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MODELLING PATTERNS OF FINANCIAL RISK AMONGST WORKING-AGE ADULTS USING LATENT CLASS ANALYSIS

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The authors take full responsibility for the content of this report. The report was finalised in October for publication in November.

Authors' credits

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Executive Summary

The research

This study focuses on risks to financial security. When thinking about the ways in which people behave towards risks, it is generally supposed that people fall into two categories: those who take risks, and those who don't. However, the assumption of a fixed attitude may be wrong; we know for example that some people are happy to take small risks on lottery tickets (risky behaviour), yet also hold comprehensive car insurance (risk-averse) behaviour.

In addition to the choices that people make, such as taking out a loan or investing in the stock market, they may also exhibit inherent traits that pose a risk to their financial security. These include a lack of qualifications, limiting health conditions, low levels of financial capability and some attitudes towards spending, saving and borrowing.

Although some of these risks to financial security have been assessed in isolation, little is known about how they co-occur. We do not know which types of people are subject to multiple forms of risks in different combinations. The extent to which different types of (more-or-less) avoidable and inherent risks tend to co-occur has implications for our understanding of a wide range of personal finance issues, including preventing financial difficulties, providing generic advice for financial consumers and the development of programmes to improve financial capability.

In order to fill some of the gaps in our knowledge, this project was designed to meet the following aims:

- Identify a range of risks to financial security;
- Consider the extent to which people are exposed to multiple risks;
- Describe people according to the particular risks they display; and
- Describe the socio-demographics of people displaying different combinations of risk.

The study poses an unusual research question, and as a consequence uses unusual methods in answering it. We have employed latent class analysis to identify which risks commonly co-exist, using data from the Baseline Survey of Financial Capability.

The analysis

The analysis focuses on adults of working-age, since many of the financial domains of interest are relevant only, or largely, to those who are below state retirement age. We have further limited the population to householders so that we do not include people

who rely on someone else – other than their spouse or partner – to protect them against financial risks. Note that we refer to our population of working-age householders simply as the 'population' throughout the report.

We have identified 11 risk factors, or domains, under four themes: inherent risks; assets and wealth; borrowing; and insurable risks. Our analysis indicated that some of the risk factors were far more common than others. For example, a majority of people did not have sufficient savings to cover a month's loss of income, whilst only one in 20 owed more than six times their monthly income in unsecured borrowing.

We found no indication that the UK population is polarised into people who face a wide range of risks and those who are entirely free of risk and are risk-averse. Indeed, the number of risk domains displayed by individuals was largely clustered around two (20 per cent), three (22 per cent) or four (20 per cent), with the overall average per person of 3.3 risks.

Analysis of the socio-demographic characteristics associated with a high number of risks (five or more), suggested that those who rented their home were more likely than average to have five or more risks. Conversely, full-time workers were significantly less likely than those with any other employment status to have a large number of risks. After taking housing tenure, income, age and work status into account, lone parents were less likely than other family types to display exposure to risk in five or more domains.

Latent class analysis: the findings

Using an innovative and powerful statistical technique known as latent class analysis we identified six classes of people according to the patterns of exposure to risk they exhibited. Members of a class share a similar profile of financial risk that distinguishes them as a group from people in the remaining five classes. We interpreted these classes as follows ranging from the class representing the largest proportion of the population of working-age householders to the smallest:

Latent Class	Description	Level of exposure
Class 1	Rainy day exposed	✕✕✕
Class 2	Relatively secure	✕✕
Class 3	Inherently at risk and unprotected	✕✕✕✕
Class 4	Chronically ill-prepared	✕✕✕✕✕
Class 5	Highly exposed	✕✕✕✕
Class 6	Future uncertainty	✕✕✕

✕ indicates average number of risks exhibited in each class, rounded to nearest whole number

The overall numbers of risks and the combination of risk exhibited by people in each class varied. Those in the *relatively secure* class had the least exposure to risk whilst those who were *chronically ill-prepared* faced the most risks: five, on average.

We describe each class below, identifying the implications for policy.

Class 1: Rainy day exposed

Class 1 were at risk from expenditure shocks, which could lead to over-borrowing. They may have been over reliant on their home as an asset. Savings incentives may be helpful to encourage such adults to protect themselves from unexpected expenses.

Around three in ten of the population (31 per cent) were classified as being ***rainy day exposed***. Their defining characteristic was that they typically had inadequate savings to deal with expenditure shocks and, although few of them held investments, those who did had a high proportion of their liquid wealth invested in the stock market. Both of these factors could have implications for their financial well-being in a slowing economy. They did, however, have either income or payment protection, which ought to help mitigate an income shock. Characteristically, members of this class were partnered (both with and without dependent children), in either full-time or part-time work, and were very likely to be homeowners.

Class 2: Relatively secure

Class 2 appeared to be largely in control of their financial situation, and financially capable. Despite this, they should not be complacent, since most members were exposed to one or two risks.

Around two in ten (21 per cent) fell into the ***relatively secure*** class and had a below-average likelihood of displaying each of the risks studied. They typically had appropriate insurance cover and adequate savings, without being highly exposed to stock market changes, displayed no inherent risks and did not have any risky borrowing. They were particularly likely to be older (aged 40 and above), in paid employment and in the highest household income quintiles. They were also predominantly homeowners, most of whom still had a mortgage to pay (they did not exhibit a mortgage risk).

Class 3: Inherently at risk and unprotected

This class appeared to be financially excluded across a range of categories, including credit, insurance and saving, whether through choice or lack of access. They showed clear signs of having been willing to mitigate against certain risks – for example they had previously paid into personal pensions that had since become inactive. Yet they did not hold important insurance policies. They would benefit from insurance to cover essential household contents, suggesting it might be appropriate to combine a minimum level of contents insurance with rent across all social housing (regardless of whether the rent is paid by Housing Benefit), perhaps with an opt-out clause to protect the right to choose.

Almost one in five of the population (19 per cent) were classed as ***inherently at risk and unprotected***. They were the only ones who were more likely than average to face all three inherent risks: income instability, poor product choice and were inclined to impulsive spenders. They had inadequate savings to cover an expenditure shock equal to a month's income and their pensions were inactive. They also lacked key

types of insurance provision such as home insurance or (where needed) life insurance. On the other hand, they did not exhibit any risk that related to borrowing. They had the lowest incomes of all six classes and were very unlikely to be in employment, most being unemployed, in poor health or looking after the home and family. They tended to be single people or lone parents, and to rent their homes, predominantly in the social rented sector.

Class 4: Chronically ill-prepared

Like Class 3, the adults in Class 4 would benefit from basic insurance. As this class were typically earners who rented their home, they would also benefit from insurance-with-rent schemes. It may even be possible to use these as an incentive to keep up with rent payments. Class 4 would also benefit from policies to improve pension take-up and both they and their families would be better protected if their partner had life insurance.

On average, Class 4 faced five of the eleven risk factors studied – the highest of all six classes – and were felt to be ***chronically ill-prepared***. Affecting one in eight people (12 per cent), they would be highly exposed in an economic downturn as they tended to be the main earner, to have dependent children and yet had neither adequate savings nor did they have income or payment protection. With about average incomes they were also at risk of income instability through low skill levels and/or ill-health. Although few of them were homeowners, there was a high prevalence of mortgage risks among those who were. Their future well-being is also uncertain regardless of economic changes, as they had inadequate pension provision for their old age, and their partner had no life insurance (which most needed as they were very likely to be partnered with children). Their possessions were also likely to be uninsured.

Class 5: Highly exposed

These highly exposed adults could benefit from carefully designed financial capability initiatives aimed to reduce their exposure through focusing on 'making ends meet' (particularly controlling consumption, and reducing borrowing). Simplified financial products, or free financial advice, would also help this class, by reducing their risk of making poor financial choices.

Almost one in ten of the population (nine per cent) have been classified as ***highly exposed***. These people will be most at risk in an economic downturn, as in addition to lacking savings and payment protection, they were also exposed to consumer borrowing risks. Most, however, rented their home so were not exposed to mortgage risks. They were also more likely than average to be at inherent risk due to spending tendencies and their poor skills with regard to choosing financial products. They would be hit hard by financial shocks. Although they were predominantly in employment they had low household incomes. They did, however, have a low risk of income instability through low skills or ill-health. Most of them were young and single, including some lone parents with dependent children.

Class 6: Future uncertainty

Class 6 face future uncertainty, especially in their old age. They exhibited a lack of planning ahead for the future, which could perhaps be counteracted by a focused financial capability initiative. It is also worth considering whether they should be encouraged to convert some of their investment holdings into pension funds to ensure a more secure future.

The smallest risk class (seven per cent of the population) showed signs of ***future uncertainty.*** They tended to be men, aged over 40, who were largely economically inactive, including early retirees, people unable to work through sickness or disability and people who had returned to full-time education or training later in life. They, therefore, had an above-average risk of personal income instability through a lack of qualifications from school and particularly ill-health or disability – which in many cases had already affected their employment. Despite this their household incomes were not especially low and they showed other signs that they might have been better-off in the past. They were disproportionately outright owners of their home, had adequate savings to cover an expenditure shock and were unlikely to have no pension provision at all. They were not impulsive spenders, nor were they poor at choosing financial products, and their homes (and contents) were insured. The main risks that they faced were having an inactive (and possibly inadequate) pension and an over-exposure to the stock market. The minority who were still buying their home also had a high mortgage risk.

Conclusions and policy implications

Exposure to financial risk is not evenly distributed through the population. Moreover, different groups of people exhibit different profiles of exposure to risk, which relate, at least in part, to personal characteristics and economic status.

Only a minority of working-age householders were *relatively secure*, that is, close to being free of risk across the domains. These people were largely confined to the older and better off sections of society. They had faced few inherent risks and had not exposed themselves to avoidable risk; consequently they had been in a financial position to protect themselves against risks that were unavoidable. The effects of having an inherent risk due to low skills or ill-health can be seen by contrasting this group with those who were of a similar age but face *future uncertainty*, particularly as they enter retirement.

At the other extreme, risks cluster together in such a way that they leave some people extremely exposed to the worst consequences of financial shocks and economic downturn, including over-indebtedness. They include the poorest and most financially excluded who are particularly vulnerable from both inherent and insurable risks, and the *chronically ill-prepared* who, despite average incomes, appear to be unable (or possibly unwilling) to protect their families or prepare for their own retirement. And finally, a group of young *highly exposed* adults are without the basic protections and are additionally exposing themselves through heavy consumer borrowing.

In between these two extremes, a group of people who represent the single largest group of working-age householders are distinguished by their lack of adequate liquid assets (or a disproportionate exposure of these to the rise and fall of the stock market). Given that most are mortgagors and many have children – and so will have little scope to reduce their major outgoings – even a small drop in income or a short spell out of work is likely to impact greatly on their ability to keep up with their commitments and certainly to maintain their current standard of living.

Consequently, the findings of the study indicate a number of key considerations for policy:

- programmes to raise awareness about the benefits of saving, and the risks of not saving, should be targeted at the *rainy-day exposed*;
- incentives to save will be especially important for the *rainy day exposed* and *chronically ill-prepared;*
- simplified financial products, including insurance products, will help to mitigate the risks of the *chronically ill-prepared* and *highly exposed*;
- financial education covering money management, budgeting and the risks of over-borrowing would be of particular benefit to the young adults who are *highly exposed*;
- free financial advice – possibly through the new 'money guidance' schemes - would assist those who are *highly exposed* by helping to prevent them making poor financial decisions;
- a targeted initiative to advise on the role of pensions compared with vehicles for saving for retirement would benefit the group of people facing *future uncertainty*, in particular.

1 Introduction

It is common for risk to be discussed in relation to investment decisions. But consumers often take risks in a variety of other ways, from buying occasional lottery tickets to using their own home as collateral when setting out on a new business venture, or using secured loans to consolidate unsecured credit commitments. Consumers also risk their future economic well-being by paying little or no attention to pensions and savings for retirement. Sometimes their choices may be counterintuitive: for example building up 'rainy-day' savings is a typically risk-averse behaviour, but holding lifetime savings in risky assets can put households at a very high risk of eroding any future financial well-being. Many consumers decide against holding travel or household insurance, even if they have insufficient funds to meet large, unexpected costs. Even more fail to save for or insure against the loss of a stable income. Yet both income shocks and (to a lesser extent) expenditure shocks can leave households in financial difficulties (Berthoud and Kempson, 1989; Kempson, 2002; McKay et al, 2004, Kempson and Atkinson, 2006).

It is generally supposed that people have a fixed appetite for risk. In simple terms, this may explain why some will enjoy gambling whilst others gain pleasure from saving a little of their income each month. Various attempts to measure this appetite have been made. Some surveys ask people about their own appetite for risk, and the reasons they have chosen risky (or risk-free) financial products, in order to identify where an individual might be on a scale of risk-taking or risk-aversion. Financial advisers are also encouraged to determine their client's attitude to risk before recommending particular products or courses of action. However, the assumption of a fixed attitude may be wrong; some people are happy to take small risks on lottery tickets (risky behaviour), yet also hold comprehensive car insurance (risk-averse) behaviour. This suggests that the size of the potential loss may have an influence on attitude.

People also face inherent or longer-term financial risks, including those that relate to a lack of qualifications, health conditions that can impact on the ability to earn money or to characteristics that relate more to individual differences in financial capability and attitudes towards spending, saving and borrowing. Again, such risks can damage financial well-being and lead to financial difficulties or over-indebtedness (Kempson, 2002, Atkinson and Kempson, 2006).

Although some of these financial risks factors have been assessed in isolation, little is known about how they co-occur. We do not know which types of people are subject to multiple forms of risks in different combinations. The extent to which different types of calculated and inherent risks tend to co-occur has implications for our understanding of a wide range of personal finance issues, including preventing financial difficulties, providing generic advice for financial consumers and the development of programmes to improve financial capability.

1.1 Aim and approach

The research question this study asked was:

> 'To what extent do different types of risk co-occur in individual consumers?'

Our aim was to understand the relationship between various types of consumer risk. The word 'risk' in this sense relates to the potential for economic loss, both as a result of personal choices and decisions, and resulting from unavoidable characteristics and events.

We have therefore undertaken secondary analysis of nationally representative survey data from the Baseline Survey of Financial Capability to explore to what extent these financial risk events, attitudes and behaviours cluster together, and the profiles of the groups in society who are facing various levels and combinations of such risks.

The study posed an unusual research question, and as a consequence used unusual methods in answering it. Personal finance research most often seeks to explain particular events, such as becoming over-indebted. Such analysis can draw on well-established analysis techniques such as logistic regression to identify the particular characteristics and circumstances that are most likely to predict the event under investigation. In this research, however, we were not aiming to predict an outcome. The notion that the risks identified pose various, potential threats to economic well-being is not in dispute; indeed, a raft of research evidence exists linking these risks to financial outcomes such as poverty, over-indebtedness and loss of assets. And we were not seeking to predict or quantify the economic loss itself. Our focus was instead on the indicators themselves, and whether or not there were any identifiable patterns in how these tended to cluster within individuals.

The analysis focused on adults of working-age, since many of the financial domains of interest – for example pension saving or income protection insurance – are relevant only or largely to those who are below state retirement age. We have further limited the population to householders – that is people whose property is owned or rented in their (or their partner's) name – so that we do not include people who may rely on someone outside their immediate family to protect them against financial risks. Note that we refer to our population of working-age householders simply as the 'population' throughout the report.

1.2 Structure of the report

In the next chapter, we begin by explaining the financial risk domains that were identified in the dataset and assess the proportion of the population who exhibit each of the various risks.

In chapter 3 we start to look at the overlap between types of risk. We examine the average numbers of risks that different socio-demographic groups exhibited and also undertake regression analysis to understand which characteristics were most strongly associated with exhibiting multiple risks. The chapter moves on to explain the multivariate modelling technique we used to identify discrete groups – or latent

classes – within the population according to the patterns of risks they exhibit. We present the preliminary results from the modelling in order to understand the main patterns that drove the definition of the latent classes.

Chapter 4 describes and interprets the risk profiles of the latent classes identified by the model. In developing an understanding of the classes we also examine the variations in the personal, social and economic characteristics and create a profile of typical membership of these classes. Finally, the focus switches to the distribution of the latent classes *within* different sections of the population, looking at the extent to which particular risk profiles dominated certain socio-demographic groups.

In the final chapter we draw together the evidence from the preceding sections, summarising the main findings, and consider the implications for policy.

2 Defining financial risks

The data used for this analysis was collected on behalf of the Financial Services Authority to gain a better understanding of the ways in which people deal with financial issues and how they manage their money. The dataset was originally used to develop Financial Capability scores and contains a rich source of information about individuals' financial circumstances, behaviours and attitudes across a number of financial domains.

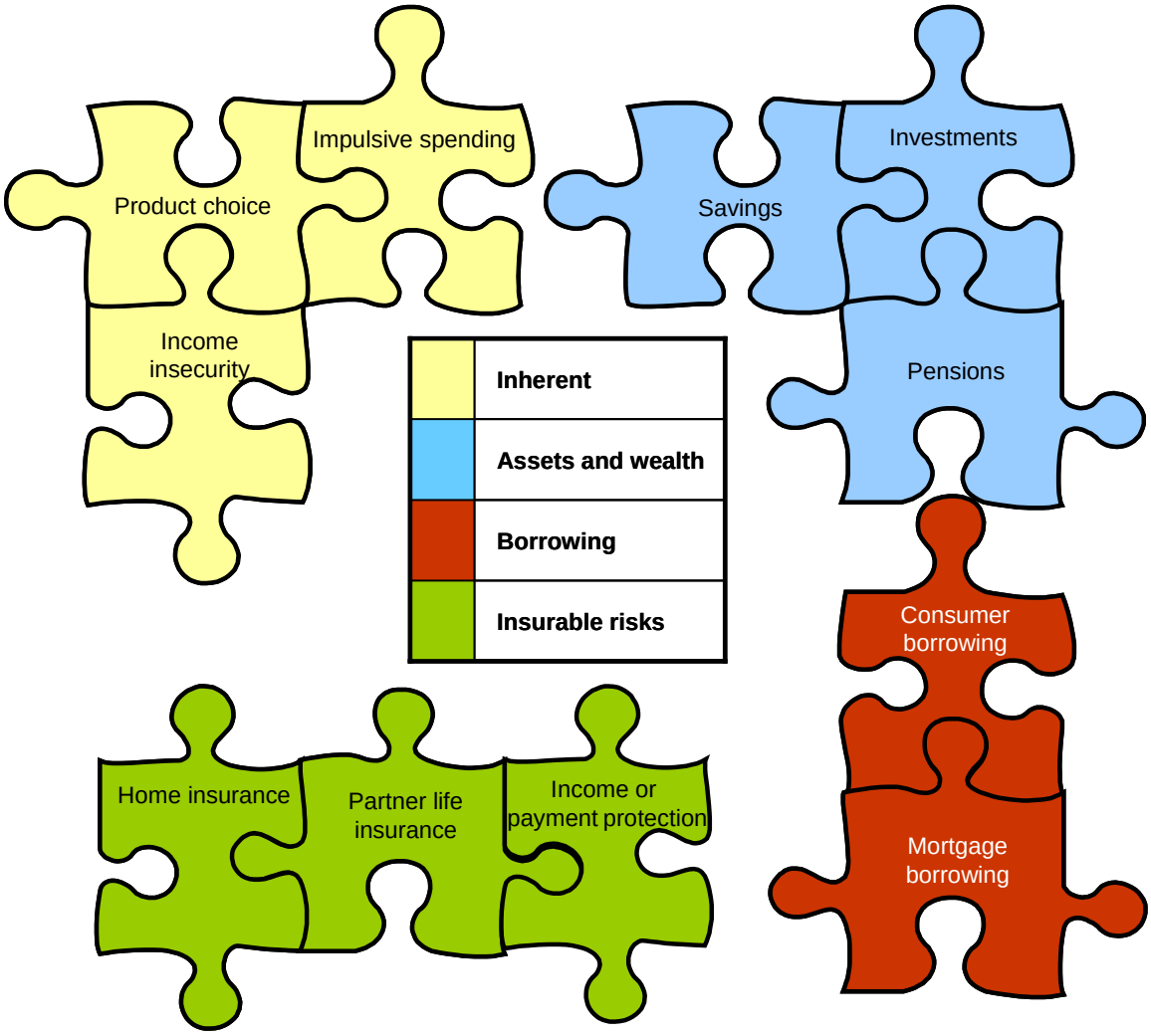
For the purposes of this research, we have taken a subset of the data, focusing on adults of working-age who are also householders, that is, they (or their partner) are responsible for buying or renting the main home. The dataset is at the level of the individual, but includes information about their partner if they have one, and their household. We have been able to exploit this fact for the current project, by looking at the financial risks that an *individual* faces whilst taking into account the protection or risks that occur at the household level (for example, whether the partner has life insurance).

2.1 Identifying the risk indicators

Using the data available we constructed a set of financial risk indicators that capture various aspects of an individual's financial circumstances, disposition or behaviour. The indicators cover risks in 11 financial domains, falling into four themes: inherent risks, assets and wealth, borrowing, and insurable risks (see Figure 1).

The aim was to cover as many financial domains as possible, from asset-based to borrowing-based risks and from the more tangible risks to the more attitudinal or skills-based risks. Some of the indicators relate to failure to hold a particular product that offers some protection; others relate to having products that impart a risk in some way. Meanwhile, some represent more or less avoidable risks; whilst others are more or less intrinsic to the person's disposition or circumstances. We have created one indicator for each of the eleven domains. Each one has implications for economic loss; they represent a potential threat to future wealth or financial security.

Figure 1 Financial risk themes and domains



In some cases the risk posed is dependent upon one or more events occurring and bringing it in to play. For example, the negative outcome associated with not having payment protection insurance is only realised if someone cannot make their repayments, perhaps because of an income or expenditure shock. The current analysis makes no consideration of the likelihood of these trigger events occurring – this will depend greatly on the precise circumstances of the individual as well as circumstances beyond their control or forecasting – and, as such, does not intend to make judgements about whether or not it is appropriate for an individual to have taken the risk or to have put protection in place. Similarly, we make no judgement about whether any particular risk has the potential to cause more or less hardship than any other.

In some instances, an individual indicator combines a number of risks from the same domain; so, for example, there are four different mortgage borrowing risks covered in the one mortgage indicator. Table 1 lists the 11 risk indicators we refer to throughout the remainder of the report and provides a short summary of how they have been defined.

Table 1 Summary of the risk indicators

Indicator	Base	Short description of the risk
Theme: Inherent risks		
Impulsive spending	All	Considers themselves both impulsive and a spender
Income insecurity	All	Has a long-term limiting illness or disability or no qualifications (or both)
Product choices	All	Has not bought a product in the last five years; Has bought a product but is not a top 80 per cent performer on the choosing products domain
Theme: Assets and wealth		
Savings	All	Does not have the equivalent of one month's household income in own savings or investments
Investments	Investors	Total personal investments are greater than 90% of personal total assets
Pension	All	Does not have any personal pension provision; Is not actively paying into an existing pension
Theme: Borrowing		
Consumer borrowing	All	Owes more than six times the monthly household income in own outstanding borrowing
Mortgage borrowing	Those with mortgage on the main home	Household has an interest-only mortgage with no linked investment, has endowment shortfall, owns at least one property other than main home on a mortgage, or is spending more than 50 per cent of income on mortgage repayments
Theme: Insurable risks		
Partner life insurance	Those dependent on partner	Has a partner who does not have life insurance and either the respondent is financially dependent on them as a main earner or their children depend on the partner in some way
Income or payment protection	Is a main earner	Is a main earner and does not have any income or payment protection in the event of job loss, sickness or accident
Home insurance	All	Does not have either contents or buildings insurance on the main home when it is applicable to have them

The next section describes the definition and preparation of the risk indicators themselves.

2.2 Indicator preparation

In creating the indicators of risk for each financial domain, we have combined various pieces of information available in the dataset. For example, when considering whether an individual was taking a risk by having little or no savings we have added together all the money that an individual held personally in savings or investments, and also added in half of any money they held jointly with their partner. This gives us a 'conservative' estimate of the assets they could draw on if necessary; of course in many households joint savings would be available in full to either partner (see Box 2 for more information).

The indicators created were all categorical: that is they were created to identify different categories of individuals. For many of them, people could fall into one of only two groups; they either exhibited that risk or they didn't. Such variables are often referred to as binary, or dichotomous. An example of one of these dichotomous variables is 'savings', since everyone is eligible to have this risk regardless of socio-demographic status.

However, for some of the indicators, we have identified three categories to take into account the situation in which some people, by virtue of their situation, could not exhibit a particular risk. One such example is 'mortgage borrowing', for which the subset of non-mortgagors could not, by definition, carry a risky mortgage. We might have combined the non-mortgagors with the mortgagors who did not carry a mortgage borrowing risk, but this would have reduced sensitivity in our analysis. This is because the pattern of risks exhibited by non-mortgagors may be quite different from the patterns exhibited by those who do have a mortgage but who do not have a mortgage borrowing risk, differences which would be masked had the two groups been combined. The other measures to which this situation applies are 'income or payment protection' and 'partner life insurance'.

'Pensions' is the one remaining indicator for which three categories were identified. In this case, however, two categories carry a pensions risk: those reporting no personal pension provision whatsoever; and those who said they had a personal pension, but it was inactive (neither they nor their employer was paying into it; see Box 2 for more information).

The precise definition and construction of all 11 indicators is described in detail in the following boxes, by theme, along with the main repercussions that each of the risks present for financial well-being.

Box 1: Inherent risks

'Impulsive spending' was created to represent a person's attitude towards spending, saving and borrowing. It combines responses to two attitudinal statements: agreement with "I am impulsive and tend to buy things even when I can't really afford them"; and disagreement with "I am more of a saver than a spender". Such statements have been found consistently in previous research to be important for explaining financial strain and heavy borrowing (e.g. European Commission, 2008; Finney et al, 2007), and have been subject to extensive cognitive testing (PFRC, 2005). The implication for someone who is impulsive *and* prefers to spend rather than save is that they are at greatly increased risk of being or becoming asset-poor and, as a result, suffering poverty or over-indebtedness.

'Income insecurity' is designed to capture the long-term risk to income presented by either a long-term limiting illness or having no qualifications. Both factors have been linked with income instability, and, in turn, financial difficulties and persistent poverty. (See, for example, Atkinson et al., 2007, Smith and Middleton, 2007).

'Product choice' - ensuring that financial product purchases are appropriate to a consumer's needs avoids the expense incurred in buying an unnecessary product and protects the consumer from a future unwanted financial event. Making the right decision about a purchase is the combination of experience and competence. Choosing products is one of the five aspects of financial capability as defined by the Financial Services Authority (Atkinson et al, 2006). We have constructed a measure that takes into account being inexperienced (having not bought any financial products personally in the past five years) or being poor at choosing products (being in the bottom 20 per cent of the entire population on this financial capability measure). To account for meaningful differences between inexperience and low capability these two elements are included as separate risk categories.

Box 2: Assets and wealth

'Savings' is defined as having assets held in savings or investments that are insufficient to cover an expense equivalent to one month's household income. Savings provide a financial safety net to help absorb temporary income or expenditure shocks, and are an important protection from financial difficulties (Berthoud and Kempson, 1992; Kempson and Atkinson, 2006; Kempson et al, 2004). In constructing a measure of total savings we have summed all savings and investments (using estimated values at the time of the interview) held solely by the respondent, including informal savings, and have included in the total a 50 per cent share of savings and investments held jointly with a partner. It is standard practice to take account of joint holdings with a partner when calculating measures of individual wealth from survey data (see for example, ONS, 2008). In the absence of further information however, a conservative approach is to assume that an individual has access to only a half of any joint savings: whilst in practice the individual may have access to all joint savings in an emergency, there may be instances in which this is not the case (such as during separation or divorce).

This savings measure was primarily designed as an indication of the ability of households to protect themselves against an expenditure shock, using the same measure as used in the BSFC. It is important to keep in mind that we have included a separate indicator for those adults with income or payment protection insurance (see Box 4) and who are therefore protected against some of the impact of an income shock.

'Investments' identifies where a consumer has at least 90 per cent of their savings and assets held as investments. Although investments offer a much greater growth potential compared with deposit savings, making them the better option over the longer-term and for larger holdings, investment products almost always, by their nature, pose some risk to the investor's capital. This indicator was therefore created to reflect the disproportionate risk posed by stock market failure to an individual's future wealth (compared with their current wealth) by them holding all or almost all liquid assets as investments. Because people who have no investments at all are likely to be different from those who own a mix of savings *and* investments, the measure includes a separate category for those with no investments. Clearly, the implications of a significant loss to the value of investments will differ depending on the total value of an individual's assets. And, although some deposit savings can be lost if a bank collapses, amounts of up to £35,000 held with any one authorised provider are protected in full under the Financial Services Compensation Scheme; moreover Government statistics suggest that very few individuals have more than this in saving deposits .[1] [2]

'Pension' has been included to reflect a failure to make adequate personal pension provision, thereby risking having insufficient income in retirement and facing poverty in old age. An initial category identifies individuals who report having made no personal pension provision whatsoever through a private pension plan or an occupational pension scheme. These people would be entirely dependent on the State or their partner for their pension in old age. Although the dataset provides no indication of the level of provision a person has through their personal pension, we were additionally able to distinguish between people who had a pension which was receiving no contributions from the individual or their employer ('inactive' pensions) from those that were currently being paid into ('active' pensions).

[1] From October 2007, the Financial Services Compensation Scheme has guaranteed up to £35,000 saved in deposit accounts (with any one authorised institution) in full. Prior to that date, the maximum compensation was for 100 per cent of the first £2,000 and 90 per cent of a further £33,000.
[2] According to the 2005/06 Family Resources Survey, only 13 per cent of families had savings totalling more than £20,000 (DWP, 2007).

Box 3: Borrowing

'Consumer borrowing' has been constructed to indicate where someone owes a large sum of money on unsecured credit commitments. A large sum has been defined as owing the equivalent of six months' income for the whole household. As with the 'savings' measure, the amount owed takes account of all money owed by the respondent in their sole name, and a half of that owed jointly with a partner. Heavy consumer borrowing is a main contributor to financial difficulties, particularly if the consumer experiences a shock to income or expenditure (European Commission, 2008). It should be noted that the total repayments is more closely linked with over-indebtedness than the amount owed, but a large total amount owed relative to income will clearly impact heavily on people who face an income shock or need additional credit following an expenditure shock. It also indicates a very strong preference for immediate gratification over future security.

'Mortgage borrowing' combines a number of aspects of risky mortgage-holding, which pose implications for difficulties in keeping up with mortgage or other payments and ultimately the loss of the home. Although mortgage-borrowing and property ownership occur at the household level, all individuals within the household are exposed to the implications posed by risky mortgage borrowing. An individual qualifies as having a risk on this domain if any of the following criteria are met: the mortgage on the main home is interest-only with no linked investment, they have only a endowment mortgage on the main home with a shortfall, the household owns one or more additional mortgaged properties (thereby increasing the risk to the first mortgaged property); or the household is spending more than 50 per cent of household income on mortgage repayments. As with the investments indicator, this measure includes a category for people who are not eligible for the risk. The indicator focuses on people who had a *mortgage on their main home,* because within this theme we were concerned about the implications for the main (mortgaged) home, and not about the implications for any additional or investment properties.

We considered the option of including the different elements of risky mortgage borrowing as individual measures. However, we were concerned that having multiple measures relating to one domain would give that domain undue weight in the multivariate analysis. This is particularly problematic with a domain such as mortgage borrowing where a subset of people are not eligible for the risk because they are not mortgagors. We also considered constructing the mortgage risk measure around the number of mortgage risks a person had, in order to provide an additional level of detail about risky mortgage borrowing. However, as only a tiny minority of mortgagors had more than one of the mortgage borrowing risks (four per cent of all mortgagors) this was felt to be unnecessary.

Box 4: Insurable risks

The final theme refers to a failure to mitigate risks which can be covered by insurance policies.

'Income or payment protection' captures any private or employer-provided accident, sickness or unemployment protection an individual has in place to provide either income or cover mortgage or unsecured credit payments. We also included any income protection people had in the event of critical illness. We did not feel it would be relevant for people to have this kind of cover if they were not the sole or a joint main earner in the household, or if they were in a single adult household and not currently working, so a separate category was created for this 'not applicable' group which we refer to as 'not a main earner'.

'Partner life insurance' – for some people, the death of a partner has been linked with increased risk of financial difficulties; for others it is linked with an increase in financial well-being (see for example, McKay and Kempson, 2003). This seemingly contradictory pattern relates at least in part to the provisions people have made in the event of an untimely death. The survey asked all partnered respondents if their partner had a private life insurance policy. We wanted to apply this measure to an appropriate subset, that is, those who we felt would suffer significant financial loss if their partner did not have insurance. We have therefore identified people who have a partner on whom they depend financially, either because they have said their partner is the sole or joint main earner or that both partners have roughly equal earnings. We have added to this partnered people who have dependent children, regardless of the financial dependence criterion, because the loss of a partner in such circumstances will inevitably impact on the household circumstances; perhaps resulting in the need to move house to be nearer supportive family, or the costs of additional childcare and possibly impacting on the earning potential of the remaining partner. The 'not applicable' subset on this measure is referred to throughout as 'does not need partner to have life insurance'. A final point to note is that some people have life insurance provided by their employer, sometimes as part of their pension arrangement. Unfortunately, this was not captured in the survey and so is not taken into account in our measure.

Although the 'not a main earner' category in the *income or payment protection* indicator and the 'does not need partner to have life insurance' category on the *partner life insurance* indicator at first appear to be opposites of each other, there is in fact overlap between these two categories because of their precise definitions. In particular, both contain single adults who – in the case of the former measure – are not in work. Consequently, we find that one in five people in the sample are both 'not a main earner' and 'do not need their partner to have life insurance'; the vast majority (nine out of ten) of these are not working and most (three-quarters) are non-partnered.

'Home insurance' identifies the absence of home content insurance among all householders (taking into account insurance held by partners where appropriate) and the absence of buildings insurance among homeowners. Without these protections in place – as appropriate – householders would be liable for any loss of belongings or the home, and any other losses linked to that (for example to attached houses, accidents that occur in the home).

2.3 Experience of financial risk by working-age householders

Table 2 shows the proportions of working-age householders who fell into each category for all of the risk indicators we have identified.

Table 2 Percentage of working-age householders exhibiting financial risks

	Column percentages
Risk indicators and categories	**(%)**
Impulsive spending	
Not impulsive and a spender	81
Considers themselves impulsive and a spender	19
Product choice	
Top 80% performer at choosing products	65
Has not actively bought a financial product in the past 5 years	20
Bottom 20% at choosing products	15
Income instability	
Has neither a long term limiting health condition nor no/low qualifications	72
Has a long term limiting health condition or no/low qualifications	28
Savings	
Has savings equivalent to one month's household income or more	31
Does not have savings equivalent to one month's household income	69
Investments	
Does have investments	21
Does not have more than 90% of assets as investments*	73
More than 90% of assets are investments*	27
Pension	
Has a personal pension which is currently being paid into	43
Has a personal pension, but it is not currently being paid into	40
Adult with no personal pension provision	16
Consumer borrowing	
Does not owe large sum in consumer borrowing	95
Personally owes more than 6 times monthly household income in unsecured borrowing	5
Mortgage borrowing	
Does have a mortgage on the main home	45
Does not have a mortgage risk*	65
Has one or more mortgage risks*	35
Income and payment protection	
Is a main earner	72
Has some income or payment protection	61
Does not have any income or payment protection	39
Partner life insurance	
Does need partner to have life insurance	49
Partner has life insurance*	36
Partner does not have life insurance*	64
Home insurance	
Has home contents and buildings insurance as appropriate	67
Home is not protected with the necessary contents or building insurance	33
Unweighted base	***3,694***

Notes: The population is all householders of working-age.
* indicates that these are based on the subset who were eligible to have the risk.

As few as five per cent of people exhibited the consumer borrowing risk, while, at the other end of the range, more than two-thirds (69 per cent) had the savings risk. Almost one in five people (19 per cent) did not have an occupational or private pension at all and a further two in five (40 per cent) had a personal pension that neither they nor their employer were paying into it at the time they were interviewed.

While the focus of this study is less on the variations in the propensity to exhibit these individual risks – and more on how the risks combine – it is helpful nevertheless to look briefly at this stage at any patterns that stand out. Full tables giving the percentages of people who exhibited the risk by the main socio-demographic characteristics can be found in Appendix 2.

2.3.1 Inherent risks

Beginning with the inherent risks (Tables A2.1 to A2.3), income instability was much more evident among older people, those who were not working (except for those in full-time education or training), the lowest income groups and, linked to this, people who were renting their home from a social landlord.

Householders aged under 20 were the most likely of all to be in the bottom 20 per cent on the choosing financial products measure of financial capability (37 per cent compared with 15 per cent on average).[3] This is most likely because of their more limited life-time experience at buying such products. People living in rented accommodation were also more likely to be poor at choosing products, as were unemployed people. Along with people who were permanently sick or disabled and those in the lowest income quintiles, unemployed people were also among the most likely groups to have no experience of buying a financial product in the previous five years. This would appear to reflect higher levels of financial exclusion among the lower income groups, especially the unemployed (Kempson and Whyley, 1999; HM Treasury, 2007).

Confirming previous research (for example, Finney et al., 2007), reporting oneself as being impulsive and a spender rather than a saver varied with age, being much more likely among people aged under 30 (32 per cent) before tailing off to nine per cent in the oldest of our age groups – people in their 50s and early 60s. It was also fairly likely among unemployed people (30 per cent), lone parents (27 per cent) and social tenants (27 per cent).

2.3.2 Assets and wealth

Turning now to the assets and wealth theme (Tables A2.4 to A2.6), we see that people who were highly likely to have insufficient savings to cover one month's income were most evident among the young and the less well off. Consequently, this risk was very common among social tenants, unemployed people and those unable to work through disability or ill-health. Not unexpectedly, these same groups of people were the least likely to have investments of any amount, but when they did they had an above-average risk, holding 90 per cent or more of total liquid assets as investments.

[3] If this sounds counterintuitive, it should be remembered that the measure takes into account all adults, whilst we are focusing on only households of working age.

As might be expected, it was the youngest adults and part-time workers (31 per cent) who were without any personal pension provision whatsoever. Consequently, lack of pension was also common among people in full-time education or training (31 per cent) and among people renting their homes privately (who were disproportionately the younger adults). In contrast, it was people who were not working at the time they were interviewed who were most likely to have an inactive pension – for example nine in every ten people who reported looking after the family or home, being unemployed, or sick and disabled. Related to this, people in the lowest income group (77 per cent) and those in social housing (65 per cent) were very likely to have an inactive pension.

2.3.3 Borrowing

The two borrowing risks were interesting in that they affected slightly different groups of people (Tables A2.7 and A2.8). By definition, the mortgage borrowing risk applies only to those who had a mortgage on the main home. Of these, a mortgage risk was especially evident among the lowest income groups (69 per cent compared with 35 per cent on average). This most likely indicates that the mortgage commitment pre-dated a drop in income and this is reinforced by the high proportion of early-retirees (48 per cent) who exhibited this risk. Indeed mortgage risks were far more common among those aged over 40 than they were among younger people. Although few lone parents had a mortgage, those who did were fairly likely to be at risk (45 per cent).

In contrast to mortgage risks, the consumer borrowing risk was most apparent among householders under the age of 30 and those living in private rented accommodation (nine per cent in both cases) who had almost twice the average risk in this area. There was no obvious link with either income or work status. The exception was people in full-time education, 19 per cent of whom had a consumer borrowing risk. As this is not likely to be explained by low incomes it most probably reflects the large amounts of borrowing higher education students have access to over the course of their studies.

2.3.4 Insurable risks

Finally, we consider insurable risks (Tables A2.9 to A2.11). Complete lack of either income or payment protection was commonly exhibited among main earners who were living in rented homes (particularly those renting from a social landlord) and people with the lowest household income; it was especially likely among those who were looking after the family or home (69 per cent compared with 39 per cent overall).

Among those who had a partner they depended on, these same groups of people, plus the unemployed, were most likely to exhibit the partner life insurance risk.

Like many of the other risks, not having home contents insurance (and building insurance among the homeowners) was particularly evident among younger and lower-income householders. In particular, unemployed people (73 per cent) and renters (private tenants 64 per cent; social tenants 67 per cent) were twice as likely as

the average to be uninsured. This reflects the findings of earlier research (Whyley et al, 1998).

Two main characteristics, therefore, stand out as being associated with above-average risk across most of the domains; namely age and income. In the following chapter we explore the extent which high risk of all kinds is highly concentrated among the younger and poorer sections of the population or whether the risks cluster in some other way.

3 Combining risks

In this section we explore the extent to which people exhibit financial risks in multiple domains. We approach this in two ways, first with some preliminary analysis of the number of financial risks members of different socio-demographic groups exhibited on average, and second by utilising an innovative multivariate analysis technique (Latent Class Analysis) to model the underlying patterns of exposure to risk.

3.1 The number of financial risks

We might assume that people either exhibit many risks or none, depending on their appetite for risk. By counting the number of risks each person exhibits, we can get a better understanding of the level of risk-merging by individuals.

Across the 11 indicators, the number of financial risks identified per person ranged from the minimum of zero (demonstrated by four per cent) to a maximum of eight (exhibited by fewer than one per cent of the population). The majority – about three in five people – exhibited two (20 per cent), three (22 per cent) or four risks (20 per cent), with an overall mean per person of 3.3 risks. Five or more risks were recorded for about a quarter of people overall (24 per cent).

It is interesting to note that the mean number of risks recorded varied significantly according to a number of personal and socio-economic characteristics (Table 3). Women, on average, recorded a higher number of risks than men (3.4 compared with 3.1). The number of risks fell significantly and consistently with age and with income. There was also variation by family structure, with families with children facing a higher number of risks (3.5) compared with single adults (3.1) and partnered adults without dependent children (3.0); lone parents (3.5) were no higher than partnered parents (3.5).

The number of risks varied markedly with economic status: a higher number of risks (4.0) were recorded for people who were not working compared with those who were working, among whom employees (2.8) had a lower number of risks than the self-employed (3.3). And among those not working, the number of risks was particularly high among people who reported looking after the home or family (4.2), the unemployed (4.2) and those classed as being permanently sick or disabled (4.3). This will be explained in part by their increased likelihood of having inherent risks.

Surprisingly, given that they had potential exposure to one more risk, people buying their homes on a mortgage were at the lower end of the range (2.8) along with the outright owners (2.6), whilst people renting their home from a social landlord were at the top of the range, with an average of 4.3 risks.

Table 3 Average number of financial risks, by socio-demographic characteristics

	Mean		Mean
Gender		**Housing tenure**	
Male	3.1	Mortgage	2.8
Female	3.4	Private rent	3.8
Age group		Local authority rent	4.3
Aged under 20	4.1	Own outright	2.6
Aged 20 to 29	3.8	**Equivalised household income**	
Aged 30 to 39	3.2	1st (lowest) quintile	4.0
Aged 40 to 49	3.1	2nd	4.0
Aged 50 to 59 (women) to 64 (men)	3.0	3rd	3.5
Family type		4th	3.0
Single Adult	3.1	5th (highest) quintile	2.4
Partnered with no dependent children	3.0	**Keeping up with bills and commitments**	
Lone parent with dependent children	3.5	Keeping up without difficulty	2.8
Partnered with dependent children	3.5	Struggle from time to time	3.7
Other	3.2	Constant struggle or falling behind	4.3
Employment status			3.3
Working	2.9	**Region**	
Working full-time (30+ hrs including temporarily off)	2.8	North East	3.8
Working part-time (including temporarily off)	3.2	North West	3.2
Not working	4.0	Yorkshire and the Humber	3.3
In full-time education or training	3.1	East Midlands	3.2
Looking after the home or family	4.2	West Midlands	3.2
Retired from paid work	3.1	East	3.0
Unemployed	4.2	London	3.4
Permanently sick or disabled	4.3	South East	3.0
		South West	3.2
Employed	2.8	Wales	3.6
Self-employed	3.3	Scotland	3.4
		Northern Ireland	3.9
Total	**3.3**	**Total**	**3.3**

Notes:
ANOVA tests indicate statistically significant variations across the categories for all characteristics ($p<0.05$).

About a quarter of people (24 per cent) faced five or more risks. In order to explore the relevance of aspects of people's socio-demographic status more fully – to try to identify which socio-demographic characteristics were independently related to having five or more risks – we ran a regression analysis.[4] The form of analysis we used also enables the relevant characteristics to be identified in order of strength, with the most important factors first.

Housing tenure was the strongest predictor of having five or more risks, followed in order of strength by work status, family type, income and age (Table 4). Sex was the only other measure tested, and this was not significant.

The analysis confirmed the earlier indication that people who rented their home had a higher number of risks than people who owned their home. This was especially marked for those renting from a social landlord: people living in the social rented

[4] Regression analysis is a multivariate technique which enables the relationship between each measure with the outcome of interest to be assessed while holding all other measures included in the model constant. By controlling for the effects of the other measures, a significant relationship is deemed to have an influence on the outcome independently of those other factors. The precise method of logistic regression used was Forward Stepwise (LR).

sector had about three times the odds ratio (4.1) of mortgagors (1.3) and four times those of people who owned their homes outright (1.0) of exhibiting five or more risks. People who were renting their home privately were also more likely than both outright owners and mortgagors to have five or more risks.

The low odds of having risks on five or more measures among those who were in full-time education or training partly reflects a high rate of ineligibility on a number of the domains, for example for mortgage borrowing and investment (see Appendix Tables A2.1 to A2.11) Nonetheless, it is striking that *all* employment status groups were more likely than this group to have risks in five or more financial domains. It is especially noticeable that people who were not working because they were sick or disabled were at the higher end of the range. The relative odds were also fairly high for people who were looking after the home or family (4.0) and those who were unemployed (3.3).

Table 4 Logistic regression predicting having five or more financial risks

			95.0% confidence interval	
	Sig.	Odds ratio	Lower	Upper
Tenure (Own outright)	0.00	1.0		
Mortgage	0.07	1.3	1.0	1.8
Rent (private landlord)	0.00	3.4	2.4	4.8
Rent (social landlord)	0.00	4.1	3.0	5.7
Work status (In full-time education or training)	0.00	1.0		
Working full-time (30+ including temporarily off)	0.02	1.8	1.1	2.8
Working part-time (including temporarily off)	0.00	2.7	1.6	4.3
Looking after the home or family	0.00	4.0	2.5	6.4
Retired from paid work	0.01	2.3	1.3	4.4
Unemployed	0.00	3.3	2.0	5.3
Permanently sick or disabled	0.00	5.9	3.4	10.1
Family type (Single adult, no dependent children)	0.00	1.0		
Partnered with no dependents	0.01	1.5	1.1	2.0
Lone parent with dependent children	0.98	1.0	0.7	1.4
Partnered with dependent children	0.00	3.0	2.2	4.0
Other	0.91	1.0	0.7	1.3
Household Income (highest quintile)	0.00	1.0		
Lowest quintile	0.00	3.1	2.2	4.5
Second lowest quintiles	0.00	4.0	2.9	5.5
Middle quintile	0.00	3.3	2.5	4.5
Second highest quintile	0.00	1.9	1.4	2.5
Age (50 to 64)	0.01	1.0		
Aged under 20	0.02	1.9	1.1	3.3
Aged 20 to 29	0.05	1.3	1.0	1.7
Aged 30 to 39	0.57	0.9	0.7	1.2
Aged 40 to 49	0.61	1.1	0.8	1.4
Pseudo R^2 (Nagelkerke)	0.25			

Notes:
Sex was also included in the model but was not significant.
The analysis was run on unweighted data.
Income in this analysis is not equivalised since family structure is taken into account in the model.

Compared with the highest income quintile, all others were significantly more likely to have at least five risks. But it was the second lowest income quintile that had the largest odds, with odds of 4.0 times the highest income group. This pattern is not

unfamiliar; it is, for example, consistently found in relation to heavy borrowing and over-indebtedness (for example, Berthoud and Kempson, 1992; Finney et al., 2007; Kempson et al, 1994). In this instance it partly reflects the mix of product-holding and absence of product-holding that underpin many of the risk domains. So, whilst the higher income groups had access to all the appropriate products (such as the insurance policies) and had other protections such as savings in place, those on the lowest incomes were often excluded (perhaps through a combination of choice and circumstance) from the mortgage and investments market altogether and so did not tend to exhibit these risks. Meanwhile, it was the people in between who were at greatest risk because – all other things being equal – they had access to a wider range of financial products (consumer and mortgage borrowing for example), but either did not have sufficient resources to put all protections in place or prioritised spending on other things.

And, where the influence of age in considered, exhibiting five or more risks was largely a factor of youth, although the relative odds did not vary greatly with the greatest difference being between the oldest group (with odds of 1.0) and the youngest (1.9).

Once these – and the other – factors were controlled, however, lone parents with children were among the least likely to have five or more risks. In this respect they were similar to single adults with no dependent children. Compared with these, people living in a couple had higher odds of exhibiting five or more risks, especially if they had dependent children (by a factor of 3.0). All other things being equal, therefore, the presence of children was an important dimension in exposure to five or more of the risks, but only for partnered parents. At face value, this is surprising. However, we saw in the previous chapter that members of certain socio-demographic groups were proportionately more likely to be ineligible for some of the risks due to their circumstances. This seems to be especially acute for lone parents: not only were they (and the single adults) ineligible by definition on the partner life insurance indicator, but many more lone parents than any other group were ineligible for the income and payment protection risk (because they were not in work) and the mortgage borrowing and investment risks (see Tables A2.5-6 and A2.9-10).

Bringing together the findings from this chapter so far and the previous chapter, we know – for each of the financial domains identified – the likelihood that someone exhibited the risk, and we have this information broken down by each of the main socio-demographic characteristics. We also know the number of risks that people carried, on average, depending on the socio-demographic characteristics. What we do not know, however, is the extent to which someone was likely to exhibit more than one risk, or how these risks tended to cluster together for an individual.

3.2 Modelling the patterns of risks: introducing latent class analysis

This research seeks to understand to what extent different aspects of financial risk coincide, and to identify what, if any, combinations dominate. It is intuitive to imagine that if people have no savings *and* no pension provision, they are very likely to be poor in old age. Similarly, people who hold all their money in investments

(risking losing their capital) and take a risk with their mortgage could, in a stock market slide, easily become over-committed on the assumption that their wealth is greater than it is.

One simple approach that can provide a partial answer to this question is to count the number of risks that different sections of the population, on average, display (as we have done above). Whilst this is a useful first step, it does not take into account *how* the risks tend to combine in the population and so fails to tap into the richness of the data. Our challenge, therefore, was to identify an appropriate method of analysis that could make our data manageable without reducing its descriptive and explanatory powers.

As we have seven measures each with two possible categories and four measures with three categories each then there would be $2^7 * 3^4 = 10{,}368$ combinations of responses ('parameters'). Clearly we cannot have a meaningful discussion about each of these potential combinations. However, it is also very likely that some theoretically possible combinations do not occur at all in practice and that some combinations are particularly dominant. We would therefore like to reduce the number of parameters to a more manageable amount, whilst also identifying those combinations of responses that indicate typical ways in which risks coincide.

Cluster analysis is the most widely used method for such analysis but it does not suit our data, primarily because we are using categorical variables (see Appendix 1 for more information). However, a less widely used and yet more powerful alternative, latent class analysis, can be used with large numbers of categorical variables even when there are many 'empty cells' (possible combinations that are not actually observed in the data), such as we have here. Latent class analysis creates categorical, latent variables that identify key groups within the data. So, for example such an analysis might identify four different latent classes, or groups, which each exhibit different combinations of risk domains. It may be that some individuals could fit into more than one class (for example a person may have all four of the risks that one class has, but also one protecting factor found amongst people in a different group). In such an event, the individual is 'placed' in the class that is most like them.

By using latent class analysis we have been able to identify the particular risks that most often combine. This means that we can describe individuals in terms of the combinations of risk domains that they exhibited and consider whether particular socio-demographic characteristics were associated with these different combinations.

Building models using latent class analysis typically involves developing an initial model based on expectations from the literature or a research question, and then making a series of refinements to this initial model. This can include reducing the number of the indicators that are included in the model definition (these can still be important for the interpretation of the classes and subsequent analysis). The refinements we have made in our analysis of the risk factors were made using the statistics that are available in the software programme (Latent GOLD, 4.0). These statistics tell the analyst about the 'fit' of the models, and refinements are made in a systematic and step-wise fashion. The process ensures that the final model settled upon is the simplest robust model possible (see Appendix 1 for further details on the process of constructing and refining the latent class model).

Box 5: Why use latent class analysis?

Sometimes, we have a strong argument for grouping certain things together. Biologists do this to identify particular species, and social scientists do so using particular characteristics of people to identify those who are very similar, and those who are dissimilar.

It can be easy to identify some characteristics, such as having a dependent child, or living in local authority housing. Other characteristics are less obvious. For example, in order to identify what IQ a person has it is necessary to ask particular questions and calculate the final measure.

In this research, we are looking for groups of people who exhibit similar types of financial risk, and who are notably different from those people in other groups in terms of their financial risks. There are a range of risk measures available to us, making it impossible to make simple decisions about similarities across people. For this reason, we have chosen to use latent class analysis, a progressive and flexible method for identifying discrete groups ('latent classes') from complex data and which is appropriate for analysis with measures that contain two or more categories.

The final model that we settled on contained five of the original set of 11 risk domains and identified six classes. In other words, the final latent class model was driven and defined by the patterns of combinations between five core risk domains; and the underlying matrix of multiple co-occurrences could be summarised into six main combinations.

The five core risk indicators that defined the model were:

- Mortgage borrowing.
- Pensions.
- Income or payment protection.
- Savings.
- Investments.

Four of the remaining measures – all three of the inherent risks and partner life insurance – were used to help improve the allocation of individuals to classes, whilst two – home insurance and consumer borrowing – were excluded entirely from the model-building process on statistical grounds (see Appendix 1 for more detail), although they remain relevant for subsequent analyses to describe and interpret the classes identified.

As a starting point, the next section considers the extent to which each of these individual core risks occurred and to what extent they paired with each of the other core risks.

3.3 The co-occurrence of risks

It is interesting to examine how often each risk appeared in the model and the bivariate co-occurrence (or 'pairing') of the five core risk domains. Figure 2 summarises the co-occurrence of the risk domains: first, it details the number of classes in which a higher than average proportion of people exhibited each risk; second, it reports the number of classes for which a higher than average risk on one domain was paired with a higher then average risk on another domain.

Pensions and savings risks were the most commonly occurring across the classes, each occurring in four out of the six classes. In fact, pensions and savings risks co-occurred in three classes, suggesting that some people did not save at all. A heightened mortgage borrowing risk occurred in three classes altogether, coinciding twice with the investment risk; it was never linked to a higher than average likelihood of carrying an income or payment protection risk.

A heightened propensity to exhibit an income or payment protection risk occurred in only two classes, as did an investment risk. Income or payment protection risk always co-occurred with a savings and a pensions risk putting some people at considerable risk overall. Investment risk always coincided with a high likelihood of a mortgage risk and – in addition to never linking with income or payment protection – never co-occurred with a savings risk.

Figure 2 Risk co-occurrence matrix

		Number of co-occurrences				
Total number of classes with a higher than average likelihood of exhibiting the risk		Mortgage borrowing *3*	Pension *4*	Income or payment protection *2*	Savings *4*	Investments *2*
Mortgage borrowing	*3*	-				
Pension	*4*	1	-			
Income or payment protection	*2*	0	2	-		
Savings	*4*	1	3	2	-	
Investments	*2*	2	1	0	0	-

Interpreting this table: This table shows, for example, that there are four classes in which people had above average likelihood of exhibiting a pensions risk, and that in three of those classes people were also more likely to exhibit a savings risk.

In the next chapter, we define and describe each of the six latent classes by the patterns of risks they exhibited and their personal, social and economic characteristics.

4 Defining and describing the latent classes

In this chapter, we describe each of the six latent classes in terms of the 11 risk domains discussed in the previous chapter, and consider the predominant socio-demographic characteristics of the people in each latent class.

The definition of the latent classes was determined by the five financial risk indicators – mortgage borrowing, pension, income or payment protection, savings, and investments – as outlined above. The final assignment of individual cases to these classes was informed (within the model) with the help of four further risks:

- Impulsive spending;
- Product choice;
- Income risks; and
- Partner life insurance.

The two remaining risks that we use to describe the classes are related to lack of home insurance and consumer borrowing. Although these were not used in the modelling, there are still significant variations in the extent to which they occur in each of the classes. We therefore pay particular attention to the five domains that were used to determine the latent classes, but take into account the other six domains in order to produce a complete profile of each class.

4.1 Latent class profiles

The output from Latent GOLD orders the groups by size, from largest to smallest. Class 1, therefore, is the largest of the groups, comprising almost a third of the population of working-age householders (31 per cent), whilst Class 6 includes just seven per cent of the population.

It is noteworthy that no single class was 'risk-free' (Table 5). This reflects the finding reported above that fewer than four per cent of people overall had none of the eleven risks, with most in fact exhibiting two, three or four. Nonetheless, almost all (96 per cent) risk-free individuals were allocated to class 2 (comprising 17 per cent of that group); the remainder were allocated to class 6 (making up 2 per cent of class 6). Although there were no cases of individuals displaying all eleven of the risks (the maximum was eight), all those who exhibited the maximum of eight risks were allocated to class 4 as were three in five of those who exhibited seven of the 11 risks.

So, whilst the average number of risks did vary across the latent classes – from 1.7 (class 2) to 5.0 (class 4) – it was to a great extent the *type* of risk that drove the formation of the classes.

Table 5 Likelihood of exhibiting the financial risks, by latent class

Column percentages (%)

Latent Class	1	2	3	4	5	6	**Total**
Share of the population (weighted percentage)	31	21	19	12	9	7	**100**
Unweighted sample	***1,097***	***737***	***754***	***60***	***410***	***236***	***3,694***
Core (model) risks							
Mortgage borrowing							
Does have a mortgage on the main home	70	75	6	30	4	34	**45**
Does not have a mortgage risk*	73	64	na	53	na	39	**65**
Has one or more mortgage risks*	27	36	na	47	na	61	**35**
Pension							
Has a pension which is active	73	77	3	-	21	25	**43**
Has a pension, but it is not active	16	17	96	69	-	71	**40**
Adult with no personal pension provision	10	6	1	31	79	4	**16**
Income or payment protection							
Is a main earner	96	100	0	94	83	31	**72**
Has some income or payment protection*	85	79	-	0	26	-	**61**
Does not have any income or payment protection*	15	21	-	100	74	100	**39**
Savings							
Does have savings equivalent to one month's household income	-	100	6	6	13	99	**31**
Does not have savings equivalent to one month's household income	100	-	94	94	87	1	**69**
Investments							
Does have investments	8	60	<1	<1	1	76	**21**
Does not have more than 90% of assets as investments*	60	77	-	na	na	68	**73**
More than 90% of assets are investments*	40	23	-	na	na	32	**27**
Additional risks							
Impulsive spending							
Either impulsive, a spender or neither	81	89	72	79	72	96	**81**
Considers themselves impulsive and a spender	19	11	28	21	28	4	**19**
Product choice							
Top 80% performer at choosing products	72	83	40	56	53	76	**65**
No choosing products score	18	13	32	26	18	12	**20**
Bottom 20% at choosing products	10	4	28	17	29	12	**15**
Income instability							
Neither LTLI nor no qualifications	82	88	45	64	77	57	**72**
Has LTLI or no qualifications	18	12	55	36	23	43	**28**
Consumer borrowing							
Does not owe large sum	95	97	96	97	89	96	**95**
Does owe large sum	5	3	4	3	11	4	**5**
Home insurance							
Has home contents and buildings insurance as appropriate	83	92	31	61	34	82	**67**
Home is not protected with contents and buildings insurance as appropriate	17	8	69	39	66	18	**33**
Partner life insurance							
Does need partner to have life insurance	64	61	20	82	2	35	**49**
Partner has life insurance*	40	45	14	29	na	31	**36**
Partner does not have life insurance*	60	55	86	71	na	69	**64**
Mean number of risks	***2.9***	***1.7***	***4.3***	***5.0***	***4.1***	***2.7***	***3.3***

Notes: Produced in SPSS; The population is all householders of working-age. * indicates that these are based on the subset who were eligible to have the risk. '-' indicates there were no cases in the sample. 'na' indicates that the figure is not available because too few were eligible for this risk. '<1' indicates a value of greater than zero but less than one.

Each of the six classes is described in detail below in relation to the proportion of the class members who exhibited each risk (drawing on Table 5) and the key defining socio-demographic characteristics of members based on cross tabular analysis (Table A 3.1) and regression analysis (Table A4.1).

4.1.1 Class 1: Rainy day exposed

Class 1 was a group of people who were primarily identified by their lack of access to savings that they could draw on in an emergency. They did not appear to be big risk-takers; for example fewer than average had taken risks with their mortgage and far more than average had appropriate buildings or contents insurance. However, the apparent lack of savings is a concern, and perhaps surprising, given their higher than average incomes. Class 1 was the largest, representing 31 per cent of the population.

Figure 3 Class 1: typical risk and socio-demographic profile

Risk profile	The defining socio-demographic features
Above average risks **savings** **investments** (but few hold any) Below average risks **mortgage borrowing** **income or payment protection** **pension** product choice income insecurity building or content insurance partner's life insurance	Partnered with/without dependent children Working, especially full-time Mortgagors 3rd, 4th and 5th income quintiles
Mean risks = 2.9	

Notes: Core risks are highlighted in bold; indicators and socio-demographic variables that are not listed did not distinguish this class. The defining socio-demographic characteristics are those that were identified as being the most important in the bivariate and regression analysis.

The most notable feature, other than its size, is that a lack of savings equivalent to one month's household income appears to define membership of class 1 (Table 5). This was the most common financial risk exhibited in the general population as a whole (69 per cent) but it was displayed among every member of this class in the sample (100 per cent). Consistent with having no or only limited amounts of savings, most had no investments at all and so most were ineligible for the investments risk.

Members of this class were much more likely than the average to have an active pension (73 per cent) and to be a main earner with income or payment protection (85 per cent of main earners in class 1 are protected). The majority also relied, at least in part, on a partner (64 per cent). This compared with just 49 per cent of the population as a whole. Life insurance was very slightly more common amongst the partners of class 1 members than the population as a whole (40 per cent compared with 36 per cent).

Class 1 members were very likely to have a mortgage on their main home (70 per cent have one) but were marginally less likely to be carrying a mortgage borrowing risk than mortgage holders in the population as a whole (27 per cent compared with 35 per cent).

In terms of their attitude to spending and the likelihood of having large amounts in outstanding credit, class 1 reflected the population as a whole. They were slightly less likely than average to exhibit an income risk.

The average number of risks exhibited by members of class 1 is 2.9, from the possible 11 indicators, just below the average of 3.3 for the population as a whole.[5] Members of class 1 were, overall, slightly more likely to be aged in their 30s and 40s and to live with a partner and have dependent children, compared with the general population of working-age householders (Table A 3.1). They were especially likely to be working full-time (71 per cent compared with 48 per cent on average), and to work as an employee as opposed to being self-employed. As noted above, the vast majority (72 per cent) were buying their home on a mortgage; reflecting this, they were also drawn disproportionately from the middle-to-high income quintiles (the top three quintiles).[6] People who lived in the South East (outside London) were slightly over-represented in this class.

Although we have described the typical composition of this class in terms of their personal and social-economic characteristics, we wanted to understand which were most important for distinguishing this class from the rest of the population. We therefore undertook regression analysis, which indicated that employment status and housing tenure were most important for explaining membership of the class. [7] Other things being equal, people who were in work (especially those working full-time) and those who were buying their home with a mortgage were most likely to be in this class, and early-retirees were extremely unlikely. The regression also confirmed that partnered people with or without children were over-represented but found that age was not independently significant.

4.1.2 Class 2: Relatively secure

Class 2 was the second largest group (21 per cent). The defining feature was their lower than average propensity to exhibit a risk on any indicator as a group and an average of only 1.7 risks per person. Members of this class were highly likely to be main earners and have mortgages but were less likely than average to be taking risks on their mortgage or to have no income or payment protection. Like class 1, most had an active pension, though in stark contrast to the previous class they all had savings equivalent to at least one month's income.

[5] The average used throughout this report is the mean value.
[6] This is equivalised household income, meaning that it is adjusted to take into account the number of adults and children in the household.
[7] The variables used in the logistic regression were sex, age, work status, family type, housing tenure and household income (not equivalised).

It is worth noting that this group was above average in terms of partner's life being insured, but even so, over half relied on a partner who was not insured.

Figure 4 Class 2: typical risk and socio-demographic profile

Risk profile	The defining socio-demographic features
Above average risks -	Single 30s to 60s Working
Below average risks **savings** **investments** **pension** **income or payment protection** impulsive or spender product choice income insecurity home insurance partner's life insurance	Mortgagors 4th and 5th (highest) income quintiles
Mean risks = 1.7	

Notes: Core risks are highlighted in bold; indicators and socio-demographic variables that are not listed did not distinguish this class. The defining socio-demographic characteristics are those that were identified as being the most important in the bivariate and regression analysis.

On average, members of class 2 exhibit the fewest financial risks, at just 1.7. Everyone in the sample in class 2 had rainy day savings (100%). They were very slightly less likely than average to be holding more than 90 per cent of their savings as investments (23 per cent compared with two per cent of all investment holders).

This well-protected class was more likely than average to be able to rely on relevant insurance including partner's life insurance (45 per cent), income or payment protection (79 per cent) and building or contents insurance (92 per cent). It was also unusual for people in this class to have had an inherent risk.

Although the risk profile of this class was quite different from that of class 1, their socio-demographic profile was fairly similar. Like class 1, full-time (71 per cent) and part-time workers (21 per cent) and mortgagors (75 per cent) were over-represented in this group. Conversely, class 2 were on the whole slightly older and wealthier; more than eight in ten were from the two highest income quintiles. Consistent with a higher income, the vast majority of this class were keeping up with bills and other commitments without difficulties (78 per cent).

Men were also slightly over-represented (52 per cent compared with 47 per cent on average), although the regression indicated that men were no more likely to be in class 2 than women once other characteristics were taken into account. The regression indicated that income was the most important determinant, confirming that those on the highest incomes were the most likely to be class 2 members, all other things being equal. After income, housing tenure and work status were also important drivers, with those working full- and part- time and mortgagors being most likely to fall in this group. The regression showed that, unlike class 1, being single was most important among the relatively secure once the other factors were controlled.

4.1.3 Class 3: Inherently at risk and unprotected

Class 3, who represented one in five (19 per cent) of the population, were less likely than average to have experience of choosing financial products, and those with experience were less skilled than average. Consequently, they were very unlikely to have any financial cover they could rely on, including savings.

Although they had above average propensity to exhibit only two of the core risks, they were more likely than the population as a whole to exhibit risks in 8 of all 11 domains, and had an average number of 4.3 risks overall. Almost nobody had savings or investments and they were not main income earners.

Figure 5 Class 3: typical risk and socio-demographic profile

Risk profile	The defining socio-demographic features
Above average risks **inactive pension** **savings** impulsive spending product choice income insecurity home insurance partner's life insurance (but few need this) Below average risks **no pension**	Lone parents and single adults Not working Renting, especially in the social sector 1st and 2nd (lowest) income quintiles
Mean risks = 4.3	

Notes: Core risks are highlighted in bold; indicators and socio-demographic variables that are not listed did not distinguish this class. The defining socio-demographic characteristics are those that were identified as being the most important in the bivariate and regression analysis.

On average, members of class 3 had 4.3 financial risks. They had a very high likelihood of carrying a savings risk: 94 per cent did not have the equivalent of one month's income in savings (and consequently did not hold investments; 0 per cent).

Class 3 was made up of people who were not a main earner for their household (100 per cent). Most held inactive pensions (96 per cent), compared with 40 per cent in the working-age population as a whole. Few had a mortgage on their main home (six per cent), making the number of class 3 members in the sample exhibiting a mortgage risk too small to be meaningful.

The core risks exhibited by class 3 were compounded by a higher than average propensity to report being impulsive and a spender and to be inexperienced or poor at choosing financial products. Additionally, members of this class were the most likely of all to exhibit an inherent income risk (55 per cent) and were twice as likely (69 per cent) as the average (33 per cent) to lack the relevant types of home insurance cover.

The risk profile strongly reflected the typical socio-economic characteristics of this group. This class comprised almost exclusively people who were not working (98 per cent) and people on the lowest of incomes. They were drawn from across the non-working groups, but especially the unemployed (31 per cent), people who were looking after the home or family (33 per cent) and the long-term sick or disabled (20 per cent). It is noteworthy that these are same groups who are over-represented among people who provide a large amount of unpaid care to friends or relatives (Atkinson et al, 2007).[8] Linked to their work and income status, they included the largest proportion of people who were either finding it a constant struggle keeping up with bills and other household commitments or were actually falling behind (26 per cent). Six in ten (61 per cent) were women. They were slightly more likely to be aged under 30, and were especially likely to be single adults and lone parents. People living in London and the North East of England were slightly over-represented.

Regression analysis largely confirmed these patterns. Work status – and not working – was the most important driver followed by housing tenure, income and family type. All other things being equal, living in the social rented sector, being a lone parent and having a low income were likely among this class. The effect of age and sex disappeared, however, once these factors were taken into account.

4.1.4 Class 4: Chronically ill-prepared

Representing 12 per cent of working-age householders, class 4 exhibited the highest average number of risks (5.0) of all six classes, and exhibited four of the five core risks (the exception being the investment risk). Members were fairly similar to those in class 3, except that their situation was chronic and, in contrast, they were made up primarily of main earners who had no income or payment protection. They had very little protection against future income or expenditure shocks and they were either not making active provision or had not made any provision for their retirement. They were also slightly more likely than average to have a partner they depended on who did not have life insurance.

[8] Among people who described their work status as looking after the family or home, 11 per cent of were providing 20 or more hours of unpaid care per week to someone who was sick, elderly or disabled. This was the largest proportion of all the identified work status groups. A further 13 per cent were providing care of less than 20 hours (Atkinson et al, 2007).

Figure 6 Class 4: typical risk and socio-demographic profile

Risk profile	The defining socio-demographic features
Above average risks **mortgage borrowing** (but few have a mortgage) **no pension/inactive pension** **income or payment protection** **savings** income insecurity home insurance partner's life insurance Below average risks	Partnered with dependent children Working part-time or looking after the family home; retired Renting, especially in the social sector 2nd and 3rd (low-to-mid) income quintiles
Mean risks = 5.0	

Notes: Core risks are highlighted in bold; indicators and socio-demographic variables that are not listed did not distinguish this class. The defining socio-demographic characteristics are those that were identified as being the most important in the bivariate and regression analysis.

Class 4 shared many similarities with class 3 in terms of the types and average number of risks (5.0) they exhibited. However, this group faced a higher risk to future welfare, as one in three had no personal pension (31 per cent) and practically nobody had an active pension despite the fact that they were almost all main earners. Furthermore, just six per cent had sufficient savings to cover an expenditure shock equal to a month's income.

The majority were main earners who held neither income nor payment protection insurance. Furthermore, four out of five (82 per cent) depended on a partner for at least half of the household income or childcare. The majority of these partners did not have life insurance (71 per cent). Given their slightly increased propensity to have inherent income risks (36 per cent compared with 28 per cent of the population as a whole) this lack of protection may be of some concern.

Like the previous class, class 4 were also slightly more likely to be women, people aged in their 30s, and not working (or working part-time). However, they were the most likely of all the groups to be in a couple with dependent children (55 per cent). They were also drawn more evenly from private and social rented sector than average and were on slightly higher incomes.

Regression analysis showed that family type was the most important socio-demographic determinant of being in class 4: all other things being equal, members of this class were very likely to be partnered with children (and rather more likely than average to be partnered in general). They were very unlikely indeed to be lone parents (unlike their counterparts in class 3). Tenure, income and work status were also significant, confirming the patterns described above. Age and sex, however, were not significant when these other factors were held constant.

4.1.5 Class 5: Highly exposed

The financial well-being of class 5 was exposed across a wide range of the risk domains. Nine per cent of the population fell into this group exhibiting 4.3 risks on average. Many had made no personal pension provision, had insufficient savings to cover a month's income and lacked income and payment protection. Many also lacked the relevant type of home insurance. Compounding this were above average tendencies to be an impulsive spender, to have large amounts of consumer borrowing and to be in the bottom 20 per cent at choosing financial products. With the exception of consumer borrowing, it was a lack of product-holding altogether that characterises this class.

Figure 7 Class 5: typical risk and socio-demographic profile

Risk profile	The defining socio-demographic features
Above average risks: **no pension** **income or payment protection** **savings** impulsive spending poor product choice consumer borrowing home insurance *Below average risks:* Income insecurity	Under 30 Lone parents, single adults and mixed households Working full-time, part-time Renting Low-to-middle incomes
Mean risks = 4.1	

Notes: Core risks are highlighted in bold; indicators and socio-demographic variables that are not listed did not distinguish this class. The defining socio-demographic characteristics are those that were identified as being the most important in the bivariate and regression analysis.

Although this class exhibited fewer risks on average than class 4, with a mean of 4.1 per person, their risk profile for certain measures was similar. Like class 4 they tended to present with pension, income or payment protection and savings risks.

Similar to class 3, members of this group were about twice as likely as the average person to be without the relevant home insurance cover (66 per cent). Notably, however, they were the most likely of all the groups – five times as likely as the average person – to report having no personal pension provision whatsoever (79 per cent).

Additionally, this is the only class for which there was a heightened risk of owing a large sum of money in consumer borrowing: 11 per cent exhibited this risk compared with five per cent overall. Very few indeed (four per cent) had a mortgage on the main home (most were renting) and most did not need their partner to have life insurance (98 per cent; indeed most were without a partner). Moreover, with the exception of unsecured credit commitments, it was the level of product holding itself that was very low for this class.

Many of these patterns are a clear reflection of the relatively young age of classs members, being drawn disproportionately from their 20s and 30s. Linked with this,

they were more likely (28 per cent) than the average (19 per cent) to describe themselves as impulsive and as spenders rather than savers, and were among the most likely to fall into the bottom quintile for capability in choosing financial products (29 per cent). Londoners were also slightly over-represented.

Regression analysis confirmed the young profile of this group. However, compared with age, housing tenure, work status and (to a lesser extent) family type were much more strongly associated with class 5 membership independently of other influences. Living in rented accommodation (whether private or social sector) were strongly predictive as were working full- or part-time. People in this class were extremely unlikely to identify themselves as unable to work because they were sick or disabled, looking after the family or home or unemployed. They were very unlikely to be partnered with dependent children and were somewhat skewed towards the lower income quintiles, all other things being equal.

4.1.6 Class 6: Future uncertainty

Class 6, the smallest of all (seven per cent), had a risk profile that was dominated on the one hand by the presence of sufficient savings to cover at least a month's income combined with a tendency to exhibit an investment risk and, on the other, by having inactive personal pension combined with a long-term limiting illness or disability. They appeared to have made positive steps to secure their financial well-being in the past but faced some future uncertainty. Consequently, as a group, they exhibited a below average number of risks (2.7).

Figure 8 Class 6: typical risk and socio-demographic profile

Risk profile	The defining socio-demographic features
Above average risks: **inactive pension** **investment** income insecurity **mortgage borrowing** (but few had a mortgage) **income or payment protection (but few need this)** partner life insurance (but few need this) *Below average risks:* **savings** impulsive spending product choice **no pension** home insurance	Men Over 40s Unlikely to be in work Outright owners
Mean risks = 2.7	

Notes: Core risks are highlighted in bold; indicators and socio-demographic variables that are not listed did not distinguish this class. The defining socio-demographic characteristics are those that were identified as being the most important in the bivariate and regression analysis.

Members of the smallest class had a relatively low average of 2.7 risks per person, compared with 3.3 overall. Although many had an inactive pension (71 per cent), very few were without a personal pension at all (four per cent). And although a significant minority of the investors in this group had more than 90 per cent of their liquid assets in investment products (32 per cent) almost all did have sufficient in savings and investments to cover a month's lost income (99 per cent). Few exhibited a risk on the home insurance domain (18 per cent), very few described themselves as impulsive and a spender (four per cent) and more than average were in the top 80 per cent of the general population in their competence in choosing financial products (76 per cent).

Members of this class were less than half as likely as the average to be a main earner (31 per cent) and fewer than average had a partner on whom they or their children depended (35 per cent; note that this apparent contradiction is due to the high number in this class who were non-working single adults and so were classed as neither dependent on a partner nor a main earner). Nonetheless, all main earners in the sample exhibited an income or payment protection risk (100 per cent) and a (marginally) higher than average proportion of those who depended on a partner had a partner who did not have life insurance (69 per cent). Given the relatively low incomes of members of this class these types of protection may well be less relevant to them. Additionally, although only a third (34 per cent) had a mortgage on their main home, those who did were quite likely to have a mortgage borrowing risk (61 per cent).

More than two in five people (43 per cent) in this class carried an inherent risk due to income instability. Further analysis shows that this related to a much higher than average incidence of limiting illness (33 per cent compared with 19 per cent on average) rather than the no qualifications element (15 per cent; this is typical for the population of working-age householders as a whole 16 per cent).

To a great extent, the risk profile of this class appeared to be consistent with people who had made sound financial decisions in the past but whose situation had perhaps changed fairly recently. The patterns largely reflected life-stage and socio-economic status, with the class being drawn predominantly from people in their 50s and 60s and being over-represented by outright homeowners (45 per cent) and early-retirees (28 per cent). Many, therefore, might have been people who had retired early with seemingly adequate financial security to back this. Consistent with this is the finding that most (70 per cent) reported keeping up with household bills and other commitments without difficulty.

However, the class also included a relatively high proportion of people who were not working because they were permanently sick or disabled (10 per cent) or were in full-time education (14 per cent); and may have included people who had become inactive for reasons beyond their control, such as illness or who are retraining late in their careers. The finding that two-thirds were not working explains why this class as a whole was drawn disproportionately from the lowest income quintile (31 per cent).

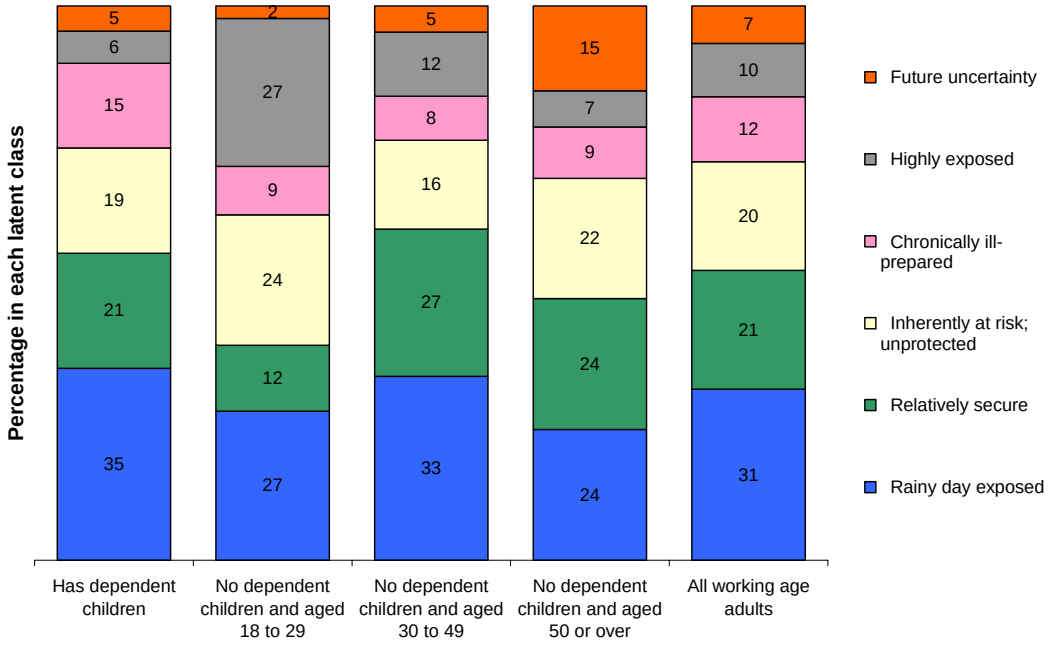
Regression analysis confirmed work status and, in particular, not working as the main defining characteristic of this class. Owning the home outright and being older were also confirmed as being independently significant. This was also the only class for

which gender was independently related to membership, confirming that men were more likely than women (though only by about twice the odds). Family type was also significant but only weakly so, with partnered parents at the top end of the range followed by partnered adults with no dependent children.[9]

4.2 Distribution of the latent class in different societal groups

In previous chapters we have described the various risk classes in terms of their socio-demographic characteristics, and the risks most commonly faced by people in each class. We now consider the main life stages of the working-age population, and the likelihood of being in a particular risk class.

Figure 9 Latent classes by life stage



It is interesting to note from Figure 1 that, within each life stage identified, there were people in each of the six risk classes. This indicates that the risk classes were not a consequence of being at a certain life stage.

Nonetheless, there were clear variations in the likelihood of being in a particular group. We can see from the above Figure, that respondents with dependent children were more likely than average to be *rainy day exposed* or to be *chronically ill-prepared*. It is very likely that such households were concentrating on current expenditure needs but paying insufficient attention to their future circumstances. Previous research has highlighted the financial strain that the presence of children can have on a household (for example, Kempson and Atkinson, 2006; European

[9] An initial regression indicated that, for family type, lone parents were most likely to be in this class all other things being equal, but this disappeared with gender was removed from the model suggesting that this was an artefact of holding gender constant in the earlier model.

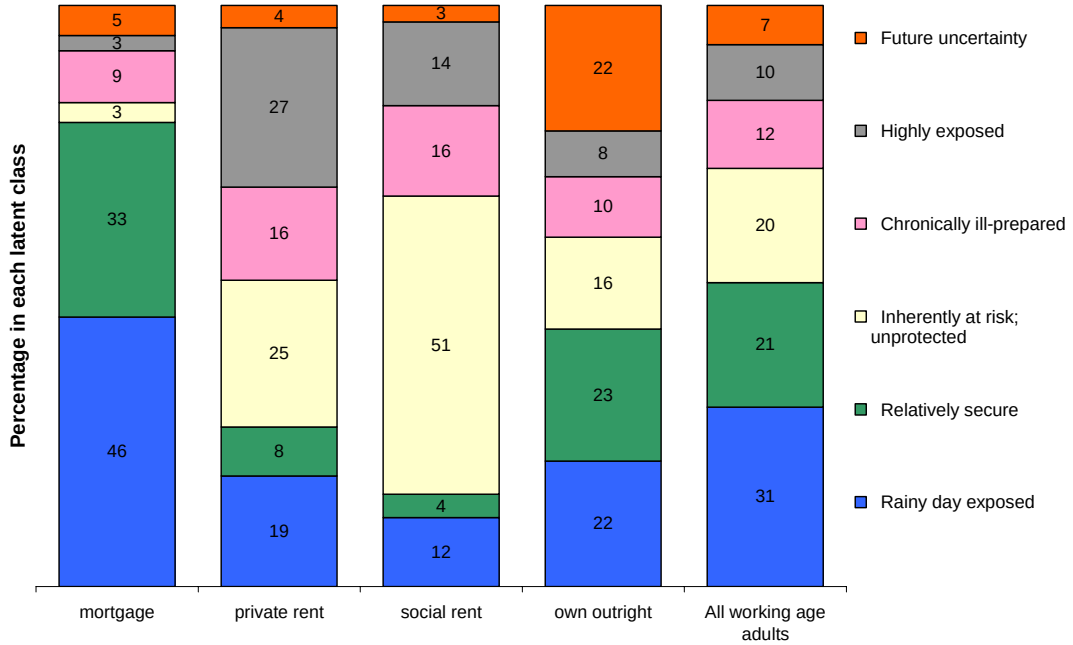
Commission, 2008), and, in relation to saving, how the tension between the inclination (desire) to save and ability to save is particularly acute where providing for children is concerned (Kempson et al, 2004).

Younger adults without children were far more likely than average to be *highly exposed*. For one reason or another, they had not yet started to make provision for their future. Conversely, they were relatively unlikely to be *relatively secure*, almost certainly because the majority will not have accumulated substantial wealth.

Adults in their middle years who were without dependent children were more likely to be *relatively secure* and slightly more likely than average to be either *highly exposed* or *ill-prepared for financial shocks*.

Of all the groups, adults without dependent children in the pre-retirement years (aged 50 plus) were the most likely to be facing *future uncertainty* (a class consisting of people with an increased likelihood of having inactive pensions, investment risks and mortgage borrowing risks). However, they were less likely than average to be *ill-prepared for financial shocks*, and slightly more likely to be *relatively secure*, reflecting their higher levels of savings and investments.

Figure 10 Latent classes by housing tenure



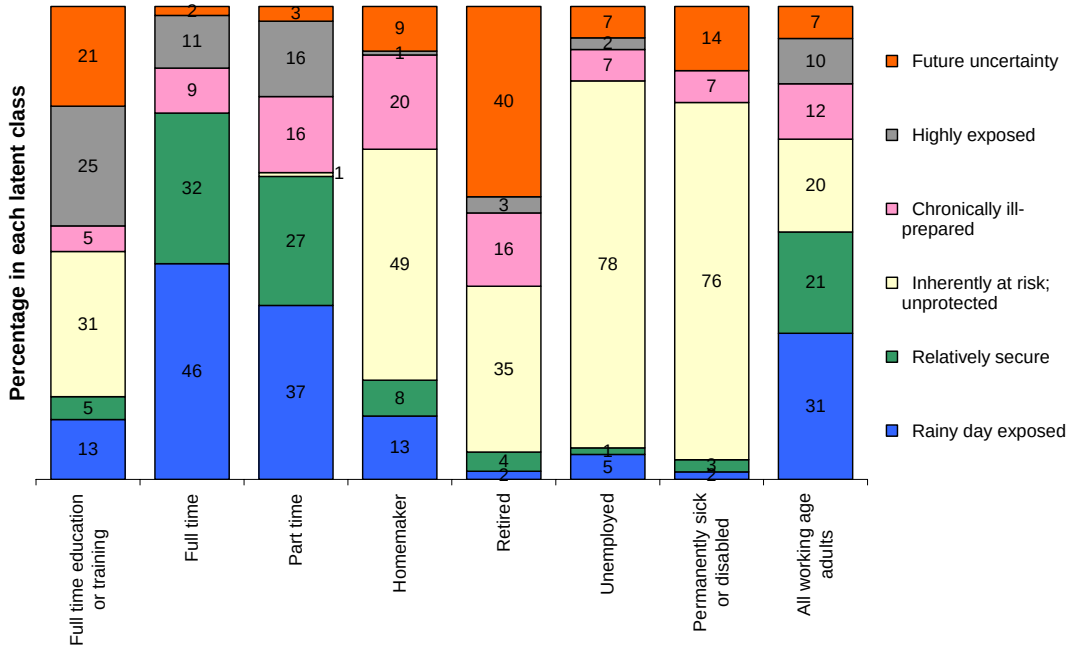
All housing tenures were represented in each of the risk classes, but very unevenly (Figure 10).

Those with a mortgage were the most likely to be *rainy day exposed* or *relatively secure*. Conversely, they were very unlikely to show signs that they were *inherently at risk and unprotected*.

Private renters showed very different combinations of risks from either those with a mortgage or from the working-age population as a whole. They were the most likely to be *highly exposed* and rather more likely than average to be *chronically ill-prepared.* Private renting is, to a certain extent, a reflection of age and income: people in this sector are disproportionately young adults who are, in turn, better off than their counterparts in the social rented sector, but who have perhaps raised insufficient capital to buy their own home or are in uncertain employment.

In contrast to those renting privately and working-age adults generally, adults living in social housing were overwhelmingly concentrated amongst those who were *inherently at risk and unprotected.* Very few were *relatively secure* (reflecting the fact that this class included people taking risks on a mortgage) but above average proportions were *chronically ill-prepared* or *highly exposed.* This is perhaps not surprising, given that only the very poorest of people qualify for social rented accommodation in Britain.

Figure 11 Latent classes by work status



Adults who owned their home outright were three times more likely to be facing *future uncertainty* in terms of their pension fund and taking risks with their investments. This may well reflect life-stage, since outright owners tend to be people in their late family or pre-retirement years. With so many outright homeowners in this category, correspondingly fewer faced any other kind of risk, compared with the working-age population.

We have seen that all risk classes were represented within each life-stage and housing tenure category. However, this was not the case for distribution of risk classes by work status (Figure 11). None of the full-time workers showed signs of being *inherently at risk and unprotected* and this was also extremely unlikely amongst part-

time workers. Amongst those who were sick or disabled nobody was *highly exposed*, perhaps because their situation was not a recent one.

Looking at each type of work status in turn, we see that those in full-time education or training were most likely to be *inherently at risk and unprotected*, *highly exposed* or face *future uncertainty*. Full- and part-time workers were more likely to be *rainy day exposed* or *relatively secure* but part-time workers were also slightly more likely than average to be *chronically ill-prepared* or *highly exposed*, perhaps indicating those who had been on long term low incomes, and those for whom a recent drop in hours worked had led to an increased in financial risk.

Almost a half of all homemakers were *inherently at risk and unprotected* and this risk class was even more common amongst other non-working groups, except for those who were early-retired. The early-retired were overwhelmingly concentrated amongst those facing *future uncertainty* which is perhaps unsurprising given their status (having not reached state pension age).

5 Conclusions

The study set out to achieve the following aims:

- Identify a range of financial risks;
- Consider the extent to which people are exposed to multiple risks;
- Describe people according to the particular risks they display; and
- Describe the socio-demographics of people displaying different combinations of risk.

We considered 11 risk domains under four themes: inherent risks; assets and wealth; borrowing; and insurable risks. Some of the risks were far more common than others. For example, a majority of people did not have sufficient savings to cover a month's loss of income, whilst only one in twenty owed more than six times their monthly income in unsecured borrowing.

We found no indication that the UK population is polarised into people who face a wide range of risks – both inherently and as a result of their own actions – and those who are entirely free of risk and are risk-averse. Indeed, the number of risk domains displayed by individuals was largely clustered around two (20 per cent), three (22 per cent) or four (20 per cent), with the overall average per person of 3.3 risks.

Analysis of the socio-demographic characteristics associated with a high number of risks (five or more), suggests that those who rented their home were more likely than average to have five or more risks. Conversely, full-time workers were significantly less likely than those with any other employment status to have a large number of risks. After taking housing tenure, income, age and work status into account, lone parents were less likely than other family types to display risk in five or more domains.

Using an innovative and powerful statistical modelling technique known as latent class analysis we have been able to identify six classes of people who share similar profiles that differentiate them from people in the remaining five classes. We described these classes as follows (ranging from the largest class to the smallest):

- Rainy day exposed
- Relatively secure
- Inherently at risk and unprotected
- Chronically ill-prepared
- Highly exposed
- Future uncertainty

The overall amount of risk and the combination of risk exhibited by people in each class varied. Those in the *relatively secure* category had the least exposure to risk whilst those who were *chronically ill-prepared* faced the most risks: five, on average.

Around three in ten of the population (31 per cent) were classified as being *rainy day exposed*. Their defining characteristic was that they had inadequate savings to deal with expenditure shocks and although few of them held investments, where they did they had a high proportion of their liquid wealth invested in the stock market – both of which could have implications for their financial well-being in a slowing economy. They did, however, have either income or payment protection, which ought to help mitigate an income shock. These people were partnered (both with and without dependent children), in either full-time or part-time work, and were very likely to be homeowners. So whilst this group appeared relatively well protected, they could certainly be at increased risk of over-borrowing if they faced an expenditure shock, as they had no liquid assets with which to meet an unexpected expense. It is very likely that they treated their home as their main asset, an attitude which may be untenable in a weakening housing market. Furthermore, as they typically had no savings to draw on for essential home maintenance, they could see the value of their home fall further still if problems were to occur.

A further two in ten (21 per cent) fell into the *relatively secure* class and had a below-average likelihood of displaying any of the risk domains studied. They displayed no inherent risks; had adequate savings and were not highly exposed to stock market changes; did not have any risky borrowing and had appropriate insurance cover. They were particularly likely to be older (aged 40 and above), in paid employment and in the highest household income quintiles. They were also predominantly homeowners, most of whom still had a mortgage to pay (they did not exhibit a mortgage risk). This group appeared to be in control of their financial situation, and financially capable.

The remaining half of the population was spread across four distinct classes each exhibiting a different range of risks and personal characteristics.

The largest of these (19 per cent of the population) comprised people who were *inherently at risk and unprotected.* They were the only ones who faced all three inherent risks: income instability, poor product choice and were inclined to impulsive spenders. They had inadequate savings to cover an expenditure shock equal to a month's income and their pensions were inactive. They also lacked key types of insurance provision such as home insurance or (where needed) life insurance. On the other hand they did not exhibit any risk that was related to borrowing. They had the lowest incomes of all six classes and were very unlikely to be in employment, most being unemployed, in poor health or looking after the home and family. They tended to be single people or lone parents, and to rent their homes, predominantly in the social rented sector.

There are several policy implications arising from this description of the *inherently at risk and unprotected* adults. They show clear signs of having been willing to mitigate against certain risks – for example they had previously paid into personal pensions. They also appeared unwilling to expose themselves to other risks, such as large amounts of borrowing (although this may also have reflected a lack of access to credit). Yet they did not hold important insurance policies, indicating that they had

cut back on almost all expenditure, probably to make ends meet. Leaving such a vulnerable group unable to protect themselves against such setbacks when they have no savings is risking their financial well-being and increasing the likelihood that they will become unable to meet their remaining financial commitments. Given that this group were typically not receiving an earned income, it could be argued that the provision of insurance to cover essential household contents should be a compulsory component of rental charges even when rent is covered by Housing Benefit.[10] Tenants could be given the right to opt-out; although research indicates that few would do so (Vestri, 2007).

This class showed several indicators of being financially excluded. A lack of savings products and insurance, plus low or missing choosing product scores indicates that these adults had not been active financial consumers for some time. The breadth of this exclusion and its potential consequences will be of interest to those trying to improve social protection.

Since most of them were already out of the labour market and they did not hold any investments, they are unlikely to suffer a large drop in income or wealth in an economic slowdown. They are, however, the people who will be hardest hit by the increased cost of essentials such as food and energy. With inherent risks and additional responsibilities such as a caring role, it is unlikely that this class could improve their financial situation without help.

The fourth class (12 per cent of the population) are *chronically ill-prepared.* On average they faced five of the eleven risks studied – the highest of all six groups. They would be highly exposed in an economic downturn as they tended to be the main earner, to have dependent children and yet had neither adequate savings nor did they have income or payment protection. With about average incomes they were also at risk of income instability through low skill levels and/or ill-health. Although few of them were homeowners (indeed most rented their home largely in the social rented sector), those who were had a high incidence of mortgage risks. Their future well-being is also uncertain regardless of economic changes, as they had inadequate pension provision for their old age, and their partner had no life insurance (which most needed as they were very likely to be partnered with children). Their possessions were also uninsured, once again indicating a larger role for rent-with-insurance schemes.

It is interesting that women were over-represented in the two most at-risk classes, *inherently at risk and unprotected* and *chronically ill-prepared* (Table A3.1). However, being a woman does not predict membership once other factors are taken into account (Table A4.1) – so it was perhaps the situations of these women – such as being a lone parent – that accounted for their increased number of risks.

Just under one in ten of the population (nine per cent) have been classified as *highly exposed*. These people will be most at risk in an economic downturn, as in addition to lacking savings and payment protection, they were also exposed to consumer borrowing risks. Most, however, rented their home so were not exposed to mortgage

[10] See a recent paper prepared for the Scottish Executive for a useful discussion of the options for providing home insurance to tenants in social rented accommodation (Vestri, 2007).

risks. They were also more likely than average to be at inherent risk due to spending tendencies and their poor skills with regard to choosing financial products. They would be hit hard by financial shocks. Although they were predominantly in employment they had low household incomes. They did, however, have a low risk of income instability through low skills or ill-health. Most of them were young and single, including some lone parents with dependent children.

These highly exposed adults could be encouraged to reduce their exposure through carefully designed financial capability initiatives focusing on making ends meet (particularly controlling consumption, and reducing borrowing). The introduction of simplified products aimed at reducing the risk of making poor choices would also be of benefit, as would readily accessible financial advice.

The smallest risk class (seven per cent of the population) showed signs of *future uncertainty*. They tended to be men, aged over 40, who were largely economically inactive, including early retirees, people unable to work through sickness or disability and people who had returned to full-time education or training later in life. They, therefore, had an above-average risk of personal income instability through a lack of qualifications from school and particularly ill-health or disability – which in many cases had already affected their employment. Despite this their household incomes were not especially low and they showed other signs that they might have been better-off in the past. They were disproportionately outright owners of their home, had adequate savings to cover an income or expenditure shock and were unlikely to have no pension provision at all. They were not impulsive spenders, nor were they poor at choosing financial products, and their homes (and contents) were insured. The main risks that they faced were having an inactive (and most likely inadequate) pension and an over-exposure to the stock market. The minority who were still buying their home also had a high mortgage risk. In other words, this group of people face an uncertain future, especially in their old age.

Pulling this together we can see that risk is not evenly distributed through the population and that different groups of people have different risk profiles. Only a minority of the population seems to be risk-free and these are people who are older and better off. They have faced few inherent risks and have not exposed themselves to avoidable risk and consequently they have been in a financial position to protect themselves against risks that are unavoidable. The possible effects of having an inherent risk due to low skills or ill-health can be seen by comparing this group of *relatively secure* people with those who are of a similar age but face *future uncertainty,* particularly as they enter retirement.

At the other extreme was a substantial minority of the population who we have classified as *inherently at risk and unprotected*. Perhaps as a consequence of their high inherent vulnerability, they had low incomes and were in no position to protect themselves from unavoidable risk. The greatest risk they face in the future, as we note above, is likely to be from expenditure shocks because most of them were already not in employment and they had no exposure to either stock market changes or to risky borrowing. They will, however, be particularly vulnerable to increases in the price of food and energy as these will account for high percentage of their income.

The impact of inherent risks and avoidable risks is, however, most apparent among the group of people who were *highly exposed*. They were inclined to spend impulsively, had no savings to fall back on, carried a high consumer borrowing risk, and were poor at choosing products. These are the people on whom financial capability initiatives most need to be focussed. They, and people who were *chronically ill-prepared*, will be at greatest risk in an economic downturn.

The conclusions touch on a number of implications for policy. In particular, people who are *rainy day exposed* are especially likely to benefit from targeted programmes that raise awareness about the benefits of saving – and the risks of not saving – and accessible and memorable tips on how to start building up a stock of liquid assets without significant loss to current lifestyles. Linked to this, incentives to save will be especially important for the both the *rainy day exposed* and the *chronically ill-prepared.*

We saw that two groups, the *chronically ill-prepared* and the *highly exposed*, were at risk partly because they were often lacking the protections provided by certain types of insurance policies. Perhaps this reflects that they have a poor view of these types of products and need some help to enter the insurance market with policies they can have confidence in (this is reflected in previous research, see Stott and Reimers, 2008). This would seem to indicate a need for simplified financial products, including insurance products, to be developed in order to mitigate the risks of these groups. Analogous to the development of basic bank accounts, these products would most likely require the support of both the financial services industry and Government. The *chronically ill-prepared* would also benefit from schemes that enable them to purchase basic home contents insurance with their rent payments or, in the case of the *inherently at risk and unprotected* to receive it as a component of housing benefit of rental costs.

Financial education covering money management, budgeting and the risks of over-borrowing would be of particular benefit to the young adults who are *highly exposed*. Similarly, free financial advice – possibly through the new 'money guidance' schemes – would assist this group in particular by helping to prevent them making poor financial decisions.

Finally, it seems that many of the people who we found were facing *future uncertainty* would be especially likely to benefit from a targeted initiative that clarifies the functions, risks and benefits of utilising pensions schemes compared with other vehicles for saving for retirement. These initiatives might focus on the action people who are beginning to look ahead to retirement can take to start or boost their pension savings, even if they feel they may be doing so too late in life, or to protect their existing assets for use in old age.

Appendix 1 – Construction of the latent class model

It is reasonable to imagine that people's observed risk behaviours, attitudes and circumstances are driven by some higher-order unobserved, or 'latent', variable. As a result of this latent variable, the risks people exhibit will, to a greater or lesser extent, tend to combine in certain ways. So, it might be that some people have a tendency to exhibit risks A, B and C, whilst others are prone to risks C, D and E in combination; and it is helpful to policy-makers and others who are interesting in reducing public risk for economic loss to summarise and understand the population on this basis of these patterns.

With a small number of risks – perhaps two or three – it is possible to construct a basic typology that takes account of all possible combinations of the risks. However, where there are numerous measures, describing the population according to all combinations becomes unmanageable. Besides, the influence of the latent variable will mean that some combinations that are possible in theory are unlikely or unimportant in practice. We therefore wanted to explore how the population of working-age people might be summarised into a relatively small number of groups based on the strongest patterns in the co-occurrence of the risks within the data.

To do this, we used a statistical modelling technique known as latent class analysis (LCA). LCA is very similar in function and in application to cluster analysis: both techniques look for underlying patterns in the observed characteristics, behaviours or attitudes in order to identify groups of people who are similar according to these patterns. However, LCA is a particularly powerful and flexible tool for analysing relationships among variables and identifying segments (McCutcheon, 1987; Vermunt and Magidson, 2005). The major advantage for us is that it is suitable for use with categorical variables (where a variable has three or more categories), or a mixture of categorical and binary variables, as we are using.[11] Cluster analysis, on the other hand, is suitable only where the measures tested are all continuous (or close to continuous) or binary. Despite its clear advantages, LCA has not been widely used for this type of research, making this study important in terms of applying new methods and highlighting the benefit of employing the most appropriate analytical techniques.

The precise methods for identifying the groups and assigning membership in cluster analysis and LCA differ in certain respects. In particular, when using LCA, after the optimal solution – that is the model that uses the smallest number of 'classes' to take adequate account of the patterns in the data – has been selected from an initial run, it is sometimes appropriate to refine that solution to improve it further. The following

[11] LCA can also handle ordinal level data. However, none of the variables we were using was ordinal; at least we did not want to make this assumption about any of our variables.

section describes how the latent class model was constructed and refined using Latent GOLD (4.0).[12]

Constructing and refining the latent class model

Since there was no prior reason to believe that any particular number of groups exists, several potential models were tested in the first instance, with solutions ranging from three to eight groups. The models were otherwise identical, containing all 11 risk indicators, weighted (inactive, not re-scaled) using the data file sampling weight, and using the LC Cluster Models default setting in Latent GOLD.

Usually, the L^2 statistic and associated p-value would be used to determine the choice of model. For sparse data,[13] however, it is recommended that the L^2 statistics and associated p-values are not relied upon and that measures such as the BIC (the most widely used) and AIC statistics are instead used to compare models (Magidson and Vermunt, 2003). Interpretation of the BIC statistics indicated that the six-class model was optimal – providing the best overall 'fit' to the patterns observed within the data – and was selected on this basis as our working model.

In this initial model, however, there were a large number of instances in the observed association between pairs of measures were not reproduced well by the model. This is indicated by bivariate residual statistics ('residuals') that are much larger than 1.0 (Magidson and Vermunt, 2003). In other words, the latent variable that was explaining the overall patterns in the data was not adequately accounting for relationships between certain pairs of measures within the model. It is likely that these associations are explained by some other, spurious, factor. By controlling for this violation of the 'local independence' assumption, it is possible to improve the fit of the solution to the patterns observed within the data.

Many of these large residuals were associated with the three inherent risk domains: financial capability in choosing products; the income risk associated with having a long-term health condition or low qualifications; and the tendency to be an impulsive spender. Therefore, the first refinement we made was to remove these from the model itself. However, we did not remove them entirely from the model-building process; instead we preferred to retain them as 'active' covariates on the grounds that previous research shows these characteristics commonly predict financial behaviour and circumstances well. By retaining these as 'active' covariates, they help to improve the allocation of individuals to the groups. In this case, the problem of multiple high residuals was removed although a few instances of high residuals remained (as we discuss below). The model was re-run.

A measure that is poorly explained by a model is, in turn, contributing little to that model. In other words, a risk that was spread fairly evenly across the groups would not be helping to discriminate the groups. Moreover, a poorly explained measure that is retained in the model will add 'noise' (or randomness) to that model. It is, therefore,

[12] Latent GOLD is specialist software that has been developed for latent class analysis and finite mixture models. Latent GOLD is a registered trademark of Statistical Innovations Inc.
[13] Sparse data occurs when the number of possible combinations of the observed variables is large relative to the sample size, resulting in no individuals exhibiting many of the possible combinations.

good practice to remove any variables that are poorly explained, indicated by a low R^2 value for that parameter. Examination of the parameters in the second model indicated that the consumer borrowing risk indicator had an R^2 of only 0.03. On this basis we removed it from the main model, again setting it as an 'active' covariate.

In the third run of our analysis, the home insurance measure had large residuals with many of the other indicators. Setting the measure as an 'active' covariate did not resolve the problem and so the variable was excluded from the model entirely.

In the fourth step, the borrowing measure relating had large residuals with many of the remaining indicator variables and so was, again, removed entirely from the model.

In the following runs, we controlled for isolated instances of large residuals between pairs of indicators and active covariates using the 'direct effects' function (which relaxes the assumption of local independence) and removed one more variable as an active covariate. This was carried out in a stepwise fashion:

- Investment risk by any mortgage borrowing risk – set direct effect
- Partner life insurance risk – removed as active covariate
- Impulsive or a spender by investment risk – set direct effect
- Any mortgage borrowing risk by choosing products risk – set direct effect
- Income risk by any mortgage borrowing risk – set direct effect

Having made these modifications, we were content that we had obtained a 'good parsimonious' model (Vermunt and Magidson, 2005). However, having made the modifications described above we wanted to verify that the six-class solution was still the optimal one for the remaining variables . To do this, we again requested models ranging from three to eight class solutions. Although the BIC statistic indicated that the five-class model was the most parsimonious, the L^2 statistic and the AIC(LL) and AIC3(LL) statistics pointed to the six-class model, and this model was retained on this basis.

Final model definition and case allocation

In the final model, therefore, the definition of the six groups was explained with reference to the following five risk indicators.

- Mortgage borrowing risk
- Pension risk
- Income or payment protection risk
- Savings risk
- Investment risk

The assignment of individual cases to a class was informed with the help of four further risks:

- Impulsive or spending risk
- Choosing products risk

- Income risk
- Partner life insurance risk

Two variables were omitted from the model construction entirely (although these remain relevant for subsequent analyses):

- Home insurance
- Consumer borrowing risk

Latent class analysis allocates individual cases to a particular class based on probabilities. Initially, a probability of belonging to each class is calculated for each individual based on their similarity to the definition of the group. Each individual is then assigned to the modal group, that is, to the class with the highest membership probability. Inclusion of the four 'active covariates' – impulsive or spending, choosing products, inherent income and partner life insurance risk – enabled further refinements in the allocation process even though they were not involved in the class definitions.

Ideally, any individual would have a probability of belonging to a single class equal to 1 and a probability of belonging to all other groups of 0. This is highly unlikely in reality, so instead we would hope for probabilities that are close to 1 and to 0, taking this as an indication of a well-fitted model. The mean membership probability for each of the groups in our final model was very high, especially for groups 1, 2 and 3.[14] This suggests a high level of between-class differences, even though on more detailed examination of the composition of the groups there was still a fair amount of diversity within groups (see chapter 3); the latter point should not be of great concern when it is considered that the entire population of working-age householders are being summarised into such a small number of groups. Finally, the percentage of cases that were expected to be mis-classified by this model was also not very high, at 12 per cent

A last set of probabilities can then be used to describe the profile of each group, bringing the groups to life, based on the original indicators that define the model and any others of interest. These probabilities are based on the number of members of each class who exhibit a particular risk or characteristic. The resulting model is discussed in chapter 3.

A copy of the Latent GOLD outputs to the final model are available from the authors on request.

[14] The mean probabilities are as follows: Group 1, 0.91; Group 2, 0.92; Group 3, 0.93; Group 4, 0.79 ; Group 5, 0.71 ; and Group 6, 0.84.

Appendix 2 – Risk indicators by socio-demographic characteristics

Table A2. 1 'Impulsive spending' by socio-demographic characteristics

			Row percentages
	Unweighted base	Not impulsive and a spender	Considers themselves impulsive and a spender
Gender			
Male	***1,798***	84	16
Female	***1,896***	78	22
Age group			
Aged under 20	***81***	68	32
Aged 20 to 29	***700***	68	32
Aged 30 to 39	***988***	78	22
Aged 40 to 49	***927***	83	17
Aged 50 to 64	***998***	91	9
Family structure			
Single Adult	***558***	82	18
Partnered with no dependent children	***865***	84	16
Lone parent with dependent children	***562***	73	27
Partnered with dependent children	***1,158***	81	19
Other	***551***	82	18
Employment status			
In full time education or training	***168***	77	23
Working full time (30hrs+ including temporarily off)	***1,787***	83	17
Working part time (including temporarily off)	***609***	83	17
Looking after the home or family	***453***	76	24
Retired from paid work	***164***	94	6
Unemployed	***315***	70	30
Permanently sick or disabled	***198***	79	21
Housing tenure			
Mortgage	***1,714***	83	17
Private rent	***542***	75	25
Social rent	***925***	73	27
Own outright	***513***	94	6
Equivalised income			
1st (lowest) quintile	***705***	77	23
2nd	***555***	80	20
3rd	***747***	78	22
4th	***839***	82	18
5th (highest) quintile	***848***	86	14
Total	***3,694***	**81**	**19**

Table A2. 2 'Product choice' by socio-demographic characteristics

				Row percentages
	Unweighted base	Top 80% performer at choosing products	Has not actively bought a financial product in the past 5 years	Bottom 20% at choosing products
Gender				
Male	***1,798***	67	20	13
Female	***1,896***	63	20	17
Age group				
Aged under 20	***81***	46	17	37
Aged 20 to 29	***700***	62	15	23
Aged 30 to 39	***988***	72	14	14
Aged 40 to 49	***927***	63	24	13
Aged 50 to 64	***998***	63	26	11
Family structure				
Single Adult	***558***	60	22	18
Partnered with no dependent children	***865***	72	18	10
Lone parent with dependent children	***562***	56	21	23
Partnered with dependent children	***1,158***	69	18	14
Other	***551***	57	26	17
Employment status				
In full time education or training	***168***	67	12	21
Working full time (30hrs+ including temporarily off)	***1,787***	72	17	11
Working part time (including temporarily off)	***609***	68	18	14
Looking after the home or family	***453***	54	26	21
Retired from paid work	***164***	66	27	7
Unemployed	***315***	44	30	27
Permanently sick or disabled	***198***	46	31	23
Housing tenure				
Mortgage	***1,714***	76	16	8
Private rent	***542***	59	18	23
Social rent	***925***	45	27	28
Own outright	***513***	65	25	10
Equivalised income				
1st (lowest) quintile	***705***	47	28	25
2nd	***555***	53	28	20
3rd	***747***	62	22	16
4th	***839***	72	15	13
5th (highest) quintile	***848***	80	13	7
Total	***3,694***	**65**	**20**	**15**

Table A2. 3 'Income instability' by socio-demographic characteristics

			Row percentages
	Unweighted base	Has neither a long term limiting health condition nor no qualifications	Has a long term limiting health condition or no qualifications
Gender			
Male	***1,798***	72	28
Female	***1,896***	71	29
Age group			
Aged under 20	***81***	84	16
Aged 20 to 29	***700***	83	17
Aged 30 to 39	***988***	80	20
Aged 40 to 49	***927***	71	29
Aged 50 to 64	***998***	55	45
Family structure			
Single Adult	***558***	62	38
Partnered with no dependent children	***865***	73	27
Lone parent with dependent children	***562***	69	31
Partnered with dependent children	***1,158***	79	21
Other	***551***	67	33
Employment status			
In full time education or training	***168***	86	14
Working full time (30hrs+ including temporarily off)	***1,787***	82	18
Working part time (including temporarily off)	***609***	78	22
Looking after the home or family	***453***	62	38
Retired from paid work	***164***	50	50
Unemployed	***315***	58	42
Permanently sick or disabled	***198***	3	97
Housing tenure			
Mortgage	***1,714***	81	19
Private rent	***542***	80	20
Social rent	***925***	51	49
Own outright	***513***	65	35
Equivalised income			
1st (lowest) quintile	***705***	60	40
2nd	***555***	55	45
3rd	***747***	70	30
4th	***839***	78	22
5th (highest) quintile	***848***	85	15
Total	***3,694***	**72**	**28**

Table A2. 4 'Savings' by socio-demographic characteristics

			Row percentages
	Unweighted base	Has savings equivalent to one month's household income or more	Does not have savings equivalent to one month's household income
Gender			
Male	***1,798***	35	65
Female	***1,896***	28	72
Age group			
Aged under 20	***81***	13	87
Aged 20 to 29	***700***	19	81
Aged 30 to 39	***988***	27	73
Aged 40 to 49	***927***	36	64
Aged 50 to 64	***998***	39	61
Family structure			
Single Adult	***558***	34	66
Partnered with no dependent children	***865***	38	62
Lone parent with dependent children	***562***	20	80
Partnered with dependent children	***1,158***	30	70
Other	***551***	30	70
Employment status			
In full time education or training	***168***	37	63
Working full time (30hrs+ including temporarily off)	***1,787***	36	64
Working part time (including temporarily off)	***609***	33	67
Looking after the home or family	***453***	19	81
Retired from paid work	***164***	52	48
Unemployed	***315***	13	87
Permanently sick or disabled	***198***	19	81
Housing tenure			
Mortgage	***1,714***	40	60
Private rent	***542***	21	79
Social rent	***925***	10	90
Own outright	***513***	49	51
Equivalised income			
1st (lowest) quintile	***705***	20	80
2nd	***555***	13	87
3rd	***747***	23	77
4th	***839***	37	63
5th (highest) quintile	***848***	51	49
Total	***3,694***	**31**	**69**

Table A2. 5 'Investments' by socio-demographic characteristics

				Row percentages
	Unweighted base	Does have investments	Does not have more than 90% of assets as investments*	More than 90% of assets are investments*
Gender				
Male	***1,798***	24	72	28
Female	***1,896***	17	73	27
Age group				
Aged under 20	***81***	<1	na	na
Aged 20 to 29	***700***	10	67	33
Aged 30 to 39	***988***	16	69	31
Aged 40 to 49	***927***	25	74	26
Aged 50 to 64	***998***	29	75	25
Family structure				
Single Adult	***558***	20	77	23
Partnered with no dependent children	***865***	27	75	25
Lone parent with dependent children	***562***	12	67	33
Partnered with dependent children	***1,158***	21	70	30
Other	***551***	18	70	30
Employment status				
In full time education or training	***168***	20	na	na
Working full time (30hrs+ including temporarily off)	***1,787***	25	73	27
Working part time (including temporarily off)	***609***	22	72	28
Looking after the home or family	***453***	10	na	na
Retired from paid work	***164***	38	78	22
Unemployed	***315***	7	na	na
Permanently sick or disabled	***198***	11	na	na
Housing tenure				
Mortgage	***1,714***	29	72	28
Private rent	***542***	8	na	na
Social rent	***925***	4	na	na
Own outright	***513***	34	79	21
Equivalised income				
1st (lowest) quintile	***705***	9	69	31
2nd	***555***	7	na	na
3rd	***747***	14	75	25
4th	***839***	25	73	27
5th (highest) quintile	***848***	38	75	25
Total	***3,694***	**21**	**73**	**27**

Notes:
* indicates that these are based on the subset who have investments. 'na' indicates that the figure is not available because too few were eligible for this risk

Table A2. 6 'Pension' by socio-demographic characteristics

				Row percentages
	Unweighted base	Has a personal pension which is currently being paid into	Has a personal pension, but it is not currently being paid into	Adult with no personal pension provision
Gender				
Male	***1,798***	50	36	15
Female	***1,896***	38	45	17
Age group				
Aged under 20	***81***	5	57	39
Aged 20 to 29	***700***	27	41	32
Aged 30 to 39	***988***	45	40	15
Aged 40 to 49	***927***	57	33	10
Aged 50 to 64	***998***	43	46	11
Family structure				
Single Adult	***558***	38	48	15
Partnered with no dependent children	***865***	48	36	16
Lone parent with dependent children	***562***	27	55	18
Partnered with dependent children	***1,158***	52	37	12
Other	***551***	40	35	25
Employment status				
In full time education or training	***168***	27	42	31
Working full time (30hrs+ including temporarily off)	***1,787***	66	16	18
Working part time (including temporarily off)	***609***	48	21	31
Looking after the home or family	***453***	10	90	-
Retired from paid work	***164***	<1	82	18
Unemployed	***315***	10	90	<1
Permanently sick or disabled	***198***	12	88	-
Housing tenure				
Mortgage	***1,714***	61	27	12
Private rent	***542***	25	41	34
Social rent	***925***	17	64	19
Own outright	***513***	45	46	9
Equivalised income				
1st (lowest) quintile	***705***	12	77	11
2nd	***555***	25	55	20
3rd	***747***	42	34	24
4th	***839***	54	29	17
5th (highest) quintile	***848***	67	22	11
Total	***3,694***	**43**	**40**	**16**

Notes:
'-' indicates there were no cases in the sample. '<1' indicates a value of greater than zero but less than one.

Table A2. 7 'Mortgage' by socio-demographic characteristics

				Row percentages
	Unweighted base	Does have a mortgage on the main home	Does not have a mortgage risk*	Has one or more mortgage risks*
Gender				
Male	***1,798***	46	65	35
Female	***1,896***	45	66	34
Age group				
Aged under 20	***81***	3	na	na
Aged 20 to 29	***700***	31	74	26
Aged 30 to 39	***988***	52	71	29
Aged 40 to 49	***927***	59	60	40
Aged 50 to 64	***998***	37	61	39
Family structure				
Single Adult	***558***	32	66	34
Partnered with no dependent children	***865***	47	66	34
Lone parent with dependent children	***562***	28	55	45
Partnered with dependent children	***1,158***	62	69	31
Other	***551***	34	57	43
Employment status				
In full time education or training	***168***	28	62	38
Working full time (30hrs+ including temporarily off)	***1,787***	60	67	33
Working part time (including temporarily off)	***609***	52	66	34
Looking after the home or family	***453***	28	63	37
Retired from paid work	***164***	24	52	48
Unemployed	***315***	11	na	na
Permanently sick or disabled	***198***	18	na	na
Housing tenure #				
Mortgage	***1,714***	92	65	35
Private rent	***542***	3	na	na
Social rent	***925***	<1	na	na
Own outright	***513***	3	na	na
Equivalised income				
1st (lowest) quintile	***705***	17	31	69
2nd	***555***	24	63	37
3rd	***747***	41	76	24
4th	***839***	57	70	30
5th (highest) quintile	***848***	70	63	37
Total	***3,694***	**45**	**65**	**35**

Notes:
* Indicates that these are based on the subset who have a mortgage on the main home.
# Respondents were asked for the way they considered they occupied their home, producing some mismatch against the specific question of whether they had a mortgage on their main home on which the risk indicator is based.
'na' indicates that the figure is not available because too few were eligible for this risk. '<1' indicates a value of greater than zero but less than one.

Table A2. 8 'Consumer borrowing' by socio-demographic characteristics

			Row percentages
	Unweighted base	Does not owe large sum in consumer borrowing	Personally owes more than 6 times monthly household income in unsecured borrowing
Gender			
Male	***1,798***	95	5
Female	***1,896***	95	5
Age group			
Aged under 20	***81***	91	9
Aged 20 to 29	***700***	91	9
Aged 30 to 39	***988***	95	5
Aged 40 to 49	***927***	96	4
Aged 50 to 64	***998***	97	3
Family structure			
Single Adult	***558***	96	4
Partnered with no dependent children	***865***	97	3
Lone parent with dependent children	***562***	93	7
Partnered with dependent children	***1,158***	96	4
Other	***551***	92	8
Employment status			
In full time education or training	***168***	81	19
Working full time (30hrs+ including temporarily off)	***1,787***	96	4
Working part time (including temporarily off)	***609***	96	4
Looking after the home or family	***453***	97	3
Retired from paid work	***164***	98	2
Unemployed	***315***	95	5
Permanently sick or disabled	***198***	96	4
Housing tenure			
Mortgage	***1,714***	96	4
Private rent	***542***	91	9
Social rent	***925***	95	5
Own outright	***513***	98	2
Equivalised income			
1st (lowest) quintile	***705***	94	6
2nd	***555***	94	6
3rd	***747***	94	6
4th	***839***	95	5
5th (highest) quintile	***848***	98	2
Total	***3,694***	**95**	**5**

Table A2. 9 'Income and payment protection' by socio-demographic characteristics

				Row percentages
	Unweighted base	Is a sole or main earner	Is sole or main earner with some cover for sickness, accident or redundancy*	Is sole or main earner without any protection*
Gender				
Male	***1,798***	75	65	35
Female	***1,896***	69	58	42
Age group				
Aged under 20	***81***	32	57	43
Aged 20 to 29	***700***	66	56	44
Aged 30 to 39	***988***	78	61	39
Aged 40 to 49	***927***	81	65	35
Aged 50 to 64	***998***	65	62	38
Family structure				
Single Adult	***558***	57	59	41
Partnered with no dependent children	***865***	78	62	38
Lone parent with dependent children	***562***	48	54	46
Partnered with dependent children	***1,158***	88	62	38
Other	***551***	67	64	36
Employment status				
In full time education or training	***168***	14	na	na
Working full time (30hrs+ including temporarily off)	***1,787***	100	70	30
Working part time (including temporarily off)	***609***	96	52	48
Looking after the home or family	***453***	41	31	69
Retired from paid work	***164***	17	na	na
Unemployed	***315***	13	na	na
Permanently sick or disabled	***198***	12	na	na
Housing tenure				
Mortgage	***1,714***	90	71	29
Private rent	***542***	67	47	53
Social rent	***925***	43	38	62
Own outright	***513***	68	56	44
Equivalised income				
1st (lowest) quintile	***705***	21	38	62
2nd	***555***	52	48	52
3rd	***747***	81	53	47
4th	***839***	91	64	36
5th (highest) quintile	***848***	96	72	28
Total	***3,694***	**72**	**61**	**39**

Notes:
* indicates that these are based on the subset who are a main earner (and, if single, are in work).
'na' indicates that the figure is not available because too few were eligible for this risk.

Table A2. 10 'Partner life insurance' by socio-demographic characteristics

				Row percentages
	Unweighted base	Does need partner to have life insurance	Partner has life insurance*	Partner does not have life insurance*
Gender				
Male	***1,798***	46	35	65
Female	***1,896***	51	37	63
Age group				
Aged under 20	***81***	15	na	na
Aged 20 to 29	***700***	42	25	75
Aged 30 to 39	***988***	56	32	68
Aged 40 to 49	***927***	56	35	65
Aged 50 to 64	***998***	42	49	51
Family structure				
Single Adult	***558***	-	na	na
Partnered with no dependent children	***865***	61	44	56
Lone parent with dependent children	***562***	-	na	na
Partnered with dependent children	***1,158***	-	na	na
Other	***551***	13	100	-
Employment status				
In full time education or training	***168***	25	na	na
Working full time (30hrs+ including temporarily off)	***1,787***	51	39	61
Working part time (including temporarily off)	***609***	60	40	60
Looking after the home or family	***453***	58	26	74
Retired from paid work	***164***	42	36	64
Unemployed	***315***	27	20	80
Permanently sick or disabled	***198***	27	39	61
Housing tenure				
Mortgage	***1,714***	62	42	58
Private rent	***542***	34	21	79
Social rent	***925***	34	18	82
Own outright	***513***	42	45	55
Equivalised income				
1st (lowest) quintile	***705***	31	22	78
2nd	***555***	43	30	70
3rd	***747***	51	30	70
4th	***839***	53	35	65
5th (highest) quintile	***848***	60	49	51
Total	***3,694***	**49**	**36**	**64**

Notes:
indicates that these are based on the subset who are dependent on their partner.
'-' indicates there were no cases in the sample. 'na' indicates that the figure is not available because too few were eligible for this risk.

Table A2. 11 'Home insurance' by socio-demographic characteristics

			Row percentages
	Unweighted base	Has home contents and buildings insurance as appropriate	Home is not protected with the necessary contents or building insurance
Gender			
Male	***1,798***	68	32
Female	***1,896***	66	34
Age group			
Aged under 20	***81***	7	93
Aged 20 to 29	***700***	43	57
Aged 30 to 39	***988***	68	32
Aged 40 to 49	***927***	76	24
Aged 50 to 64	***998***	78	22
Family structure			
Single Adult	***558***	56	44
Partnered with no dependent children	***865***	76	24
Lone parent with dependent children	***562***	48	52
Partnered with dependent children	***1,158***	77	23
Other	***551***	59	41
Employment status			
In full time education or training	***168***	52	48
Working full time (30hrs+ including temporarily off)	***1,787***	77	23
Working part time (including temporarily off)	***609***	76	24
Looking after the home or family	***453***	51	49
Retired from paid work	***164***	84	16
Unemployed	***315***	27	73
Permanently sick or disabled	***198***	48	52
Housing tenure			
Mortgage	***1,714***	88	12
Private rent	***542***	36	64
Social rent	***925***	33	67
Own outright	***513***	85	15
Equivalised income			
1st (lowest) quintile	***705***	41	59
2nd	***555***	50	50
3rd	***747***	66	34
4th	***839***	77	23
5th (highest) quintile	***848***	87	13
Total	***3,694***	**67**	**33**

Appendix 3 – Socio-demographic profile of the latent classes

Table A3. 1 Socio-demographic profile of the latent classes

							Column percentage (%)
Latent Class	1	2	3	4	5	6	Total
Share of the population (weighted percentage)	31	21	19	12	9	7	100
Unweighted sample	**1,097**	**737**	**754**	**460**	**410**	**236**	**3,694**
Gender							
Male	50	52	39	40	46	57	47
Female	50	48	61	60	54	43	53
Age group							
Aged under 20	<1	-	5	1	7	<1	2
Aged 20 to 29	16	9	24	20	34	8	18
Aged 30 to 39	30	27	23	34	25	12	27
Aged 40 to 49	30	33	18	20	16	22	25
Aged 50 to 59	20	27	22	21	14	36	23
Aged 60 to 64	3	4	7	4	3	20	5
Family structure							
Single Adult	9	13	25	5	24	18	15
Partnered with no dependent children	27	31	15	28	14	34	25
Lone parent with dependent children	8	7	32	5	26	15	14
Partnered with dependent children	44	37	12	55	2	16	32
Other	13	11	15	6	34	17	14
Employment status							
Working	92	93	2	63	95	34	68
Working full time (30hrs+ including temporarily off)	71	71	-	39	56	13	48
Working part time (including temporarily off)	20	21	1	23	28	8	17
Not working	8	7	98	37	5	66	32
In full time education or training	2	1	7	2	12	14	4
Looking after the home or family	6	5	33	22	1	18	13
Retired from paid work	<1	1	8	6	2	28	5
Unemployed	1	1	31	5	2	8	8
Permanently sick or disabled	<1	1	20	3	-	10	5
Employed	91	90	85	71	97	68	88
Self-employed	9	10	15	29	3	32	12
Housing tenure							
Mortgage	72	75	8	37	13	37	48
Private rent	8	5	18	19	39	8	14
Local authority rent	9	4	63	32	36	10	24
Own outright	10	15	11	13	12	45	14
Equivalised household income							
1st (lowest) quintile	5	2	57	13	17	31	18
2nd	10	3	27	20	19	12	14
3rd	22	14	12	25	31	13	19
4th	31	29	3	26	22	24	23
5th (highest) quintile	31	52	1	16	11	20	25

Table A3. 2 (continued) Socio-demographic profile of the latent classes

Keeping up with bills and commitments							
Keeping up without difficulty	59	78	38	50	53	70	58
Struggle from time to time	31	20	36	39	32	26	30
Constant struggle or falling behind	10	2	26	11	15	4	12
Government region							
North East	3	3	6	5	5	1	4
North West	10	14	12	10	12	13	11
Yorkshire and the Humber	7	9	9	10	7	9	8
East Midlands	7	8	6	8	4	9	7
West Midlands	11	7	9	10	9	9	9
East	9	10	8	10	6	15	9
London	11	10	18	11	20	11	13
South East	16	16	8	11	11	15	13
South West	10	10	5	8	8	7	9
Wales	4	4	6	6	5	4	5
Scotland	9	8	9	8	10	7	9
Northern Ireland	2	2	3	3	3	2	3

Notes:
-' indicates there were no cases in the sample. '<1' indicates a value of greater than zero but less than one.

Appendix 4 – Socio-demographic predictors of latent class membership

Table A4. 1 Resulted of logistic regression predicting class membership by socio-demographic characteristics

Odds ratios

Latent class	1		2		3		4		5		6	
Work status (In full time education or training)	**1.0**		**1.0**		**1.0**		**1.0**		**1.0**		**1.0**	
Working full time (30+ including temporarily off)	4.3	**	4.4	**	0.0		2.2		4.4	**	59.7	**
Working part time (including temporarily off)	2.9	**	4.1	**	0.0	**	3.8	**	5.4	**	2.7	**
Looking after the home or family	0.9		1.6		4.0	**	4.6	**	0.0	**	17.0	**
Retired from paid work	0.1	**	0.5		4.4	**	5.0	**	0.8		24.0	**
Unemployed	0.5		0.5		8.7	**	2.1		0.1	**	8.8	**
Permanently sick or disabled	0.2	**	0.6		13.3	**	1.8		0.0		12.7	**
Gender (men)	ns		ns		ns		ns		ns		**1.0**	
Women											0.5	**
Age (30 to 39)	ns		**1.0**		ns		ns		**1.0**		**1.0**	
Aged under 20			-						3.4	**	0.2	*
Aged 20 to 29			0.7	*					1.4		0.7	
Aged 40 to 49			1.3						0.6	*	2.3	**
Aged 50 to 64			1.3						0.6	*	2.5	**
Family type (Single adult, no dependent children)	**1.0**		**1.0**		**1.0**		**1.0**		**1.0**		**1.0**	
Partnered with no dependents	2.3	**	0.6	**	0.4	**	3.3	**	0.4	**	0.8	
Lone parent with dependent children	1.0		0.6	**	2.0	*	0.5	*	1.5	*	1.7	
Partnered with dependent children	2.5	**	0.4	**	0.3	**	6.2	**	0.0	**	0.6	
Other	1.6	**	0.6	**	0.6	*	1.2		1.3		1.0	
Tenure (Mortgage)	**1.0**		**1.0**		**1.0**		**1.0**		**1.0**		**1.0**	
Rent (private landlord)	0.3	**	0.3	**	4.2	**	3.2	**	10.5	**	0.5	*
Rent (social landlord)	0.3	**	0.3	**	7.2	**	2.5	**	9.3	**	0.3	**
Own outright	0.5	**	0.9		1.6		1.6	*	2.7	**	2.3	**
Household Income lowest quintile)	**1.0**		**1.0**		**1.0**		**1.0**		**1.0**	**	ns	
Second highest quintile	1.6	*	2.5		1.0		1.4		1.1			
Second lowest quintiles	1.9	**	5.3	**	0.5	**	2.6	**	0.6	*		
Middle quintile	1.8	*	8.8	**	0.1	**	2.8	**	0.3	**		
Highest quintile	1.0		18.2	**	0.1	**	1.3		0.2	**		

Notes:
The reference category is shown in brackets. '*' indicates a significant difference from the reference category (p<0.05) and '**' indicates a highly significant difference (p<0.01). 'ns' indicates that the measure was not significant in the model (p>0.05). '-' indicates that there were too few cases to allow the model to estimate the odds ratio for this category.

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