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ABSTRACT

This report uses newly developed techniques of statistical analysis to assess the separate and joint influences of home, school, and neighborhood in Lothian (Scotland, United Kingdom) and to show that deprivation in each of these areas depresses young people's educational attainment. The results reported here come from the first phase of a two-phase study of the effects of deprivation on young people's lives. Phase 1 examines how far family, school, and neighborhood factors influence young people's transition into the labor market or higher education. The report addresses two related aspects of the problem. First, although it is well known that deprivation is not a single, unidimensional condition, research to date has been unable to assess the relative magnitude of different contributory factors. Using the new statistical technique of multilevel analysis, this report examines the influence of family, school, and neighborhood characteristics on a child's educational attainment. A better understanding of these discrete influences is seen as a means to a more efficient targeting of remedial policies. Second, the report examines how aspects of social change are affecting the nature of disadvantage itself. The paper includes statistical data in 27 charts and 29 tables, 3 appendixes, and a list of 31 references. (AF)

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A study of the incidence of deprivation in Lothian and of its influence on young people's educational attainment

Catherine L Garner

A report on Phase I of the research carried out January 1988 to March 1989

March 1989

Contents

Tables and Figures are gathered at the end of each Chapter or Appendix, as appropriate, but are not paginated.

Summary

1. Chapter 1 examines changes in the characteristics of school-leavers and their families of origin over the decade 1977-1987 comparing Lothian with the rest of Scotland.

2. The main changes reflect nationwide UK trends which can be summarised in terms of two main themes: 'improvement' and 'polarisation'. By 'improvement' is meant an increase in the incidence of characteristics in the parental population that commonly lead to higher educational attainment among children. By 'polarisation' is meant a widening gap between the educationally relevant advantages of the majority of families and the disadvantages of a growing minority.

3. Trends towards 'improvement' were evident in the rising proportions of fathers in non-manual occupations, in the higher proportions of parents educated beyond the minimum school leaving age, and in the declining proportion of families with more than three children. On the other hand, polarisation was evident in the growth in the proportions of single-parent families and of families where the male head was unemployed.

4. In respect of all these indicators, Lothian started with an advantage over the rest of Scotland, and then increased that advantage over the decade 1977-1987. In particular, Lothian had more substantial increases of fathers in non-manual occupations and of parents educated beyond the minimum. Similarly Lothian experienced lower falls in father's employment and a more rapid decline in family size.

5. Among the young people themselves, rising proportions over the decade left school with some formal SCE qualifications (the study took no account of CSE). There were decreases in early school leaving and truanting, and an increase in satisfaction with school.

6. Changes over the decade in young people's destinations immediately post-school were dominated by the fall in the proportions entering full-time employment, a fall of over 30 per cent across the decade in Scotland as a whole. Correspondingly, unemployment among school leavers increased, but the increase was kept low by the uptake of YOP

and YTS. Early in 1987, 20 per cent of young people who had left school in 1986 were on YTS. The burden of unemployment and of enrolment on government schemes fell squarely on the less qualified. For this group in Lothian, unemployment was around twice the Lothian average. Nevertheless, Lothian fared better than the rest of Scotland.

7. Chapter 2 describes the spatial distribution of deprivation in Lothian and focuses on deprivation at an area level. Using a Scottish Office indicator of deprivation, we identify eighteen areas in Lothian that are more deprived than the national Scottish average. Eight of the deprived areas are in Edinburgh, six in West Lothian and two in each of East and Midlothian. We then examine the family and other characteristics of the young people in these deprived areas, and compare them with the rest of Lothian. For technical reasons the comparisons are based on 1981 data. The eighteen deprived areas all have higher proportions of unqualified school leavers and higher unemployment rates than the average for Lothian. Unemployment was highest in the areas in West Lothian where isolation, transportation costs and depressed local labour markets may have had a cumulative effect on opportunity. Young people from Lothian's deprived areas tended to be relatively alienated from schooling. These areas had higher proportions of early leavers, higher levels of truancy and lower levels of satisfaction with schooling.

8. Family-background characteristics suggested some degree of polarisation *within* Lothian. Compared to Lothian averages, Lothian's 18 deprived areas had lower proportions of fathers in non-manual occupations, higher proportions with no occupation, higher proportions of single-parent families, more large families, and higher proportions of parents with minimum levels of schooling.

9. Using the new statistical technique of multilevel analysis, Chapter 3 examines the influence on a child's attainment of family, school and neighbourhood characteristics.

10. By far the greatest influence on attainment is individual pupil ability. However, we did not have a measure of ability at age 12 in the Lothian study. Of the factors that we could measure, family-background had the greatest influence. Schools also contributed to individual attainment, and we found that some schools serving deprived areas boosted young

people's attainment more than other schools serving less deprived areas. Neighbourhood deprivation depressed attainment. Within any school, children from the most deprived home neighbourhoods tended to perform worst, even after allowance was made statistically for differences in family-background. Attendance at schools which housed large proportions of children from deprived neighbourhods tended to lower the child's attainment, whatever the family characteristics of the child.

11. The effects on attainment of deprivation in the home neighbourhood are not trivial. We can express their size in terms of two young people coming from identical family backgrounds and attending the same school. The first young person, however, lives in one of the less deprived areas of the school catchment (in technical terms, at the 10th percentile), while the other lives in one of the more deprived areas (at the 90th percentile). The former young person, will attain between two and four more O grades (at A-C grade) than the latter young person, even though they are identical in other respects. (We say 'between two and four' because our statistical model does not fully control for pupil ability on entry to secondary school; so the lower estimate, of two O grades, is probably the more accurate).

12. Many of our conclusions will not be unexpected. But at least two are entirely new. First, we add to the growing body of evidence, from economic, social and other sources, that suggests that opportunity in Britain is polarising, socially and geographically. In this regard, Lothian as a whole is relatively advantaged, standing in relation to the rest of Scotland rather as the south-east of England stands in relation to the rest of England. Nevertheless, the young people in Lothian's eighteen deprived areas suffer major disadvantages, which may possibly be experienced even more acutely as a result of the relative good fortune of their peers in the Region.

13. Second, the evidence on the impact of neighbourhood deprivation on educational attainment is new, though long suspected. Statistical models have not previously been able to disentangle the effects of family, school and neighbourhood. Even with this advance, however, we still have an imperfect understanding of how these effects occur, and how the effects of deprivation might be mitigated. What is clear,

however, and new, is that families, schools and neighbourhoods are all implicated. To be wholly successful, therefore, remedial policies must be directed at all three.

Introduction

Does deprivation damage? The answer to this question is an emphatic 'yes'. For young people who live in Lothian's deprived areas, the consequences for their education and life chances are serious. Using newly developed techniques of statistical analysis we have been able for the first time to assess the separate and joint influences of home, school and neighbourhood, and to show that deprivation in each of these depresses young people's educational attainment. Neighbourhood deprivation effects are not trivial. For example, for two young people with identical family characteristics attending the same school but coming from home neighbourhoods with very different levels of deprivation, the difference in attainment may be anything between two and four O grade passes. Poor educational attainment in turn has a detrimental effect on what young people do on leaving school.

The results reported here come from the first phase of a two-phase study of the effects of deprivation on young people's lives. Phase 1 examines how far family, school and neighbourhood factors, separately and jointly, influence young people's educational attainment, and thereby also influence transition into the labour market or higher education. Phase 2 of the project was initially intended to examine trends in the incidence and clustering of family-background factors associated with low educational attainment, disaffection from school and unsuccessful entry into the labour market. In the event, trends over time in these factors have been examined in Phase 1, and are reported here. Phase 2 will take further the extent to which family disadvantage is transmitted through the child's low attainment at school into protracted periods of unemployment and into distinctive life styles after leaving school. Phase 2 will look mainly at Scotland as a whole. In Phase 1 we pay special regard to young people who live and go to school in Lothian.

The project as a whole aims to help the Trust gain a better understanding of the nature of deprivation as it affects the lives of today's young people. To this end, we address two related aspects of the problem. First, although it is well known that deprivation is not a single, unidimensional condition, research to date has been unable to assess the relative magnitude of different contributory factors. Here, for the first time, we have been able to assess the influence on a young person's educational attainment of deprivation in the home, the school and the neighbourhood. We know that disadvantaged families tend to be grouped together into deprived neighbourhoods through the operation of housing markets and policies. We also know that schools gather children together from deprived and non-deprived homes and neighbourhoods.

What we have been unable to do until now is to say how far deprivation in each of these levels separately influences an individual pupil's attainment. A better understanding of these influences may help to clarify the processes at work and allow a more efficient targetting of remedial policies.

Second, we examine aspects of social change in relation to disadvantage. There are major changes occuring in the social structure of the population at large, and these are likely to be affecting the very nature of disadvantage itself. Any understanding of the nature of social disadvantage today must take account of social change. It must ask whether factors such as the increasing number of single-parent families, and a decade of high adult and youth unemployment, have redefined the nature of disadvantage. We need also to ask whether social changes have differentially affected particular sub-groups of the population, or sub-groups in different areas of the country.

Phase 1, reported here, describes changes affecting young people across the decade 1977-1987. It also makes substantial progress towards disentangling the effects of deprivation in the home, the neighbourhood and the school. Phase 2 will examine how disadvantage which has resulted in depressed educational attainment is then transmitted into young people's life chances, such as their transition into the labour market and patterns of family formation.

Definitions of deprivation

We must start by saying what we understand by deprivation. The word is common-place but ill-defined. It has its origins in the concept of material poverty, and achieved common currency in discussions of social inequalities in Britain in the late 1960s. Deprivation has thus come to mean something more than just the lack of material resources; for while the poor are often seen as those at the bottom of an overall distribution, the deprived are taken to be those who fall below a certain well defined line, such as the level of income which triggers payment of Supplementary Benefit. Deprivation is essentially a normative concept, incorporating value judgements about what is morally acceptable and what is not. It is multi-dimensional because it implies relative lack of access to a range of resources. Deprivation can exist at many different levels. Individuals, families, schools and areas all may be deprived. Townsend for example defines deprivation as:

"A state of observable and demonstrable disadvantage relative to

> the local community or the wider society or nation to which an individual, family or group belongs." (Townsend 1987 p126)

The study of deprivation has largely been dominated by attempts to develop efficient indicators to discriminate among individuals, households, social groups and areas. The fact that these indicators exhibit a pattern of geographical concentration has resulted in the widespread adoption of area-based policies of positive discrimination to alleviate deprivation. The implementation of these area-based policies has, in turn, concentrated effort still further towards the design of efficient indicators, but at the expense of research into causal factors. The lack of a strong prior definition of deprivation in the design of these indicators has led to a situation in which deprivation has become that which the indicators measure (Edwards 1975).

The concern engendered by deprivation (however defined) is with more than social injustice alone. It is a concern that deprivation, by its very nature, will perpetuate itself through some 'cause and effect' mechanism, forming a 'cycle of disadvantage' from one generation to the next (Rutter and Madge 1979). In particular, the worry raised by geographical concentrations of deprivation is related to political unease. Geographical 'enclaves' of deprived groups whose very spatial concentration leads to an increase in damaging, non-confirmist life styles, values and attitudes, are believed to pose a threat to social and political stability (Norris 1979). These fears and beliefs fit with the conceptualization of deprivation as something which has its roots in personal and familial pathologies, rather than in structural explanations.

There have been attempts to define direct measures of deprivation, as distinct from indicators (Townsend 1979; Piachaud 1987; Mack and Lansley 1985). Because of data limitations, these approaches can rarely be used for the targetting of policies. The requirement for nationally available and comparable data at small areal scales has resulted in an overwhelming reliance on the use of indicator variables from Census data. Census measures however can be no more than indicators because they are related in an essentially unknown way to the incidence of deprivation. They are seldom a direct measure of deprivation itself. Indicators are rarely based on adequate causal explanations and are often too general to be efficient. What might be a valid indicator for health deprivation does not necessarily have the same validity for educational disadvantage. For the future, indicators of disadvantage should be rooted in causal explanations of particular forms of disadvantage and these should be the product of directed research. Such an approach would in turn lead to the development of better indicators. Phase 2 will begin to unpick some of these causal

mechanisms with regard to the ways in which low educational attainment is transmitted into particular life chances and styles. For the present study, however, we restrict ourselves to the use of existing and well-used indicators. One advantage of this approach is compatibility with official figures.

Design of Phase 1

Phase I draws first on information from recent reports, both national and local, to set our findings into context (Lothian Regional Council 1984; Edinburgh District Council 1987; HMSO 1989). But the main body of our findings come from an analysis of data from the Scottish School Leavers Surveys (SSLS). In Chapter 1 we examine changes across the ten years between 1977 and 1987 as they have affected young people and their families in Lothian and the rest of Scotland. In Chapter 2 we establish some of the characteristics of deprived areas in Lothian and focus in more detail on young people from those areas. Chapter 3 combines data from the 1981 SSLS with enumeration-district data from the 1981 Census. These data are used in a 'multilevel' analysis of the effects of family, school and neighbourhood on young people's educational attainment. Multilevel analysis is a new research technique which enables us to address a number of important questions. First, we can assess how much of the variation in educational attainment can be attributed to influences at the family, the school and the neighbourhood level. Second, after we have allowed for differences in the individual and family characteristics of pupils in schools, we can ask how much of the average-attainment differences between schools can be explained by characteristics of the pupil membership (or composition) of the school. Third, we can examine whether schools make important contributions over and above these compositional effects and, finally, we can assess whether different types of pupils do better or worse in some schools rather than in others.

Data for the trends analyses in Chapter 1 come from the SSLS of 1977, 1979, 1981, 1983, 1985 and 1987. All surveys have been carried out by the Centre for Educational Sociology at Edinburgh University (since 1983 in conjunction with the Scottish Education Department), and have been additionally supported by funding from the Economic and Social Research Council (formerly the SSRC), the Training Agency, the Industry Department for Scotland, and other funding bodies (for details, see Burnhill, McPherson, Raffe and Tomes 1987).

In Chapter 2 we use data from the 1981 SSLS survey. Like other SSLS surveys, this was sent out in April to young people who had left school in Scotland in the

previous academic session. The 1981 survey covered leavers from all secondary schools in Scotland and was sent to 37 per cent of all 1979/80 leavers (Burnhill 1984). Other surveys were sent to 10 per cent of leavers (except 1977 which went to more). All analyses employ a design weight to take account of biases arising from non-coverage. Lothian analyses are restricted to those pupils who live in Lothian and who attended Lothian schools. The 1981 data are used for our more detailed, small-scale analyses because of the larger sampling fraction, and because they have been linked to area-level data from the 1981 Census of Population. Enumeration-district data from the Census is matched to individual survey data through home postcodes (Garner 1984). This allows us to locate, geographically the home address of our survey respondents within Lothian, and to use Census data to describe each respondent's home neighbourhood.

Chapter 1

Young People and their families: A decade of change

Introduction

Life for young people has changed considerably over the last ten years as a result of changes in the social and family composition of the population at large (HMSO 1989). There appear to have been two countervailing trends at work: improvement and polarisation. Improvement in this context is defined as an increased incidence in the adult population of the types of characteristics which are associated with higher levels of childrens' educational attainment. For example, higher proportions of the adult population are now in non-manual employment, and the level of parental education is rising as the educational changes of the 1940s and 1950s feed through. However, there have also been trends towards the break up of traditional nuclear families and towards higher adult unemployment. Thus there is a polarising minority of households that are not well placed to transmit advantages to their children, advantages arising from increased prosperity and improvement, as defined above. The trend towards a more non-manual and more highly educated parental population will have 'improved' the family life and home environment of many young people. For many others however, the doubling of the proportion of single-parent families, from seven per cent in 1979 to 14 per cent in 1987 (HMSO 1989), will have depressed home circumstances. One-in-seven families now have a non-nuclear structure, and suffer the social and economic stresses often related to this type of household. A recent survey of poverty in Edinburgh showed that over 70 per cent of single parents in Edinburgh are dependent on Supplementary Benefit (Edinburgh District Council (EDC) 1987). Among nuclear families, the increase in adult male unemployment has meant that many traditional families too have suffered economic hardship. It is recognised that, on several direct measures of hardship, unemployed couples with children are the worst off (EDC 1987), and that family hardship can have detrimental effects on the education and life chances of young people.

Outside the home there have also been considerable changes linked to the national economic situation. Employment prospects for young people collapsed in the early 1980s, and special schemes such as the Youth Opportunities Programme (YOP)

and the Youth Training Scheme (YTS) have become almost universal for the less well qualified, changing the entire process of transition from school for many young people (Furlong and Raffe 1988). At the same time, the opportunities for better qualified young people to enter higher education have also been restricted (Burnhill, Garner and McPherson 1988).

Have the families of young people, and those in Lothian in particular, experienced these changes to the same degree as the population at large? Using data from a decade of surveys of young people throughout Scotland, we can say whether similar trends are to be found nationally in Scotland and locally in Lothian. It is important to emphasize here that, because we are sampling families through their 16 to 18 year old children, we have a representative picture only for this section of the population (and not for the population at large). This means, that when, for instance, we examine family size (see below) we do not, by definition, have families with no children. Our estimates may therefore be at variance with official estimates from sources such as the Census.

Results

Compared with 1977, more young people in Lothian in the mid 1980s are likely to have a father who is classified as being in a non-manual occupation. Lothian has a higher proportion of non-manual fathers than the rest of Scotland and, indeed, the gap has widened in favour of Lothian across the decade. Lothian's non-manual group has increased by six per cent between 1977 and 1987, from 31 percent to 37 percent. In the rest of Scotland, the increase in the proportion of fathers in non-manual occupations has been around four percent, from 27 per cent to 31 per cent (Table 1.1B, Diagrams 1.1a, 1.1b).

Father's occupation is used as the basis for the categorisation of social class. The categorisation used here is the Registrar General's scheme (OPCS 1970; OPCS 1980) which is the most commonly used classification of this kind. (The terms 'father's occupation' and 'father's social class' are used interchangeably in this report). A more detailed breakdown of social-class composition (Table 1.1A) shows that the increase across Scotland has been due to the growth of the intermediate category (Registrar General's Social Class II) which consists of managers and employers. This increase is consistent with known changes in the occupational structure of Britain as a whole.

Young people from non-manual families on average do better at school than those

from families where the father is in a manual occupation. Therefore the growth in non-manual employment might be expected to have a positive effect on young people's school attainment (Burnhill *et al* 1988). In contrast, the increased proportion of fathers whose occupation is unknown or unclassifiable is likely to have an opposite effect on educational attainment. Across Scotland, there has been an increase in this unclassified group of almost ten per cent since 1977, from around 12 per cent to around 22 per cent. This reflects two trends: first, the rise in adult long-term unemployment; and second, the increasing number of young people who live in non-nuclear families and are therefore unable, or unwilling, to report an occupation for their father. Trends in Lothian are comparable to those in the rest of the country.

There has been a large increase in adult unemployment nationally during the 1980s, and the trends are evident from our information on young people. But since the 1981 survey, the *average* increase across Scotland, and particularly in Lothian, does not seem to have been severe, with employment levels recovering to 1980 figures by 1987. In Lothian, the proportion of fathers in employment is consistently higher than for the rest of Scotland, by five or more percentage points (Table 1.2, Diagram 1.2).

Information on family structure is only available from the SSLS since 1981, but it clearly shows the increasing trend for young people to come from single-parent families. The Lothian increase is similar to that in the rest of Scotland, with increases of three to four per cent over the six-year period from 1981 (Table 1.3, Diagram 1.3). By examining family structure and father's occupation together, we can gain some insight into the increase in non-classifiable and missing occupations (reported above). Around one third of those who did not report an occupation for their father come from single-parent families.

Large families are among the poorest groups in society, with just over half of them living in, or at, the margins of poverty (EDC 1987). Young people from large families tend to suffer in their educational performance, and this is exacerbated when large families are also single-parent families or have an unemployed head of household. In common with trends across the country, the proportion of large families has decreased in the last ten years. Across the period, fewer of our respondents in Lothian than in the rest of Scotland come from families with three or more children. The decrease in family size has been more marked in Lothian than elsewhere, although the drop is considerable even in the rest of Scotland (Table 1.4, Diagram 1.4).

A further important influence on young people's educational attainment is the level

of parental education. This too has changed. Children from families with more educated parents on average do better at school (Burnhill *et al* 1988), and the national trend for parents to have had more voluntary schooling is clear from our information here. The greatest increase has been among parents who have had a modest experience of post-compulsory schooling. In 1977, only nine per cent of young people had a parent who had stayed on at school for one year beyond the minimum, but this had risen to almost 20 per cent by 1987. Across the decade, Lothian has a higher proportion of parents than the rest of Scotland educated beyond the minimum, and the gap has grown in favour of Lothian. In 1977, some 24 per cent of young people in Lothian had parents educated beyond the minimum, compared to 20 percent in the rest of Scotland. By 1987 the figures had increased to 41 and 34 per cent respectively (Table 1.5, Diagrams 1.5a, 1.5b).

In the light of these changes in the social structure, how have young people in Lothian fared in terms of their schooling and their immediate post-school experience during this decade of change? The improvement in qualification levels among young people in Scotland has been documented in detail elsewhere (McPherson and Willms 1987) and can be clearly seen here (Table 1.6, Diagrams 1.6a, 1.6b). There has been a noticeable decrease in the proportion of young people leaving school with no formal educational certification (a reduction of around six per cent). Correspondingly, there have been increases across all qualification levels, and particularly in the proportion of young people leaving school with three or more Highers (the minimum formal qualification level for entry to higher education). Trends in Lothian are comparable to those in the rest of Scotland, but appear to have been disproportionately influenced by improved female qualifications, particularly in Highers (Table 1.7). (We note that our measures of qualifications take no account of CSE awards, and will therefore understate attainment in Lothian to some degree.)

Qualifications are a quantifiable outcome of young people's education. Some indication of their feelings about their educational experiences can be gained from how long they remained at school, how often they truanted and how useful they thought their time in school had been. In 1977, some two-thirds of all young people left school at the earliest opportunity (Table 1.8, Diagram 1.7). By 1987 this figure had dropped to just over half, possibly as a reaction to decreased opportunities in employment. From 1983 onwards, more girls than boys stayed on beyond the minimum school-leaving age in Lothian (Table 1.9). The pattern of leaving school from fifth year in the West of Scotland means that, compared with the rest of Scotland, more pupils in Lothian remain at school until sixth year. Since the mid 1980s this has been particularly true of Lothian girls.

Serious truanting has decreased since the early 1980s, again possibly a reflection of tightening post-school opportunities and of young people's realistic appraisals of the importance of education for their future (Raffe 1986). Patterns in Lothian are more-or-less identical to those in the rest of Scotland (Table 1.10, Diagram 1.8). It is among boys that the problem of serious truancy persists, standing at around 11 per cent (Table 1.11). In general, pupils' satisfaction with their final year of schooling is similar between Lothian and the rest of Scotland, with girls being more positive about their school experiences than boys (Tables 1.12, 1.13, Diagram 1.9).

Destinations on leaving school are closely linked to educational attainment. The most striking pattern across the decade is the dramatic decline in the proportion entering full-time employment. This has decreased by 29 per cent for Lothian over the decade, from 69 to 40 per cent, and by 34 per cent for the rest of Scotland, from 63 to 29 per cent (Table 1.14, Diagrams 1.10a, 1.10b). Young people in Lothian have a consistently higher chance of entering full-time employment than those from the rest of Scotland.

School-leaver unemployment has risen by around five or six per cent since 1977, but this has of course been kept low by the introduction first, of YOP and subsequently of YTS. In spring 1987, approximately six months after our latest survey respondents had left school, almost 20 per cent of school leavers from Lothian and almost 30 per cent of leavers from the rest of Scotland were on YTS. The proportion of young people entering full-time further education rose to a peak in 1983 but has subsequently dropped back. Patterns of entry to further education are similar in Lothian and the rest of the country.

The burden of unemployment and entry to government schemes falls predominantly on the less well qualified (Tables 1.15, 1.16, Diagrams 1.11a, 1.11b, 1.12). In 1987, for example, while 19 per cent of school leavers in Lothian were on a YTS scheme six months after leaving school, 33 per cent of those who left school with no formal educational certification were on schemes. Similarly, unemployment among school leavers in Lothian stood at around 14 per cent but, for the 'unqualified' group, the figure was almost double at 26 per cent. Those who leave school with no formal qualifications are virtually excluded from direct entry into full-time further education, and therefore are more vulnerable to the vicissitudes of the youth labour market (Garner, Main and Raffe 1987).

Post-school destinations also vary for boys and girls in Lothian. Boys at present are more likely to enter YTS schemes or to become unemployed, but this is a pattern

which has developed only since 1985 when there appears to have been an upturn in the proportions of girls entering employment (Table 1.17). The unemployment pattern for young people mirrors the changes in the adult-unemployment patterns for Edinburgh and Lothian where the female-dominated unemployment of the early 1980s has given way to increases in male unemployment in recent years. This is a direct consequence of the changing nature of the employment structure in the region, with a substantial decrease in the manufacturing base of traditional and heavy industries, and an increase in the service and new-technology sectors which tend to employ women, frequently in part-time, low-paid employment (EDC 1987).

Summary

We have shown that changes affecting the families of young people in Lothian are generally similar to the changes occuring at a national level in the population at large. Two major trends have been evident. These trends will have countervailing effects on young people's educational performance. There has been an increase in the proportion of families who have fathers in non-manual occupations, and an increase in the general educational level of parents. These changes, together with the tendency for young people to come from smaller families, are changes that are likely to be beneficial to young people's attainment. However, there have also been increases in the proportions of single-parent families and of families with unemployed household heads. These countervailing trends suggest some measure of polarisation and possibly the development of an 'underclass'.

These family-background factors influence educational progress. Just as we observed changes in these factors, we also found changes in the outcomes of schooling. In terms of formal school qualifications, we were able to report a picture of improvement across the board, with young people in Lothian improving at a similar rate to those in the rest of Scotland. In terms of staying on at school, levels of truanting and a measure of satisfaction with schooling, a more positive attitude towards schooling seems to have developed across the decade, in both Lothian and in the rest of Scotland. Compared to similar young people in the mid-to-late 1970s, more young people in the 1980s remained at school, truanted less and felt their time at school to have been worthwhile.

Over the ten years, post-school destinations, recorded some six months after leaving school, showed a dramatic fall in full-time employment and a corresponding increase in enrolments on schemes for young people. There was also an increase in

the uptake of further education immediately after school. However, this was negligible for those young people who left school with no formal educational qualifications. This group bore the brunt of the depressed national economic situation in the early 1980s. Their employment chances were halved across the decade 1977–1987 and, in the late 1980s, almost two-thirds of them were unemployed or on the YTS six .nonths after leaving school.

School leavers with few or no formal qualifications are vulnerable (Mortimore and Blackstone 1982). We do not examine the long-term destinations of these young people here, but an early analysis of young people who have been followed up to 19.6 years has indicated that a fair proportion of those who are classified as unemployed six months out of school will remain unemployed in the longer term (Furlong and Raffe 1988).

In Chapter 2 we examine the spatial distribution of deprivation in Lothian, and the characteristics of young people and their families who live in Lothian's most deprived areas.

Social class composition
in Lothian 1977-1987

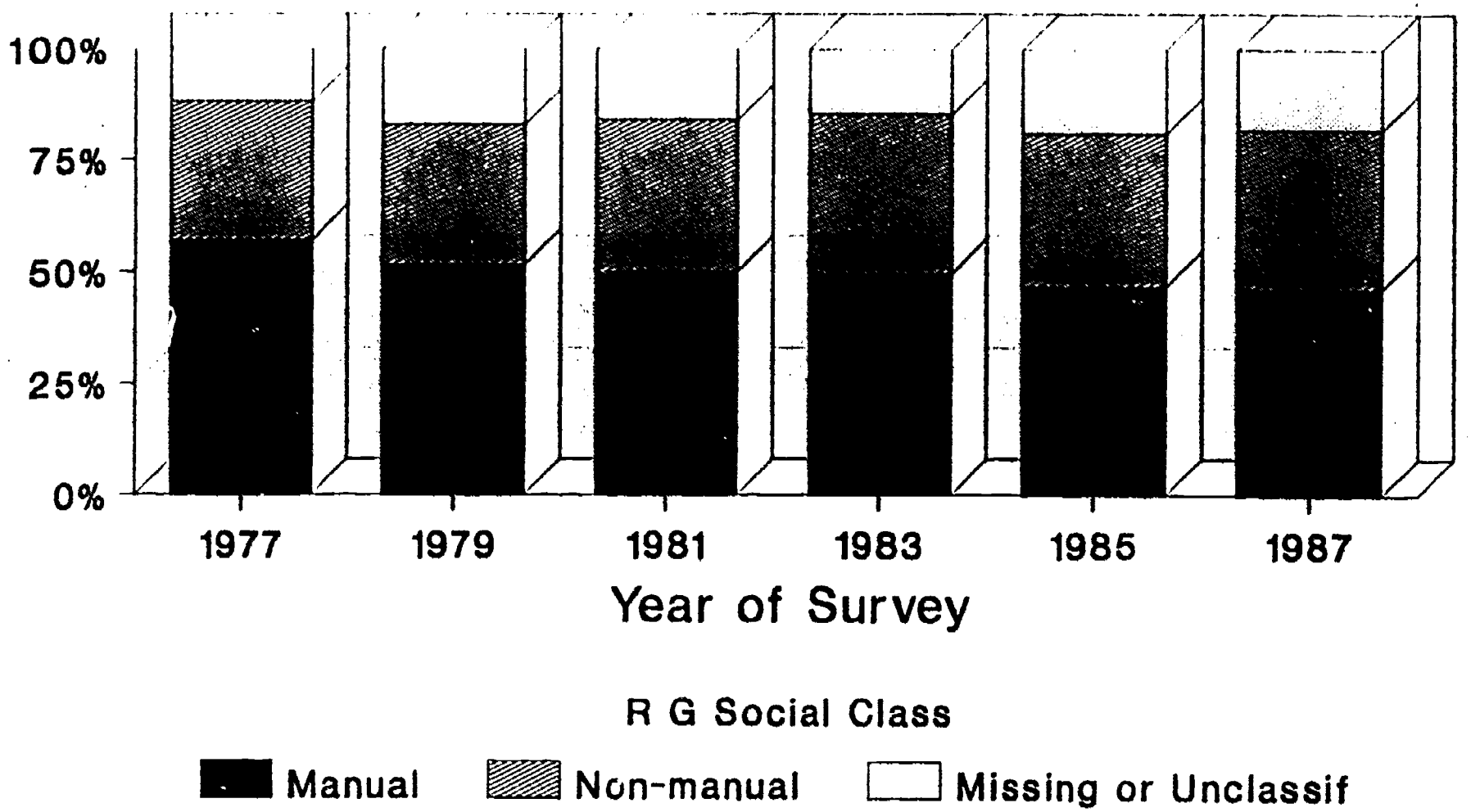


Diagram 1.1a
Source:SSLS and SYPS 1977-1987

Social class composition
in the Rest of Scotland 1977-1987

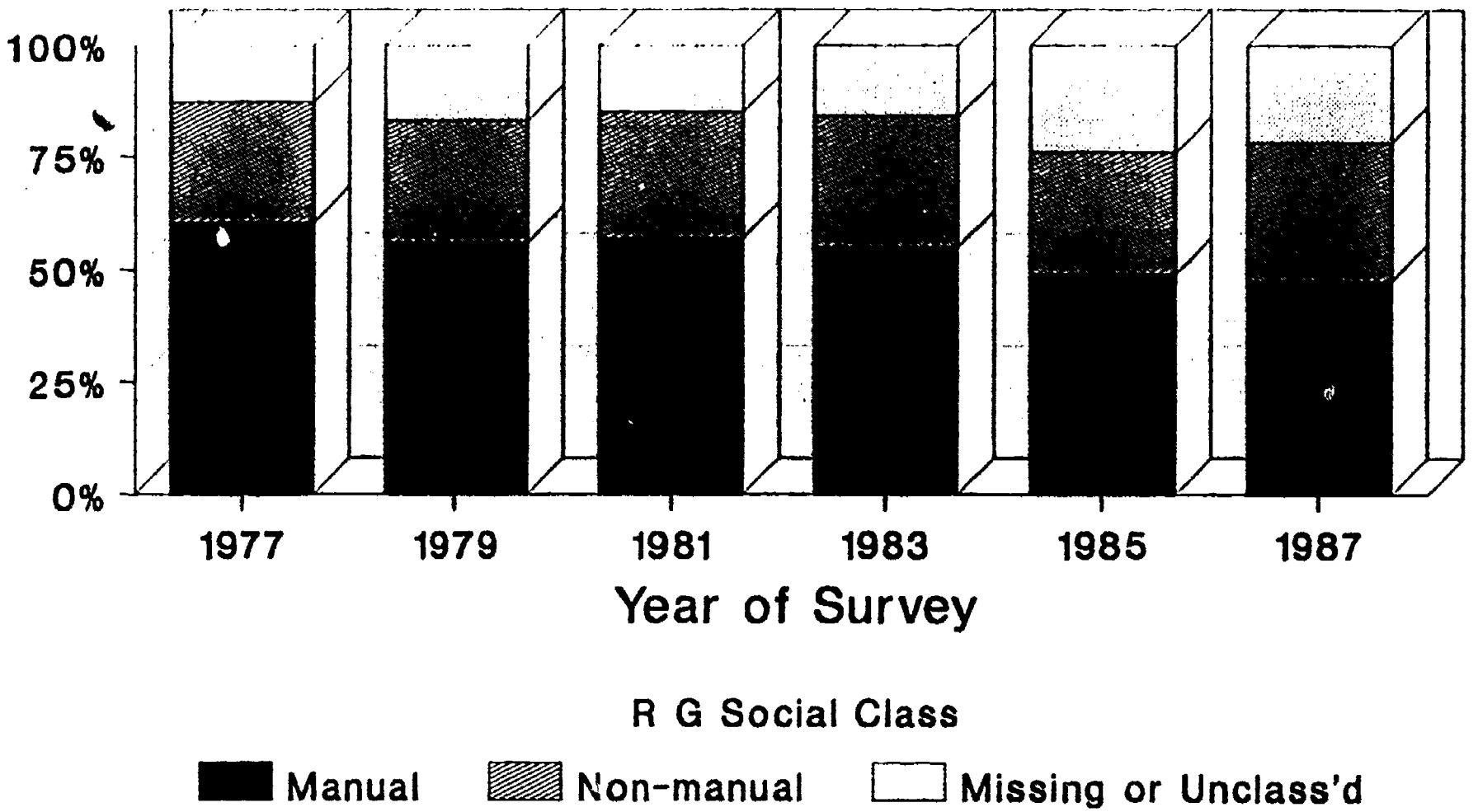


Diagram 1.1b
Source: SSLS and SYPS 1977-1987

Father's employment status in Lothian and the Rest of Scotland 1981-1987

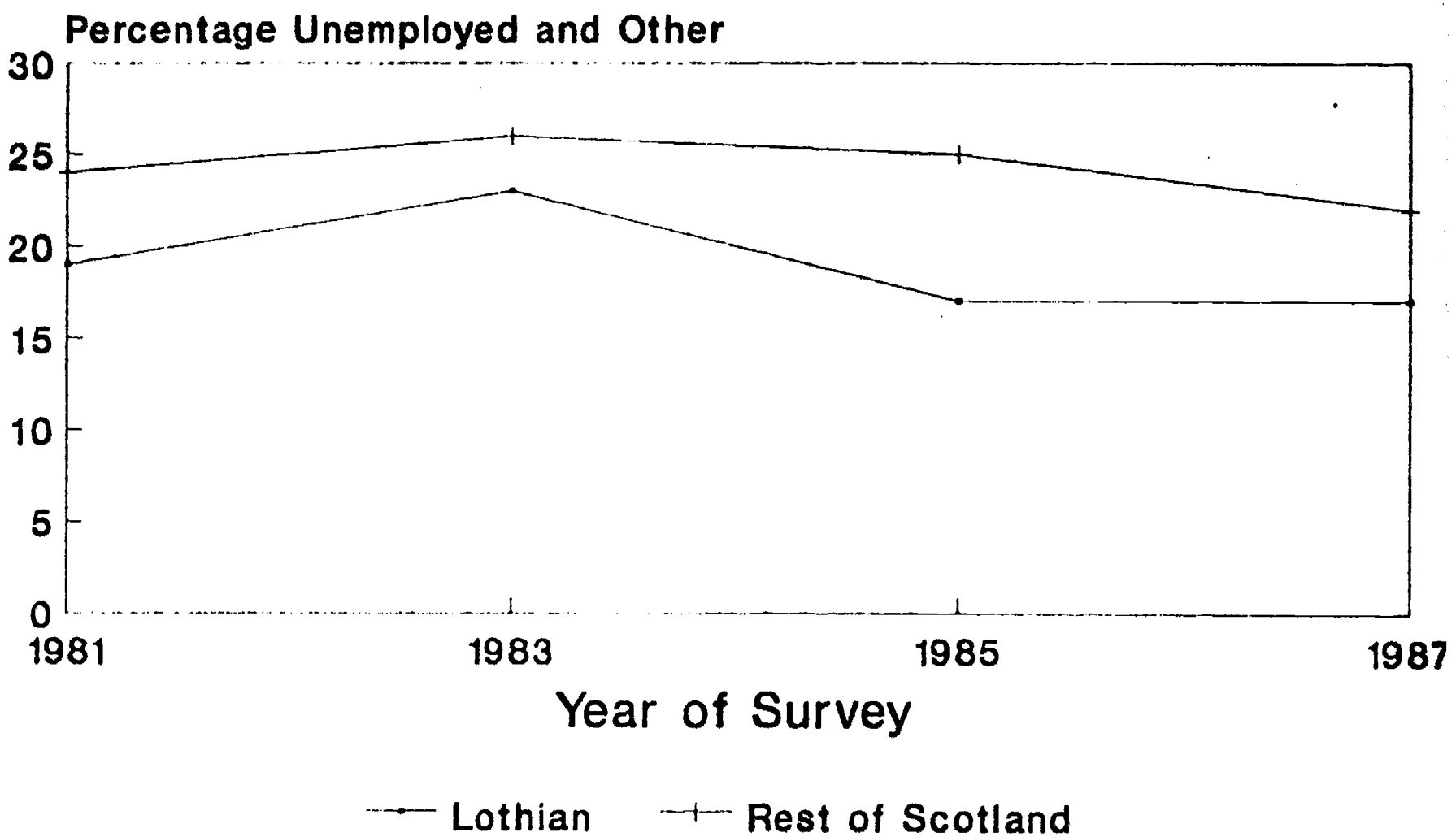


Diagram 1.2
Source: SSLS and SYPS 1981-1987

Single parent families in Lothian and the Rest of Scotland 1981-1987

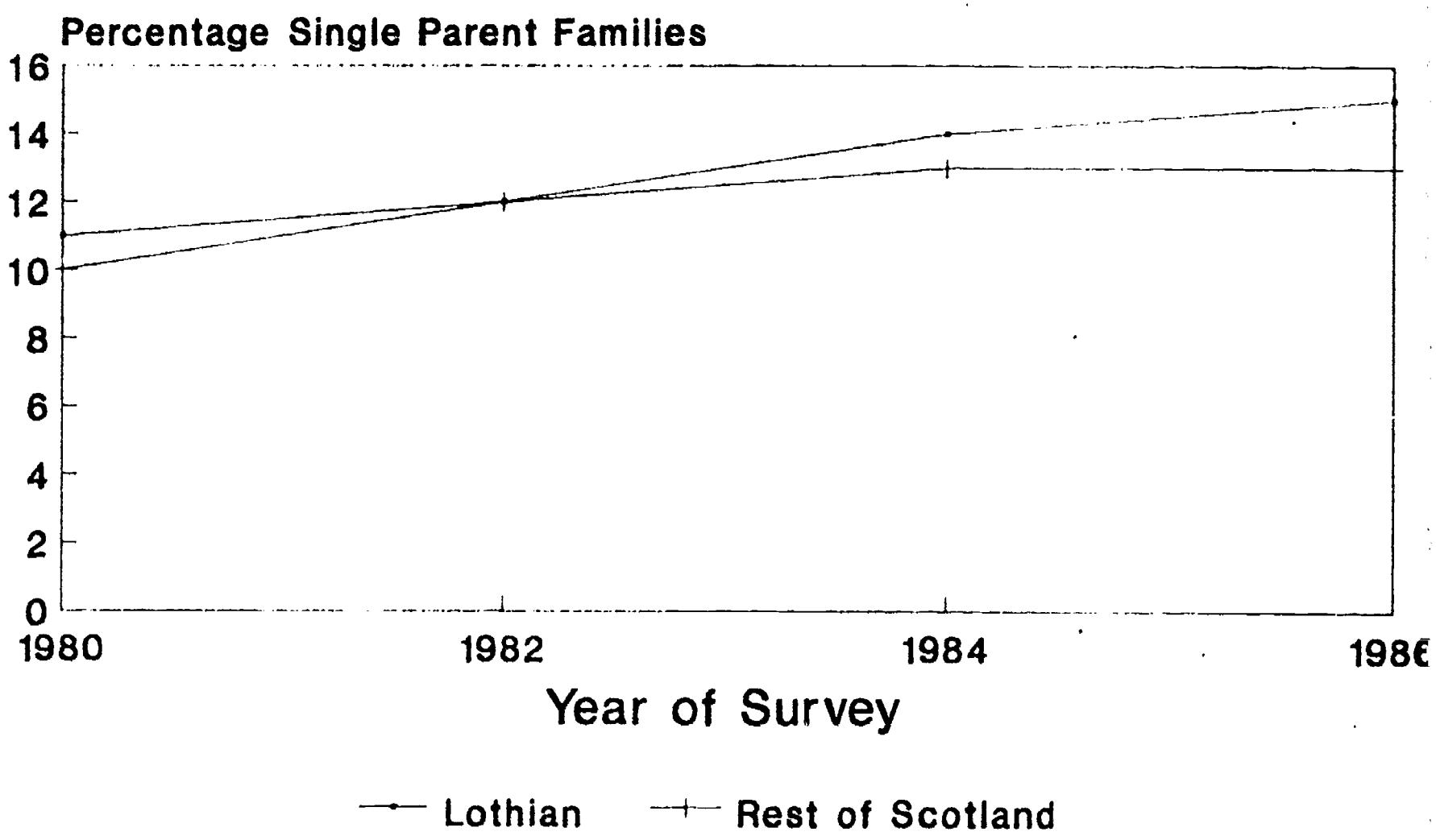


Diagram 1.3
Source: SSLS and SYPS 1981-1987

Large Families in Lothian and the Rest of Scotland 1977-1987

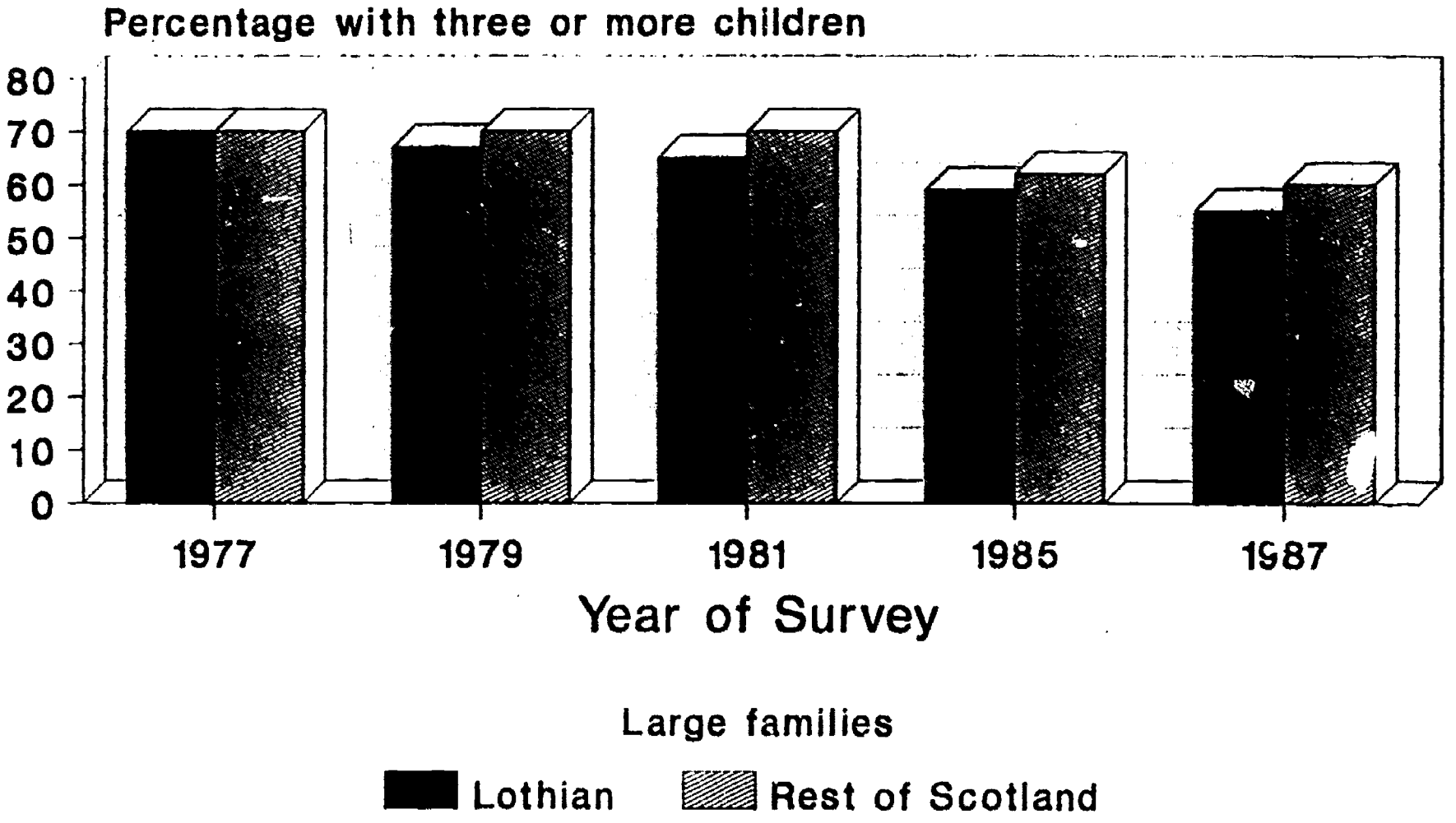


Diagram 1.4
Source: SSLS and SYPS 1977-1987

Parental Education of young people in Lothian 1977-1987

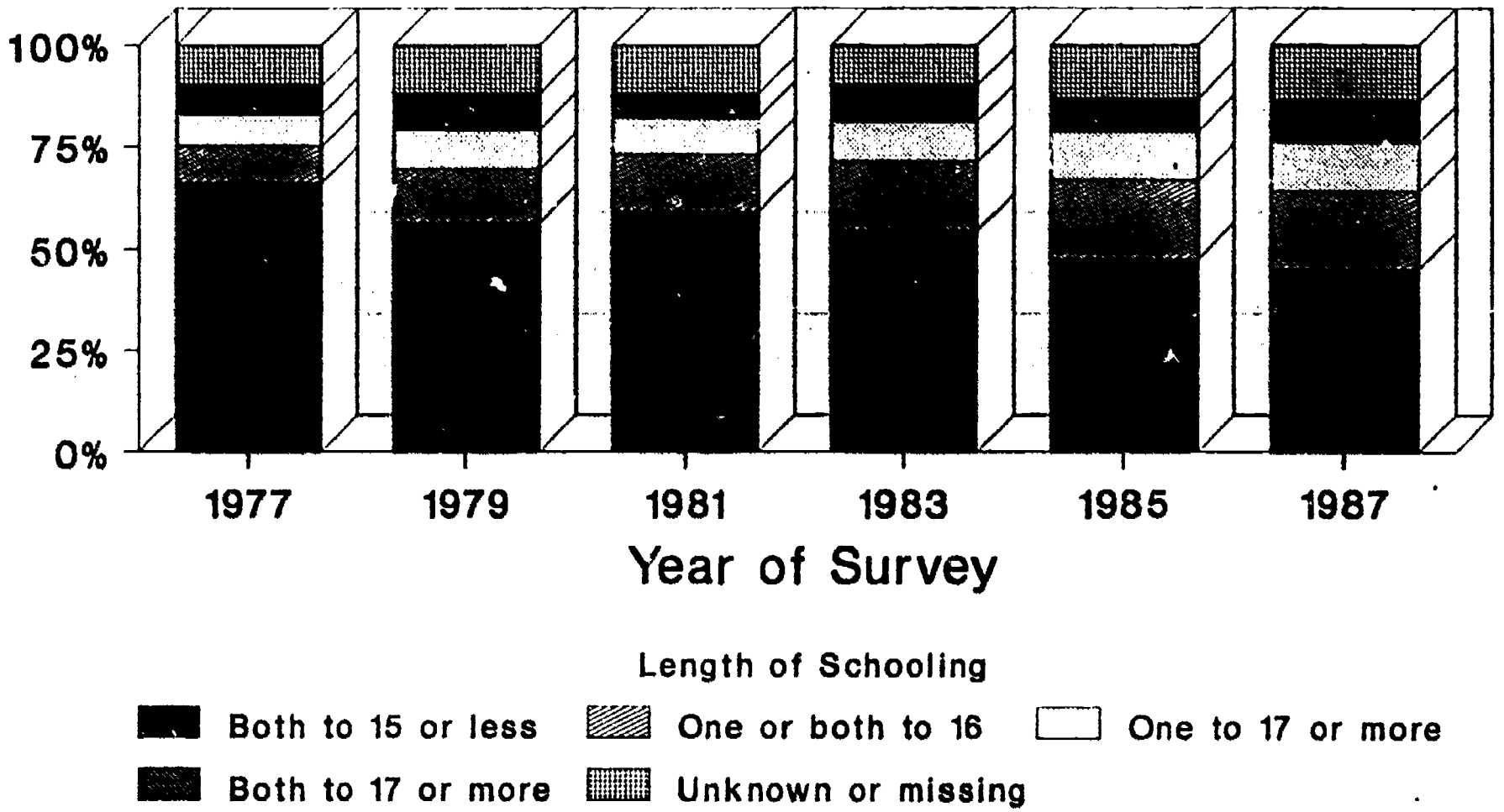


Diagram 1.5a
Source: SSLS and SYPS 1977-1987

Parental Education of young people in the Rest of Scotland 1977-1987

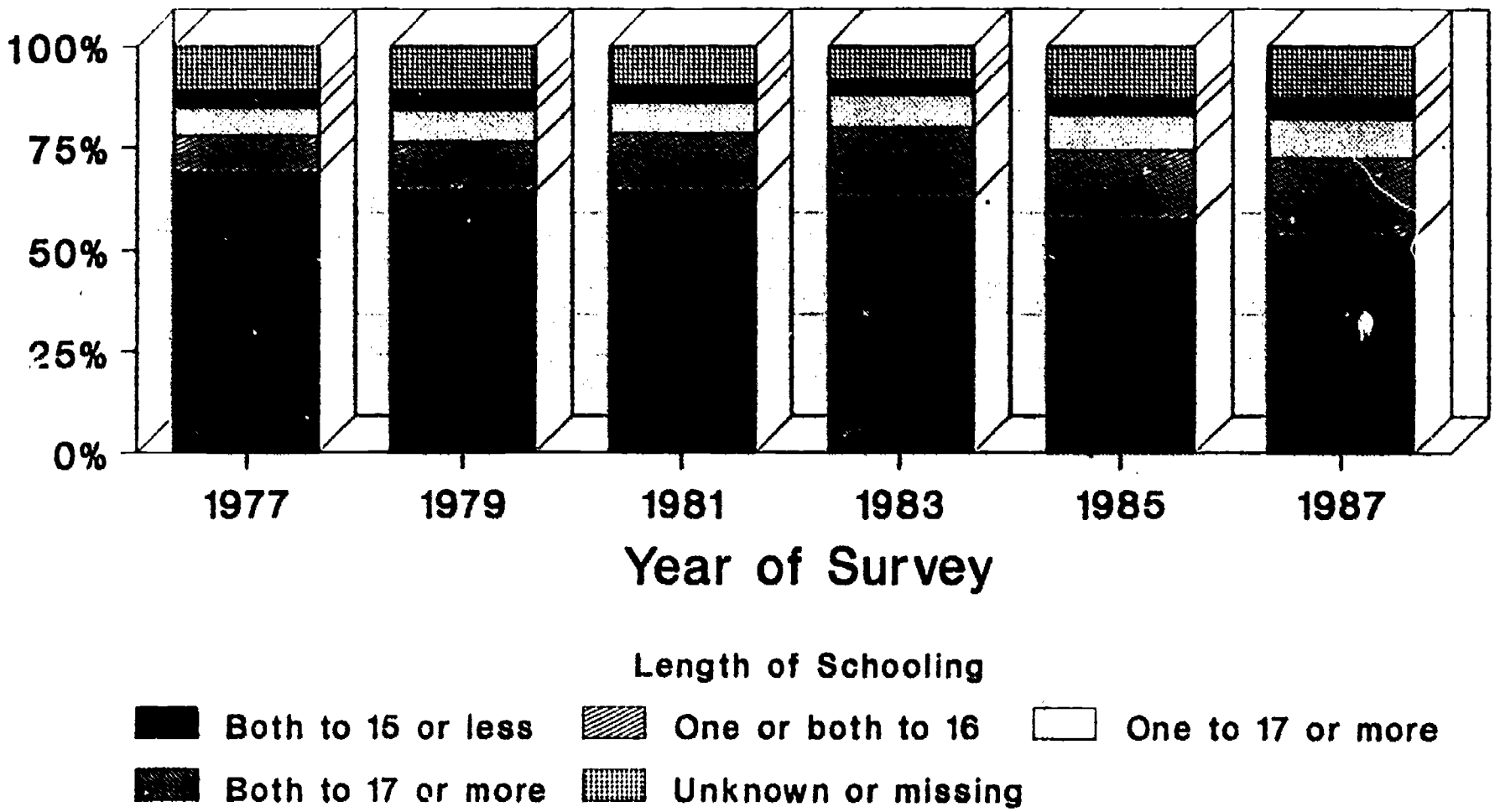


Diagram 1.5b
Source: SSLS and SYPS 1977-1987

Qualifications of young people in Lothian 1977-1987

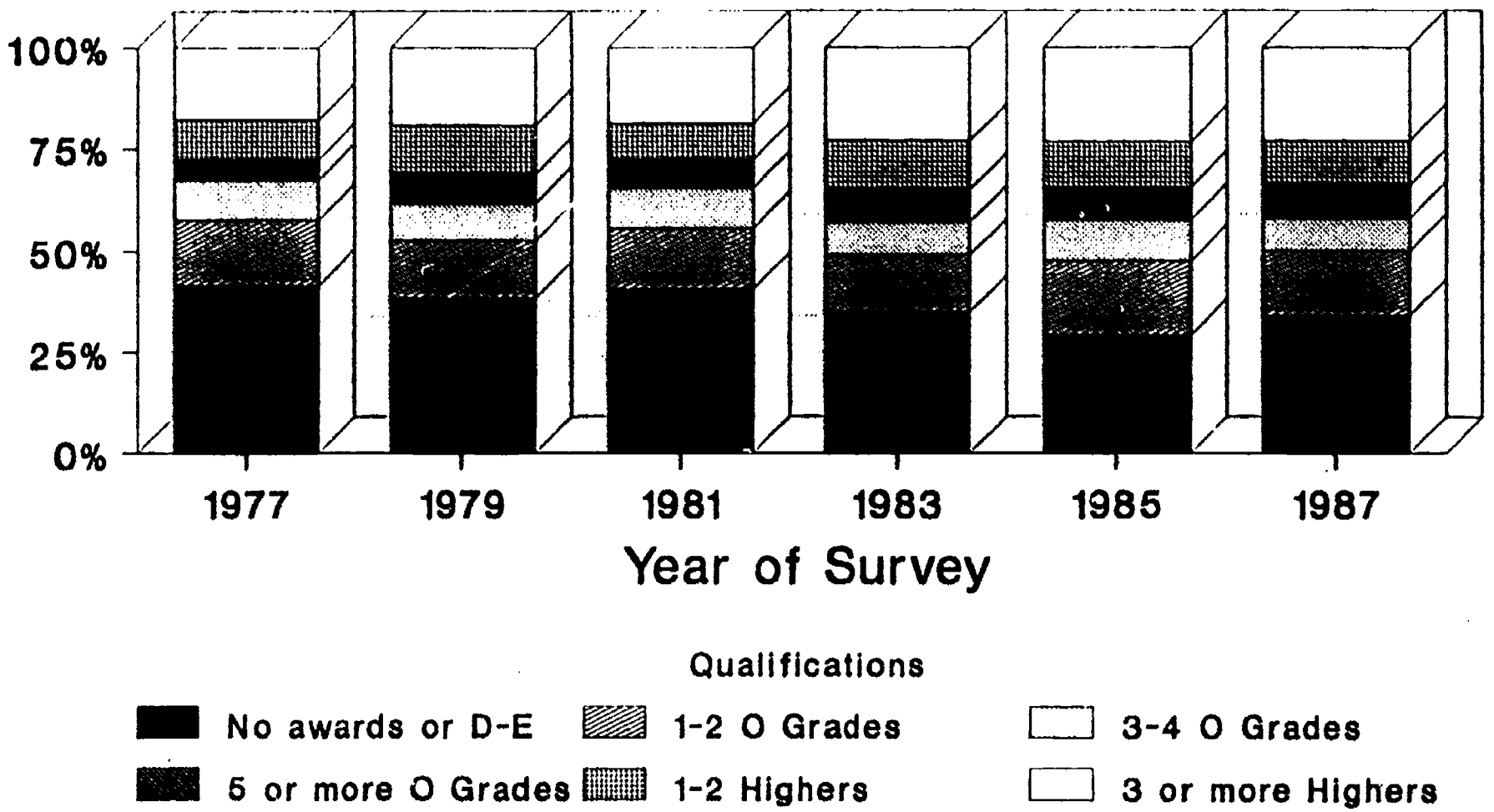


Diagram 1.6a
Source: SSLS and SYPS 1977-1987

Qualifications of young people in the Rest of Scotland 1977-1987

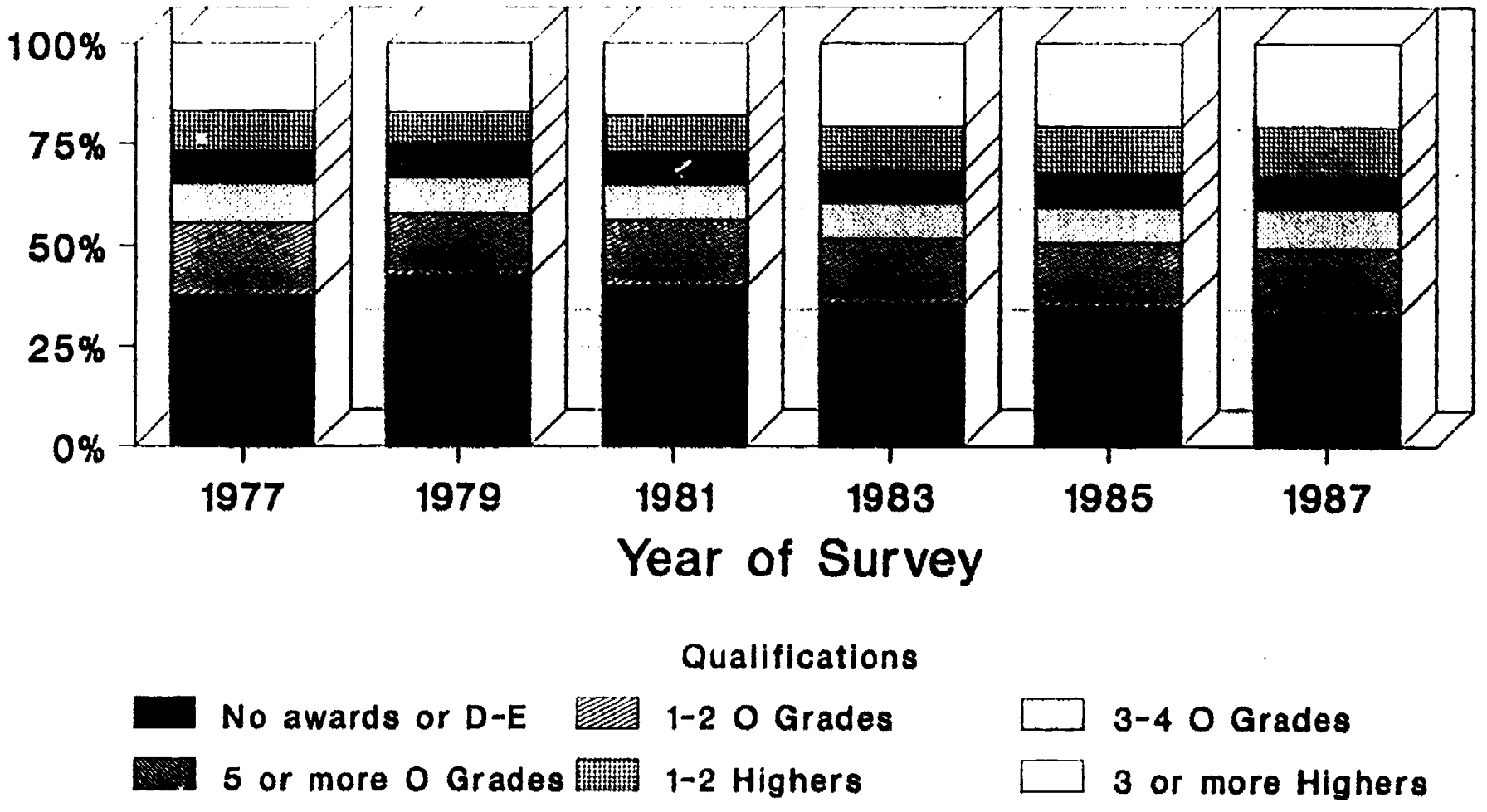


Diagram 1.6b
Source: SSLS and SYPS 1977-1987

Stage of leaving school in Lothian and the Rest of Scotland 1977-1987

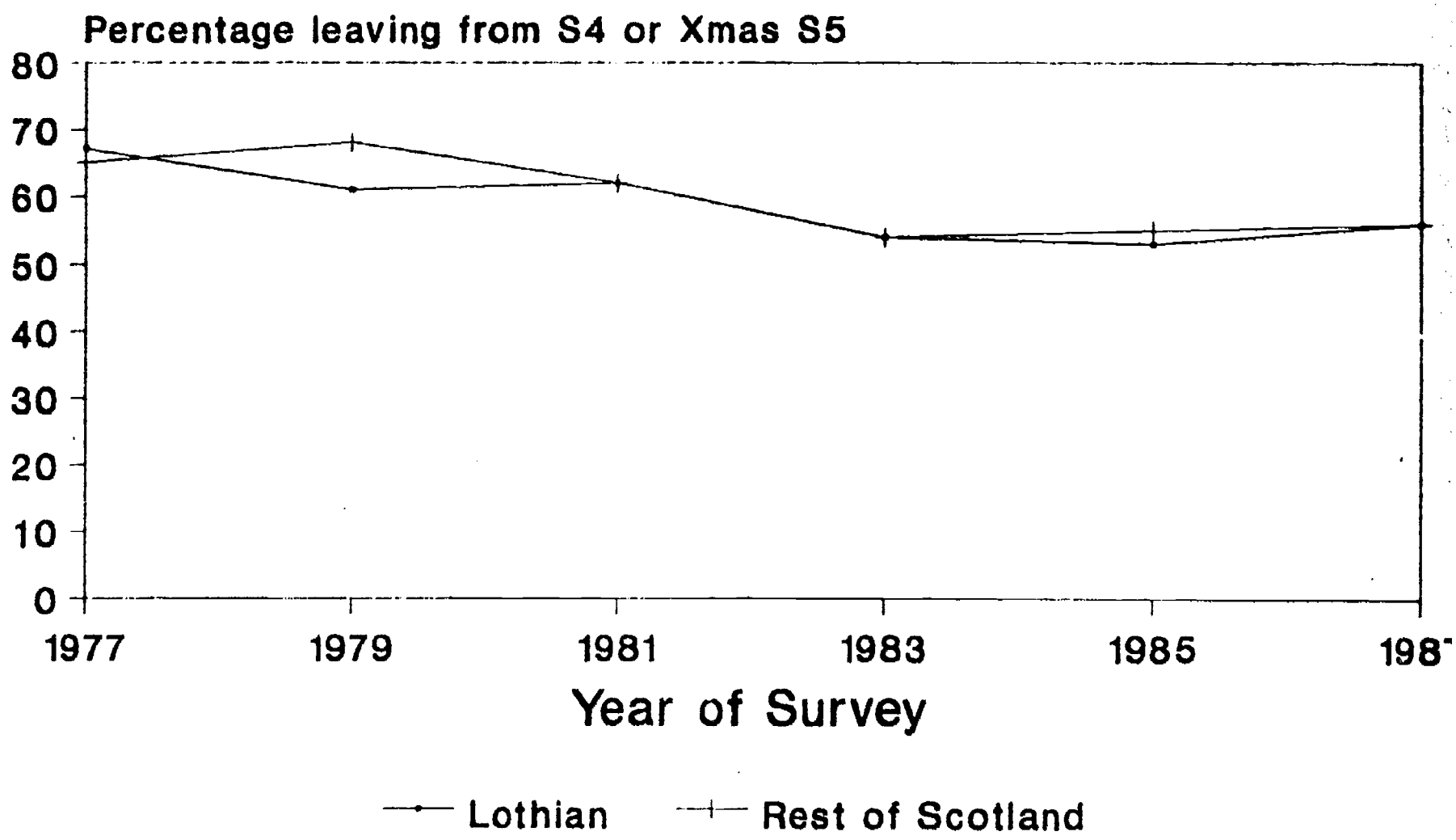


Diagram 1.7
Source: SSLS and SYPS 1977-1987

Serious truanting in Lothian and the Rest of Scotland 1977-1987

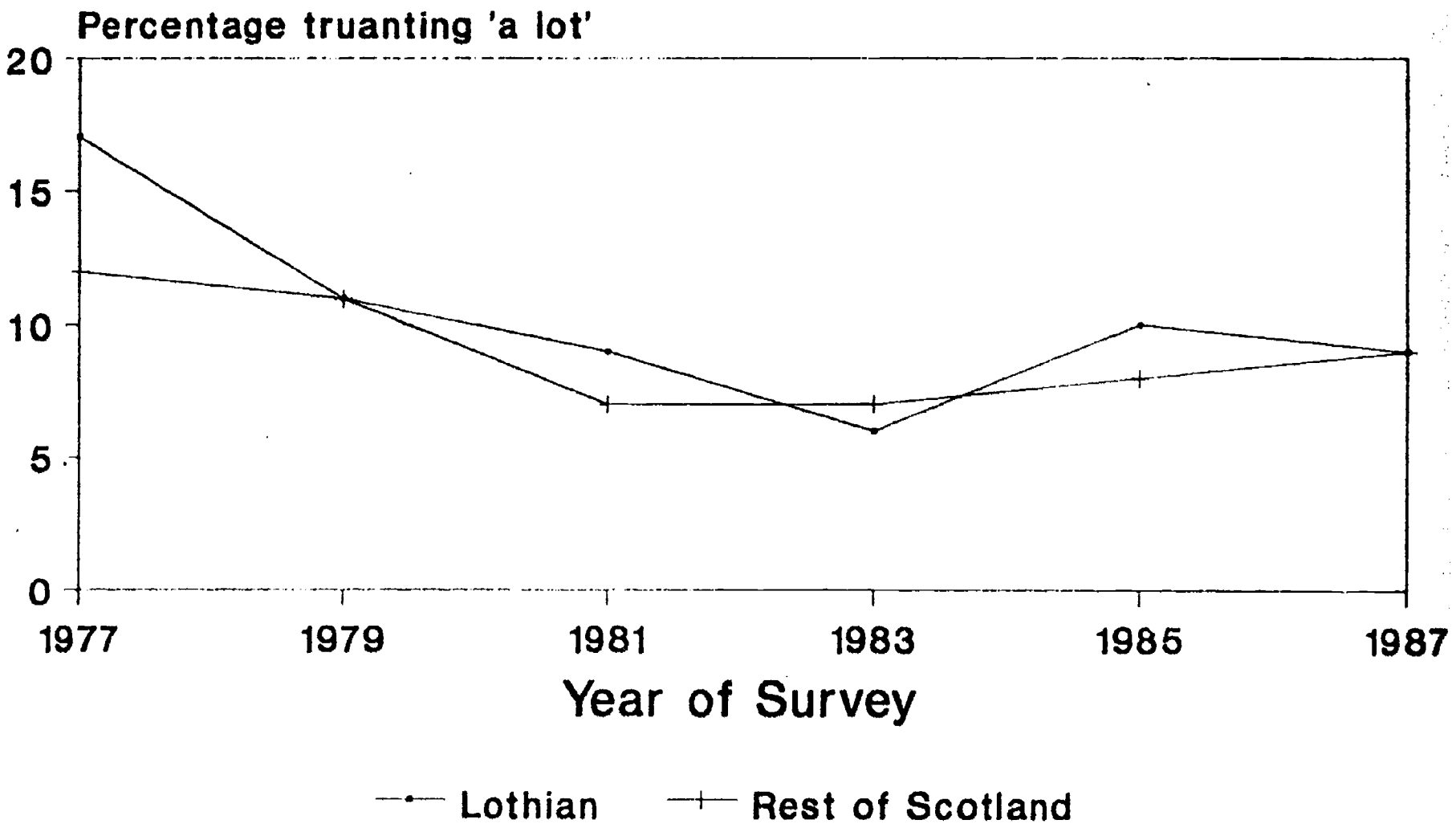


Diagram 1.8
Source: SSLS and SYPS 1977-1987

Satisfaction with school in Lothian and the Rest of Scotland 1977-1985

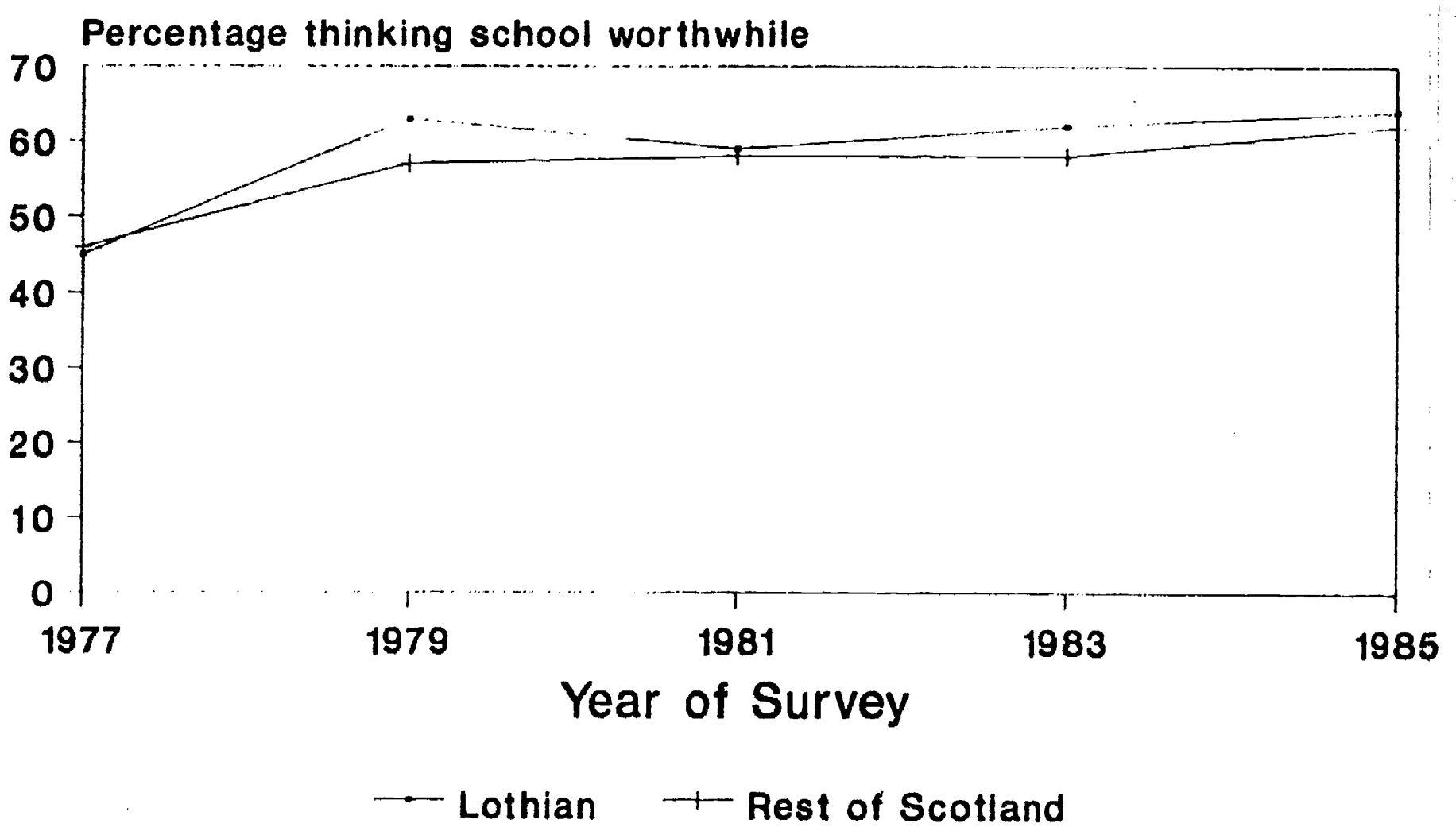


Diagram 1.9
Source: SSLS and SYPS 1977-1987

Post-school Destinations
in Lothian 1977-1987

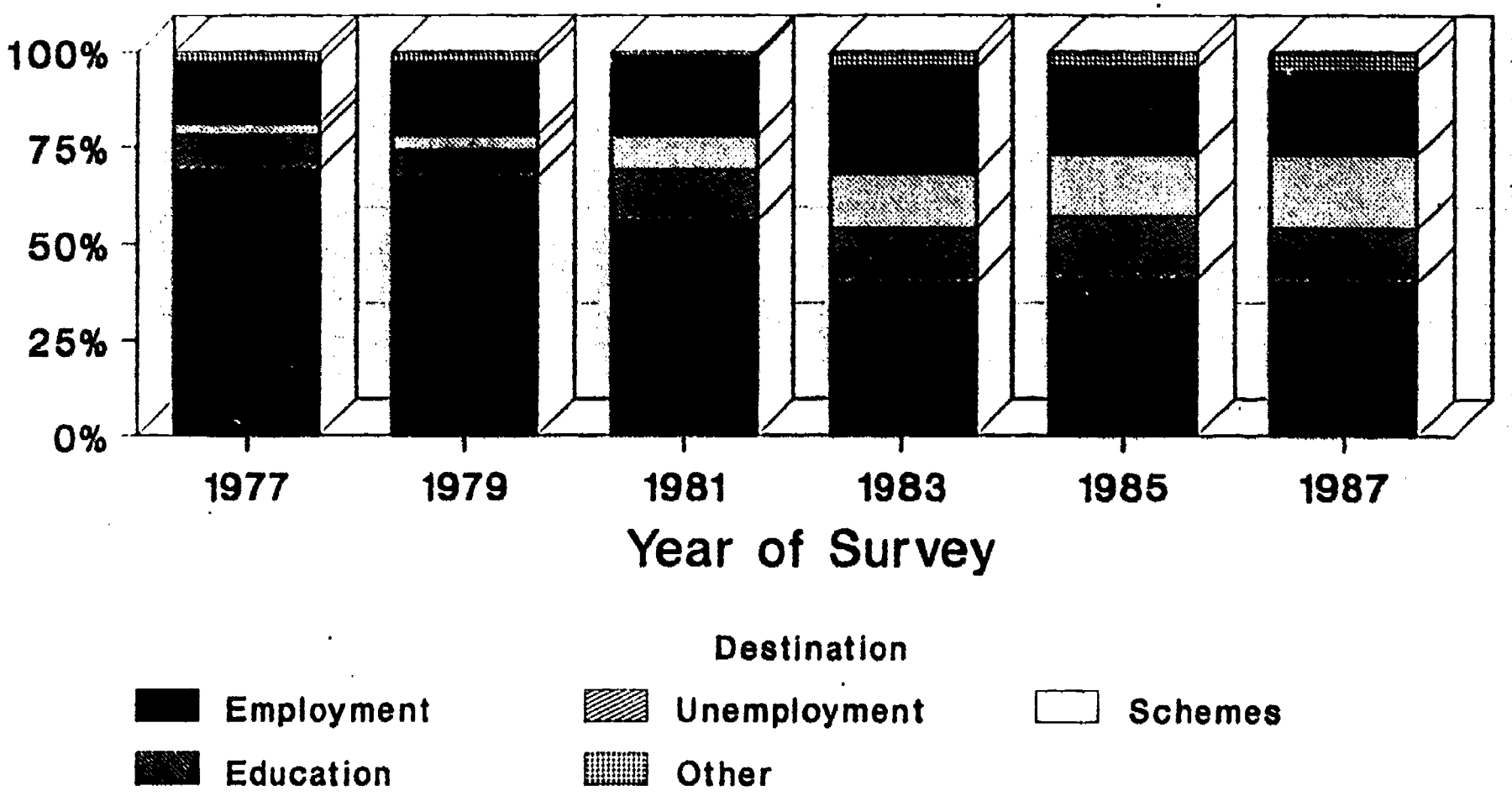


Diagram 1.10a
Source: SSLS and SYPS 1977-1987

Post-school Destinations
in the Rest of Scotland 1977-1987

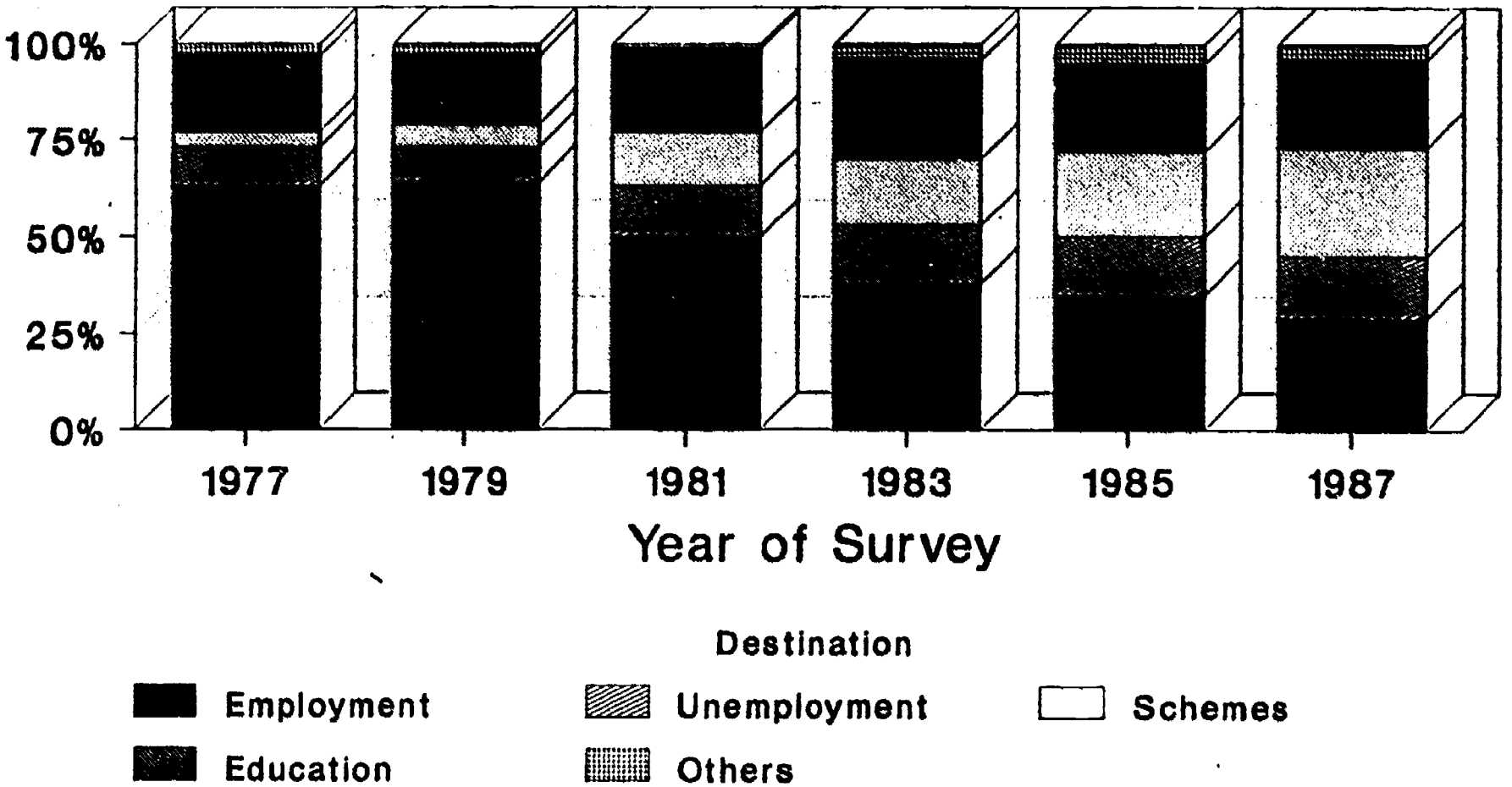


Diagram 1.10b
Source: SSLS and SYPS 1977-1987

Post-school Destinations of Unqualified school leavers in Lothian 1977-1987

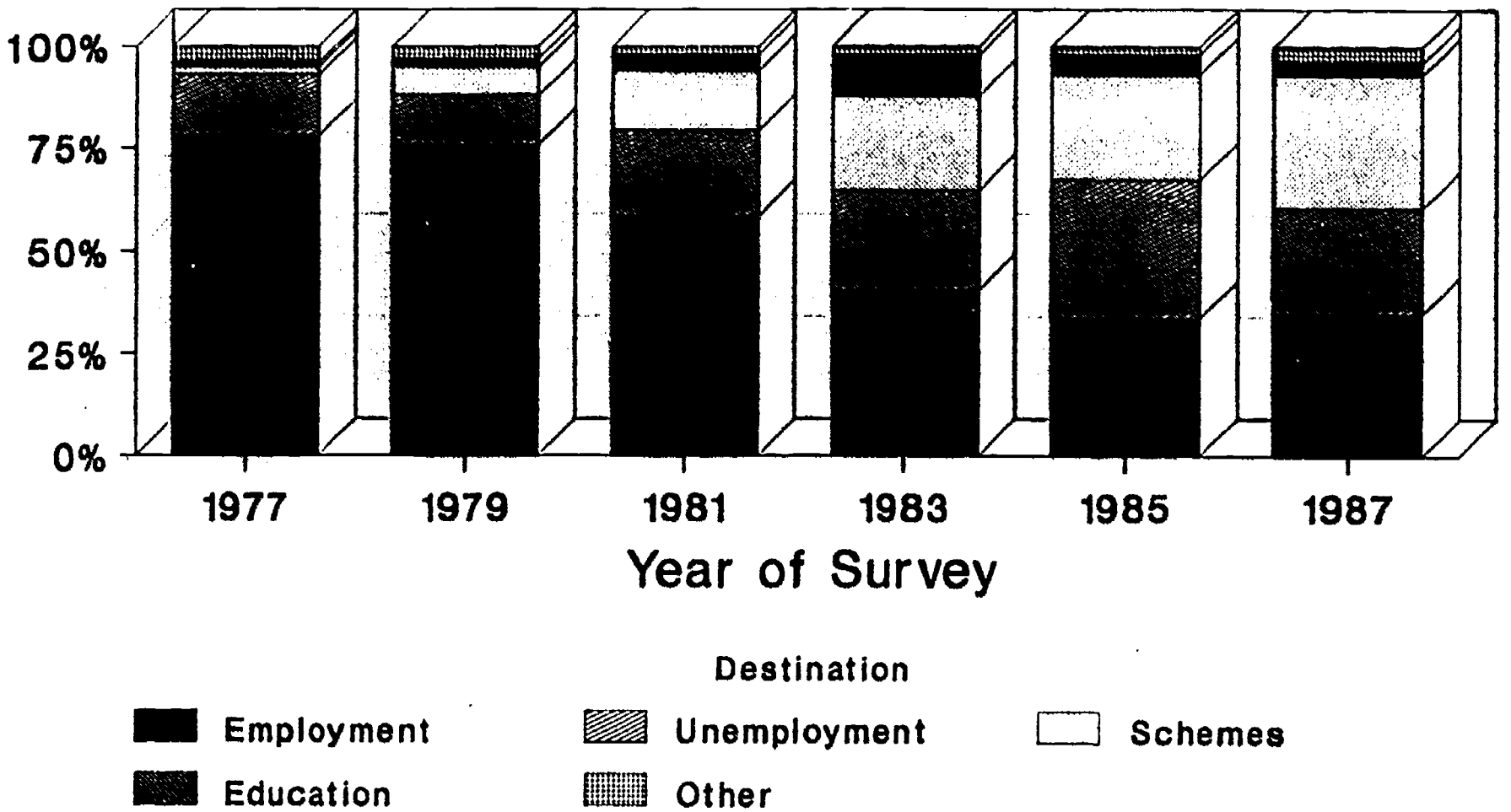


Diagram 1.11a
Source: SSLS and SYPS 1977-1987

Post-school Destinations for Unqualified leavers in the Rest of Scotland 1977-87

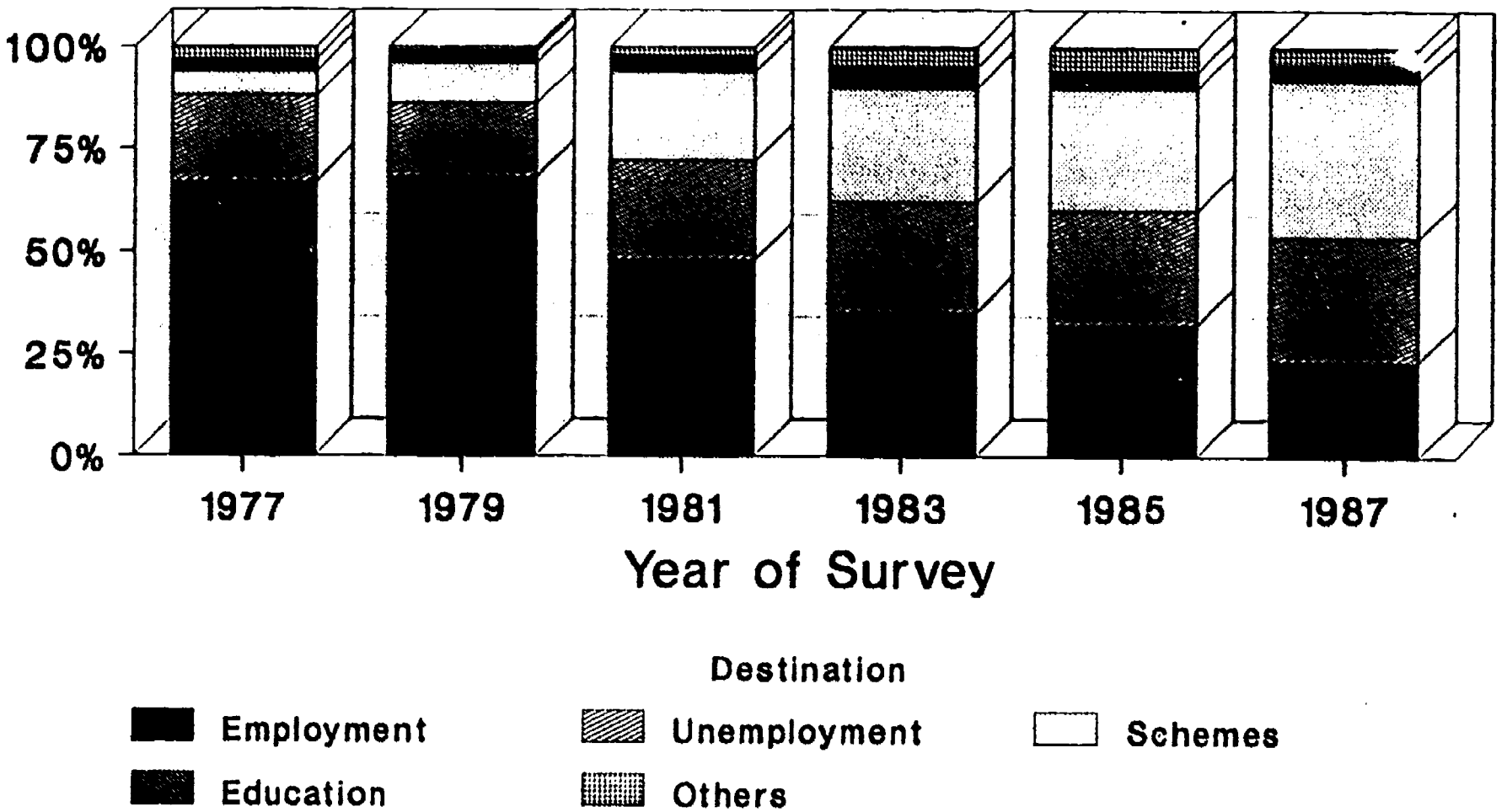


Diagram 1.11b
Source: SSLS and SYPS 1977-1987

Full-time employment for 'qualified' and 'unqualified' leavers in Lothian 1977-87

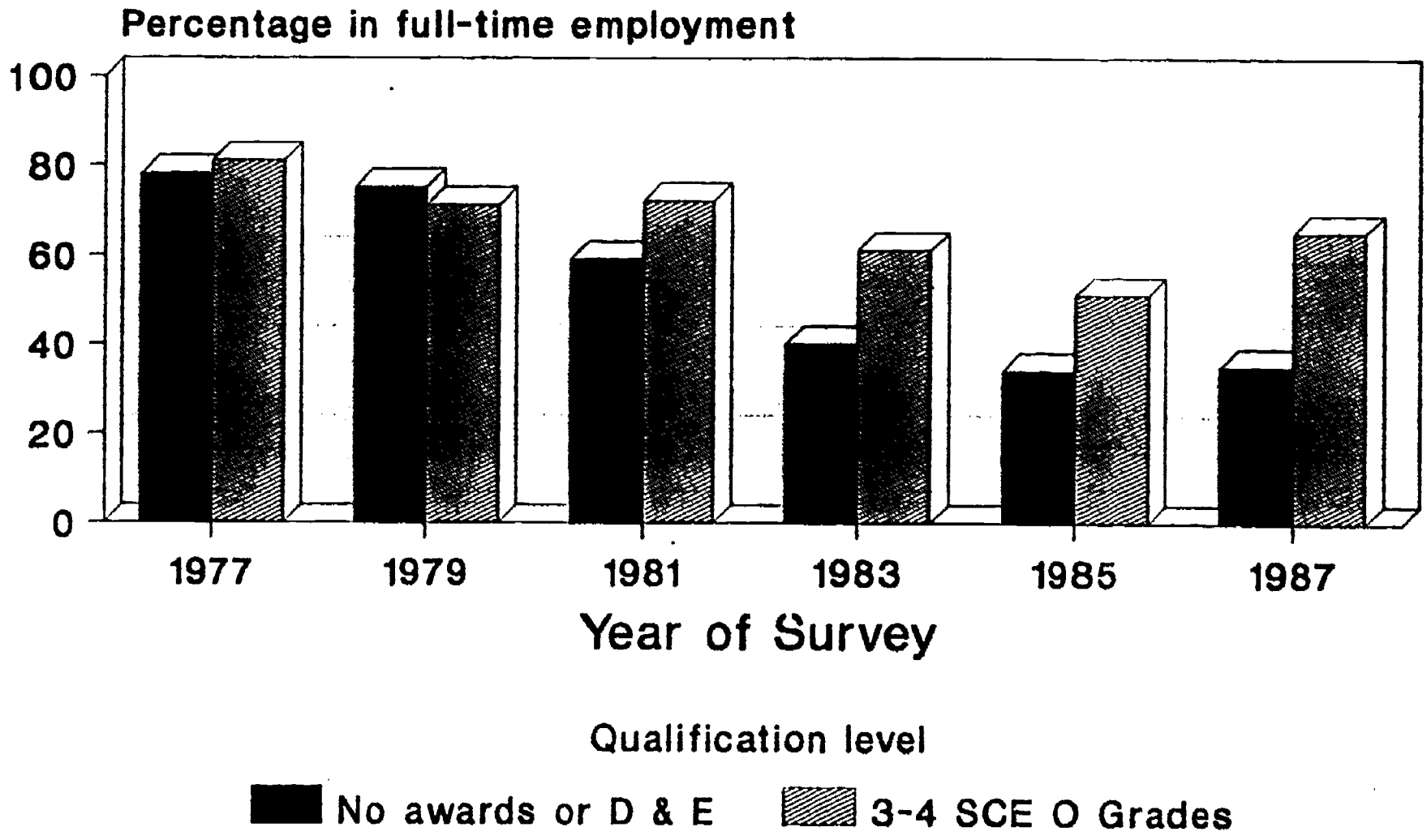


Diagram 1.12
Source: SSLS and SYPS 1977-1987

Table 1.1

Social class composition in Lothian and the Rest of Scotland 1977-1987

Father's social class		1977		1979		1981		1983		1985		1987	
		Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
A.	I	7	5	6	4	7	4	7	4	7	5	8	5
	II	16	15	18	17	19	17	20	18	21	17	23	19
	IIIN	8	7	7	5	8	7	8	7	8	6	6	7
	IIIM	38	40	35	37	33	37	35	39	31	32	33	32
	IV	16	17	14	15	13	15	12	13	9	13	8	12
	V	4	3	3	4	4	5	3	3	4	4	3	4
	Unclassified or Missing	12	13	17	17	16	15	15	16	20	24	19	22
	Total	101	100	100	99	100	100	100	100	100	101	100	101
B.	Non-Manual	31	27	31	27	34	28	36	29	36	27	37	31
	Manual	57	61	51	56	50	57	50	55	44	49	44	48
	Unweighted (n)	674	5142	802	5146	772	4776	869	6178	858	5481	766	4985

Table 1.2

Father's employment status in Lothian and the Rest of Scotland 1977-1987

Father's employment status	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
In employment	-	-	-	-	82	77	78	75	83	74	83	77
Unemployed or unable to work	-	-	-	-	1[illegible]	14	11	14	9	15	12	17
Other	-	-	-	-	9	10	12	12	8	10	5	7
Total	-	-	-	-	101	101	101	101	100	99	100	101
Unweighted (n)					763	4712	850	6092	817	5143	694	4536

- no da a available

Table 1.3

Family structure of young people in Lothian and the Rest of Scotland 1977-1987

Family Composition	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
Nuclear family	-	-	-	-	86	87	84	86	83	84	81	85
Single parent family	-	-	-	-	11	10	12	12	14	13	15	13
Other	-	-	-	-	3	3	4	2	4	3	4	2
Total	-	-	-	-	100	100	100	100	101	100	100	100
Unweighted (n)					767	4746	863	6135	840	5336	756	4949

- no data available

Table 1.4

Family size in Lothian and the Rest of Scotland 1977-1987

Family Size	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
1 child	5	7	8	6	6	6	-	-	6	7	5	6
2 children	25	23	26	24	29	25	-	-	3ь	31	40	34
3 children	27	24	28	26	26	28	-	-	29	28	29	29
4 or more children	43	46	39	44	39	42	-	-	30	34	26	31
Total	100	100	101	100	100	101	-	-	101	100	100	100
Unweighted (n)	674	5142	802	5146	772	4776			869	6178	858	5481

- no data available

Table 1.5

Parental education of young people in Lothian and the rest of Scotland 1977-1987

Parental schooling	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
Both to 15 years or less	66	68	57	65	59	65	55	62	47	58	45	54
One or both to 16 years	9	9	13	12	14	14	17	17	19	17	19	19
One to 17 years or more	8	7	10	8	9	8	10	8	12	9	12	10
Both to 17 years or more	7	4	9	5	6	4	9	4	8	4	10	5
Unknown or missing	10	11	12	11	12	10	10	8	13	13	14	13
Total	100	99	101	101	100	101	101	99	99	101	100	101
Unweighted (n)	674	5142	802	5146	772	4776	869	6178	888	5481	766	4985

Table 1.6

Qualification levels for young people in Lothian and the Rest of Scotland 1977-1987

Qualification Levels	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
No awards or D-E only	42	38	38	42	41	40	35	36	29	35	34	33
1-2 O Grades	16	18	14	15	15	16	14	16	18	16	16	16
3-4 O-Grades	10	10	9	9	10	9	8	9	10	9	8	10
5 or more O Grades	5	8	7	8	7	8	8	8	8	8	8	8
1-2 Highers	10	10	12	8	9	9	12	11	11	12	11	12
3 or more Highers	18	17	19	17	19	18	23	21	23	21	23	21
Total	101	101	99	99	101	100	100	101	99	101	100	100
Unweighted (n)	674	5142	802	5146	772	4776	869	6178	858	5481	762	4985

Table 1.7

Qualification levels for young people in Lothian by gender : 1977 - 1987

Qualification Levels	1977		1979		1981		1983		1985		1987	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
No awards or D & E only	43	40	38	38	43	38	37	33	33	25	38	29
1-2 O grades	14	17	13	16	15	15	15	13	17	19	16	16
3-4 O grades	10	11	9	10	9	10	9	8	9	12	9	8
5 or more O grades	5	4	8	7	7	7	9	6	9	8	8	8
1-2 Highers	10	10	13	12	9	10	9	14	9	13	9	13
3 or more Highers	18	18	20	17	18	20	21	25	23	24	20	27
Total	100	100	101	100	101	100	100	99	100	101	100	100
Unweighted (n)	315	359	391	411	370	402	431	438	421	437	369	397

Table 1.8

Stage of leaving school for pupils in Lothian and the Rest of Scotland 977-1987

Stage of Leaving	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
S4, Xmas S5	67	65	61	68	62	62	54	54	53	55	56	56
S5	15	19	20	18	17	21	21	24	20	23	18	21
S6	19	17	19	15	21	17	26	21	27	22	26	23
Total	101	101	100	100	100	100	101	100	99	100	100	101
Unweighted (n)	674	5142	802	5146	772	4776	869	6178	858	5481	766	4985

Table 1.9

Stage of leaving school in Lothian by gender : 1977 - 1987

Stage of leaving	1977		1979		1981		1983		1985		1987	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
S4, Xmas S5	67	67	60	62	64	60	57	50	57	49	61	50
S5	13	15	18	20	16	19	18	24	17	23	15	22
S6	21	17	22	16	21	21	25	26	26	28	24	29
Total	101	101	100	101	100	100	101	100	100	100	100	100
Unweighted (n)	315	359	391	411	370	402	431	438	421	437	369	397

Table 1.10

Truanting by pupils from Lothian and the Rest of Scotland 1977-1987

Truanted	1977		1979		1981*		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
Never	34	37	39	42	38	44	33	46	42	44	42	43
Seldom	49	51	50	47	52	49	61	46	48	48	49	49
A Lot	17	12	11	11	9	7	6	7	10	8	9	9
Total	100	100	100	100	99	100	100	99	100	100	100	101
Unweighted (n)	665	4332	794	5109			171	1200	840	5391	750	4873

* estimates based on different sample members

Table 1.11

Truanting in Lothian by gender : 1977 - 1987

Truanted	1977		1979		1981		1983		1985		1987	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Never	32	37	34	44	35	43	34	31	38	46	38	46
Seldom	54	45	54	46	56	48	58	64	50	46	51	47
A lot	14	19	11	10	9	9	8	5	11	9	11	7
Total	100	101	99	100	100	100	100	100	99	101	100	100
Unweighted (n)	309	356	387	407			83	88	413	427	362	388

Table 1.12

Satisfaction with school for young people in Lothian and the Rest of Scotland 1977-1987

Last year worthwhile	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
Yes	45	46	63	57	59	58	62	58	64	62	-	-
No	55	54	37	43	41	42	38	42	36	38	-	-
Total	100	100	100	100	100	100	100	100	100	100	-	-

- no data available

Note:

The question asked respondents to say whether they felt their last year at school was worthwhile.

Table 1.13

Satisfaction with last year at school in Lothian by gender : 1977 - 1987

Last year worthwhile	1977		1979		1981		1983		1985		1987	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Yes	58	65	62	65	59	61	61	65	60	68	-	-
No	42	35	38	35	41	39	39	35	40	32	-	-
Total	100	100	100	100	100	100	100	100	100	100	-	-
Unweighted (n)	315	359	391	411	370	402	433	436	414	432		

- no data available

Table 1.14

Post-school destinations of young people in Lothian and the Rest of Scotland 1977-1987 **

Destination	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
Scheme for young people	3	4	4	6	9	14	14	17	16	22	19	28
Full-time employment	69	63	67	64	56	50	40	38	41	35	40	29
Unemployed and looking for work	9	10	7	9	13	13	14	15	16	15	14	16
Full-time education	16	20	19	18	21	22	28	26	23	23	22	23
Doing something else	4	3	4	3	1	1	4	4	4	4	5	4
Total	101	100	101	100	100	100	100	100	100	99	100	100
Unweighted (n)	674	5142	802	5146	772	4776	869	6178	858	5481	766	4985

Notes

** Approximately six months after leaving school.

Table 1.15

Post school destinations among the unqualified* in Lothian and the Rest of Scotland 1977-1987

	1977		1979		1981		1983		1985		1987	
	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest	Lothian	Rest
Schemes for young people	2	6	7	10	15	22	23	28	26	30	33	38
Full-time employment	78	66	75	68	59	48	40	35	34	32	35	23
Unemployed and looking for work	15	21	12	18	21	24	24	27	34	28	26	30
Full-time education	1	3	2	3	4	4	10	5	5	4	3	4
Doing something else	4	3	3	1	2	2	2	5	2	6	4	4
Total	100	99	99	100	101	100	99	100	101	100	101	99

* This group comprises those who are unqualified in the sense of leaving school with no formal certification at SCE. They are defined as those leavers who reported that they left school with either no SCE O grades or D and E passes only.

Table 1.16

Post-school destinations in Lothian by qualifications

	Destination					
	Schemes for young people	Full-time employment	Unemployed & looking for work	Full-time education	Doing something else	Total
1977						
No awards or D & E only	2	78	15	1	4	100
1-2 O grades	5	79	8	6	2	100
3-4 O grades	5	81	2	8	4	100
5+ O grades	3	78	-	17	3	101
1-2 Highers	3	68	8	19	2	100
3+ Highers	1	28	3	62	7	101
1979						
No awards or D & E only	7	75	12	2	3	99
1-2 O grades	5	77	6	9	3	100
3-4 O grades	3	71	3	20	3	100
5+ O grades	2	86	2	7	4	101
1-2 Highers	3	73	4	19	2	101
3+ Highers	1	29	1	63	7	101
1981						
No awards or D & E only	15	59	21	4	2	101
1-2 O grades	10	70	13	7	-	100
3-4 O grades	6	72	6	16	-	100
5+ O grades	2	72	7	16	4	101
1-2 Highers	1	62	7	30	-	100
3+ Highers	1	25	3	59	2	100
1983						
No awards or D & E only	23	40	24	10	2	99
1-2 O grades	27	43	13	12	5	100
3-4 O grades	7	61	6	26	-	100
5+ O grades	13	61	3	10	4	100
1-2 Highers	7	42	10	32	9	100
3+ Highers	1	21	5	66	7	100
1985						
No awards or D & E only	26	34	34	5	2	101
1-2 O grades	25	51	11	10	4	101
3-4 O grades	22	51	14	12	2	101
5+ O grades	14	59	8	12	7	100
1-2 Highers	2	57	9	25	7	100
3+ Highers	1	27	2	64	7	101
1987						
No awards or D & E only	33	35	26	3	4	101
1-2 O grades	31	42	15	6	6	100
3-4 O grades	16	65	13	4	2	100
5+ O grades	17	58	3	18	4	100
1-2 Highers	6	53	8	27	7	101
3+ Highers	-	24	2	67	7	100

Table 1.17

Post-school destinations in Lothian by gender : 1977 - 1987

Destination	1977		1979		1981		1983		1985		1987	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Scheme for young people	2	3	4	5	9	8	15	14	19	13	23	15
Full-time employment	72	65	70	63	59	54	44	35	39	44	38	41
Unemployed and looking for work	8	9	6	7	12	13	14	14	18	13	15	12
Full-time education	13	20	16	21	19	24	23	33	19	27	19	25
Doing something else	5	3	4	4	1	1	4	5	5	3	4	6
Total	100	100	100	100	100	100	100	101	100	100	99	99
Unweighted (n)	315	359	391	411	370	402	431	438	421	437	369	397

Chapter 2

Young people in Lothian's deprived areas

Introduction

This chapter describes the spatial distribution of individual deprivation in Lothian, and also identifies areas with high levels of deprivation.

The home addresses of all respondents to the 1981 SSLS were postcoded. Postcodes allow us to link the home address to the enumeration districts of the 1981 Census of Population. This link enables us to locate individual respondents geographically within Lothian. It also allows us to describe each respondent's home neighbourhood in terms of the Census characteristics of the entire population in that area.

For example, if we compare the spatial distribution of the concentration of unqualified leavers (Diagram 2.3) with the spatial pattern of deprivation from the 1981 Census (Diagram 2.1), we see that the patterns show remarkable similarities: those areas identified as being most deprived also have the largest proportions of unqualified leavers. This is an 'ecological' correlation; that is, a correlation of one area characteristic with another. As such it does not necessarily confirm a direct association between individual deprivation and individual poor attainment. Chapter 3 disentangles the relationship for individuals. But the ecological correlation does confirm that those *areas* which have been identified from the Census as being most severely deprived also have low average levels of attainment.

Identifying areas of high deprivation from our maps and from an earlier study of multiple deprivation in Lothian (Lothian Regional Council 1984), we can take a closer look at how young people from deprived areas compare with the average for Lothian, on the key indicators examined in Chapter 1. This part of the study is necessarily restricted to an examination of information from our enhanced 1981 survey. More recent surveys have smaller sampling fractions and do not provide sufficient numbers of young people to give accurate estimates for small areas.

The most deprived areas in Lothian were identified in terms of the postcode sectors in which the most deprived enumeration districts were located. For

descriptive purposes we cannot use smaller spatial units than postcode sectors because of the limited number of observations even in our 1981 sample survey. Even with postcode sectors, we are faced with small numbers in some areas. This restriction means that we have sometimes had to combine areas which are not homogeneous. For example, the sector labelled here as Wester Hailes contains part of the private residential area of Baberton Mains. This expedient may 'improve' the average estimates for young people and their families from this area. Similarly, the areas labelled Oxgangs and Livingston draw together smaller pockets of more deprived and less deprived areas. (In Chapter 3 we do not need to worry about the number of observations in each areal unit. There the method of analysis allows us to use enumeration-district data to measure the characteristics of home neighbourhoods.)

Sectors were ranked in terms of their average level of deprivation as measured on an index of deprivation devised by the Urban Renewal Research Unit of the Scottish Development Department (Duguid and Grant 1983; see Appendix 2 of this report). Eighteen sectors were picked out as being more deprived than the national average. These are identified in Table 2.0 and Diagram 2.2.

Eight sectors above the national average in their level of deprivation are located in Edinburgh District, six in West Lothian and two more in each of East and Mid Lothian. These areas have been given local neighbourhood names, although their boundaries are determined by postcode sectors and may not be entirely coincident with the area as popularly defined (Diagram 2.2). The areas identified are well recognised as being areas suffering from deprivation. In Edinburgh they are predominantly the peripheral local-authority housing estates. In the rest of Lothian the areas picked out are largely around the old traditional mining or industrial areas, with histories of high unemployment. We subsequently refer to these 18 areas as Lothian's deprived areas.

Results

Examining the proportion of young people from these areas who are unqualified when they leave school (Table 2.1, Diagram 2.3), we see that all of Lothian's deprived areas have a higher proportion of unqualified leavers than the Lothian average (with the exception of two less reliable estimates in West Lothian). While some 41 per cent of Lothian school leavers in 1981 left school with no formal qualifications, in Craigmillar the proportion was 77 per cent. Other areas with very high proportions of unqualified leavers were the Pilton/Muirhouse area with 68 per cent, Gilmerton and

Burdiehouse with 63 and 61 per cent respectively, and the Fauldhouse area of West Lothian with 70 per cent. Given the importance of formal qualifications in determining post-school destinations (Chapter 1), it is not surprising to find that many of these areas also have higher-than-average youth unemployment rates. Interestingly, although unemployment levels are frequently above average in Edinburgh's deprived areas, it is in West Lothian that we see extremely high levels, such as 37 per cent in Blackburn and 34 per cent in Fauldhouse. This suggests that the relative isolation of young people in areas where the local labour market is depressed presents problems related to the cost of transportation to work. Such problems are not experienced to the same degree by young people living in the city where transportation costs are less and a single urban labour market is in operation (Garner, Main and Raffe 1987).

We must remember that these figures are based on young people who left school in 1979/80. Trends reported in Chapter 1 indicate that the situation has deteriorated since then. Given that the opportunities for unqualified leavers have decreased most, it is fair to assume that young people from these areas have not experienced any upturn in their prospects in the intervening years, unless they have been targetted by specific initiatives. A recent study of Edinburgh District however, showed that the most severe youth unemployment is now concentrated in the central-city wards of Broughton, Harbour, St Giles, Fort, Tollcross and Portobello where youth unemployment rates in 1987 were over 40 per cent (EDC 1987). Because of small sample numbers, we are unable to describe the pattern for our survey respondents at this spatial scale. The trend towards increased unemployment in the inner-city areas might be partly explained by the influx of young unemployed to these areas as a consequence of the Government's new board-and-lodgings regulations, and partly by the fact that the concentration of long-term unemployed in the peripheral housing estates means that many from places such as Craigmillar have been taken onto specifically designed government schemes.

Although there would seem to be a fair proportion of young people from these deprived areas in employment in 1981 (Table 2.2 Diagram 2.4), the situation will have deteriorated since the early 1980s with higher proportions now on the YTS. Because a large proportion of young people from these areas are unqualified, it is likely that those who *are* employed will be concentrated in less skilled occupations. The least qualified tend to enter the manufacturing, construction, distribution and service sectors of employment, and it has been shown elsewhere that these employment sectors have the lowest youth wages (Furlong and Raffe 1988). Girls in these occupational sectors are paid even less than boys. The concentration of the less well qualified in occupations which are traditionally low paid, and which may also be

affected by seasonality factors, has been shown to be the source of many young people's problems. The Citizen's Advice Bureau reports that many of the problems brought to its attention are caused by young persons' alternations between low paid jobs and state benefits, a situation which may make them worse off than total dependence on benefits (EDC 1987). It should not be assumed, therefore, that just because an area has a relatively low unemployment rate, people there do not suffer from attendant problems such as low pay and high job turnover.

An examination of the experiences of young people from the most deprived areas in terms of school-leaving patterns, truanting, and satisfaction with schooling (Tables 2.3, 2.4 and 2.5), reveals a picture of general disillusionment with schooling. Around three-quarters of young people in Craigmillar, Pilton, Muirhouse, Prestonpans and Wallyford leave school at the earliest opportunity and, in all but one of Lothian's deprived areas, the percentage leaving school as soon as the regulations allow is above the Lothian average of 62 per cent. The figures for serious truanting, although based on small numbers and therefore not very reliable, give some indication of the scale of the problem, with truanting rates of over twice the Lothian average in places such as Craigmillar, Muirhouse, Broomhouse and Gilmerton. When asked whether they felt their last year at school was worthwhile, the young people from almost all the deprived areas expressed a lower level of satisfaction than the Lothian average of 58 per cent. There is some evidence from the tables on truanting and satisfaction with school that truanting was a more serious problem in city schools than in the outlying areas of West and East Lothian, and conversely that satisfaction with time at school was greater in Edinburgh's deprived areas than in the deprived areas of West Lothian. This does not mean that those who truanted most also felt that their time at school was worthwhile. An examination of truanting and satisfaction taken together showed that around three-quarters of those who said they 'never truanted' thought their last year at school had been worthwhile, whereas only about half of those who 'seldom truanted' did. Under a quarter of those who truanted regularly felt satisfied with their final year at school.

The school experience of young people from Lothian's deprived areas may or may not be related to the actual schools attended in these areas. It may be that schools serving deprived areas are actually doing well by their pupils and that the problems lie in the home or the neighbourhood. Only a multivariate and multilevel analysis can hope to separate these different influences (see Chapter 3).

The family characteristics for young people from Lothian's deprived areas show some interesting differences from the average Lothian picture. First, father's social

class (represented by occupation) (Table 2.6) shows that, in all but one area (Oxgangs, which is a mixed area as defined here), the proportion of fathers who are classified as being in non-manual occupations is lower than the Lothian average of 34 per cent. In some areas it is dramatically lower, for example Craigmillar, Pilton/Muirhouse, Broomhouse and Fauldhouse have fewer than 10 per cent of fathers in this category. Not only are there higher proportions of fathers classified as manual in all but one of these areas, but there is also a tendency for young people from these deprived areas to have fathers whose occupation is unclassified or unknown. The proportion in the unclassified category stands at a high of 35 per cent in Craigmillar, 22 per cent in Pilton/Muirhouse and Blackburn, and 20 per cent in Livingston. This may be is compared with the average of 16 per cent for Lothian as a whole.

An examination of father's employment status (Table 2.7) could potentially have thrown more light on these findings, but is limited by the small number of respondents to this question in each area. However, we know that around one-third of those who do not report an occupation for their father come from single-parent families. Thus an examination of the family-structure patterns may throw some light on why there is a high proportion of fathers whose occupation is missing or unclassifiable in Lothian's deprived areas.

From our 1981 survey we estimated the average proportion of single-parent families in Lothian to be around 11 per cent. In many of the Lothian's deprived areas the proportions are similar to this average (Table 2.8, Diagram 2.5), but in others they are notably higher. Some 28 per cent of sample members in Craigmillar were from single-parent families. There were similarly high proportions in Pilton/Muirhouse, and Burdiehouse in Edinburgh, and in the Blackburn area of West Lothian. Similarly, many of the deprived areas had higher proportions of large families (Table 2.9, Diagram 2.6), although the actual ranking of areas is not identical.

The final family-background characteristic which we have measured here, is the level of parental education (Table 2.10, Diagram 2.7). We saw in Chapter 1 that the proportion of parents who had the minimum length of schooling was decreasing at a faster rate in Lothian than in the rest of Scotland. However, when we look at the proportions in Lothian's deprived areas, we see that they are in general substantially higher than the Lothian average, indeed are higher than the national Scottish average. This suggests some polarisation within Lothian in terms of educational advantage and disadvantage.

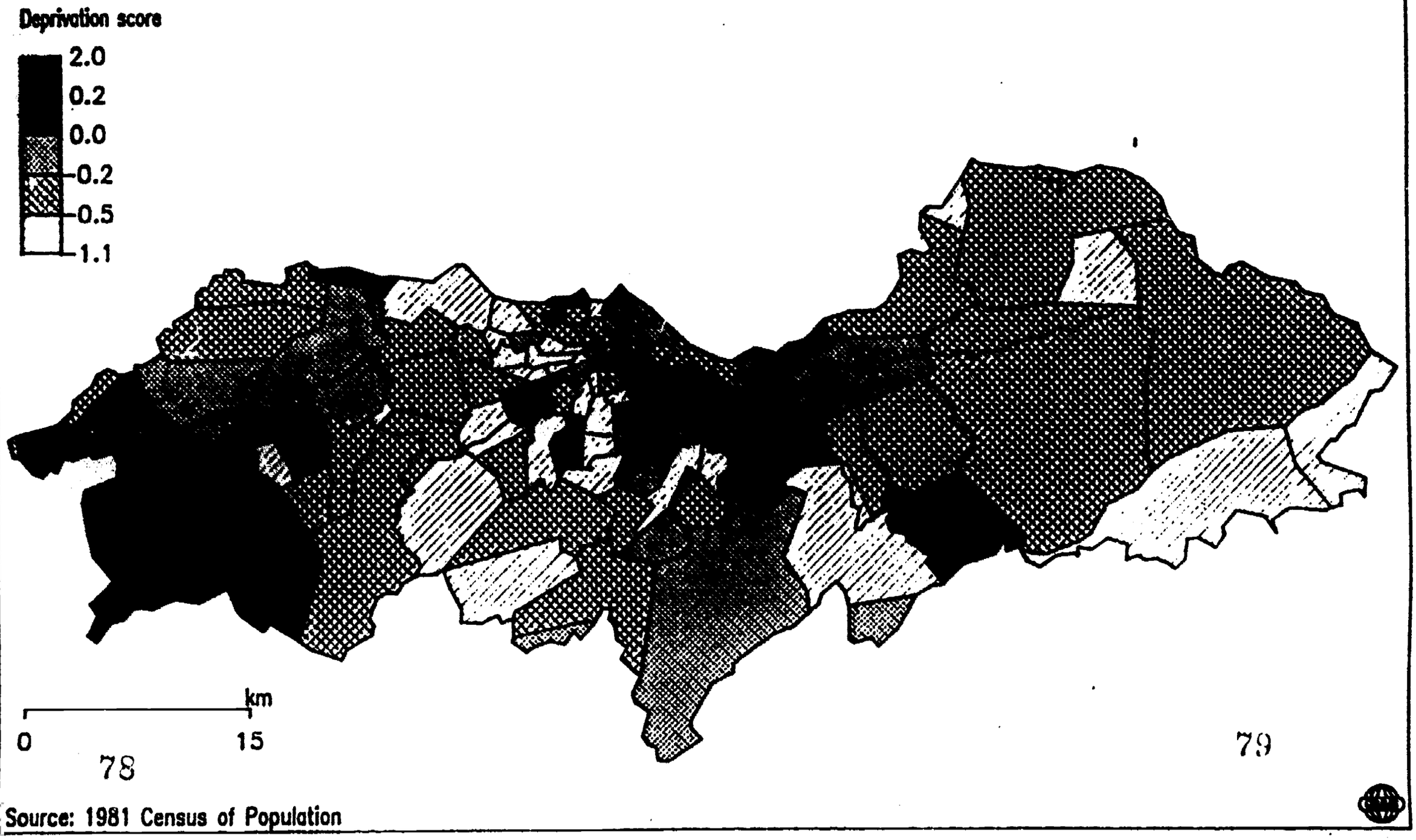
Summary

In this chapter we first defined 18 areas in Lothian which are more deprived than the national average. We also examined the characteristics of young people living in these areas, and their family backgrounds. On average, young people from Lothian's deprived areas fared worse than might be supposed from the general picture for Lothian. The 18 deprived areas were characterised by high proportions of young people who left school with few if any formal qualifications, and high proportions who left school as early as possible. Many of the areas also had higher-than-average levels of reported truancy and lower satisfaction ratings with school, although the patterns were not consistent across all areas. In terms of post-school destinations, there was also a variation across areas with different patterns emerging for those areas within Edinburgh city as compared with the rest of Lothian. Family-background characteristics varied across Lothian's deprived areas, but were generally less favourable to educational success than in non-deprived areas.

The variability across these deprived areas indicates the need for a multivariate and multilevel approach to examine whether the influence of factors differs in different situations. In this chapter we have only demonstrated average and ecological correlations of factors. Because we have a high proportion of single-parent families in an area where we also have low educational attainment, we cannot say that there is any causal link between the two. Ecological (areal) correlations are purely descriptive. What we need to be able to do is to examine the influence of a range of characteristics on an individual's educational attainment. Because we need to examine the influence of characteristics at different levels, namely the family, the school and the neighbourhood, we must use an appropriate statistical technique to disentangle the different effects. This is done in Chapter 3.

Deprivation in Lothian

Diagram 2.1



Source: 1981 Census of Population

Deprived Areas in Lothian

Diagram 2.2

Edinburgh District:

1. Craigmillar
2. Pilton/Muirhouse
3. Burdiehouse
4. Broomhouse
5. Wester Hailes
6. Pilton/West Granton
7. Gilmerton
8. Oxgangs

West Lothian:

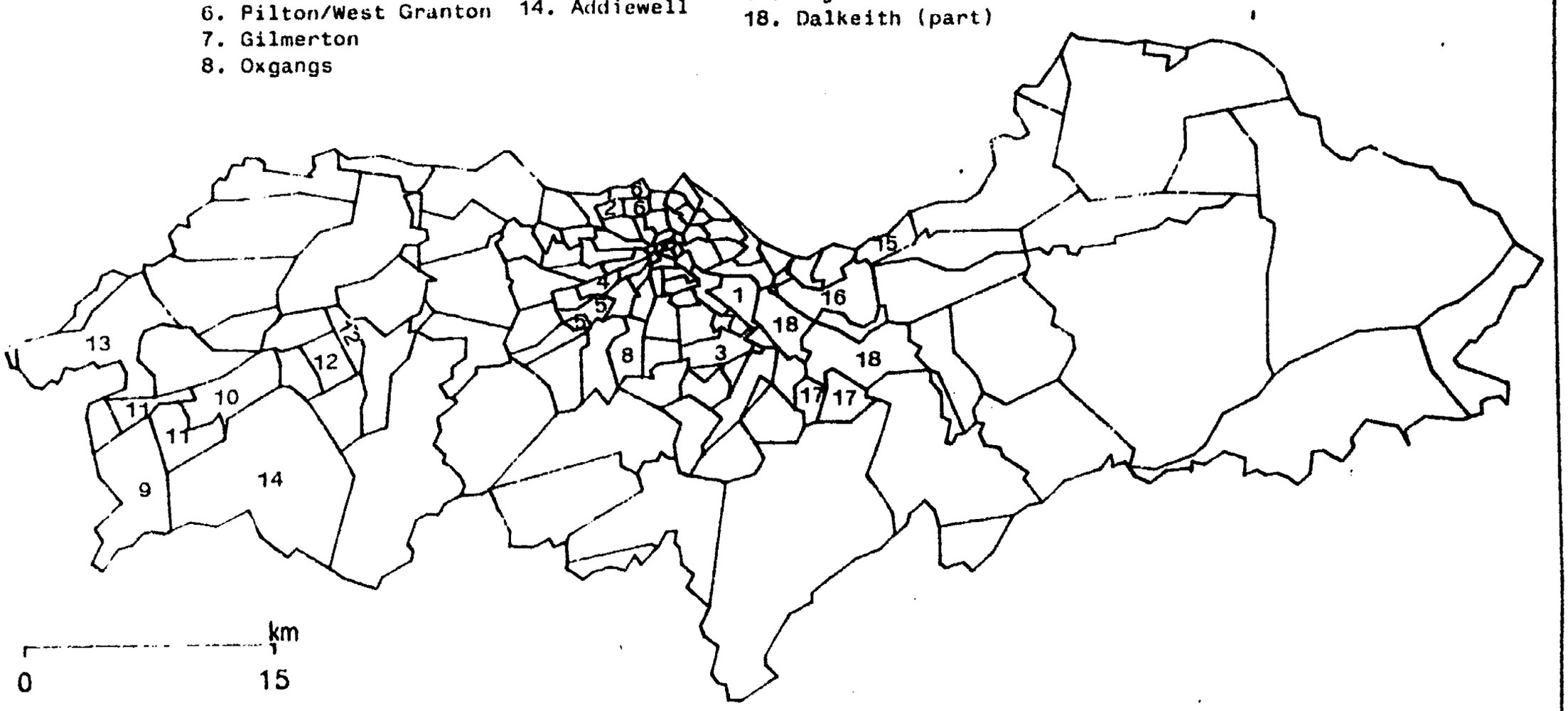
9. Fauldhouse
10. Blackburn
11. Whitburn
12. Livingston
13. Armadale
14. Addiewell

East Lothian:

15. Prestonpans
16. Wallyford

Midlothian:

17. Mayfield
18. Dalkeith (part)

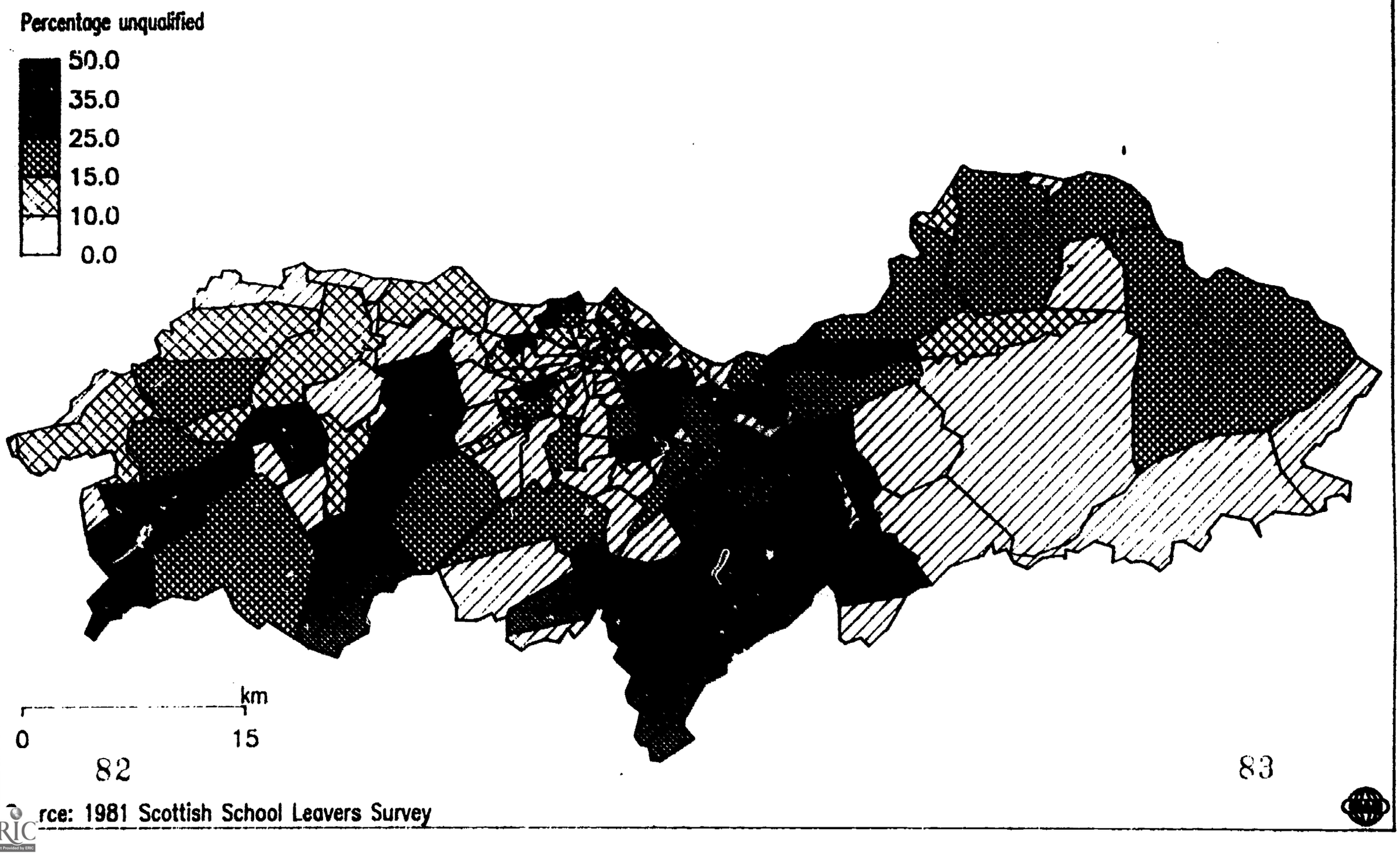


18 deprived areas defined in Chapter 2

Unqualified School Leavers

Percentage unqualified in Lothian in 1981

Diagram 2.3

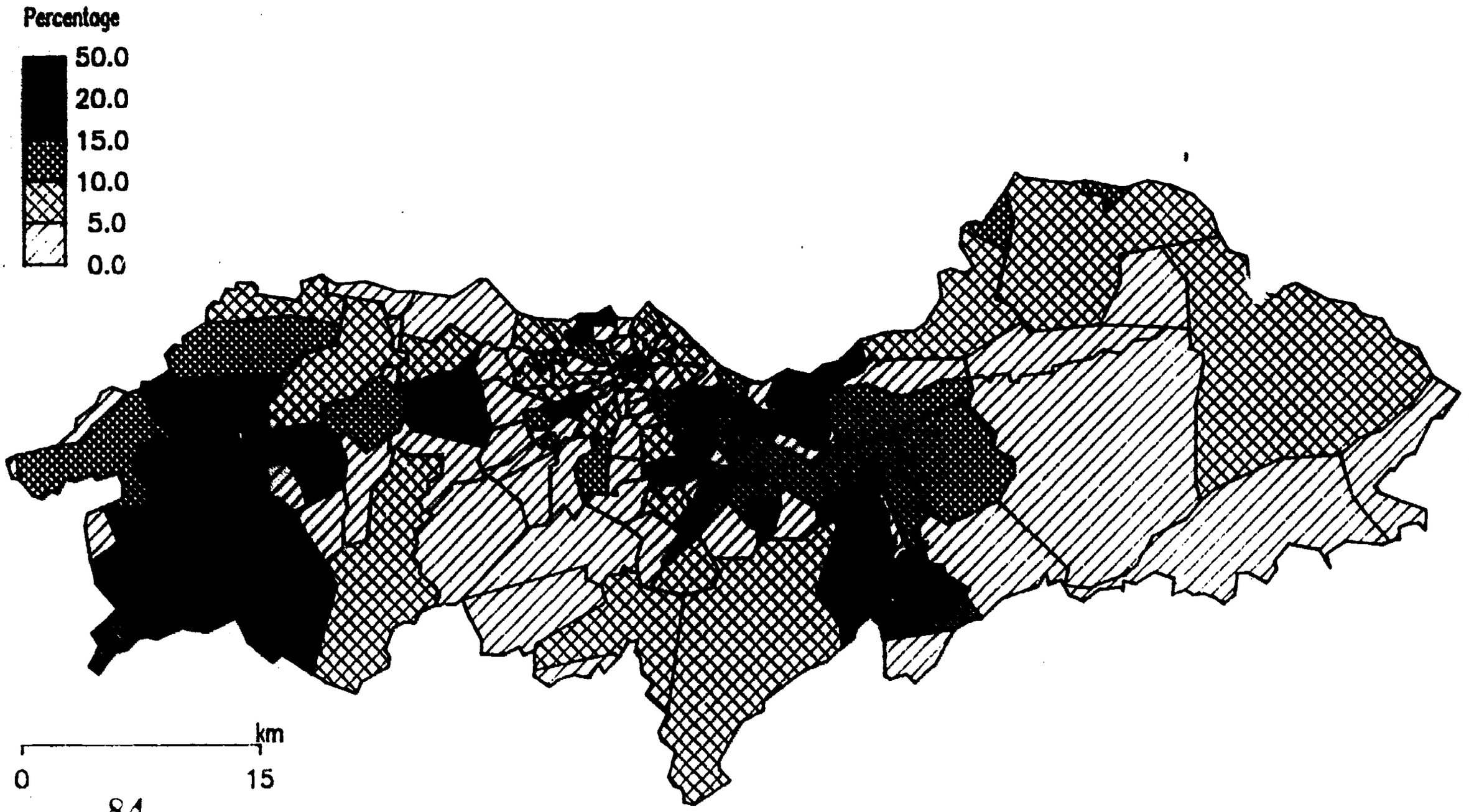


Source: 1981 Scottish School Leavers Survey

Post School Destinations

Percentage unemployed or on YTS in Lothian 1981

Diagram 2.4



Source: 1981 Scottish School Leavers Survey

Single Parent Families

Percentage of single parents in Lothian

Diagram 2.5

86

87

Source : 1981 Scottish School Leavers Survey

Large Families in Lothian

Diagram 2.6

Percentage with three or more children

Source: 1981 Scottish School Leavers Survey

Parental Education

Percentage with minimum length of schooling

Diagram 2.7

e: 1981 Scottish School Leavers Survey

Table 2.0

Areas of highest deprivation in Lothian defined by postcode sectors

Area Name	Postcode Sectors	Average Deprivation Score*
Lothian Average		-0.17
<u>Edinburgh District</u>:		
Craigmillar	EH16.4	1.92
Pilton/Muirhouse	EH 4.4	1.68
Burdiehouse	EH17.8	0.53
Broomhouse	EH11.3	0.51
Wester Hailes	EH14.2, EH14.3	0.41
Pilton/West Granton	EH 5.1, EH 5.2	0.31
Gilmerton	EH17.7	0.27
Oxgangs	EH13.9	0.15
<u>West Lothian</u>:		
Fauldhouse	EH47.9	0.88
Blackburn	EH47.7	0.82
Whitburn	EH47.0, EH47.8	0.37
Livingston	EH54.5, EH54.6	0.30
Armadale	EH48.3	0.20
Addiewell	EH55.8	0.19
<u>East Lothian</u>:		
Prestonpans	EH32.9	0.32
Wallyford	EH21.8	0.28
<u>Mid Lothian</u>:		
Mayfield	EH22.4, EH22.5	0.16
Dalkeith (part)	EH22.1, EH22.2	0.05

Notes:

* The deprivation score given here has a national, all Scotland, average of zero (Duguid and Grant 1983). The higher the score the worse the level of deprivation.

Table 2.1

Percentage unqualified among young people in the most deprived areas in Lothian in 1981

Area	Percentage unqualified
Lothian Average	41
<u>Edinburgh District</u>:	
Craigmillar	77
Pilton/Muirhouse	68
Burdiehouse	61
Broomhouse	59
Wester Hailes	44
Pilton/West Granton	43
Gilmerton	63
Oxgangs	43
<u>West Lothian</u>:	
Fauldhouse	70
Blackburn	55
Whitburn	53
Livingston	52
Armadale	(28)
Addiewell	(36)
<u>East Lothian</u>:	
Prestonpans	56
Wallyford	(53)
<u>Mid Lothian</u>:	
Mayfield	55
Dalkeith (part)	47

Notes:
( ) based on less than 30 observations

Table 2.2

Post-school destinations among young people from the most deprived areas in Lothian in 1981

Area	Scheme for young people	Full time employment	Unemployed	Other	Total
Lothian Average	9	56	13	22	100
Edinburgh District:					
Craigmillar	13	66	15	7	101
Pilton/Muirhouse	8	60	24	8	100
Burdiehouse	11	62	12	14	99
Broomhouse	9	59	28	5	101
Wester Hailes	6	58	4	32	100
Pilton/West Granton	4	77	12	7	100
Gilmerton	24	56	12	8	10[illegible]
Oxgangs	2	58	20	20	10[illegible]
West Lothian:					
Fauldhouse	19	33	34	14	100
Blackburn	15	36	37	12	100
Whitburn	18	44	18	21	101
Livingston	19	49	17	15	100
Armadale	(13)	(51)	(15)	(21)	100
Addiewell	(4)	(39)	(28)	(29)	100
East Lothian:					
Prestonpans	13	47	20	20	100
Wallyford	(10)	(72)	(19)	(-)	101
Mid Lothian:					
Mayfield	5	59	11	25	100
Dalkeith (part)	10	69	8	13	100

( ) based on less than 30 observations

Table 2.3

Proportion leaving school as early as possible among young people from the most deprived areas in Lothian in 1981

Area	Percentage leaving school from S4 or Xmas S5
Lothian Average	62
<u>Edinburgh District</u>:	
Craigmillar	88
Pilton/Muirhouse	85
Burdiehouse	75
Broomhouse	73
Wester Hailes	69
Pilton/West Granton	63
Gilmerton	72
Oxgangs	58
<u>West Lothian</u>:	
Fauldhouse	87
Blackburn	78
Whitburn	64
Livingston	78
Armadale	(60)
Addiewell	(65)
<u>East Lothian</u>:	
Prestonpans	81
Wallyford	(86)
<u>Mid Lothian</u>:	
Mayfield	79
Dalkeith (part)	77

( ) based on less than 30 observations

Table 2.4

Regular truanting* among young people from the most deprived areas in Lothian in 1981

Area	Percentage truanting for several days at a time or more
Lothian Average	9
Edinburgh District:	
Craigmillar	20
Pilton/Muirhouse	22
Burdiehouse	-
Broomhouse	25
Wester Hailes	6
Pilton/West Granton	-
Gilmerton	22
Oxgangs	12
West Lothian:	
Fauldhouse	10
Blackburn	6
Whitburn	15
Livingston	12
Armadale	(4)
Addiewell	(-)
East Lothian:	
Prestonpans	11
Wallyford	(25)
Mid Lothian:	
Mayfield	6
Dalkeith (part)	-

Notes:

* This question was not asked of all respondents, therefore small numbers make the estimates less reliable.

Area figures are all based on less than 50 respondents.

( ) based on less than 20 observations.

Table 2.5

Satisfaction with last year at school among young people from the most deprived areas in Lothian in 1981

Area	Percentage feeling that their last year at school was worthwhile
Lothian Average	58
Edinburgh District:	
Craigmillar	55
Pilton/Muirhouse	52
Burdiehouse	64
Broomhouse	57
Wester Hailes	49
Pilton/West Granton	62
Gilmerton	57
Oxgangs	57
West Lothian:	
Fauldhouse	41
Blackburn	55
Whitburn	51
Livingston	51
Armadale	(45)
Addiewell	(72)
East Lothian:	
Prestonpans	43
Wallyford	(60)
Mid Lothian:	
Mayfield	43
Dalkeith (part)	38

Note:
( ) based on less than 30 observations

Table 2.6

Social class composition of the most deprived areas in Lothian in 1981

Area	Percentages Non-manual	Manual	Unclassified	Total
Lothian Average	34	50	16	100
<u>Edinburgh District</u>:				
Craigmillar	3	62	35	100
Pilton/Muirhouse	6	72	22	100
Burdiehouse	14	76	10	100
Broomhouse	9	80	12	101
Wester Hailes	31	60	9	100
Pilton/West Granton	24	64	11	99
Gilmerton	16	68	17	101
Oxgangs	36	46	18	100
<u>West Lothian</u>:				
Fauldhouse	8	82	11	101
Blackburn	15	64	22	101
Whitburn	18	67	14	99
Livingston	21	58	20	99
Armadale	(10)	(69)	(22)	101
Addiewell	(30)	(64)	(7)	101
<u>East Lothian</u>:				
Prestonpans	15	72	14	101
Wallyford	(3)	(87)	(10)	100
<u>Mid Lothian</u>:				
Mayfield	20	67	13	100
Dalkeith (part)	26	62	12	100

( ) based on less than 30 observations

Table 2.7

Father's employment status* in the most deprived areas in Lothian in 1981

Area	Percentages* In employment	Unemployed	Other	Total
Lothian Average	82	10	9	101
Edinburgh District:				
Craigmillar	61	24	14	99
Pilton/Muirhouse	88	9	3	100
Burdiehouse	98	2	-	100
Broomhouse	100	-	-	100
Wester Hailes	93	7	-	100
Pilton/West Granton	77	18	5	100
Gilmerton	96	-	4	100
Oxgangs	83	6	12	101
West Lothian:				
Fauldhouse	88	-	13	101
Blackburn	94	6	-	100
Whitburn	90	6	5	101
Livingston	93	-	7	100
Armadale	89	4	7	100
Addiewell	84	8	9	101
East Lothian:				
Prestonpans	94	3	3	100
Wallyford	95	-	5	100
Mid Lothian:				
Mayfield	90	5	5	100
Dalkeith (part)	88	8	4	100

Notes:

* This question was only asked of half of the sample in 1981, therefore small numbers make the estimates less reliable

Area figures are all based on less than 60 respondents.

( ) based on less than 30 observations

Table 2.8

Single-parent families in the most deprived areas in Lothian in 1981

Area	Percentage of single-parent families
Lothian Average	11
Edinburgh District:	
Craigmillar	28
Pilton/Muirhouse	20
Burdiehouse	21
Broomhouse	15
Wester Hailes	10
Pilton/West Granton	11
Gilmerton	13
Oxgangs	15
West Lothian:	
Fauldhouse	10
Blackburn	24
Whitburn	12
Livingston	10
Armadale	(24)
Addiewell	(6)
East Lothian:	
Prestonpans	9
Wallyford	(19)
Mid Lothian:	
Mayfield	9
Dalkeith (part)	15

( ) based on less than 30 observations

Table 2.9

Family size in the most deprived areas in Lothian in 1981

Area	Percentage of large families*
Lothian Average	65
Edinburgh District:	
Craigmillar	68
Pilton/Muirhouse	80
Burdiehouse	83
Broomhouse	81
Wester Hailes	75
Pilton/West Granton	54
Gilmerton	80
Oxgangs	59
West Lothian:	
Fauldhouse	82
Blackburn	72
Whitburn	67
Livingston	80
Armadale	66
Addiewell	86
East Lothian:	
Prestonpans	81
Wallyford	64
Mid Lothian:	
Mayfield	68
Dalkeith (part)	66

( ) based on less than 30 observations
* large families are defined here as families with 3 or more children

Table 2.10

Parental education in the most deprived areas in Lothian in 1981

Area	Percentage with minimum schooling
Lothian Average	59
Edinburgh District:	
Craigmillar	74
Pilton/Muirhouse	75
Burdiehouse	67
Broomhouse	82
Wester Hailes	56
Pilton/West Granton	81
Gilmerton	77
Oxgangs	58
West Lothian:	
Fauldhouse	76
Blackburn	72
Whitburn	75
Livingston	64
Armadale	(67)
Addiewell	(62)
East Lothian:	
Prestonpans	83
Wallyford	(75)
Mid Lothian:	
Mayfield	78
Dalkeith (part)	78

( ) based on less than 30 observations

Chapter 3

Deprivation effects on young people's educational attainment in Lothian

We have seen that areas with high proportions of unqualified school leavers and unemployed young people are also those areas where there are high levels of neighbourhood deprivation and high proportions of families with 'disadvantaging' characteristics. We have not yet demonstrated any direct association between an individual's educational attainment and these family and area characteristics.

To move towards a valid explanation, we must use a multivariate statistical analysis where all factors are examined together and simultaneously. We can identify four 'levels' of influence which we might wish to model in the current context – individual, family, school and neighbourhood.

This multilevel structure poses a problem for our analysis because, in reality, we can never wholly separate the individual from his or her context. For example, we can ask whether a particular pupil would have obtained better qualifications if they had attended school X rather than school Y. In a statistical model, we can assume that an individual can move between schools and remain the same individual. In reality, however, the fact that a pupil attends school X rather than school Y may partly reflect their individual characteristics. If they were in school Y rather than school X then some, though not all, of their characteristics might also differ. Similarly, if we move a pupil from school X to school Y, we change the character of both schools in some way, and the schools are not the same as before. In reality then, influences at the individual, family, school and neighbourhood levels are all interrelated and cannot be wholly separated. In our statistical models we can make assumptions about these relationships and adopt an approach which will allow us to separate these influences. There is an element of arbitrariness in the exercise, but there is also much that can be learned.

Although we can identify four levels of influence – individual, family, school and neighbourhood – it is not possible to model all four levels in the present study. There are two reasons for this. First, we have limited data measured unambiguously at the level of the individual, as distinct from the level of the family. Only the sex of the

respondent and the outcome measure of educational attainment are true individual-level measures. We do not have any measure which allows us to control for individual ability in the present study. However, a recent study of young people's attainment in another Scottish education authority where such a measure is available (Garner and Raudenbush 1989), can help us calibrate the effect of this shortcoming here. Nevertheless, the distinction between families and individuals within families becomes blurred when examining the influence of the characteristics of the family on an individual's outcomes. In our analysis we treat father's occupation, parental education and family size as characteristics of the individual. In effect these measures act as proxies for the educationally relevant advantages or disadvantages to which individual sample members have access through their families.

The second main difficulty is that we are restricted in our ability to model school and neighbourhood as separate 'levels' (this is because of software limitations and our definition of neighbourhood – for details, see Appendix 3). In the present study we overcame this problem by attaching the level of deprivation in the home neighbourhood to the individual. In practical terms, this means that we assume that deprivation in each neighbourhood has the same effect for each young person in that neighbourhood irrespective of any differences in their other characteristics.

We have therefore reduced our four-level conceptual model to a two-level statistical model. The levels are the individual and the school, and neighbourhood deprivation is treated as an individual-level measure. Using this type of model we can address a number of substantively important questions. First, we can assess how much of the variation in individuals' educational attainment can be attributed to influences coming from the family, the school and the neighbourhood. Second, after we have allowed for differences in the individual (family) characteristics of pupils in schools, we can ask how much of the average variation between schools can be explained by characteristics of the pupil composition of the schools (ie the average social class or average level of deprivation). Third, we can examine whether schools have important contributions over and above these compositional effects. Finally, we can assess whether different types of pupils do better or worse in some schools rather than in others.

Results

Because the analysis is highly technical we present our full results only in Appendix 3. Here we present a brief summary of our findings and highlight the

conclusions to be drawn.

The analysis is carried out in stages. First, we estimate how much of the variation in educational attainment among our survey respondents might conceivably be explained by the different schools they have attended. In doing this, we do not at first allow for the fact that schools have differing pupil memberships. Our estimates are therefore maximum estimates for the data we are analysing. Before allowing for differences in pupil intakes, we find that just over 15 per cent of the variation in young people's educational attainment is associated with the different schools they attend. This figure does not represent the maximum contribution which schools *could* make to attainment. Rather, this is the maximum amount which the schools in our present study might conceivably explain. The maximum contribution which schools in other circumstances could make to pupils' attainment could be substantially more. We must remember that we are examining data from a system where policy in the schools already influences attainment. We are unable to measure the effects of such policies because of lack of data.

The 15 per cent of variation in educational attainment which is associated with going to different schools means that the larger variation (around 85 per cent) comes from differences between individual pupils, irrespective of the schools they attend.

The next stage in our analysis is to introduce individual and family-background characteristics to explain the variation between individual pupils. The introduction of father's social class, mother's and father's education, family size and the sex of respondent, explains around 20 per cent of the differences between pupils. When we allow for differences between schools in the individual and family-background characteristics of their pupil intakes, we explain just over half of the initial 15 per cent of variation in attainment which we found might be coming from schools. This means that the average attainment of schools is highly dependent on the types of pupils who attend them. It would therefore be misleading to compare the average number of O grades gained per pupil in a school serving one of Lothian's deprived areas with those of a school serving a predominantly middle-class suburb; misleading, that is, unless we take the pupil intake into account. Even then, our estimates of the effect of the school will tend to be overestimates because we do not have any measure of pupil ability. In another study where we have a measure of intake ability at 12 years, the introduction of individual ability and family-background explains much of the original variation between schools (Garner and Raudenbush 1989).

Our final step here is to introduce neighbourhood deprivation to see whether this

helps to explain remaining attainment differences between pupils. Neighbourhood deprivation does add to the explanation of pupil differences in attainment within schools. We also find that the effect of neighbourhood deprivation in lowering attainment is not the same in every school. We find that some schools are better than others at moderating the effects of deprivation. We also find that high deprivation in the home neighbourhood is associated with reduced individual educational attainment. Also schools with a high proportion of pupils from deprived neighbourhoods will tend to have lower average attainment levels, even after allowing for differences in their intakes. This does not mean that schools in deprived areas are not doing well by their pupils. Indeed there is evidence that some schools in deprived areas are doing better for their pupils than some in less deprived areas (Diagram 3.1). However the evidence does show that, the worse the average neighbourhood deprivation in the school, the lower tends to be the attainment of the pupils from the most deprived neighbourhoods. Some schools also perform better for boys than girls, and *vice versa*.

Before discussing further what these effects mean for different sorts of pupils, we may examine the constituents of the neighbourhood deprivation score to see whether we can shed some light on the factors behind the association of deprivation and attainment. The three characteristics from the deprivation index which most strongly depress educational attainment are: the level of adult unemployment in the neighbourhood; the proportion of neighbourhood residents who are in low-earning socio-economic groups; and the level of overcrowding in the area.

All three are consistent with theories of what neighbourhood effects might be. The level of adult unemployment and the proportion of low-earning socio-economic groups accords with the Plowden thesis that, where education is seen as irrelevant for post-school life, there will be little motivation for young people to perform well at school. If we update the following quote to include unemployment, or if we substitute unemployment for jobs/work, the Plowden view of the 1960s can easily be transferred into the 1980s.

> "In a neighbourhood where the jobs people do and the status they hold owe little to their education, it is natural for children as they grow older to regard school as a brief prelude to work rather than as an avenue to future opportunities." (CACE, 1967, vol 1, p.50)

Similarly, living in a neighbourhood where there is a high level of overcrowding

might have a depressing effect on young people's attainment at school because of lack of home facilities for study (although this is more correctly an individual/family influence). Perhaps this could also manifest itself through the pressure to be out 'on the streets,' enhancing the influence of peer-group cultures.

We can use our estimate of the effect of neighbourhood deprivation to assess the size of its effects on the attainment of the young people who live in the deprived areas of Lothian identified in Chapter 2. If we take the difference between the level of deprivation in each area and the average deprivation for Lothian, we can estimate that neighbourhood deprivation alone (having already allowed for the influence of family and schools) could mean a reduction of between two and four O grade passes in Craigmillar compared with the average for Lothian. Estimates for the Pilton/Muirhouse area show a similar reduction of one to three O grades. These estimates are based on the average deprivation for each of Lothian's deprived areas. The higher estimate of attainment for each area corresponds to that predicted by our model for Lothian. The lower estimate is that which would be predicted by the results of our most stringent model in another region of Scotland where we were able to control for pupil ability on entry to secondary school (and where we used neighbourhood rather than school at the higher level - Garner and Raudenbush 1989).

These estimates mask a wide range of deprivation within each of the 18 areas. Diagrams 3.2 and 3.3 illustrate the differentials within areas as estimated firstly by our model for Lothian, and secondly by our neighbourhood model from our other study. The estimates from that study are likely to be rather conservative, since our aim there was to construct as severe a test as possible for neighbourhood deprivation. We should also remember that, by controlling for pupil ability at entry to secondary school, we are restricting our measure of the influence of neighbourhood deprivation to the progress in educational attainment between the age of twelve and around sixteen years. This obviously underestimates the *total* effect of neighbourhood deprivation because the prior-ability measure absorbs any influence from deprivation (and family) which occurs up to 12 years.

The effects illustrated in the diagrams are additional to any effects of family background and schools. We should also remember that young people from deprived areas are likely to come from families with 'disadvantaging' characteristics. They are likely then to be doubly or even three-times deprived. They are disadvantaged by their home circumstances, disadvantaged by the compositional effects in the schools they attend, (not necessarily by their schooling *per se* and disadvantaged through where they live.

Summary

Chapter 3 uses the new statistical technique of multilevel modelling to untangle the relationships between a child's educational attainment and the influence of family, school and neighbourhood. We found that most of the differences in educational attainment arose from individual and family-background factors. Individual ability is the single most important explanation for differences in attainment. Because we did not have such a measure in the present study, family characteristics were found to be of greatest importance here. Young people who have fathers in lower social classes tend to have lower attainment. Lower parental education and large families both depress attainment, as also does living in a single-parent family. Boys are less likely to do well than girls. Schools are also important, but those with higher proportions of children from low social-class backgrounds tend to produce lower levels of attainment for a pupil of fixed characteristics. Neighbourhood deprivation has an important negative association with attainment, as does the average level of neighbourhood deprivation among pupils in the school.

Discussion

The distinctive contribution to educational research which this chapter has made is to show that home-neighbourhood must be taken into account when explaining educational disadvantage. The effects of neighbhourhood are not trivial. For two young people with identical family/individual characteristics attending the same school but coming from home neighbourhoods with very different levels of deprivation, the difference in attainment predicted by our models here may be anything between two and four O grade passes. Given the importance of formal qualifications in determining post-school destinations, and therefore a young person's future employment, such differences could be crucial in determining life chances.

Many policy initiatives have been designed to counter the educational disadvantage experienced by young people who come from areas of social disadvantage. That pupils from such areas have a lower average educational attainment than their counterparts from more advantaged areas has long been known (Coleman et al. 1966; CACE 1967; Rutter and Madge 1976; Rutter et al. 1979). What has not been shown until now is the statistically separate contributions to educational disadvantage made by the pupil's family, school and home neighbourhood.

The inter-relations between these factors has meant that policy makers have found it difficult to design appropriately balanced initiatives to alleviate disadvantage. For example, the early enthusiasm for school-based programmes in the 1960s soon dissolved because of the critical assessments of early intervention strategies such as Project Headstart in the USA. The Coleman Report (Coleman et al. 1966) and the Plowden Report (CACE 1967) provided evidence, that in both the USA and the UK, the major sources of educational inequality were to be found, not in the schools, but in the home, the neighbourhood and the general social environment. Partly as a reaction to the perceived failings of early school-based initiatives, and partly through a realisation of the scale of social problems in the 1970s, policies to tackle educational disadvantage became subsumed within area-based policies to tackle wider social problems. The lack of a clear understanding of the interactions between home, school and neighbourhood and of their joint effects on young people's performance at school, led to a situation where *school-based* initiatives were drawn up for *areas* suffering from social disadvantage.

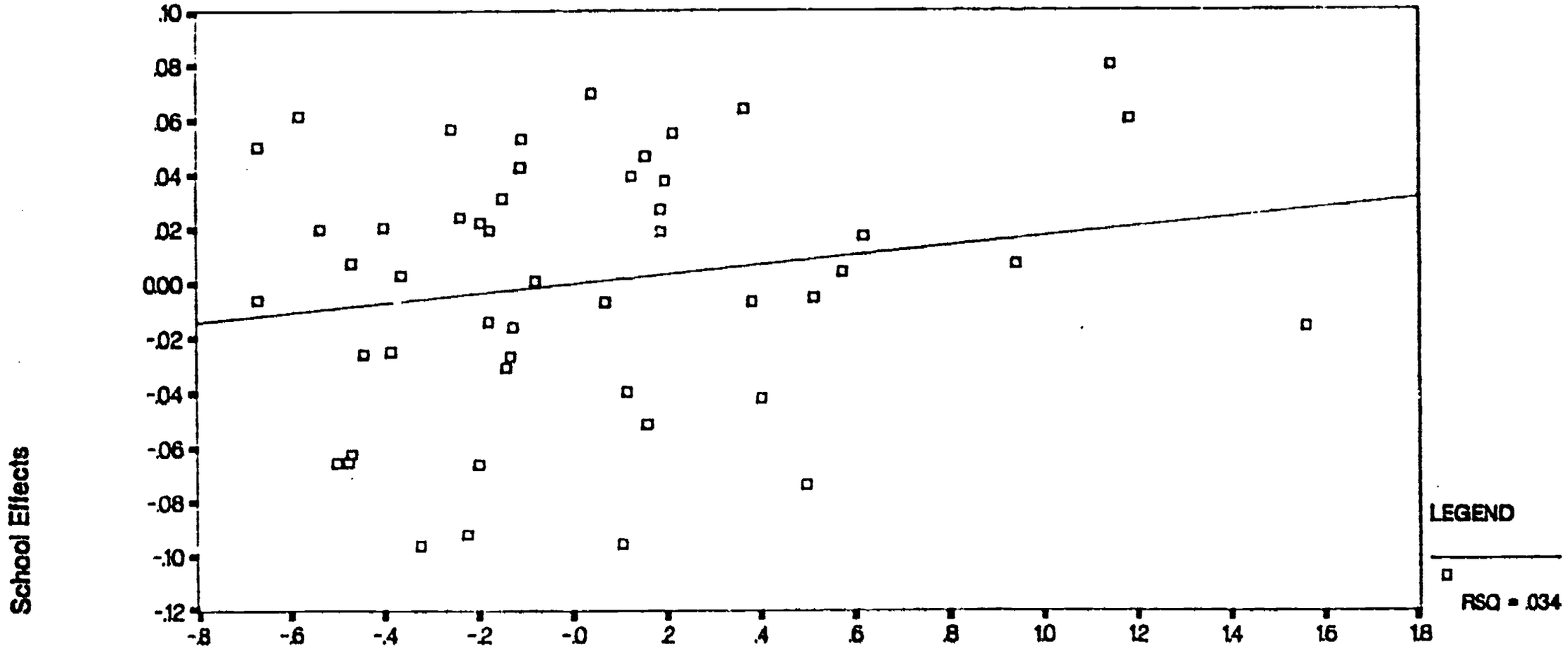
Traditionally, it has been argued that, for resource allocation to be efficient, it must be targetted at areas, or at institutions such as schools. However, because educational disadvantage is essentially experienced on an individual, personal basis, such targetting risks missing the very individuals it is seeking to assist. The classic criticism of the Educational Priority Area (EPA) schools set up under Plowden, was that not all children in EPA schools were disadvantaged, and that not all disadvantaged children lived in areas served by EPA schools. Similarly, area-based initiatives run the risk that the pupils who will benefit most from any positive discrimination are those most able to take advantage of any extra resources (in general, the least deprived in any area), while the disadvantaged who are not in the area are totally excluded from the benefits of the policy initiative.

Such criticisms might seem to lead to the conclusion that all policies of positive discrimination should be directed at individuals or families. However, as we have seen here, individual, family, school and neighbourhood all contribute to a young person's educational performance. This means that an individualistic policy cannot alleviate all educational disadvantage.

Diagram 3.1

School Effects in Lothian

Schools by Average Deprivation

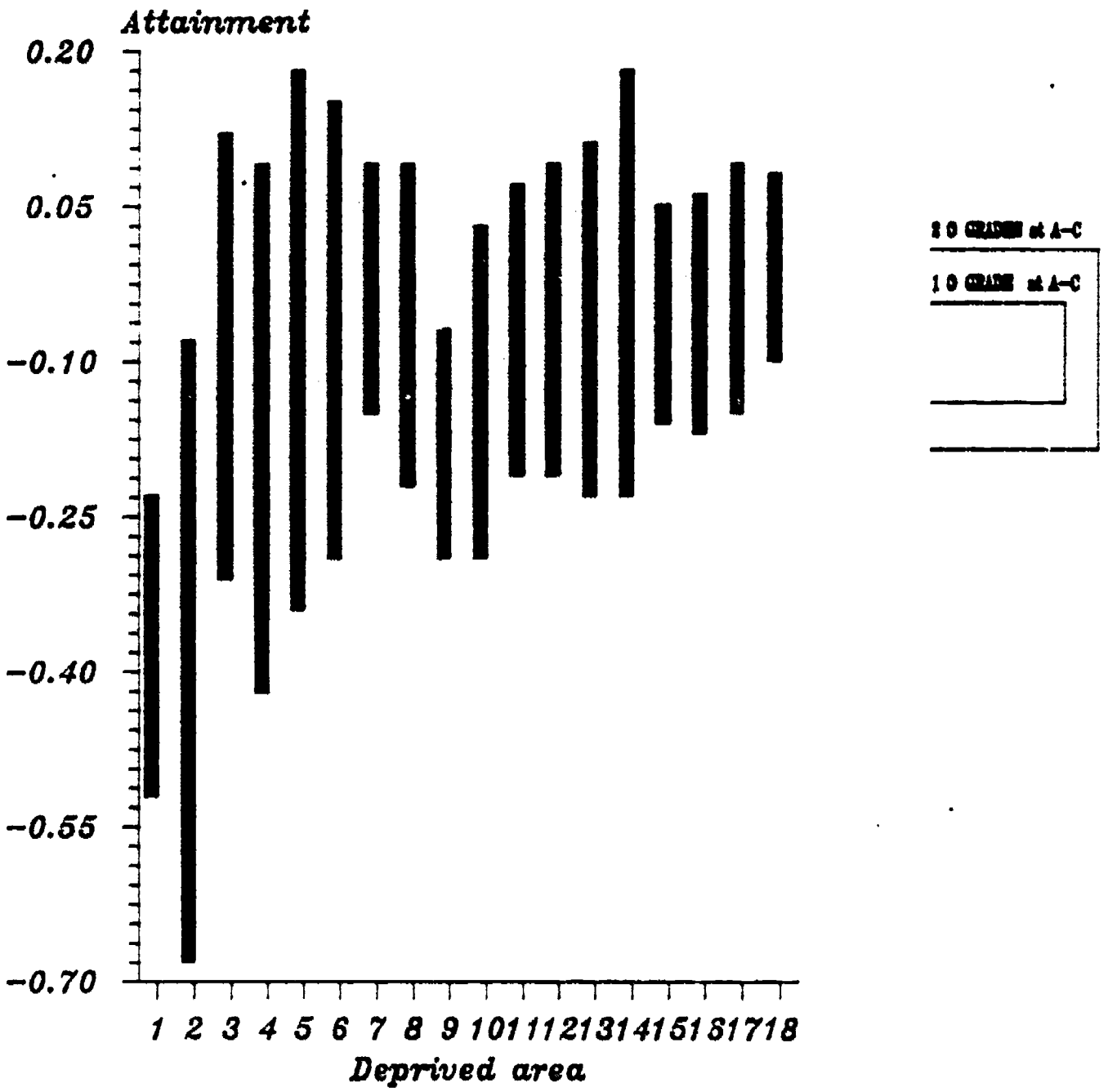


Average school deprivation

This plots school effects by average level of school deprivation as estimated from our multilevel model (IV).

Diagram 3.2

Predicted Attainment Differentials by Lothian Model



These predicted attainment differentials within areas are those associated with neighbourhood deprivation alone. Home background and schooling are held constant.These results are based on the Lothian Model which does not control for individual pupil ability.

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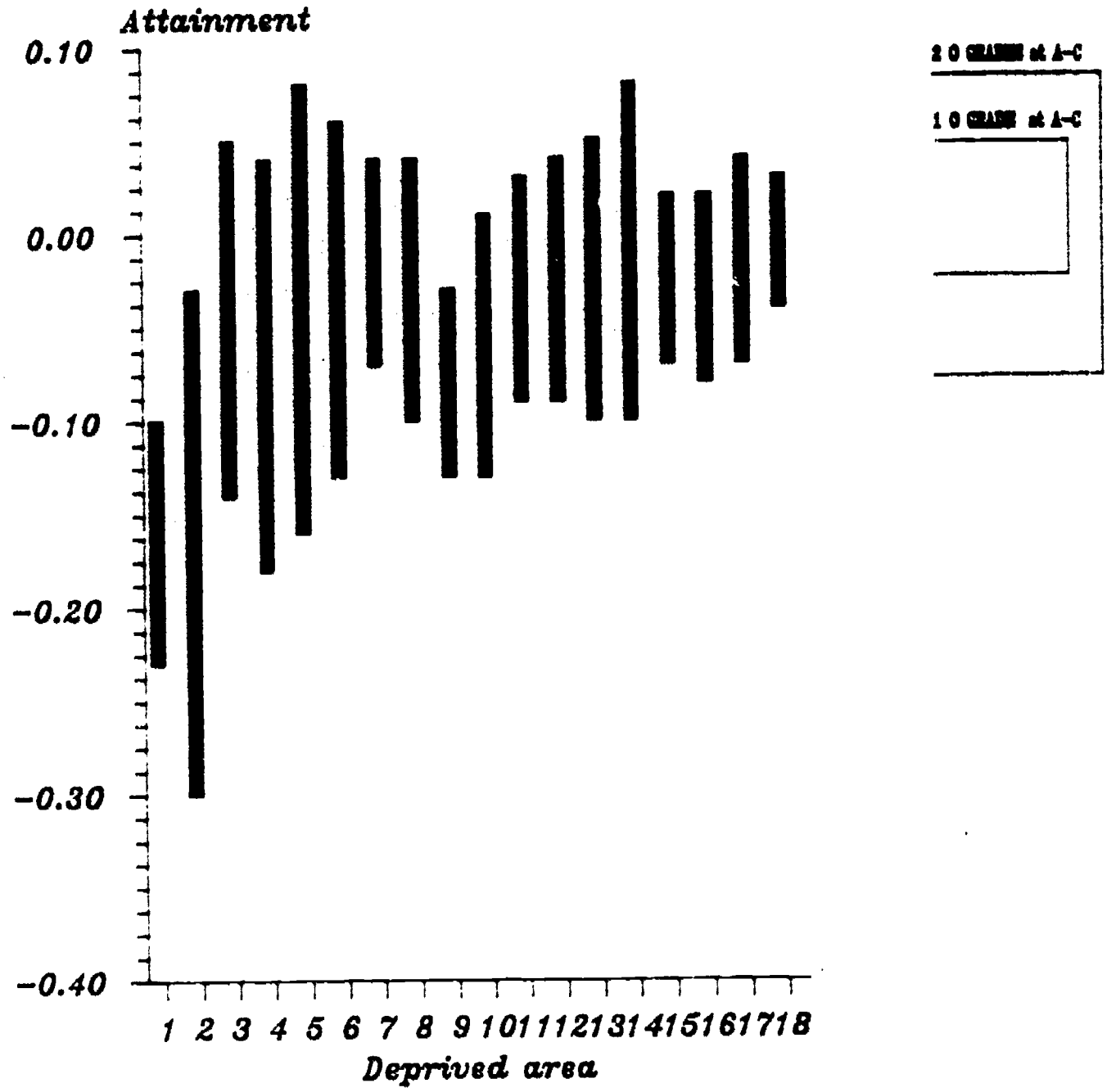
Diagram 3.3

Predicted Attainment Differentials by Alternative Model



These predicted attainment differentials within areas are those associated with neighbourhood deprivation alone. Individual prior attainment, home background and schooling are held constant. These results are based on a stringent alternative model in which we control for pupil ability at entry to secondary school and use Neighbourhood at the higher level.

Designed 1988-08-18 K.E.A.TOLGU

Predicted Attainment Differentials, Diagrams 3.2 and 3.3

Key to Areas:

1. Craigmillar
2. Pilton/Muirhouse
3. Burdiehouse
4. Broomhouse
5. Wester Hailes
6. Pilton/West Granton
7. Gilmerton
8. Oxgangs
9. Fauldhouse
10. Blackburn
11. Whitburn
12. Livingston
13. Armadale
14. Addiewell
15. Prestonpans
16. Wallyford
17. Mayfield
18. Dalkeith (part)

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Appendix 1

Notes on Tables

1. All tables show rounded percentages.

2. The figures for 1977 (rest of Scotland) in Tables 1.1 - 1.17 are restricted to the rest of the central belt of Scotland.

3. Source: Scottish School Leavers Surveys 1977 - 1987.

Appendix 2

Data–set construction and data description

The following four sections describe data–set construction for the multilevel analysis in Chapter 3.

1. **Postcoding and linkage:** all Lothian survey respondents home addresses were postcoded during an earlier CES study (Garner, Main and Raffe 1987). However the earlier study used only postcodes at the sector level, and some checking and re–postcoding was required to allow matching at the more detailed postcode–unit level (eg. postcode sector = EH15.1; postcode unit = EH15 1LP). The unit postcodes for over 2,800 Lothian respondents were fed into a database together with their survey identifier. The unit postcodes were also fed into the Postcode Directory to obtain the 1981 Census enumeration district (ED) identifier. (The Postcode Directory is provided to researchers through Edinburgh University Data Library.) The ED identifiers were then added to the database to permit a direct match between each survey respondent and their 1981 Census ED.

2. **Census data retrieval:** the 1981 Population Census data is accessed through a retrieval program called SASPAC (provided through Edinburgh University Data Library). This permits users to specify selected variables for all of Scotland or for any region, at various levels of aggregation. The 12 constituent variables for the deprivation index (see below) were extracted for all 2,557 EDs in Lothian. The output from SASPAC was entered into a second database for storage, and also into an SPSSX data file to permit the construction of the deprivation index.

3. **Deprivation index construction:** the twelve constituent variables for each Lothian ED were standardised to have a mean of zero and a standard deviation of one. They were then weighted by the factor–score coefficients from an all–Scotland study (Duguid and Grant 1983) and summed to give a single index of deprivation for each ED in Lothian. These ED–level scores were subsequently fed back into the data–base

to be linked with the individual-level data from the 1981 SSLS survey. Each respondent was then allocated a measure of deprivation in their home area.

4. **SPSSX data-set construction:** for preliminary analyses and data cleaning an SPSSX data set was created at the individual-pupil level. This permitted the rescaling and documentation of variables and the checking of values through simple frequencies.

Data description

The outcome variable for educational attainment has 14 categories describing the number of O grade and Higher SCE awards at the A to C level. For pupils obtaining no A-C awards at O grade, account was taken of any SCE O-grade awards at the D or E grade. This variable captures both attainment and length of schooling, because Highers cannot be taken until fifth or sixth year. Willms (1986) scaled the variable using a logit distribution for re-expressing grades (following Mosteller and Tukey 1977).

The independent variables used in the multilevel analysis represent individual/family characteristics, schools and home-area deprivation. We do not have any measure of individual ability or prior attainment for young people in Lothian. This results in an underspecification of our models. However, studies in another region of Scotland for which we have primary-school VRQ scores can be used as a guide to the effect of this underspecification (Details given in Chapter 3).

1. ***Fathers social class*** was derived from the father's occupation and was based on the Registrar General's Classification of Occupations, rescaled to the Hope-Goldthorpe scale (Willms 1986).

2. ***Parental schooling*** is represented by two dummy variables, MUMED and DADED. They are scaled 1 for parents who stayed on at school beyond 15, and 0 for others.

3. ***Family size*** is represented by the number of siblings, with a range of 0 to 9.

4. ***Sex of respondent*** is coded 0 for males and 1 for females.

5. ***Father's current employment status*** is coded 1 for unemployed and 0 for others. This variable was asked only of half the sample and estimates based on it are therefore less reliable than others in the study.

6. ***Family structure***: residing with a single parent is scored 1 and all other family groupings scored 0.

7. ***Schooling*** represents the higher-level grouping in the analysis. All Grant-Aided and Independent schools were grouped together because of small numbers of pupils. Essentially school membership is the key variable here but a number of 'contextual' variables were also created at the school-level by aggregating up individual-pupil characteristics to give a school mean, such as mean social-class composition and mean level of deprivation.

8. ***Neighbourhood deprivation*** is represented by a deprivation index designed by the Housing and Urban Renewal Research Unit of the Scottish Development Department to identify areas of special need in Scotland in 1981. It combines characteristics of the physical environment with social and economic aspects of the population living in an area. The index is based on a substantial programme of research to identify areas of need in Scotland, and is widely used by policy makers at national, regional and local levels (see Table A2.1 for details). The index is designed to have a mean of 0 and a standard deviation of 1 for the whole of Scotland. For Lothian the index has a mean of −0.166 and a standard deviation of 0.754. This means that Lothian, on average, is below the national average for Scotland (i.e. has less deprivation) and has a smaller range of deprivation than the country as a whole. In the city of Edinburgh, the mean is −0.158 and the standard deviation 0.839. This compares with Glasgow where the mean is around +0.21 and the standard deviation is 1.095. Glasgow is more deprived than Edinburgh, and is well above the average for Scotland. Glasgow also has a wider range between high and low scores than Edinburgh or the country as a whole.

Table A2.1 Deprivation score: constituent variables

Socio-demographic indicators:

1. Single-parent families - households containing at least one single-parent family with dependent child(ren) as a percentage of all households
2. Large households - households with four or more children as a percentage of all households
3. * Elderly households - households containing persons of pensionable age only, as a percentage of all households

Economic indicators

4. Unemployment - economically active residents aged 16 or more seeking work as a percentage of economically active residents of the same age
5. Youth unemployment - economically active residents aged 16-20 seeking work as a percentage of economically active residents aged 16 or more
6. The permanently sick - residents aged 16+ who are permanently sick as a percentage of all residents aged 16+
7. Low earning socio-economic groups - residents economically active or retired who are classified by the Registrar General into socio-economic groups 7, 10, 11, 15 or 17 as a percentage of all residents who are economically active or retired

Housing indicators

8. * Amenity deficiency - households without exclusive use of either a bath or an inside WC or both as a percentage of all households
9. Overcrowding - households below the occupancy norm as a percentage of all households
10. * Vacant dwellings - household spaces classified in the Census as 'other' vacants as a percentage of total household spaces
11. * Level and access (1): The very elderly - elderly households containing at least one person aged 75+ on the first floor or above with no lift for access as a percentage of all households
12. Level and access (2): The under-fives - households containing at least one person aged 0-4 on the first floor or above as a percentage of all households.

* these four variables have very small weightings and therefore have comparatively little impact on the deprivation score.

Source: Based on Duguid and Grant (1983)

Appendix 3

Multilevel Analysis

Background

Recent advances since the mid 1980s in statistical modelling and in the development of the necessary computer software now allow us to estimate statistically the separate effects for multilevel data (Aitken and Longford 1986; Raudenbush and Bryk 1986; Goldstein 1987). The development of these multilevel modelling programs has been focused on educational research because key variables are frequently measured at a higher level of aggregation than the outcome variable of interest. The software is currently under development and cannot yet cope with every problem which researchers would like to address, but the advances in understanding and statistical estimation which it affords, even at present, should not be understated.

The statistical estimation is complex but is designed specifically to cope with the analysis of data which have an hierarchical structure. Educational data are typically of this type. For example pupils are grouped within schools or within neighbourhoods. We have information on the characteristics of the pupils, such as their educational attainment, sex, ability, size of their family and so on. We also have 'higher level' information about the school or the neighbourhood. Traditional analysis ignores this structure with the result that the conclusions drawn may be incorrect, or the effects may be inaccurately estimated.

The improvement in statistical estimation through the use of multilevel models is important. Perhaps of even more significance is the ability of these techniques to estimate accurately 'cross-level effects'. That is to say, we can identify and measure with statistical accuracy for the first time, the contributions which the characteristics of the school or the neighbourhood are making towards the average educational performance of pupils in a school. In addition, we can use this technique to identify which school or neighbourhood characteristics might be able to explain various features. For example, why is it that in some schools girls do better than boys? Again, why does coming from a deprived home neighbourhood in a school where a high number of pupils come from such areas have a more serious effect on attainment than in a school where only a few come from socially deprived neighbourhoods?

Multilevel analysis of educational attainment in Lothian

A series of multilevel models was fitted to the educational outcomes of some 2,800 young people in Lothian to examine the contribution of family, neighbourhood and school to their attainment. The data come from the enhanced 1981 Scottish School Leavers Survey which collected information from some 37 per cent of young people who left school in Scotland in 1979/80. These data form the best source for such an analysis because the enhanced sample provides sufficient numbers of young people to carry out a study between schools or neighbourhoods. Additionally, these data have been linked to the 1981 Census of Population through home postcodes, thus providing the potential to introduce information on the characteristics of home neighbourhoods. The combination of these large data sets and the use of multilevel models is new to educational research.

Because one of our objectives was to discover if neighbourhood deprivation has a direct effect on individual educational attainment, as distinct from home and school effects, we had to define neighbourhoods so as to take account of small pockets of different levels of deprivation. We have defined home neighbourhood here to be equivalent to a Census enumeration district. These spatial units are relatively small and contain approximately only 150-200 households. Schools draw pupils from these neighbourhoods, but neighbourhoods may send pupils to more than one school. Therefore, we do not have an hierarchical arrangement of levels where neighbourhoods nest uniquely within schools. Although the statistical theory can cope with this complexity, the currently available software cannot analyse non-hierarchical structures (Goldstein 1987).

We use the HLM program (Bryk, Raudenbush, Seltzer and Congdon 1986) to perform all our multilevel analysis here. This program represents a two-level model by two equations - the within-unit and the between-unit equations.

The parameters of the within-unit model become the outcome variables to be explained by the between-unit factors. Thus the within-unit model here represents the relationship between individual educational outcomes, sex, family characteristics and neighbourhood deprivation within each school. The between-unit model at the school level attempts to explain both the mean attainment levels of schools, given the control for the within-school variables, and the relationship between background factors and attainment within schools. For example, we can specify a model which will allow us to discover whether the average level of deprivation for the school

affects the relationship between deprivation and attainment within each school.

The analysis was one with pupils grouped within schools. An initial investigation showed that, of the variation in individual educational attainment, where there is no control for any differences in family background or neighbourhoods, some 15.6 per cent of the total (unconditional) variation was between schools.

Allowing for the individual and family-background characteristics of sex, father's social class plus family size and parental education (Model 2), over half (53.4 per cent) of the differences in educational outcomes at the school level could be explained (Table A3.1). The higher the father's social class or the father's and mother's educational levels, the higher the young person's attainment. Young people from large families have an attainment level that is depressed by as much as one O Grade (A–C) for every additional sibling. Girls generally outperform boys, although there is evidence that girls do not perform equally in all schools and that, in those schools where there is evidence of a positive school effect, it is achieved through an improvement in the performance of boys.

Adding neighbourhood deprivation as an explanatory factor together with school-level information (Model IV), results in an increase in the level of explanation of variations in attainment at the school level to over three-quarters (76.8 per cent). Neighbourhood deprivation here has to be added as a characteristic at the pupil level but shows an important and negative effect on young people's attainment. This is within all schools and given that we have already allowed for individual and family-background differences. There is also evidence that young people from neighbourhoods with different levels of deprivation perform differently in different schools. Using the ability of multilevel models to explain these differences, we find that the higher (worse) the average deprivation in the school, the worse those pupils from the most deprived areas actually perform. The higher the average school deprivation, the worse the average school attainment, so that all pupils will tend to perform less well in schools with a high proportion of pupils from socially deprived areas whatever their individual or family characteristics. But for those from the most deprived areas the effect will be additive. The young person from a low social class, poorly educated family who lives in a poor neighbourhood and who attends a school where there is a high proportion of other pupils from deprived areas has the worst of all worlds and could be said not only to be deprived, but to be doubly or even three times deprived. We note here one consequence of measuring neighbourhood deprivation as an individual fixed effect. We may also capture part of the school compositional effect in this estimate, because, although neighbourhoods can send

their children to different schools, the majority of children from any one neighbourhood are likely to attend the same local school. This is particularly true for the data we are investigating here because we describe a situation before the introduction of parental choice of school. This is probably particularly true of Lothian where catchments tended to be strictly enforced. Again, we can use information from the study of another region in Scotland to help us adjust our estimates.

Table A3.1

ML models of educational attainment in Lothian schools

Fixed Effects	I Effect	(se)	II Effect	(se)	III Effect	(se)	IV Effect	(se)	V Effect	(se)
Average within-school equation										
Adjusted levels of achievement	.080	(.058)	.090*	(.034)	.087*	(.037)	.117*	(.018)	.197*	(.069)
Father's social class			.024*	(.001)	.022*	(.001)	.021*	(.001)	.020*	(.001)
Father's education			.180*	(.048)	.165*	(.048)	.155*	(.047)	.151*	(.047)
Mother's education			.211*	(.044)	.204*	(.043)	.204*	(.043)	.194*	(.043)
Family size			-.092*	(.010)	-.082*	(.010)	-.080*	(.009)	-.077*	(.009)
Sex			.062	(.039)	.066	(.039)	.128*	(.045)	.066	(.040)
Neighbourhood characteristics:										
Neighbourhood deprivation					-.180*	(.031)	-.203*	(.029)		
Percentage adult unemployment									-.013*	(.004)
Percentage in low-earning S.E.Gs									-.003*	(.001)
Percentage overcrowded									-.011*	(.004)
Effects of between-school variables										
On adjusted levels of achievement										
School sex composition							-.190	(.217)	-.166	(.219)
School mean social class							.033*	(.005)	.031*	(.006)
School mean deprivation							-.168*	(.053)		
School mean unemployment									-.010	(.006)
School mean level of overcrowding									-.010	(.008)
On deprivation differences										
School mean deprivation							.128*	(.045)		

Random Effects	Est	χ	df	Est	χ	df	Est	χ	df	Est	χ	df	Est	χ	df
Residual parameter variance															
Adjusted levels of achievement	.148*	912.1	48	.044*	1093.6	48	.053*	1118.5	48	.005*	275 2	45	.006*	321.1	44
Sex differences				.025*	83.1	48	.026*	84.0	48	.027*	83.7	48	.029*	87.1	48
Deprivation differences							.010*	152.2	48	.003*	130.9	47	-	-	-
Unemployment differences													.000*	97.3	48
Overcrowding differences													.000*	102.9	48
Observed parameter variance															
Adjusted levels of achievement	.181			.071			.079			.031			.031		
Sex differences				.083			.084			.085			.087		
Deprivation differences							.064			.057			-		
Unemployment differences													.001		
Overcrowding differences													.001		
Reliability of estimates															
Adjusted levels of achievement	.822			.625			.669			.160			.178		
Sex differences				.306			.308			.315			.335		
Deprivation differences							.150			.045			-		
Unemployment differences													.116		
Overcrowding differences													.048		
Model Statistics															
Maximum likelihood estimate of σ^2	.803			.665			.651			.652			.647		
Percentage of parameter variance explained	-			53.4			39.9			76.8			76.2		

* significant at .05 level

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