

Understanding the risks of social exclusion across the life course: Families with Children

A Research Report for the Social Exclusion Task Force,
Cabinet Office

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Acknowledgements

The data for this study were made available through the UK Data Archive (UKDA) and the Department for Work and Pensions.

The Families and Children Study (FACS) is funded by the Department for Work and Pensions and carried out by the National Centre for Social Research (NatCen). The developers and funders of FACS and the Data Archive do not bear any responsibility for the analyses or interpretations presented in this document.

The analysis and views expressed in this paper are not a statement of Government policy.

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Glossary of Terms

FACS	Families and Children Study
B-SEM	Bristol social exclusion matrix
IMD	Indices of Multiple Deprivation
SETF	Social Exclusion Task Force
ECM	Every Child Matters
BHC	Before housing costs
AHC	After housing costs

Executive Summary

The Social Exclusion Task Force (SETF), Cabinet Office, aims to extend opportunity to the least advantaged so that they enjoy more of the choices and chances that the rest of society takes for granted. SETF has commissioned a series of analytical reports to investigate markers of social exclusion across the life course. This report presents the first of four interconnected projects on families and children; youth and young adulthood; working age; and older age.

How is social exclusion measured?

Social exclusion is about more than income poverty. It is a short-hand term for what can happen when people or areas have a combination of linked problems, such as unemployment, discrimination, poor skills, low incomes, poor housing, high crime and family breakdown. These problems are linked and mutually reinforcing. In previous work for SETF Levitas et al (2007) created a comprehensive operational framework with which to study social exclusion. The Bristol Social Exclusion Matrix (B-SEM) was used in this study to explore the indicators or risk markers of exclusion across three main domains, resources, participation and quality of life.

This study uses data from the Families and Children Study (FACS) to explore social exclusion among families with children. Eighteen markers of risk are constructed from the data, ranging from income poverty to lack of social contact to overcrowded accommodation. FACS is a series of annual surveys that investigate the lives of British families with dependent children. It is a panel study, which means that it returns to interview the same families year after year, and is particularly suitable to observe dynamic behaviour and experiences.

How do disadvantages cluster together?

Around 45% of families with children were exposed to multiple risk markers (i.e. two or more markers of risk) in 2006, with only a small proportion (less than 2%) experiencing 10 or more risks. Cluster analysis was used to group families into relatively homogeneous 'clusters' based on the combination of risk markers that they experienced. This produced nine distinct clusters of multiple risk families, including 'severely excluded families' (5%) who had an average of 9 risk markers; 'materially deprived families with no private transport' (8% of families) and 'families living in poor housing with debts' (4%). The most at risk families were more likely to have lone or younger parents, four or more children, live in rented accommodation and live in the most deprived areas.

What are the living standards for children living in multiple risk families?

The findings support existing evidence that poor outcomes can be transmitted from one generation to the next. Children from the most at risk families also experienced low levels of well-being, and their risks often reflected those of their parents. For example, children with parents in ill health also had disproportionately high rates of illness and children who lacked the use of internet facilities at home were more likely to come from poorer families and have parents with lower levels of education.

How do families experience multiple risks over time?

Using the longitudinal element of FACS, which ‘follows’ the same families over time, we revealed that more families experienced singular, and multiple, forms of risk over a six-year period than ‘point-in-time’ estimates would suggest. This suggests that risk touches more families, and children, than estimates that are based on yearly data would imply. A small proportion of families (between four and seven per cent) was found to experience multiple risk persistently.

What are the drivers of multidimensional social exclusion?

Families that experienced persistent multiple risk were more likely to be lone parents, those with four or more children, young mothers, mothers from Black ethnic groups, social tenants and those living in urban areas. Families that were successful in making a transition out of multiple risk had experienced events such as partnering and entering employment. On the other hand, moves into multiple risk, or between risk clusters, were generally associated with becoming unemployed, experiencing family separation, lone parent status, mothers with low levels of education, younger mothers, and social and private tenants.

Policy Implications

The findings suggest a number of directions for policy. Understanding in a more nuanced way how different risks cluster among vulnerable families, and the types of families most likely to experience such risks, may assist public service providers to better identify the range and complexity of need among families, as well as inform the targeting and prioritisation of services. It also highlights the need to provide tailored, whole family

approaches that address the diverse and different risks experienced by both parents and children.

The identification of different clusterings of multiple risks among families with children suggests that such families may access support from public services from a range of different service entry points. Policy makers and service providers may therefore wish to consider how services can best be coordinated to address the full range of need among such families.

1. Introduction

The Social Exclusion Task Force (SETF), based in the Cabinet Office, is committed to improving the lives of people who experience the most complex and persistent problems of social exclusion and who have been missed by current policies aimed at reducing disadvantage. The SETF strongly advocates evidence-based policy making and believes that the most effective policies are shaped by informed analysis. Consequently the SETF has commissioned a number of secondary analysis projects to form a collection of research evidence to better understand who the most excluded people are and what drives social exclusion. This research evidence is aimed at policy makers whose undertaking is to reduce and prevent social exclusion across the life course.

This report details a secondary analysis research project on social exclusion among families with children. It forms the first part of a broader research project aimed at understanding social exclusion across key life stages: youth and young adulthood; working age without dependent children; and older age¹.

1.1 Conceptualising social exclusion

It is important that an analytical investigation of social exclusion be based on a strong theoretical foundation of what social exclusion means and how it should be measured. This is provided by previous research commissioned by SETF and undertaken by researchers at the University of Bristol (Levitas et al, 2007). This research identified a composite working definition of social exclusion.

"Social exclusion is a complex and multi-dimensional process. It involves the lack or denial of resources, rights, goods and services, and the inability to participate in the normal relationships and activities available to the majority

¹ Reports from the projects on the other life stages are being published at the same time as this report. For the report on youth and young adulthood see Cusworth et al (2009); for the report on working age adults without children see Fahmy et al (2009); for the report on older people see Becker and Boreham (2009).

of people in a society, whether in economic, social, cultural or political arenas. It affects both the quality of life of individuals and the equity and cohesion of society as a whole." (Levitas et al, p25, 2007)

Social exclusion is universally regarded in the academic and policy literature as involving multi-dimensional disadvantage. This research uses survey data from families that covers a wide range of risk markers, to understand the combinations of possible disadvantages that families experience. Social exclusion is also dynamic, because it focuses on the processes that lead to a situation of exclusion and the consequences of that exclusion on participation and integration into society. This research uses longitudinal survey data, collected from the same families over consecutive years, to explore how long risk markers persist, how often they recur and what drives experiences of social exclusion.

Levitas et al (2007) created the Bristol Social Exclusion Matrix (B-SEM) as a framework to guide empirical investigation of social exclusion. The B-SEM sets out three domains and ten sub-domains of topic areas that are important to social exclusion (see Figure 1.1).

Figure 1.1 The Bristol Social Exclusion Matrix (B-SEM)



Levitas et al (2007) used the Bristol Social Exclusion Matrix to explore the availability of data on each of the domains in existing survey data sets and administrative sources. This investigation also addressed the coverage of potentially excluded groups within each dataset. Levitas et al recommended using the Families and Children Study (FACS) to

investigate social exclusion amongst families with children.

1.2 The Families and Children Study (FACS)

The Families and Children Study (FACS) is a series of annual surveys that investigate the lives of British families with dependent children. FACS is commissioned by the Department for Work and Pensions (DWP) and carried out by the National Centre for Social Research (NatCen). The study began in 1999 with a survey representative of all lone-parent families and low-income couples. In 2001 the study was enlarged to be representative of all families with dependent children.

One of the main qualities of FACS is that it is a panel study, which means that it returns to interview the same families year after year. It can therefore be used to observe dynamic behaviour and experiences.

The main FACS interview takes place with a mother figure in a household, and a shorter interview with her partner. The FACS sample has two main elements. The *panel sample* includes families who had entered the study in a previous year and are re-interviewed year on year. The *booster sample* consists of new families added to the sample in order to ensure it is representative of all families with dependent children in Britain. Booster families account for approximately 10 per cent of families each year. Table 1.2 shows that approximately 7,000 families and over 12,000 children take part in FACS each year.

Table 1.1 Number of families and children in FACS, 2001-2006

Year of FACS survey	Number of families with children	Number of children
2001 (Wave 3)	7,721	15,959
2002 (Wave 4)	7,358	15,287
2003 (Wave 5)	7,250	15,056
2004 (Wave 6)	6,940	14,099
2005 (Wave 7)	6,976	13,814
2006 (Wave 8)	6,928	12,483

Notes:

- In 1999 and 2000 FACS only interviewed lone-parent families and low-to-moderate income couple families. From 2001 onwards FACS became representative of all families with children in Britain.

One of the main objectives of the annual FACS surveys is to provide information on general family welfare issues, including the Government's long-term targets to eradicate child poverty. The survey therefore covers a number of themes related to work, income, receipt of social security benefits and tax credits, deprivation and hardship. The survey also collects a range of socio-demographic and economic information from the parents and children, including family composition, educational qualifications, health and disability status, and social activities and relationships. FACS attempts to collect information from both parents in couple families. The mother is regarded as the main respondent in the family, as she is likely to know the most about the children in the family. Hence the mother responds to questions about the circumstances of the father if he is unavailable for interview. This proxy interview, asked to approximately two in five couple mothers, includes a limited set of key information about the father, such as working hours, health and education.

FACS includes a number of measures that can represent risk markers of disadvantage for children. The survey contains a wealth of information on education and health outcomes for each child in the family, including school performance in core subjects, school behaviour, and specific physical and mental health illness. Additionally, in 2003, 2004 and 2006 children aged 11 to 15 years were given a self-completion questionnaire that asked their views on a range of well-being issues, including social contact, alcohol, cigarette and drug use and feelings towards school, appearance, health, and the family.²

A profile of families with children in Britain in 2006 is presented in Table 1.3. Three-quarters of families with children are headed by a couple and the majority of lone-parent families are headed by a mother. One half of lone parents have never married and four in five couple families are married rather than cohabiting.

Two in five families have a child less than 5 years of age and one in twelve families have a child 16-18 years of age living at home. Three quarters of families have one or two children; and one in six families has three or more. Mothers tend to be younger than

² For more information on FACS see www.esds.ac.uk/longitudinal/access/facs/14427.asp

fathers. One in six mothers are under 30 years of age, twice as many mothers as fathers are under this age.

Nine in ten families are headed by a White mother and the vast majority of mothers speak English as a first language. Three in five families are buying their house via a mortgage and one in five live in social rented housing. Lone parents are equally likely to work at least 16 hours per week as not. In more than half of couple families both parents work at least 16 hours per week.

Table 1.2 Socio-demographic characteristics of families with children in Britain in 2006

Characteristic	Category	Col % within characteristic	Number of FACS families
Family type	Lone mother	24	1849
	Lone father	1	85
	Couple	75	4994
Marital status	Lone parent; single, never married	12	1048
	Lone parent; married and separated	4	272
	Lone parent; divorced	7	543
	Lone parent; widowed	1	53
	Couple; married	62	4014
	Couple; cohabitating	13	976
Age of youngest child	0-4 years	43	3164
	5-7 years	13	986
	8-10 years	14	940
	11-13 years	14	846
	14-15 years	9	541
	16-18 years	8	451
Number of dependent children	1	46	3097
	2	39	2758
	3	12	804
	4 or more	4	269
Age group of mother	Under 25 years	6	566
	25-29 years	10	837
	30-34 years	17	1228
	35-39 years	24	1641
	40-44 years	23	1431

	45 years and over	20	1225
Age group of father (couple only)	Under 25 years	2	133
	25-29 years	5	396
	30-34 years	11	796
	35-39 years	17	1175
	40-44 years	18	1159
	45 years and over	22	1335
Ethnic group of mother	White	91	6349
	Black	2	155
	Asian	4	246
	Other	3	173
Main language of mother	English	96	6647
	Not English	4	281
Mother cares for sick or disabled person	Non-Carer	94	6538
	Carer	6	390
Housing tenure	Own outright	8	484
	Own with a mortgage	61	4051
	Social tenant	20	1520
	Private tenant	9	703
Working status of parents	Lone parent: 16+ hours	13	952
	Lone parent: 0-15 hours	12	982
	Couple: both 16+ hours	42	2823
	Couple: one 16+ hours	28	1851
	Couple: both 0-15 hours	4	320
Area type	Urban	74	5582
	Town	9	675
	Village	74	469
	Hamlet & Isolated	3	202
Index of Multiple Deprivation (2005)	Family lives in 10% most deprived areas	10	693
	2	10	721
	3	9	591
	4	10	719
	5	9	637
	6	10	676
	7	11	776
	8	11	773
	9	10	719
	Family lives in 10% least deprived areas	9	622

All families with children	100	6928
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Base: 6928 families with children

Source: FACS (2006)

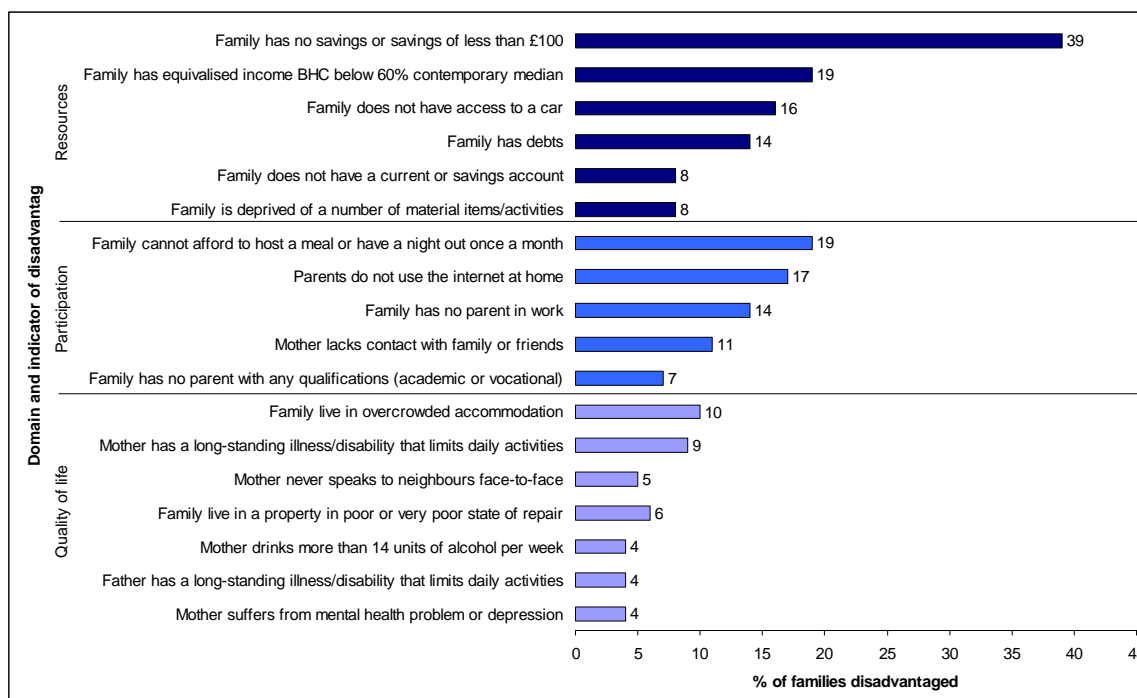
1.3 Singular risk markers

Drawing upon the conceptual framework of the B-SEM, eighteen indicators (or risk markers) were constructed using the 2006 wave of FACS. Where possible, indicators were constructed using definitions and thresholds used in official indicators of disadvantage among families with children. If this was not possible, an alternative indicator was constructed from other published government sources or other established non-government indicators. The indicators, and their prevalence amongst families with children, are presented in Figure 1.2.

From Figure 1.2 we see the range of possible risk markers that families experience:

- Two in five (39%) families do not have savings or more than £100;
- One in five (19%) families are below the official income poverty line;
- One in ten (10%) families live in overcrowded accommodation;
- One in twenty (5%) mothers never speak to their neighbours;
- One in five (19%) families cannot afford to have people around for a meal or to have a night out once a month; and
- One in seven (14%) families have no parent in work.

Figure 1.2 Prevalence of singular risk markers among families with children



Note: Father's illness based on couple families only

Base: 6438 families with children

Source: FACS (2006)

Given the explicit focus of the FACS dataset on families with children, it is not surprising that FACS provides quite comprehensive coverage across most of the B-SEM. Nevertheless, the survey provides virtually no information on civic and political participation - a vital aspect of social exclusion in most interpretations of the concept. Similarly, the FACS data provide only very limited coverage in relation to crime and social harm. These limitations of FACS should be kept in mind when interpreting the analysis presented in this report.

1.4 Summary

In this chapter we have outlined the 18 indicators or risk markers that will be used to investigate social exclusion. They cover a range of risks that families with children experience, including low income, worklessness, social isolation and poor health. The Families and Children Study (FACS) is a unique dataset with which to explore social exclusion as it covers many issues relevant to the welfare of families. FACS also interviews the same families year after year, which allows the dynamic nature of their

experiences to be explored.

The following chapter focuses on families with multiple risk markers. These are families prone to social exclusion because of the many difficulties that they experience. We explore the different combinations of risks that families face and cluster families according to the particular combinations of risk that they have. We also investigate what it is like for children living in families with multiple risk markers, and whether children's experiences vary according to the combination of risks that their family has.

2. Understanding multidimensional disadvantage

2.1 Introduction

In this chapter we further investigate the number of risk markers that families with children experience and focus in particular on families that face multiple markers of risk. Previous research by SETF has shown that experiencing multiple disadvantages can reinforce the barriers to inclusion in mainstream society and can significantly increase the chances that children will experience multiple problems in later life (SETF, 2006). Understanding the nature and type of disadvantages that families face, as well as the way in which particular disadvantages are associated with each other, is a key factor in formulating policy responses to tackle social exclusion.

The specific research questions we investigate in this chapter are:

- How many families are at risk of multiple disadvantage?
- Which risk markers are these families exposed to?
- Which families are most likely to face multiple risks of disadvantage?
- How is the well-being of children living in families that experience multiple risks of disadvantage?

2.2 The prevalence of multiple markers of risk

A basic measure of the number of families experiencing multidimensional disadvantage can be obtained by counting the number of risk that families are exposed to. This way of obtaining a measure of disadvantage suggests that disadvantage can be understood cumulatively, with the assumption being that exposure to two risk markers, for example, signifies a worse situation than exposure to just one. This may not necessarily be the case and may depend on the type and severity of risk markers that families are exposed to, and also the combination and interaction of risk for families that are exposed to multiple risks. The analysis in this chapter seeks to explore some of these issues.

Despite the assertions stated above, previous research has shown that people who experience certain disadvantages are more likely to face other disadvantages too. For

example, unemployed people are more likely to report a health problem or disability, and poorer families are more likely to live in overcrowded accommodation³. Previous research by the SETF identified that 2% of families experience five or more disadvantages from a basket of seven indicators (SETF, 2007)⁴. The current research utilises a much wider basket of risk markers – the 18 indicators detailed in Table 1.2 – and hence direct comparisons cannot be made with this previous research.

Figure 2.1 shows that approximately two thirds (67%) of families experienced at least one of the eighteen risks markers and that 45% experienced multiple risk markers – that is, two or more. Just over one sixth (16%) of families were exposed to five or more risk markers and a small proportion (under 2%) had ten or more.

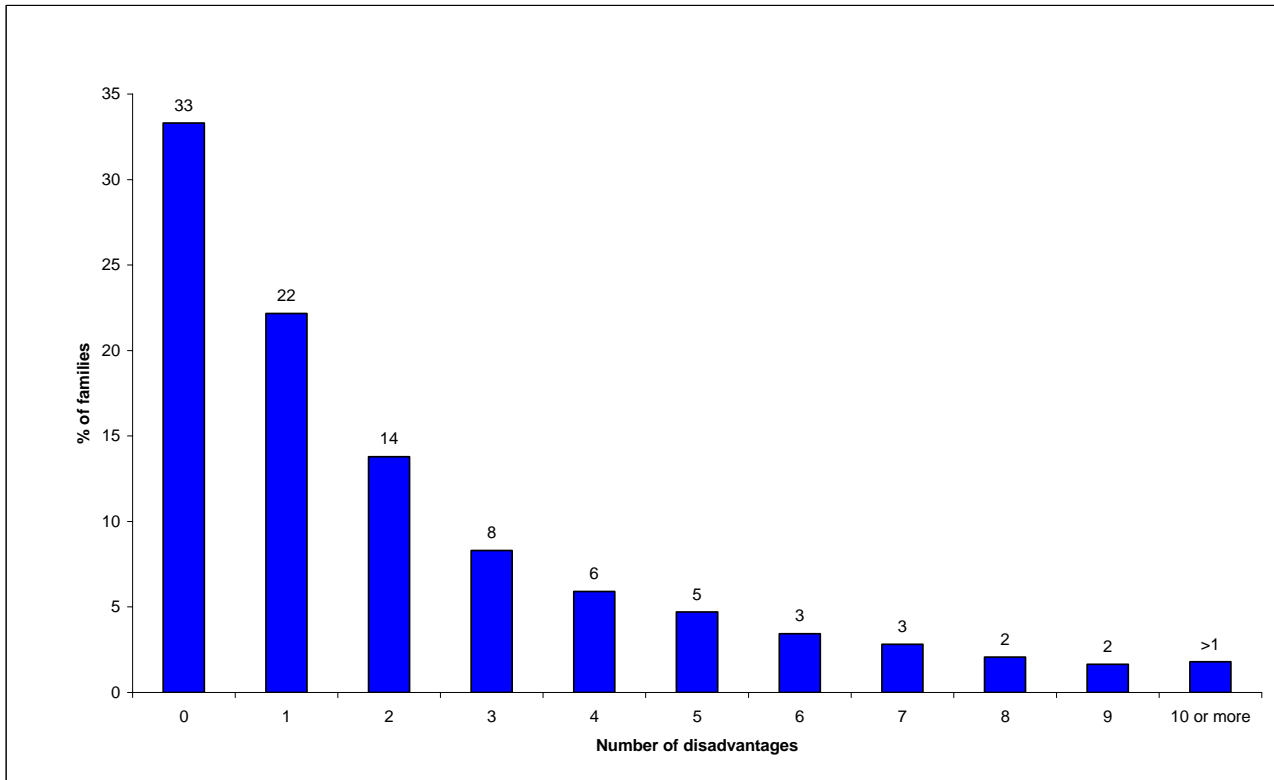
³ Feinstein, L and R, Sabates (2006) The prevalence of multiple deprivation for children in the UK: Analysis of the Millennium Cohort and Longitudinal Survey of Young People in England.

⁴ The seven disadvantages used in the SETF (2007) research were:

1) No parent in the family is in work; 2) Family lives in overcrowded housing; 3) No parent has any qualifications; 4) Mother has mental health problems; 5) At least one parent has a long-standing limiting illness, disability or infirmity; 6) Family has low income (below 60% of median income); 7) Family cannot afford a number of food and clothing items. See

http://www.cabinetoffice.gov.uk/upload/assets/www.cabinetoffice.gov.uk/social_exclusion_task_force/risk_data.pdf for a summary.

Figure 2.1 Number of risk markers that families had (maximum 18)

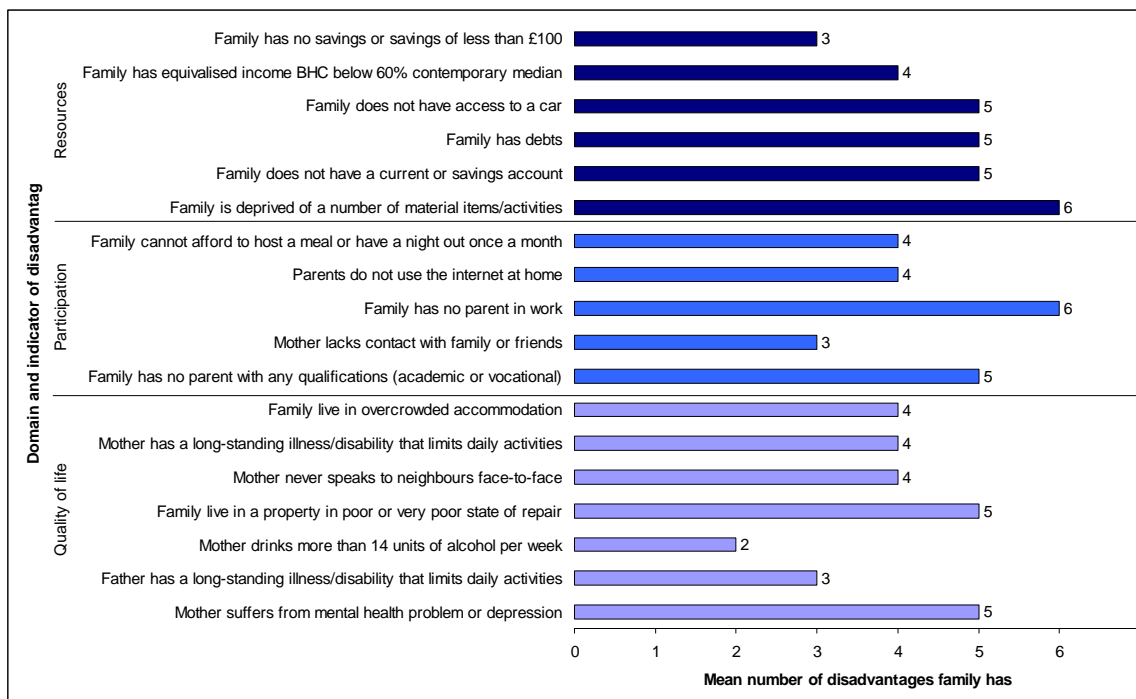


Source: Families and Children Study (2006)
Base: 6438 Families with children

Figure 2.2 shows the number of other markers of risk that families face. For example, on average, families with no savings over £100 have a heightened exposure to three other risk markers. Families experiencing material deprivation are exposed to the highest number of risk markers (six, on average). Workless families also experience six other risk markers on average. Other families that face exposure to high number risk markers are those in which parents lack educational or vocational qualifications, and those where the mother has a mental health problem.

This analysis also reveals the markers of risk that families tend to face alone, or those that have few other risks associated with them. These include when the mother drinks excessive amounts of alcohol and where the mother has little contact with the family. Both of these may not be regarded as strict markers of risk for certain families, for example those families where the mother has an active social life and those families who have a small extended family.

Figure 2.2 Mean number of ‘other’ risk markers families are exposed to



Source: Families and Children Study (2006)
 Base: Families with children (number varies according to row)

We saw from Figure 2.2 that families experiencing material deprivation are the most likely to be exposed to other risks markers. The next stage of our analysis investigates which risks families experience at the same time. We begin this exploration by looking at the pairs of risk markers that tend to occur together (presented below).

- Having low income and having no parent in work
- Having low income and living in overcrowded accommodation
- Being materially deprived and lacking social participation
- Having no savings over £100 and having debts
- Being workless and having no savings over £100
- Having debts and being materially deprived
- Having no parent in work and not having access to a car
- Having no parent in work and not having internet access at home
- Having no parent in work and having no parent with educational qualifications
- Having no parent in work and the father with a long-term limiting physical health problem
- Having no parent with educational qualifications and not having internet access at

home

- Having no parent with educational qualifications and not having regular access to a car
- Having a mum with a long-term limiting physical health problem and a mental health problem

Here we see that similar risk tend to occur together – for example economic resources such as having a low income, not having savings and being in debt. There are also examples of families who face different types of risks that span across the B-SEM, such as being materially deprived and lacking social participation. In the next section we try to summarise combinations of risk markers for families multiple risks (i.e. more than two).

2.3 Exploring combinations of problems for families exposed to multiple risks of disadvantage

As we have seen from Figure 2.1, under half of families (45%) experience two or more risk markers. It is unlikely that families with multiple risk markers are homogenous in the types of risks that they experience. In other words, different families will have exposure to different combinations of risk markers. We know from the preceding analyses in this chapter that certain pairs of risks are associated. For example, a family with low income is more likely to be materially deprived than it is to have a mother who drinks more than the recommended quantity of alcohol per week. However, we also know that certain families tend to be exposed to more than two risk markers at any one time. For example, seven out of 10 families face three or more risk markers and four out of 10 face five or more (calculated from Figure 2.1). In this section we seek to understand the combinations of multiple risk markers that these families have exposure to.

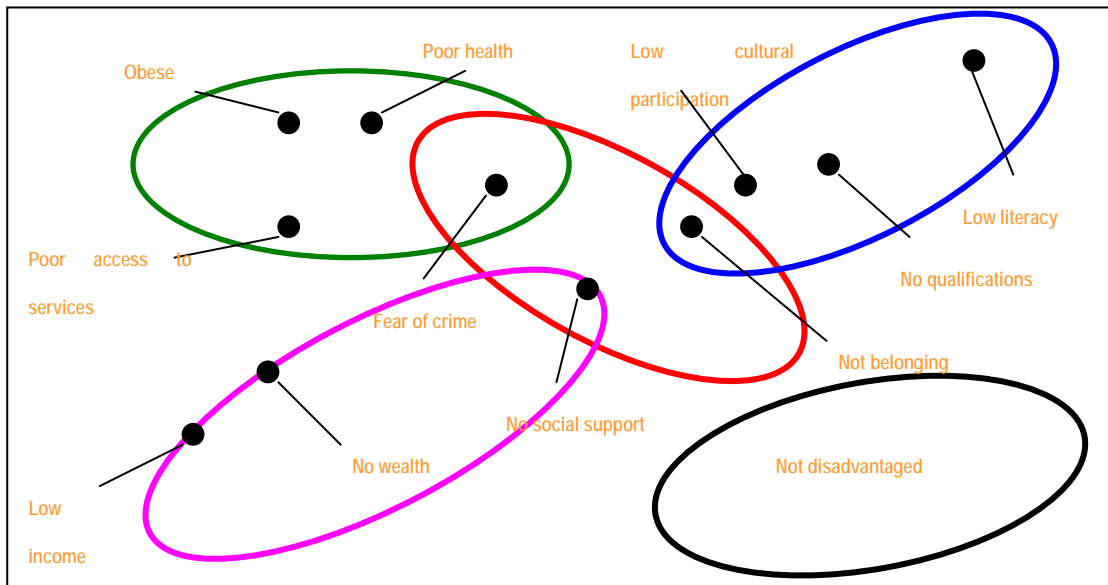
Figure 2.3 illustrates how risks markers may group together. Each ellipse represents a group, or cluster, of families and the particular risks that they experience are detailed inside the ellipse. For example, in this illustration the green ellipse represents families with risk markers related to health issues: obesity, poor general health and poor access to services.

Each family can be a member of just one cluster, as the cluster is defined according to the combinations of risk factors that these families are exposed to. Not all families in a cluster will be exposed to exactly the same combination of risk markers, as there are too many

combinations to make that possible. Families are grouped together because they experience similar combinations of risk markers and different combinations to families in other clusters.

As Figure 2.3 shows, a single type of risk may occur in more than one cluster. For example, families in different clusters can be income poor. An individual risk marker is not unique to a cluster nor does it define a cluster, rather, it is the *combination* of risks that are commonly experienced by families that determines how clusters are formed. Again this methodology assumes that disadvantages can be combined additively - the limitations of this have been outlined above.

Figure 2.3 A hypothetical illustration of how markers of risk cluster together

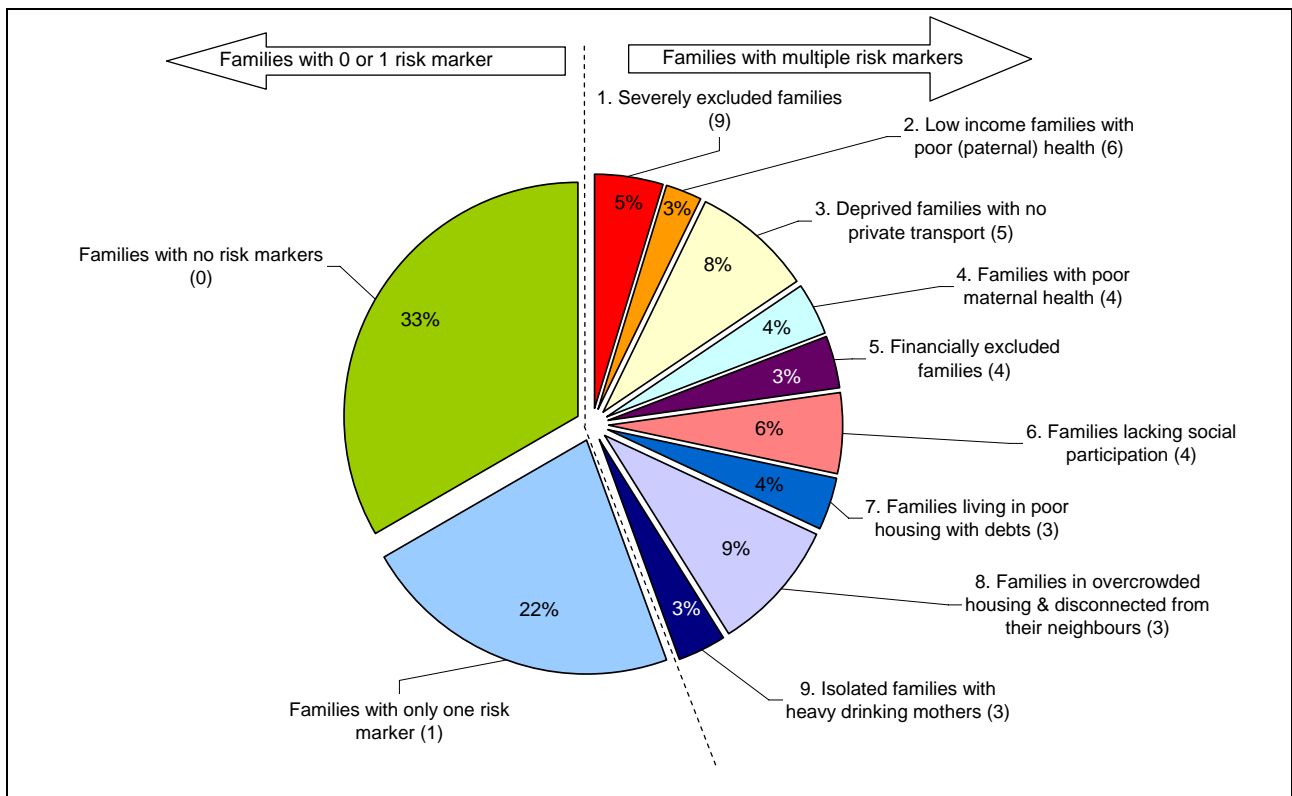


To enable us to identify these groupings of families in the FACS data we use a technique called cluster analysis. Cluster analysis sorts families into groups, or clusters, according to the combination of risks that they are exposed to. This results in a strong similarity between families in the same cluster and differences between families of different clusters.

The cluster analysis was carried out on families that had two or more risk markers of

disadvantage (2,992 families). Nine clusters of families were identified⁵. These clusters are outlined in Figure 2.4 (which also includes families that were exposed to none and those scoring on only one of the eighteen risk markers).

Figure 2.4 Clusters of families according to the risk markers they scored on



Note: The average number of risk markers that families have in each cluster is given in brackets
Source: Families and Children Study (2006)
Base: 6438 families with children

Below we describe each cluster in more detail, outlining the risk markers that are prominent among families in each cluster. We also describe which families are most likely to be in each cluster. We summarise each cluster by comparing the prevalence of particular risks and characteristics of each cluster to the overall prevalence of risk markers among all families with children. This is necessary because families' tendency to experience each risk is different. For example, 39% of all families do not have savings, whereas only 16% have a car. Therefore to see families in a particular cluster being more

⁵ See Annex 2 for statistics on cluster selection.

likely to lack savings than a car may just be a reflection of the overall prevalence of these risk markers.

Hence we calculate the risk of families in a cluster experiencing a disadvantage relative to the overall prevalence among all families (the 'relative risk'). This is calculated as:

$$\text{Relative risk} = \frac{\% \text{ of families in cluster A with marker X}}{\% \text{ of all families with marker X}} \quad \begin{array}{l} \text{(see Figure 2.5 onwards)} \\ \text{(see Figure 1.2)} \end{array}$$

Hence:

- A relative risk of 1 means there is no difference in risk between families in the cluster and all families.
- A relative risk <1 means the disadvantage is less likely to occur in the cluster than amongst all families.
- A relative risk >1 means the disadvantage is more likely to occur in the cluster than amongst all families.

The same methodology is applied to characteristics of families to see which families are most likely to appear in each cluster.

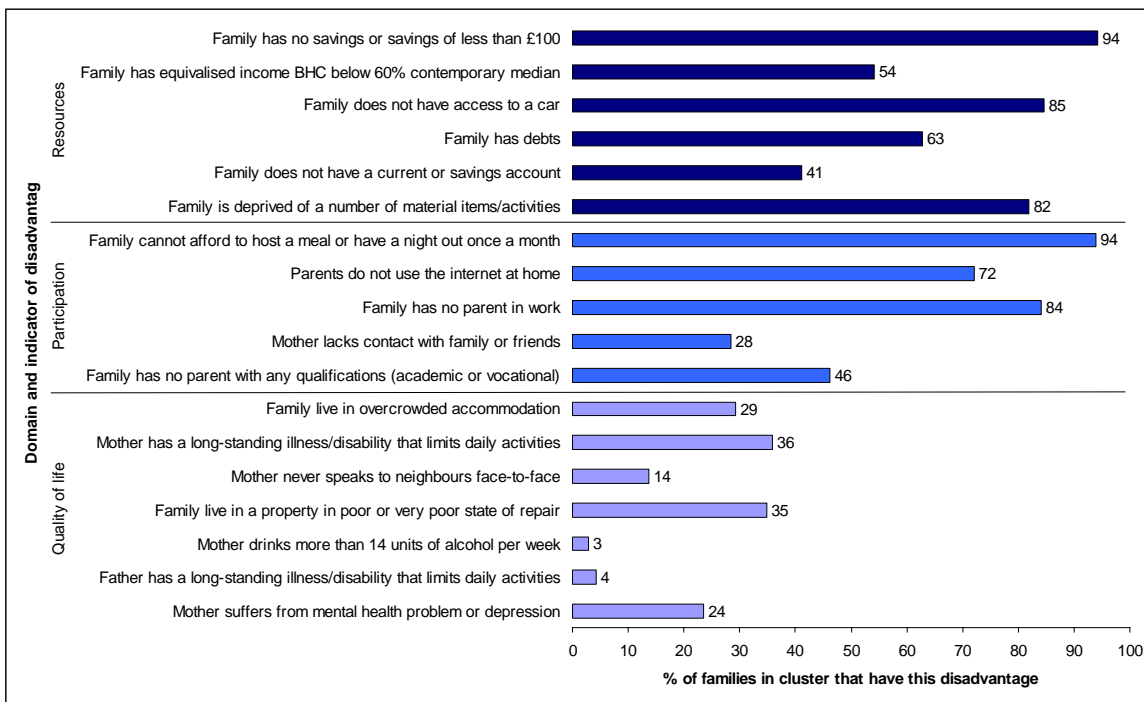
The charts presented below profile each cluster – that is, they illustrate the actual percentage of that cluster with each marker or characteristic. The commentary for each table highlights the marker, and characteristics, that each cluster is disproportionately likely to have - making use of the relative risk analysis discussed above. Two tables of relative risks, one for risk markers and one for characteristics, can be found in Annex III.

Severely excluded families

- 5% of families
- Families in this cluster had nine risk markers on average

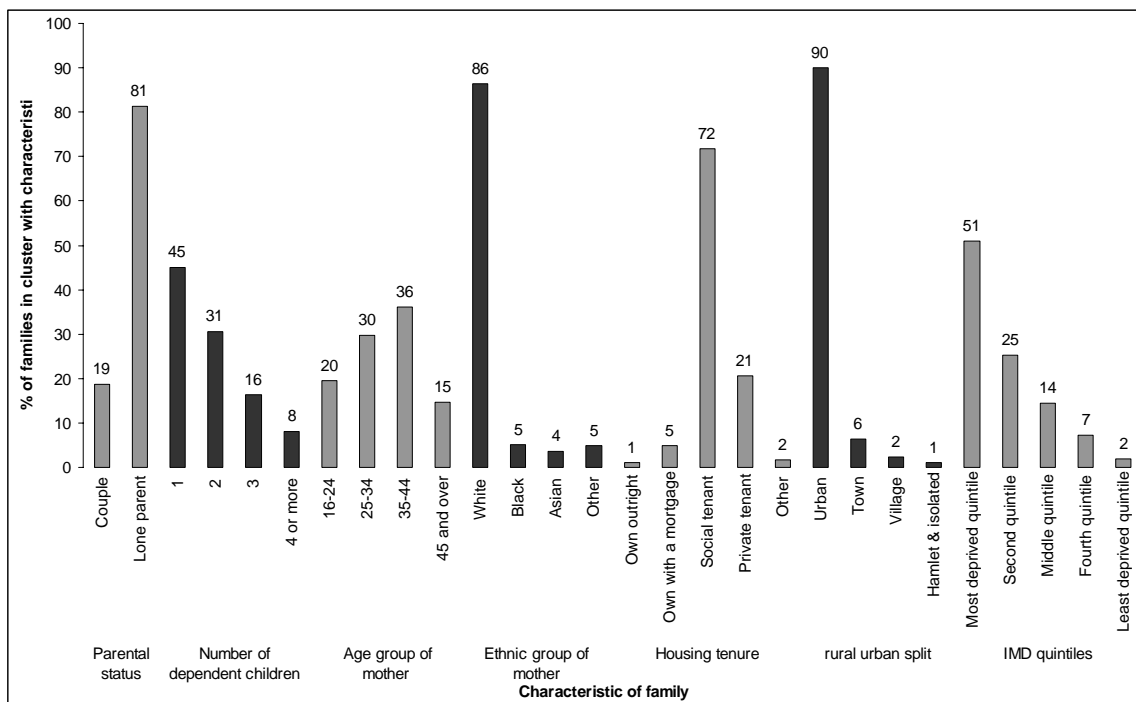
Families in this cluster had exposure to the highest number of risks compared to other families, with multiple risks (nine on average). The risks that families in this cluster faced, included material deprivation, worklessness, no education, and mothers with mental health problems.

Figure 2.5 Risk markers and families in the ‘severely excluded’ cluster



Families in this cluster were more likely to be lone parents; have a younger mother, a Black mother and have a large number of children. They were also more likely to live in urban areas and in the most deprived areas (as identified using the Indices of Multiple Deprivation (IMD)).

Figure 2.6 Characteristics of families in the ‘severely excluded’ cluster

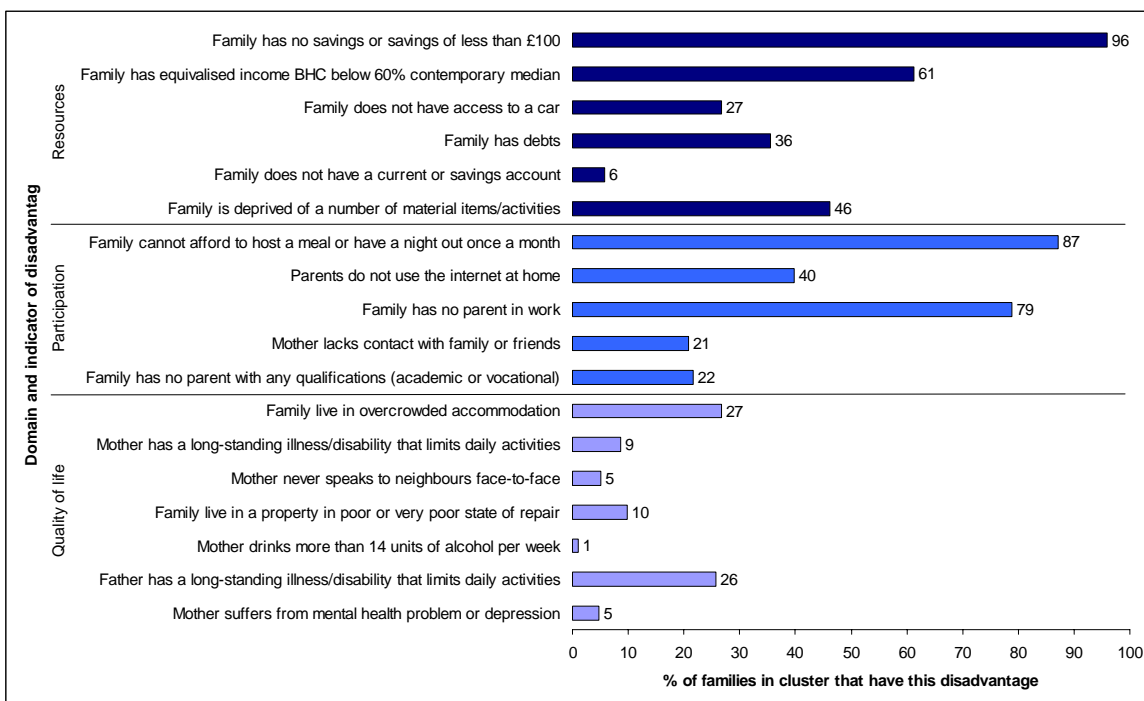


Low income families with poor health

- 3% of families
- Families in this cluster faced six risk markers on average

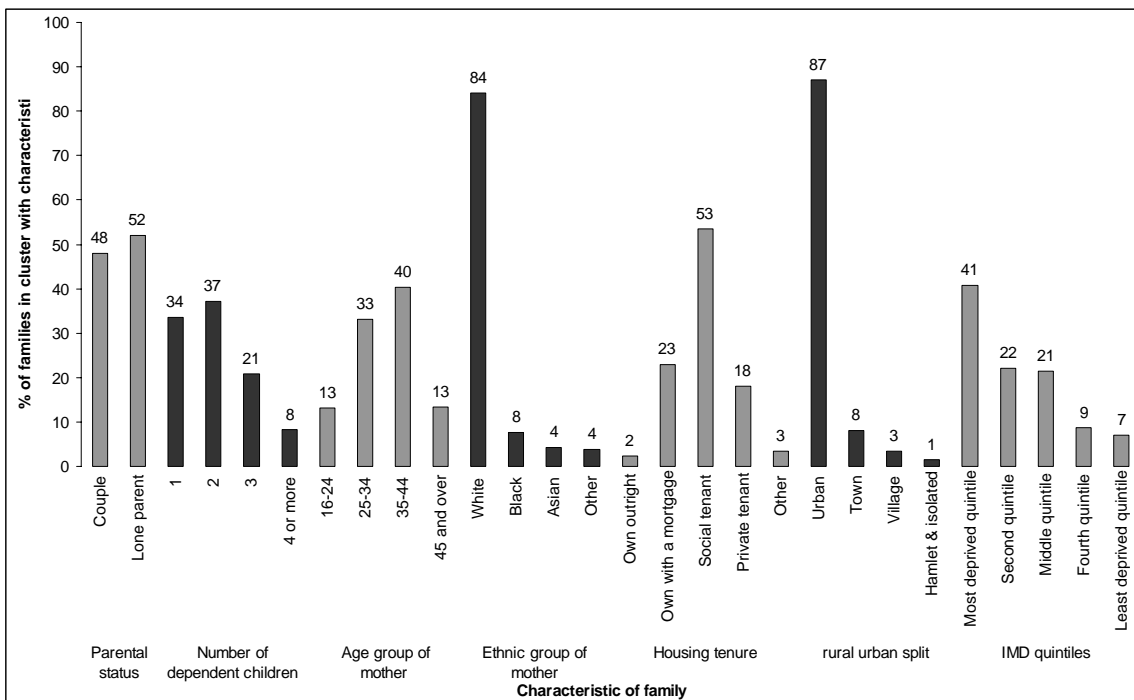
These families were exposed to many of the same risk markers as those in the severely excluded cluster, albeit fewer on average. The defining markers of these families were having a partner with a long-term limiting illness and consequently many of these families had no parent in work. This meant many were income poor and materially deprived. They also lacked social participation.

Figure 2.7 Risk markers and families in the ‘low income families with poor paternal health’ cluster



As with the previous cluster, these families were likely to be lone parents; social and private tenants; families with mothers from Black and Asian ethnic groups. These families lived predominantly in urban areas and were more likely to live in the bottom 20% of the most deprived areas.

Figure 2.8 Characteristics of families in the ‘low income families with poor paternal health’ cluster

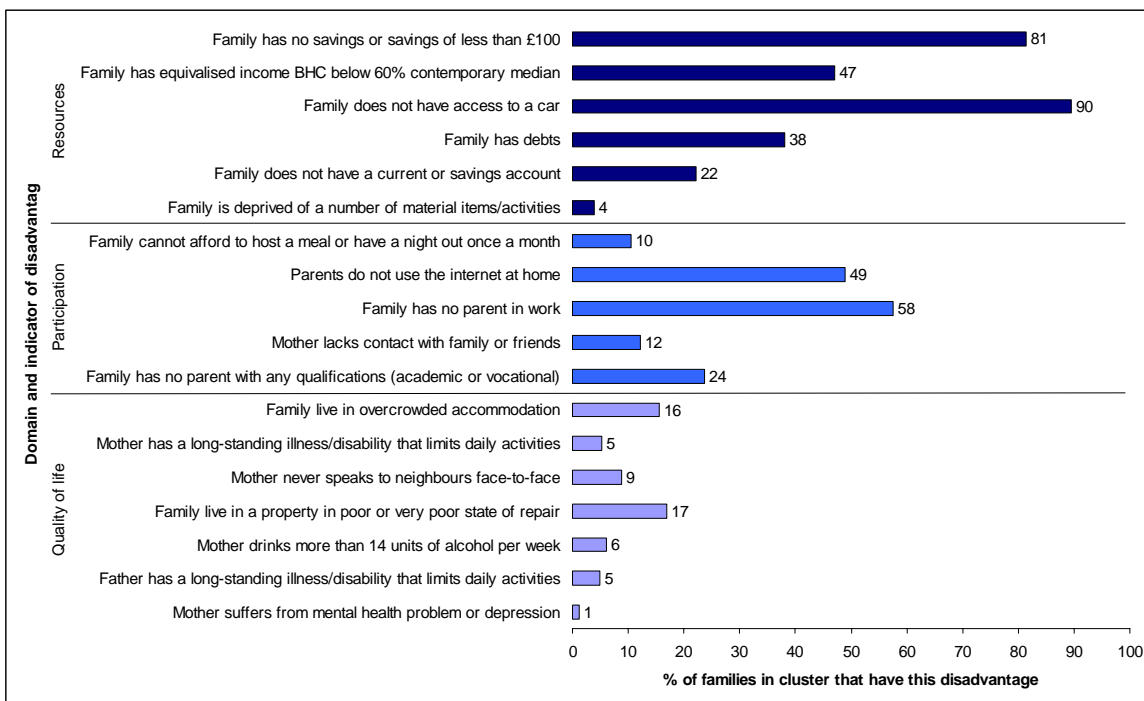


Deprived families with no private transport

- 8% of families
- Families in this cluster experienced five risk markers on average

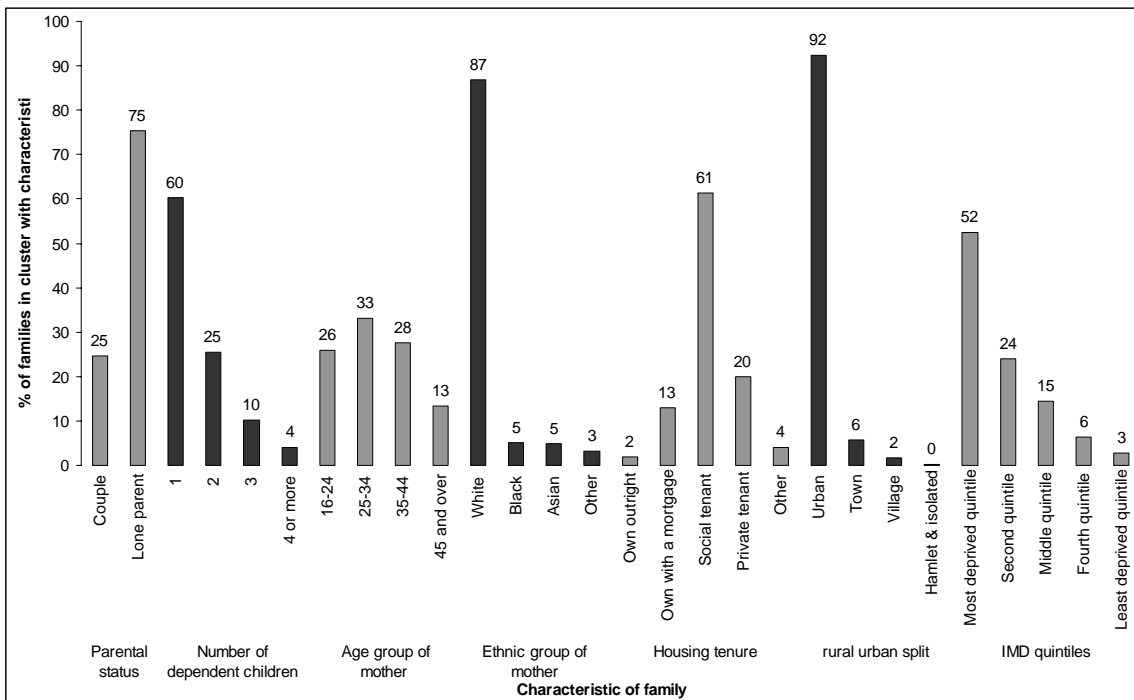
A very high proportion of families in this cluster had no regular access to a car (90%), as well as a high incidence of worklessness (58%), low income (47%), no savings (22%) and no qualifications (24%).

Figure 2.9 Risk markers and families in the ‘deprived families with no private transport’ cluster



These families were more likely to be lone parents; young mothers; families with younger children; social and private tenants; and families with mothers from Black and Asian ethnic groups. They were also more likely to live in urban areas and in the bottom 20% of the most deprived areas.

Figure 2.10 Characteristics of families in the ‘deprived families with no private transport’ cluster

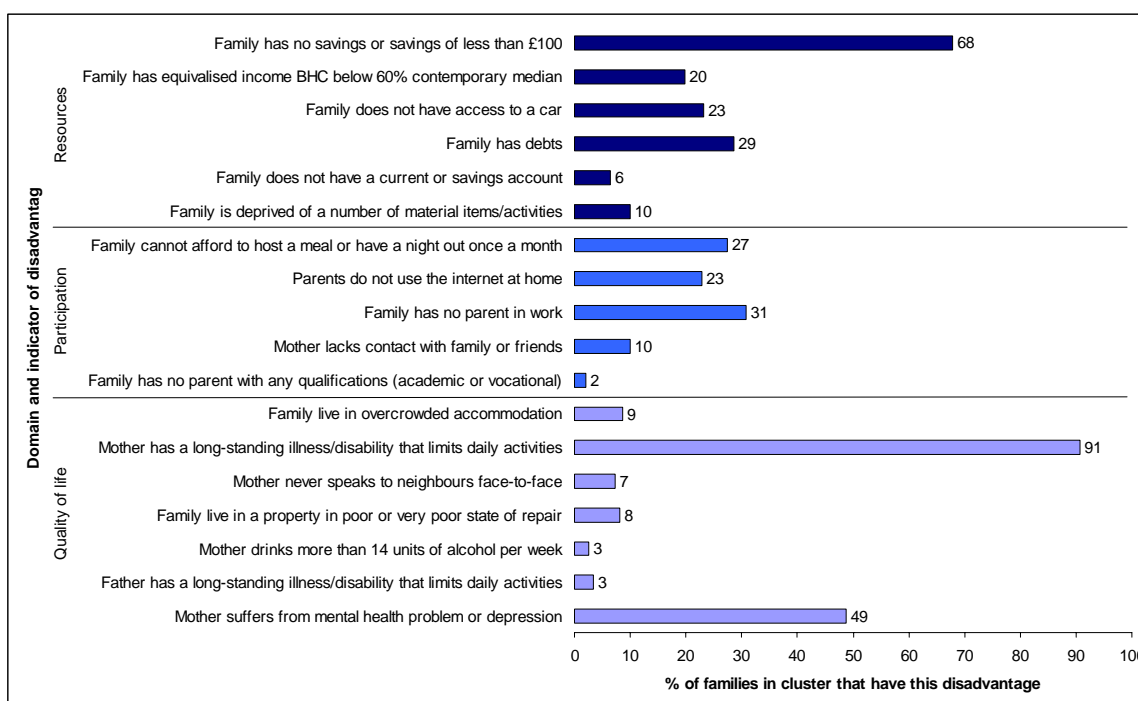


Families with poor maternal health

- 4% of families
- Families in this cluster experienced four risk markers on average

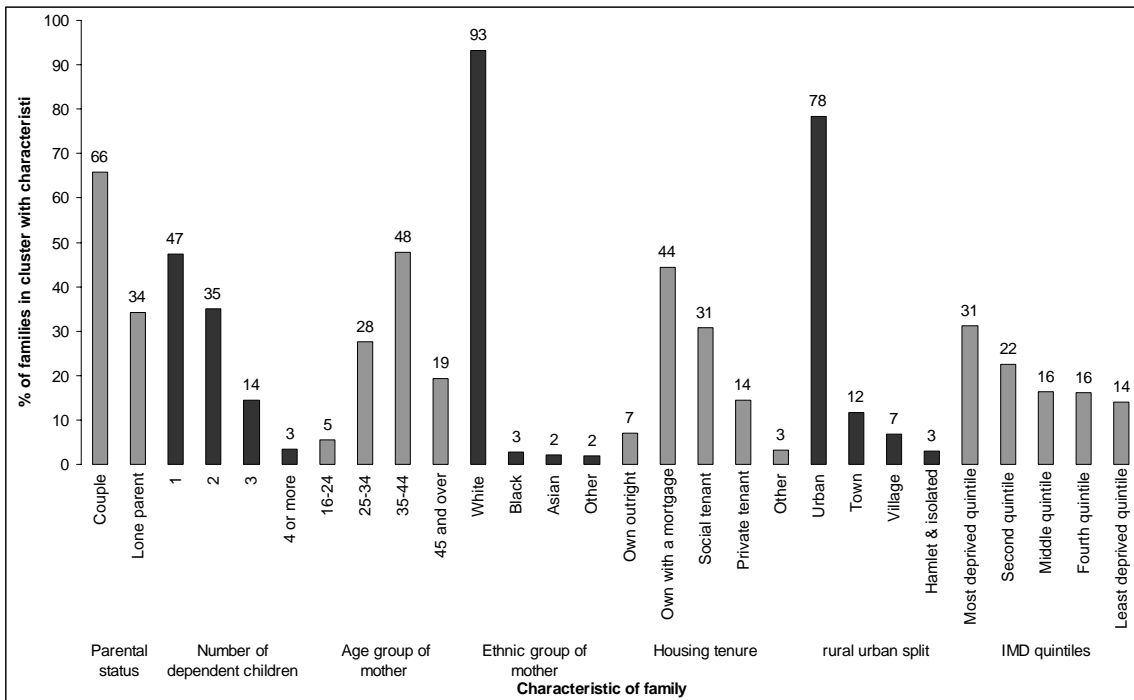
Almost all mothers in this cluster had a long-term limiting illness (91%) and half experienced mental health problems (49%).

Figure 2.11 Risk markers and families in the ‘poor maternal health’ cluster



Families in this cluster were more likely to be lone parents; social tenants; mothers in the middle age categories; and those with older children. Mothers in this cluster were also more likely to be unpaid carers.

Figure 2.12 Characteristics of families in the 'poor maternal health' cluster

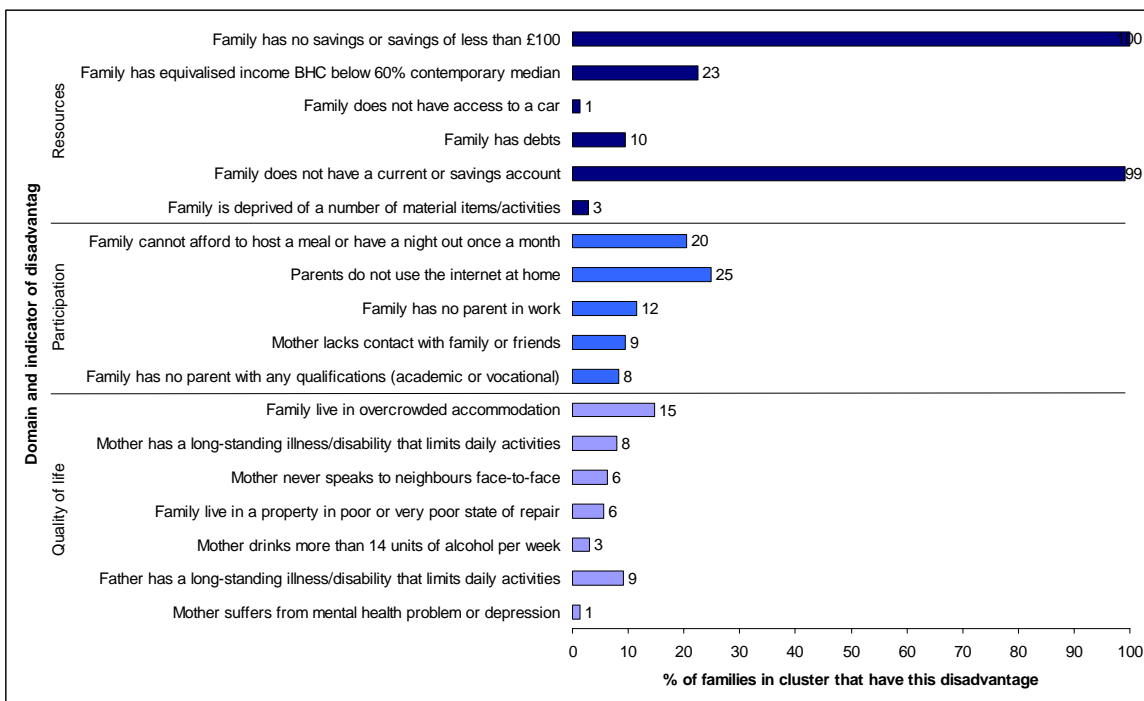


Financially excluded families

- 4% of families
- Families in this cluster experienced four risk markers on average

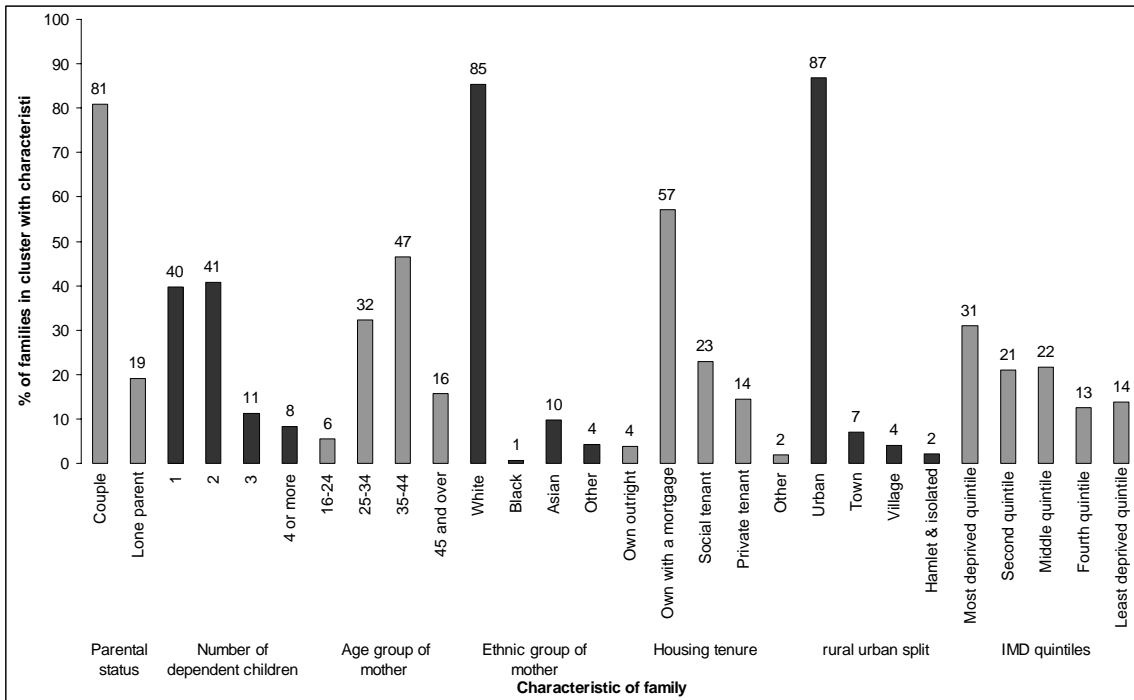
The vast majority of families in this cluster did not have a savings or current account (99%) and none of them had any savings (100%). These families were also likely to be income poor.

Figure 2.13 Risk markers and families in the ‘financially excluded’ cluster



Families in this cluster were more likely to be couple families; families with four or more children; mothers from Asian ethnic groups; private and social tenants.

Figure 2.14 Characteristics of families in the 'financially excluded' cluster

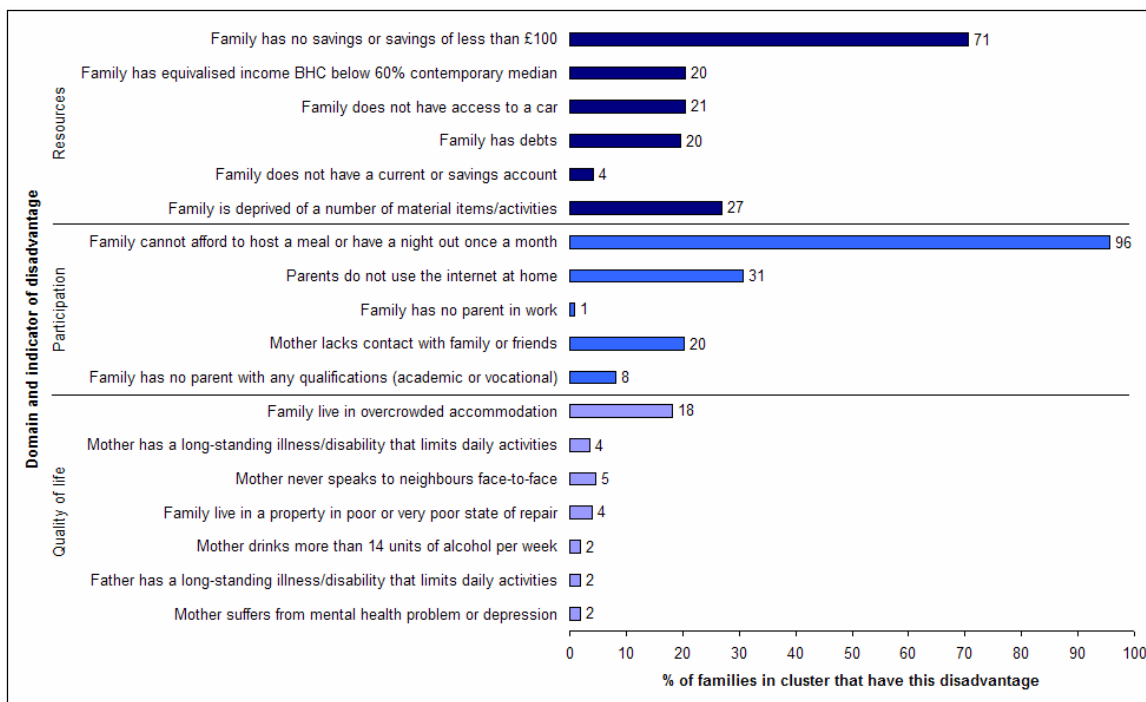


Families lacking social participation

- 6% of families
- Families in this cluster experienced four risk markers on average

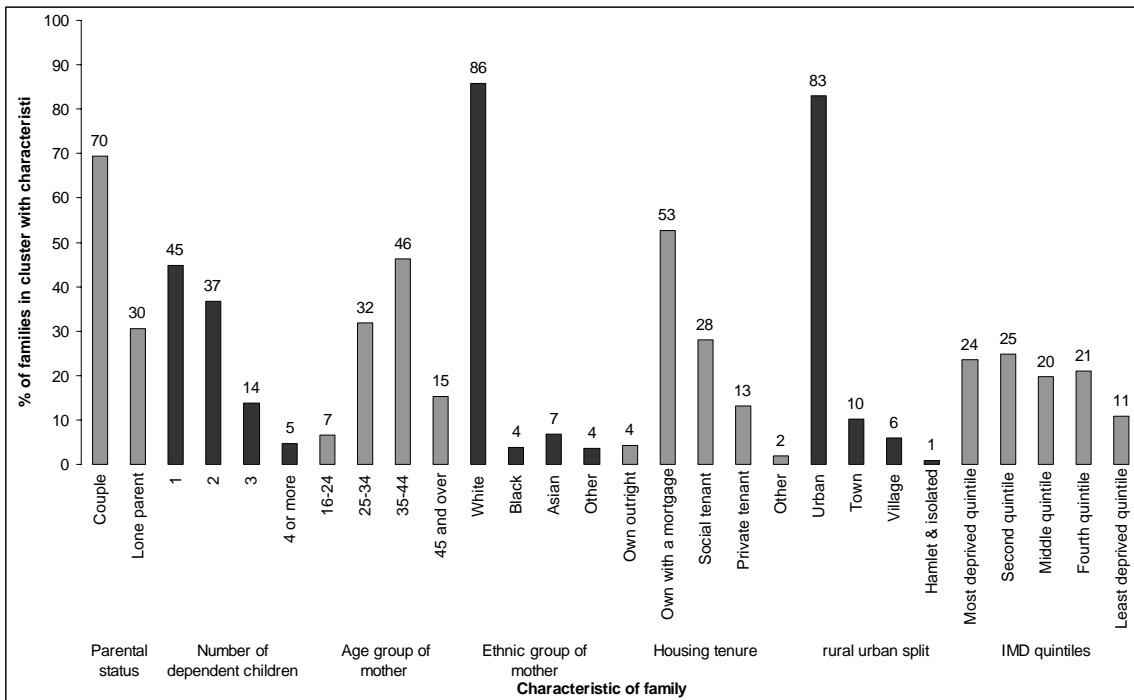
Nearly all families in this cluster reported that they did not engage in social participation at least once a month (96%) and one in five (20%) mothers reported that they lacked contact with family and friends. These families were also likely to lack internet access at home, thereby being without another means of social communication.

Figure 2.15 Risk markers and families in the ‘lacking social participation’ cluster



These families were more likely to be lone parents; have three or more children; younger mothers; social and private tenants; and mothers from non-white ethnic groups. They were also more likely to live in urban areas or towns, rather than in villages or hamlets.

Figure 2.16 Characteristics of families in the 'lacking social participation' cluster

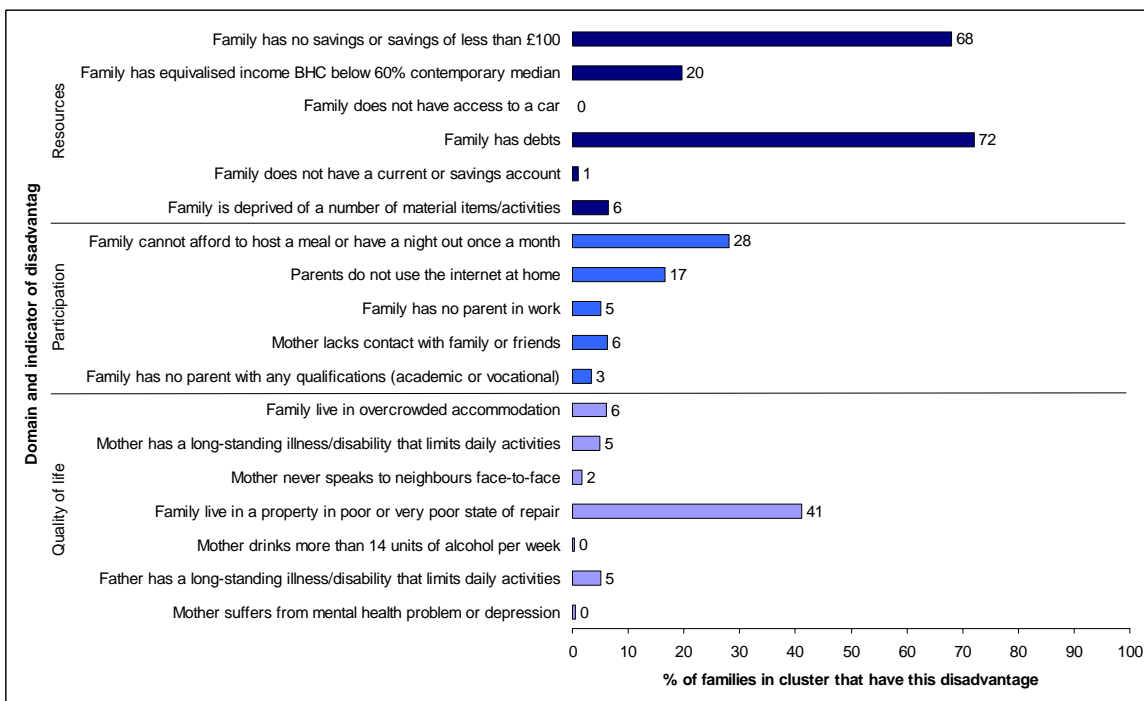


Families living in poor housing with debts

- 4% of families
- Families in this cluster experienced three risk markers on average

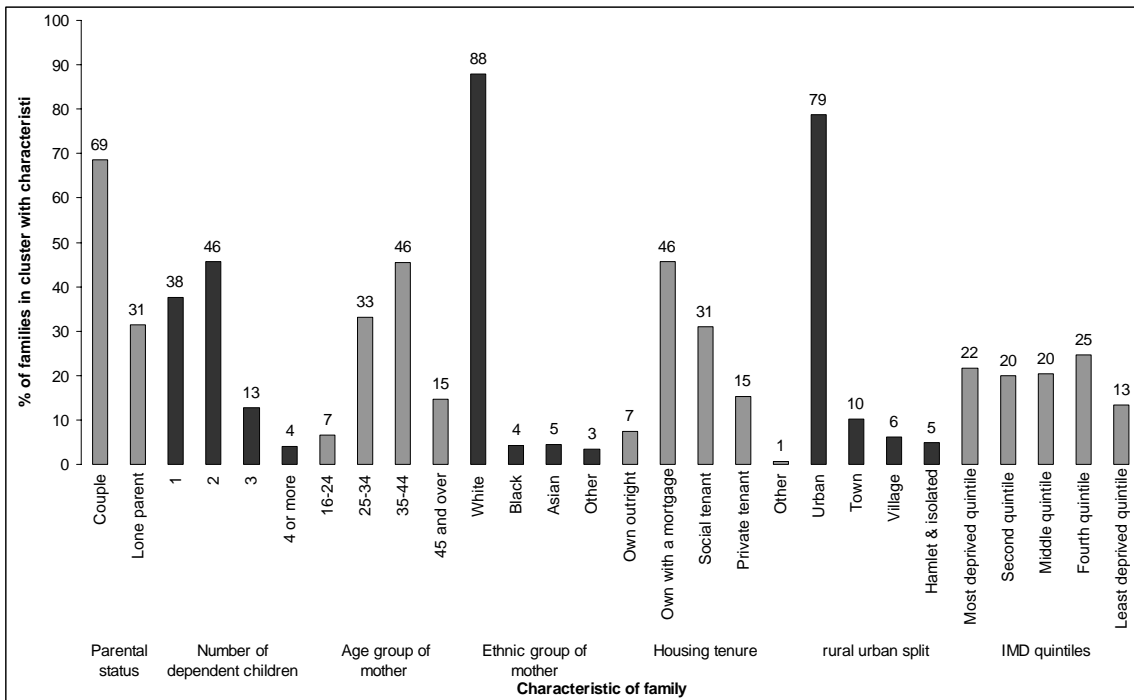
Around three quarters of families in this cluster reported family debts (72%), over two thirds had no savings (68%), and about two in five lived in housing in poor state of repair (41%).

Figure 2.17 Risk markers and families in the ‘living in poor housing with debts’ cluster



These families were more likely to be lone parents; social tenants; those with two or more children and families that were reliant on other family members for added financial help. They were also more likely to live in hamlets and isolated areas.

Figure 2.18 Characteristics of families in the 'living in poor housing with debts' cluster

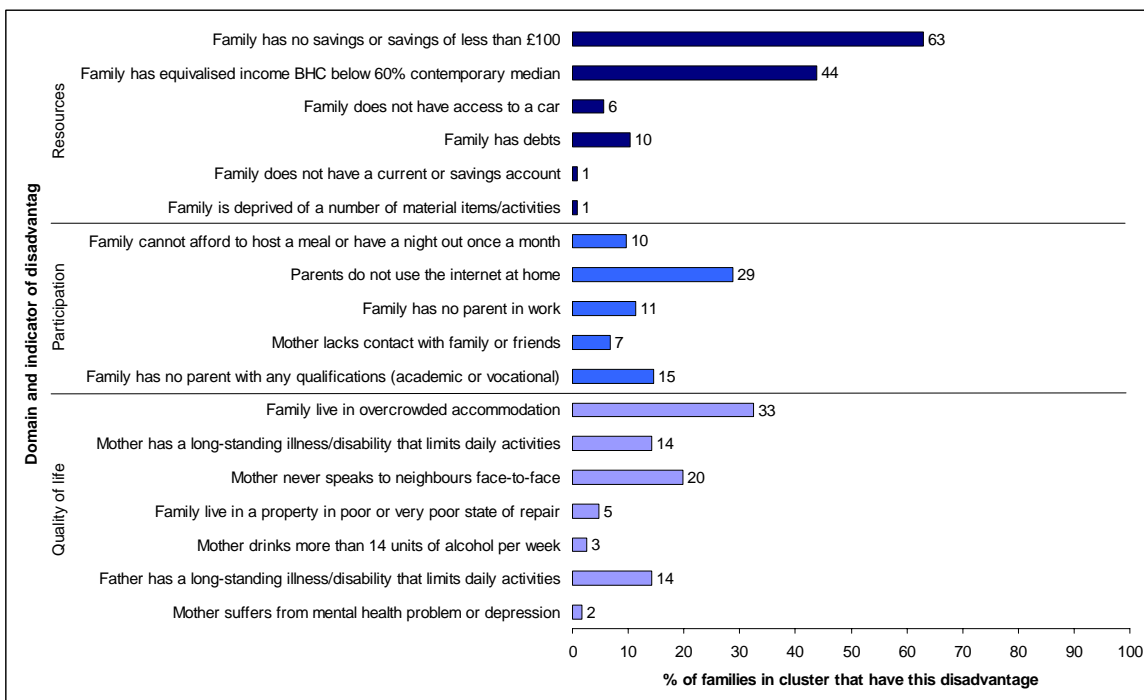


Families in overcrowded housing and disconnected from their neighbours

- 9% of families
- Families in this cluster experienced three risk markers on average

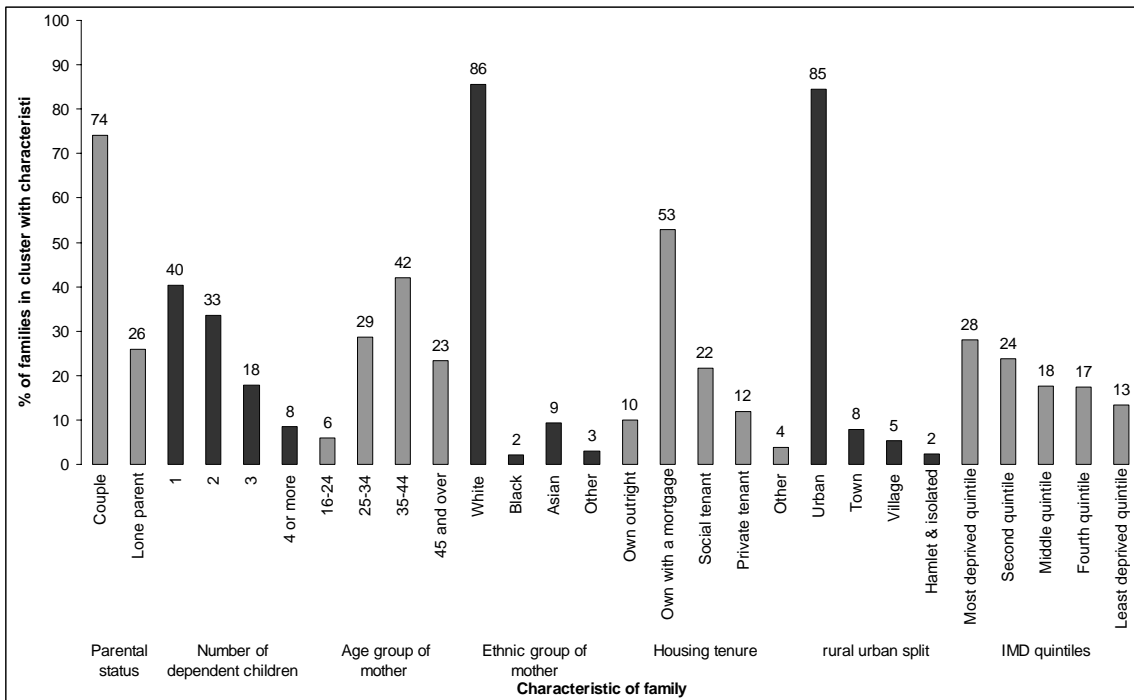
Families in this cluster were particularly likely to live in overcrowded accommodation (33%) and have mothers who did not speak face-to-face with their neighbours (20%). These families were also disproportionately more likely to have a father with a long-term limiting illness (14%) and to be income poor (44%).

Figure 2.19 Risk markers and families in the ‘overcrowded housing and disconnected from neighbours’ cluster



Families in this cluster were more likely to be larger families, families from Asian ethnic groups, and to live in urban areas.

Figure 2.20 Characteristics of families in the ‘overcrowded housing and disconnected from neighbours’ cluster

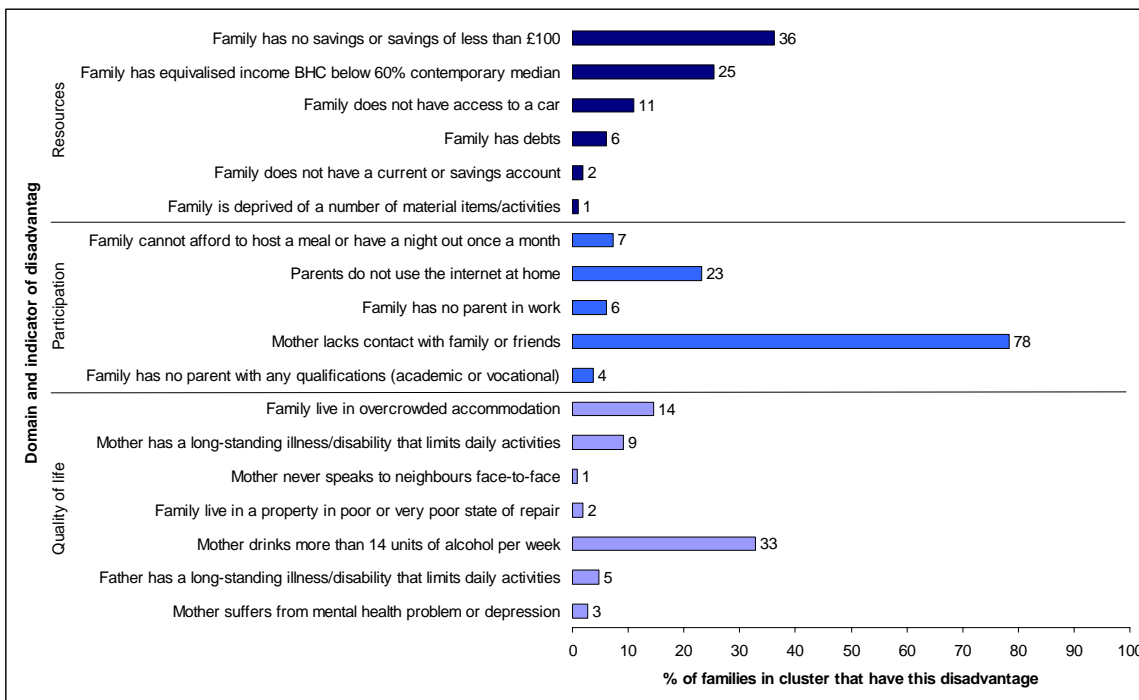


Isolated families with heavy drinking mothers

- 3% of families
- Families in this cluster experienced three risk markers on average

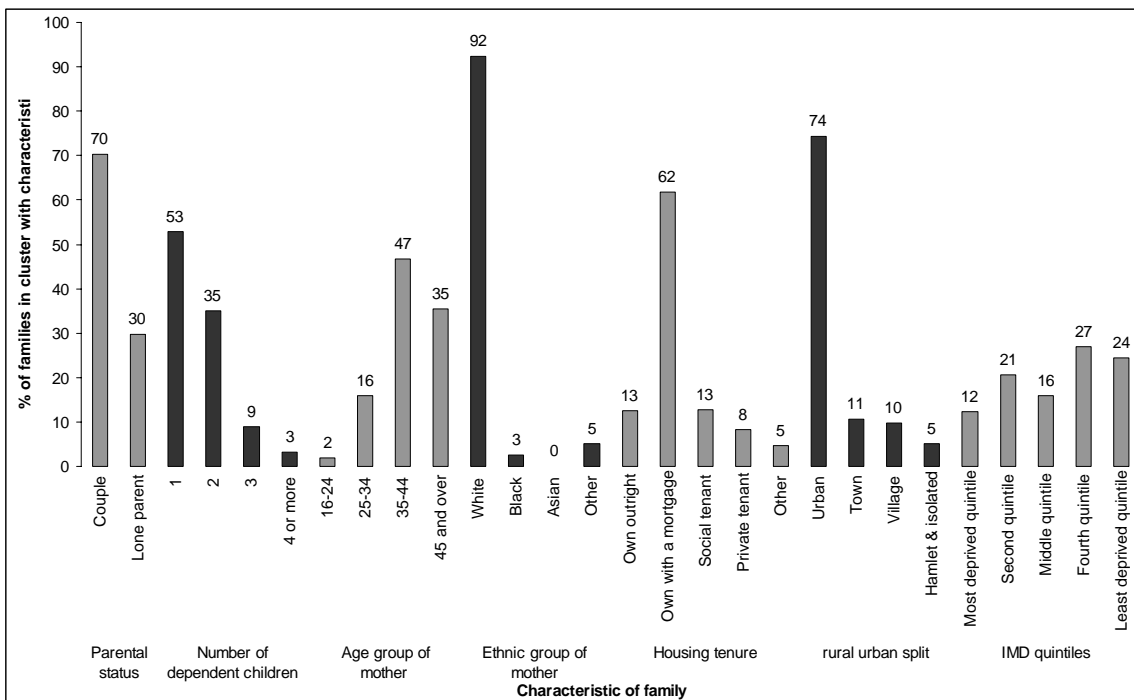
Around one third of mothers in this family cluster consumed excessive amounts of alcohol (33%) and over three quarters did not have contact with family or friends (78%) or internet access at home (23%).

Figure 2.21 Risk markers and families in the ‘isolated families with heavy drinking mothers’ cluster



These families were more likely to be older mothers; families with older children; and home owners. Mothers who were unpaid carers were also over represented in this group and there was a slightly higher concentration of these families in rural and isolated areas and in the least deprived areas.

Figure 2.22 Characteristics of families in the ‘isolated families with heavy drinking mothers’ cluster

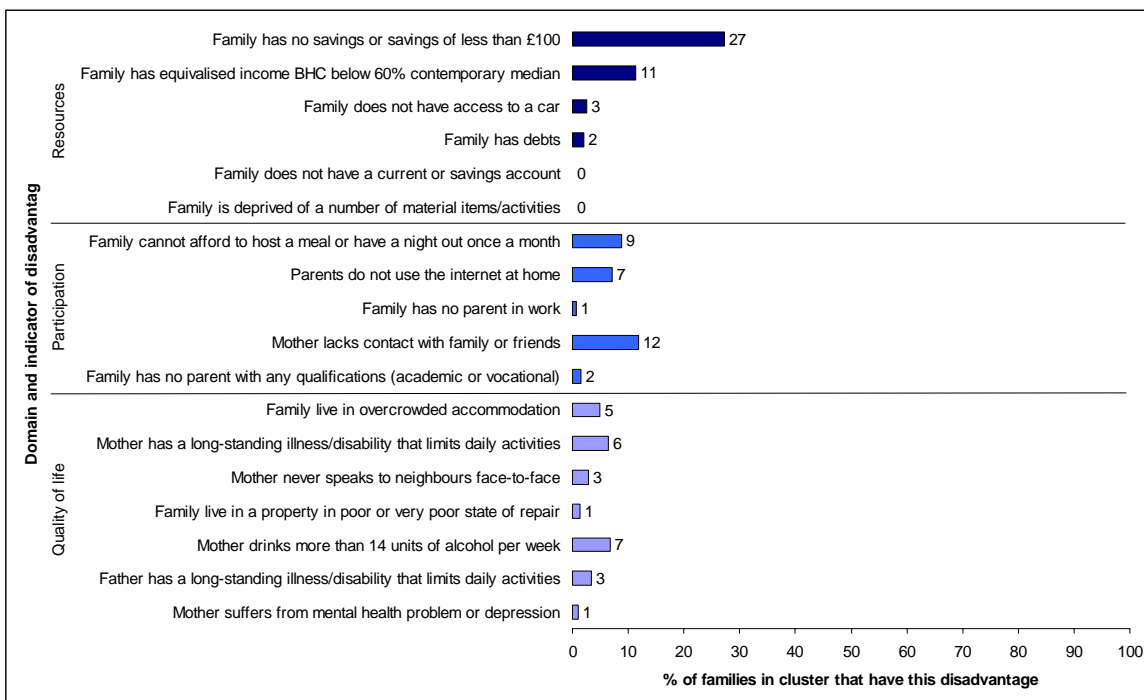


Families with only one risk marker

- 22% of families
- Families in this cluster experienced one risk marker each

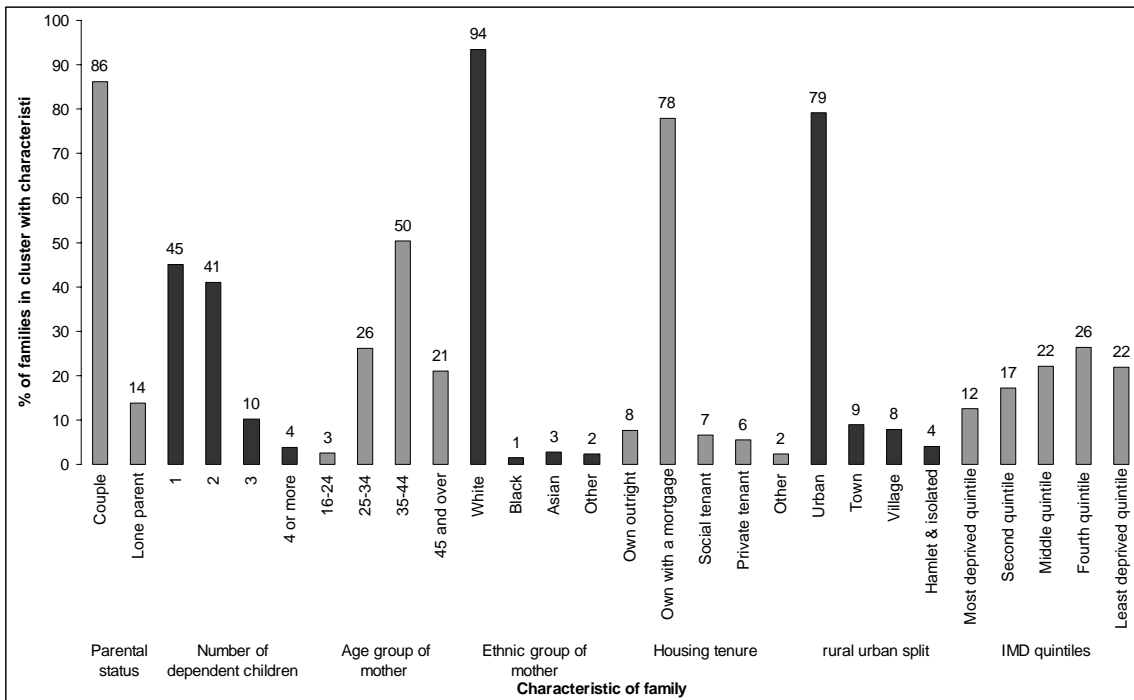
All families in this cluster experienced only one risk marker each. The risk of disadvantage among these families were, understandably, lower than for families with multiple-risks. Markers of risk that occurred alone, rather than alongside others, included the mother drinking above the recommended alcohol intake and not talking face-to-face with their neighbours.

Figure 2.23 Risk markers and families with only one risk marker



Families with just one risk marker were more likely to be couple families; those with older children; families with a White mother; and home owners. There was also a relatively greater concentration of these families in villages, hamlets and isolated areas.

Figure 2.24 Characteristics of families with only one risk marker

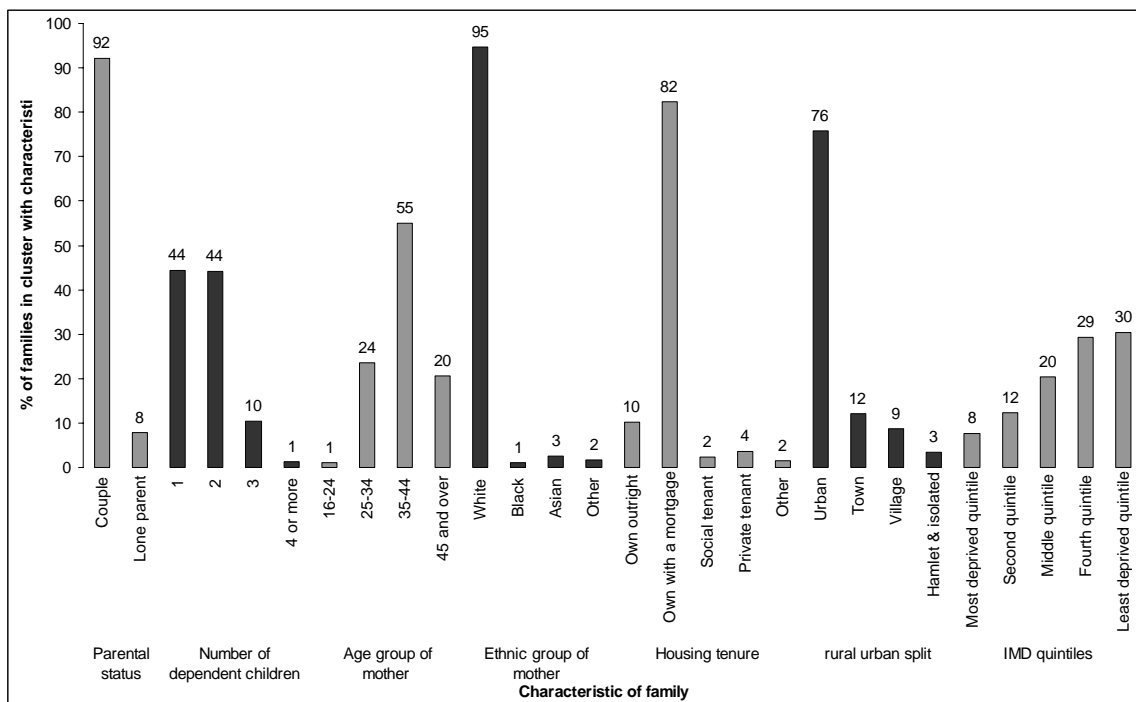


Families with no risk markers

- 33% of families

A third of families did not have any risk markers of disadvantages. These families were more likely to be couple families; those with fewer children; those with both parents in work; and those who owned their homes outright or with a mortgage. They were also more likely to have mothers from a White ethnic background, older and with educational qualifications, and to live outside urban areas. They were less likely to live in the most deprived areas.

Figure 2.25 Characteristics of families without any disadvantages



2.4 The well-being of children in families with multiple risk markers

Previous work has highlighted the importance of examining social exclusion from a child-centered perspective (Ridge, T, 2002)⁶ to understand how parental risk markers, such as low income and poor health, can impact on children. In this section, we explore what it is like for children living in families with multiple risk markers of disadvantage by looking at measures of their well-being.

To do this, we use measures of children's well-being collected from the self-completion questionnaire given to children aged 11 to 15 years in the FACS survey. This questionnaire asks children about a variety of issues, ranging from how they use their spare time, to their feelings about their family and school work, and their use of illegal substances. In the analysis presented below we categorize children's well-being according to the five *Every Child Matters* domains. *Every Child Matters* is the Government's approach to the well-being of children and young people from birth to age 19 (Department for Education and Skills (DfES), 2004). The Government's aim is for every child, whatever their background or their circumstances, to have the support they need to:

- Be healthy, enjoying good physical and mental health and living a healthy lifestyle;
- Stay safe, being protected from harm and neglect and growing up able to look after themselves;
- Enjoy and achieve, getting the most out of life and developing broad skills for adulthood;
- Make a positive contribution, not engaging in anti-social or offending behaviour; and
- Achieve economic well-being, ensuring children and young people are not being prevented by economic disadvantage from achieving their full potential in life.

These measures are detailed in Table 2.1.

⁶ See Ridge, T. (2002), *Childhood Poverty and Social Exclusion: From a child's perspective*, The Policy Press.

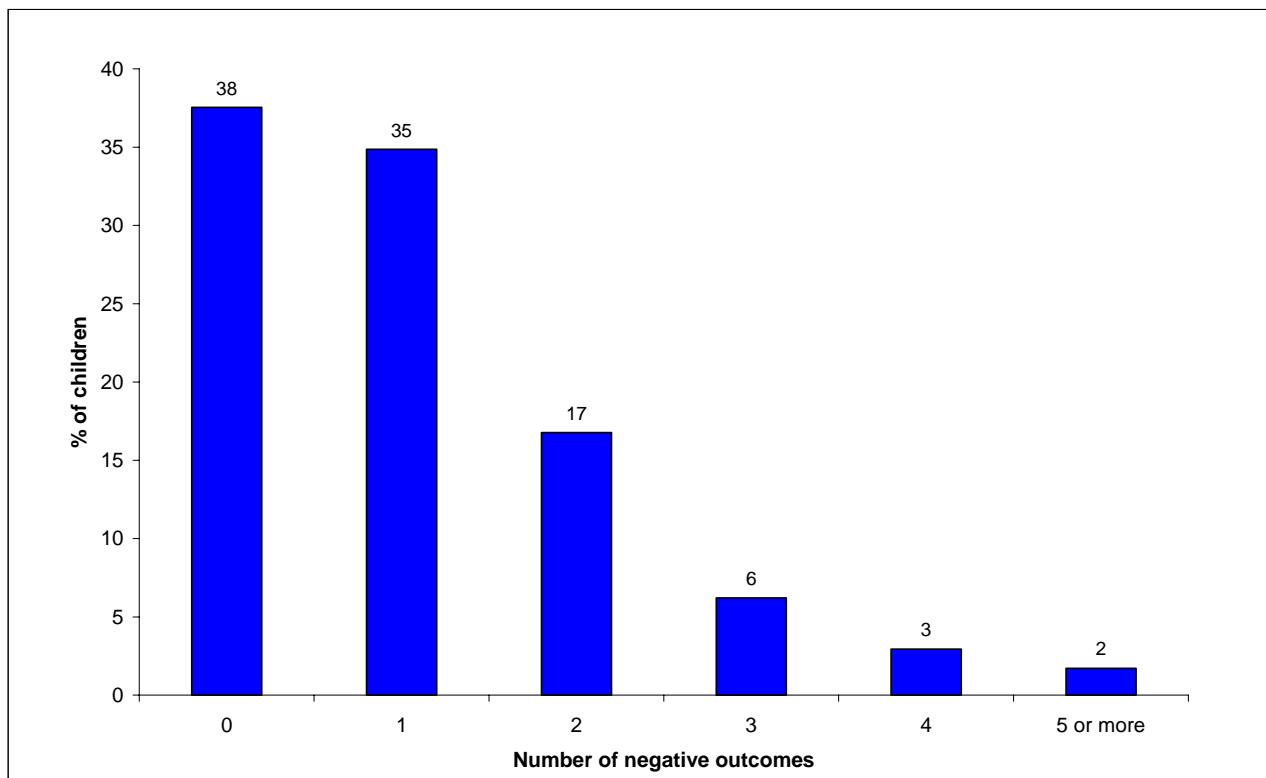
Table 2.1 Prevalence of risk markers for children of secondary-school age

ECM Classification and Indicator	% of children disadvantaged
<i>Be Healthy</i>	
Has not done any sporting activities in the last week	6
Parent thinks child has smoked; used drugs or drank alcohol in last year	5
Child has a long term limiting mental illness or disability	1
Child has a long term limiting physical illness or disability	15
<i>Staying Safe</i>	
Worry about being robbed or mugged	15
Child has run away from home	7
Has child been bullied the last 12 months	16
<i>Enjoy and Achieve</i>	
Child feels unhappy about life	3
Well below average in English or maths	1
<i>Making a positive contribution</i>	
Police has contacted parent about child in the last year	3
Does not have friends round or visited friends at their home in last 7 days	23
<i>Achieving Economic Well being</i>	
Child has been suspended or excluded from school	4
Does not use the internet and/or email	12

Base: 2693 children aged 11-15 years.
 Source: Families and Children Study (2006)

Almost two in five (38%) of children do not have any of these negative outcomes (Figure 2.26). Over one quarter (27%) have multiple (i.e. two or more) negative outcomes, and two per cent have five or more.

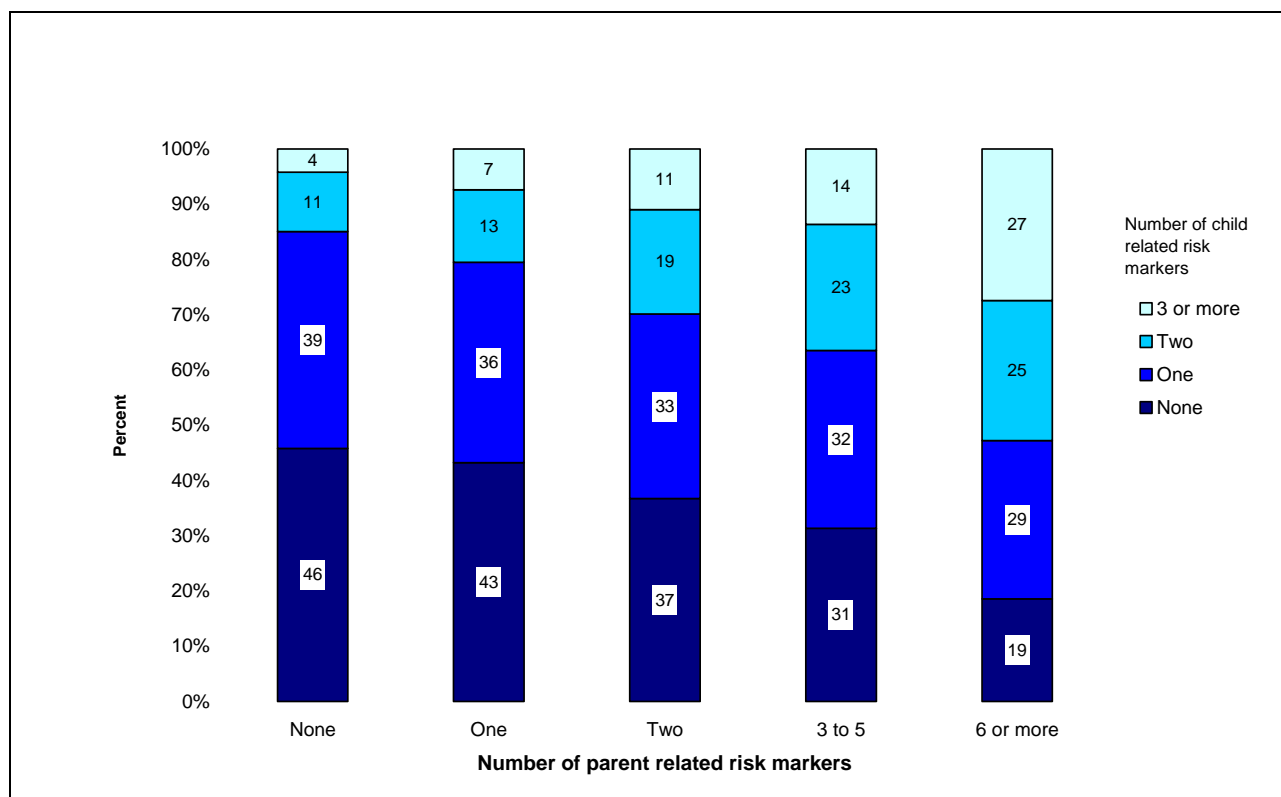
Figure 2.26 Number of negative outcomes children have



Source: Families and Children Study (2006)
Base: 2692 Families with children (aged 11 to 15 years old)

Figure 2.27 illustrates the well-being of children living in families with multiple risks of disadvantage. Children are more likely to face a number of child related risk markers if they live in families where the parents are also exposed to multiple risks. For example, around one quarter (27%) of children from families experiencing six or more parent-related risks also had three or risks compared to four per cent from families with no parent-related risk marker (which also suggests that living in a non-disadvantaged family does not provide full protection against child-related disadvantages).

Figure 2.17 The relationship between the number of child and parent based risk markers



Source: Families and Children Study (2006)
 Base: 2692 Families with children (aged 11 to 15 years old)

Next we investigate whether children’s well-being varies according to the types of risk markers their parents are exposed to. Table 2.2 presents well-being outcomes for children living in each of the family clusters with multiple risk markers identified in the previous section. In general, children’s well-being is associated with the type of disadvantages that their parents have. There are, however, some children who experience a range of negative outcomes despite living in families with only risk markers of disadvantage.

Table 2.2 presents the ‘relative risk’ of a child experiencing a negative well-being outcome. This measure compares the prevalence of each risk marker amongst children from cluster with multiple risk markers and compares the outcomes with children from the families with no risk markers i.e. the ‘not disadvantaged’ cluster. The main findings from Table 2.2 are outlined below:

- Children from the severely excluded family cluster had a higher than average prevalence on nearly all of the problem outcomes examined. These children were particularly likely to have run away from home; been suspended or expelled from

school; worry about being robbed or mugged and to have smoked, used drugs, or drank alcohol in the last year.

- Children from families with low income and poor health were particularly likely to not have done any sporting activities in the last week.
- Children from deprived families with no private transport were more likely to have been suspended or excluded from school.
- Children with parents with poor health were more likely to have a long-term limiting illness or disability. They were also more likely to have been bullied.
- Children from financially excluded families did not use the internet at home.
- Children from families lacking social participation were more likely to have smoked, used drugs, or drank alcohol in the last year.
- Children from families in debt and living in poor housing were more likely to be bullied and did not use the internet or email at home.
- Children living in overcrowded housing, who also had parents who felt disconnected from their neighbours, were worried about being robbed or mugged in their local area.
- Children from isolated families with heavy drinking mothers did not use the internet or email at home.

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Table 2.2 Prevalence of outcomes for children from different family clusters (relative risk ratios are presented in parentheses)

ECM OUTCOMES	Severely excluded families	Low income families with poor health	Deprived families with no private transport	Families with poor maternal health	Financially excluded families	Families lacking social participation	Families in poor housing with debts	Families in overcrowded housing and disconnected from their neighbours	Isolated Families with heavy drinking mothers	Families with only one disadvantage	Families with no disadvantages	All children aged 11 to 15 years
Be Healthy												
Has not done any sporting activities in the last week	9% (3.336)**	7% (3.335)*	5% (1.670)	7% (2.541)	8% (2.808)	9% (2.567)	5% (1.378)	7% (2.349)*	6% (1.920)	4% (1.455)	3% (1.000)	5%
Parent thinks child has smoked ; used drugs or drank alcohol in last year	18% (6.151)***	6% (1.795)	11% (2.952)**	10% (3.433)**	8% (3.385)	8% (3.553)**	4% (1.224)	4% (1.461)	8% (2.963)	3% (1.060)	2% (1.000)	5%
Child has a long term limiting mental illness or disability	2% (0.396)	5% (3.373)	1% (0.385)	4% (1.287)	1% (2.952)	2% (0.378)	0% -	1% (0.776)	0% (1.247)	0% (0.157)	0% (1.000)	1%
Child has a long term limiting physical illness or disability	21% (1.588)	16% (0.765)	17% (1.227)	27% (2.110)**	10% (0.713)	13% (0.910)	17% (1.443)	13% (0.988)	10% (0.666)	12% (1.044)	11% (1.000)	14%
Staying Safe												
Worries about being robbed or mugged	24% (2.029)*	16% (1.513)	22% (2.179)**	22% (2.620)***	18% (2.008)	17% (1.437)	21% (2.373)*	19% (2.072)**	14% (1.427)	14% (1.399)	9% (1.000)	15%
Child has run away from home	16% (2.710)**	6% (1.267)	10% (1.795)	7% (1.289)	2% (0.674)	7% (1.460)	7% (1.646)	7% (1.611)	10% (2.066)	8% (1.628)	4% (1.000)	7%
Child has been bullied the last 12 months	24% (1.857)	18% (1.850)	24% (2.263)***	25% (2.016)*	18% (1.671)	25% (2.497)***	27% (2.753)**	14% (1.379)	13% (1.339)	13% (1.050)	11% (1.000)	15%
Enjoy and Achieve												
Child feels unhappy about life	5% (1.073)	7% (3.370)	3% (1.064)	5% (1.250)	3% (1.179)	5% (1.521)	2% (0.845)	3% (1.235)	5% (1.391)	4% (1.511)	2% (1.000)	3%
Well below average in English or maths	4% (1.872)	0% -	2% (1.376)	2% (0.725)	1% (0.453)	3% (2.763)	0% -	2% (1.159)	1% (0.854)	1% (1.797)	1% (1.000)	1%
Making a positive contribution												
Police has contacted parent about child?	6% (0.916)	6% (2.232)	8% (3.279)	5% (3.027)	5% (3.028)	1% (0.491)	6% (4.459)	3% (1.874)	6% (3.743)	1% (1.250)	1% (1.000)	3%
Has not had friends round or visited friends at their home in last 7 days	21% (0.815)	33% (1.591)	17% (0.575)	23% (0.789)	23% (1.100)	21% (0.884)	21% (0.854)	18% (0.636)	28% (1.148)	22% (0.787)	26% (1.000)	23%
Achieving Economic Well being												
Child has been suspended or excluded from school	12% (3.872)**	9% (3.478)	11% (4.079)**	5% (1.600)	5% (1.453)	4% (1.751)	4% (1.752)	2% (1.242)	4% (1.928)	3% (1.687)	1% (1.000)	4%
Does not use the internet and/or email	53% (29.104)***	22% (7.095)***	25% (10.193)***	13% (4.122)***	17% (6.074)***	15% (5.020)***	10% (3.436)**	17% (6.342)***	10% (3.403)**	4% (1.293)	3% (1.000)	11%
N	139	83	185	109	88	120	81	306	109	634	836	2693
Percent of children aged 11-15 years	5%	3%	7%	4%	3%	4%	3%	11%	4%	24%	31%	100

1) Source: Family and Children's Study (2006); 2) Base: 2693 children aged 11 to 15 years;
 4) *p<0.10; **p<0.05; ***p<0.001

3) Relative risk ratios based on a multinomial logistic regression, with children from the 'no disadvantages' cluster as the comparison category

2.5 Summary

In this chapter we used 18 different risk markers (of disadvantage) to categorise families according to the combination of risks that they may experience. Approximately two thirds (67%) of families were exposed to at least one risk marker and almost half (45%) were exposed to multiple risk markers (i.e. two or more) measures of potential disadvantage. Just over one in ten (12%) of families scored on five or more risk markers and very few families (2%) scored on 10 or more.

Families that experienced material deprivation, worklessness and had no academic or vocational qualifications were most likely to be exposed to a range of other risk markers. Some measures of potential risk were more likely to be experienced alone, including excessive alcohol consumption by the mother and lacking contact with wider family or friends.

Arguably the most severely disadvantaged families were those exposed to multiple risk markers that ranged across all three domains of the Bristol Social Exclusion Matrix, that is, resources, participation and quality of life. We identified 5% of families in this predicament, each family scoring an average of 9 risk markers. These families typified the most disadvantaged families in that they were more likely to have lone or younger parents, four or more children, live in rented accommodation and live in the most deprived areas.

Children from families exposed to multiple risks of disadvantage also experienced low levels of well-being, and their risk markers often reflected those of their parents. For example, children with parents in ill health also had disproportionately high rates of illness and children who lacked the use of internet facilities at home were more likely to come from poorer families and have parents with lower levels of education.

3. The dynamics of multidimensional disadvantage

3.1 Introduction

Social exclusion is a process that happens over time, with long-lasting or cumulative effects, and hence exploring the dynamics of multidimensional disadvantage is crucial to our investigations. This chapter makes use of the longitudinal component of FACS to investigate the dynamics of multidimensional disadvantage for families with children. Undertaking dynamic analyses, on data that tracks the same individuals over time brings a new perspective to social research that is not possible from standard 'point-in-time' surveys.

This chapter investigates the following four research questions:

- How long do experiences of disadvantage last?
- How do different combinations of disadvantage problems behave over time?
- What events trigger experiences of social exclusion?; and
- What are the key drivers of social exclusion?

The research draws on the six annual FACS interviews from 2001 to 2006. Following families' circumstances in this way provides rich data that allows us to compare changes in living standards and outcomes.

3.2 Understanding trends in singular risk of disadvantage

Although the focus of this project is on multiple disadvantage there is a lack of research on the dynamics of disadvantage in general. Hence understanding the dynamics of singular forms of disadvantage is a useful precursor to the analysis that will appear later in this chapter. The first step is to present trends over time in the prevalence of the individual risk markers of disadvantage that we used in the previous chapter. This allows us to see whether certain risk markers (of disadvantage) have become more or less prevalent (or remained about the same), which helps us to understand why families may become, or stop being, at risk of disadvantage over the period of interest.

To observe trends in the prevalence of disadvantage we require FACS to have collected

information on each indicator (or risk marker) consistently in all of the six years under investigation. Of the 18 indicators used in the previous chapter, only the three social capital indicators were not collected consistently over time⁷. As such, these three indicators are excluded from the basket of disadvantages used in this chapter, which now includes the remaining 15 indicators.

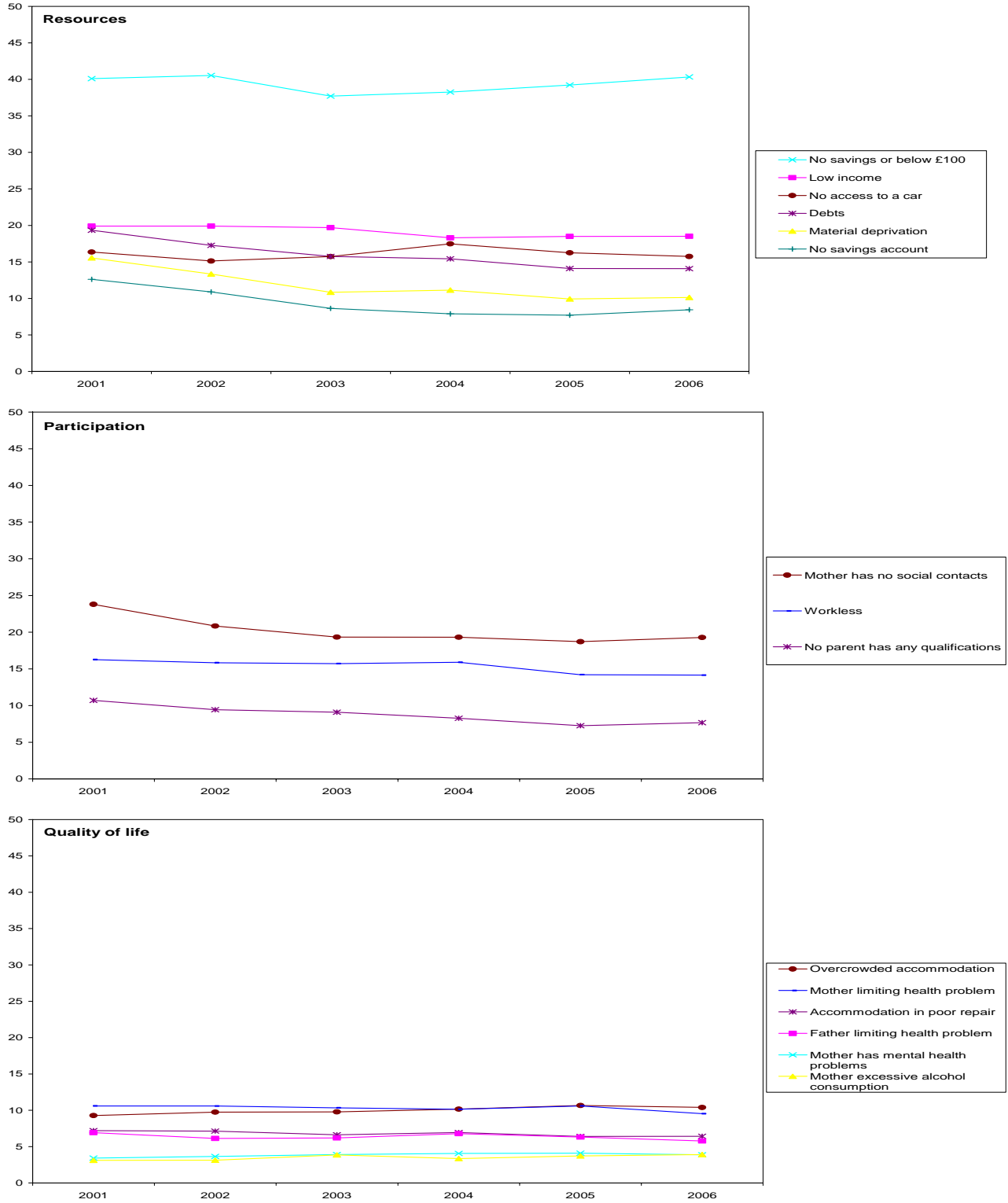
Figure 3.1 presents trends in risk markers of disadvantage between 2001 and 2006. The general picture is a slight fall in the prevalence of risk markers, particularly among indicators in the resources and participation domains. Among risk markers in the *resources* domain, we have seen a decrease in the proportion of families that have debts (from 19% in 2001 to 14% in 2006), that are materially deprived (from 16% to 10%) and that do not have a savings account (from 13% to 8%). Income poverty has reduced slightly over the period, from 20% in 2001 to 18.5% in 2006. The other *resources* indicators measured in this study have remained relatively stable over the period.

In terms of *participation* risk markers, having no parent with any educational qualifications has fallen gradually during the period, from 11% in 2001 to 8% in 2006. Worklessness has reduced slightly (from 16% to 14 %) and the proportion of mothers with no social contact has remained fairly level in recent years at around 19%, having been 24% in 2001.

The *quality of life* risk markers are experienced by fewer families and have remained fairly stable over the period. For example, approximately one in 10 families were living in overcrowded accommodation in 2001 and this remained relatively unchanged over the period.

⁷ The indicators are: 1) Mother never speaks to neighbours face-to-face; 2) Family cannot afford to have people round for a meal or have a night out once a month; 3) Parents do not use / have the internet at home. These three indicators were only introduced to the survey in 2006.

Figure 3.1 Trends in risk markers for families with children, 2001-2006



Source: FACS 2001-2006

3.3 The dynamics of singular risk markers

Exploring trends in risk markers or potential indicators of disadvantage is useful for understanding how the risk of experiencing disadvantage changes over a period of time. However, what we are really interested in investigating in this chapter is how the duration of exposure to risk markers of disadvantage can have an impact on individual families. A simple way of investigating the duration of exposure to risk markers is to count the number of times a family scores on a particular risk marker over a set time period. (We do this by focusing on families that took part in all of the annual FACS surveys over the period from 2001 to 2006)⁸.

In Figure 3.2 we present the number of times that families scored on each risk marker or indicator⁹. We distinguish between those families who experienced:

- No exposure to disadvantage (i.e. did not score against any of the risk markers at any of the 6 annual interviews);
- Short-term exposure to disadvantage (i.e. scored against a risk marker at 1 or 2 interviews)
- Medium-term exposure to disadvantage (i.e. scores on risk markers at 3 or 4 interviews); and
- Long-term exposure to disadvantage (i.e. scores on risk markers at 5 or 6 interviews).

There are a number of general conclusions that can be drawn from Figure 3.2. The first one is that more families experience potential risks of disadvantage over a period of time than year-on-year estimates may lead us to believe. For example, the yearly estimates in Figure 3.1 suggest that about one in five families (19% on average) experience income poverty at any one time over the period from 2001 to 2006. From Figure 3.2 we can see

⁸ Panel studies such as FACS suffer from attrition, as some families drop out of the survey each year. This can impact on the use of the data in the longer-term, as the families that remain in the study after several years may not be representative of all families with children. We use the 'longitudinal weight' provided with the FACS data to account for the impact of such attrition, and non-response, in our analyses.

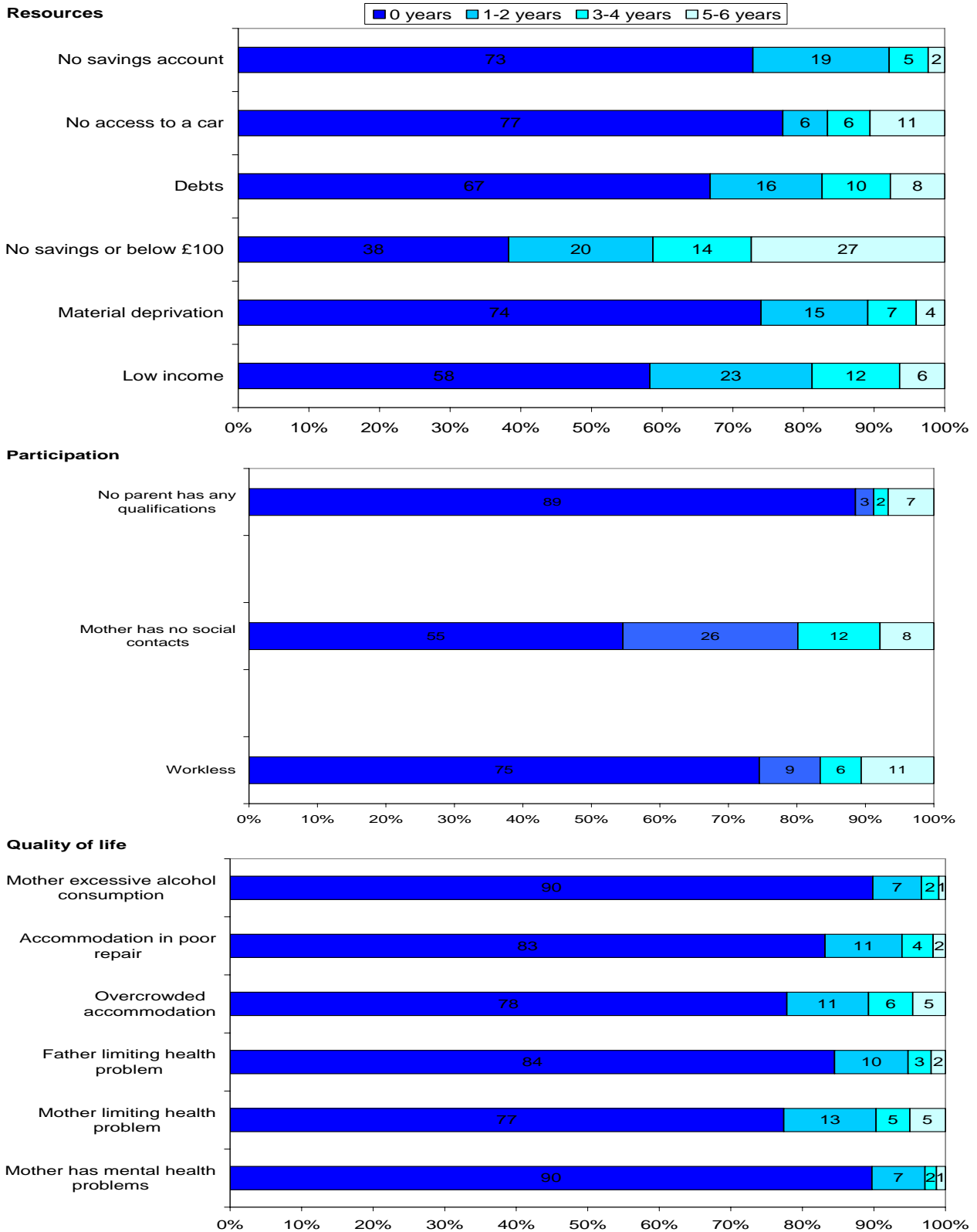
⁹It should be noted that a family may move into and out of disadvantage between interviews, but this will not be picked up in the survey or in our analysis.

that over twice as many families (41%) experienced income poverty at least once during this time. This suggests on the one hand that income poverty is not permanent for all families that experience it, but on the other hand that a larger proportion of families are touched by income poverty than annual estimates may imply.

We see that of the 41% of families that experienced income poverty over the period, the majority did so one or two times (23% of all families) and only a small minority did so five or six times (6% of all families). It is clear from Figure 3.2 that there are variations in the proportion of families with exposure to the different risk markers at least once over the period. Although this is to some degree reflective of the general prevalence of the disadvantage, there is some interesting evidence to note.

Clearly some risk markers are likely to be more long-term than others - not having substantial savings (27% did not have this at 5 or 6 interviews), not having access to a car (11%), being workless (11%) and having no qualifications (7%) were risks markers that were more likely to persist long- rather than short- or medium-term. Likewise, there are risk markers that tend to be more short-term, including mother lacking social contact (26% did not have this at one or two interviews), low income (23%), debts (16%), material deprivation (15%) and all of the *quality of life* indicators.

Figure 3.2 Observations of risk markers among families (2001 to 2006)



Base: Families with children (in all waves of FACS from 2001-2006)

3.4 How long do families remain at risk of experiencing multiple-disadvantage?

The focus of this chapter is on investigating how combinations of potential risk markers behave over time. In the previous chapter we revealed that families who experience multiple disadvantages are not a homogenous group – in other words, these families do not all experience the same number and type of disadvantages. We identified nine clusters of families' with different combinations of risk markers. We now go on to explore the dynamics of these clusters by observing whether families continue to be exposed to the same combinations of disadvantages over time. For those that do not, we explore whether they are able to free themselves from particular risk markers or whether they become burdened with more potential risks.

The clusters of families we use here are slightly different to the clusters we used in the previous chapter. This is because it was not possible to use the same basket of indicators (or risk markers), as FACS did not consistently capture information on the three social capital indicators over time. Also, because of the problem with attrition, we had fewer families to analyse. Distributing these families between nine clusters would have meant that some of the clusters would have been sparsely populated, which would not enable robust analysis.

Instead, we performed a new cluster analysis on each wave of FACS between 2001 and 2006, using the 15 indicators that were consistently collected over this period. Similar cluster solutions were obtained as in the previous chapter, but we then combined the most similar clusters to generate a consistent four-cluster model suitable for longitudinal analysis¹⁰.

These four clusters were:

- *Not disadvantaged families (with no, or only one risk marker)*: Families in this cluster
-

¹⁰ Annex IV presents the dendrogram generated for each wave along with further details of the longitudinal clusters.

were not highly disadvantaged on any of the indicators. They were more likely to be home owners, couples, mothers in middle age groups, and have high levels of educational qualifications.

- *Families with poor health* (scoring an average of three risk markers): Almost one third of families in this cluster had a mother with a long term limiting illness and relatively high proportions did not have any savings, were on low income and lived in overcrowded accommodation. The majority of families in this cluster were home owners, couples, older mothers, and had low levels of educational qualifications.
- *Families with low qualifications and poor housing* (average of five risk markers): This cluster was characterised by a high proportion of families with no qualifications and those who lived in unfit housing. In addition, a high proportion did not have regular access to a car or to a bank account. They were mostly social and private renters, lone parents and younger mothers with low levels of educational qualifications. They were also more likely to have younger children.
- *Severely excluded families* (average of six risk markers): This cluster had the highest proportion of families who were at risk of material deprivation. Over half were workless and most had no savings. Nearly three quarters of families in this cluster did not own their home and the majority were lone parents.

Table 3.1 shows the duration that families spend in each cluster over the six year period, 2001 to 2006. The majority of families experienced few instances of potential disadvantage – 64% spent four to six years in the not disadvantaged cluster. However, a significant proportion (21% to 30%) spent one to three years in one of the disadvantaged clusters, but only a small proportion experiences persistent disadvantage (between four and seven per cent).

Table 3.1 Time families spent in each cluster **Row %**

Cluster	0 years	1-3 years	4-6 years
Not disadvantaged	20	16	64
Families with poor health	66	30	4
Low qualifications and poor housing	66	28	6
Severely deprived	72	21	7

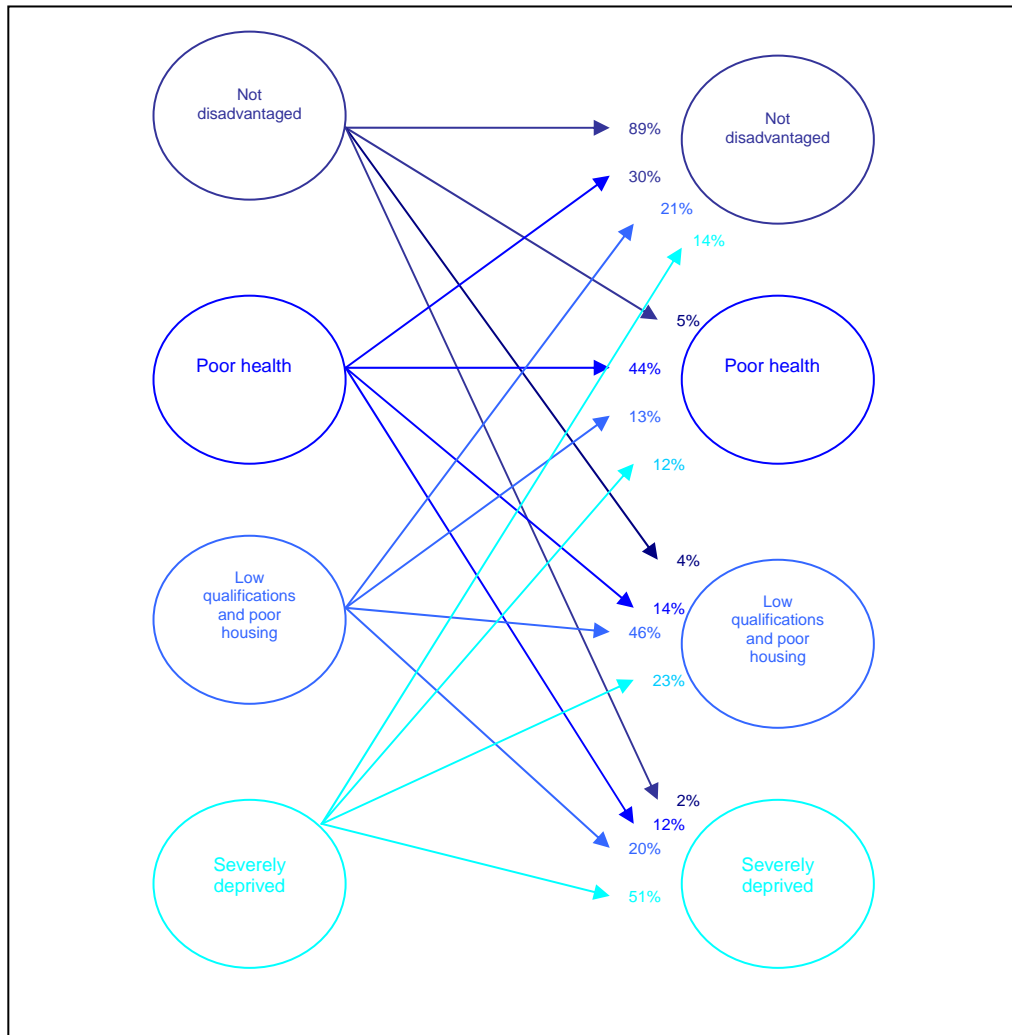
Base: 2926 families present in all six waves (2001 to 2006)

Additional analysis (not presented here) revealed that families most likely to be persistently at risk of disadvantaged (for four or more years) were lone parents; those with four or more children; young mothers; mothers from Black ethnic groups; those who are social tenants; and those living in urban areas.

3.5 Transitions into and out of multiple disadvantage

Next we investigate the dynamics of families at risk of multiple disadvantage by exploring the year-on-year transitions families make into and out of the four clusters. Figure 3.3 illustrates the different transitions that families made. The percentage next to each arrow indicates the percentage of families that have moved from one cluster to another (or who have remained in their original cluster). For example, 89% of families who were in the not disadvantaged cluster remained in this cluster a year later, 5% moved to the poor health cluster, 4% moved to the low qualifications and poor housing cluster, and 2% moved to the severely deprived cluster.

Figure 3.3 Following clusters over time



Base: 6072 families FACS (2001 to 2006)

Of all families that were initially in one of the multiply disadvantaged clusters, around 45 to 50% remained in their originating cluster the following year, while the remainder either moved out of clusters with multiple risks or to another cluster with higher or lower risk of disadvantage. Indeed, a significant proportion were found to escape the risk of disadvantage – around 30% of families in the poor health cluster moved to the not disadvantaged cluster the following year, as did 21% from the low qualifications and poor housing cluster and 14% from the severely deprived cluster. Other families moved between disadvantaged clusters. For example, 13% of families initially in the low qualifications and poor housing cluster moved to the poor health cluster, while 20% moved to the severely deprived cluster. Likewise, 23% of families initially in the severely deprived cluster moved to the low qualifications and poor housing cluster, and 12% moved to the

poor health cluster. We will explore the events associated with transitions between clusters in the following sections.

3.6 What events can trigger experiences of social exclusion?

In order to help explain whether there are key events associated with the exposure or ceasing of multiple disadvantage risk, we examined cluster transitions alongside a number of possible events that families experience – such as parents partnering and separating, the birth of a new child and the mother starting employment.

Table 3.2 Events associated with cluster transitions

Event	Cluster before event	Cluster after event				Row %
		Not disadvantaged	Poor health	Low qualifications and poor housing	Severely deprived	
Couple Formation	Not disadvantaged	92	4	3	2	100
	Poor health	36	44	8	12	100
	Low qualifications and poor housing	44	9	28	19	100
	Severely deprived	29	13	18	40	100
Family Separation	Not disadvantaged	82	9	5	4	100
	Poor health	30	36	21	13	100
	Low qualifications and poor housing	17	8	52	22	100
	Severely deprived	8	11	30	52	100
The birth of a child	Not disadvantaged	88	5	5	3	100
	Poor health	31	42	11	16	100
	Low qualifications and poor housing	15	8	51	26	100
	Severely deprived	13	7	26	54	100
Mother gets a job	Not disadvantaged	90	5	3	2	100
	Poor health	37	44	8	11	100
	Low qualifications and poor housing	42	17	27	13	100
	Severely deprived	34	15	15	36	100

Source: FACS 2001 to 2006

Base: 9% (263 families) moved house; 8% (234 mothers) either got married or started cohabiting; 6% (176 mothers) got divorced or separated; 5% (146 families) had a new birth; 66% (1391 mothers) started or increased their hours of employment.

Table 3.2 shows the extent to which transitions between clusters are associated with key family events, averaged across all six waves of FACS. Overall, it shows that events like couple formation or entering into employment are strongly associated with remaining in or moving to less deprived clusters. For example, twice the proportion of families moved from the severe disadvantage cluster to the non-disadvantage cluster having formed a partnership, than would be expected on average.

Other events, like becoming unemployed or experiencing family separation, are associated with transitions to more deprived clusters. For example, half of those in the low qualifications and poor housing cluster before separating remained in this cluster, while one in five moved to the severely excluded cluster.

3.7 What are the key drivers of social exclusion?

In our final section of analysis we try to understand which factors may drive social exclusion. In order to identify the factors driving membership of, and movements between, the four clusters, we use a competing risks hazard model. This allows the comparison of the factors associated with an exit from an old state to a new state, with the factors correlated with the persistence in the old state. For example, we compare the characteristics of families who exit from a disadvantaged cluster with the characteristics of families who continue in that cluster.

The following four tables describe the hazard rate¹¹ associated with exiting each of the four clusters. It also shows the results of the competing risk model used to assess the destination of families leaving a particular cluster and the family characteristics associated with movements in and out of each cluster¹².

¹¹ The hazard rate is the conditional probability of leaving the existing cluster year n , given the permanence in the cluster for $n - 1$ years.

¹² See appendix 3.1 for further discussion of the competing risk model.

Table 3.3 Hazard Rate Models for not-disadvantaged families

Covariates	Logistic Model	Competing-Risk Model		
		Poor Health	Low qualifications and poor housing	Severely deprived
Duration_1 year	-1.432***	-1.686**	-3.249***	-3.173***
Duration_2 years	-2.237***	-2.273***	-4.186***	-4.368***
Duration_3 years	-2.529***	-2.597***	-4.450***	-4.565***
Duration_4 years	-2.378***	-2.393***	-4.398***	-4.365***
Linear trend	0.182***	0.102	0.241**	0.282**
Lone parents	0.451***	0.245	0.590**	0.721**
Mothers education – medium	0.388**	0.315	0.599**	0.238
Mothers education – low	0.841***	0.395	1.277***	1.041**
Mother aged 25 or less	0.695*	0.209	1.123***	0.608
Mother aged 25-29	0.507**	0.545*	0.320	0.713*
Work ratio	-0.877***	-0.779*	-0.727	-1.370**
Unemployment	1.028*	0.929	1.286*	0.831
Private tenants	0.681***	0.626*	0.901***	0.340
log-likelihood	-1117	-1706		
units of time at risk	1984	1984		
families	1099	1099		

Legend: * p<0.05; ** p<0.01; *** p<0.001

Notes: standard errors adjusted clustering across families

Table 3.3 presents the hazard rates and competing risk model for the non-disadvantaged family cluster. The column labelled logistic model shows the probability (or odds ratio) of exiting this cluster for a range of characteristics. The coefficients of the duration variables indicate that, once a member of this cluster, families are more likely to stay in this cluster than exit, and this effect becomes more pronounced the longer a family remains in this cluster (see the variables labelled Duration_1 year to Duration_4 years). Families are also less likely to exit this cluster if there are a high number of family members who are employed relative to the size of the household ('work ratio'). Other characteristics,

however, are associated with families being more likely to exit this cluster. These include: lone parents; mothers with low and medium levels of education; younger mothers; those unemployed and private tenants.

The results of the competing risk model are presented in the three remaining columns of the table. These show the probabilities of entering into each of the three multiply disadvantaged clusters after exiting the non-disadvantaged cluster. Negative coefficients indicate that families are less likely to make a transition to the associated cluster. In this table, families with a high 'work ratio' are significantly less likely to enter the poor health or severely deprived cluster. Apart from 'work ratio', however, all other characteristics in Table 3.3 are associated with higher levels of vulnerability to enter one of the multiply disadvantaged clusters. For example, on leaving the not-disadvantaged cluster, lone parents and mothers with low education are more likely to make a transition to the severely deprived or low qualifications and poor housing clusters. Families with young mothers, those with medium levels of education and those unemployed, are more likely to move to the low qualifications and poor housing cluster, while mothers aged 25 to 29 are more likely to move to either the poor health or severely deprived clusters. Private tenants, on the other hand, are more likely to move to the poor health or low qualifications and poor housing clusters.

Table 3.4 Hazard Rate Models for families in the poor health cluster

Covariates	Logistic Model	Competing-Risk Model		
		Not disadvantaged	Low qualifications and poor housing	Severely deprived
Duration_1 year	-0.175	-0.560	-3.108***	-3.413***
Duration_2 years	-0.564	-1.045*	-3.165***	-3.703***
Duration_3 years	-0.324	-1.130	-2.608**	-3.185**
Duration_4 years	-1.054	-2.361	-3.981**	-2.961**
Linear trend	0.142*	0.127	0.180	0.198
2 dependent children	-0.131	-0.158	-0.121	-0.220
3+ dependent children	-0.286	-0.562**	0.017	-0.005
Lone parents	0.280*	-0.357*	1.601***	0.658**
Mothers education - medium	0.040	-0.182	0.133	1.353**
Mothers education - low	0.538*	-0.633*	1.398***	2.192***
Fathers education - low	0.186	0.146	0.851*	0.324
Mother aged 25 or less	-0.305	-0.142	0.116	-1.233*
Work ratio	-0.182	0.655**	-0.842***	-0.833***
Private tenants	-0.291	-0.538**	-0.106	0.345
Social tenants	-0.421**	-1.097***	0.290	0.061
log-likelihood	- 838	-1401		
units of time at risk	1263	1263		
families	862	862		

Legend: * p<0.05; ** p<0.01; *** p<0.001
 Notes: standard errors adjusted clustering across families

Table 3.4 shows the probabilities of families making an exit from the poor health cluster. Lone parent families and families with mothers with low levels of education had a greater probability of leaving this cluster and moving to either the ‘low qualifications and poor housing’, or ‘severely deprived’ clusters. They were less likely, however, to move to the not-disadvantaged cluster. Social tenants, on the other hand, were less likely to leave the poor health cluster.

The results for the competing risks model shows that families who did leave the poor health cluster were more likely to move to one of the disadvantaged clusters (or rather were significantly less likely to move to the not-disadvantaged cluster). The exception was for families with a higher 'work ratio' – those who exited were more likely to move to the not-disadvantaged cluster.

Table 3.5 Hazard Rate Models for families in the low qualifications and poor housing cluster

Covariates	Logistic Model	Competing-Risk Model		
		Not disadvantaged	Poor Health	Severely deprived
Duration_1 year	0.611	0.527	-1.434*	-1.679**
Duration_2 years	0.276	0.031	-1.569*	-2.049***
Duration_3 years	-0.083	-0.422	-2.179**	-2.298***
Duration_4 years	-0.292	-0.535	-1.721	-2.975***
Linear trend	0.198***	0.053	0.280**	0.291***
2 dependent children	0.246	0.183	0.216	0.287
3+ dependent children	0.355*	-0.349	0.483*	0.620**
Lone parents	-0.779***	-1.250***	-0.996***	-0.191
Mothers education - medium	-0.232	-0.626**	0.044	0.075
Mothers education - low	-0.977***	-2.066***	-1.040**	-0.234
Mother aged 30-39	0.109	0.528*	0.03	-0.077
Mother aged 40-44	-0.062	0.313	-0.137	-0.305
Mother aged 45 or more	-0.036	-0.069	0.098	0.005
Work ratio	-0.043	1.053***	0.006	-0.702***
Private tenants	-0.565**	-0.541*	-0.294	-0.542*
Social tenants	-0.826***	-1.455***	-0.854***	-0.279
log-likelihood	- 854	-1579		
units of time at risk	1431	1431		
Families	1009	1009		

1. Legend: * p<0.05; ** p<0.01; *** p<0.001

2. Notes: standard errors adjusted clustering across families

The probabilities of families making an exit from the low qualifications and poor housing cluster are shown in Table 3.5. This reveals that lone parent families, those living in social or private rented accommodation and families whose mothers had low levels of education, were less likely to leave this cluster. Of those who did, they were significantly less likely to move to the not-disadvantaged or poor health cluster (suggesting they were more likely to transition to the severely deprived cluster, although the coefficients for these transitions were not significant).

Families in the low qualifications and poor housing cluster with three or more children were more likely to leave the cluster and move to either the poor health or severely deprived cluster. On the other hand, families with a higher 'work ratio' who left the cluster were more likely to move to the not-disadvantaged cluster and significantly less likely to move to the severely deprived cluster. This suggests that work rich households are less likely to spend significant periods in a state of multiple disadvantage.

Table 3.6 Hazard Rate Models for families in the severely deprived cluster

Covariates	Logistic Model	Competing-Risk Model		
		Not disadvantaged	Poor Health	Low qualifications poor housing
duration_1 year	0.808*	0.947	-0.679	-1.765***
duration_2 years	0.834	0.767	-0.583	-1.704**
duration_3 or 4 years	0.503	1.109	-0.802	-2.365***
linear trend	0.047	-0.142	0.034	0.179**
lone parents	-0.285	-0.869***	-0.630**	0.406*
Mothers education - medium	-0.701**	-1.255***	-0.548	-0.123
Mothers education - low	-0.949***	-2.691***	-1.049*	-0.086
work ratio	0.565***	1.857***	0.620*	-0.006
social tenants	-0.369**	-1.311***	-0.191	-0.037
log-likelihood	- 690	-1176		
units of time at risk	1069	1069		
Families	752	752		

Legend: * p<0.05; ** p<0.01; *** p<0.001

Notes: standard errors adjusted clustering across families

Table 3.6 shows the probabilities of families exiting the severely deprived cluster¹³. Consistent with the previous results, families with a higher ‘work ratio’ were more likely to leave this cluster and move to the not-disadvantaged cluster. Families that had been in the cluster for a short duration (that is, one year) also had a higher probability of leaving the cluster. However, lone parents, families with low or medium levels of education and social tenants were less likely to exit the cluster. Of those who did, they were more likely to move to another multiply disadvantaged cluster.

¹³ The following variables were excluded from the analysis as they were not significantly associated with transitions in or out of this cluster; Number of dependent children; Age group of mother and Household in private rented accommodation.

3.8 Summary

This chapter has utilised the longitudinal element of FACS, which ‘follows’ the same families by interviewing them at yearly intervals, to explore the dynamic nature of multiple disadvantage. A similar basket of indicators was used as that in the previous chapter, bar the three indicators of social capital that were not asked in previous waves of the FACS survey.

Exploring how many times families were disadvantaged over a period of time revealed that more families experienced singular, and multiple forms of disadvantage over a six-year period than ‘point-in-time’ estimates would suggest. This suggests that measuring disadvantage with longitudinal data can overcome some of the limitations imposed by the use of cross-sectional data.

Four clusters of multiple disadvantaged families were followed over time. These clusters combined some of the nine clusters identified in the previous chapter. Attrition and a different basket of indicators meant that the same clusters could not be used. A small proportion of families (between four and seven per cent) was found to be at risk of persistent multiple disadvantage.

To help us understand what drives social exclusion, the analysis focused on families who moved from one cluster to another, and particularly those who exited or entered multiple disadvantage. The events that may trigger episodes of multiple disadvantage were becoming unemployed, experiencing family separation, lone parent status, mothers with low to medium levels of education and being a younger mother. Conversely moves out of multiple disadvantage were associated with couple formation, entering employment, and households with a high ‘work ratio’.

4. Summary of findings and directions for policy

This study has sought to provide greater insight into the nature and experience of social exclusion among families with children in Britain, using secondary analysis of the Families and Children Study (FACS). Analysis of this data has enabled us to better understand the different forms, prevalence and duration of multiple disadvantage risk among families, as well as explore some of the key trigger events and drivers that are associated with multiple disadvantage.

The analysis revealed that a significant proportion (45%) of families with children were at risk of experiencing multiple disadvantage. Clearly the experience of multiple disadvantage is not homogeneous and from the data we identified nine clusters of families with multiple risk markers, thereby deepening our understanding of the way in which problems experienced by families combine and are associated with one another. The types of families found to be most at risk of multiple disadvantage include lone parents; social tenants; families from Black, Asian and other ethnic groups; families with younger mothers; and those with three or more children.

The analysis also found a heightened prevalence of problem outcomes among children from families in the multiple risk clusters. For some children, their problem outcomes reflected those of their parents. For others, the relationship between their own and their parents' disadvantages was less straightforward. Nonetheless, the findings add to the existing evidence for parental problems to be transmitted to their children.

When looking at trends in the incidence of disadvantages over time we saw a slight fall in rates of singular risk markers over the period 2001 to 2006. Using the longitudinal element of FACS, which 'follows' the same families over time, we revealed that more families experienced singular, and multiple forms of disadvantage over a six-year period than 'point-in-time' estimates would suggest. This suggests that disadvantage touches more families, and children, than yearly estimates would imply.

Four clusters of families were followed over the period from 2001 to 2006. Most families did not experience multiple disadvantage during this time, and if they did it was relatively short-term. Nonetheless, a small proportion of families (between four and seven per cent)

was found to be at risk of multiple disadvantage persistently. These families were more likely to be lone parents, those with four or more children, young mothers, mothers from Black ethnic groups, social tenants and those living in urban areas.

The analysis of transitions between clusters showed that most families at risk of multiple disadvantage in one year were more likely to still be at risk in the following year. However, significant proportions were successful in making a transition out of clusters characterised by multiple risks. Analysis of the trigger events and drivers associated with such transitions showed that moves out of multiple disadvantage, or from more to less disadvantaged clusters, were associated with couple formation, entering employment, and households with a high 'work ratio'. On the other hand, being at risk of multiple disadvantage, or movement between disadvantaged clusters, were generally associated with becoming unemployed, experiencing family separation, lone parent status, mothers with low to medium levels of education, younger mothers, and social and private tenants.

The findings suggest a number of directions for policy. While the proportion of families exposed to the risk of multiple disadvantage was substantial (45 per cent), the analysis revealed a more nuanced picture of the way in which different types of problems cluster among vulnerable families and the types of families most at risk. This information may assist public services to better identify the range and complexity of need among families, as well as inform the targeting and prioritisation of services. It also highlights the need to provide tailored, whole family approaches that address the diverse and different problems experienced by both parents and children.

The identification of different clusterings of multiple problems among families with children suggests that such families may access support from public services from a range of different entry points. Policy makers and service providers may therefore wish to consider how services can best be coordinated to address the full range of need among such families.

As discussed above, the majority of families with children do not experience multiple disadvantage and, of those who do, most experience it for only a short duration. However, a small proportion experience persistent multiple disadvantage. Arguably this group requires greater assistance to help them move out of multiple disadvantage and policy and services should consider the intensity of support required to improve the outcomes for this group.

While the findings have thrown considerable light on the nature of social exclusion among families with children and provide support for the B-SEM as a framework for measuring multiple disadvantage, the analysis was limited in two main respects. First, like most household surveys, FACS provides a representative sample of the population it covers but excludes people living in institutions and atypical accommodation, many of who are highly vulnerable or at significant risk of social exclusion. Secondly, FACS has limited coverage of the sub-domains of the B-SEM relating to crime, drug use, and political or civic participation among adults, which may limit the extent to which a comprehensive assessment of social exclusion can be made with this dataset. Both of these factors may therefore lead the present study to underestimate the prevalence of social exclusion among families with children in Britain.

Future research may seek to explore the potential of other survey datasets, as well as administrative data, to address these issues and further develop our understanding of families at risk of social exclusion.

References

Barnes, M. (2005) *Social exclusion in Great Britain: An empirical investigation and comparison with other European Union member states*, Aldershot: Ashgate Publishing Limited.

Feinstein, L and R, Sabates (2006) The prevalence of multiple deprivation for children in the UK: Analysis of the Millennium Cohort and Longitudinal Survey of Young People in England.

Halleröd, B (1995) The truly poor: Direct and indirect consensual measurement of poverty in Sweden. *European Social Policy*, 5 (2), pp.111-129.

Halleröd, B and Bask, M. (2008) Accumulation of Welfare Problems in a longitudinal perspective. *Social Indicators Research* 88(2) pp.311-327.

Joseph Rowntree Foundation (2000) *Poverty and social exclusion in Britain*.

Kaufman, L and P.J. Rousseeuw (1990). *Finding Groups in Data*, Wiley, New York

Levitas, R., Pantazis, C., Fahmy, E., Gordon, D., Lloyd, E. and Patsios, D. (2007) [The Multidimensional Analysis of Social Exclusion](http://www.cabinetoffice.gov.uk/social_exclusion_task_force/publications/research/multidimensional.asp), London: Social Exclusion Task Force. http://www.cabinetoffice.gov.uk/social_exclusion_task_force/publications/research/multidimensional.asp

McCulloch, A. and Joshi, H. (2000) *Neighbourhood and Family Influences on the Cognitive Ability of Children in the British National Child Development Study*, ISER Working Paper 2000-24, Colchester: Institute for Social and Economic Research, University of Essex.

Mogadi, M. and Middleton, S (2005) [Britain's poorest children revisited: Evidence from the BHPS \(1992-2002\)](#) Loughborough University: CRSP.

Ridge, T. (2002), *Childhood Poverty and Social Exclusion: From a child's perspective*, The Policy Press.

Ringen, S (1988) Direct and Indirect measures of poverty. *Social Policy* (17) pp 351-365.

Social Exclusion Task Force (2006) *Reaching Out: An Action Plan for Social Exclusion*. London: Cabinet Office.

Social Exclusion Task Force (2007) *Reaching Out: Think Family*. London: Cabinet Office.

Social Exclusion Unit (2002) *The Impact of government policy on social exclusion among children aged 0–13 and their families*. London: The Stationery Office.

Vakharia, A, J and Wemmerlov, U. (1995). A comparative investigation of hierarchical clustering techniques and dissimilarity measures applied to the cell formation problem. *Journal of Operations Management* 13 pp.117-138.

Willits, M (2006) *Measuring child poverty using material deprivation: possible approaches*. DWP Working Paper No 28.

Annexes

- Annex I Definition of indicators of disadvantage**
- Annex II Cluster Analysis of FACS 2006**
- Annex III Relative Risk Analysis of Cluster Membership**
- Annex IV Cluster Analysis of FACS 2001 to 2006**
- Annex V Competing Risk Model-Hazard Rate / Survival Analysis**

Annex I Definition of indicators of disadvantage

This table describes in more detail the definition of the disadvantage indicators.

B-SEM domain	Indicator or risk marker
Resources	<p>Family is deprived of a number of material items/activities Items include:</p> <ul style="list-style-type: none"> -Two pairs of all-weather shoes for each adult - A celebration with presents, for friends and family at special occasions like birthdays - Toys and sports gear for the children - A one-week holiday away from home, not staying with relatives - Food items -Clothing items
	<p>Family does not have a current or savings account Includes:</p> <ul style="list-style-type: none"> - a savings account or; - a current account
	<p>Family has debts Items include:</p> <ul style="list-style-type: none"> -whether the family currently has any debts -Number of debts <p>By types including:</p> <ul style="list-style-type: none"> -electricity bill -gas bill -other fuel bills like coal or oil -Council Tax -insurance policies -telephone bill -television/video rental or HP -HP payments -water rates -Rent/Mortgage -Catalogue payments -Other specific answers that are not codeable to those above
	<p>Family does not have access to a car: -</p>
	<p>Family has equivalised income BHC below 60% contemporary median</p>
	<p>Family has no savings or savings of less than £100</p>
	Quality of life
<p>Mother never speaks to neighbours face-to-face - How often to do you speak to neighbours (face-to-face)?</p>	
<p>Mother drinks more than 14 units of alcohol per week</p>	
<p>Mother has a long-standing illness/disability that limits daily activities</p>	
<p>Father has a long-standing illness/disability that limits daily activities¹</p>	
<p>Family lives in overcrowded accommodation</p>	
<p>Family lives in a property in poor or very poor state of repair</p>	
Participation	<p>Family cannot afford to have people around for a meal or have a night out once a month</p> <ul style="list-style-type: none"> - A night out once a month -Family being able to have friends or relatives for a meal once a month <p>Options / answers include the following:</p> <ul style="list-style-type: none"> -We have this -We would like to have this, but cannot afford it at the moment -We do not want/need this at the moment

	<p>Family has no parent with any qualifications (academic or vocational)</p> <p>Educational:</p> <ul style="list-style-type: none"> -GCSE grade D-G, CSE grade 2-5, SCE O Grades D-E, SCE Standard -GCSE grade A-C, GCE O -level passes, CSE grade 1, SCE O Grade -GCE A -level, AS Level, SCE Higher Grades A-C, Scottish Nat -First degree, e.g. BSc, BA, BEd, MA at first degree level -Higher degree, e.g. MSc, MA, MBA, PGCE, PhD -None of these -Has qualification, level unknown -Overseas qualification <p>Vocational:</p> <ul style="list-style-type: none"> -Level 1 NVQ or equivalent -Level 2 NVQ or equivalent -Level 3 NVQ or equivalent -Level 4 NVQ or equivalent -Level 5 NVQ or equivalent
	<p>Mother lacks contact with family or friends: The next questions are about how often you personally contact relatives, friends and neighbours How often do you speak to friends on the phone? How often do you meet up with relatives who are not living with you? How often do you meet up with friends?</p>
	<p>Family has no parent in work</p>
	<p>Parents do not use the internet at home</p>

Annex II Cluster analysis FACS 2006

Cluster analysis provides two main procedures for determining how clusters are formed, hierarchical or non hierarchical procedures, which are further subdivided into agglomerative or divisive methods. We elected to use agglomerative hierarchical clustering: Wards linkage, with the matching procedure in Stata.

In agglomerative hierarchical clustering every case is initially considered a cluster, and then the two cases with the highest similarity are combined into a cluster, this process is continued until all cases are fully classified. The aim in Ward's method is to join cases into clusters such that the variance within a cluster is minimised. Each case begins as its own cluster; clusters are then merged in such a way as to reduce the variability within a cluster and maximise the differences between clusters.

Academic opinion is divided on whether Ward's linkage is suitable for binary data. For example, Kaufman and Rousseeuw (1990) highlight that Ward's linkage method was originally developed to be used for interval data. However others disagree and have also highlighted its suitability for binary data; see Mosier (1990) for a full discussion. To verify the results obtained with Ward's method, we tested other linkage methods which produced similar results and analysed the clusters using a number of ANOVA techniques.

After the selection and examination of the cluster model, a relative risk analysis was carried out to establish which risk markers were significant in each cluster and also to determine its relative weight when compared to other clusters. The results were used as a basis to assign labels to each cluster.

Table IIa Change statistics of various cluster solutions

Duda / Hart Test

Number of clusters	Je(2) / Je(1)	Pseudo T-squared
1	0.8959	347.41
2	0.8838	152.60
3	0.9455	105.23
4	0.9334	105.58
5	0.9241	103.21
6	0.9344	70.47
7	0.9239	64.03
8	0.9266	41.82
9	0.9286	48.53
10	0.9130	54.11
11	0.8967	53.68
12	0.8698	52.39
13	0.7545	73.21
14	0.9054	38.57
15	0.9290	27.27

The ideal cluster model will have a high (Je) 2 / (Je) 1 ratio and a low value for the pseudo T-squared. However a balance must be struck between the best statistically determined model and its practical usefulness when the clusters are examined in detail.

We opted to use the 9 cluster model, as it had a reasonably high Je ratio and the 4th lowest pseudo T-squared value.

Annex III Relative risk analysis of cluster membership

The risk of families in a cluster with a particular risk marker relative to the overall prevalence among all families is called the 'relative risk'. This is calculated as:

$$\text{Relative risk} = \frac{\% \text{ of families in cluster A with risk marker X}}{\% \text{ of all families with risk marker X}}$$

Hence:

- A relative risk of 1 means there is no difference in risk between families in the cluster and all families.
- A relative risk <1 means the disadvantage is less likely to occur in the cluster than amongst all families.
- A relative risk >1 means the disadvantage is more likely to occur in the cluster than amongst all families.

Table IIIa presents the relative risk of disadvantage for families in each cluster. Table IIIb presents the relative risk of characteristics of families in each cluster.

Table IIIa Relative risk analysis of cluster membership by indicator

	Severely excluded families	Low income families with poor health	Deprived families with no private transport	Families with poor maternal health	Financially excluded families	Families lacking social participation	Families in poor housing with debts	Families in overcrowded housing & disconnected from their neighbours	Isolated Families with heavy drinking mothers	Families with only one disadvantage	Families with no disadvantaged ages
Low income	2.876	3.268	2.499	1.057	1.213	1.089	1.042	2.334	1.350	0.608	0.000
Material deprivation	10.730	6.021	0.514	1.303	0.351	3.542	0.853	0.111	0.119	0.000	0.000
No savings	2.414	2.465	2.086	1.742	2.559	1.808	1.736	1.611	0.926	0.698	0.000
Family debts	4.585	2.604	2.790	2.086	0.686	1.435	5.281	0.755	0.432	0.149	0.000
No regular access to car	5.434	1.703	5.746	1.485	0.086	1.316	0.000	0.358	0.700	0.166	0.000
No savings account	5.135	0.696	2.786	0.779	12.412	0.519	0.109	0.106	0.227	0.000	0.000
Worklessness	6.050	5.691	4.146	2.232	0.836	0.060	0.376	0.817	0.426	0.050	0.000
No social participation	5.036	4.667	0.561	1.467	1.100	5.121	1.514	0.517	0.388	0.473	0.000
No qualifications	6.240	2.910	3.191	0.278	1.142	1.082	0.468	1.960	0.490	0.208	0.000
Mother experiences mental health problems	6.272	1.301	0.297	12.922	0.355	0.512	0.115	0.448	0.720	0.241	0.000
Mother has a long term limiting illness	3.791	0.913	0.556	9.619	0.854	0.382	0.508	1.511	0.962	0.685	0.000
Partner has a long term limiting illness	1.030	6.123	1.155	0.786	2.122	0.460	1.240	3.378	1.080	0.815	0.000
Lives in overcrowded accommodation	2.942	2.662	1.556	0.870	1.478	1.829	0.610	3.258	1.452	0.492	0.000
Lives in housing that is in a poor state of repair	5.592	1.568	2.688	1.320	0.856	0.620	6.530	0.757	0.289	0.224	0.000
Family lacks internet access at home	4.117	2.280	2.790	1.305	1.430	1.753	0.945	1.645	1.326	0.412	0.000
Mother lacks contact with family	2.610	1.921	1.119	0.914	0.864	1.863	0.601	0.623	7.211	1.091	0.000
Mother never speaks face to face to neighbours	2.866	1.036	1.842	1.560	1.311	0.929	0.365	4.152	0.190	0.588	0.000
Mother consumes excessive alcohol	0.698	0.321	1.566	0.652	0.818	0.506	0.114	0.664	8.566	1.760	0.000
Size of Cluster (n)	300	163	535	242	224	362	230	591	221	1427	2145
Percentage of families in cluster %	4.7	2.5	8.3	3.8	3.5	5.6	3.6	9.2	3.4	22.2	33.3
Average number of disadvantaged per family	9	6	5	4	4	4	3	3	3	1	0

Table IIIb Relative Risk Analysis of Cluster Membership by Socio Demographic

Characteristics

	Severely excluded families	Low income families with poor health	Deprived families with no private transport	Families with poor maternal health	Financially excluded families	Families lacking social participation	Families in poor housing with debts	Families in overcrowded housing & disconnected from their neighbours	Isolated Families with heavy drinking mothers	Families with only one disadvantage	Families with no disadvantages	All Families
Family Type												
Couple	0.250	0.640	0.330	0.879	1.081	0.930	0.919	0.991	0.938	1.154	1.232	1
Lone Parent	3.225	2.068	2.987	1.360	0.761	1.208	1.241	1.027	1.184	0.544	0.312	1
Number of dependent children												
One	0.996	0.751	1.332	1.042	0.879	0.993	0.837	0.889	1.171	0.995	0.980	1
Two	0.788	0.952	0.653	0.903	1.044	0.940	1.173	0.860	0.895	1.053	1.132	1
Three	1.359	1.746	0.855	1.203	0.929	1.152	1.049	1.490	0.753	0.857	0.869	1
Four or more	2.069	2.075	1.064	0.855	2.194	1.218	1.012	2.184	0.819	0.978	0.313	1
Age group of youngest child												
0 to 4 years	1.153	1.089	1.173	0.946	1.033	1.068	1.082	0.878	0.550	0.957	1.020	1
5 to 10 years	1.023	0.930	0.963	1.009	1.139	1.199	0.945	1.183	1.255	0.948	0.926	1
11 to 15 years	0.825	1.057	0.803	1.023	0.947	0.820	0.918	1.047	1.380	1.062	1.018	1
16 to 18 years	0.575	0.570	0.746	1.207	0.474	0.441	0.977	0.899	1.502	1.246	1.096	1
Age group of mother												
16 to 24	3.331	2.182	4.400	0.914	0.911	1.126	1.105	1.003	0.308	0.439	0.166	1
25 to 34	1.102	1.231	1.229	1.033	1.200	1.184	1.228	1.069	0.591	0.968	0.875	1
35 to 44	0.757	0.851	0.582	1.003	0.981	0.973	0.960	0.882	0.984	1.057	1.156	1
45 and over	0.747	0.688	0.676	0.973	0.800	0.776	0.753	1.190	1.807	1.074	1.043	1
Mothers unpaid Carer Status												
Carer	1.183	2.190	0.862	1.613	0.871	1.029	1.697	1.231	1.451	0.907	0.736	1
Non carer	0.989	0.929	1.008	0.963	1.008	0.998	0.958	0.986	0.973	1.006	1.016	1
Economic status of mother												
Working 16 hours or more	0.135	0.227	0.547	0.591	0.878	0.920	1.094	0.930	1.164	1.205	1.220	1
Working 1-15 hours	0.233	0.000	0.466	0.824	0.934	1.817	0.696	1.062	0.992	1.006	1.218	1

Annexes

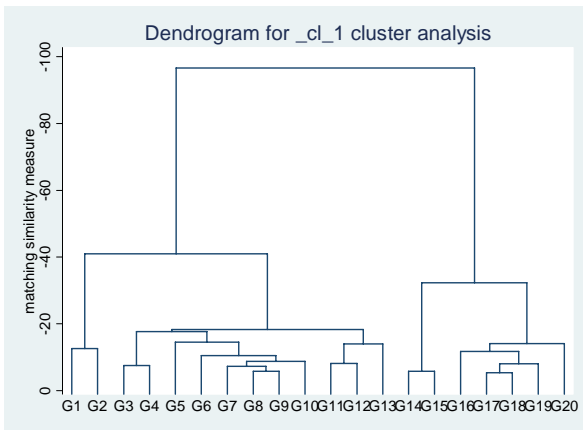
Urban	1.119	1.084	1.147	0.972	1.078	1.031	0.973	1.052	0.925	0.982	0.941	1
Town	0.644	0.822	0.581	1.203	0.720	1.052	1.057	0.802	1.086	0.924	1.250	1
Village	0.348	0.493	0.248	1.000	0.623	0.847	0.943	0.779	1.423	1.162	1.285	1
Hamlet & isolated	0.404	0.458	0.072	1.083	0.642	0.310	1.683	0.748	1.816	1.387	1.144	1
Government office region												
North East	0.969	1.019	1.937	1.459	0.652	1.154	0.809	1.091	0.940	0.917	0.784	1
North West	1.004	0.873	0.937	1.245	1.577	0.744	0.688	1.007	0.530	1.021	1.046	1
Yorkshire and Humber	0.777	0.715	1.349	0.916	2.458	1.231	0.959	0.968	1.055	0.957	0.821	1
East Midlands	0.760	0.855	1.158	1.204	0.852	0.845	0.987	1.031	1.147	1.031	0.981	1
West Midlands	0.533	0.981	0.875	0.837	0.956	0.799	0.784	1.084	1.013	1.016	1.143	1
South West	0.807	0.928	0.678	0.959	0.860	0.841	1.310	0.923	0.776	1.189	1.044	1
Eastern	1.743	1.630	1.215	0.638	1.076	1.214	1.076	1.031	1.008	0.787	0.915	1
London	0.609	0.948	0.551	0.784	0.599	1.054	1.095	0.929	1.399	1.020	1.183	1
South East	0.632	1.018	0.597	1.029	0.478	1.120	1.026	1.025	1.180	1.056	1.116	1
Wales	1.703	1.003	1.258	1.689	0.641	1.192	0.619	1.316	1.295	1.017	0.676	1
Scotland	1.818	0.892	1.289	0.952	0.544	0.977	1.417	0.801	0.713	0.986	0.927	1
IMD quintiles												
Most deprived	2.522	2.013	2.595	1.539	1.529	1.162	1.066	1.379	0.601	0.614	0.380	1
Second most deprived	1.404	1.210	1.318	1.242	1.169	1.375	1.088	1.316	1.124	0.948	0.676	1
Middle	0.745	1.090	0.744	0.830	1.109	1.006	1.056	0.898	0.820	1.137	1.044	1
Second least deprived	0.324	0.403	0.284	0.723	0.555	0.941	1.100	0.774	1.212	1.178	1.306	1
Least deprived	0.092	0.360	0.141	0.708	0.701	0.550	0.682	0.679	1.231	1.104	1.541	1

Annex IV Cluster analysis FACS 2001-2006

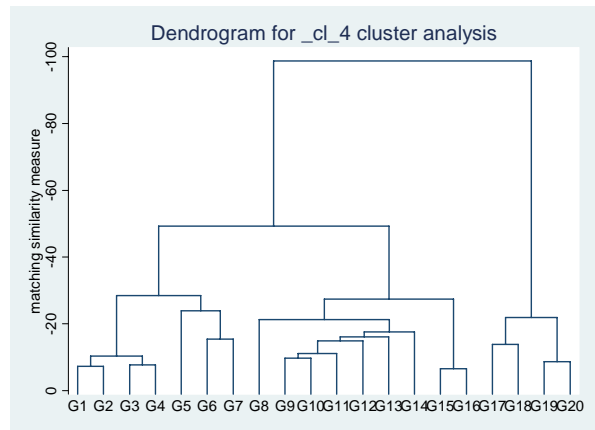
The main outcome of a cluster analysis is a dendrogram, which is used to help decide how many clusters to select – by choosing a place where the cluster structure remains stable for a long distance or finding cluster groupings that agree with expected structures.

Figure IVa Dendrograms for longitudinal clusters

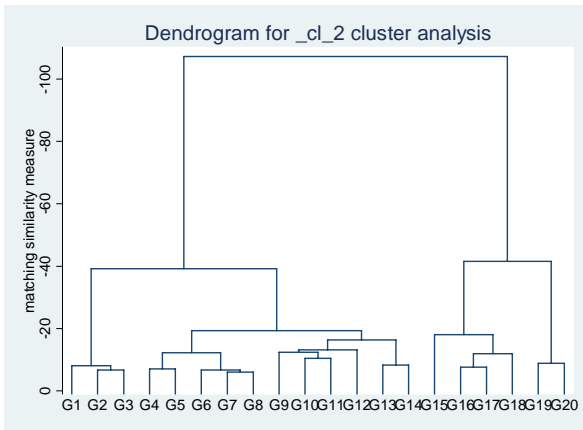
Wave 3 2001



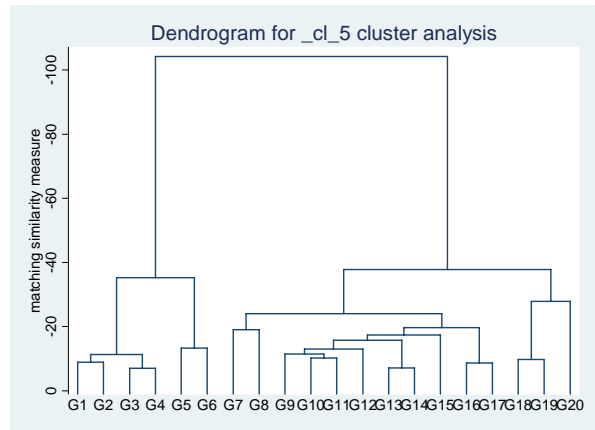
Wave 6 2004



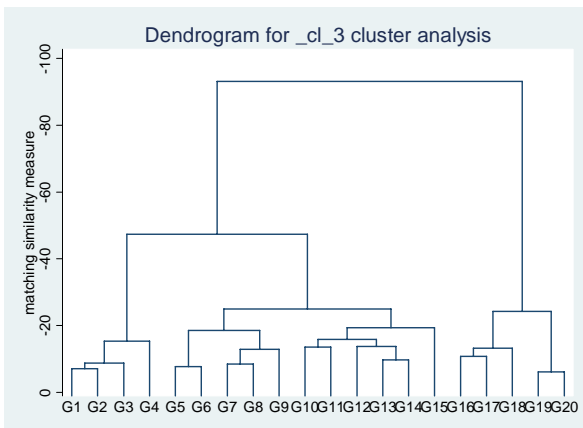
Wave 4 2002



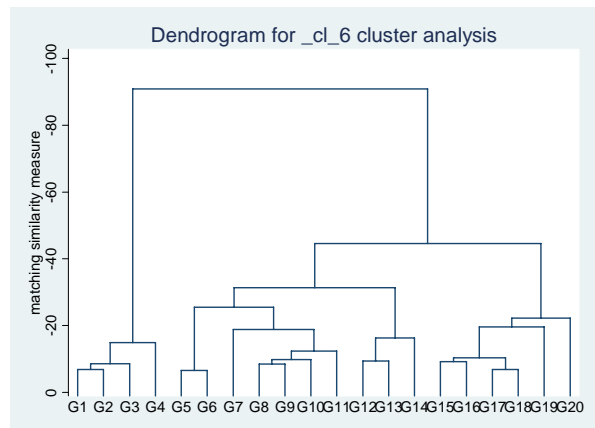
Wave 7 2005



Wave 5 2003



Wave 8 2006



The dendrograms reveal a six cluster solution, for each wave of FACS. Following detailed analysis of each cluster, similar clusters were combined to ensure consistency across types of disadvantage characterising them. Table IVa summarizes this process: each cell indicates which of the six old clusters were used to obtain the correspondent 4-format clusters. Indicators that characterize the clusters are shown in the last row.

Table IVa Alignment of clusters for longitudinal consistency

clusters \ waves	Not disadvantaged	Poor health	Low qualifications and poor housing	Severely deprived
3	.	3 4	1 2	5 6
4	.	3 4	1 2	5 6
5	.	3 5	1 2 4	5 6
6	.	3	1 2 4	5 6
7	.	3 4 5	1 2	5 6
8	.	3 4	1 2	5 6
Main disadvantages	.	Mother physical health Mother mental health Mother alcohol Father physical health	No bank account No job No access to car No qualification Unfit accommodation	Material deprivation No social participation No job

Table IVb Average number of risk markers (Proxy for Intensity of Social Exclusion in longitudinal clusters)

clusters \ Waves	Not disadvantaged	Poor health	Low qualifications and poor housing	Severely deprived
3	0.35	2.92	3.79	6.26
4	0.36	3.62	4.18	5.11
5	0.33	3.05	4.00	5.36
6	0.34	2.88	4.16	5.66
7	0.36	3.03	3.74	5.64
8	0.37	2.98	3.58	5.32
Main disadvantages	.	Mother physical health Mother mental health Mother alcohol Father physical health	No bank account No job No access to car No qualification Unfit accommodation	Material deprivation No social participation No job

Annex V Competing risk model-Hazard Rate / Survival Analysis


We model the hazard rate associated to every different cluster or state of social exclusion. The hazard is the conditional probability of leaving the relevant state after n years given the permanence in the state for $n-1$ years. In short, it is the probability of exiting the relevant state or cluster.

Hazard (n) = Probability of (leaving after n time-units) \ Probability of (surviving until $n-1$ time-units)

The first spells (left-censored) of each family are excluded from the analysis, because their time of entry into a state of exclusion is unknown. This leads to an “initial conditions” issue (never solved in the literature). Families with gaps (due to missing values) in the middle of their exclusion state sequences are also excluded. Spells whose end date is unknown (right-censored or simply censored) are naturally included through the denominator of the hazard. The exclusion of left-censored spells and the number of waves equal to 6 imply that the maximum duration a spell can last is 4.

In the analysis the spells are assumed independent. This issue is not problematic because of the very low number of multiple spells (families that repeat the same time of exclusion states). Moreover, we cluster across families, so that the standard errors are adjusted for the no-independence of the spells experienced by the same families.

While we recognize that the underlying processes are continuous, we use discrete time hazard models because of the nature of our data that are interval-censored. We fit both simple logistic and competing-risk discrete time hazard models for each of the relevant states or clusters. The key difference is that the former does not distinguish across the destination of a family exiting the relevant exclusion state, while the latter does, providing different estimates associated to each of the destinations.



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Publication date: July 2009

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