the outset that a variety of protective processes must be in operation; there was no common, single 'x-factor' which explained the resilience in all areas. Subsequent analyses were based on that assumption.

We have structured the rest of the results section around four themes which emerged strongly from the data, and which are key to thinking about the resilience we observed: population composition; retaining or attracting population; environment and housing; and social cohesion. Although we discuss them in turn, we recognise that they are likely to be inter-connected.

Population composition

The method of identifying a resilient area adequately controlled for age, sex and economic deprivation (including unemployment).[2] However, it did not control for other features of population composition which might positively influence mortality rate, such as ethnic origins and / or religious identity. The West Midlands case study area, for example, had a relatively high concentration of minority ethnic population drawn largely from Pakistani, Bangladeshi, Indian and Black Caribbean origins, with concentrations varying by age group. Men of Caribbean origin have a lower risk of cardiovascular mortality than the English and Welsh average, whilst those of South East Asian origin have lower rates of cancer mortality.[16-19] In this area, rates of cancers associated with low socio-economic position were markedly lower at age groups which have high concentrations of people from South East Asian origin (rates for 30-44 year olds were 40% lower than the British average, for example).

Secondary analyses, however, failed to reveal any significant difference between the resilient and non-resilient areas in terms of the proportion of population reporting an ethnic group other than white, in terms of individual ethnic group representations, or in terms of religious affiliation. We undertook these tests both on the whole population and by age group (data not shown). Some of the resilient areas were among Britain's most ethnically mixed, yet other very mixed areas were not resilient.

Retaining or attracting population

Maintaining population in the face of economic adversity emerged strongly as important in distinguishing the resilient places. Regeneration officers from the Welsh case study (denoted by *WR*), interviewed together, commented

WR4 "I would say a lot of the young men I know, sort of between twenties and forties now tend to be going away to work, sort of like on the railways and things, that seems to be quite popular round here at the moment…"
Julia Gibbs (the interviewer, henceforth JG) "And the people that you're talking about who go and work on the railways, will that just be part of the year, or do they move away altogether?"
WR4 "No, a lot of them travel back and forth."
WR1 "Yeah, they don't seem to move out of the area"…

The interviewees contrasted their area's experience with that of its neighbour, which, they reported, had *"seen massive outward migration"* (*WR1*). Census data confirmed that the neighbouring area experienced 2.25 times greater population loss 1971-2001, despite very similar economic history. Interviewees from all case study areas discussed the positive consequences of a stable population: families stayed together and supported each other, local shops and services were maintained because the population provided sufficient business for them. Some interviewees linked the retention of families or attraction of immigrants to religious or ethnic identity. This was particularly the case in the London and West Midlands case studies, where Jewish or Muslim identities were cited as significant in keeping families in, or attracting them to, the area. None of the interviewees mentioned job creation schemes as important for retaining or attracting population.

Quantitative analyses supported the observations of the interviewees. The resilient constituencies were significantly better at retaining or attracting population in the face of economic adversity than the non-resilient areas (mean population change 1971-

2001, -13.2% and -22.2% respectively, (mean difference in change -8% (95% CI for mean difference -17.5% - -0.3%) p=0.04). These differences were pronounced for people aged under 15 years, suggesting that it was families in particular who were more likely to be retained in, or attracted to, the resilient areas (for example, mean population change 1971 – 2001, for population aged 5-9, was -28.1% and -40.9% in the resilient and non resilient areas respectively, p =0.01).

Environment and housing

The value of local housing policies for maintaining the physical and social fabric of deprived communities emerged strongly in all case studies. Support for unemployed owner occupiers, from local authorities and their agencies, helped to maintain the physical fabric of houses and allowed poor neighbourhoods to appear vibrant and functional as this extract from an interview with housing officers in the Welsh case study (denoted by *WH*) illustrates;

WH2 "Well basically in this area we've got such very high levels of owner/occupation in these villages… literally those people would not have been able to maintain those houses... And we managed to do that… and obviously all the knock-on effects of that, the schools and all that type of stuff [have been] sustained by the fact that we've been able to maintain those villages."
JG "Right, so there's a whole percentage of owner/occupiers who might, for example, be unemployed or…?"
WH2 "Absolutely, absolutely. And, of course, very old housing stock."
JG "So they owned a property and then you would buy it off them and they would then rent it off you?"
WH3 "Yeah."
JG " Why would they choose to do that?"
WH3 "Because the houses are in absolute abominable condition and there was no other way they could do anything"

The pathway from good quality housing to better health in an area is plausible, though evidence that improving housing also improves health is mixed.[20,21] Housing policies may have had more impact on population health by retaining population than by directly affecting the health of individuals.

Several informants made reference to the quality of the physical environment in their areas, suggesting that they were either 'pleasant places to live' or, in one case, that

access to natural or green environments (such as forests or countryside) might have direct health benefits. There is some evidence that either physical or visual access to green environments has health benefits [22-24], and we noted that a number of our resilient areas were on the periphery of larger urban areas, perhaps offering greener environments than the inner cities. However, when we compared the quantity of green space in resilient and non-resilient areas in England, they were almost identical at 32.2% and 30.6% respectively (p=.753) (data from the Generalised Land Use Database [25], and unavailable for Wales). We note however, that quality and accessibility of green space may also be important in determining its use and potential health impacts.[24] Data were not available to compare quality of green spaces in resilient and non-resilient areas.

Community cohesion

A cohesive community [26,27], was the explanation for resilience which emerged most strongly from the interview data. The source of community cohesion varied, reflecting religious or ethnic identity in some areas and common industrial heritage in others. A health professional from the North West case study (denoted by NWPH) gave clear indications of the values of community engagement and cohesion.

NWHP1: "We've got various forums… We've got three area forums, one in the north, one central and one in the south. We've children and young people, we've got the children's parliament, we've got an elder people's voice, what else have we got? Patient and public involvement forum, there's a community engagement network,…I have been really impressed as to how involved the local community have got… [They] really put in so much time and energy and effort into their local community wanting it to flower and yeah, they're fantastic people, many of them, absolutely fantastic people, they look after their friends and neighbours."

One graphic example of the power of local cohesion to influence the neighbourhood environment came from the West Midlands case study. The situation was described by a local academic researcher:

WMR1 "…people just got fed up of prostitutes sort of plying their trade around street corners, women being hassled by people from outside the area… But people just said 'Enough is enough', and they had street patrols, they used to sit twenty-four hours a day on the corner, monitoring people, monitoring cars that came into the area, taking note … telling the police, so… people who were going to prostitutes from

outside the area would get a letter, you know, sent to their home. So it was really direct tactics and it worked, to an extent."

While this is evidence of community cohesion and coherence, driving away prostitution was unlikely to have had much direct impact on mortality rates. The interviewee also noted that the prostitution problem had simply been shifted to a neighbouring (non-resilient) area. It is possible that small-scale spatial shifts of community problems might help to explain how neighbouring areas could appear resilient and non-resilient, despite similarity in many other characteristics. Other case study areas also generated examples of community action to campaign for or maintain resources, or to change policies. In the Welsh case study, the community had begun a fruit and vegetable co-operative delivering to local people, with up to 50% of households in some neighbourhoods reportedly making purchases.

Other aspects of community life, such as the exchange of informal labour and support were also highlighted by interviewees. The 'informal' labour market (that is, work carried out for cash or for payment in kind and not taxed) was cited as one means by which a community accessed services, such as maintenance or plumbing, when money was short. Where such labour resulted in safer living environments, it is plausible that direct health benefits might have accrued.

The degree of social capital in an area cannot easily be assessed using secondary data [28], however it has been suggested that political participation is a valid proxy for the degree of social capital in a community.[26,27,29] To this end, we compared the average abstention rate in all general elections 1979 – 2001 and trends in abstention, among resilient and non-resilient areas. There was no significant difference in either rates or trends, with rates at 35.2% and 36.5%, respectively ($p=0.373$). Furthermore, there was almost no variation in political affiliation of the constituencies (which has also been linked to public health [30,31]). All but 3 of the 54 persistently poor constituencies had returned a Labour member of parliament in every election since 1983.

DISCUSSION

Principal findings

The study intended to uncover plausible pathways through which the 18 poor but resilient areas might have attained their relatively low mortality rates. The strongest finding, suggested by both quantitative and qualitative analyses, is that they managed to retain or attract population to a greater extent than the 36 other poor areas. Previous studies have suggested an association between population loss and poor health, operating partly via selective migration and partly by the poorer environment and health services the residual population experiences. [32-36] This perspective has been challenged by Exeter et al. [37] who suggest that the relationship between population change and mortality might be an artefact of that between area deprivation and mortality. In this study however, all the areas were deprived and retention of population was still associated with relatively better health questions. Davey Smith et al. [32] note that whilst work and wages are key drivers in migration decisions, 'quality of life factors' including issues such as available amenities and services, notions of community and quality of housing, are also key.[38] This has direct resonance with our findings; several plausible mechanisms by which population was retained or attracted were highlighted. These include innovative local housing policies to maintain the homes of deprived owner occupiers as well as social tenants, and strong community cohesion, perhaps founded on a common industrial heritage, a common ethnicity or religion. Some of these factors may also have direct health benefits in themselves via reduction in exposure to cold and damp because of housing repair, supportive social networks providing access to health care and services, or stress reduction via psychoneuroendochrine mechanisms.[39-41] Community cohesion has been identified as important in fostering resilience in other studies [1,5], though its connection to retaining or attracting population has not previously been articulated as strongly as in this study. Community cohesion has also been linked with improved mental and physical health in itself.[42-44]

That we were unable to find significant differences between the resilient and non-resilient areas in characteristics other than population change raises important questions. We recognise that it may be due to the crudeness of our quantitative measures. However, if such characteristics do have a role in creating resilience, but are present both in resilient and non-resilient areas, what makes them 'successful' in some areas, but not in others? Is some other attribute required to act as a catalyst? Whilst there may be a set of ingredients which could be used to create resilience, perhaps not every ingredient is required in every situation. Or perhaps resilience is something so fragile that often, where the ingredients are in place, insufficient

protection of health is conveyed for mortality rates to appear relatively low. If this is the case, our in-depth focus on resilient areas only may have masked valuable information on why characteristics identified lead to resilience in some circumstances, but not others.

Strengths and weaknesses of the study

Whilst defining 'area' using parliamentary constituency has technical and substantive advantages for quantitative analysis of mortality data [45,46], constituency may not have equated to the 'community' our interviewees knew. Although JG began each interview by showing a map delimiting the constituency, inevitably the communities discussed in the interviews did not precisely conform to constituency boundaries. However, JG was careful to prompt respondents to consider whether their views applied across the entire area or not. It was apparent from the interview data that respondents were not simply discussing their own 'patch', they did try to reflect on the constituency as a whole. Our approach to defining 'area' did facilitate assessment of resilience, using an objective measure of health, across large populations.

Our study design had identified resilience using all cause mortality rates, but used the cause-specific rates to develop hypotheses about processes fostering resilience. An alternative design could have identified areas with disease-specific resilience and focused on pathways specific to that disease's aetiology.

The quantitative explorations of differences in environment and social cohesion between resilient and non-resilient areas were crude and partial. The extent to which participation in voting captures social cohesion or social capital in an area is highly debatable for example.[28] Between-group testing also ignores the possibility that attributes contributing to resilience might vary from area to area; social cohesion centred on ethnic identity might have been important in determining resilience in some areas, but not in others.

Mortality rates in all areas will have been influenced by life-long exposure to social and physical risk factors in the population; there is a lag between risk exposure and mortality which is difficult to control for. Although our interviewees were selected for their knowledge of the areas, some aspects of community history may not have been known to them because of their age or length of residence. However, in our previous study we found remarkable stability in patterns of mortality rates over time (that is to say, the resilient places had been resilient for a long time).[2]

The selection of interviewees with a 'professional' interest in their community will have influenced our data. It is possible that the interviewees were simply repeating what they had read in professional literature, or what they thought 'we wanted to hear'. Furthermore, their professional experiences of life in the deprived communities may have been very different to those of 'the public'.

The mixed methods approach can have advantages over perspectives drawing on a single epistemological paradigm [47] and offered a rich and detailed account of how communities try to cope with economic adversity. The qualitative data were intrinsically different to the quantitative data, with the former reporting perceptions of a particular group of stakeholders and the latter offering objective observations of whole area populations or environmental characteristics. It seems plausible that the qualitative data were more sensitive to characteristics and features of day to day life in these areas than the quantitative data. However, it remains difficult to integrate and assess seemingly contradictory findings from these differing perspectives.[48]

Resilience might not be constant, either across communities or across time within the same community. Some characteristics, present in all communities, may only confer resilience' in the right circumstances or to a particular population. The study design might have been insensitive to such variability. However, if resilience (as it is defined here) does have the capacity to make a significant contribution to public health, the study design should have detected its influence.

The value of a resilience approach

For public health, perhaps the greatest value of the resilience approach is the question it asks: how do some people or places stay healthy in unpropitious circumstances?[4] The utility of trying to understand *health* rather than *disease* or sickness is recognised by epidemiologists, but it remains a perspective which is rarely adopted in the literature.[4,15,49] In policy terms, resilience might seem to be an attractive concept, suggesting that it is possible to weaken (but not uncouple [1,2]) the connections between adversity and poor health. Yet poverty is an incredibly strong predictor of high mortality, so resilience must, by definition, be rare. Furthermore, whilst we have identified some characteristics which plausibly contribute to resilience, it is notable that many of these could not be bestowed on a community by policy makers as a response to impending economic disaster. Policy makers cannot quickly create the sense of cohesion which stems from a shared

history of being a mining community, for example. We would not wish a resilience perspective to become an excuse for blaming those who succumb to the effects of poverty or adversity of any kind just because it may be possible to identify some people and places who do, to an extent, 'beat the odds'.

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WHAT IS ALREADY KNOWN ON THIS SUBJECT

Economic deprivation in an area is usually associated with higher mortality rates among the area's population.

It is possible to identify economically deprived areas in which mortality rates are much lower than would be expected; these are referred to as resilient areas.

WHAT THIS PAPER ADDS

This paper identified some plausible mechanisms by which resilience is achieved. The strongest of these appears to be maintaining or attracting population, despite economic decline.

However, there does not appear to be a definitive set of characteristics which reliably produces resilience.

POLICY IMPLICATIONS

Resilience might seem to be an attractive concept, suggesting that it is possible to weaken connections between adversity and poor health. Yet poverty remains a strong predictor of high mortality, so resilience must, by definition, be rare.

Whilst we can identify some characteristics which plausibly contribute to resilience, it is notable that many of these could not be bestowed on a community by policy makers because they relate to common social, ethnic or industrial heritage.

Retaining population in the face of economic adversity, perhaps through innovative housing policy, may protect community health.

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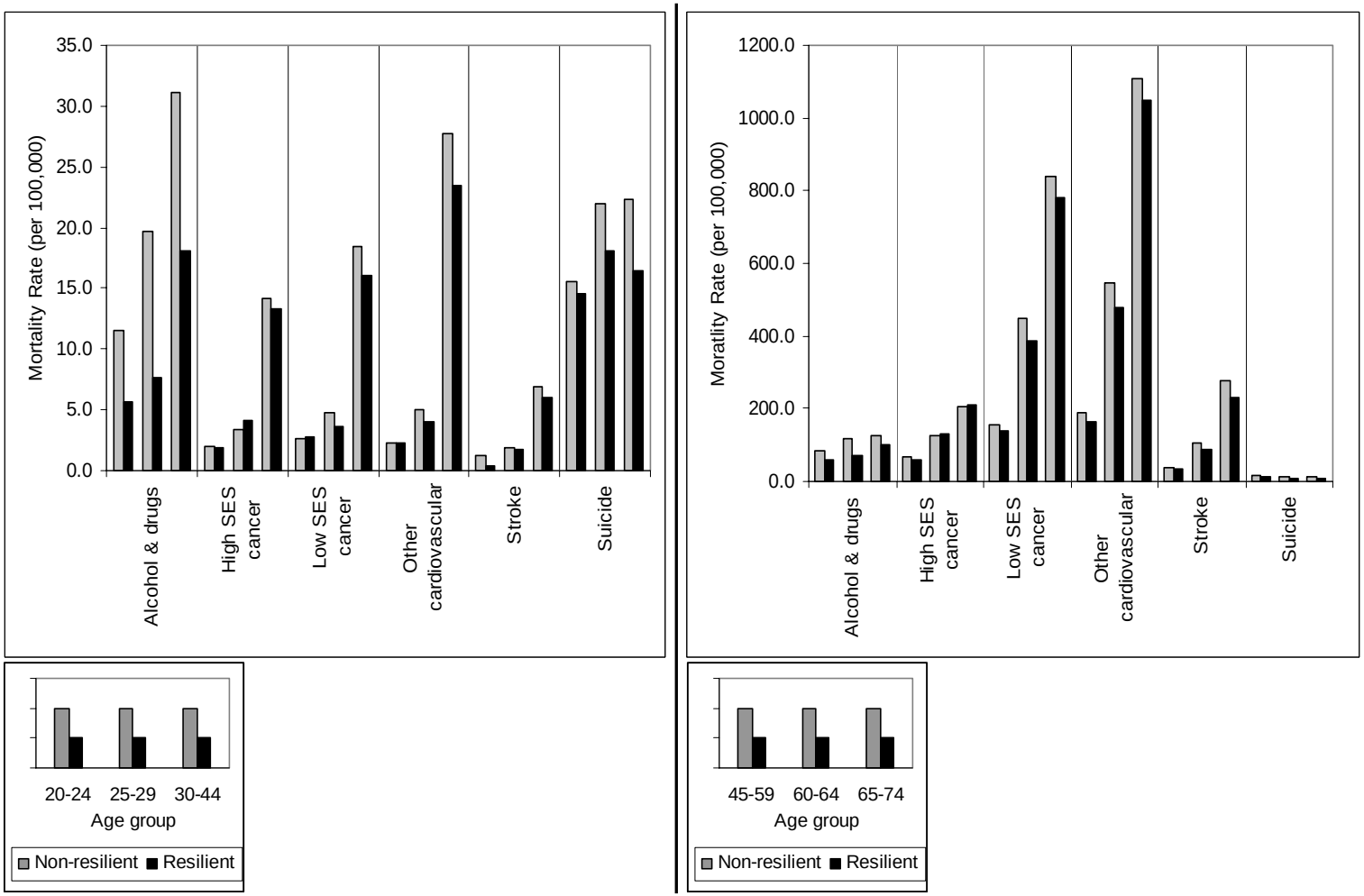
Legend for Figure 1

For each age group, rates are shown for non-resilient and resilient areas. Three age groups are nested within each cause of death, as shown in the key.

High SES cancer denotes those associated with high socio-economic position (including breast and colon)

Low SES cancer denotes those associated with low socio-economic position (including lung and stomach)


Mortality Rate (per 100,000)
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Alcohol & drugs
High SES cancer
Low SES cancer
Other cardiovascular
Stroke
Suicide
20-24
25-29
30-44
Age group
Non-resilient
Resilient
Moratlity Rate (per 100,000)
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
Alcohol & drugs
High SES cancer
Low SES cancer
Other cardiovascular
Stroke
Suicide
45-59
60-64
65-74
Age group
Non-resilient
Resilient