This is a repository copy of *Estimating Housing Need*.

White Rose Research Online URL for this paper:
https://eprints.whiterose.ac.uk/72850/

Version: Submitted Version

Monograph:

Bramley, G, Pawson, H, White, M et al. (2 more authors) (2010) Estimating Housing Need. Research Report. Communities and Local Government , London.

Estimating housing need

Estimating housing need

Glen Bramley, Hal Pawson, Michael White and David Watkins (School of the Built Environment, Heriot-Watt University)

Nicholas Pleace (Centre for Housing Policy, University of York)

This research was commissioned by the previous government. The views and analysis expressed in this report are those of the authors and do not necessarily reflect those of the Department for Communities and Local Government. It makes reference to previous government policies.

Contents

Executive summary

Background

This report, together with the model which it describes, is the main output of a study commissioned by the Department for Communities and Local Government in August 2008. The key goal for the research was to develop a statistical model for estimating housing need at both the national and regional level, both for the current period and well into the future. The model was required to build on and enhance existing 'state of the art' modelling techniques and to possess the flexibility to address a wide range of possible future scenarios and 'what if?' questions. This report seeks to provide a concise account of the research as a whole, including an explanation of the selected variables measured and modelled, a summary of key outputs generated by the model and a commentary about the significance and implications of these.

Key findings

Behavioural models and baseline evidence are brought together in a medium sized spreadsheet-based simulation model to produce medium term conditional forecasts of housing outcomes, subject to a wide range of user-controlled assumptions or policy inputs.

Unmet housing need has increased and is forecast to increase sharply around 2009 due to demographic and economic pressures, inadequate supply and recent credit rationing. Needs are forecast to remain at higher levels than a few years ago, with the prospect of only gradual improvement over time.

Increasing social housing supply has a larger and earlier impact on need than private supply, although there is a good case for a balance of provision including intermediate tenures. Social housing allocation policies appear to have quite a significant impact on need trajectories, but this finding must be weighed with other considerations.

Housing need: concept, theory and past research

Like other forms of social need, housing need is intrinsically a normative concept. Judgements about the conditions in which someone can be considered as 'in need' are inherently based on assumed 'acceptable standards'. All revolves around decisions about which people with what problems have priority in what circumstances.

Critical concepts embedded within traditional approaches to the measurement of housing need include the distinction between 'backlog' and 'newly arising' need. Recognition of this duality has important implications for needs estimation methodology. It is also important to differentiate between 'need' and 'demand' and to recognise that valid policy responses to need include some which do not entail new provision of affordable housing.

Governments may require estimates of housing need for a variety of purposes. These can provide a way of monitoring the state of the housing system, analagous to poverty or labour market tracking measures. They may form an input to public

spending review discussions about the scale of state-funded housing investment and will also inform government about the desirable composition of the investment programme, e.g. in relation to the size or tenure mix of homes newly constructed with public subsidy.

Forms of housing need and underlying influences on needs incidence

The multi-dimensional quality of housing need can be classified under four general headings: lacking own secure tenure, mismatch/unsuitability, house condition and social needs. These are largely embodied in the legal framework as set out in the Housing Act 1996. However, enumeration of those experiencing each form of need, as required in the construction of a statistical model, necessitates use of some proxy indicators as well as statistics which are direct measures of the relevant phenomena.

Housing need drivers include demographic trends such as migration rates, population age structures and household headship rates. However, economic factors are also relevant – both directly and indirectly in terms of their influence over demographic outcomes such as household formation. Hence, any comprehensive housing needs model must include both demographic and economic variables.

Existing approaches to modelling housing needs

Four main approaches can be discerned within previous work on modelling housing needs. First, there is the Holmans model, a primarily demographic framework sometimes termed a 'net stock' methodology. Second, there is the approach developed by Cambridge University's Department of Applied Economics (DAE); this more ambitious framework included modelling of both house prices and household formation. However, it incorporated a rather specific and economistic definition of the need for social housing which allowed little scope for flexibility or policy choices.

The third general approach may be termed an affordability-based needs model. Although particularly associated with the present author this approach has been adopted by other researchers and consultants, particularly in the context of sub-national needs studies. The model focuses mainly on the need for additional subsidised provision and does not cover needs relating to house condition or unsuitability within the social sector.

The fourth approach, as exemplified here by the Greater London Housing Needs study (2002-04), involves a survey-based model incorporating many of the concepts and features included in the other three approaches (e.g. distinction between backlog and newly arising need, explicit focus on affordability). However, like the Holmans approach, this model is limited in that it contains no behavioural dimension in relation to factors such as migration, household formation, house prices and rents.

Why a new approach?

The approach adopted in this study goes beyond these previous attempts at modelling need, taking account of their limitations while setting a vision for the kind of model required. We want to know how housing needs and other outcomes of the housing

system, for example household numbers and types, are likely to evolve in the medium term, and how they will be affected by changing economic, market and other conditions, including government policies. To understand and model the processes producing these outcomes entails looking at the current active market as well as background conditions (flows as well as stocks), while recognising crucial differences in the way tenures are rationed, regional and sub-regional differences, and cumulative processes. At the same time, the end product should be a model which is relatively easy to use to test a wide range of scenarios.

Incidence and drivers of different needs

In the research a number of distinct needs categories were identified and defined. Each of these need types was examined with respect to its national and regional incidence, and also in terms of trends over time as well as demographic and tenure patterns. Drivers of and relationships between different forms of need were also explored.

Concealed households are family units or single adults living within 'host' households. Depending on the chosen definition, concealed households are present in up to 4.1 per cent of all households in England. Concealed family households are much more prevalent in London. At a national level their numbers have recently been increasing. Particularly given that formerly concealed households account for almost 30 per cent of new lettings in social rented housing, they are an important component in housing needs, overall.

Sharing households include lodgers and others who share use of facilities within a dwelling but do not cater collectively or share a living room. About 1 per cent of households are sharers and although their numbers have been subject to long-term decline, they may recently have plateaued. Like concealed single person households they are overrepresented in private renting and in London.

Unaffordability as a form of housing need is defined in this study as follows. For private renters, it affects those paying more than 50 per cent of their net income in rent, and/or those whose residual (post-rent) income is below the 'applicable amount' for housing benefit purposes. Mortgaged owners in circumstances of unaffordability are those with more than six months arrears or who are otherwise finding it 'very difficult' to meet payments, or 'falling further behind' with these. Applying these rather different definitions, unaffordability appears far more common among private renters (13 per cent) than owners (0.7 per cent). Further investigation confirms that on comparable ratio-based measures of risk private renters are still two-three times more likely to face such problems as mortgaged owners.

Overcrowding, a fourth identified form of housing need, affected an average of 2.7 per cent of households over the period 1997-2007. Compared with owner occupiers, rates of overcrowding have been three times higher in the private rented sector and four times higher among social renters. Across all tenures, overcrowding has been 3-4 times higher in London than elsewhere. Nationally, the incidence of the problem appeared to increase somewhat in the 2003-07 period and is forecast to increase further.

In relation to unsuitable accommodation as a form of housing need, the analysis focused on families in high flats and elderly or disabled persons living in inappropriate

dwellings. At least 2 per cent (and possibly up to 5 per cent) of all households are affected on this basis and although incidence is higher in London the margin is smaller than in relation to most other forms of housing need.

Homelessness is another well-recognised form of housing need particularly prevalent in London. Both in the capital and elsewhere – almost certainly thanks to vigorous prevention activity on the part of local authorities – recorded numbers of households owed a main homelessness duty (homelessness acceptances) fell dramatically between 2003 and 2007. Modelling suggests the most effective measures have involved universal home visits, floating support referral, formal referral to family mediation and 'sanctuary schemes'. Adjusting homelessness acceptance rates for reported prevention activity suggests that the underlying rate of homelessness did, in fact, increase steadily from 1997 to 2007. Partly because homelessness substantially overlaps with other measures of housing need in the model, it is treated as a kind of 'overlay' on the main need estimates.

In calibrating housing need in relation to unsatisfactory house condition, compliance with the Decent Homes Standard has been taken as the main benchmark. A distinction has, however, been made in relation to those whose home is 'non-decent' solely in relation to inadequate thermal comfort (both because this category is widespread and because such problems are usually fairly inexpensive to remedy). Almost a quarter of households living in non-decent dwellings are subject to at least one other form of housing need.

Taking the core need indicators together London stands out from all other regions with 15 per cent of all households experiencing at least one form of need, compared with a national average of 7 per cent (excluding condition problems, which would roughly double these figures if included).

Housing related support

Alongside the development of the general needs model, the study explored how housing support services impact on overall housing need. These 'low intensity' housing related support services are targeted on three broad groups: older people, (other) adults with support needs, and socially excluded people. Individuals may be supported on a short or long-term basis, with provision models including both 'floating support' and 'accommodation-based'. In recent years such activities have often been funded under the Supporting People (SP) programme.

A review of existing housing support service needs assessment techniques suggested that these were not always robust either in terms of their methodology or the data upon which reliance was placed. In practice, such data as are available in this area tend to reflect patterns of service provision rather than needs, per se. Commissioning patterns have been influenced by 'legacy' service provisions, many of which were originally developed on a fairly ad hoc basis. Nevertheless, analysed spatially, it is perhaps reassuring that the data confirm the provision of more services for socially excluded groups in areas with more deprivation and more services for older people in areas with higher proportions of persons aged over 65.

Short term housing related support services are dominated by provision for socially excluded groups. Since around 70 per cent of those exiting such services move to a rented tenancy, they may represent a significant proportion of these housing sectors' annual flow of lettings, particularly for the social sector.

Although our investigation of housing related support services was partly a parallel track, setting housing related support service provision estimates alongside numbers derived from the main housing needs model also reveals some further insights. For example, the inflow into older people services represents about a fifth of over-60 households with 'unsuitability problems' – a not unreasonable ratio of flow supply to stock/backlog need. Our analysis also suggests that about two thirds of such older people needs are met by ongoing services. In a regional context, it appears that housing related support provision/takeup is low relative to need in London (for all clients), in the South East (for adults with support needs and socially excluded), and to some extent in the West Midlands and Yorkshire and Humberside (for older people). Conversely, provision/takeup looks high in the East Midlands and the East of England (for older people) and in the North East and West Midlands (for socially excluded clients).

By accommodating former social renters, housing related support services for older people play an important role in facilitating the generation of vacancies in social rented housing. Nationally, nearly one-in-ten general needs social rented sector lets arise in this way, with higher figures in the East, the South East and the South West, but much lower figures in London.

Also among the key findings of the above work that warrant further attention is that relating to the use of the social rented sector and (and a subsector of the private rented sector) by socially excluded groups coming through shorter term housing related support services. The rate at which these households consume available re-lets in these sectors, especially a social sector in particularly short supply, may be quite significant in some regions. It feeds into the longstanding concerns about residualisation of the social sector.

Household formation, mobility and tenure choice

Household formation, household composition changes, mobility and tenure choice are centrally important for our understanding of how economic, social and demographic forces act through the housing system to generate housing need outcomes. Through a review of previous research on these issues we have developed a set of behavioural models forming the foundation of the simulation model constructed to estimate housing needs now and in the future.

Literature reviews on household formation and tenure choice/mobility have drawn out key theoretical and methodological insights and these are supported by existing empirical models of key relationships. Building on this and on recent data on observed patterns, econometric models for these key processes have been constructed. Our findings are presented in terms of key determinants of household flows and their distribution between tenures.

Modelling household formation

In considering household formation, there has been an evolution from traditional demographic projection methods which, although sophisticated, remain extrapolative in character, towards modelling approaches which take more account of economic and social influences, including affordability conditions in housing markets. Recent data show that, although some long established trends to more separate household formation continue, there have been reductions in separate household formation by younger adults in some regions which probably reflect recently worsening affordability and supply constraints.

The model developed for household formation in the current study builds on earlier work in using longitudinal micro data on household transitions, linked to contextual data on housing and labour market conditions at a relatively local geographical scale. This model captures a range of effects as expected on theoretical grounds or as found in earlier empirical research. While demographic factors like age structure, marriage and children remain important, we also reveal evidence that income, employment/unemployment, house prices and the supply of social lettings impact significantly on household formation. Our analysis here also addresses other elements of household change, including 'in situ' changes in household composition, the scale and incidence of household dissolutions, and the effect of migration.

Modelling tenure choice

In approaching tenure choice we emphasise the need to go beyond traditional approaches by including a genuine behavioural perspective, by focussing on flows of households actually moving in the market, and by recognising that the social rented sector is 'different' in the sense that supply is rationed and allocated administratively. The literature review emphasises the importance of factors like credit constraints as well as affordability and, in particular, the crucial role of expected mobility or length of stay in influencing the choice to buy a home. The growing importance of private renting is also apparent. Reviewing past research underlines that although economic factors are important in tenure choice, demographic factors continue to play a part.

The preferred form of model developed adopts a sequential approach; first predicting mobility itself, then the choice to buy, followed by the choice/opportunity to move into social renting, with private renting the residual option. This scheme is applied separately to four groups: new households, existing owners, social and private renters. The mobility models draw out the importance of age, tenure and income. Younger people, private renters, and higher income households display greater mobility. These factors are more important than any differences between regions.

More mobile households are less likely to buy, as are migrants and the young, while more qualified/higher SEG households are more likely to buy. Worse affordability clearly deters house purchase for all groups, whilst social lettings supply has little effect. Mobile and migrant households are less likely to enter social renting, while this tenure is more important generally for the young and the old and for lower income and non-working households. House prices and affordability do not have so much effect on these flows, while social lettings supply has a stronger positive effect for new households.

Constructing an overall simulation model

The culmination of the work described above was the development of a spreadsheet-based simulation model integrating the research outputs within a framework which projects forward the evolution of the English housing system at regional level given specified economic, demographic and policy scenarios. The principal outputs of this simulation model are (for each region):

- The size and household composition of the main tenure groups at future dates
- The incidence of a range of specific need categories at future dates.

The model can be represented at a high level in terms of a structure with five main modules covering household change, the housing market, tenure flows, specific needs and overall simulation. Each of these can in turn be represented schematically in greater detail.

Base period data for the model are derived primarily from the Survey of English Housing (SEH) pooled over 11 years to 2007/8, supplemented by data from Labour Force Survey (LFS, 1992-2008), British Household Panel Survey (BHPS) and the Continuous Recording System (CORE) for social lettings. Processes and outcomes are modelled at the level of 12 household age-type groups by three main tenures and 9 regions, and conditional forecasts are made annually for 2009-2021. Via the model we demonstrate significant differences in the household profile of both tenures and regions and, in particular, highlight the substantial differences in needs incidence between household groups.

The basic model operation is described in Chapter 6, highlighting the interaction of household composition changes with the effects of changes in regional socio-economic and market drivers, using the results of the earlier econometric modelling to quantify these effects. Tenure flows are generated using the sequential approach to modelling developed in Chapter 5, while needs are forecast using the models described in Chapter 3. Endogenous variables within the model are generally accommodated through a recursive structure and/or the use of lagged values.

The estimating housing need model operates in tandem with the DCLG Affordability model and takes forecasts for a number of variables from this source. Both models contain adjustments for the current episode of credit rationing although some limitations on the ability to model labour market changes are recognised.

Semi-automatic mechanisms are incorporated within the model to ration social housing inflows to available supply, and to reconcile total household and stock numbers in the private sector. These have various feedback effects on household formation, tenure numbers and on needs, and reveal particular pressures on the housing system in the recent period. A method of forecasting private rents has been incorporated within the model to allow for the effects of rents on certain tenure flows and needs.

Consideration of the requirements of the needs forecasting model led to modified approaches in some elements of the models derived from Chapter 3, to better reflect path dependency (or the cumulative nature of need backlogs), tenure flows, and direct

evidence on the needs of new social housing tenants. An additional feature included in the final model is an ability to simulate the impact of low cost home ownership provision on needs and tenure flows.

Modelling housing needs scenarios

Having constructed a simulation model as described above, this has been put to work in producing conditional forecasts of households, tenure and housing need outcomes. The model has proved capable of demonstrating the way in which recent market changes have generated a higher level of unmet need. More importantly, it enables us to forecast future levels of need, given certain levels of supply and economic conditions. Needs are expected to peak in 2009-10 and remain at a higher level than in the recent past for some years. In the medium term (up to 2021) some reduction in backlog need may be anticipated, although this is unlikely to bring need down to below the levels of the early 2000s.

The baseline housing needs forecast generated by the model is summarised in Figure A. The total stood at 1.24m in 1999 and 1.29m in 2004 (6.1% of households), rising to 1.61m (7.3%) in 2007. The forecast is based on continuation of relevant existing policies and on judgements about the likely path of the wider economy going forward. It illustrates backlog need peaking in 2009 at around 1.99 million households – equivalent to 8.8 per cent of all households, before falling back gradually until 2021.

Figure A: Types of need profile over projection period
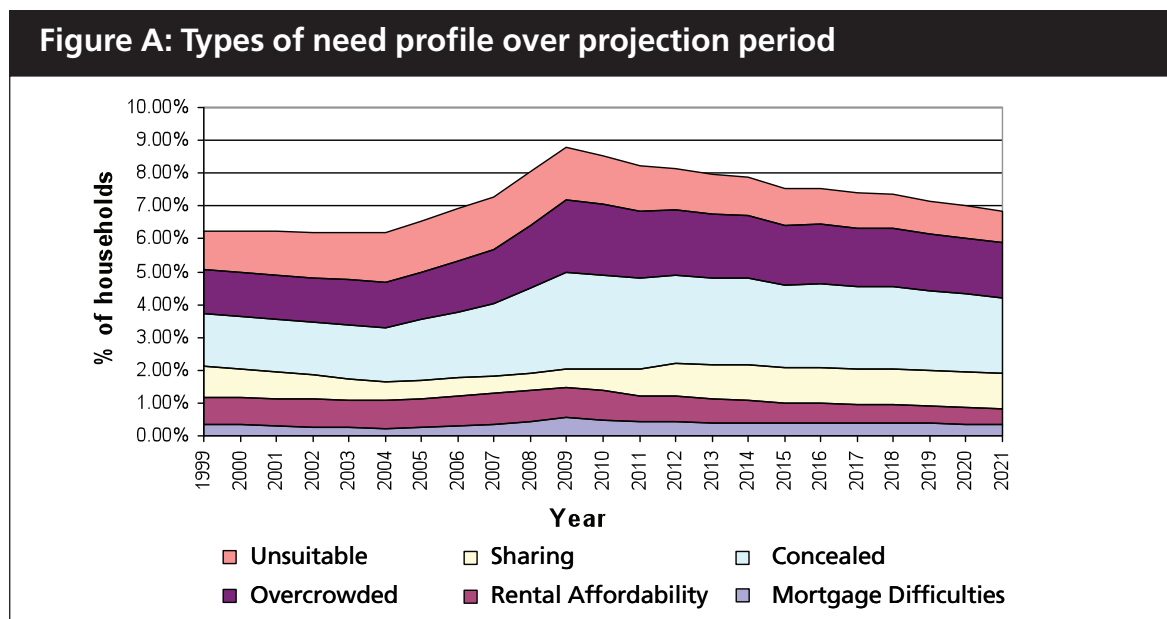
Modelling expanded housing supply

Increasing social housing supply would, according to the model, have a sizeable impact on backlog needs in the short-medium run. Increasing social rented supply by 269,000 dwellings over the planning period would, assuming the continuation of existing tenancy allocation policies, reduce backlog need by 168,000 by 2021. The difference between the two figures arises for a range of reasons including the formation of extra households.

The model suggests that increasing private housing supply by 435,000 over the planning period would have a smaller impact on needs than the expanded social rented output scenario outlined above. This magnitude of extra private supply would reduce backlog need by 91,000 by 2021. The impacts would be modest in the early period owing to time lags in building up supply and in the affordability impacts working through. A scenario where output is more modestly increased in both private and social sectors would deliver more appreciable reductions in need in the early years.

As well as reducing backlog need, expanding social rented supply as in the above scenario would also substantially increase household growth, from its current very suppressed level. The expanded private sector output scenario would also have a substantial impact on household growth, and would not increase owner occupation as much as private renting, while also increasing vacancies slightly.

Both higher and lower supply scenarios have bigger impacts on need in the regions where need is expected to be higher, namely London and the southern regions of England, especially the South West and South East. The types of need most sensitive to modelled changes in supply are concealed and sharing households, although there are also significant impacts on overcrowding, affordability and other problems.

This analysis also highlights the situation whereby, on current trends, younger households are getting less access to social housing and experiencing a growing incidence of need. An indirect effect of this is to further lower the turnover supply of social lettings.

A scenario involving expanded low cost home ownership shows that tripling the current programme (a total of 238,000 extra low cost home ownership units) would increase owner-occupation vs. private renting, increase household growth slightly, and reduce backlog need by 93,000 in 2021.

Modelling other policy, demographic and economic scenarios

The model can be used to test the consequences of certain types of change in social housing allocation priorities, in terms of household types and/or need groups. Scenarios involving more or less needs-based allocation priorities have major impacts on the level of backlog need. Increasing the share of our key need groups by 30 per cent (close to the maximum possible) would reduce backlog needs by 228,000 (14 per cent) in 2021; reducing their share by the same proportion would leave backlog need 304,000 (19 per cent) higher in 2021. This suggests that there are substantial tradeoffs between policies for widening choice and social balance, on the one hand, and meeting need on the other.

The model can also be used to explore changes in the regional allocation of social housing investment (or indeed private new build distribution). While, traditionally, housing needs have been much higher in London and less variable between other regions, a range of indications in the projections suggest that the regions where greatest increases in need may be expected are SE and SW. Our initial test here suggests that the overall national reduction in need from a regional re-distribution of a fixed amount of social housing investment is minimal; this is essentially about distribution, an attempt to reduce disparities in need between regions.

There are difficulties in modelling the economic recession including its labour market effects using the DCLG Affordability model, although we can make a partial test of the expected spike in unemployment within the EHN model. This suggests that the immediate effect in terms of pushing up backlog needs (and certain other need factors like the proportion of renters on housing benefit) is quickly offset as needs appear to fall back to a lower level – partly because household formation is reduced and partly because of lower prices. There would also be a persistent fall in owner occupation as a result of such a labour market recession.

Migration is another topical issue, and the model can be used to assess the impact on housing need of certain migration scenarios – albeit with considerable caveats regarding the different characteristics of international migrant groups. Under a 'low migration' scenario we would forecast a substantial reduction in backlog need (particularly sharing and concealed households), with rather less certain effects on tenure. Further work on this issue, distinguishing international migrants and taking account of price effects, may be appropriate.

Figure B provides a fitting way of summing up the impact of different scenarios tested on the trajectory of backlog need in England. It shows that the biggest reduction would be associated with less severe and less persistent credit rationing, whilst higher and more persistent credit rationing would lead to the worst need outcomes in the next five years. A sizeable reduction could be achieved by making social housing allocation as strongly needs-based as possible, while much less needs-based allocation would leave needs at a high level later in the period. However, any such policy shifts would have to be assessed against wider considerations. While the effects of greater supply, particularly involving social housing and low cost home ownership, are positive, the magnitude of their effects are less initially than the scenarios just mentioned, although comparable by the end of the period.

Figure B: Backlog need under different policy & controlled scenarios
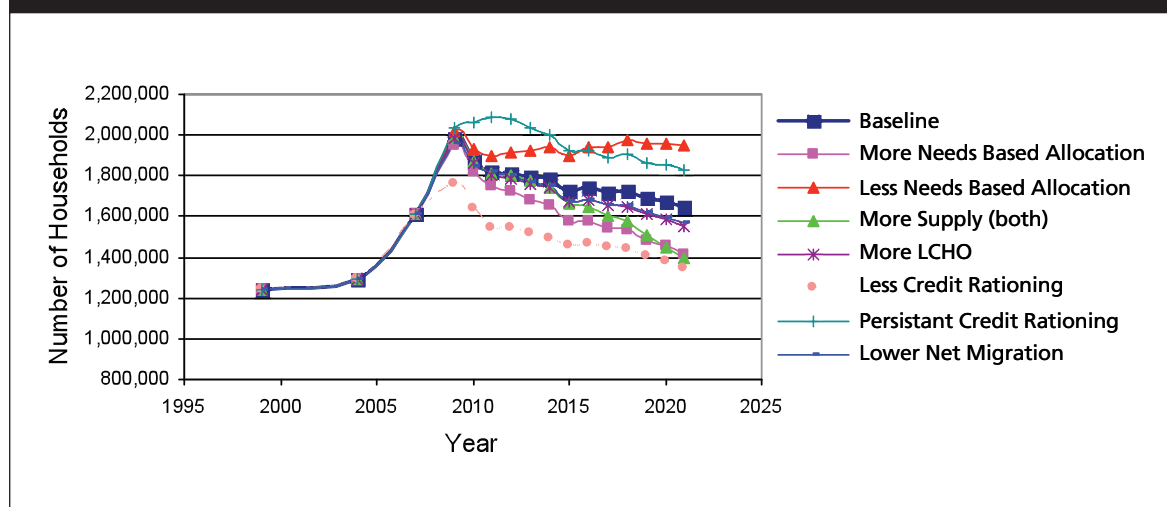
Conclusions

This research has involved an ambitious attempt to develop a housing needs model of considerably more sophistication than anything previously in existence. We believe the resulting product works in a plausible way and will be valuable to government analysts in its capacity for flexible deployment in helping to address a range of important policy questions. As an outcome-oriented approach, it provides a genuinely fresh way of looking at housing need and policy issues. For first time we can offer an evidenced answer to questions about what happens to needs if we do or do not provide particular numbers of extra homes in different tenures and regions.

Chapter 1

Introduction

Purpose

1.1   This report is the main output of the 'Estimating Housing Need' research project commissioned by DCLG in August 2008. Its main purpose (see Box 1.1, below) is to provide a concise account of the study as a whole, including an explanation of the selected variables measured and modelled, a summary of key outputs generated by the model and a commentary about the significance and implications of these.

Box 1.1: Purpose

- The Department for Communities and Local Government (DCLG) wished to commission the development of a model that would allow the Department to produce estimates of 'housing need'.

- The housing need model would be a medium-sized model.

- The model may also produce outputs in the area of the need for housing related support.

- Once developed, the housing need model would form an important component of DCLG's housing evidence base and will be used to inform policy development.

- The model would also add to DCLG's suite of models in the area of housing policy – and specifically it will interact with the extant DCLG Affordability Model.

[from Project Specification, s.1]

Background

1.2   Housing has attracted increasing policy attention in recent years. One important stimulus to this was the Barker (2004) Review of Housing Supply. The Government outlined many of its ambitions for housing policy in the July 2007 Housing green paper *(Homes for the future: more affordable, more sustainable)*. This set out the Government's vision that "everyone [should] have access to a decent home at a price they can afford, in a place where they want to live and work."[1] In the same period a wide-ranging review of the role and functioning of social housing was carried out by Professor John Hills[2] which examined the current role and profile of social rented housing, as well as discussing some options for how this might develop in the future. This included possible modifications in the social rented sector, including tenancy terms and

---

[1] P6 in: CLG (July 2007), Homes for the future: more affordable, more sustainable London: CLG
http://webarchive.nationalarchives.gov.uk/+/http://www.communities.gov.uk/publications/housing/homesforfuture

[2] Hills, J. (2007) Ends and means: the future roles of social housing in England, CASE report 34; London: LSE
http://sticerd.lse.ac.uk/case/news.asp#SocialHousing

conditions, rents, opportunities for mobility and patterns of new development. In addition substantial progress was made against the major commitments entered into in 2001 to achieve Decent Homes for all social tenants and vulnerable households in the private sector (see Chapter 3, para 3.56).

1.3 DCLG's Departmental Strategic Objective (DSO) 2[3], "To *improve the supply, environmental performance and quality of housing that is more responsive to the needs of individuals, communities and the economy*", reflects the high priority of supplying not only housing but the right type of housing. This DSO has a number of indicators which relate to various aspects of housing need (including children living in poor housing). These indicators will aid the Department in the measurement of success in tackling housing need over time.

1.4 DCLG's Planning Policy Statement 3[4] defines housing need as "*the quantity of housing required for households who are unable to access suitable housing without financial assistance*". One of the challenges facing the modelling team in this research was to develop and apply clear definitions of housing need (see point 1 in Table 1). It was anticipated that the definition of housing need given in PPS3 would serve as a foundation for this work.

1.5 The research was preceded by a Scoping Study[5], which reviewed the main existing approaches to housing needs estimation in the UK, highlighting their strengths and limitations, and suggested requirements for a new model. This provided a key jumping-off point for the research.

1.6 The Scoping Study underlined that need is inevitably in part a normative phenomenon, as well as a matter of (social) scientific measurement. In other words the definition of need entails value judgements about standards and who should have what. Having established such definitions and agreed standards, it is possible to set about measuring needs. The second key point about needs is that they are multi-dimensional, with qualitatively different kinds of need which often affect different groups of people and different geographical areas to differing degrees. Some of the key types of housing need of concern to government include:

- homeless people and those living in temporary accommodation
- overcrowded households
- people forced to share or live with others when they would rather form separate households
- people with housing-related support needs
- 'non-decent' homes

1.7 The different types and gradations of need are discussed further in Chapter 2, while Chapter 3 presents evidence on the incidence of different needs and the factors which may cause needs to vary.

---

[3] http://www.communities.gov.uk/corporate/about/howwework/publicserviceagreements/departmentalstrategicobjectives/

[4] http://www.communities.gov.uk/publications/planningandbuilding/pps3housing

[5] The paper by Glen Bramley entitled *Scoping Note on Approaches to Estimating Housing Need* was published as Housing and Communities Analysis Expert Panel Paper 4 by the Centre for Housing Policy at the University of York.

1.8 The social rented sector of housing clearly plays a major role in meeting need and is the direct object of much of government's housing policies and public investment. Therefore, a part of any study of housing need must involve considering the size of the sector: how big will it be in future, and how big should it be? The answers to these questions depend in part on views taken about the future roles and functions of the sector, issues examined in the Hills (2007) review.

1.9 When considering the need for social housing people frequently refer to housing 'waiting lists' as evidence of unmet need or demand. Recent national data show an apparent large rise in waiting lists. While accepting that this is clearly one symptom of a system under pressure, we have a somewhat sceptical view of the value of waiting lists per se as consistent measures of need, as explained in Chapter 2.

1.10 Government housing and planning policy has increasingly emphasised 'affordability' as a key goal, particularly following the Barker (2004) Review and the subsequent policy commitments reflected in the 2007 green paper and Public Service Agreement Targets. The affordability concept and its relationship with needs is discussed in Chapter 2. DCLG already has an operational model known as the 'Affordability Model'[6], which essentially predicts the ratio of house prices to incomes under different economic and housing supply scenarios. This model operates at regional level, like the housing need model developed in this project, and an important requirement of this project was that the two models should be linked.

1.11 Affordability, the relationship between housing prices or costs and incomes, is an important factor, not just in its own right but also for its impact on housing needs. Recognition of this is an important step forward from traditional approaches to housing need based on demographic projection. However, this is not to argue that housing need is solely driven by these economic variables. It remains important to consider a range of other influences, including demographic, social and environmental factors, and vital to remember that need is always in part a normative concept.

1.12 Significant demographic trends are impacting on housing need and demand, notably the growth in population resulting from both international migration and natural change. Trends towards smaller households continue to mean higher levels of growth in household numbers. People are living longer and the population structure is ageing. However, this may or may not mean greater needs for housing-related support or specialised housing, as longer lives may be healthier lives.

---

[6] The CLG Affordability Model, often referred to as the 'Reading model', was developed by a multi-university team led by Professor Geoff Meen; the basic model was described in the report of December 2005 http://www.communities.gov.uk/publications/housing/affordabilitytargetsimplications; significant updates and enhancements are reflected in reports published by the Department in June 2008 http://www.communities.gov.uk/publications/housing/affordabilitymodeldevelopments and September 2009 http://www.communities.gov.uk/nhpau/keypublications/research/affordabilitymodelguide.

Type of model required

1.13   Recognition of different dimensions or types of need is valuable in providing more evidence for policymakers. However, some caution is needed when we quantify numbers and look at the overall picture. Firstly, needs may 'overlap' in the sense that one household might have more than one type of problem. This can give rise to an issue of double counting 'households in need' unless we make a specific adjustment for this. Secondly, different needs may warrant different solutions; these solutions may not all take the form of providing the household affected with a unit of social rented accommodation. Some problems may be better solved 'in situ'; for example, through improvements or adaptations, perhaps supported by a financial subsidy or regulation. Many people may be best able to resolve their problem by moving to other housing within the market, whether unassisted or with limited help from the state. Thirdly, different groups with different types of need are likely to be viewed by government (nationally and locally) as having different degrees of priority.

1.14   These observations have implications for the approach to developing a model, and particularly for the reporting of its results. They suggest that the output of the model will be an array of numbers rather than a single number. There is a need to make adjustments to numbers built up from specific needs to allow for overlaps, and further adjustments to allow for in situ or self-driven/ market solutions.

1.15   Box 1.2 summarises key desirable features for the model to fulfil, as derived from the Scoping Study and the Project Specification.[7]

---

[7] The wording of some of the points in Box 1.2 has been edited, partly for brevity and partly to reflect slight modifications agreed in early stages of the research

---

Box 1.2: DCLG criteria for a housing need model

1. The methodology should apply clear definition(s) of housing need in consultation with DCLG.

2. Recognition should be given to the multi-dimensional nature of housing need, including possible districntion between 'core' and 'additional' need.

3. The approach should allow for and inform policy choices by showing the link between numbers and policies.

4. The method should be capable of yielding a single number bottom line answer, for given definition(s) and assumptions, as well as more disaggregated outputs.

5. The method should entail an explicit link between assumed/forecast economic conditions, demographic factors and housing need numbers.

6. The method should be able to forecast normatively relevant outcomes based on realistic models of behaviour.

7. The method should be capable of expression in terms of stocks and flows, with these different numbers being consistent and reconciled.

8. The model should operate at national and regional levels.

9. The model should be capable of using outputs from the DCLG Affordability Model.

10. The model should be based, so far as possible, on large scale secondary datasets available to government.

11. In-house analysts should be able quickly and easily to update the model.

1.16   The Department also required that the model should have the capacity to explore the housing need consequences of different interventions in the housing market. For example, what happens to need under different allocations policies? And which demographic groups would win and lose from such changes in policy? However, the model is primarily an analytical tool, and as such it has not been designed to offer conclusions on what is the 'optimal' or 'right' policy.

1.17   Traditional housing needs models and estimates have tended to focus on a single number housing need figure[8]. This is typically either the total number of dwellings, or the total number of social rented dwellings, which should be provided over a certain time period. The model developed in this research is slightly different in its philosophy and orientation. We are interested in housing needs as a range of 'outcomes' from the housing system. The model aims to make a conditional forecast of the trajectory of those outcomes over the medium term, where the conditions are specified as regards assumed demographic and economic conditions and also policy inputs (e.g. private and social housing supply, allocation priorities based approach. The policymaker is thus presented with a quantified picture of future prospects for key outcomes, in a series of 'what if…?' scenarios.

---

[8] The best known estimates of this kind are those associated with Alan Holmans, particularly through a series of studies supported by Shelter and other organisations (Holmans 1995, Holmans *et al* 1998, Holmans 2000, 2001, 2003). Other estimates and approaches are reviewed in the Scoping study (Bramley 2007)]

1.18   This 'outcome-based' approach is a little different from traditional housing need assessments. However, it can be used to come back to the same kind of central quantified number, if desired. The point is that need number is then the answer to a question of the form: 'if you want to bring backlog housing needs down to a level of (say) 20 per cent below 2007 levels by 2016, then what is the number of extra affordable or private homes which would need to be provided?' The different approaches represented by this model and various previous models and research literature on housing needs are reviewed further in Chapter 2.

Limitations of traditional approaches

1.19   The motivation and justification for this research is partly based on a recognition of the limitations of traditional approaches. These are discussed more fully in Chapter 2, but may be briefly summarised here.

- waiting lists reflect a mixture of need, demand, supply, expectations, rules and administrative procedures which vary greatly over time and space (see para 2.29 below)

- household surveys provide a static description of the 'backlog' of people with current needs, but do not directly provide a forecast of need in the future, particularly the emergence of new need and a recognition of the fluid, changing nature of individual situations (see para. 2.64 below)

- demographic projections represent a mechanistic extrapolation of household numbers and types but with no explicit link to economic, market or other drivers of change (see para. 2.49 below)

- macro and regional economic models can provide scenarios for future housing construction, prices and relationships with income, but they do not reflect the local variability of market conditions or the links between housing needs and other social, demographic and environmental factors at this level

- particular needs estimates are typically tied to particular normative standards and may be inflexible to changing policy priorities

- needs studies often produce a large number for the housing provision which is needed, when often resources and priorities will not support such a level; while not providing much indication of what may be expected to happen in the absence of such provision (or with a lower level)

Vision of preferred approach

1.20   We highlight here the key features of the approach which we have sought to adopt, responding to and overcoming many of the above limitations

- the approach views housing needs as problematic 'outcomes' which, while varying in nature and type, are expected to be of concern to governments

- it is recognised that outcomes are influenced by economic and market conditions and by social and environmental factors, as well as by demographic and policy inputs

- housing outcomes are affected both by background conditions and by the operation of the current active market, implying an analysis in terms of flows as well as stocks

- flows involved in household formation and movement between tenures are integral to the generation, maintenance and alleviation of need as well as being of policy interest in their own right

- access to different tenures is governed by different factors, with needs-based rationing central to the social sector while affordability is critical for homeownership

- housing need displays in part a cumulative character and the model should be capable of representing this, and the associated characteristic of 'path dependence' of outcomes

- the model should link to robust national and regional economic models while taking account where appropriate of variations in market conditions at sub-regional level

- the model should be easy to use and give the ability to manipulate and test sensitivities to a wide range of policy inputs and other assumptions

1.21   These elements of the 'vision' were developed to some extent in the 'Scoping study' (Bramley 2007) and embodied in the brief for the research.

Nature of the research

1.22   The starting point for this study has been to review previous research literature on housing needs. This builds on the review embodied in the Scoping Study (Bramley, 2007) and addresses issues about the concept and definition of need, measurement of need and forward projection and forecasting. This provides the main focus for Chapter 2. The literature review also addresses issues about how the housing system is understood to operate and, in particular, about the housing market and how key outcomes there (house prices and affordability) impact on the numbers of households formed and moving between tenures. These issues are reviewed further in Chapter 5, which also goes on to examine empirical evidence and models for these processes.

1.23   A second main stage involved working with key secondary data sources to compile estimates of the extent and incidence of the various types of need identified as relevant and potentially key outcome measures. Although we are primarily interested in numbers at regional level, this analysis drills down within the various survey sources to examine patterns of incidence over time, by tenure and by household type and age groups. We try to operationalise the concept of broader and more narrow (filtered) definitions of need and to quantify these differences as well as look at recent trends. More ambitiously, we have also aimed to develop predictive models to generate quantified forecasts for future need numbers, depending on assumptions about the future scenarios in terms of key 'drivers' of need. This work is reported in Chapter 3.

1.24   Chapter 4 reports on the specific area of housing related support. This work sits alongside the mainstream need modelling, and draws on a range of specific data sources, some of which are relatively new. Some links and implications for the main model, in relation to issues of supply and demand flows augmented or pre-empted by housing related support clients, suitability needs of older households, and homelessness, turnover and benefit issues associated with socially excluded clients, are discussed in Chapter 4.

1.25   A third stage involved developing predictive models of behaviour relating to key processes and decision points in the operation of the housing market/system. These relate particularly to processes of household formation, household mobility and household tenure choices or flows. Following the brief (Box 1.2, point 7 above) and the 'vision' sketched above (para 1.20), the aim has been to produce a 'gross flows' model of the housing system, thereby arguably going somewhat beyond previous models[9]. The issues involved are mainly reviewed in Chapter 5. Typically, the models developed have used statistical techniques to predict particular behavioural transitions at the level of individual households, based on large scale household surveys aggregated over a run of years, but taking account of the economic, labour and housing market conditions in the local/subregional area where those households are located in the year in question.

1.26   The fourth stage of the research entailed designing, setting up and testing an overall simulation model of the housing system. This model produces a baseline scenario at national and regional level including forecasts of housing stocks and flows by tenure and type of household, as well as housing need outcomes. It is designed to test the impact of a wide range of 'what if..?' scenarios on these outcomes, and looks forward over a dozen years (to 2021). Set up on a spreadsheet, the model is intended to be usable by analysts within government. Chapter 6 describes the design and rationale for this model, including some further analysis of key relationships and calibration of key parameters undertaken to ensure the model exhibits reasonable behavioural properties.

1.27   Figure 1.1 (which is the same as Figure 6.1 in chapter 6) presents a schematic overall picture of the model. It shows at the top some of the key data sources, official demographic statistics and large scale government surveys. Four main elements of the model deal with household change, the housing market, tenure flows and specific needs, and there are many interconnections between these. The overall system simulation brings these together in testing medium-term scenarios which entail different combinations of economic conditions and policy options. The main outcomes which the model forecasts are household numbers and composition, housing tenures, and a range of specific housing needs (e.g. overcrowding, concealed households).

---

[9] Of the previous major approaches reviewed in the Scoping Study and Chapter 2, some such as Holmans are what may be termed 'net stock' models (following Whitehead & Kleinman 1991), whereas others such as Bramley (2005, 2006) and typical local/rubregional housing needs assessments (e.g. Greater London housing related support, ORC 2005) use a partial gross flows approach focusing mainly on the social/affordable sector.

Figure 1.1: Schematic picture of overall simulation model
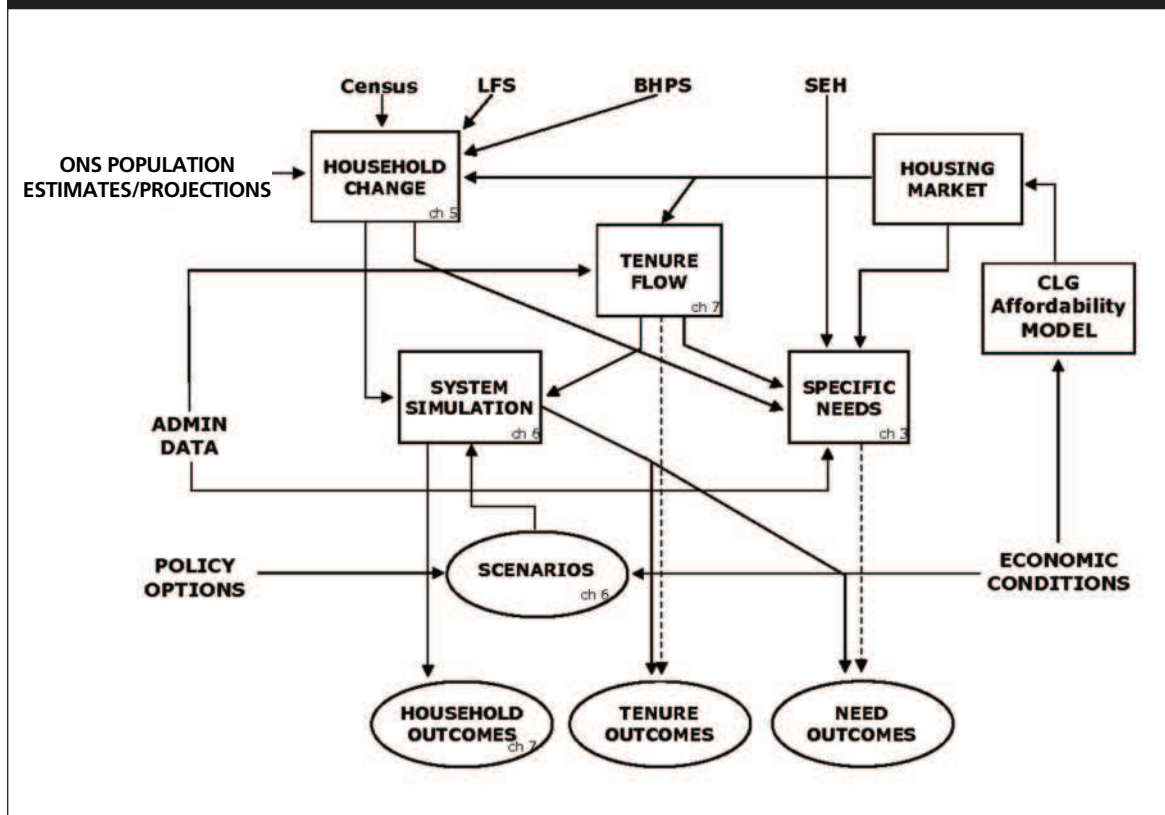
1.28 This model thus provides the basis for generating a detailed picture of future prospects for the housing system and key housing need outcomes under different scenarios. We offer a baseline scenario, described in detail in Chapter 7, along with tests of the impact of a range of alternative scenarios. These mainly reflect different policy-related inputs; for example, the levels and mixes of new housing supply or social housing allocation priorities. However, they can also encompass some differences in the assumed wider economic and housing market conditions.

1.29 The final stage is to take stock of what has been achieved within the research, while recognising some limitations and compromises adopted along the way. Chapter 8 provides this overall conclusion, highlighting the most significant findings, but also pointing to some areas of uncertainty and areas where more research, or refinement of the model, may be warranted.

1.30 The research underlying this report has been quite a substantial exercise. However, this report is intended to be relatively manageable in scale and readable/accessible in style. In order to provide a fuller 'evidence trail' from the overall model through its constituent sub-models to the original data sources, a number of Appendices have also been produced, providing more technical details of the research. In some instances this includes some discussion and reporting of different estimates or models tested on the same or different data sets, for comparison with those finally selected for use. The Appendices are available at:
www.sbe.hw.ac.uk/ResearchandBusiness/Housing%20and%20urban %20society/downloads.htm?pane=6

Chapter 2

Housing need: Concept, theory and past research

Definition and concept of need

2.1   The Scoping Study (Bramley 2007) and the project specification suggested there should be an initial ground-clearing exercise, reviewing existing literature and policy documents to establish a clear picture of the meaning and interpretation of 'housing need'. It was anticipated that this would be likely to yield some areas of general agreement and some greyer areas, where definition and scope depends upon policy judgements.

Normative basis

2.2   There is not actually a great deal of recent academic literature on housing need, and certainly relatively little addressing the fundamental concepts. One may situate housing need in a wider social need concept, and draw on a broader social/public policy perspective, although there are some distinct features in the housing case. Perhaps the central conclusion emerging from this perspective is that need is an intrinsically normative concept; other approaches, such as Bradshaw's (1972), 'felt', 'expressed' and 'comparative' need are more problematic.

2.3   Bramley (1990), drawing on an extensive literature from the preceding decades[10], concluded that "*all need statements contain a normative judgement somewhere about the desirability of the end states (e.g. survival, health, autonomy) which some set of means ….are argued empirically to further*" (p.59). Beyond this it was argued there that 'needs' only carry special weight in policy discourse if these normative judgements are subject to wide consensus and hence stable political support (ibid. p.60). One of the more problematic areas for achieving consensus may be where people's need-creating situation has arisen as a result of individual choice (Le Grand, 1991). Housing presents a number of such examples, as in the homelessness field or where people could afford to improve their home but choose not to do so.

2.4   Some work in allied fields such as homelessness may be regarded as relevant, although this also illustrates the point that definitions are very dependent on the local/national legal/institutional context; Britain has a very distinct framework compared with other countries (Fitzpatrick & Stephens 2008).

2.5   The Scoping Study underlined the point that housing need is multi-dimensional; that is, it comprises a mixture of qualitatively different conditions which affect different groups in different ways and which may require different kinds of solutions. It was argued that any general housing needs model for government should recognise this multi-dimensionality and

---

[10] See especially Hill & Bramley 1986, ch.4; Bramley 1990, ch.3; Foster 1983; Soper 1981; Springborg 1981; Barry 1965; Williams 1974; Miller 1976; Plant *et al* 1980; Weale 1983; Townsend 1979; Doyal & Gough 1984; le Grand (1991); Sen 1992

allow some flexibility in terms of relative priority assigned to different categories. Needs ultimately rest on value and policy judgements, as argued above, and will in practice have to be weighed against available resources. This may lead to varying judgements being made, at the margins, about the definitions and coverage. An obvious example of such marginal judgements concerns the 'rights' of younger single people to expect self-contained accommodation to be provided through public subsidy. It would be desirable for the model to make the relationship between these marginal judgements and resulting numbers explicit.

Backlog vs. new need

2.6   Holmans' various studies (particularly Holmans (2001)) have generally included a discussion of this issue of definition, pointing to the historical evolution of housing need concepts in the UK and the areas where legislation, custom and practice have implicitly applied certain definitions. These discussions have generally identified a broad distinction between the 'backlog' of households/individuals currently experiencing particular needs and 'newly arising need' expected to occur over a planning timescale. Whereas the backlog is a 'stock' concept, newly arising need is a 'flow'. The homely analogy of a bathtub is often used here: the backlog is the water in the bath, the newly arising need is the flow from the taps, while new lettings of affordable housing (or other equivalent 'solutions') is the flow out through the plughole. We carry these concepts forward into our model design, and indeed argue that the 'backlog' of need is arguably the key outcome which should be our focus of attention.

2.7   The 'backlog' versus 'newly arising' distinction is particularly important in housing, because housing is a highly durable asset and interventions to meet housing need often entail new investment. The backlog may, in a broad conceptual sense, be weighed against the existing stock and prospective investment in a kind of capital balance sheet. However, rarely will it be possible to meet all of these needs in a single year – indeed, it may take many years to fully eliminate backlog needs in a more pressured region. Also, the balance sheet analogy suggests that backlog need may be set off against vacant or underoccupied housing on the other side; but this is very problematic if there is no mechanism to enable the households in need to access the vacant homes or free up the underoccupied ones, which may in any case be of the wrong type or in the wrong place. This is one reason why we favour a flows based approach over a solely stock-based approach.

2.8   Another consequence of this characterisation of housing need, which distinguishes housing from some other social services, is that the act of meeting a housing need typically extinguishes the evidence of that need. An overcrowded or sharing household is rehoused by a registered social landlord; hopefully as a result the count of overcrowded or sharing households falls by one unit. The more we succeed in meeting housing need, the less evidence there will be out there of that need. We need to remember that there is an underlying concept of global need which comprises both 'met need' (e.g. tenants of social landlords, people living in adequate private rented sector tenancies with local housing allowance support) and unmet need.

Need vs. demand

2.9   These discussions also generally distinguish 'need' – shortfalls from certain normative standards of adequate accommodation – from 'demand' – the quantity and quality of housing which households will choose to occupy given their preferences and ability to pay (at given prices). The term 'housing requirements' is sometimes used in this context, to refer to the combination of need and demand, particularly where market as well as affordable housing provision is being considered (as in the planning system).

2.10   Social and affordable housing is generally a good in scarce supply which is subject to rationing. One kind of output from the model may therefore be a measure of the extent to which rationing has to be applied. At a more detailed level this might take the form of waiting times for different categories of household in need, although this is not something we are easily able to calculate in our model. We do however provide a measure of the relative extent of rationing.

Shortfall vs. provision

2.11   It is also important to recognise the difference between statements about 'need' which refer to existing or expected shortfalls (the backlog) and statements about the amount of affordable or general housing which 'needs' to be provided over some time frame. Statements of the former kind refer to problems, whereas statements of the latter kind deal with proposed solutions. The latter assume some underlying aims and priorities, and also entail implicit judgements about more or less cost-effective solutions. Thus, such statements go beyond the strict scope of the needs model.

2.12   It is clear that some policy responses to need (e.g. homelessness prevention, facilitating underoccupier trading-down moves) do not entail new provision of affordable housing, which itself can take different forms (including intermediate tenures or low cost home ownership). This also touches on the future role and functions of social housing, as addressed by Hills (2007) and others. However, the role of the needs model is to provide evidence to support assessment of policy options, rather than to determine the best options.

Purpose of needs assesment

2.13   Governments may require estimates of housing need for a variety of purposes. If regularly refreshed they should provide a way of monitoring the state of the housing system, analagous to government's monitoring of poverty or the state of the labour market. They may form an input to public spending review discussions about the scale of housing investment programmes by the public sector.

2.14   They will also inform government about the desirable composition of the programme, e.g. the role of intermediate sector provision. Given disaggregation to regional level, these estimates would presumably inform the regional allocation of spending programmes, a role previously performed by various composite indicators known as the Housing Needs Index (HNI) and the General Needs Index (GNI). Regional estimates would also be available as

background evidence when assessing the adequacy of regional spatial strategies, particularly given the growing importance of s.106 arrangements for the delivery of affordable housing. They would similarly provide a benchmark for looking at the aggregation of subregional housing strategies

2.15   The previous paragraphs still tend to assume that the needs estimates are mainly relevant to new housing provision, but as previously emphasised the policy basket may contain a much wider range of options. Thus, for example, outputs of the model may also be used to inform policies relating to allocation of social housing, rents and housing benefit, or the regulation of the private rented sector.

Types and levels of need

Dimensions of need

2.16   One of the basic starting points for this research has been the recognition of different dimensions, or types, of housing need. Qualitatively different types of problem may tend to affect different kinds of household, with a different pattern of incidence across tenures and regions. These different problems may be caused or influenced by different factors and the appropriate solutions may vary. Policymakers may wish to assign different priorities different needs.

2.17   The CLG (2007) guidance on strategic housing market assessments and predecessor guidance on local housing needs assessment (DETR 2000) contain listings of categories of need which should be considered. Strategic housing market assessment (Table 5.1 in the 2007 guidance) identified four main categories (Lack own secure tenure; mismatch/unsuitability; house condition and social needs) as shown in the first column of Table 2.1. It further identified specific groups, as shown in the next column[11]. We have suggested in the third column a further set of sub-groups; some of these classifications are overlapping or cross-cutting.

---

[11] It is beyond the scope of this research to investigate the actual use of these categories and estimated numbers arising from strategic housing market assessments but in future it may be possible to make such comparisons with this model at regional level.

Table 2.1 Need categories and sub-groups

General	Specific	Sub-groups
Lack own secure tenure	Homeless	Priority/other
		Roofless/temporary accommodation/home
		Age/ household composition/ vulnerability
	Concealed households	Concealed families
		Concealed singles
	Insecure	Under notice/ repossession /end of lease
	Unaffordable	High housing cost to income ratios
		Self-reported difficulty
		In arrears
Mismatch/ unsuitablility	Overcrowded	
	Too large	Underoccupied
		Difficult to maintain
	Sharing	Share kitchen/BR/WC
		- families, couples
		- singles >25
		- singles <25
	Children in high flats	
	Mobility impairment	Older
		Younger
	Other specific need	
House condition	Lack basic amenities	Kitchen, BR, WC, HW
	Lack central heating	
	Non-decent	Thermal Comfort
		Not Category 1 hazard
		State/cost of repair
		Modern facilities/services
Social needs	Harassment	Racially aggravated
		ASB
	Vulnerable groups needing support	Older
		Disabled
		Care-leaver
		Ex offender
		etc.

2.18 The most relevant recent legislation is probably the Housing Act 1996 which includes (in s.167(2)) a set of categories of case which local authorities should give 'Reasonable Preference' to in allocation of social housing. These include:

(a) homeless, including non-priority and intentionally

(b) others owed a duty under various specific legislation

(c) insanitary, poor condition or overcrowded accommodation

(d) medical or welfare grounds, including disability

(e) hardship grounds for needing to move to a particular location.

2.19 While the above list provides underpinning for many but not all of the categories identified in Table 2.1, it can be argued, on the basis of evidence from actual allocations practice, that the reasonable preference categories are not a wholly adequate and inclusive definition of housing need. In their report on allocations practice Pawson *et al* (2009, para 4.17), which was based on a survey of LAs in two regions, find that 58% of local authorities give some priority to locally-defined groups outside the reasonable preference categories, including for example family members in social rented sector without succession rights, key workers, people 'moving on' from short term supported housing, young disadvantaged singles, relationship breakdown, split families. Not all social lettings go to RP cases, although this proportion varies over time and region.

2.20 Groups included in Table 2.1 but not within reasonable preference categories include decants, private tenants at the end of an assured shorthold tenancy, and people wishing to move to independent accommodation (i.e. concealed households). It is also worth noting that some allocations to reasonable preference groups would not necessarily be to people who were previously in one of the core backlog need groups used in this study, as described in more detail in Chapter 3. For example, some homeless people would not previously have been counted in one of these groups, prior to their episode of homelessness.

2.21 Holmans (2001) provides an extended discussion of the components of 'backlog' need, which provides an alternative classification, as shown in Box 2.1.

Box 2.1: Backlog need

a) Actual and potential households without self-contained accommodation, including (i) homeless households in temporary accommodation, (ii) concealed couple and lone parent families living with others, (iii) involuntarily sharing households; (iv) would-be couples forced to live apart; (v) single homeless and hostel residents;

b) Private sector households needing social sector homes because current homes are unsuitable, for example due to (vi)/(viii) medical or age reasons, (vii) inability to meet housing costs, (ix) expiry of lease, or (x) overcrowding.

c) Social tenants in unsuitable housing, including due to disrepair, crowding, or children in high flats.

(based on Holmans (2001) Ch.3).

2.22   The point of the classification in Box 2.1 is that distinguishes (a) cases where there is a clear need for an additional affordable dwelling unit, (b) cases where the household needs access to an affordable unit but may release a unit which could be suitable for another household, and (c) cases which may be resolved by households moving within the social rented sector. However, cases in types (b) and (c) do not necessarily require no investment in additional affordable/ social housing, because there may be a net shortfall of, say, larger or family-suitable housing.

2.23   Because our approach aims to separate issues of the solution to the need from the existence of the need or problem (paras 2.11-12 above), we do not attempt to make such a strong distinction between these types of case. Box 2.1 also highlights some subtle differences; for example, the category 'couples forced to live apart', which does not explicitly appear in Table 2.1.

2.24   It is one thing to create a refined definition of need which focuses on particular groups which are or should be seen as priorities for assistance. It is another, however, to find measures within standard secondary statistical data sources which can measure the size of these groups, consistently across the whole country and over time. Thus, in building an operational model, we work with categories and indicators which are less than perfect compromises (see Chapter 3).

Standards and levels of need

2.25   Needs ultimately rest on value and policy judgements, and will in practice have to be weighed against available resources. This may lead to varying judgements being made, at the margins, about the definitions and coverage. These judgements may be likened to 'service standards'; they might also be thought of as 'rationing filters'. An obvious example of such marginal judgements concerns the 'rights' of younger single people to expect self-contained accommodation to be provided through public subsidy. Concealed single persons living with parents or other households may not be in the reasonable preference category, but if the parental/other household asks them to leave they become homeless and thereby qualify as reasonable preference.

2.26   Other examples include the question of whether tenure security is an issue, in general or for particular types of household (older people, families), given that most private tenancies are shorthold; whether 'unaffordability' is a need criterion (e.g. because it may be a risk factor for insecurity and potentially homelessness), and how it is measured; whether the preferences/intentions of concealed and sharing households matter. These issues are not rehearsed at length here[12].

2.27   In general, needs depend upon normative value or policy judgements about which people with what problems have priority in what circumstances. Conceptually, we argue that the government should measure and monitor a spectrum of housing-related needs and problems, defined in a relatively broad and inclusive way. Within that framework, certain groups and types of need can be highlighted as being of higher priority, a sort of 'core need', depending on the legislation, commitments and preferences of government at that time. There may be local variation in how this is interpreted, given that this has traditionally been an area of local policy discretion and also given the local variations in supply and demand.

2.28   However, what can be measured and monitored may not map closely onto the ideal policy-driven need definitions. For example, some questions may not have been asked in the 'ideal' fashion in the relevant government surveys, or they may not have been asked in all of the relevant years. The latter point is critical insofar as we wish to develop statistical models to predict future need, by fitting these to data for a run of recent years. Therefore, in practice in the analysis reported in Chapter 3[13] and which underpins the model used for forecasting and scenarios, we adopt a rather wider definition for analytical purposes, with further filters applied to bring this down to a tighter definition which is closer to a core need concept (but which is still a somewhat broader compromise measure).

Housing waiting lists

2.29   Discussion of housing need in the media and policy debate often refers to housing waiting lists, which provide one kind of quantitative measure of the backlog of housing need, although this might be better termed the 'expressed demand for a social tenancy'. However, based on a range of both recent and earlier research, published data and direct experience, we have reached a view that waiting lists are not the best way of measuring unmet need at regional and national level for the purposes of this project and model. It has long been argued that waiting lists may both under-state some needs (for example, where people are deterred from applying by perceived prospects of rehousing or by perceptions of social housing), and at the same time over-represent needs by including many people who do not have recognised needs[14] and others who are no longer seeking social housing

---

[12] See further discussion in Appendix 2

[13] And in more detail in Appendix 2

[14] In April 2000, LA HIP returns indicated that 80 per cent of waiting list cases were classed as 'in need'; however, in 2006 only 43 per cent of waiting list cases were classed as in the 'Reasonable Preference' categories defined by s.167(2) of the Housing Act 1996; in both cases there were wide variations in proportions between local authorities.

through change of circumstances[15]. Further complicating factors include the incomplete coverage of households registered on housing association lists (with only a minority of authorities maintaining common registers) and the growth of 'choice based lettings', which appear to have encouraged greater registration by households who may not be in need (Pawson *et al* 2006, 2008). While housing list data may provide supplementary indicators for monitoring trends in demand for social housing, considerable caution is in order in relation to their interpretation as measures of unmet need and the changing quantum of unmet need over time.

Need drivers and the housing market

Demographics

2.30   Housing need has always been seen as strongly related to demographic trends in population and household numbers, and any modelling of housing need must take account of demographics including age structures. However, there has been a strand of criticism of wholesale reliance on traditional demographic trend-based planning for housing. This essentially points out that some demographic trends are actually influenced by economic factors, including the operation of the housing market, and may be directly impacted by housing supply or policies on housing assistance[16]. Part of the rationale for the development of the DCLG 'Affordability Model'(alias 'Reading Model'[17]) following the Barker (2004) Review was to inject more of an economic-behavioural and market perspective into the analysis of future housing scenarios.

2.31   Our approach to modelling housing needs embeds demographic influences in a number of ways. We report needs incidence by household type and age, and these variables play a significant role in virtually all of our statistical need models. The general simulation model is structured around a breakdown of households into a dozen age-type groups, for which typically the incidence of specific needs varies markedly. The overall population total and age structure is derived from ONS projections, but mediated through the DCLG Affordability model. This recognises that inter-regional migration will be influenced by economic factors as well as past propensities. Household formation is forecast on the basis of econometric models which take account of the economic and market factors mentioned above; this may well lead to a forecast which is at variance with the official household projections.

2.32   Migration is a particular part of the demographic scenario which is both significant and sensitive. We generally take our migration numbers from the DCLG model, and in this attempt to take account of both domestic and 'international' elements of migration and the role of economic factors in driving these. Recent migrants may have different characteristics, make different choices, and be at different risks of being in need. Therefore, it is

---

[15] See Prescott-Clarke *et al* (1994) for evidence on 'deadwood' and non-need cases in waiting lists.

[16] See Bramley *et al* (1997), Bramley & Watkins (1995), Meen (1998), and further discussion of household formation in Appendix 1.

[17] This model was developed by a team led by Professor Geoff Meen from Reading University – see ODPM (2005), Meen *et al* (2008).

desirable to reflect this in the modelling. However, there are some difficulties here in distinguishing different types of migrant (e.g. recent international arrival, student, upwardly mobile professional, pre-retirement 'downshifter').

Economy and labour market

2.33   The performance of the economy at national and regional levels has a strong influence on the housing market. Incomes affect demand through increasing household formation, through increasing the proportion of households wishing to buy, and through increasing the size and quality of homes that people wish to buy or rent. The level, growth and distribution of earnings and household incomes have a strong influence on house prices, particularly in the English context where supply is rather inelastic (Barker 2004).

2.34   It might be expected that increased income would reduce the chances of households being in need. While this is true for individuals, and in some instances when comparing different times and places, it is not necessarily true for a region where supply limitations mean that house prices rise much more to offset the higher incomes.

2.35   We would also expect broadly similar effects associated with employment and unemployment, increasing and reducing respectively the chances of being in need. There may be some differences in the effects of these variables; for example, unemployment may be associated with some increases in mobility as people seek new opportunities. Therefore, in our models we generally include such measures as well as income. We also include some other variables indirectly related to current or expected future income and/or wealth. Examples include educational qualifications, occupational class, or car ownership. These variables may also partly pick up socio-cultural influences, as mentioned below.

Housing market

2.36   Income growth without a matching supply increase will lead to a rise in house prices; given typical demand responses, prices tend to increase relative to income and hence cause a deterioration in affordability (conventionally measured by the price:income ratio). We would expect to find, and our statistical modelling reported in Chapter 3 confirms, that worse affordability goes with higher and increasing levels of most types of need. Higher prices also affect household formation and flows of households between tenures. For example, higher prices will reduce new household formation, reduce the flows of new and renter households into home ownership, reduce the relets turnover in social rented housing, and push more households into private renting. These tendencies in part account for and reinforce the link between affordability and needs; for example, because private renting is a tenure which tends to exhibit more needs.

2.37   It should be emphasised that the model developed in this project does not attempt to forecast house prices. Rather, we look to the DCLG Affordability model to track the effects of different supply and income scenarios on house prices, and use the values derived from that model as inputs to our needs forecasts.

2.38   The supply of units in the private market may not be a direct determinant of tenure flows or housing needs – we would expect prices or rents to mediate this relationship. However, we do not necessarily expect private rents to directly follow house prices, and describe later (in Chapter 6) how we predict private rents. The quantity of lettings supplied by the social rented sector is something we would expect to influence tenure flows and unmet needs, because this is a subsidised tenure which is rationed and often in scarce supply. This quantity is determined by a mixture of policy (new build), demographics (e.g. dissolutions, mainly related to age and type of household) and tenure flows (e.g. moving out to buy). We reflect the rationed and locally-specific nature of social housing supply in the way we model needs and tenure flows, and also when we simulate future scenarios.

2.39   Other housing market characteristics which may be expected to influence some needs include the size and type mix of the existing housing stock, and its age and physical condition. For example, overcrowding may be more prevalent where the housing stock is skewed towards flats rather than houses, other things being equal. Mobility-related suitability problems may be more prevalent where there is more high and medium rise flatted accommodation.

Social and cultural factors

2.40   A fourth general class of factor affecting housing needs may be termed 'social and cultural'. One aspect of this is the broad dimension of socio-economic class, which correlates to a considerable degree with income as discussed above. There may be cultural factors (e.g. differing preferences for home ownership) associated with age – ideally we would try to distinguish age from generational/cohort effects, although the data available may not permit this.

2.41   There may be distinct regional cultural factors as well, which could affect both tenure choices and needs. For example, some regions may have a stronger expectation of living in social rented housing. Cultural factors like this are perhaps questionable as to their proper inclusion, on grounds of fairness, in models of need to be used as a basis for resource allocation. In general, when fitting statistical models for this project, we try to avoid the device of including regional 'dummy variables'[18]. One reason for this is to avoid building in this kind of cultural factor; another is that there is some danger of the regional dummy variable displacing other more meaningful variables in the model.

2.42   Minority ethnic groups may differ in a number of respects from the mainstream population, including in terms of demographic profiles and household structures, occupational, work, income and expenditure patterns. They may also differ in cultural preferences, but care is needed to ensure that different patterns observed do not represent factors like discrimination and harassment, rather than free choices. A distinction should also be drawn between ethnic and recent migrant group. Several recent studies have highlighted different demographic trends for these groups, and that local

---

[18] A regional dummy variable takes the value of 1 for observations in that region and zero elsewhere. Inclusion of such a variable in a regression model tends to pick up both 'unexplained' regional variation and some part of the variation which would otherwise be explained by other variables, such as socio-economic characteristics.

concentrations of particular groups can have a marked influence on the future evolution of needs and demands. While clearly this is most relevant in sub-regional studies, it is clear that we should be alert to potential ethnic effects when modelling needs and tenure flows.

Previous housing need models

2.43   In the last part of this chapter we review the main alternative approaches to modelling housing need which have been used in England in the last decade or so. This review is a distillation of that presented in the scoping study, which identified four key approaches. In each case, we describe the essential elements of the approach and then provide brief comments, from the scoping study.

Holmans' model

2.44   The first methodology reviewed is probably the best-known and longest-established, and is best represented by the work of Alan Holmans, originally within the then Department of Environment and more recently at the University of Cambridge[19]. Although the method has been progressively refined over time since its original development in the 1977 Housing Policy Review, it remains essentially 'demographic' in character. The approach has also sometimes been termed a 'net stock' approach (Whitehead & Kleinman 1992), because it essentially looks at net changes in the balance between housing stock and households, subdivided between two tenure/ 'assistance' sectors.

2.45   As with some other approaches, a distinction is drawn between the 'backlog' of existing unmet needs and 'newly arising need'. The backlog estimates are generally derived from a mixture of official survey and administrative records, and cover the categories identified in Box 2.1 above.

2.46   Meeting needs in some categories may release dwellings which are suitable for some other household in need, while other needs associated with unsuitability or poor house condition should be capable of being met by in situ improvements. For these reasons, the net need associated with the backlog is considerably less than the gross total of all of these categories. For example, in the 2001 study a gross total of 950,000 was reduced to 650,000 on this account.

2.47   The method of calculating *newly arising need* may be characterized as working in the following way:

- conventional trend-based household projections, broken down by age, sex and marital status, are used to project a future household composition structure at target dates up to 10-15 years ahead

- the proportion of households in each subcategory who are (non-'Right to Buy') owner-occupiers or 'unassisted' private tenants is estimated for the base period, using a large scale survey dataset such as SEH

---

[19] See Holmans 1995, Holmans *et al* 1998, Holmans 2000, 2001, 2003.

- for those aged under 45, the base year propensities to be in the owned/market rented sector are kept constant; for over-45s, a 'cohort' or ratchet effect is assumed to operate

- separate projections are made of the number of RTB owner occupiers and of shared ownership households

- further adjustments may be made at this stage to reflect judgements about trends in, for example, mortgage default, moves by owners into social renting, and moves out of social renting in lower demand areas (Holmans 2001, p.36)

- deducting the number of market households from total households gives the number of households needing affordable housing at the target date

- projection of the associated required stock additions allows for changes in vacancies, secondary residences, demolitions and transfers between sectors, generally using judgements based on recent trends.

2.48   This methodology meets a number of the requirements of a needs model (as identified in Box 1.2), including defining need in a suitable multidimensional fashion, linking to some key policy assumptions, and producing a single number answer. It is based on available datasets and could be regularly updated. It is mainly a stock rather than a flow model, and as such is only partially comparable with local housing needs studies following recent guidance. The model was primarily developed to provide national estimates but more recent versions have included a disaggregation to broad regions – the limiting factor here is sample numbers within the SEH for fine-scale disaggregation of household groups.

2.49   Its two main limitations are that it does not explicitly link economic variables to housing need numbers, and that it offers a projection rather than a behavioural forecast of outcomes. Given the growing post-Barker emphasis on affordability outcomes, these limitations would seem to be rather important. If there was a marked rise (or fall) in house prices relative to incomes after the base period, the model would not show any change in affordable housing requirements. Both the household projections themselves, and the tenure propensities applied to them, essentially assume a continuance of the same economic/market conditions as prevailed over the base period. While the normative need basis of the backlog numbers is clear enough, this does not so clearly apply to the division of newly arising need[20]. Need is implicitly assured by virtue of someone having formed a separate household and obtained a social tenancy or obtained housing benefit (local housing allowance) as a private tenant.

The Department of Applied Economics model

2.50   This model was specifically commissioned in 1995 to provide the then Department of Environment with 'an economic model of the demand and need for social housing', the work being undertaken by William Peterson,

---

[20] This line of criticism was stronger with earlier versions, which projected the split between owner occupation and other tenures.

Cliff Pratten and James Tatch of the Department of Applied Economics (DAE), Cambridge University. The main report was published by Department of the Environment, Transport and the Regions (1999a) and a subsequent further stage of work and updating reported through a Research Summary (Office of the Deputy Prime Minister, 2002b). In many ways this model comes closest to reflecting what the Department is now seeking, so it is particularly interesting to reflect on its achievements, strengths and weaknesses.

2.51   The model in fact comprised a number of loosely-linked modules which use somewhat different modelling approaches:

- a household formation (headship rate) model based on a dynamic time series econometric equation fitted to aggregate national data from the General Household Survey (GHS)

- a cross-sectional micro econometric model of tenure choice (owner, unassisted PR and 'assisted'), underpinning a 'micro-simulation' for 480 subgroups of households broken down by income, age, etc.

- a financial cost-benefit model, used to determine the optimal assistance solution, social renting vs housing benefit-assisted private rented sector

- the supply side of the private rented sector is governed by a simple imposed supply elasticity

- there are house price and private starts/completions equations estimated using dynamic time series models, but in the final simulation these equations are modified by some imposed relationships for price-supply and 'disequilibrium'- price effects.

2.52   The model was ambitious and wide ranging. Some elements within it, such as the modelling of house prices and household formation, cover the same territory as is now covered by the DCLG Affordability model. It is clear from the main report that the model as it turned out was not exactly as had originally been envisaged, for example because certain relationships could not be satisfactorily estimated using the initially favoured econometric approach, and also because of some implausible features in interim simulations. Further work on the model led to certain modifications, including a regional disaggregation and other disaggregations of potential demand (ODPM 2002b). This work concluded that certain relationships – e.g. economic determinants of household formation, the positive relationship between house prices and the need for assistance – were robust but there were still doubts about the forecasting power of the model and it did not prove possible to incorporate regional migration within the modelling.

2.53   The model did not apply a detailed, explicit definition of 'need for assistance', while developing a rather specific and economistic definition of the need for social housing based on the financial cost-benefit calculus, essentially suggesting that this tenure was only for the long-term poor. Although mentioning the 'backlog' in general discussion the model did not explicitly enumerate the different categories of existing need or measure their extent.

Need could be only partially linked to policy; for example, through parameters governing the Cost-Benefit criterion or 'maximum level of provision' (which seems rather circular). However, the model was certainly capable of producing a single-number answer, could be linked to economic assumptions, and did involve behavioural forecasts of certain key overall numbers, although it did not forecast the incidence of specific types of need. It was set up to provide a forward projection over 10 years.

2.54 The DAE model was mainly a stock model although it contained elements where gross flows were forecast. While originally national the model later acquired a regional version; this highlighted the important differences in housing market regime (e.g. markedly different supply/demand conditions for social housing) between different regions. The model could meet a number of our criteria, in principle. However, the structure and output would not facilitate easy comparison with conventional housing needs studies.

2.55 Considerable effort went into the creation of this model and some robust elements were developed along the way. These include, in particular, the household formation prediction model (used in DETR 1999b). The original tenure choice model was unsatisfactory in lacking price and supply terms, although this was to some degree corrected in the later regional model. The division of assisted households between private rented sector and social tenure, based on a financial appraisal of subsidy cost, seems to rely on a strong set of policy assumptions about the role and function of social renting, issues which have recently been extensively reviewed by Hills (2007). While it is a strength to have an explicit allocation rule in the model, allowance needs to be made for policymakers having a wider range of targeting possibilities in mind. Also, this rule was only applied to the social-private rented sector splitting of assisted households, not to the modelling of the overall assisted/non-assisted split. An approach looking at flows/transitions into social or assisted private rented sector housing, including reference to previous housing circumstances, might be more fruitful here.

2.56 Several key relationships were imposed rather than estimated and this was generally acknowledged as a weakness. One of these was the private rented sector supply elasticity; despite a subsequent international review by Bramley, Satsangi & Pryce (1999) no very satisfactory evidence was adduced. The recent upsurge in Buy to Let underlines that this aspect of any model remains crucial. A second problematic relationship was the feedback from new build supply to house prices; more recent work by both Meen *et al* in the DCLG Affordability model (ODPM 2005a) and by Bramley & Leishman (2005) provide plausible estimates for this parameter. A third problem area was the inability to estimate a positive price-supply relationship. Others have found problems here, reflecting the generally very low supply responsiveness of the British market (Barker, 2003, 2004), but model limitations such as the lack of planning/land supply measures could have played a part. Finally, the model demonstrated a tendency for disequilibria to build up between supply and demand without necessarily being resolved by price or other mechanisms – again, the model provided for user-determined feedback parameters to be imposed here.

Bramley affordability model

2.57   The third general approach may be termed a (local) affordability-based needs model. Although particularly associated with one of the present authors it is an approach which has been used, partially and in varying forms, by other researchers and consultants, particularly in the context of undertaking sub-national needs studies[21]. Aspects of this approach are reflected in the DETR (2000) local housing needs assessment guidance and its recent replacement (CLG 2007 strategic housing market assessment guidance or strategic housing market assessment).

2.58   The model may be characterised as a partial gross flows model entailing the following elements:

• estimation of local income distribution patterns for households disaggregated by size/type, economic activity, and broad age (modelled using Census base and proxies with calibration against Family Resource Survey)

• comparison with local threshold price levels (e.g. lower quartile, by size) to determine percent of each group able to afford to buy (or other intermediate options); in recent studies, private rent option and an adjustment for access wealth included

• gross new household formation derived from Census age-headship relationships, with application of affordability rates to generate newly arising affordable need

• additional allowance for migrants, originally based on net flow and affordability, now based on proxied incomes of in- and out-migrants (Census, by occupation) and marginal affordability rates

• allowance for older owner-occupiers moving to social renting based on national rates observed in SEH

• calculation of 'backlog' based on combination of (a) large scale survey measures of incidence of problems such as overcrowding, sharing, unsuitable or unaffordable accommodation, (b) Census proxy measures for these, and (c) local waiting list levels and/or changes

• sum of four elements of gross need compared with supply from social sector net relets, with relets based on recent actuals but possibility of econometric forecasting model coefficients to use for future forecasting/projection.

2.59   The model is typically applied at local authority district level but it has been applied to smaller and larger zones. This clearly distinguishes it from the two models reviewed above.

2.60   The definition of need is primarily in terms of normative affordability, although backlog can be built up in a similar way to Holmans. The model does not purport to measure needs relating to house condition or unsuitability within the social sector, and focuses mainly on the need for additional subsidised provision. It produces a single number answer and directly estimates the

---

[21] The best recent published account of this work relates to the Scottish version of the model (Bramley 2004, Bramley *et al* 2006), but recent English applications are covered in Bramley & Karley (2005). Similar affordability indices and measures have been prioduced by Wilcox (2003, 2005), although these models stop short of calculating quantitative needs as a function of the affordability index values.

impact of economic/market conditions. It is basically a mechanistic calculation rather than a behavioural model and forward projections are relatively mechanistic, although market responses to imbalances can be imposed. It is a flows-based approach, although some stocks are used as inputs and not all flows of existing households are accounted for. The model could clearly accept inputs from the DCLG Affordability model for prices and income levels, and feed back more detailed affordability outcomes than the simple price:income ratios which that model produces It is deliberately designed to be driven by secondary data sources, and updating is relatively straightforward over shorter periods. Comparisons can be readily made with local needs surveys where these follow the strategic housing market assessment guidance format).

2.61   The model has, like the others reviewed here, evolved over time, but it remains rather tied to its origins in terms of providing a mechanical snapshot in the base period rather than a behavioural forecasting model. It is heavily reliant on Census data and hence perhaps less reliable the further time elapses from the last Census. From this point of view, and given the regional focus of the Department's requirements, more use of regular official surveys like SEH and FRS might play a bigger role in future.

Greater London housing requirements study

2.62   This study was carried out by Opinion Research Services (ORS) for the Greater London Authority (GLA) in 2002-04, and is representative of recent practice in larger regional/subregional housing need assessments built on a combination of special household interview surveys and a range of secondary, market and administrative data. The main stages or elements in the assessment were as follows.

- an interview survey was carried out with 8,158 households to generate information on current housing circumstances, detailed housing problems (existing need), recent and desired moves, income and other household demographics; survey results can be compared with Census profiles and reweighted accordingly

- current backlog needs are estimated in eleven categories; raw numbers are then reduced to allow for 'in situ' solutions, out-migrants, institutional solutions, and cases where households could afford to move to suitable market housing within sub-regional sectors of London

- the model simulates moves to more suitable housing, allowing for the vacancies released by these moves, but recognising imbalances in supply and demand between different size groups and affordability sectors (market, intermediate and social)

- migration estimates are generated and affordability profiles are applied to migrant flows and to the flows of new households, while allowance is also made for household dissolutions

- the analysis of resulting shortfalls and surpluses is broken down by size as well as affordability sector

- forward projections are made over 10 years, with different scenarios tested in terms of house price changes and levels of migration.

2.63 The division into three sectors is based on affordability, so in that sense the model is like the previous one discussed. Affordability assessments are relatively sophisticated, taking account of savings/deposits and applying 'sliding scale' norms (lending multipliers for purchase, rent:income ratios for renting) which take account of arguments about residual income requirements for households of different sizes. The adjustment from raw to net backlog numbers is similar in principle to adjustments made within the Holmans model, but the scale of adjustment downwards is much greater (from 560,000 to 145,000 for Greater London, of whom a majority are in the social rented sector already, or 180,000 including those in temporary accommodation). However, the net shortfall after simulating movements is very small, only 16,400, although there are significant shortfalls in larger social and intermediate sector categories which add up to more than this. For some key numbers, such as household formation, estimates are 'triangulated' between different sources – in this case, intentions, recent actual moves, and census-based demographics.

2.64 The comments from the scoping study may be summed up fairly simply. Although the report talked of a 'matching model', it was not quite clear how this was undertaken. It did not appear to be a micro-simulation, and neither was it clear whether the rate of movement required to match households to more suitable accommodation was realistic and whether all household flows had been accounted for. The forward projections appeared to be relatively simple, with numbers simply changing pro rata to total population. Some aspects of the policy conclusions might also be seen as questionable, including the emphasis on small dwellings and the total scale of need. However, the most important limitation of this model is that it does not really contain behavioural feedback functions for migration, household formation, prices and rents, even while acknowledging the importance of these factors in the way the system adapts to imbalances of supply and demand.

2.65 This particular study was used to illustrate the kinds of approaches which can be and are utilised in sub-regional and local studies based around household surveys. Different studies may vary in how they deal with particular issues and how they approach forward projection[22].

The state of the art

2.66 Summing up, we would argue that none of the existing models, as reviewed here, fully meet the requirements for a national and regional needs model as set out in Chapter 1. Three of the methods basically fail to provide an economic/behavioural model driving the forecasts of future need, household and tenure numbers. Only the DAE model attempted to do that, but it had many other shortcomings.

2.67 Arguably, the most challenging requirement, in terms of going beyond existing research evidence, is to meet criterion 6 in Box 1.2.('...able to forecast normatively relevant outcomes based on realistic models of

---

[22] Further perspectives on these approaches may be gained from Fordham *et al* (1998), Hall and Lee (1998) and Bramley *et al* (1999).

behaviour'). Most of the emphasis in relation to need has been on measurement of the backlog rather than modelling its determinants, while most of the modelling of housing markets has not gone beyond the market outcomes of price and new build numbers. Thus, we are not in a good position to say what will happen if we don't fully meet the need identified – potentially complex adjustment mechanisms are involved. To what extent will shortfalls lead to cumulative increases in different categories of problem; for example, overcrowding, sharing, payment arrears? To what extent will they affect future household formation and migration? Arguably, ministers and policy advisers should be asking those sorts of questions.

2.68   As stated in Chapter 1, these are the questions which flow from an 'outcome orientation', of the kind which governments are increasingly taking when looking at policy and resource allocation. It would be valuable to have a model which was capable of meeting this aim, in relation to key or summary outcome measures. That is the essence of the 'vision' set out in para 1.20.

2.69   That is not to say that it is easy to develop the requisite behavioural models for housing need outcomes or the market processes underpinning them. There are questions about whether the data are adequate to this task, whether the resulting models are statistically robust, and whether the conditions and behaviour which pertained in the past will continue to be a good guide to the future. The following chapters describe our approach in more detail, but these broader questions should be borne in mind in assessing the results.

Chapter 3

Incidence and drivers of different needs

Chapter scope

3.1   The purpose of this chapter is to focus on each of the main types of need in turn and to present the main findings in terms of (a) measurement issues, (b) patterns of incidence, and (c) factors found through the modelling to be significant in determining levels of need. The types of need considered were introduced in Chapter 2, and in most cases we follow a common approach to the analysis, drawing primarily on large scale government surveys, particularly the Survey of English Housing (SEH) and linked housing market data. The approach is slightly different for homelessness, drawing primarily on local authority level administrative data.

3.2   The specific types of need addressed in this chapter are the main manifestations of housing problems which policies are intended to tackle. They are the key outcomes of the housing system. The overarching purpose of the models developed in this research is to predict how these outcomes will change in the medium term, at regional and national level, given certain assumptions and scenarios for the economy, housing supply and other policies.

3.3   The research involved taking a broadly common approach to each need category. This entailed considering issues of definition, coverage, possibly sub-groups, 'filtering', and relative priority levels; key data sources and possible alternatives ('triangulation'); recent national incidence rates, changes, and regional variations; patterns in terms of tenure, household types and other obvious demographic correlates; approaches to modelling; predictor variables and their significance; and relationships with other modules or elements in the overall system model. These issues were rehearsed and reported in detail in discussion papers produced in the course of the study[23]. This chapter provides a concise account of the findings.

Concealed households

Definition

3.4   Concealed households are family units or single adults living within other households, who may be regarded as potential separate households which may wish to form given appropriate opportunity. We work mainly with an operational definition comprising couples, lone parent families, and adult singles (other than never-married children of main family unit) living within other households. A broader definition could include adult children of the main family unit, perhaps above an age threshold. A narrower definition could apply an age cutoff of 25 or 30 to the singles, although this is not applicable to all years of our primary SEH data source. A further narrowing

---

[23] This more detailed discussion and supporting evidence is contained in Appendix 2

could be achieved, given survey data on the preferences and intentions of the concealed households, discounting those who do not wish to move out of their current household in the immediate future[24]. Also, if data on the ability of the concealed family unit to afford market housing could be obtained, that could provide a further basis for narrowing the definition. In practice, we take account of the affordability position of the overall household in some of the measures used, but this does not make much difference.

3.5   Summing up, the operational definition used treads a middle course between a very broad, liberal and inclusive definition and a very conservative core definition, partly for practical reasons. When modelling incidence, we take the definition in the second sentence in paragraph 3.4 above, filtered to exclude households able to afford to buy[25]. When translating into forecast need numbers we make an adjustment to reflect the exclusion of singles under 25 and overlap between need categories.

Incidence

3.6   About 0.8 per cent of households contain concealed couple or lone parent families; 2.1 per cent contain concealed singles living with a family unit, while another 0.8 per cent of households consist of several unrelated single persons within the same household (SEH pooled 1997/8-2007/8). This suggests that concealed singles are four-times as numerous as concealed families. Indeed, allowing for multiple concealed singles within some of these households could increase the implied need, although this would be offset by any allowance for split potential households (two singles who would combine to form a couple). The total concealed household figure of 3.7 per cent equated to about 700,000 household units on average, rising to 875,000 (4.1 per cent) in 2007.

3.7   However, the frequency of concealed singles drops sharply if we apply an age threshold; a threshold of 25 reduces singles concealed in families to 1.0 per cent and multi-single households to 0.4 per cent; a threshold of 30 would further reduce these to 0.7 per cent and 0.2 per cent. So on a stricter definition there are about 470,000 concealed households in England (but we still have not filtered on preferences).

3.8   New data from SEH (2007/8 only) based on asking individuals over 18 other than HRP /partner (including children of HRP aged 25+) why they are living here, enables us to identify the group who would like to buy or rent but cannot afford it, looking to buy/rent, will soon be moving, or waiting to live with someone else. This yields estimates of 796,000 such cases, of which 475,000 are children of HRP aged 25+, 101,000 are other relatives and 220,000 are other unrelated. These figures are clearly in the same ballpark as the estimates given above; rather less in the 'non-children' category, but similar or more if we take children over-25 on board.

---

[24] Some survey evidence on this was collected in 1990, while a new question has been included in the SEH from 2007/8 – preliminary evidence from this source is described in para 3.8.

[25] See Appendix 2, s.A2.0, for details of filtering for affordability.

3.9   Concealed families occur in all three tenures, but concealed singles are much more prevalent in private renting, with multi-single households largely confined to that tenure (Figure 3.1). All types of concealed households are much more prevalent in London; the first category is also above average in the West Midlands; the second category is slightly higher in the South East and West Midlands; the third category is a bit higher in the South West (see Figure 3.2)[26]. Concealed families and singles have increased, particularly in 2006 and 2007. Analysis of the Labour Force Survey (LFS) suggests a sharper rise in concealed couples/lone parents between 2002 and 2008, and a higher total incidence of concealed households than that shown in SEH.

3.10   As made clear in later chapters, concealed households play an important part in the housing needs story, and increasingly so as housing supply and affordability constraints bite.
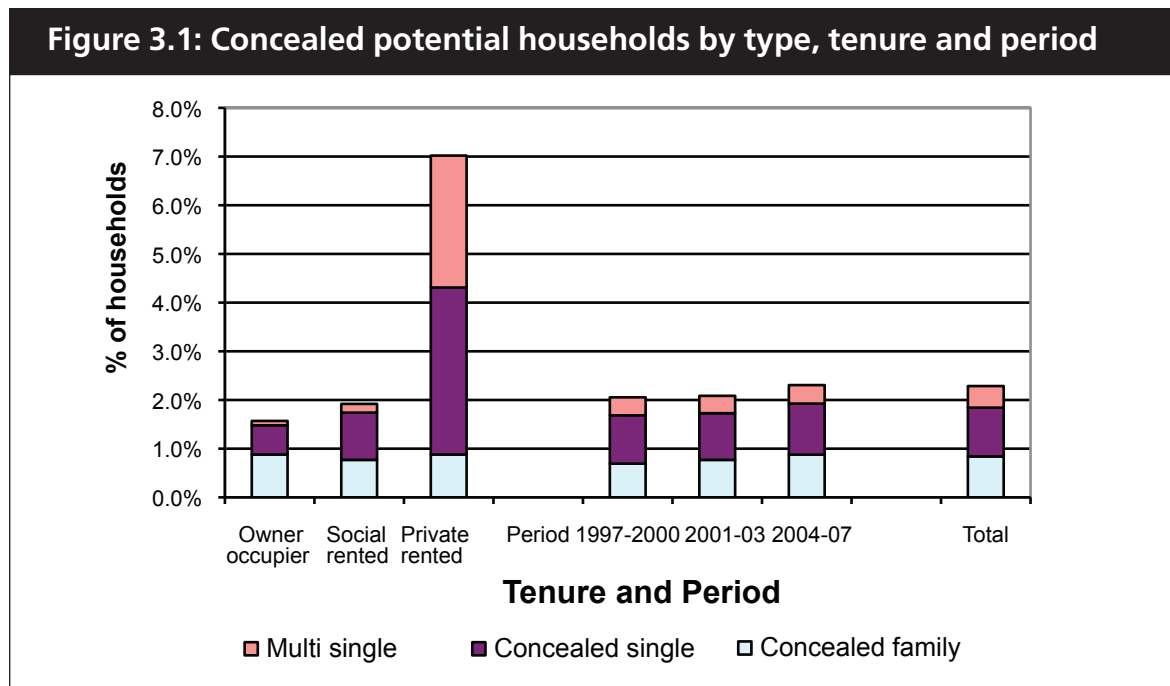
Figure 3.1: Concealed potential households by type, tenure and period

---

Figure 3.2: Concealed potential households by type and region
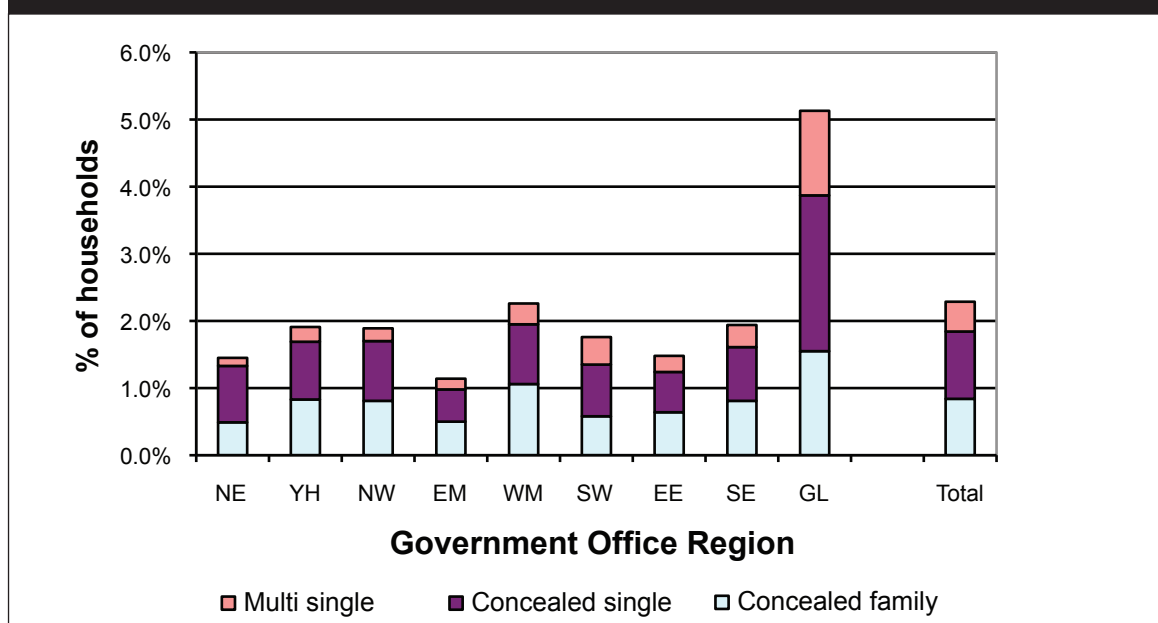
Determinants

3.11   The model used to predict concealed households is fitted to micro data from the SEH over 11 years 1997-2007 with housing and labour market data linked at local authority or subregional area level. We model all three types of concealed households together using the broader definition (not filtering for age), for the relevant sub-set of household types. The key drivers are as expected: affordability - house price:income ratio (HPIR) with an elasticity of 0.36 - area poverty and area unemployment (both positive), private renting (+), with sickness and disability having small positive effects as well, and students a small negative effect. The supply of social lettings has a negative effect, again as expected. The CORE analysis suggests that nearly 30 per cent of lettings are to concealed households, and we use this information in the simulation model. Demographic variables mainly work as expected. Younger (under-30), lone parent and multi-adult households are all associated with a greater presence of concealed households. The number of workers is also positive, but this is probably picking up size of household in terms of number of adults (as is the number of cars). More broadly, high economic activity and status goes with higher demand in the housing market, which may then force people to live with others. Migrant households (moved from another area) are slightly more likely to contain concealed households[27]. The revised model contains a term for lagged subregional concealed household rate, implying a degree of path-dependence (i.e. a cumulative effect); this effect is stronger (0.26) in the aggregated subregional version of the model (which we use to calibrate this term for the simulation).

---

[27] In the modelling work using S.E.H no distinction was made between domestic and international migrants. This is acknowledged as a limitation in paras 7.76-78 below. Possible future work, perhaps using a different dataset such as LFS, might enable different migrant groups to be distinguished.
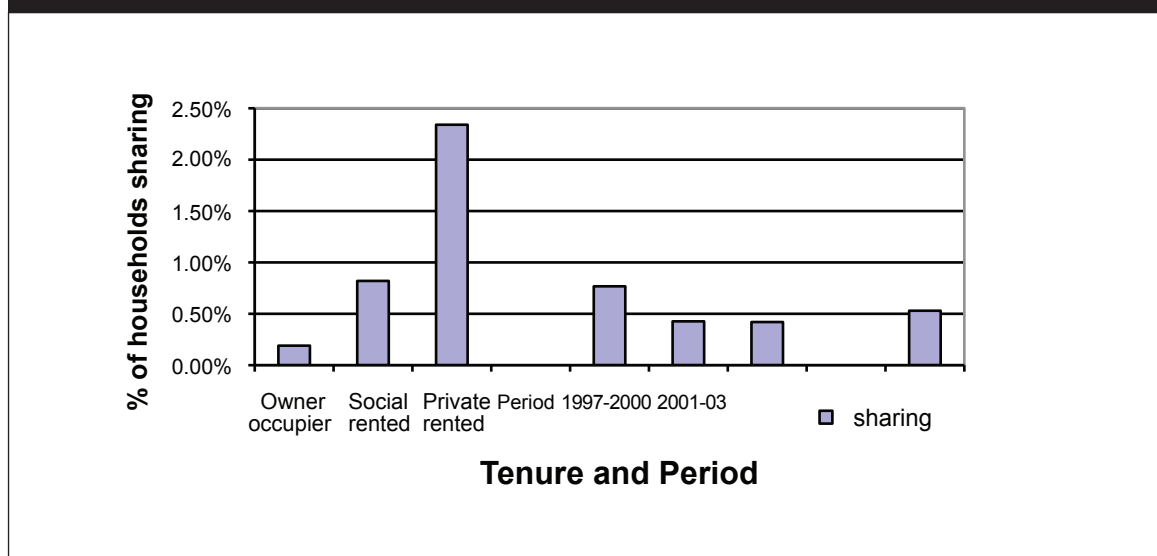
Sharing

Definition

3.12   Given the definition of a household[28], it follows that sharing households are those households who live together in the same dwelling but who do not share either a living room or regular meals together. They may share circulation space, a bathroom or toilet, or a small kitchen. Sharing is part of the fundamental identity linking households and dwellings (total households equals total dwellings less vacant dwellings plus total sharers less shared dwellings). The number of housing/household need units required for sharers will be more than twice the total number of shared dwellings (because some dwellings are shared by three or more) but less than the number of sharers (because some will couple up with others, and because some may choose to share).

3.13   The main sources for sharing data are similar to those described for concealed households: Census, SEH and LFS. Traditionally, sharing was a major phenomenon, with many households sharing in different ways, as 'lodgers' living in bedsitters or multi-occupied rooming houses. As shown below, this is less true today.

Incidence

3.14   The proportion of sharing households in the SEH. (pooled 1997/8-2007/8) is 1.0 per cent. After filtering for affordability[29] the number remaining is 0.7 per cent. Further filtering by age reduces this to 0.5 per cent (age threshold 25) or 0.4 per cent (age threshold 30). Nationally, for England, the numbers of sharing households are therefore between 85,000 and 215,000, according to this source. However, the LFS suggests that proportion of sharing households is about 1.7 per cent over the same period, implying about 350,000 sharers. For the most recent year (2008) it is 1.3 per cent, compared with 0.8 per cent in SEH for 2007. It is not clear why LFS measures more sharers than SEH, in the same way it measures more concealed households. There may be subtle differences in definition, as well as differences in survey procedure – LFS is more focussed on individuals than households. We know that there were problems with the coding of sharing in the late 1990s, and we have used a variant algorithm in the affected years.

3.15   Like concealed singles, sharing is concentrated in private renting (Figure 3.3). It is also much more common in London and (to a lesser extent) the South East and South West (Figure 3.4), with the lowest scores in the East Midlands. SEH and LFS both suggest that sharing has fallen since the 1990s, continuing a long-standing trend, although there are some signs of it having levelled out in the last year or so. The longer term declining trend may be due to changes in the private rented sector entailing a move away from traditional low rent multi-occupation and bedsits towards self-contained flats. Some people who would have been sharers in the past may now be concealed households, while others may look more to the social sector.

---

[28] A household is one person or a group of people who live at the same address and share either regular meals or a living room.

[29] See Appendix 2, s.A2.0, for details

Figure 3.3: Sharing (filtered) by tenure and period

Determinants

3.16   Sharing may be regarded as a related phenomenon to concealed households, with the boundary between them something of a grey area, and hence similar demographics and drivers may apply. The demography of the sharing group is similar to that for multi-single concealed households: relatively young adult, single person households on moderate incomes, including working adults, unemployed, and students. 9.9 per cent of under-30 singles share. Students might be considered a lower priority within this need group, given that flat-sharing can be a positive social and learning experience and that provision of student accommodation is the responsibility of the HE sector[30]. Sharing may be associated with some migration flows, as an easily–accessible tenure of first arrival. Certain housing types (e.g. flats) and locations (e.g. inner city) may be regarded as more appropriate/desirable by the sharing demographic group.

3.17   Using a similar statistical model to that for concealed households, a number of expected relationships are in evidence. Sharing is positively associated with unaffordability (higher price:income ratio, high or rising rents) and unemployment, and negatively with higher occupations and car ownership. Migrants and recent movers are more likely to share, as are minority ethnic groups (to a small extent). Other positive associations are with private renting, previous regional sharing rates, more households in temporary accommodation, and more people moving into private renting. More social lettings reduce sharing (CORE data suggest around 6 per cent of lets are to sharers). A similar model can be fitted to LFS data; although the variables available are somewhat different, the results broadly support the picture just painted. Using an aggregated model, the cumulative effect of previous levels of sharing at subregional level appears smaller than for concealed and other need categories.

---

[30] Students are not excluded from our measure of sharing, although this might be an option for the future. Students in household was not a strong predictor in the sharing model.

Existing affordability problems

Definitions

3.18   We argue that 'unaffordability' constitutes a housing need because it implies that the current home/tenure is not sustainable and that there is a risk of moving into insecurity or even outright homelessness (evidence of the link with homelessness is picked up later). It is also a problem in its own right as it may lead to poverty and hardship. Three overlapping ways of measuring unaffordability have been considered: (a) ratio measures of housing costs to income, and/or of residual income[31] to poverty-related needs standard; (b) self-reported financial difficulties related to housing payments; (c) actual arrears with payments or possession actions. Because of the way data are collected, it is generally necessary to have separate measures for tenants and for homeowners, and these are not directly comparable. The measures exemplified below are primarily of type (a) for private renters and type (b) (plus a bit of (c)) for mortgaged homeowners.

3.19   For mortgaged owners, we define serious mortgage payment difficulty as either being more than 6 months in arrears or 'finding it very difficult' to manage payments or 'falling further behind' with payments. In relation to renter households, we use a type (a) definition for private renters only, making the assumption that the combined operation of housing benefit with social sector rent guidelines is intended to achieve affordability within that sector. Renting is seriously unaffordable if the payment ratio exceeds 50 per cent of net income or if residual income is below the 'Applicable Amount' for housing benefit (student households and those on full housing benefit being excluded). For both tenures, a further filter can be applied to exclude households who could apparently solve their problem by moving and buying in the local market, taking account of both income and estimated equity[32]. Issues about the definition, measurement and scale of affordability problems are discussed further in Appendix 2 (Section A2.3)[33].

3.20   In developing the model we have also found it useful to estimate and predict the proportion of private renters receiving housing benefit, now modified as the local housing allowance. This provides another kind of measure of the extent of officially-recognised affordability problems in the private rented sector. However, we suggest that this is better characterised as a measure of affordability needs which have been met (through the allowance), rather than unmet needs.

---

[31] Residual income is income net of tax/NI, including benefits, less housing costs net of housing benefit/local housing allowance, expressed as a ratio to the Income Support Applicable Amount

[32] The way needs are filtered for affordability, that is the ability of the household to buy and move to suitable sized accommodation in their local area, is described in Appendix 2, at the end of section A2.0. It takes account of income, age, local price levels, and owners' equity.

[33] After investigation using Family Resources Survey data, the measures based on S.E.H. were modified to allow for the incomes of other household members in complex households, which reduces the overall incidence by about one-third. This modified measure is used in the final model.

Incidence

3.21   Using the criteria set as above, in the SEH dataset, affordability problems appear to be much more prevalent for private renters than for homeowners (Figure 3.4). More than a fifth of the former have such problems, whereas less than one per cent of owners do. While this underlines the key nexus between private renting, affordability and other housing needs, particularly insecurity, it is also necessary to caution that the measures are not strictly comparable, with the measure for owners being more narrowly defined than that for renters. Mortgage problems are currently receiving much publicity but, as a source of housing needs, they are probably (in most years) quantitatively less significant than the problems in private renting. Further analysis reported in Appendix 2 suggests that on comparable ratio-based measures of risk, private renters have about two to three times the incidence as mortgaged owners.

3.22   Household types most likely to suffer these problems are (in both tenures) lone parents and larger families, with younger households generally more associated with problems in the rental sector. Couples and pensioners have the lowest incidence. For owners, the regional variation is not very large, but the regions with higher incidence over the whole period included the South West, South East, West Midlands and London (Figure 3.5). For renters, London stands out more strongly as having greater problems, followed by Yorkshire, South West and South East. Affordability problems fell somewhat to about 2003, but have been increasing again more recently (and may be expected to rise further in the immediate future).

Figure 3.4: Affordability difficulties by tenure & period
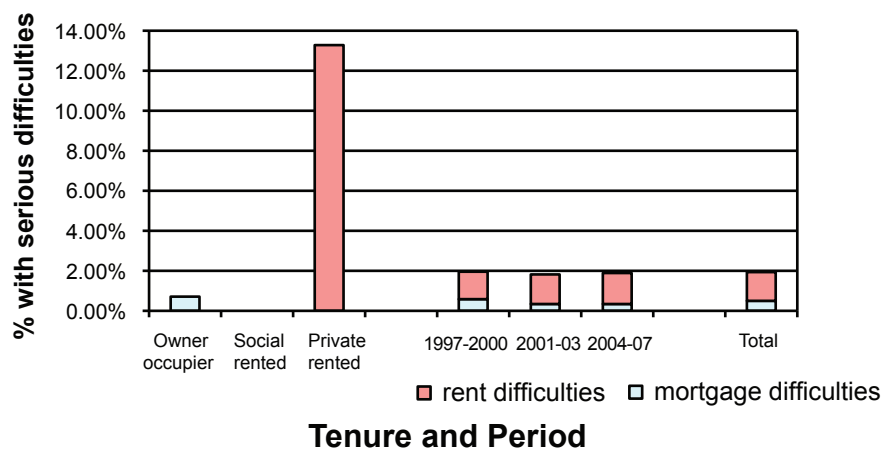
Figure 3.5: Affordability difficulties by region (1997-2006)
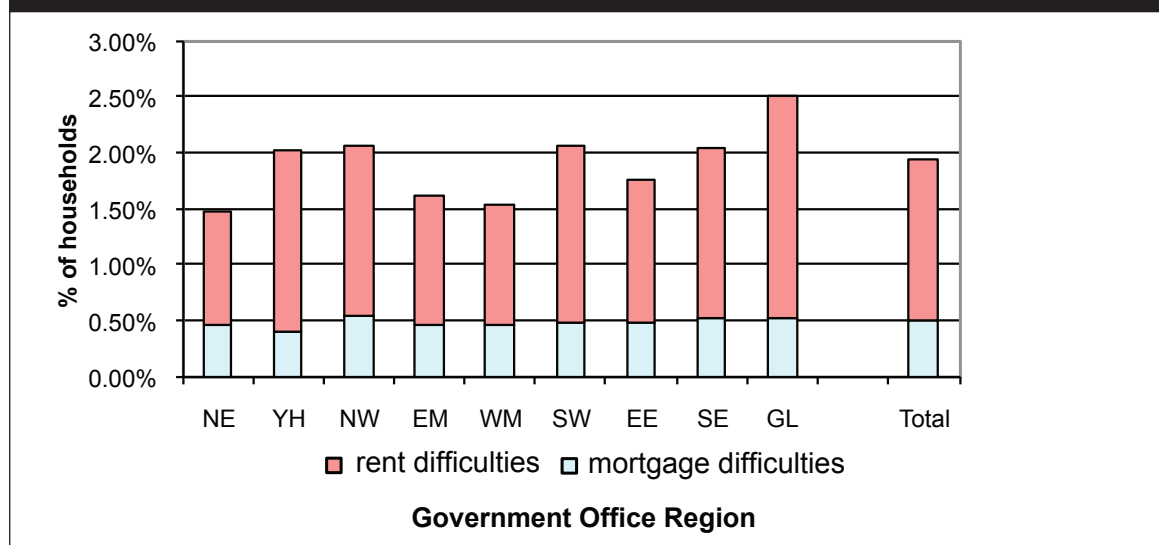
3.23 The proportion of private rented sector households on housing benefit/local housing allowance is estimated from SEH at around 19.4 per cent in 2004, 23.2 per cent in 2007 and 21.0 per cent (forecast) in 2009. These numbers appear to undercount private rented housing benefit/local housing allowance cases compared with published data from DWP (Wilcox 2009, Table 118). The proportions are markedly higher (28-32 per cent) in the northern regions compared with the southern regions (15-20 per cent), suggesting a greater concentration of low income households in the northern private rented sector. Lone parent families and older singles have markedly higher rates of housing benefit/local housing allowance claiming. Comparison within SEH suggests that half of those in our 'serious rental payment difficulty' category are not claiming housing benefit (some of these may be eligible but not claiming), while half are on housing benefit, suggesting that the housing benefit system does not always fully deal with the problem[34].

Determinants

3.24 As with the previous need categories, we can use logistic regression models to predict the incidence of these problems. For owners having serious mortgage payment difficulties, the effects of nearly all variables are in line with expectations. The house price:income ratio has a strong positive effect (elasticity +1.14), as does area unemployment (+0.80), number of children (+0.25), lone parent or multi-adult households. Other more modest positive effects are associated with individual unemployment, disability, low occupational group, Asian households and migration. Negative effects go with area poverty, significant deposit/equity, new households, elderly and single person households, number of workers, cars, and high occupations. Very few households move into social renting from owner occupation because of mortgage difficulties (1.2 per cent of lettings).

---

[34] housing benefit (now local housing allowance) may not provide sufficient support to prevent residual income falling below Applicable Amount (or rent exceeding 50 per cent of income) in a particular case because actual rent may exceed the rent allowed for in the housing benefit/local housing allowance system, or because of change of circumstances not yet matched by benefit adjustment, or because of other adjustments to benefit (e.g. for non-dependants) which do not necessarily match actual monies available to the tenant.

3.25   Although the apparent incidence of rental problems is much higher, the predictive model is somewhat less satisfactory although still reasonable. Income has a negative effect (elasticity -0.64) while private rents has a stronger positive effect (+0.68) than house prices (+0.15). Other positive effects are associated with area poverty, recent moves to private renting, older households, lone parents, couple families and multi-adult households, number of children, proportion of workers and sickness (the inclusion of workers and older households in this list is surprising). Negative effects are associated with area unemployment, new households, single person households, students, minority ethnic groups and migrants (the results for area unemployment, ethnicity and migrants are not quite as expected). Variables which were not significant included the supply of social lettings, although we estimate from CORE that something like 13 per cent of new lettings are to former private renters in such difficulty.

3.26   Using aggregated models we estimate that the cumulative effect of previous levels of these problems at subregional level is much less than with other needs (elasticities of 0.18 and 0.015 respectively).

3.27   The predictive model for private renters on housing benefit suggests that the predominant influences are economic variables, including income (elasticity -0.52), number of workers (-0.67), area unemployment (0.34) and cars (-0.13), with demographic variables including lone parent and couple families also playing a part.

Overcrowding

Definition

3.28   There is a general consensus that overcrowding is an important type of housing need to be addressed, and that the 'bedroom standard' is the most appropriate criterion. This broadly corresponds to traditional social rented sector allocation 'fitting' rules. Essentially, this allocates one bedroom to each couple or lone parent, one to each pair of children under 10, one to each pair of children of the same sex over 10, with additional bedrooms for individual children over 10 of different sex and for additional adult household members. This measure is implemented in household surveys, including SEH and EHCS, but not exactly in other sources like the Census, where proxy measures have to be used. For overcrowding the two main survey sources agree closely.

Incidence

3.29   Over the period 1997-2007 overcrowding affected 2.6 per cent of households on average. Applying a filter based on ability to move and buy an appropriate sized home[35] reduces this figure only modestly, to 2.2 per cent. Overcrowding is relatively low but not non-existent in owner occupation (1.5 per cent, or 1 per cent after filtering), but it is three times higher in private renting and four times higher in social renting (Figure 3.6). The association of higher overcrowding with the social rented sector is a noteworthy feature of these data.

---

[35] As described at the end of section A2.0 in Appendix 2.

3.30   Unsurprisingly, overcrowding is much more prevalent for larger families, with lone parents and multi-adult households the next most-affected. Conversely, it does not affect single person households, nor two-person or elderly households. There is a strong regional effect too, with overcrowding in London 3-4 times higher than in most of the other regions. The only other region at or above the average is the West Midlands (we hypothesised this might be an ethnic effect but the predictive models do not really support this). Consistent with housing media coverage of the issue, overcrowding increased somewhat, from 2.35 per cent in 1997-2000 to 2.66 per cent in 2004-07.

Figure 3.6: Overcrowding by tenure and time period (bedroom standard, filtered)
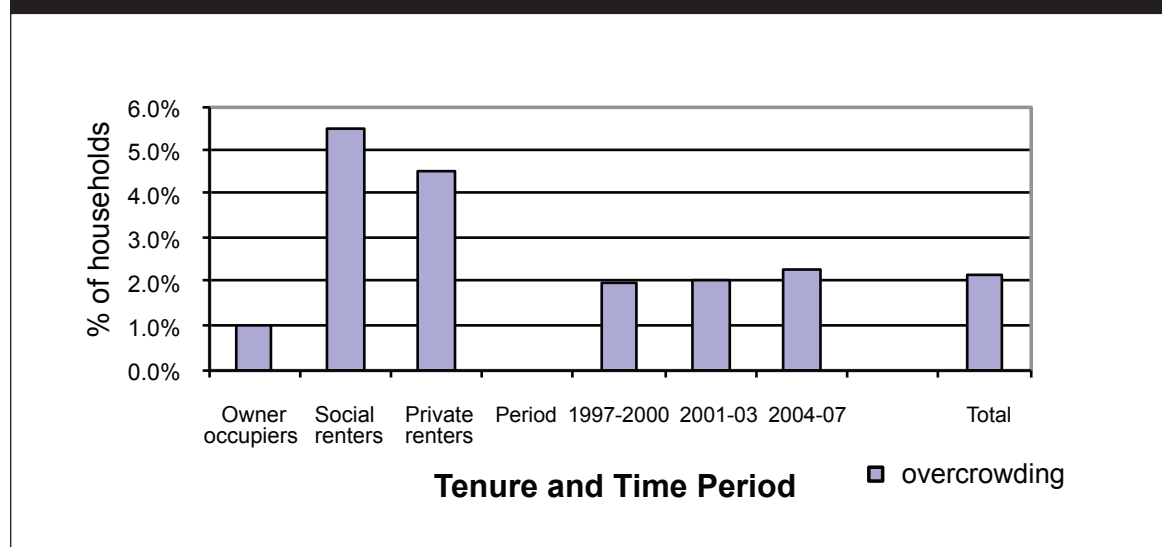
Determinants

3.31   A statistical model fitted to SEH micro data provides a reasonably good explanation of the incidence of overcrowding. Demographic factors including couple families, multi-adult households and number of children have the expected positive effects. Affordability (house price:income ratio) has a strong effect, with an elasticity of 0.51. This is reinforced by other economic factors, including area low income deprivation (+0.36), and at individual level deposits (wealth, -0.24), occupational groups (high -, low +) and car ownership (-). However, it should be noted that number of workers has a strong positive effect (+0.94), reflecting a size of household effect.

3.32   The association with rental tenures is reflected in the model, again with social renting slightly stronger in its effect, and also a positive effect from households in temporary accommodation. Students also feature with small positive effect. The mix of housing available is reflected to some degree through the effects of flats and terraced houses (both positive). However, the estimated model does not feature the actual supply of social lettings or the mix of lettings, although we know from CORE that overcrowding is the reason for rehousing in about 12 per cent of cases. Neither does the model reflect private sector rents, partly perhaps because current data on these is

not good and this is correlated with house prices. Using an aggregated model we find a strong cumulative effect from previous subregional levels of crowding (elasticity +0.40) and a positive growth trend.

Unsuitable accommodation

Definition

3.33 This is potentially a wide and diverse general category which may encompass a number of distinct groups/situations. Two specific groups considered here are (a) families with children living in flats on higher floors, and (b) elderly or disabled people with mobility problems for whom current accommodation is unsuitable. Wider definitions might encompass households with a need to live in particular locations in order to give or receive support, access local services or access work (e.g. with unsocial hours), or avoid problems of harassment. Another additional category might be people living caravans and other non-permanent accommodation, including winter lets of holiday homes (although this might be covered by insecurity/potential homelessness). Within the narrower category (a) there are clearly issues about defining floor level thresholds for 'high' flats; within (b) the issue is one of defining the degree of mobility impairment and the nature of the problems with the existing accommodation.

3.34 SEH and EHCS both provide ways of identifying, albeit imperfectly and not in a wholly consistent fashion, groups (a) and (b) identified above. In future these surveys will be combined, which will in a sense solve the consistency problem, although it may leave some problems incompletely captured. Another possible angle is to look at the data from CORE on reasons for rehousing and previous housing circumstances, which indicates that 13 per cent of recent social rehousing cases had unsuitability problems as their reason for rehousing.

Incidence

3.35 Overall, the incidence of unsuitability in this sense is similar in scale to overcrowding, affecting 2.5 per cent of households on average over the last decade. Of the two sub-components of this measure, the elderly/disabled group in unsuitable housing is much the larger part, accounting for 2.58 per cent, vs 0.33 per cent for the families with children in high flats or non-permanent accommodation in 2007. The incidence appears to have increased markedly over the period. Lone parents and larger families again feature with a higher incidence, but this time elderly households also feature significantly. There is some concentration in London (3.9 per cent), but this is less sharply so than for the other need categories. The northern regions (and West Midlands) have a noticeably higher incidence than the non-London southern regions. Filtering for affordability to move in the market only reduces the incidence moderately (2.0 per cent vs 2.5 per cent). Even more than in the case of overcrowding, these problems seem to be more concentrated in the social rented sector. Again we have a paradox, whereby the 'solution' may also in some cases be part of the problem. This will include many families in high rise flats and many elderly people in unsuitable walk-up flats.

3.36   Analysis of EHCS data using more complex criteria which differ in detail suggests that the incidence of unsuitability problems is greater than the SEH estimates just presented, with more than 5 per cent of households affected even in the private sectors. In building the overall needs model we stick with the SEH-based numbers for reasons of consistency, conservatism and the ability to model needs over a longer run of years. However, we should keep in mind the possibility that these estimates are on the low side, and consider reviewing this measure when the combined EHS comes on stream. Such a review might also build on the insights provided by comparison with the housing related support analysis in Chapter 4, particularly para 4.35, which suggests that a significant proportion of existing needs in the private household population are 'met' by existing services[36].

Figure 3.7: Unsuitability problems by tenure and time period (filtered)
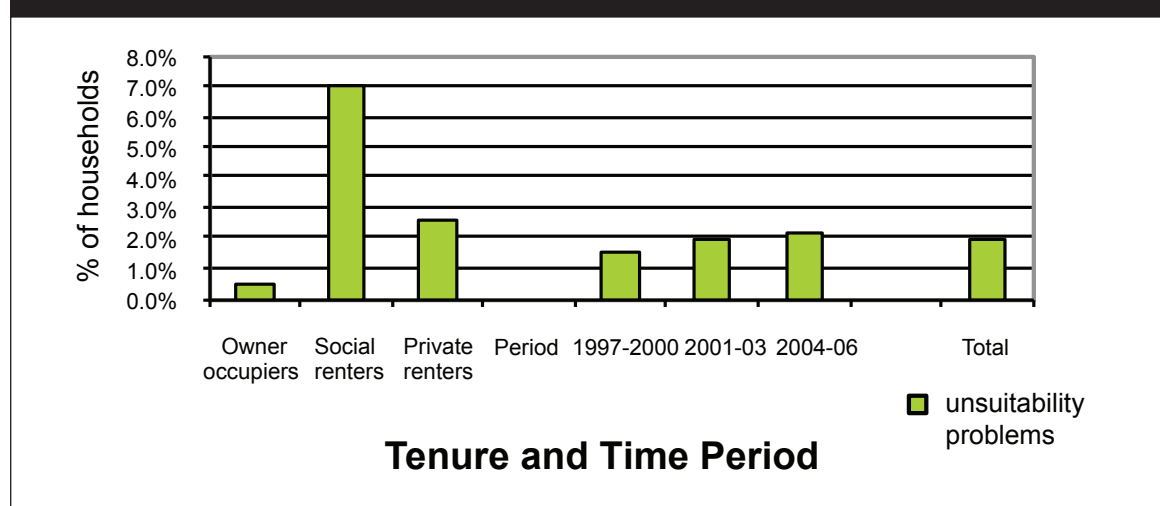
Determinants

3.37   The statistical model for unsuitability provides a reasonable account which encompasses a wide range of predictors, mainly having effects in the expected direction. Affordability still features, but its effect is much less than in most of the other models (elasticity of 0.13). Other economic factors/proxies, such as area poverty (+0.24), deposits/wealth (-0.19), number of workers (-0.31), cars and high occupations also feature, but generally with smaller effects. However, the most powerful predictor is disability (+1.5).

3.38   Although demographic and age factors are included, the age variables have less impact than might be expected, while the incidence is spread across a number of household types. In this model some housing type characteristics including flat and 'high entrance level' feature, as well as the condition proxy 'no central heating'. There is a moderate positive association with each of the main minority ethnic groups as well. In revising the model, we have incorporated a lagged subregional unsuitability rate term, which has the expected positive effect (+0.21 based on the aggregated model).

---

[36] Care is needed in interpreting this. A service may be provided which partially responds to the need but which still leaves the household feeling that their accommodation is unsuitable. Or a service may be provided which satisfies the need, so it is not flagged in the S.E.H.-based measure.

Homelessness

Definition

3.39   In law, a person is defined as homeless in England if, broadly speaking,

- they do not have accommodation that they have a legal right to occupy

- they have accommodation but they cannot gain access to it

- they have a mobile home (e.g. caravan or boat) but nowhere they can legally site it and live in it

- they have accommodation but it would not be reasonable to continue to live there (e.g. because there would be a risk of violence)

- they have accommodation but it does not provide somewhere to live for the whole household

3.40   If a local authority has reason to believe an applicant is, or may be, homeless, they must decide whether any duty is owed to the applicant under the homelessness legislation. There are four criteria:

(a) are they eligible for assistance (some categories of person from abroad are not)

(b) are they homeless (or likely to become homeless within 28 days)

(c) are they unintentionally homeless (i.e. the homelessness is not a consequence of their own deliberate behaviour), and

(d) do they fall within a priority need group (e.g. does the household include dependant children, a pregnant woman or someone who is vulnerable for some reason).

3.41   If an applicant meets all four criteria, the main homelessness duty will be owed. This is a duty to secure (temporary) accommodation until a settled home can be offered. People accepted as owed the main duty are referred to as homeless acceptances.

3.42   The number of such priority acceptances per year constitutes the primary measure of homelessness as a 'newly arising need' or 'expressed demand' for assistance with housing. This is a flow measure, whereas the other specific needs discussed in this chapter are stock measures of a backlog of unmet need. The equivalent stock measure for homelessness might be taken as the number of homeless households in temporary accommodation (temporary accommodation) at a point in time, also regularly recorded. However, it is important to note that most temporary accommodation now consists of mainstream housing, either social rented stock or licensed private rented sector housing, and that most of these do not necessarily have a specific need other than their status of not yet having settled accommodation.[37]

---

[37] Pleace *et al* (2008) study of households in temporary accommodation provides evidence on the circumstances of homeless households in temporary accommodation.

3.43   Because of these features, it would have been difficult to fit homelessness into the framework of the main needs model we have developed, where the key outcomes are stocks of unmet need. Homeless acceptances are a flow which overlaps heavily with other measures we are using, such as concealed households. The stock of households in temporary accommodation is thus a more consistent measure to use, but this also overlaps with other measures used; and most of these households do not have a specific need in their current accommodation, other than their non-settled status. At the same time, homelessness is an important statutory responsibility for local authorities which takes considerable resources in administration and in provision of rehousing, particularly given the policy assumption built into current homelessness legislation that homeless acceptances should ultimately be offered social housing. It is also an important policy priority for national government. Therefore, it is desirable to include key homelessness numbers within the estimates and forecasts contained in the model. The approach adopted recognises this, while treating homelessness as a kind of 'overlay' on the main need estimates.

Incidence and profile

3.44   Households accepted as homeless and in priority need were 48,500 in the year to 2009 Q2, down from 135,600 in 2003[38]. The total count of homeless or potentially homeless households in temporary accommodation was 60,250 in Q2 2008, down from 101,000 in 2005 but still higher than the 49,400 in 1998. The proportions of those in temporary accommodation living in mainstream accommodation were 88.5 per cent in 2008 (70 per cent in 2001). The striking feature of these data is the sharp fall in numbers of acceptances after 2003, following a period of rising numbers (Figure 3.8). The fall in temporary accommodation is probably mainly a consequence of this. On past experience, logic and statistical modelling evidence[39], we would expect the flow of homeless acceptances to reflect the 'tightness' of the housing market. If so, we would have expected a further increase in numbers between 2003 and 2007.

3.45   It seems inescapable that the recent trend in the figures results from administrative changes connected with the officially promoted 'homelessness prevention agenda' (ODPM, 2003a & b). The post-2002 stress on 'homelessness prevention' has encouraged many authorities to seek to assist potentially homeless households (a) by assertively attempting to help them to retain tenancies at risk and (b) via purely informal procedures, facilitating access to private tenancies for those whose previous accommodation could not be retained (Pawson *et al*, 2007). We go on below to describe modelling results where prevention measures are explicitly included in the explanation of homeless rates, results which are fully consistent with the case just made.

---

[38] However the historical peak figure was 141,000 in 1990 .

[39] See for example Bramley 1989, 1993, and Bramley *et al* 2006, Appendix B.

3.46 Homelessness acceptance rates run at a consistently higher level in London, roughly double the rate in the other regions (Figure 3.9). Rates are somewhat higher in the more urban/industrial regions of the north and the West Midlands than in the south of England outside London. This probably reflects the socio-economic drivers discussed further below, whereas the London situation is dominated by the tightness of the housing market. The rates in Figure 3.9 are standardised (i.e. assume constant prevention activities); as such they indicate that there was a moderate 'real' increase in homelessness over the last decade. Homeless households in temporary accommodation have a much higher incidence in London, and to a lesser extent in the immediately surrounding areas (Figure 3.10). This is particularly true of forms of temporary accommodation such as bed and breakfast hotels. Durations of stay are also much longer in London.

Figure 3.8: Homeless acceptances, temporary accommodation, prevention and lettings supply, England 1993-2007
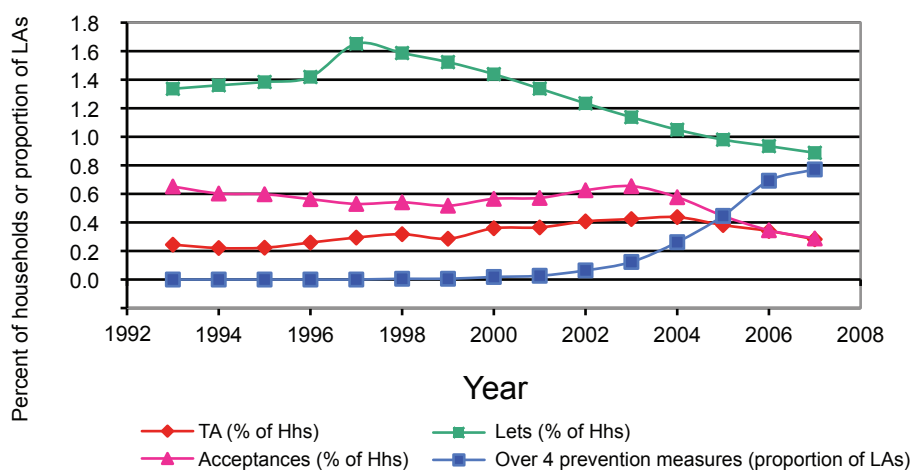
Figure 3.9: Predicted homeless acceptance rates (adjusted for constant prevention activity)
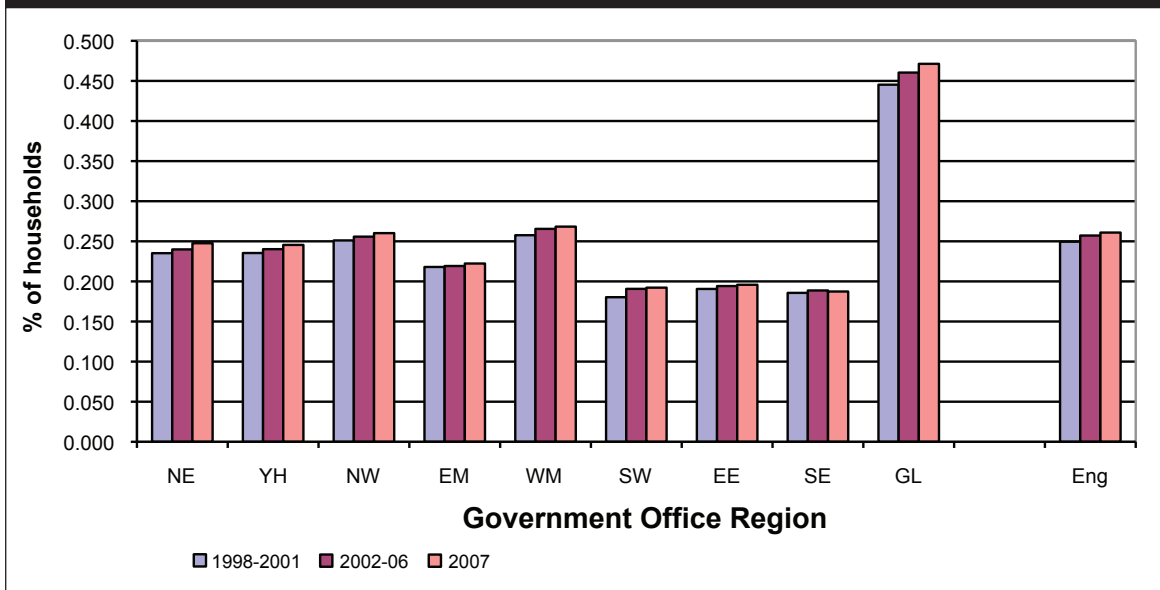
Figure 3.10: Homeless in temporary accommodation rates by region and period (percentage of households)
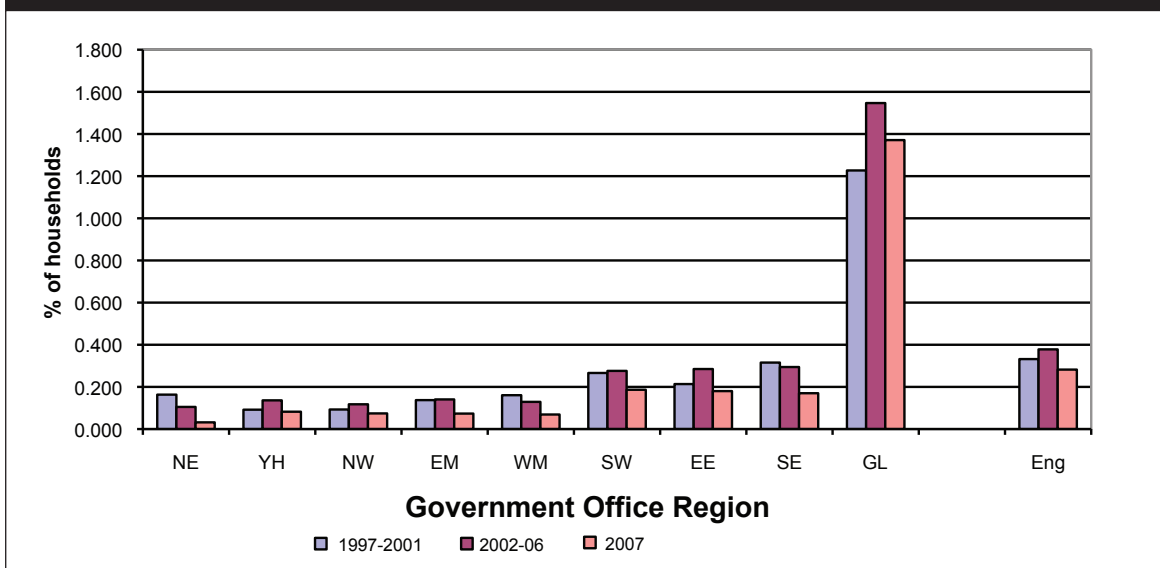
3.47   Families still represent a majority of statutory homelessness, with 71 per cent of households accepted in 2008 including dependent children or a pregnant woman, much the same rate as in the early 1990s, and lone parents outnumber two-parent households by two-and-a-half to one. The more common 'vulnerability' grounds accepted are young (16/17 or care leaver), mental illness, physical disability, 'other' (including care, prison or forces leavers), domestic and other violence. Relatively rare are cases of vulnerability on account of old age, and 41 per cent of households accepted are headed by an adult aged under 25. This profile underlines the significance of the link to housing support for socially excluded groups picked up in Chapter 4. 36 per cent of acceptances had relatives or friends no longer willing/able to

accommodate them, with another 18 per cent coming from relationship breakdown, which emphasises the link with household formation and, in the former case, concealed households; nineteen per cent come from loss of shorthold or other private tenancy, underlining the issue of insecurity in that sector. Payment difficulties are relatively infrequent causes although mortgage arrears/possessions was up from 1 per cent in 2003 to 4 per cent in 2008[40].

Determinants

3.48   We model homelessness in a two-stage model, the first stage predicting priority acceptances and the second stage predicting temporary accommodation, given acceptance rates. These regression models are fitted to local authority level annual data over the period 1993-2008. The dataset includes indicators of detailed prevention measures including their year of introduction, while a typical range of socio-economic and demographic variables are also included.

3.49   The most significant (effective) individual prevention measures appear to be: home visits all cases; floating support referral; formal external mediation; sanctuary scheme; homeless prevention fund. Having four or more measures reduces acceptances significantly. The overall effect of all of the measures included would reduce the acceptance rate by 48 per cent of the mean value. These findings are fully consistent with the view that prevention measures significantly reduce homeless acceptances and explain the national fall since 2003.

3.50   The local housing market does affect homeless rates; for example, through house prices (elasticity 0.18), although these effects are less strong than those of income (-0.48). Also, social lettings supply has a positive association with homeless acceptances (possibly evidence for supply influencing demand[41]), whereas private renting has a negative effect (alternative housing opportunities, perhaps). Other demographic factors include young adults (+0.89), in-migration (+0.35) and minority ethnic population (+0.17). There is a positive relationship with crime rates (+0.24), which may be a general deprivation proxy more than the actual flow of homeless people from prison.

3.51   We use this model to estimate what homeless acceptances would have been if full prevention measures, of the kind which are now normal, had applied throughout the period. This is the basis of Figure 3.9, and also the treatment of homelessness in the general simulation model.

3.52   A similar statistical model is used to predict the rate of households in temporary accommodation (as per cent of households) at the end of each year in each local authority. This model, which achieves a high fit to the data, implies that for every 100 households in temporary accommodation at the start of the year, there will on average be 86 in temporary accommodation at the end (not the same households, typically); for every 100 acceptances there

---

[40] This share peaked at 10 per cent in 1992.

[41] This relationship could be accounted for in various ways, although it is consistent with the evidence in Chapter 5 that social lettings supply is positively associated with household formation and moves by new households into social renting.
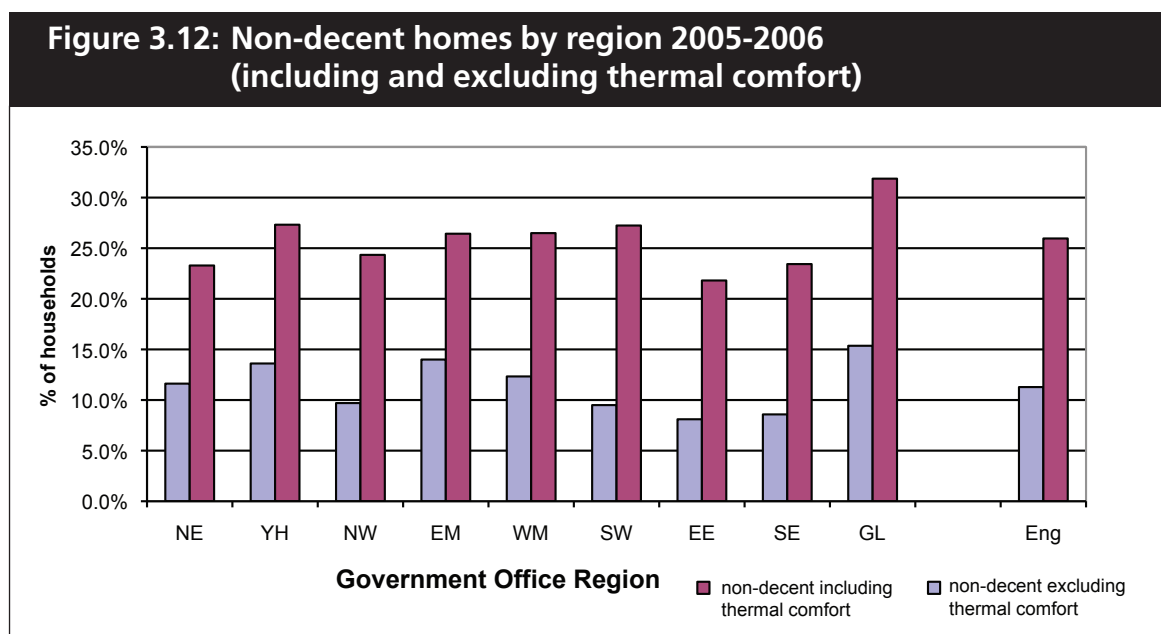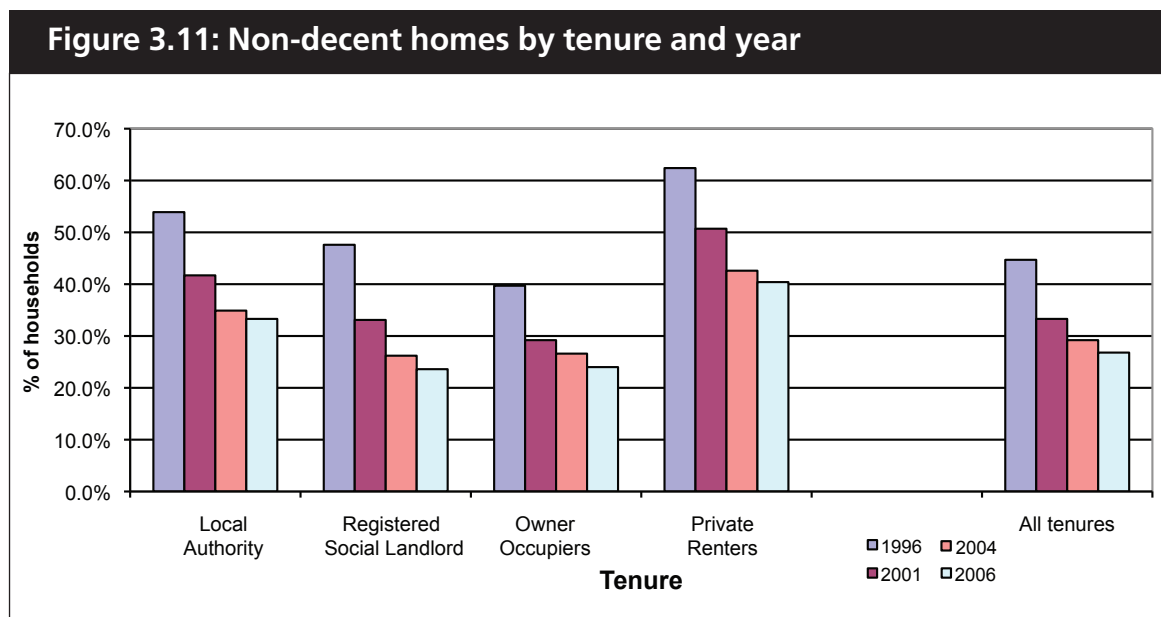
will be 8 more in temporary accommodation at the end of the year; for every 100 social lets there will be 3-4 less in temporary accommodation at the end of the year. These latter figures look rather low; they will be affected by the propensity to use temporary accommodation and the priority given to housing temporary accommodation cases, and will doubtless vary greatly between localities, regions and time periods. For example, Figure 3.8 suggests that more lettings may have been used to reduce temporary accommodation in the recent period.

3.53   Some other variables have moderate effects in the models. More prevention measures seem to reduce temporary accommodation as well as acceptances. Higher house prices are associated with fewer households in temporary accommodation (unexpected). More social renting stock is associated with more temporary accommodation, while more social vacancies reduce it (similarly to acceptances). However, this time there is also a positive effect from private renting. One interpretation of these results is that the two rental tenures provide the main opportunities to provide temporary accommodation, so this may be in part a supply effect. As with acceptances, there is a significant association of temporary accommodation with minority ethnic population vs White UK population.

House condition

3.54   Poor physical housing conditions are a significant housing problem and type of need, but we have not given so much attention to this issue as we have to other types of need. This reflects guidance from the project's advisory group, which in turn reflects a couple of important considerations. The first of these is that house condition problems, in today's conditions, tend to be such that the appropriate solutions most often involve repair and renewal work to the dwelling and its facilities, rather than complete replacement of the dwelling and rehousing of its occupants. This distinguishes condition needs from the other needs reviewed in this chapter, which tend to require provision of subsidised housing opportunities for the households affected. The second consideration is that distinct programmes are in place to meet backlogs of poor condition in the form of 'non-decent' homes, particularly in the social sector but also for vulnerable households in the private sector. Progress in reducing condition problems will be mainly governed by the progress of these programmes rather than by what is happening in the rest of the housing market.

3.55   Nevertheless, it is appropriate to present some summary data on the state of England's housing stock in terms of the key standard of decency which is now applied, in order to complete the overall picture. The Decent Homes standard has been central to policy since 2001. This requires homes to meet four criteria: statutory minimum standards (prior to 2006, and in the data presented here, this means fitness); a reasonable state of repair; reasonably modern facilities; and reasonable thermal comfort. A major programme is underway to bring the whole social housing stock up to this standard, originally by 2010 although in practice this will take somewhat longer. For the private sector the focus is upon 'vulnerable' households, essentially those on low income benefits.

3.56   Figure 3.11 charts progress since 1996 and up to 2006 by tenure, drawing on the EHCS. This shows that there has indeed been a sharp improvement against the decent homes criterion. This applies to all tenures, although the improvement has been greatest for the registered social landlord sector, probably due to its better initial condition and the impact of stock transfer programmes. There is still much to be done in the remaining local authority sector and in private renting, although even here there has been much progress.

Figure 3.11: Non-decent homes by tenure and year

Figure 3.12: Non-decent homes by region 2005-2006 (including and excluding thermal comfort)

3.57   Figure 3.12 shows the picture across the regions in 2005-06. Here we show separately the non-decency rate excluding thermal comfort, because this criterion is the most common reason for failing the standard but is also often something which only requires modest investment to put right (Wilcox 2009, p.40). It is non-decency associated with the other criteria which more closely relates to traditional notions of housing in poor condition, the core problem

as it were. Overall about 11 per cent of households suffer from these core condition problems. This varies between about 8 per cent in East of England and over 15 per cent in London. This is one instance where East Midlands also does rather poorly (14 per cent), as does Yorkshire & Humber.

3.58   It is possible to relate house condition problems to other measures of housing need experienced by individual households within the EHCS, similar to those presented earlier in this chapter. It is possible to infer from this that nearly a quarter (23 per cent) of the households with condition problems (excluding thermal comfort) also have some other housing need. This degree of overlap should be borne in mind when attempting to count the total number of households with housing needs including condition problems.

The overall picture

3.59   Figure 3.1 outlines the core need categories used in the model and the filters which have been applied to obtain headline estimates. It is interesting to look at the overall picture, combining the main elements of need discussed in this chapter, across the regions. Figure 3.13 presents this picture for the most recent year for which we have data (2007) with the six main need categories (excluding condition and homelessness) 'stacked up'. This is the jumping-off point for the simulations. It is clear that London has substantially higher needs than all other regions, and that this arises from differences in most of the components except mortgage difficulties. Other regions with relatively high needs are Yorkshire & Humber and the West Midlands. The region with consistently the lowest level of need is the East Midlands.

Figure 3.13: Profile of backlog need by region in 2007
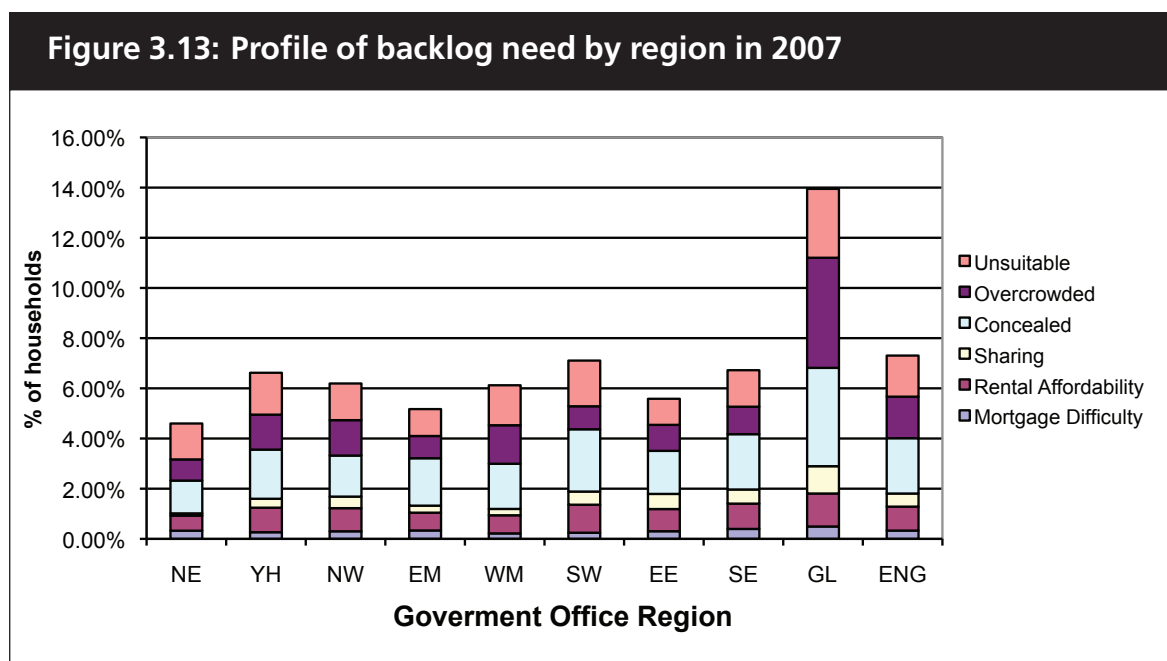
Note: Values are scaled to reflect additional filters (e.g. for age of concealed households) and an allowance for overlap.

Table 3.1: Summary of core need categories used in model		
Need Category	*Definition*	*Filters (further exclusions)*
Concealed households	Households containing concealed couple, lone parent or single adult members (excluding never-married children of HRP)	Single adults under 25; Households able to buy
Sharing households	Households sharing a dwelling, i.e. living at same address but not sharing either living room or meals in common	Single adults under 25; Households able to buy
Mortgage Difficulties	Owner occupier more than 6 months in arrears, or finding it very difficult to manage payments, or falling further behind	Households able to buy based on income and equity
Rental Affordability Problem	Private tenants (excluding students) with rent to net income ratio over 50 per cent, or residual income below housing benefit Applicable amount,	Households able to buy Tenants on full housing benefit
Overcrowding	Households below bedroom standard (less bedrooms than required for household members allowing for age & sex)	Households able to buy
Unsuitable Accommodation	(a) families with children living in flats on higher floors, and (b) elderly or disabled people with mobility problems for whom current accommodation is unsuitable	Households able to buy
Combined	Any of the above	Overlap between need categories, i.e. households experiencing more than one need only counted once.

Chapter 4

Housing related support

Introduction

4.1   Alongside the development of the general needs model, a small scale exercise was conducted that explored how housing support services might impact on overall housing need. This work was intended mainly to supplement and perhaps to enhance the main model, providing an overlay of additional evidence about the nature and scale of housing support activity and its relationship with the mainstream housing system. Part of the motive for including this was recognition of the rapid recent development of policies and services for housing support. The two main purposes were:

- to provide data and insight into the possible impacts of housing support service use on housing need and supply; and

- to collate and review available data to explore whether understanding of need for housing support services might be improved.

4.2   We start by defining what is meant by 'housing support services' and giving an overview of the methodology and the available data. The next section explores the broad patterns of housing support services that can be seen in the data, broken down by region. We go on to describe what the housing support data can tell us about homelessness. A brief discussion of the results concludes the chapter.

Defining housing support services

4.3   Broadly speaking, housing support services are forms of support which are currently funded by the Supporting People programme, although this will cease to have ring-fenced funding after 2010/11. The label of 'housing support services' is employed, though the same sets of services can also be described as 'housing related' or as 'low intensity' support services. All forms of supported housing, for example for older people, have been included regardless of their funding base.

4.4   Although housing support services are diverse, most services fall into one of a small number of general models of service delivery and also tend to work with subgroups that fall within quite widely-defined populations:

- Services for frail older people, older people with support needs and older people with dementia can be collectively described as **services for older people**

- Services for adults with a learning disability and/or a physical disability can be described as **services for adults with support needs**

- Services for homeless people, people sleeping rough and homeless families with support needs, travellers, refugees, people with mental health problems, people with substance misuse problems, current and former

offenders and people with HIV can be described as **services for socially excluded people**. Defining this 'super' client group has particular utility because there is strong evidence that the subgroups that compose it are often not discrete.

4.5   Housing support services can usually be described as either:

- **Floating support services** which employ mobile staff who deliver housing support to wherever an individual or households is living (referred to as FSS)

- **Accommodation-based services** which deliver housing support services on a fixed site or group of sites; the support is tied to specific accommodation (e.g. hostels, refuges, foyers, supported housing (referred to as ABS).

4.6   Services may be further subdivided into:

- **Short term services**, which work with a household/individual for a few days, weeks or months, with the aim of enabling the person or household to live independently

- **Long term services**, which work with a household/individual for an extended period and/or provide a settled housing solution.

4.7   Housing support services differ from personal care (social services) and from the medical care delivered by the NHS because they are defined as "low intensity". There is a blurred line between what might be termed the 'high end' of housing support services, which engage with often highly dependent people, and some personal care and health service provision, but these services will not deliver personal care like that funded by social services or the medical care delivered by the NHS.

4.8   Alongside providing services such as resettlement and hostels for socially excluded groups, housing support services are also increasingly engaged in areas such as education and training, the management of anti-social behaviour, and responding to homelessness, re-offending and substance misuse in the cities. Recent years have seen privately owned self-contained housing coming to be used to accommodate homeless households on a substantial scale.

Methodology and data

4.9   The original methodology was designed to assess and, if necessary, modify existing models for projecting housing related support needs. However, a review showed that despite some development since 2003 the available models suffered from a number of significant weaknesses. Even the strongest existing models were found to have some limitations[42]. Models could be 'tipped' to produce differing outcomes depending on the agendas of agencies involved; models were reliant on a set of assumptions that used

---

[42] See for example: Rogers, N.; Goldup, M. and O'Leary, C. (2007) *Building for All: Identifying the need for supported housing in London* London: National Housing Federation and the Housing Corporation and HGO Consultancy (2008) *The Need for Support and Supported Housing Services in the North West 2008-2020* Wigan: 4NW.

weak or unrelated data; there were difficulties in determining the size of some subgroups with any real confidence and, more generally, in determining the rates at which people within specific need groups require housing support services. The decision was taken to not adopt, nor to attempt to modify, any of these existing models to avoid the appearance of spurious accuracy.

4.10 Because housing support activity can meet similar or identical needs using different types of services (**e.g. FSS versus ABS**) a *specific* relationship between 'needs' and 'service types' is difficult to establish. Some of the needs that housing support services are designed to meet have not been the subject of surveys. The presence of a need only triggers a need for housing support under some circumstances, depending on the availability of good quality social supports, the accessibility of other services, or the severity of the need[43]. Trying to predict numbers of people with such a combination of circumstances is bound to be challenging.

4.11 The available data are almost entirely administrative data on commissioned services. Some authorities' commissioning patterns have been strongly influenced by 'legacy' service provisions, many of which were originally developed on a fairly ad hoc basis. However, local authorities have increasingly based their commissioning patterns on a robust strategic assessment of local needs and priorities and reflected in their Supporting People strategies. There is still an uncertain degree of double counting within this administrative data, particularly for socially excluded groups[44].

4.12 The Supporting People programme has had a growing role in social exclusion policy, particularly in the field of homelessness. The programme has only very briefly reached what might be termed a 'steady state' prior to the ring fence being lifted in Aril 2009 and the programme being placed within the Area Based Grant in April 2010. There has been considerable change in the services funded as local authorities developed robust needs assessment and commissioning plans. However, there is an absence of reliable time series data that would allow patterns of delivery over time to be compared to determine broad commissioning trends (unlike, for example, the data on acceptances under the homelessness legislation[45]).

4.13 The sources on which our analysis has drawn are:

• **Supporting People Local System** (SPLS) which details publicly funded services at unitary and county level.

• The SP **Client Record** (CR) which counts the number of people using housing support services by service type and client group, at unitary and county level during a financial year. See: http://www.spclientrecord.org.uk/

---

[43] Rogers, N.; Goldup, M. and O'Leary, C. (2007) *Building for All: Identifying the need for supported housing in London* London: National Housing Federation and the Housing Corporation.

[44] In the last fifteen years or so there has been a greater emphasis on medium and long term interventions, a short hand way of expressing this is the move from providing a 'bed for a night' and towards 'more than a roof' services' that attempt resettlement over a more sustained intervention. Although there is less very short term intervention, double counting must be occurring to an extent.

[45] Though here too there are caveats as the priority needs groups have changed under the most recent legislative change and a major policy shift has occurred with the rise of the preventative agenda.

- SP **Outcomes Data Sample** (OD) which collects data on service users at the point at which they exit short-term housing related support services. For long-term housing related support services a sample of clients is identified and outcomes data is collected for this sample of clients only (for further detail see Appendix 4)[46]. Outcome data are also collected at unitary and county level. See: http://www.spclientrecord.org.uk/

- **Elderly Accommodation Counsel** databases on the size, number and tenure of all sheltered housing and extra care housing schemes in England

- **CORE** (COntinuous REcording) is a national information source recording information on the characteristics of new social housing tenants and low cost home ownership purchasers and the homes they rent and buy. Of specific relevance here are the data on lets in supported housing. See: http://core.tenantservicesauthority.org/

4.14   All of these are available and compiled at county and unitary authority level, but aggregated in our analysis to regions.

Housing support service activity

4.15   Figure 4.1 shows the levels of activity on **short term** housing support services during 2007/8, combining all three super-client groups. Short term services are dominated by provision for socially excluded groups, with much lower numbers in the older people and adults with support needs groups. Some 95 per cent of short term ABS activity was focused on the socially excluded group nationally, alongside 81 per cent of short term FSS activity. This reflects the fact that shorter term needs of older and adult clients are covered by NHS and statutory Social Services.

4.16   The measures shown are client numbers, distinguishing 'inflow'[47], outflow and the pool of cases (i.e. the stock outstanding) at the end of the year. The monitoring for each financial year covers households and individuals who entered housing support services at the end of the preceding financial year. This means the individuals and households recorded as leaving services in a financial year are not necessarily the individuals and households who are recorded as entering those services in the same financial year. In addition, the available data are not entirely comprehensive, as completion of returns is not mandatory. There is also an element of double counting in the Client Record in relation to short term housing support services, but the extent is probably not particularly great (because services are typically delivered for several months at least, so an individual is unlikely to appear many times in the same year). Clearly though, with these services the flows are large relative to the pools. Because the Figure shows absolute numbers the highly populated urban regions tend to dominate the picture.

---

[46] The data for 2007/8 were 'probably incomplete because not all service providers were making returns

[47] In the case of short term services, 'inflow' effectively includes both new cases and cases carried over from the previous period.

Figure 4.1: Estimated inflows and outflows from short term housing support services for all three super client groups by region 2007/8
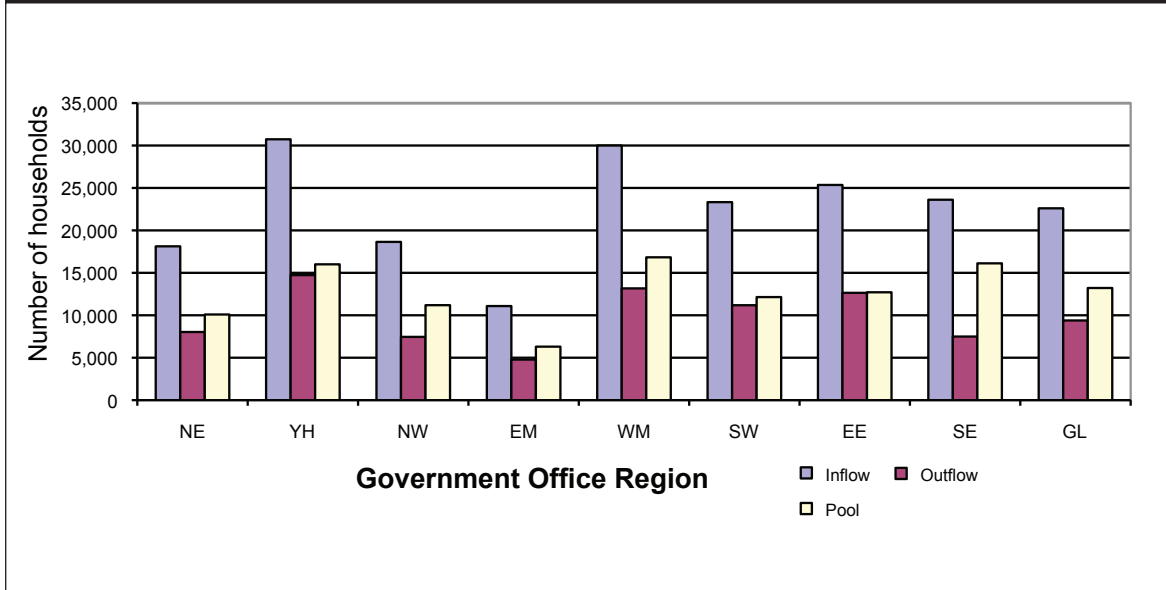
Source: Client Records and Outcomes Data 2007/8 (covers all super client groups)
See Table A4.3 in Appendix 4.

Figure 4.2: Estimated inflows and outflows from medium and long term services by region 2007/8
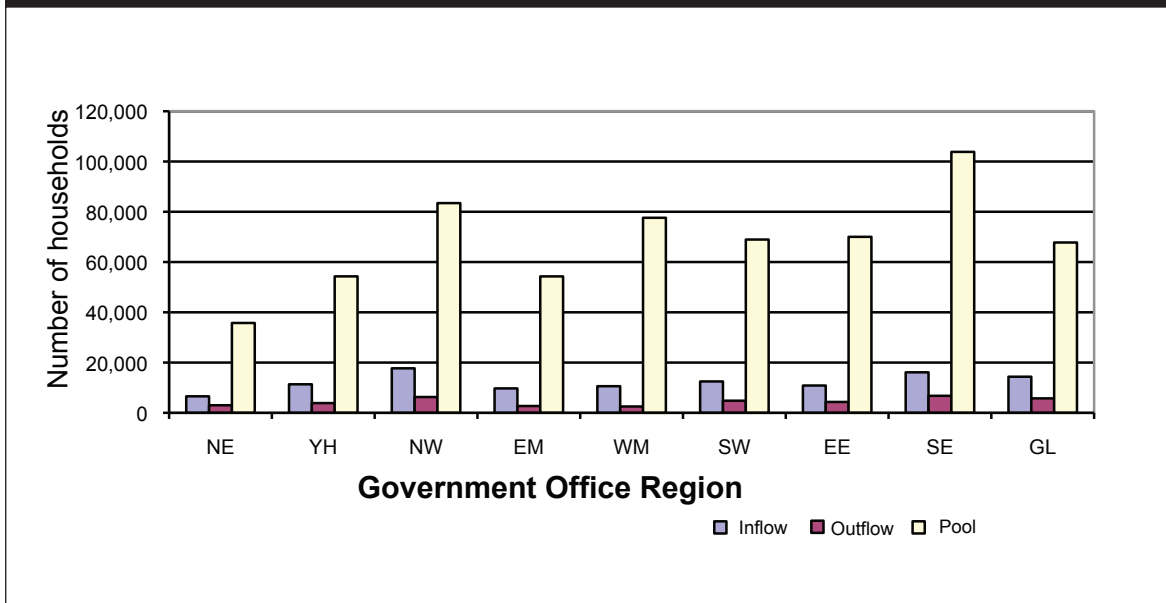
Sources: CORE and Outcomes Data 2007/8, estimates based on Elderly Accommodation Counsel
databases for annual exits and sales for bought sheltered and extra care housing. See Table
A4.4. in Appendix 4.

4.17 Figure 4.2 looks at the medium and longer term services. Older people are much more likely to use sheltered housing and extra care services provided by social landlords than they are to engage with the shorter term forms of housing support services. However, the socially excluded client group is still significant for these services, with 41 per cent of social landlords' supported housing lets being to socially excluded households, compared to the 35 per cent of lets made to older people. The adults with support needs group is relatively small in number for both short and long term services.

4.18 Figure 4.2 shows, as expected, that the pool of continuing cases greatly exceeds the annual flow. It also shows a different regional distribution, with higher numbers in the South East versus London, for example. The study has attempted to estimate the scale of numbers involved in private sector sheltered housing, but this is generally outside the SP framework and much smaller in scale (about one-sixth of the scale of social rented sector provision).

Table 4.1: Estimated total flows and pools by super-client group and region 2007/08 (000 households)

Region	Older people			Adults with support needs			Socially excluded people		
	inflow	outflow	pool	inflow	outflow	pool	inflow	outflow	pool
NE	3	3	33	3	2	1	19	7	12
YH	7	4	50	4	2	2	31	13	18
NW	7	5	74	6	2	4	24	7	17
EM	4	2	49	3	1	2	13	5	9
WM	5	2	72	4	1	3	32	12	20
SW	6	4	63	4	2	2	26	10	16
E	6	4	66	4	2	2	26	12	14
SE	8	5	97	4	2	3	27	7	20
GL	5	4	59	5	2	3	27	9	18
Eng	51	33	565	37	14	23	225	82	143

Sources: Authors calculations from CORE returns, Outcome Data, Client Record 2007/8 and Elderly Accommodation Counsel databases (2008). Note: combines short and long term services.

4.19 Table 4.1 brings together the estimates of the flows and pools for all HS services for the three client groups. There are significant differences in the ranking of regions in terms of these numbers. For example, pools of older people clients are greatest in the South East; for adults with support needs clients they are greatest in the North West; for the socially excluded group, West Midlands vies with the South East. It is an interesting contrast with other aspects of housing need (see, for example, Chapter 3) that London is not at the top of these league tables. Further comments on the regional distribution of activity compared with need measures from the main model are discussed in a later section of this Chapter (from para. 4.33).

Destination of exits

4.20   Where clients move on to after receiving housing related support services is important, particularly for the larger, high-turnover socially excluded group. Relatively recently outcomes data have begun to be compiled. Figure 4.3 shows the pattern in terms of destination tenures for socially excluded group outflows. This confirms the importance of the social rented sector, which accounts for 40 per cent of tenure outcomes (possibly more, allowing for the 'unknown' element). Private renting accounts for 11 per cent, but this is significantly exceeded by the numbers moving into 'insecure' tenures (presumably many also in the private rented sector, licenses, etc). Another 15 per cent go into ABS for a more extended stay.

4.21   Figure 4.3 suggests that the social rented sector is more important in regions where it is larger in scale (NW, WM, London). The private rented sector is more important in the more rural regions (EM, SW, EE).

Figure 4.3: Destination tenures of socially excluded group outflows 2007 by region
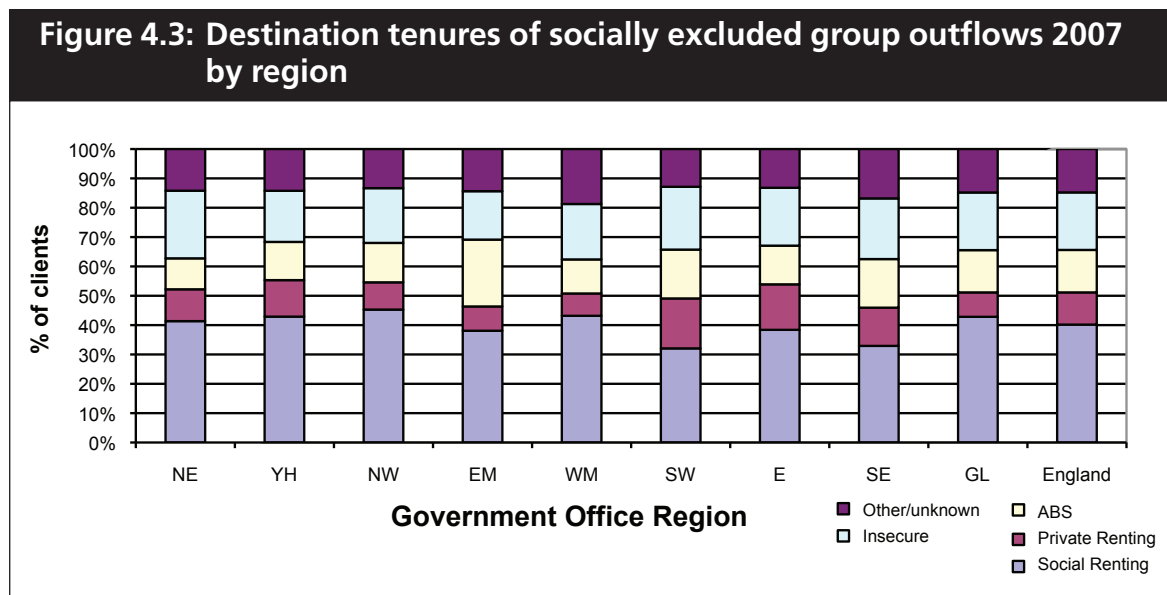
Source: Outcomes data for 2007/8.

Implications of flows

4.22   The flows and pools shown in Table 4.1 have various consequences in terms of their potential impacts on housing need, which merit brief comment.

4.23   Inflows involving older people are mainly composed of moves to longer term ABS settings (81 per cent), and are mainly constituted of exits from general needs housing (30 per cent from social rented sector, 16 per cent from owner-occupation, 14 per cent from private rented sector). Outflows of older people are mainly due to death or health deterioration leading into institution-based care. Only 12 per cent are exits from short term services back into general needs housing.

4.24   The inflow of adults with support needs is divided between those who are entering short term services (30 per cent) and a larger group receiving lets in

supported housing (ABS). The 70 per cent receiving supported lets (in ABS) can be broadly assumed to not require general needs housing. As can be seen from the table, numbers within the adults with support needs group within any one region are low.

4.25   A large element of the inflows and pools of socially excluded households receiving services will exit those services after having been assisted for only a short period. This group, approximately 70 per cent of socially excluded households, will often exit to social rented and private rented sector housing. They may therefore represent a significant proportion of these housing sectors' annual flow of lettings, particularly for the social rented sector but also potentially for the subsector of the private rented sector which specialises more in the housing of lower income (housing benefit/local housing allowance-claiming) households.

4.26   To take one example, London has some 3.14 million households, of which 0.68 million are private rented sector and 0.76 million are social rented sector[48]. The inflow of adults with support needs households to housing support services during 2007/8 was equivalent to 0.68 per cent of social rented sector households or 0.76 per cent of private rented sector households. By contrast, the figures for socially excluded households were 3.6 per cent and 4 per cent.

4.27   We proceed in the next section to draw out the significance of these flows and stocks for the broader housing need and supply picture, by linking these numbers to figures from the main needs model.

Patterns of provision and patterns of need

4.28   It is tempting to ask the question: what does the pattern of housing related support activity across England, at regional and local level, tell us about the need for these services? However, extreme caution is needed about the interpretation of the data in this way. As emphasised in the introduction, some of the current pattern of activity strongly reflects a legacy of incremental service development following the inception of the programme. More recently, resources have been allocated partly by a needs-based formula. However, this leads to a problem circularity or 'endogeneity' because the factors that should correlate with service provision are the same factors used in the grant allocation model. For example, the obvious factors associated with more demand for services for older people, such as a higher percentage of population aged over 65, are used to determine grant levels, which in turn determines service provision.

4.29   Figures 4.4 and 4.5 tend to illustrate the predictable consequence of this situation. The bars in the chart measure the relative level of activity on housing related support services in general, and ABS for older people client group, respectively. The different colour bars represent more or less active local authorities in terms of commissioning. The blocks of bars represent deprivation levels in the first Figure and proportion aged over 65 in the second figure.

---

[48] N. total households: 2001 census counts regionally updated to March 07

Figure 4.4: Quartiles of least and most active authorities in provision of housing support services by indices of deprivation (IMD) score for 2007 (quartiles)
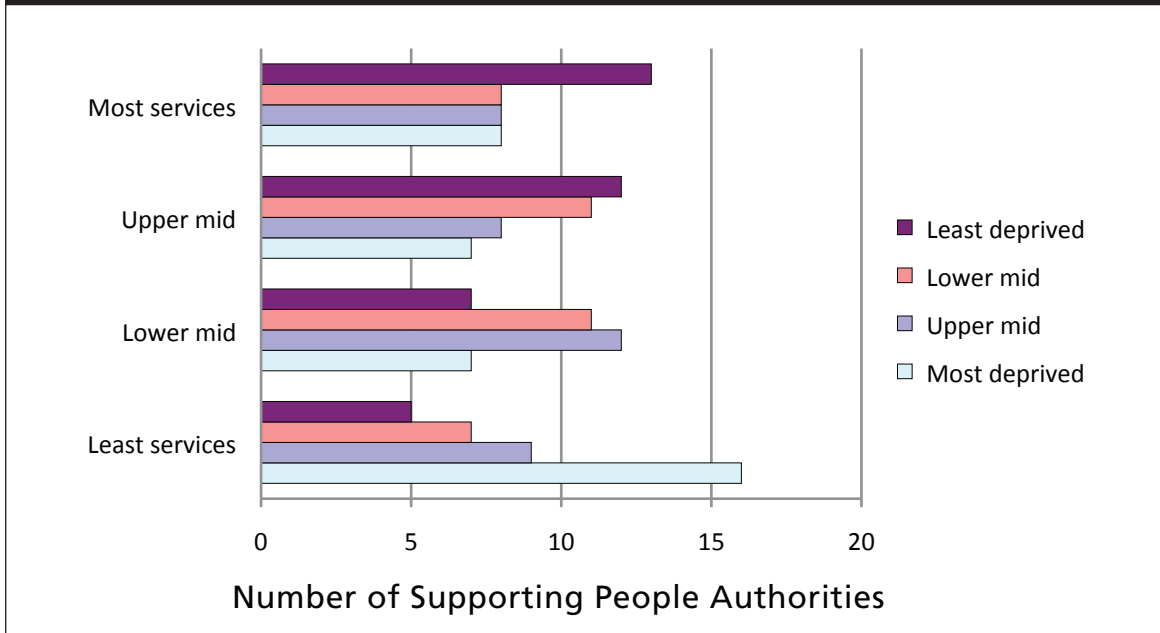
Sources: Client Record 2007/8 and IMD 2007

Figure 4.5: Quartiles of least and most active authorities in provision of ABS for older people by quartiles of population aged over 65
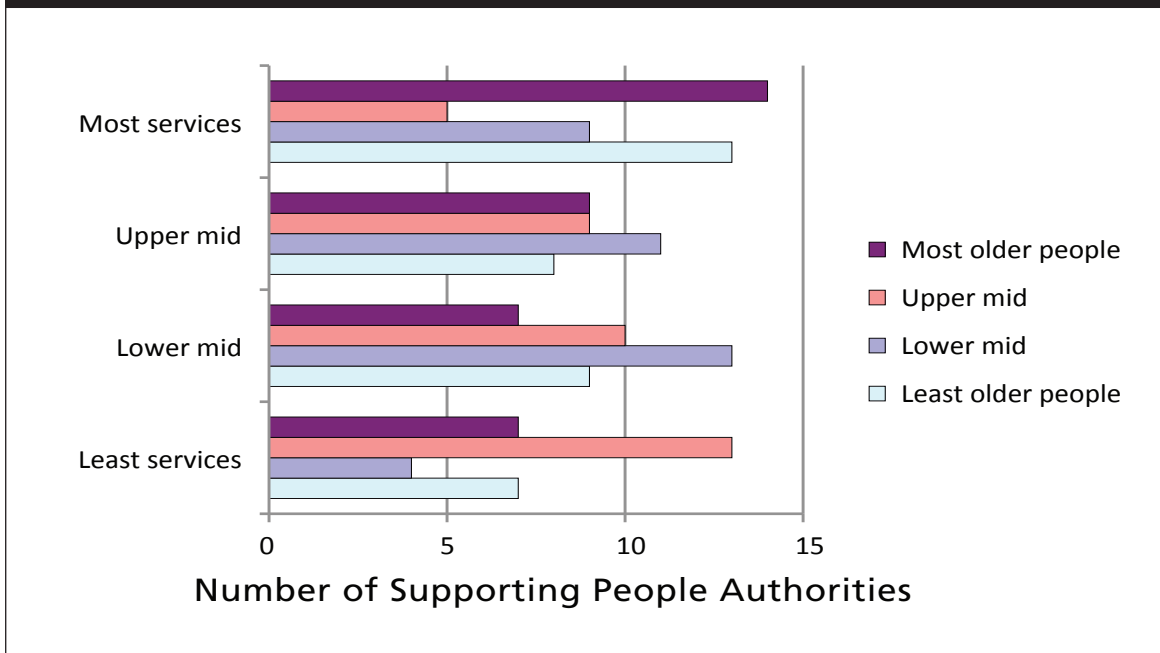
Sources:: Client Record 2007/8 and ONS.

4.30   Very simply, there are more services for socially excluded groups among areas with more deprivation and more services for older people in areas with relatively higher proportions of their population aged over 65.

Homelessness

4.31   A lot of the socially excluded clients, but relatively few of the other groups, are classified as homeless by Supporting People providers of services, either in the statutory sense of being owed the main duty, or non-statutory. These classifications applied to 43,000 and 55,000 cases respectively among the total inflows with client records of 220,000 in 2007/08. However, it should be emphasized that these classifications may not match with the formal determination of homelessness status by the local authorities, and the data may not match in terms of timing and coverage.

4.32   'Non-statutory' homelessness can include households not formally assessed, as well as other found to be homeless but not owed the main duty. This can be influenced by various factors, particularly the orientation of the particular service ('homeless' services identify people as homeless, 'substance misuse services identify this as the predominant need, etc.) and the nature of the monitoring procedure. These factors may vary systematically between types of area, for example with large urban centres having more specialised services.

Support services, wider housing needs and supply

4.33   Although the primary investigation into housing related support services has been something of a parallel track, exploring relatively new data systems to profile a relatively new, or significantly reshaped, set of services, some further insights have been revealed by setting these estimates alongside numbers derived from the main housing needs model. This provides some indications of the extent to which need is or is not being met in different regions, and of the significance of interactions between the housing related support and mainstream housing. This uses a range of outputs or data contained within the general simulation model described further in Chapter 6, for the same year (2007) and set of regions. It must be emphasised that this particular element remains a snapshot, not an attempt at forward projection.

Provision, takeup and need

4.34   How large and significant are the numbers receiving housing related support services, relative to the most relevant potential or estimated actual need groups in the wider population? Table 4.2 presents some relevant measures here, referring to the different client groups and to both flows and pools (stocks). Shading is used to indicate regions with relatively high (green) or low (pink) housing related support provision/takeup relative to the wider need group.

4.35   The inflow into older people services represents overall about one-fifth (19 per cent) of over-60 households with 'unsuitability problems' – that is a not unreasonable ratio of flow supply to stock/backlog need, suggesting that, if provision for these well-established services is on an overall appropriate scale, the needs model figure for unsuitability problems is in the right ballpark. The ratio is highest in the East and East Midland regions, and lowest in London and West Midlands, with the highest region five times the lowest. That suggests there is still considerable regional imbalance in provision for older people. The third column shows an equivalent pool-to-stock ratio for the older people

group, where we include the pool (as 'met need') with the stock denominator. This suggests that overall about two thirds of older people needs are 'met' by ongoing services, with a range from around half in London to around 80 per cent in EM and EE.

Table 4.2 SP flows & pools as percentage of potential need measures						
Region	older people inflow/ o60Unsuit	adults with support needs inflow/ <60Unsuit	older people Pool/ <60Unsuit + pool	socially excluded Flow/l <60 Sing Any Need	socially excluded Pool <60 Need +.6*pool[49]	socially excluded Flow Stat HL/ HL Acc
NE	19.1%	24.1%	66.2%	136.1%	23.7%	119.4%
YH	19.5%	17.0%	58.6%	91.7%	13.5%	99.5%
NW	19.1%	16.8%	68.1%	50.5%	10.9%	108.7%
EM	23.0%	25.9%	72.9%	47.5%	10.1%	66.6%
WM	15.5%	14.1%	69.5%	160.5%	16.4%	72.1%
SW	19.2%	14.2%	67.5%	68.0%	11.5%	77.6%
E	30.8%	20.2%	76.1%	81.7%	11.8%	80.3%
socially excluded	21.6%	10.5%	71.8%	24.9%	9.6%	62.8%
GL	9.5%	5.4%	54.7%	28.0%	4.4%	54.1%
England	18.5%	12.6%	67.2%	58.3%	10.1%	76.8%

Sources: Authors' calculations based on main EHN model forecasts for 2007 and estimated HS numbers from Appendix 4.

4.36   The second column of Table 4.2 compares the inflow for the adults with support needs group with under-60 households with suitability problems. Here the overall ratio is rather lower, at 13 per cent, and the range of variation wider. There is some regional similarity with London low and EM and EE high (along with NE).

4.37   The fourth column relates the socially excluded flow to under-60 households with any need. Here, the overall ratio is higher at 47 per cent, but again there is wide variation, from 25-30 per cent in London and South East and up to nearly 140 per cent in North East and 160 per cent in the West Midlands. The equivalent pool measure is lower, averaging 10 per cent, but this reflects the high-turnover/low duration of service characteristic of the socially excluded group. Again London has the lowest score and North East and West Midlands the highest. Caution is needed in interpreting these ratios, because (a) not all socially excluded group are living in the private household population and captured in surveys like SEH; (b) response rate to surveys from this group may be low; (c) some of this group's needs are not captured in the main need categories used in the needs model. Nevertheless, the extent of the regional variation suggests that provision really is uneven relative to potential need.

---

[49] The base population for this ratio includes both those in any of the six main needs in the private household population of households aged under 60, and those receiving ABS, estimated at 60 per cent of socially excluded pool based on Table A4.1, totals for cols 6 & 7.

4.38   The final column of Table 4.2 compares socially excluded flow classed as statutory homeless with the number of homeless acceptances[50]. This figure is surprisingly high[51], averaging 77 per cent, and ranging from 54 per cent in London to figures of 100-120 per cent in the northern regions. The pattern of these differences are similar to those mentioned above, and both would be consistent with a story that general pressure of housing shortage, particularly within the social sector, means that provision has been able to meet less of the potential need in London and parts of the south of England than in parts of the midlands and north.

4.39   These estimates are a fresh way of looking at housing related support and its role in meeting housing needs. On the face of it, ratios presented do in most cases make sense, and they appear to tell a story about the relative level of provision, against some relevant, independent, need measures in the different regions. Table 4.2 suggests that housing related support provision/takeup is low relative to need in London (for all clients), in SE (for adults with support needs and socially excluded), and to some extent in WM and YH (for older people); it appears to be high in EM and EE (for older people) and in NE and WM (for socially excluded clients). It is possible that other factors may be involved in explaining some of these patterns, e.g. role of other services not measured here. Further investigation might be warranted here.

Turnover and supply

4.40   The focus shifts to supply and turnover in Table 4.3, which just deals with the older people client group. The first column gives the turnover rate for older people clients within housing related support services themselves. This is quite low overall, averaging 5.8 per cent, with particularly low figures in the midlands, and higher figures in both London and the north. The second column compares older people exits from housing related support with social rented sector exits associated with older age household dissolutions. Overall, the housing related support estimates are equivalent to rather under half of the exits from mainstream social housing by older tenants; the ratio is rather higher in the more rural southern regions which have smaller social rented sector and more engagement in housing related support for older people.

4.41   The third column in Table 4.3 compares older people supported lets (into sheltered housing) with social renting transfers by older households. In this case the housing related support lets are equivalent to about two-thirds of the transfer activity within social rented sector for this group, but again very high in SW and SE. The fourth column compares supported lets with mainstream social rented sector lets to over-60s; here it appears that the housing related support sector is providing more opportunities to move to more suitable housing situations The final column compares the inflow into older people housing related support with all net new lets by social landlords.

---

[50] The denominator here is modelled homeless acceptances assuming full application of prevention measures in 2007

[51] There may be some double counting or repeat presentation in the socially excluded inflow numbers, and in addition some may be coded as statutory homeless even if they have not completed the process of being accepted by the LA.

The average share here is 12 per cent, with low figures in London, WM and NE and higher figures in SW and SE. This measure is potentially very significant, as it highlights the extent to which housing related support can encourage older tenants to move and free up social lettings for other households in need. On average, nearly one-in-ten general needs lets arise in this way.

Table 4.3: Turnover comparisons for older people client group					
Region	older people outflow/ pool	older people outflow /social rented sector Dissolution	older people supported lets/ social rented sector transfers>60	older people supported lets/ social rented sector new lets>60	older people inflow ex social rented sector/ all new lets
NE	7.8%	38.5%	56.1%	133.3%	11.0%
YH	7.3%	40.7%	58.8%	166.6%	14.9%
NW	6.3%	40.1%	65.7%	253.2%	15.3%
EM	4.2%	36.8%	70.7%	153.4%	10.5%
WM	3.3%	27.1%	47.1%	95.9%	6.9%
SW	6.2%	70.7%	88.6%	213.4%	15.4%
E	5.5%	57.8%	81.3%	154.8%	11.5%
socially excluded	5.6%	70.4%	87.4%	193.0%	13.7%
GL	7.5%	43.0%	51.8%	273.4%	8.2%
England	5.8%	45.8%	66.7%	172.8%	11.6%

Sources: Authors' calculations based on main EHN model forecasts for 2007 and estimated HS numbers from Appendix 4.

4.42   The final table (4.4) looks at key comparisons for the turnover flows associated with the socially excluded group. While older people clients release social lets, socially excluded clients use them up, and at a higher rate (24 per cent, column 1)[52]. In YH, NE and SW regions, this client group use more than one-quarter of all lettings, while in no region is it below 12 per cent. A second comparison relates this flow to social rented sector with the modelled number of lets to under-60 single person households (many of the socially excluded group are single). The average ratio is over 118 per cent and this rises to over 190 per cent in YH, while never being less than 60 per cent (SE, EM). This suggests that most of the younger singles allocated social tenancies are in fact from the socially excluded group. The implications of this for mixed, sustainable communities, as well as for the housing options available to other 'non-excluded' but moderate-income single persons, probably merit further discussion.

---

[52] It may be argued that this overstates the 'consumption' of social lets by socially excluded groups, because they tend to have a higher turnover rate and hence create more total lettings, or reduce let lettings by a lesser amount. However, a corollary of this argument is that this group is associated with a lot of non-sustainable tenancies and does not contribute well to sustainability of neighbourhoods.

4.43 The final column of Table 4.4 compares the outflow into the private rented sector with an estimate of the gross lettings in that part of the sector which specialises in housing benefit/local housing allowance-claiming households. While the average share is quite modest at 3.5 per cent, this rises to nearly 10 per cent in some regions (and may be an underestimate allowing for licenses).

Table 4.4: Turnover comparisons for socially excluded client group			
Region	Outflow to social rented sector/net lets	Outflow to social rented sector/u60 singles lets	Outflow to private rented sector/gross lets private rented sector housing benefit
NE	32.1%	182.9%	4.1%
YH	38.1%	194.1%	5.3%
NW	22.1%	110.8%	1.4%
EM	13.1%	60.2%	2.0%
WM	24.6%	129.8%	4.0%
SW	28.0%	152.1%	7.4%
E	25.8%	131.9%	9.1%
SE	11.8%	59.9%	2.5%
GL	20.5%	87.5%	1.7%
England	23.6%	117.9%	3.5%

Sources: Authors' calculations based on main EHN model forecasts for 2007 and estimated HS numbers from Appendix 4.

Conclusions

4.44 This chapter does not constitute a 'needs' projection, but essentially looks at the housing related support services that have been funded, and at what that pattern of commissioning might mean in terms of impacts on housing need. The usual limits of time and a range of data limitations mean that some caveats have to be attached to the estimates presented. At best, the information and estimates presented here should be seen as providing broad indications of where the role of housing support services should be considered when thinking about housing need.

4.45 There are perhaps two key 'findings' that warrant further attention. The first is the use of social rented sector and (and a subsector of the private rented sector) by socially excluded groups coming through shorter term housing related support services. The rate at which these households consume available re-lets in these sectors, especially a social rented sector in particularly short supply, may be quite significant in some regions. It feeds into the longstanding concerns about residualisation of the social sector[53].

---

[53] Pleace, N.; Quilgars, D.; Jones, A. and Rugg J. (2007) *Tackling homelessness - Housing associations and local authorities working in partnership*, London: The Housing Corporation.

4.46   Similarly, it was known that the inflows and pools of older people choosing to live in the social rented sector and owner-occupied sheltered housing was 'freeing up' general needs stock. Many social rented sector landlords employ policies that try to decant older people from general needs housing into supported lets of various sorts. The scale and importance of social rented sector ABS is evident from this exercise, with owner occupation of sheltered and extra care housing still being an option that is available to, and chosen by, a minority. More broadly, the data suggest that supported housing services are meeting the needs of the older population in a reasonable way, nationally and across most of the regions, but less so in London.

Chapter 5

Household formation, mobility and tenure choice

Chapter scope

5.1   This chapter presents the underlying research undertaken on the patterns, processes and determinants of key household flows in the system, particularly household formation and the flows of households between tenures. It also describes more briefly the way in which other changes in household numbers and composition are modelled.

5.2   These issues are important for a number of reasons. In the planning system the total number of households and its relationship with the supply of dwellings has for long been a major focus of debate and controversy. The Barker (2004) review of housing supply injected a new urgency to this debate and argued that more attention should be paid to affordability, to the economic as well as the demographic drivers of affordability and to the adverse social and economic consequences of worsening affordability. While the DCLG Affordability model predicts affordability outcomes given broad supply scenarios, there is a role for our housing needs model in tracing the effects of these scenarios on the detailed working of the system and on housing need outcomes. We need to get a clearer picture of the ways in which the economic, social and demographic factors affecting demand interact with supply to generate actual changes in the numbers and types of households in the different tenures and the needs which they experience. From a policy viewpoint, we are interested in the likely effects on housing needs outcomes of applying different policy levers; for example, the provision of new social or intermediate affordable housing by region or the ways in which this is allocated. The analysis in Chapter 3 shows how specific needs are influenced by the mix of different household types and the tenures people are living in, as well as by affordability and economic conditions. Therefore, we need to be able to predict the numbers and types of households moving into and living within different tenures in the regions, in order to predict future need outcomes.

5.3   The research undertaken has involved, firstly, a literature review to identify theoretical perspectives, methodological issues and evidence from past research on the key influences on these processes. This has focused mainly on household formation and on tenure choice, although it turns out that the latter is closely linked to issues of mobility. Secondly, we have looked at empirical data on recent patterns of household formation, household change and mobility between tenures. Thirdly, we have constructed models to relate household formation, mobility and tenure choices to the range of determinant factors identified from the literature review. These econometric models have been tested and compared using more than one source of evidence. The final models are based primarily upon the British Household Panel Survey (BHPS) but comparisons and supporting evidence have also been presented using SEH and LFS.

Household formation

5.4 Household formation is of fundamental importance to the generation of housing need and that is why this project has revisited the topic of household demography, starting with a review of literature and past research on household formation. This builds on recent and earlier reviews[54].

Household projections

5.5 The traditional UK approach to forecasting household numbers for official purposes adopts an essentially demographic, trend-based projection methodology (DoE 1995, DETR 1999; ODPM 2006; Bramley *et al* 1997 s.3.1; Corner 1992).

5.6 The method builds on ONS/GROS sub-national population estimates and projections, which themselves embody assumptions about fertility, mortality and migration (internal and international). These are disaggregated by age and sex, and then (in England) separate projections of marital status are incorporated. The proportion of each age/sex/(marital status) group who 'represent' a separate household is calculated for several previous points in time, based primarily on Census data. These 'household representative rates' (HRRs), are projected forward using a nonlinear statistical function, which also (in England) takes account of cohort relationships. The projected HR rates are multiplied by the projected disaggregated population numbers to yield household numbers. This exercise is undertaken at national, regional and local authority levels.

5.7 These projections have been used for many years in the planning system, particularly as a basis for future housing land requirements. Their use became somewhat more controversial in the mid-1990s, as part of the general political concern about accommodating housing pressures (DOE 1996, House of Commons 1996). Concerns were voiced that this process was in some senses 'circular' or a self-fulfilling prophecy (see, for example, Bramley & Watkins 1995, Bramley 1996). Part of the basis of the mid-90s critique of household projections, or their use, was the argument that that they ignored behavioural influences on household numbers, particularly economic factors like incomes, housing market factors like house prices, and housing supply availability.

Behavioural economic models

5.8 What broad alternative approaches to modelling household formation might be considered, were one to move away from the traditional demographic model? A review of previous literature in Bramley *et al* (1997) identified four possible approaches: (a) time series econometric models applied to aggregate data; (b) cross-sectional aggregate models (e.g. across local authorities); (c) cross-sectional micro models to explain the household status of individuals; and (d) longitudinal/panel micro models which use data on a sample of individuals over time and seek to predict key events (e.g. leaving home) or states (e.g. living separately). This last category covers the approach used in the current study.

---

54 See Bramley *et al* (2006) and Bramley *et al* (1997).

5.9   Bramley *et al* (1997) systematically reviewed previous literature on economic influences on household formation. This confirmed that the fundamental demographic characteristics – age, sex, marital/partnership status – are the most important determinants of household status, while demographic events – entering a marriage/partnership, divorce/separation, having children – are closely related to changes in household status. It was, however, pointed out that while 'family' units (couples, lone parent) and older adults are nearly all separate households already, there is considerable scope for variation in the household status of younger non-family adults. This is the primary arena in which economic and housing market factors may affect household formation. However, the study also found some evidence that marriage, family formation and fertility may be affected somewhat at the margins by economic factors.

5.10   The 1997 study focused particularly on elasticities of household formation with respect to income and housing cost. Household formation is expected to rise with higher incomes; this review found a range of empirical estimates for the overall income elasticity of headship between 0.05 and 0.40, although for younger non-family adults, the elasticities are much higher – in the range 0.3 to 1.8.

5.11   The elasticity of household formation with respect to housing costs is expected to be negative from a theoretical viewpoint. While this is confirmed by empirical findings, these also show a relatively inelastic relationship with overall values in the range –0.01 to –0.28. Because changes in house prices are quite strongly related to income trends (especially in Britain), income and price effects are likely in practice to be to a considerable degree offsetting. Housing supply effects are partly captured through prices, at least in the market sectors. Variations in the availability of social housing are expected to influence household formation directly, because this is a rationed good. A limited number of studies provided some support for this hypothesis.

5.12   The 1997 study also examined a number of other socio-economic factors which could be hypothesised as significant, including the role of higher education and skill levels and the geographic distribution of skilled jobs. There was some evidence of cultural differences related to certain ethnic groups, which may be geographically concentrated (see Holmans & Whitehead 2008). It was also suggested that certain policy factors, particularly benefit systems, may have an influence, but empirical evidence on such effects is scant, particularly for UK where benefit systems are uniform.

5.13   Contemporaneous with our earlier study was the exercise by Peterson, Pratten and Tatch (DETR 1999a) to develop an economic model of the demand and need for social housing in England (as reviewed in Chapter 2 – under 'the DAE model'). This produced a rather higher estimate of the responsiveness of household formation to income (0.33). A subsequent update of this study (DTLR 2002) broadly confirmed these findings, and also pointed out a negative association with unemployment.

5.14   Bramley, Champion and Fisher (1996) explored the household impacts of migration using BHPS data for 1996/7. This modelling confirmed the importance of demographic events, but also showed some socio-economic effects as expected. The effects of these variables on household formation seems to be mainly via their effects on initial headship or mobility. This study was particularly concerned with the impact of migration on household formation, confirming that such an association exists but accepting that it is difficult to fully tease out the direction of causation. The model developed for the current study builds on this and related work.

5.15   In their recent research on the implications of affordability targets for housing supply (ODPM 2005a and b), Meen *et al* included a model for household formation based on BHPS data on transitions by under-35 adults, estimated using a bivariate probit model. This confirms the importance of demographic variables, both states and changes. Income has the expected positive effect and is quite significant; regional unemployment has a more modest negative effect. There is a housing cost term based on regional house prices and interest rates, which has a marginal negative effect. In general, this study concluded that these economic factors are more important in tenure choice than in household formation. However, the model does not appear to test for housing supply (especially social rented supply), and it should be noted that its 'area effects' are regional.

Other relevant research

5.16   There has been a certain cluster of recent literature on the issue of 'living alone', which is one particular manifestation of household fission. Chandler *et al* (2004) use longitudinally-linked Census data on working age people who live alone. They find that, once a person lives alone they are more likely to continue to do so, and that this is more the case for younger cohorts. Hall & Ogden (2003) look at trends in living alone in London, particularly among migrants, and raise wider questions about new ways of urban living. Hooper *et al* (1998) report on a survey of the preferences and expectations of single person house-buyers. Kaufmann (1994) provides a review of experience across Europe, highlighting the particular growth in solo living in the intermediate age groups. Different factors underlie this trend for different age groups: Living alone is commonest at either end of the social scale, particularly among men.

5.17   Another cluster of literature relates to the process of leaving the parental home vs continued co-residence among young adults (e.g. White 1994). Some of this literature was reviewed in Bramley *et al* (1997) and Bramley, Champion & Fisher (2006). More recent British studies include Ermisch (1999) and Clark & Huang (2003).

5.18   Other clusters relate to mobility and change in the middle and older years. There is a strong tradition of working with 'life-cycle' or 'life-course' concepts. These entail common patterns of household living arrangements for particular age groups, and a presumption of common sequences of

changes associated with ageing (e.g. marriage in 20s, arrival of children, expanding family, children leaving home, widowhood). However, the growing prevalence of divorce/breakup and the already-mentioned 'living alone' phenomenon both suggest that simple generalisations of this kind are becoming less adequate as a general framework for understanding household change.

Recent data on household formation

5.19　　Data on household formation can be obtained from a number of different sources, including the Census, SEH, BHPS and LFS. The first and last of these sources are mainly useful for looking at rates of 'headship' at different points of time in different regions, while the other two sources enable us to identify the flow and profile of households actually forming in a particular year. As such these are most useful for building the model required, in order to generate gross flows of new household formation. However, the LFS is useful for looking at recent changes in patterns of separate household living by age, based on a very large sample (100,000 adults per year).

5.20　　Based on SEH, the number of newly forming households was equivalent to 2.49 per cent of the stock of existing households in the period around 1999, 2.30 per cent around 2004, and 2.13 per cent in 2007, indicating a general decline over this period. In 2007 rates varied between 1.78 per cent in the South East and 2.50 per cent in Yorkshire & Humber.

5.21　　Figure 5.1 traces the relationship between age and separate household status in 1992 and 2008. The basic shape of the relationship involves a steep rise in headship through the 20s and into the early 30s, then something approaching a plateau until the 50s, then a gradual rise though the older age groups. The first of these phases relates to young people leaving the family home to live independently. The second phase happens because most people have left by then, and because people ceasing to live with others are offset by others moving to live with partners. The final phase is affected by mainly by widowhood, as one member of couples die and the other surviving member (most often a woman) becomes a head of household. Figure 5.1 underlines that overall net household formation will be strongly influenced by the age structure of the population, particularly numbers in the age range 20-34.

5.22　　Figure 5.1 also shows changes in the profile over the 16 year period to 2008. In each of the three phases described above there have been changes, but they are not all in the same direction. In the young adult age range, headship rates have fallen noticeably. Speculating at this stage, such a fall could reflect a wide range of factors but it is difficult to avoid the inference that an important factor may have been greater difficulties facing younger households entering the housing market, both in terms of market affordability and in the availability of social rented housing. However, other social and cultural factors may also be at work, including for example greater participation in post-16 and higher education, declining marriage rates and later ages of marriage and family formation. Some commentators have identified a tendency to 'delayed maturation' of younger cohorts in this period.

Figure 5.1: Headship by age 1992 – 2008
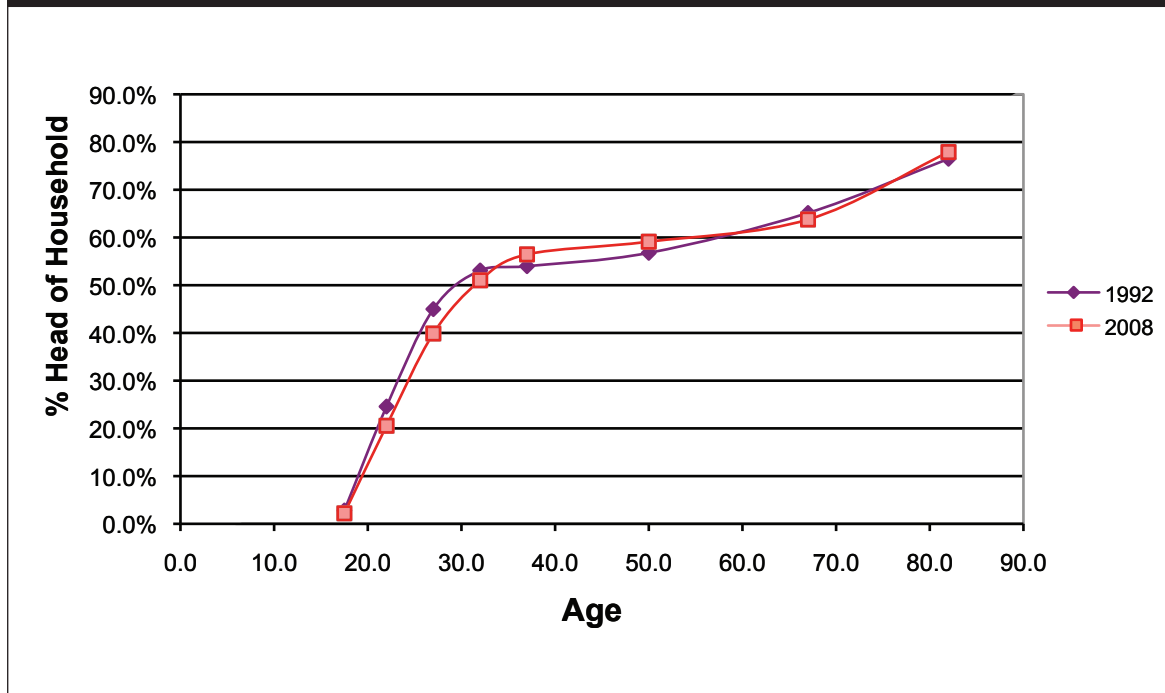
5.23 In the middle age ranges up to the 50s, headship rates rose over the period covered in our analysis. Given a picture, in earlier periods, of rising headship in the younger age groups, this may be partly a cohort effect as these groups age. The decline of marriage and the rise of more separate living by single persons and lone parent families is part of this picture, as well as the long term decline in extended families. In the older age groups, there is a mixed picture, with a fall in headship in the 60s. This is probably mainly because of a greater tendency for both members of couples to survive, pushing back the age of widowhood.

5.24 There appears to have been a steady decline for the 20-24 age group, suggesting the importance of the HE participation factor. For the next two age groups, 25-34, there was a sharper decline in the last period, suggestive of the effects of housing affordability and supply difficulties in the early 2000s. For the middle years, 30-59, there was gentle growth through the period, while for the 60-74s there was a slightly greater downturn in the last period. For the oldest group, the increase was greater earlier, with a levelling off in the last period.

5.25 Figure 5.2 looks at the regional dimension, taking four regions across the economic/housing market spectrum and comparing headship in the 20s between 1992 and 2008. It is clear from this that the decline in headship for this key age group has been much more marked in the south and London than in the north. This tends to reinforce the message that for this group housing market access is a key factor.

Figure 5.2: Headship rates in the 20's, for selected regions 1992 – 2008
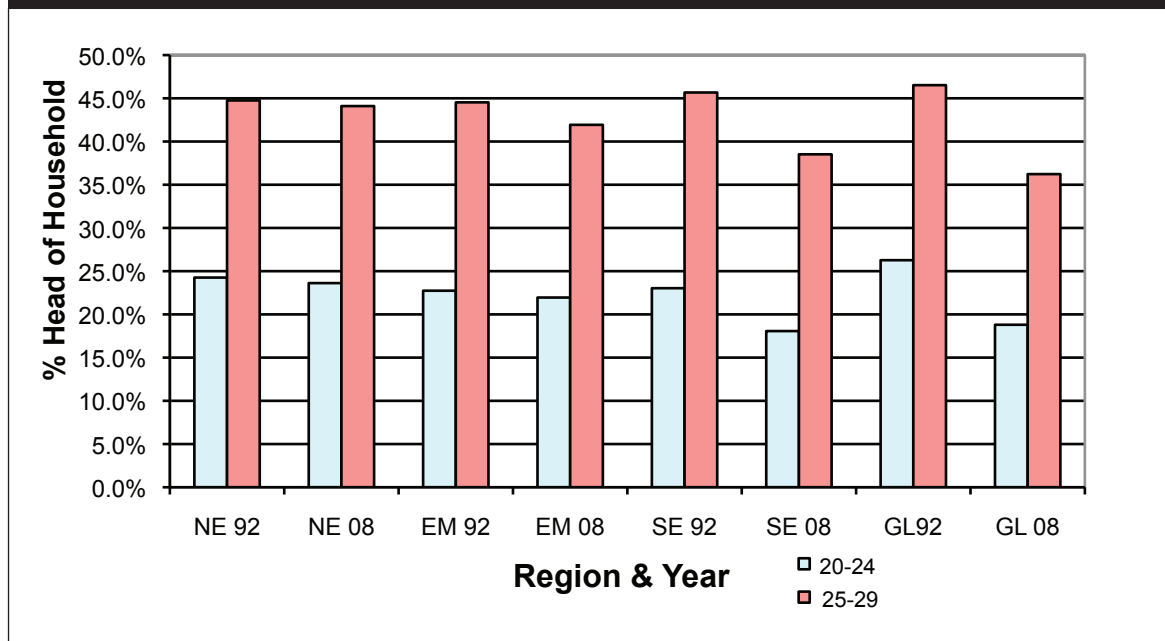
Source: Labour Force Survey

5.26   We have explored statistical modelling of headship propensities using LFS, but this data source is less satisfactory than BHPS in terms of the variables available and the ability to link housing and labour market factors, which can only be done at very broad regional level. We also explored modelling using Census rates at local authority level, but again this was less satisfactory overall. This work provides general background support for arguments about the role of particular variables. For example, the LA-level models support the arguments that headship responds positively to income, migration, social lettings supply and occupational mix, and negatively to house prices and poverty. The LFS modelling provides broadly similar messages, including the role of unemployment, occupations and qualifications, the role of private rents (sometimes more significant than prices), and some differences among ethnic groups.

Statistical Model

5.27   The model developed for new household formation is fitted to data from the British Household Panel Survey (BHPS). As noted above, there is growing interest in the use of micro-datasets, particularly where these are in panel form. Micro-data provides a much richer basis for modelling, with many more degrees of freedom and a greater ability to avoid problems of 'ecological correlations', multicollinearity and spurious relationships. Where it comes in a panel format, as in BHPS, it is possible to study and model the process of change itself, and to take account of previous circumstances and recent events in influencing the change propensities. We have also been able to link annual data on local housing and labour market conditions to this dataset at a fairly fine geographical level, the 260 'SAR' LA areas in England. The BHPS has a sample of c.5000 households and c.12,000 individual adults, with data collected annually.

5.28   It is interesting to note that the DCLG Affordability model contains such an element within it, based on an analysis of BHPS data. We considered using this directly, but there are some limitations with this component of the DCLG model. While it provides a plausible representation of the overall effects of house prices/incomes (i.e. affordability), this is based on quite high level aggregation (region). Arguably, the model also fails to effectively reflect the potential role of social housing supply/availability, which is a rationed sector with supply varying widely between different geographical areas. Linkage of market /supply data at a lower geographical level than the region, closer to the theoretically preferred concept of the 'housing market area', seemed more appropriate, and here was also a range of other influences which we felt might be relevant for inclusion in the model. These include area factors like labour market conditions as well as individual factors. There were also technical reasons connected with the form of the simulation model, as discussed in Chapter 6.

5.29   We now report on the results of work on refining a model for new household formation fitted to data from the BHPS. This is fitted to a run of data for pairs of waves[55]. For each pair of waves we have identified and classified a range of transitions (including forming a new household) and these can be related to characteristics of the individual or the household, either before (previous year) or after (new year) the transition. The model is fitted by binary logistic regression, separately for under-40 and over-40 adults (about 10 per cent of new households are formed by over-40s). The resulting relationships with key variables are listed in Table 5.1, expressed as elasticities (i.e. relative proportional changes) at the mean. The models also include a number of household composition variables, omitted from this table because household composition is treated differently in the simulation model. The model reflects a two-step procedure (following Bramley *et al* 2006), where the first step is to predict previous household representative status (prohrp) and then include this predicted value in the second stage model.

---

[55] The version used is based on 7 pairs of waves, 1996/7-2003/4, although a very similar version has been fitted to the full run of available waves from 1991 to 2007.

Table 5.1: Elasticities of new household formation with respect to key variables for adults aged under and over 40

Variable description	varname	Under 40	Over 40	weighted
share of under/over 40 new hhd	Share	0.899	0.101	
predicted HRP status	prohrp	-0.379	-0.326	-0.374
moved between SAR areas	migrant	0.314	0.046	0.287
direction of move within urban hierarchy	migdir2	-0.046		-0.042
aged 20-29	aged2029	0.154		0.138
aged over 60	oov60		-0.317	-0.032
previously living in Social Rent home	prevsoc	0.045		0.040
previously living in Private Rent home	prevpr	-0.159		-0.143
got married in year	getmar	0.020		0.018
got un-married in year	getunmar	0.037	0.041	0.037
got additional child in year	getchild	0.085		0.076
Higher education qualification	dhequal	-0.042	-0.063	-0.044
Ethnic minority	oethnic	-0.006		-0.006
Working	dwork	0.062		0.056
Previously living in flat	oflat	-0.090		-0.081
Area unemployment	asunem	-0.270		-0.242
SAR area price real lower qtl £k	lplqk	-0.297		-0.267
previous household income real £k	oinchhrk	0.241		0.217
individual income real £k	dincindrk	0.098		0.088
Social lettings per cent all household	pslets	0.244	0.427	0.262
previous persons per room	opprm		0.251	0.025
previous household size	ohhsize		1.024	0.104

Note: Based on logistic regression models fitted to BHPS data over 7 waves 1996/7-2003/4; elasticities evaluated at the mean; household composition variables omitted from this table

5.30   Most of the variables included in Table 5.1 have effects consistent with hypotheses, although the strength of these varies. In particular, the variables representing economic conditions (income, unemployment) and area housing market/supply have significant effects as expected. The more likely someone is to have been a previous head of household, the less likely they are to form a new one. People who move geographically are much more likely to form a new household, but this is more true for people moving from rural/small town/suburban locations to urban/city areas, and less true for those moving in the opposite direction.

5.31   Not surprisingly, people in their twenties are most likely to form a new household, as are those who previously lived in large households or households containing non-dependent children or unrelated adults. These are some of the demographic effects, highlighted in previous research, which inevitably play a major role in household formation. Our model highlights, however, that it is not just factors like marital status and having children, but

especially changes in these statuses, which drive transitions. This suggests that regional measures of divorce rates or birth rates might play a role in forecasting household formation, alongside population age structures.

5.32 The main point of note about previous tenure is that private renting has a significant negative association with household formation – this is the tenure which new households most often move into, rather than where they move from. One may draw a parallel here with the similar negative association with the previous house type being a flat, although these variables may also be partly proxying a relative lack of wealth. Minority ethnic groups overall have a somewhat lower household forming propensity, according to these results. Previous household income has a larger effect than current individual income, underlining the importance of family background and echoing some earlier research (Ermisch 1999).

5.33 The area variables retained in this model are significant and have effects in the direction expected. Higher unemployment reduces household formation (elasticity -0.27), presumably by affecting the both the actual and expected employment and income levels. Higher house prices reduce household formation, in line with some previous research (Bramley *et al* 1997, DTLR 2002, Meen *et al* 2005). The elasticity for this group, based on doubling price at the mean, would be -0.297. We tested private rents, but collinearity with prices tends to rule out including both variables, and the price measures are much more robust.

5.34 Most interestingly, in this model we find that the supply of social rented lettings has a positive effect on new household formation. That is something we expect to find in theory but which has either not been tested or has been previously elusive in terms of hard evidence. However, the size of this effect is limited (elasticity of 0.244 for under-40s, 0.427 for over 40s)[56].

5.35 A similar but rather simpler model has been fitted to BHPS data for the older (over-40) age group. The incidence of new household forming transitions is much lower for this group. The most important variables in this model are demographic changes including divorce/relationship breakdown/widowhood ('getunmar'), being a migrant between localities, and demographic state such as size of previous household and presence of non-dependents. Socio-economic and housing market effects are marginal at best.

5.36 The results of this model are used in the simulation described in Chapter 6, essentially to predict proportional changes in new household formation from base period values for each region. These base period values are derived from an average of the estimates derived from BHPS and SEH, broken down by region and household type of new households formed. The larger sample from SEH (20,000 per year, 100,000 households for five-year base period) gives a more robust base for this disaggregated picture of the base period patterns. The proportional changes are then simulated using predicted regional values of the key driver variables as listed in Table 5.1.

---

[56] One comment on this model and the tenure choice models was that the variable for social lets was endogenous. However, this is only partly true, as it is partly driven by new build sand dissolutions. We have tested a predicted value version of this variable, and the resulting coefficients are little different.

5.37   Household formation is of great interest in its own right, in terms of driving the overall level of household growth and the balance between households and dwellings. It is also of more specific relevance to particular housing needs, notably concealed households, which are to a degree the mirror image of household formation. In other words, some of the adults who do not form households become or remain concealed households. This is not true of all such adults, depending on the precise definitions and age cutoffs used in the definition of concealed households. But there will be a general relationship whereby if household formation is reduced by market conditions, there will be some increase in concealed households.

Other household changes

Household type changes

5.38   We are interested in changes in the mix of household types, both in general, and by tenure and region, because different household types have markedly different propensities to experience different housing needs. The household formation feeds into household type mix change, but there are other processes including household dissolutions and migration considered below. Existing households experience changes in composition from year to year as a result of such processes as birth of children, partners joining or leaving, adult children leaving or returning, and general ageing.

5.39   There are various ways in which we can attempt to model such changes. The approach adopted is relatively simple but, we believe, robust and draws on two data sources. One is the BHPS, where we have constructed a table of transitions between household age-type categories using data pooled over seven waves. This shows that, for example, for every 100 single person households aged under 30, in a typical year 64.4 will remain as under-30 singles, 14.7 will become under-30 couples/multi-adult households, 9.8 will age into 30-59 year old singles, 1.8 will become 30-59 couples, and so forth (we use 12 categories altogether). The other data source is the LFS, from which we have calculated the average trend change in share of each of these 12 categories in each region over the period 1992-2008. We modify our predicted composition changes, based on the above transition matrix and the other modelled changes, by half of the difference between the modelled change and the LFS trend change.

5.40   Additional adjustments need to be made to the model when disaggregating by tenure. By definition, 'in situ' household type changes, not associated with a move, must net out at zero, and this must be true for each tenure. We have to adjust the positive changes predicted for the older groups to match the reductions predicted for the younger groups, to reflect the very different age structures in each tenure. We also impose checks to ensure that no household types in particular tenures go negative in any year.

Household dissolutions

5.41   Household dissolutions are the other side of the coin from new household formation. Households dissolve over a year when the household ceases to exist by the end of the year, because its members have died, gone into an institution, or moved out to live with others. It is important to estimate dissolutions in a gross flows model, because they contribute significant numbers of the flows of dwellings becoming available in the market each year, as well as being part of the overall accounting for household change in aggregate and in terms of household types. However, we are very poorly served in terms of data sources on dissolutions, particularly direct measures which are anything like complete. We therefore have to piece together estimates from different sources, make inferences from other known numbers, and apply judgement.

5.42   One source is BHPS, where using a classification of household transitions developed by Bramley, Champion & Fisher (2006), we can identify a category of apparent dissolutions and tabulate its incidence by age-types of households. However, while this is useful in highlighting the extent of dissolutions involving younger small households, it is clear that a considerable proportion of dissolutions associated with old age and mortality are simply missing. A second source is the CORE data on social lettings, which identifies reasons for void including death or institutionalisation of tenant, although this is probably an underestimate. A third source is the work of Holmans, originally developed mainly to estimate equity withdrawal from the owner occupier housing market through last time sales, but more recently updated and extended in order to provide a full account of flows between tenures based mainly on the SEH. We have taken account of his recent estimates and ensured that in aggregate our own figures are of a similar order of magnitude for the main tenures.

5.43   As a basic check on this figuring, there is an identity relationship which links the overall household numbers. This states that the change in the number of households must equate to new household formation plus the household equivalent of net migration minus household dissolutions. Given direct evidence on the other elements, a total for household dissolutions can be derived as the residual balancing item.

5.44   Unlike other elements of household change, dissolutions are essentially a demographic phenomenon which may be expected to be relatively stable over time, with changes driven by essentially demographic elements relating to ageing and mortality and household composition. Dissolutions are not likely to respond significantly to short or medium term economic and housing market factors. In simulating household changes we take account of projected changes in mortality by region, but otherwise the numbers are simply driven by changes in the household composition structure.

Migration

5.45   Household changes in our model also have to take account of the effects of migration of people and households between regions and countries. For this part of the model we rely primarily upon the DCLG Affordability (Reading) model, which contains modules to predict migration between regions as a function of economic and housing market conditions. The original model has also been enhanced to take more account of international migration changes. The needs model takes the predicted migration flows from the DCLG Affordability model and expresses these in net household equivalent terms.

5.46   The impact on different household types within regions is estimated by taking account of data from the SEH on the number of movers into each household type and tenure category who were 'migrants' in the sense of having moved more than a certain distance threshold. Changes in migration are assigned to household types pro rata these base estimates. In practice, the baseline forecasts do not entail significant changes in migration. We allow the option of changing the net migration rate through a user-controlled parameter, in order to trace possible impacts. However, this is in practice somewhat limited in its usefulness because we do not distinguish between international and interregional migrants, who may in fact have different characteristics.

Mobility and tenure choice

Issues and approaches

General approach

5.47   Broadly, the purpose of this module is to predict the numbers of households living in (stock) or moving into (flow) each main tenure type. This module needs to try to overcome the limitations of the previous models reviewed in the Chapter 2. In other words, it should: (a) recognise that economic/market factors, particularly affordability, will affect tenure choices; (b) recognise that supply (especially of social rented or intermediate housing) will constrain choices; (c) allow for household preferences and choice behaviour which may deviate from what would be implied by normative standards (e.g. some people may borrow more than 'norm' level income multipliers to buy a home; others may borrow less than they 'could' afford).

5.48   In addition to generating overall numbers the model should if possible provide further information about the profile of households in or entering the main tenures, in terms of age, size/type and income/economic activity.

5.49   We recommended an approach to tenure choice based on micro-econometric modelling of households or household transitions, using large scale secondary data sets, similar to that undertaken for household formation, and sharing in common the same databases (BHPS, SEH, linked local market data). We believe that models of choice for households in transition (i.e. mover flows), as a function of current economic and market conditions, would be more effective than stock models, because the stock of households in tenure k in year t reflects a whole history of supply availability and price over preceding

years t-1, t-2, t-3 etc. As with the household formation work, we favoured attaching data at LA or SAR area level on prices, supply and other market conditions. By pooling data over a run of years with varying economic conditions we would have more confidence in the estimates of the effects of economic variables in these models.

Factors affecting tenure choice

5.50   Economic factors are crucial to a household's choice of tenure. In general terms, tenure choice will be a function of the costs of different tenures, previous tenure the household has held, individual or household real incomes, availability and cost of credit, and also age, gender, and the presence of children. It is clear that income distribution is important for affordability and access to home ownership. This would automatically be reflected in models fitted to micro data.

5.51   Credit conditions may act as a constraint on tenure choice. Age of first homeownership has risen since the 1990s and the average deposit for a home has doubled in the last ten years. Following the Credit Crunch in 2007, mortgage availability became even more restricted, with much higher deposit requirements, for a period. Another constraint is in relation to housing supply. This is especially important in relation to social rented housing as access is via a non-market allocation mechanism. Failing to meet eligibility criteria will force households into the low cost section of the private rented sector, and possibly into sharing. Such supply constraints can be expected to vary regionally and be more significant in high demand locations.

5.52   The planned or expected length of stay and housing tenure choice may be interrelated (Ioannides 1987). The length of stay directly influences the relative cost of homeownership (through transaction costs and the period over which they are annualised) and hence the housing tenure decision. At the same time, the planned length of stay depends upon past housing tenure choices. The larger realised transactions costs attached to homeownership mean that households in this tenure tend to be less sensitive to changes in demographic and economic factors than, for example, private renters. Housing consumption may be 'sub-optimal' but people may still not move to adjust it, partly because of moving costs but also because of attachment to their existing house or neighbourhood.

5.53   There are psychological costs associated with moving, which involves the loss of family, friends and social networks as well as the familiar physical home environment (Rossi and Weber 1996). This may be why people do not typically move very far - 80 per cent of owners, 58 per cent of private renters and 92 per cent of social renters moved less than 20 miles in 1997/8 (SEH). This, in turn, underlines the importance of modelling choices in a fairly localised market context.

5.54   These issues are particularly relevant to the choice between private renting and home-ownership. The private rented sector has assumed increasing importance in England since de-regulation in 1988 and the further boost to supply associated with the Buy to Let phenomenon. In the recent period private

renting has appeared significantly more affordable than house purchase in many areas of England (Wilcox 2007). Private renting has also assumed a greater potential role as a solution to people presenting to local authorities as homeless or in housing need (Pawson *et al*, 2007). A possible complication in modelling these choices concerns the operation of the housing benefit system, because this interacts with rent and income levels and may be expected to alter 'normal' economic behavioural relationships; recent changes from housing benefit to local housing allowance are a further complication.

5.55   Recent data developments may provide additional evidence on aspects of tenure choice and tenure flows, particularly in respect of the social rented and intermediate (low cost home ownership) sectors where the evolving CORE system provides a detailed picture of key flows.

Econometric issues and options

5.56   Di Salvo and Ermisch (1997) estimate a tenure choice model for the choice between owner-occupation and renting. They use survival analysis and estimate models for each gender and also control for parents' tenure type. However they do not jointly model or sequentially model household formation decisions or predict length of stay. Studies jointly modelling housing tenure choices and duration of stay capture simultaneity but ignore dependence (Pickles and Davis 1996). The alternative to joint modelling is to adopt a sequential approach, whereby the expected spell length is obtained from a duration model estimated on the spell in an existing residence and then used as a regressor in the housing tenure choice model (Haurin and Chung 1998, Henderson and Ioannides 1989). This also permits measurement of the impact of transactions costs on tenure choices.

5.57   Borrowing constraints or more generally transaction costs are measured infrequently and are often unreported in survey data. Consequently, they have to be inferred, usually as some proportion of the house value (Rosenthal 1988) and/or current income (Goodman 1995). In the UK context, however, these costs have been relatively small and may be dwarfed by other elements of 'user cost'.

5.58   An individual's/household's planned length of stay is often unobserved or unreported in surveys. Rosenthal (1988) used the actual length of stay as a proxy for the planned length of stay. But the ex-post length of stay is unlikely to be a good proxy as unplanned events can shorten a stay by affecting the desired house size, location and a household's ability to meet mortgage or rental payments. More recent investigations have attempted to predict length of stay using a duration model as a proxy for a planned stay (Haurin and Chung 1998).

5.59   A particular current issue is that young adults are likely to suffer from biting credit market constraints (Hendershott, Haurin and Wachter 1997, Andrew 2005). Andrew el al (2003) point out that up-front transaction costs such as stamp duty can impose an additional hurdle for households with few assets, especially if house prices are rising rapidly. Moreover, as the tax thresholds have fallen in real terms, the burden of stamp duty as an up-front transaction costs has risen.

5.60   The tenure choice decision faced by a household is determined by its demographic and economic characteristics and the cost of owning relative to renting. The cost of owner occupation is frequently defined as 'the housing user cost of capital' (see Meen (1990)), which takes account of not just price and interest rates but also expected capital gains and transaction costs. . When absolute constraints on borrowing are present, Dougherty and Van Order (1982) argue that the housing user cost of capital takes a modified form although, using economic theory, Hendershott and Shilling (1980) show how the standard user cost (UCC) can be extended to include transactions costs and the expected length of stay. Haurin and Gill (2002) have shown that the simple version proposed by Chambers and Simonson (1987) performs equally as well.

$$UCC_{CSt} = UCC_t + \beta_t/N + c/PH.N$$

where c is any element of transactions costs which are not related to property values, β is a parameter, N is population and PH is house price.

5.61   The choice between renting and owning is only observed after households have been established. The econometric approach may need to recognise interdependencies between household formation and tenure decisions. One type of approach found in the literature is pooled bivariate probit estimator with standard errors adjusted for clustering; these are a good approximation as a random effects estimator and ease the burden of estimation quite considerably (Wooldridge 2002, Ermisch 1999, Chamberlain 1984). Different versions of the empirical models can be estimated, to test or control for these effects (Andrew 2005, Biewen 2004)[57].

5.62   There is also, as explained, an interaction between tenure choice and length of stay. It is possible to use a duration model to derive the expected spell length for each household in each time period, following Haurin and Chung (1998), Greene (1997) and Box-Steffensmeier and Jones (2004). However, such an approach may be over-complicated for the purposes of this study.

5.63   The largest element of realised transactions costs may be the attachment value to a residence. In the duration model, we could use Boehm (1981) and adopt a proxy for attachment value, an indicator variable depicting whether the head and spouse liked the neighbourhood at the start of each time interval. Identification between the housing tenure choice model and the duration model can be enhanced by including variables found to be important in the urban economics literature in determining a residence move and excluding them from the housing tenure choice equation; for example, the length of a commute, a job change in the previous year and acquiring a new job. In addition, many of the time varying variables in the duration model take values at the start of each interval, that is, lagged values.

5.64   This review of the housing literature highlighted the problem of the planned length of stay and the housing tenure choice being jointly determined. Using a predicted value for the planned length of stay is a possible solution to this

---

[57] This is equivalent to treating unobservable individual heterogeneity as being time invariant.

problem. Alternatively, one could model the inverse of length of stay, namely the mobility rate. This is an attractive option in the context of our housing needs model, and one which we take up in practice. Haurin and Gill (2002) make the point that it is only after having made a move that households recognise the greater transactions costs of relocations involving homeownership. If suitable proxies can be found for the realised financial and psychological transactions costs, then the endogeneity problem is lessened and a sequential estimation strategy may be pursued.

Determinants of tenure choice

5.65   Andrew and White (2006) use BHPS from 1991 to 2002/3 examining younger households. Initial results indicated that financial transactions costs were relatively small, in most cases being under one percent of the house value. They suggested that the user cost component of financial transactions costs was likely to be swamped by its other elements. Also, instead of adopting an explicit measure for transaction costs in the housing user cost, its impact was examined by including the expected spell length in the housing tenure choice model.

5.66   In relation to length of stay, couples and married households, and families with children were found to be less likely to move, probably due to their stronger attachment to the local area, for example, through schooling and establishment of social ties. Families with older children are less likely to move than those with younger children, suggesting that such ties are stronger for this group. Black and Asian household appear to have lower propensities to move. Households on higher permanent incomes were found to be relatively mobile. Finally, families residing in regions with higher unemployment rates had a lower propensity to move. This model also included a dummy indicator for negative housing equity which discourages a move (Henley 1998).

5.67   In the tenure choice models, higher permanent incomes increase owner-occupation rates as does a male household head. Wealth and income constrained households were less likely to be in homeownership and longer planned length of stay also increased owner-occupation.

Statistical models

General approach

5.68   In the light of the preceding discussion we have evolved an approach to the modelling of mobility and tenure choice which we believe is robust and appropriate for the purposes of the wider needs model. It takes account of the theoretical and econometric issues reviewed above, institutional features of the English housing market, and practical issues of data availability. Key influences evidenced by previous research are represented within our models, directly or through proxy variables. During the course of the research we first tested models using SEH data, then developed models using a revised sequence within the BHPS data, then tested further variants within that dataset over different time periods.

5.69.   Table 5.2 summarises the hierarchical or sequential approach to modelling adopted. Essentially, this says that there are up to eight separate statistical models, according to the tenure of origin and the stage of decision-making. New household formation is presented as though it were another tenure of origin, but we described this model in detail earlier in this chapter. For existing households, the first stage decision is whether to move or not (mobility). There are two main rationales for this, as explained above: (a) the need to focus on choices of those actively in the market in a particular time period, and (b) the interrelationship with expected length of stay. We develop a predictive model for mobility, with the option of having different models for the different tenures or a common model with tenure dummy (shift) variables.

Table 5.2: Hierarchical/sequential scheme for tenure flows modelling			
New Household	Owner occupier	Social Renter	Private Renter
Form?	Move?	Move?	Move?
Buy?	Buy?	Buy?	Buy?
Social Rent?	Social Rent?	Social Rent?	Social Rent?

5.70   The next stage of the hierarchy is the decision to buy. We originally tested a different sequence, with social renting at this stage. Although social renting is rationed, there is a view that the more fundamental choice is whether to buy and that ownership is for most households the preferred tenure if attainable. We therefore fit models for the choice to buy to the subsets of households who actually did move (or form) in the year. These models are estimated separately for each tenure, with predicted mobility from the first stage included as an inverse proxy for expected length of stay. The third stage is to predict moving into social renting for those households moving but not buying. The interpretation of this model is that it is a combined 'choice and rationing' function, with the propensities partly influenced by the (average) allocation priorities of the social landlords.

5.71   Implicit in this structure is the outcome that households which move, do not buy and do not move into social renting must end up moving into the private rented sector. They are the residual group. This is an important property of the model, as discussed further in Chapter 6. Another point to note is that one cell in each tenure column is effectively predicting moves within that tenure. Finally, it should be noted that the combination of the move/buy/social rented sector sequence for existing social renters generates the predicted flow of movers out of the social rented sector, into ownership or the private rented sector. This will be a major part of the flow of 'relets' supply, along with dissolutions[58].

---

[58] See footnote 39 for comment on the point that relets supply is thereby partly endogenous.

Mobility

5.72   The first stage models used to predict household mobility (move house within a 1 year period) use a common model but estimated separately for each tenure. The resulting equations are summarised in Table 5.3, using elasticities at the mean as a summary measure and bold type to emphasise the more statistically significant relationships. We can briefly highlight the main features of these models.

Table 5.3: Elasticities in mobility models				
Variable description	Short name	Owner occupiers	Social renters	Private renters
Aged <20	oageu20	-0.001	0.008	0.001
Aged 20-24	oage2024	0.007	0.036	0.011
Aged 25-29	oage2529	0.036	0.042	0.055
Aged 30-34	oage3034	0.031	0.022	0.066
Aged >60	oov60	-0.194	-0.398	-0.106
Aged >75	oov75	0.015	-0.018	-0.094
Household size	ohhsize	-0.453	-0.477	-0.289
Lone parent	olpar	0.017	0.006	0.016
Married	omar	-0.073	0.048	-0.058
Get married	getmar	0.006	0.003	0.003
Get un-married	getunmar	0.007	0.005	-0.006
Get child	getchild	0.017	0.018	0.018
Income (household)	ofihhyrk	0.159	-0.128	0.374
House price	lplqk	0.074	-0.333	-0.193
Private rent	prent2bm	0.639	-0.183	0.221
Social lets	pslets2	-0.199	-0.153	-0.314
Area unemployment	asunem	0.082	0.042	0.340
No. of children	onchild	0.078	-0.014	-0.079
Get a Job	getwork	-0.004	0.009	0.011
Weeks unemployed	dnjuwks	0.003	0.000	-0.002
Long term Sick/ Disabled	dltsickdis	-0.001	-0.014	0.001
Student	dstud	0.000	0.002	0.002
Higher educational qualifications	dhequal	0.041	0.018	0.075
High socio-econ group	hiseg	0.050	0.014	0.034
Low socio-econ group	loseg	-0.016	-0.010	-0.004
Persons per room	opprm	0.300	1.129	0.214
Wealth proxy	dwealthki2	-0.384	0.029	-0.113
London	londum	-0.044	-0.049	-0.032

Note: Elasticities evaluated at mean; bold type shows coefficients significant at 10 per cent level or better. Estimated on BHPS data 1996/7-2003/4.

5.73   Younger households are more mobile, and this is more true in rental sectors (social below 25, private over 25). Large households are less mobile, although number of children seems to increase mobility for owners while overcrowding increases it for all sectors, but particularly for social tenants. Marriage and separation both slightly increase mobility, but having an additional child has a rather greater impact.

5.74   Higher income increases mobility in the private market sectors but not in the social sector, and other proxies for permanent income (qualifications, SEG) work to reinforce this income effect. However, higher wealth reduces mobility in the market sectors, while still increasing it for social tenants (enabling to them to exit, presumably). As expected, higher house prices reduce mobility, particularly (out of) social renting, but higher private rents appear to increase mobility in the owner occupier sector[59]. The effects of unemployment are a bit unclear but tend to be positive – higher unemployment may force more people to move, either to seek work or because they lose their existing home or need to move to a cheaper one. Getting a job increases mobility in the private rented sector.

5.75   These mobility models are used in the simulations, but with slight modifications of a small number of parameters[60].

5.76   Figure 5.3 shows mobility rates[61] by tenure at two different dates, across the regions (the 2009 rates are model forecasts, while 2004 are based on pooled data for 2002-06). Between those two periods mobility is expected to rise in owner occupation but to fall in both rental tenures. Mobility rates were slightly higher in social renting than in owner occupation, but that position may be tending towards reversal. Rates in private renting are 4-5 times higher than in the other tenures. The differences between regions are rather modest, compared with the tenure or even time differences.

---

[59] This may be slightly spurious, probably reflecting the association of high private rents with locations and housing types which attract a more mobile population, e.g. inner London and other central or University cities.

[60] Inspection of cases where the model appeared to display unrealistic or unstable results indicated that particular variable coefficients were implausible in size and direction, and this was confirmed when comparing with the previous equivalent S.E.H. results. These coefficients (affecting private rents and overcrowding) were adjusted to more defensible values (or zero).

[61] These rates are 'one-year' rates consistent with SEH estimates; multiple moves within a year would only count once.

Figure 5.3: Mobility rates by tenure and region, 2004 & 2009

Figure 5.4: Mobility rates by household age-type and by tenure, 2002-06
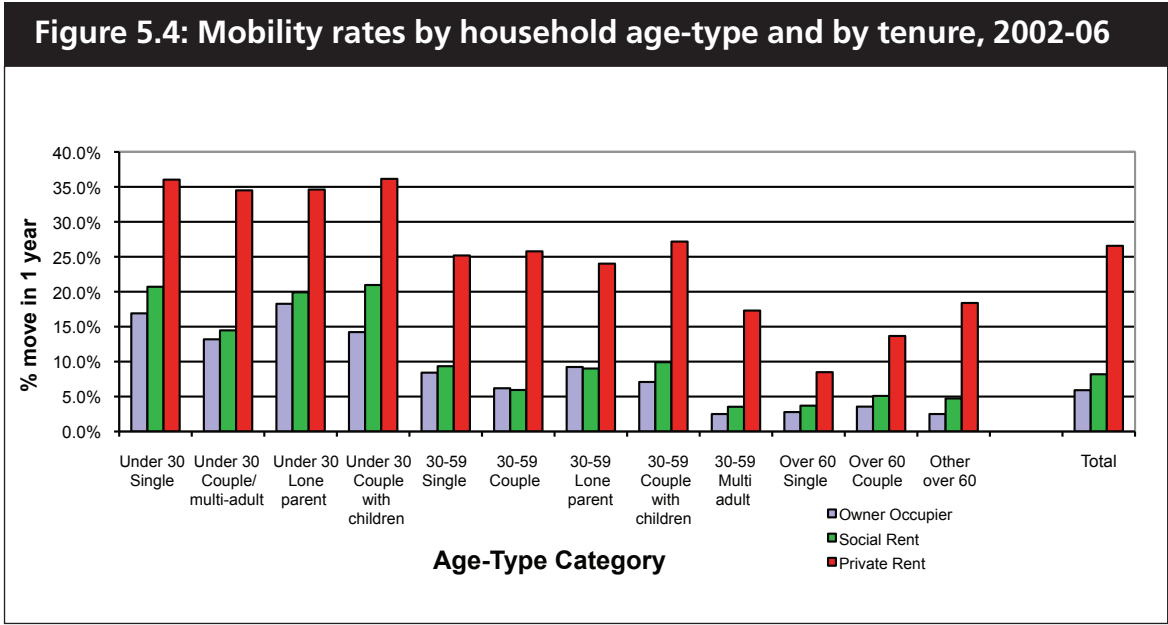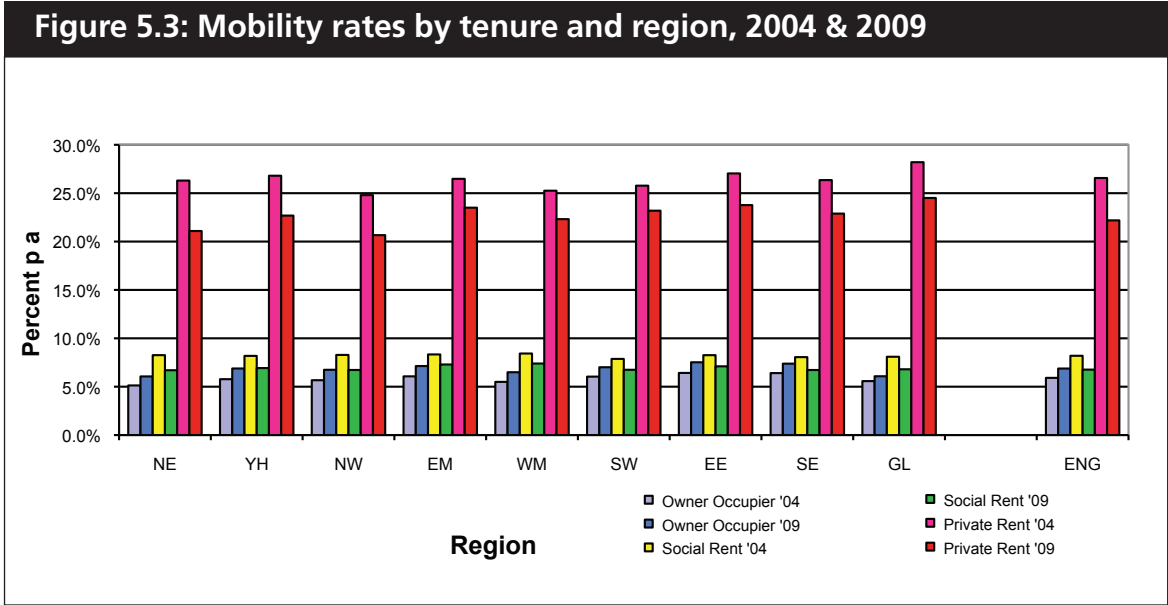
5.77   Figure 5.4 shows the differences across household types within three broad age bands. In each tenure younger households are more mobile and the older households are least mobile. In the young and middle bands, couples and multi-adult households are less mobile than singles and families, whilst in the older age band singles are less mobile. Overall, this suggests the image of the mobile single is perhaps misleading. For every group, private renters are much more mobile than the other tenures, and in nearly every group (except 30-59 lone parents) owners are less mobile than social renters. However the younger private renters are only about twice as mobile as the younger social renters, and similarly up the age range. Thus, part of the higher overall mobility of the private rented sector reflects its age profile.

Tenure Choice

5.78 The tenure choice models are presented in concise form in Tables 5.4 (buying) and 5.5 (social renting). These models are again estimated using logistic regression on BHPS data. This time the numbers in the tables are the actual coefficients, which measure the impact of one unit change in the explanatory variable on the log of the odds ratio of buying (or social renting). Where not implicit, variable units are indicated (most individual attributes are in dummy one-zero form). We try to make more parsimonious models, by eliminating clearly insignificant variables. However, where variables are expected to play a role on grounds of theory or previous research, and particularly where they are of marginal significance, they are retained[62].

5.79 The move-to-buy models achieve a reasonable fit to the data, particularly the new-to-buy and social-to-buy models which achieve pseudo-r-squared statistics in the range 0.29 to 0.59 and correctly classify 87-90 per cent of cases. The poorest model is own-to-buy, with figures in the range 0.14-0.18 and 65 per cent, respectively.

5.80 It is not appropriate in this report to comment on all of the fine detail of these results, but we try to draw out the main features. From Table 5.4 we can see that predicted mobility rate has the expected negative effect on buying for households in the private market (the expected 'length of stay' effect), but a marginally positive effect in the social sector. Migrants are less likely to buy unless they are from the social sector, while migrants from urban to more rural locations are more likely to buy. The young are generally less likely to buy. Larger households are less likely to go from renting to buying. Getting married, unmarried, or having a child are all associated more with buying, except in the case of social renters. Higher qualifications and/or SEG are associated with buying, for households already in the private markets, while working status is unsurprisingly associated with buying across all groups. Worse affordability (alias the house price:income ratio) has a substantial negative effect across three groups, but does not much affect existing owners. Available social lets may have some slight negative effect on buying, but these coefficients are not statistically significant.

5.81 Table 5.5 focuses on the drivers of moves into or within social renting, for those movers who do not buy. The sample numbers are smaller here so the models are sometimes a bit less satisfactory. The best-fitting model is 'own to social' which has pseudo-r-squared statistics in the range 0.15-0.37 and correctly classifies 94 per cent of cases. The poorest fitting is again the within-tenure moves model (social to social), where the figures are 0.16-0.21 and 66 per cent.

---

[62] Technical Appendix 3 reports some additional tests of variant models and models fitted to different runs of data; in some instances this means that variables which are marginally insignificant as reported here become significant.

5.82   Existing tenants who are more likely to be mobile are less likely to go into social renting, while migrant households from all previous tenures are less likely to get a social tenancy (echoing earlier research on the tendency of social housing not to support geographical mobility – see Hills 2007). There is a general story about social renting being for the young and the old, but the results for private renters suggest a significant influx involving people in their later twenties. The positive association with both singles and lone parents in most cases is no surprise, and neither is the positive association across all groups with getting a child.

5.83   Moving to social renting is associated with lower socio-economic status, not working, sickness/disability, unemployment, lower income and wealth, all as expected. This is not to imply that social renting causes these problems, simply that the processes of constrained choice and social housing allocation combine to create this association. Overcrowding increases the chance of moving into or within social renting significantly. House price only appears in one case (reducing own to social), while 'affordability' (price:income ratio) is not significant in any instance – this variable played its role at the previous stage, allocating people into the broader rented sector. Social letting rate appears to increase flows into social housing, as expected, but its effect is larger and statistically significant in the new-to-social case but marginally insignificant in other cases (and we would not expect much effect on social to social).

Table 5.4: Effect of different variables on choice to buy by previous tenure (coefficient measuring effect of 1 unit change on log-odds of buying for moving households)

Variable description	Short name	New to buying	Owner occupier buying	Social renting to buying	Private renting to buying
Predicted move rate	prmove		**-6.085**	3.822	-2.586
Moved area	migrant	-0.303	-0.116	**0.642**	
Migration direction (u-r)*	migdir2	**0.476**			
Aged <20	oageu20	**-0.930**	-1.319	-2.763	-0.908
Aged 20-24	oage2024			**-1.114**	-0.417
Aged 25-29	oage2529		0.174		0.072
Aged >60	oov60		**0.473**		-0.452
Aged >75	oov75				
No. of children	onchild	-0.200			
Household size	ohhsize			-0.348	-0.351
Single person household	osing		1.315		
Lone parent	olpar		**0.799**	**0.645**	**0.683**
Get married	getmar	**0.842**	0.893		**1.163**
Get un-married	getunmar		**1.645**		
Get child	getchild		**0.954**	**-1.271**	**0.798**
Higher education qualifications	dhequal	-0.343	**0.303**		**0.403**
High socio-econ group	hiseg		0.646		
Low socio-econ group	loseg	-0.323			
Long term sick/disabled	dltsickdis				
Working HRP	dwork	**0.713**	**0.950**	**1.847**	**0.999**
Student	dstud	**-1.798**			
Weeks unemployed	dnjuwks			**-0.067**	-0.008
Income (household) £k	dinchhrk	**0.000**			
Wealth £k	**dwealthki2**	0.057		0.028	0.007
ln(wealth)**	lwealthi				
Persons per room	opprm				
Flat	oflat				
Area unemployment per cent	asunem	-0.124			
House price £k	**lplqk**	0.000	-0.001		
Social lets per cent hhd	pslets2	-0.139	-0.109	-0.026	
Private rent £pw	prent2bm				
ln(house price:income)	lhpir	**-0.875**		**-1.063**	**-0.586**
Constant		**-0.699**	**-0.461**	**-1.809**	**0.029**

Note: Bold type indicates coefficients significant at 10 per cent level or better.
*   means urban to rural
** In refers to the natural logarithm

Variable description	Short name	New to social renting	Owner occupier to social renting	Social renting to social renting	Private renting to social renting
Predicted move rate	prmove			-3.865	-4.961
Moved area	migrant	**-0.580**	**-0.654**	**-0.547**	**-1.014**
Migration direction u-r	migdir2				0.538
Aged <20	oageu20			-1.030	-0.890
Aged 20-24	oage2024	**1.394**			
Aged 25-29	oage2529			-0.691	0.979
Aged >60	oov60	**3.254**	**1.873**		
Aged >75	oov75		-0.973		
No. of children	onchild				
Household size	ohhsize				
Single person household	osing		**1.398**	**1.340**	**0.896**
Lone parent	olpar		**0.829**	**1.265**	
Get married	getmar				
Get un-married	getunmar				
Get Child	getchild	**2.718**	**1.337**	**1.471**	**1.952**
Higher educational qualifications	dhequal		-0.605		-1.148
High socio-econ group	hiseg				
Low socio-econ group	loseg	**1.001**	**0.508**		
Long term sick/disabled	dltsickdis	**3.328**	**1.201**		1.290
Working HRP	dwork	0.251	-0.387	**-0.418**	-0.318
Student	dstud	-0.173			
Weeks unemployed	dnjuwks		**0.030**	0.008	**0.036**
Income (household) £k	dinchhrk				
Wealth £k	dwealthki2	-0.046		**-0.017**	**-0.054**
ln(wealth)	lwealthi		-0.763		
Persons per room	opprm	**1.308**	**1.254**	**0.618**	0.425
Flat	oflat		0.464		
Area unemployment per cent	asunem			-0.100	
House price £k	lplqk		-0.015		
Social lets per cent hhd	pslets2	**0.288**	0.196	0.188	0.063
Private rent £pw	prent2bm		0.009		0.006
Ln (house price:income)	lhpir				
Constant		-4.668	-2.986	-0.464	-2.322

Table 5.5: Effect of different variables on move to social renting by previous tenure (coefficient measuring effect of 1 unit change on log-odds of buying, for moving households not buying)

Note: Bold type indicates coefficients significant at 10 per cent level or better.

5.84   These models are used in the simulation model described in Chapter 6 to predict flows of households between tenures on a year-by-year basis. Essentially the coefficients in Tables 5.4-5.5 are applied to regional changes in the relevant variables to predict changes in flows between tenures from the previous period.

Conclusions

5.85   Household formation, household composition changes, mobility and tenure choice are centrally important for our understanding of how economic, social and demographic forces act through the housing system to generate housing need outcomes. This chapter has described the research conducted on these issues to provide an underlying set of behavioural models which form the foundation of the simulation model constructed to estimate housing needs now and in the future.

5.86   The research has involved literature reviews on household formation and tenure choice/mobility to draw out key theoretical and methodological insights and existing empirical model of key relationships. Building on this and on recent data on observed patterns, we go on to build econometric models for these key processes and report our findings in terms of key determinants of household flows and their distribution between tenures.

5.87   In considering household formation, there has been an evolution from traditional demographic projection methods which, although sophisticated, remain extrapolative in character, towards modelling approaches which take more account of economic and social influences, including affordability conditions in housing markets.

5.88   Recent descriptive data are presented which show that, although some long established trends to more separate household formation continue, there have been reductions in separate household formation by younger adults in some regions which appear likely to be related to recently rising affordability and supply constraints.

5.89   The model developed for household formation builds on earlier work in using longitudinal micro data on household transitions, linked to contextual data on housing and labour market conditions at a relatively local geographical scale. This model appears to capture a range of effects as expected on theoretical grounds or from earlier empirical research. While demographic factors like age structure, marriage and children remain important, we also find that income, employment/unemployment, house prices and the supply of social lettings impact significantly on household formation.

5.90   The Chapter also addresses other elements of household change, including 'in situ' changes in household composition, the scale and incidence of household dissolutions, and the effect of migration.

5.91   In approaching tenure choice we emphasise the need to go beyond simpler past approaches by including a genuine behavioural perspective, by focussing on flows of households actually moving in the market, and by recognising that the social rented sector is 'different' in the sense that supply is rationed and allocated administratively.

5.92   The literature review draws out the importance of factors like credit constraints as well as affordability, and in particular the crucial role of expected mobility or length of stay in influencing the choice to buy a home. The growing importance of private renting is also noted. Distinctive econometric estimation problems and possible solutions are briefly reviewed. Reviewing past research underlines that, although economic factors are important in tenure choice, demographic factors continue to play a part.

5.93.   The preferred form of model developed adopts a sequential approach; first predicting mobility itself, then the choice to buy, followed by the choice/opportunity to move into social renting, with private renting the residual option. This scheme is applied separately to four groups: new households, existing owners, social and private renters.

5.94   The mobility models draw out the importance of age, tenure and income. Younger people, private renters, and higher income households display greater mobility. These factors are more important than any differences between regions.

5.95   More mobile households are less likely to buy, as are migrants and the young, whilst more qualified/higher SEG households are more likely to buy. Worse affordability clearly deters house purchase for all groups, whilst social lettings supply has little effect.

5.96   Mobile and migrant households are less likely to enter social renting, while this tenure is more important generally for the young and the old and for lower income and non-working households. House prices and affordability do not have so much effect on these flows, while social lettings supply has a stronger positive effect for new households.

Chapter 6

Constructing an overall simulation model

Introduction

6.1   This chapter describes the approach adopted and issues arising in developing an overall simulation model for forecasting future housing needs at national and regional level in England. This element of the project integrates the outputs of a number of more specific modules within a framework which projects forward the evolution of the English housing system at regional level given specified economic, demographic and policy scenarios. Some more detailed aspects of the model are described and discussed at greater length in Appendix 5.

6.2   The principal outputs envisaged for this simulation model are (for each region):

- the size and household composition of the main tenure groups at future dates
- the incidence of a range of specific need categories at future dates.

6.3   In line with the project brief, the aim was to develop a model representing the processes of change in terms of the gross flows of households of different types into and out of the system and between the tenure groups. Key choice processes were to be represented by behavioural functions taking account of economic, social, demographic influences, fitted to data from the recent past using appropriate econometric/statistical modelling techniques (as described in Chapter 5). However, these functions must be applied to future household and tenure structures, and a core function of the simulation is to roll these forward in an appropriate way.

6.4   The model is designed to work in conjunction with existing DCLG models, particularly the DCLG Affordability model. Key housing market variables (house prices, affordability ratios, migration) are derived from the DCLG model, along with associated macro-economic and supply numbers consistent with chosen scenarios. The new model provides an opportunity to revisit some of the second-order effects of housing market changes (e.g. tenure choice, vacancies) as well as to provide more detailed outputs and insights relating to housing need.

6.5   There are different kinds of simulation models and it is worth underlining that this model should be classed as a 'macro-simulation' rather than a 'micro-simulation' approach. In other words, it works with aggregates of households, albeit broken down by region and various sub-groupings, rather than with individual households, and predicts proportions of those aggregate populations which have a particular characteristic or experience a particular change. However, much of the evidence which is used to establish and calibrate the model is individual/household level data from sample surveys (as described in Chapters 3 and 5).

Model architecture

Overview

6.6 The model developed here has reflected the Brief, particularly the requirement for 'a medium-sized model' (Box 1.1, Ch.1). The summary of required outputs specified that these should include:

"A spreadsheet model which estimates potential future housing need and the need for housing related support. It will:

i. produce results which are easily interpreted, policy relevant and robust; and

ii. have the ability to vary key assumptions within the model and to combine the model where necessary with other CLG models."

6.7 This specifies what 'the model' should look like at the end of the research, confirming the preference for a spreadsheet as the software platform for the model. This is for quite understandable reasons in terms of familiarity to a wide potential user group, relative transparency of formulae and operations, ease of porting data in and out and ease of preparing presentational material including charts.

6.8 The most obvious precedent is the DCLG Affordability ('Reading') model, which is also implemented as a spreadsheet. However, in the light of the phrase 'medium-sized', and bearing in mind our own and others' experience in using the DCLG model, we also aimed to end up with something on a significantly smaller scale than that[63]. This has influenced our approach to design, leading to certain compromises in the way certain relationships are represented (particularly when getting from the micro to the macro). While possibly resulting in slightly less precise predictions for particular groups, this way of working is greatly space-saving. Other differences of approach include the fact that our EHN model provides a potentially wider range of detailed outputs and allows the user to vary more inputs and assumptions.

6.9 We attempted to provide a single schematic diagram to summarise the model structure, but this would certainly occupy more than one page! It is, in fact, more useful to present it as a series of diagrams, starting with an overview and then, as it were, 'drilling down' to greater detail on each of several aspects in turn. For simplicity the diagrams are only illustrative of the processes within the model and it should be noted that they do not capture every relationship.

Figure 6.1: Schematic picture of overall simulation model
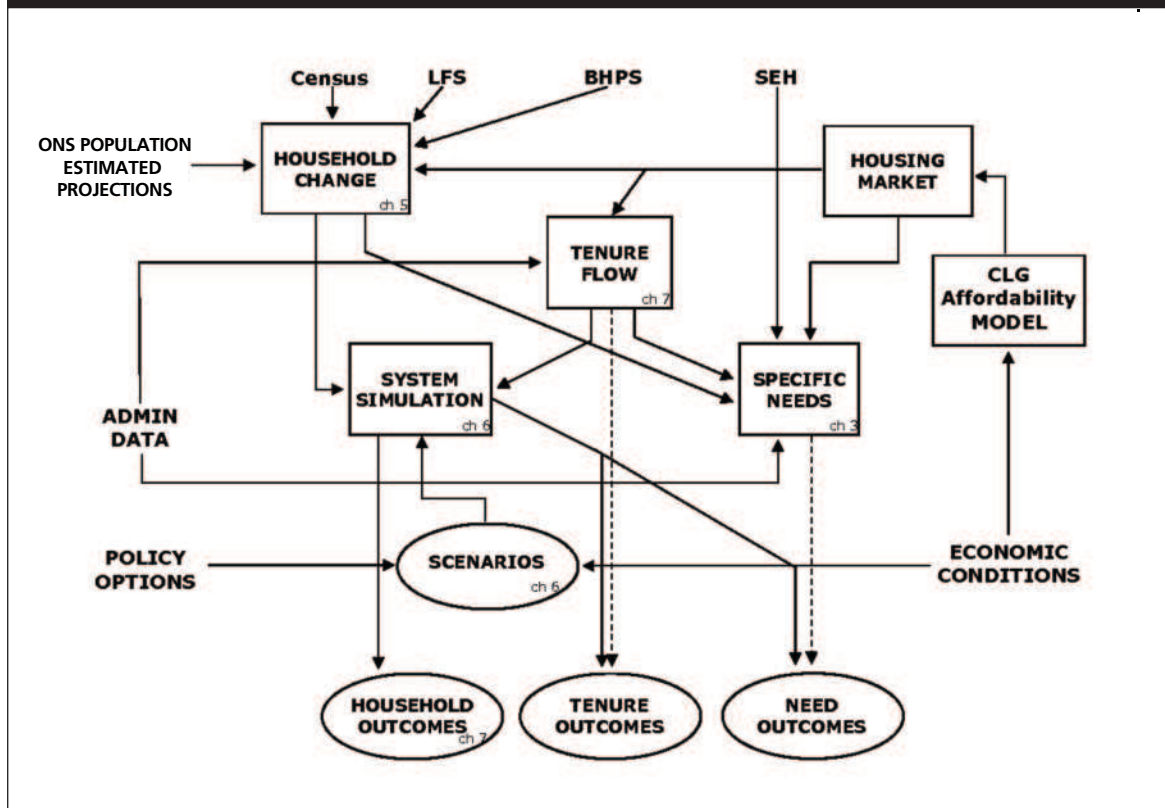
6.10   Figure 6.1 (which is the same as Figure 1.1 in Chapter 1) provides the higher level schematic for the whole model. Inputs and data sources are shown around the edges, unboxed; rectangular boxes represent the main modules of the model; round boxes represent intermediate or final outputs. The model can be described as having four main modules: household change, housing market, tenure flows, and specific needs. A fifth module, the system simulation model (alias 'the spreadsheet') brings these together in generating conditional forecasts over a medium term period. These forecasts focus on three types of outcome – household numbers and types, tenure changes, and specific need outcomes.

6.11   The different modules derive from the research discussed in different chapters of this report; Specific Needs relates to Chapter 3, Household Change and Tenure flows are both discussed in Chapter 5, while this chapter discusses the system simulation. We can only really claim 'half a housing market module', in effect, because the DCLG Affordability model provides key inputs on housing market consequences of different supply scenarios (specifically, net additions, prices, migration, incomes, and employment). The Estimating Housing Need (EHN) model makes supplementary estimates of certain market related outcomes or key variables, including private rents and vacancy rates, as well as the household changes and tenure flows covered in those modules.

6.12   Later in this chapter we 'open the box' for particular modules and present a more detailed picture of how each element works.

Base period data

6.13 The model is set up and 'populated' with actual data for a base period or periods. The key source used has been the Survey of English Housing (SEH). Data for 11 years (1997/8 to 2007/8 has been aggregated together, taking a subset of over 200 variables at household level from this source. The task of combining these surveys over a longer time period has been quite laborious, owing to changes in survey content and detailed variable naming and coding[64].

6.14 Because we are trying to get reasonable profiles of quite detailed characteristics at regional level, there are advantages in obtaining a larger sample by pooling years (SEH has a sample of 20,000 households per year). Therefore most of the analysis focuses upon averaging over two five-year periods: Period 1 (1997-2001) and Period 2 (2002-2006), with 2007/8 subsequently added as a third period (albeit with a smaller sample).

6.15 A range of housing and labour market indicators have been attached to SEH individual data at local or sub-regional level, to assist with econometric modelling of mobility, tenure choice and specific needs. For some analyses this uses the same 90 zones as the ODPM 'MigMod' migration model and derivative models (particularly Bramley & Leishman 2005, Bramley *et al* 2007, 2008). In some instances (e.g. lower quartile house prices) LA-level values are available; for others (where larger samples are needed) we have used larger subregional groupings. As explained in Chapter 5, we use BHPS as the main basis for modelling mobility and tenure choice, again attaching housing and labour market variables but at a slightly different geographical level (so-called SAR areas, based on local authorities or groups of smaller districts).

6.16 We have also analysed Labour Force Survey (LFS) data for the period 1992 to 2008, because this has a much larger sample than SEH and should therefore provide a more robust base of household demographic and socio-economic profiles by region. Like the BHPS, this provides a way of checking certain needs measures and other variables for which SEH is typically the primary source.

Age, household type and tenure

Age and type

6.17 The typical circumstances, needs, and behavioural choices of households vary greatly (and to some extent predictably) depending upon age and household composition. That is why we require the model to predict the future and age and compositional structure of households living within and moving between the main tenures. The structure which we have implemented in this seminal model entails up to five household types within three age groups.

6.18 The age groups are based on the Household Representative Person (HRP) being aged under 30, between 30 and 59, and 60 or over. The rationale for the first age group is that this captures the early stages of people's housing

---

[64] Subsequently, CLG commissioned consultants to construct a 15-year dataset on a consistent basis, and this has recently been published. However this covers only about 120 variables.

career, as they first move away from the parental home, study/train and enter the workforce, when they are quite mobile but have limited resources and are quite constrained by housing market conditions and availability. The second group are in the central part of their housing career, as their longer term tenure status becomes confirmed and families are formed or grow. The third group is dominated by retirement, smaller households with the possible onset of frailty/dependency.

6.19   Five household types are distinguished: (1) single person households; (2) couples /two-adult households; (3) lone parent families with dependent children; (4) couple/two-adult families with dependent children; (5) multi adult households (which may include dependent children), which include both mature families with adult offspring or other relatives present as well as groups of sharers and lodgers.

6.20   Because of small numbers, group (5) is combined with group (2) for the under 30s, while groups (3), (4) and (5) are combined for the over-60s. Thus, the full 'age-type' classification comprises 4+5+3=12 groups. Figure 6.2 shows the numerical size and change in these 12 groups in the period 1992-2008. Numerically the largest groups are 30-59 families and singles and over-60 Singles and Couples. The groups which are growing the most are 30-59 singles, multis and lone parent families, while the groups declining most are couple families over and under 30 and under-30 couples/multis.

Tenure

6.21   The base period analysis and the simulation model allocate these age-type categories between three broad housing tenures: owner occupation (including outright, mortgaged and shared ownership); social renting (including local authority and registered social landlord); and private renting (including employment-related tenancies and living rent-free). The method used in the forward projections employs the tenure choice models described in Chapter 5.

6.22   Figure 6.3 shows the pattern of tenure across the age-types. Owner occupation is now larger in both absolute and relative scale in the older age groups, and more of a minority tenure for the under-30s. Within the age bands, couples are most likely to own and lone parent families least likely. We would expect private renting to be more concentrated on the young and single persons; it certainly plays a bigger role for younger and a relatively smaller role, now, for older households, but the extent of use by couple families is interesting. Social renting specialises to some extent in housing single older households, lone parent families, couple families, and singles aged 30-59. The relatively low representation of young households, particularly singles and couples/multis, in social renting is a notable feature.

Figure 6.2: Household age-type structure and change, England 2007
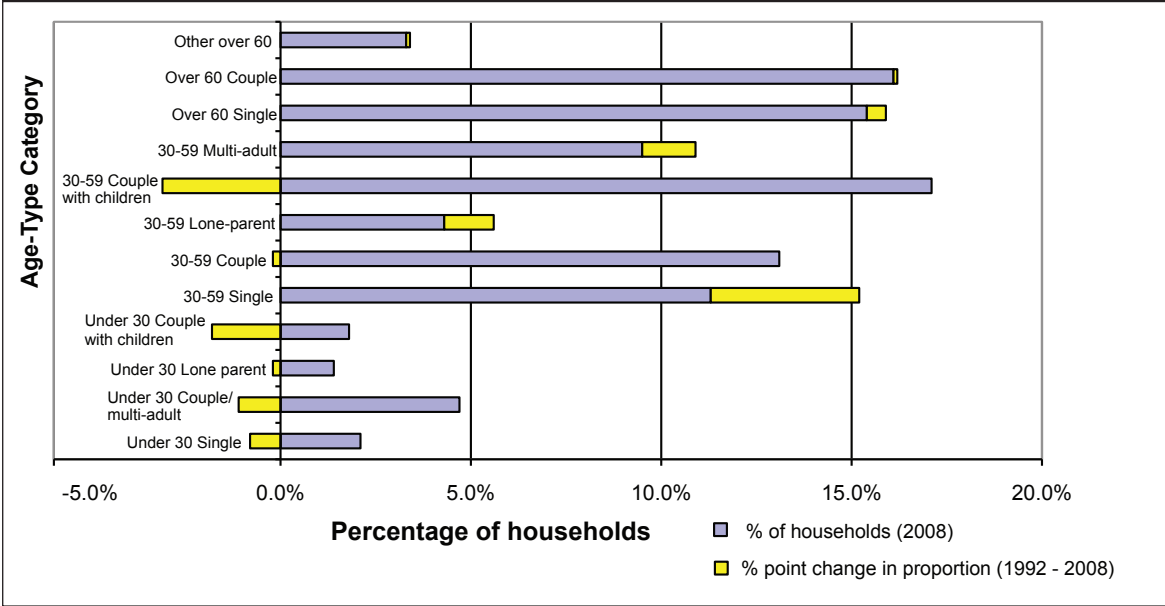
Source: Labour Force Survey

6.23   Figure 6.4 shows the pattern of age-types across the regions. This suggests more similarities than differences in structures, although London is as always distinct, with more younger and fewer older households, and with more singles and lone parents and less couples. In contrasts, the SW has a markedly older profile with significantly more older couples.

Figure 6.3: Households by age-type and tenure, England 2007
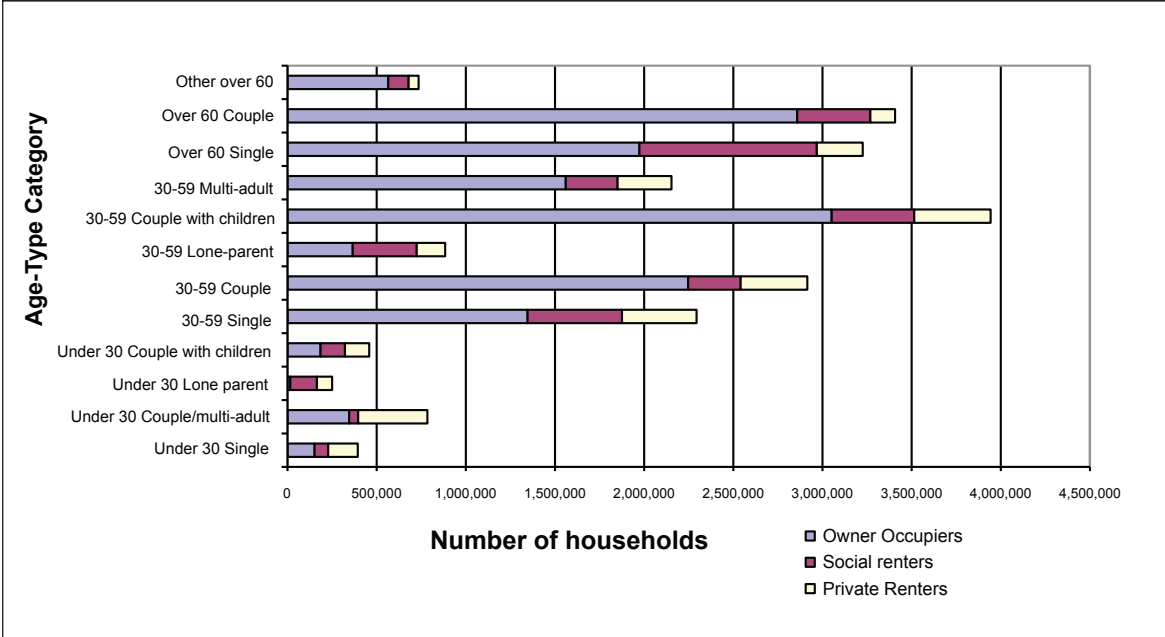
Source: Labour Force Survey and Survey of English Housing

Figure 6.4: Households by age-type composition by region 2007
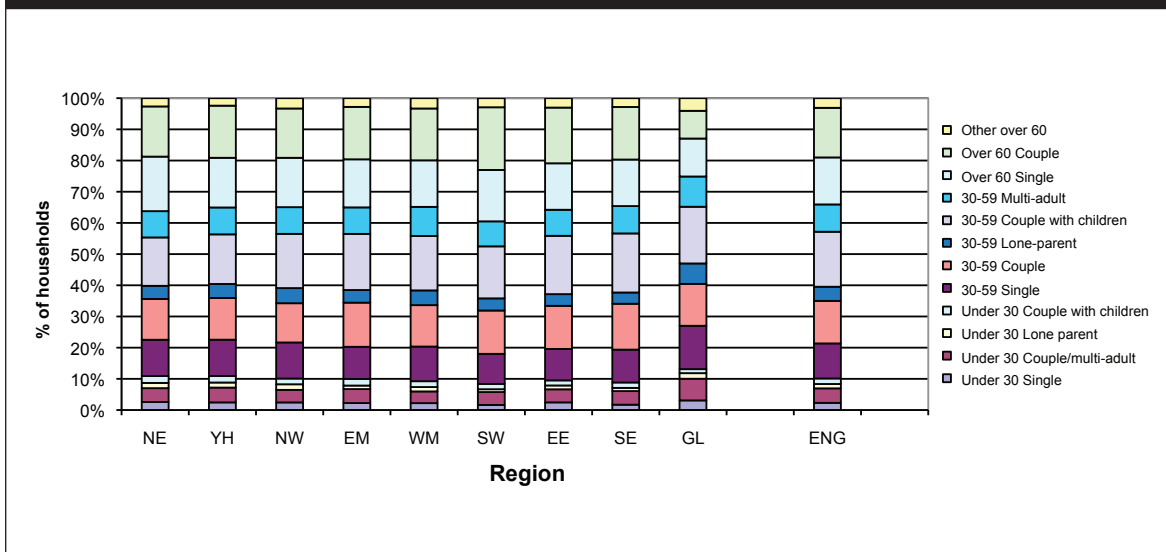
Source: Labour Force Survey and Survey of English Housing

6.24   Figure 6.5 looks at the association between specific needs, and their accumulated incidence, across the age-type groups. This gives some weight to our argument that the age-type mix is important for understanding and predicting needs. Overall needs are much higher for some groups – lone parents, especially younger ones; multi-adult households; older 'other' households; younger couple families; and younger singles. Over-30 and over-60 couples and singles, and over-30 couple families, have relatively low incidence of need.

Figure 6.5: Types of need by age-types category of household 2007
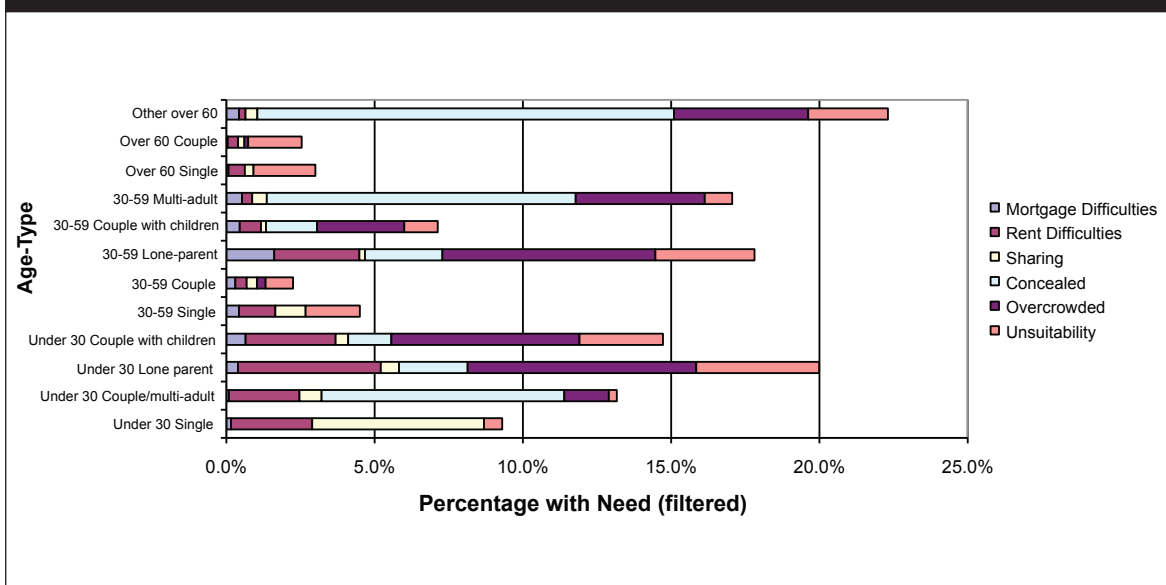
Source: Authors' estimates based on Survey of English Housing

Model operation

6.25   Most of the forecasting models use the age-type breakdown detailed above. The relevant propensity (probability) of each age-type group to make a particular transition or to have a particular need in the base period or previous year is multiplied by a composite function of changes in the 'driver' variables from the relevant econometric equation, at regional level, to derive the predicted value for that propensity for that age-type group in the year in question. Thus, the overall outcome depends upon the interaction of changes in the household age-type composition and the combined effect of the driver variables.

6.26   The process of generating changes in household numbers is summarised in Figure 6.6 – this is where we drill down into the detail of one of the modules, household change. The basis for these processes was described in detail in the earlier part of Chapter 5. Households are broken down by age-type and region from the base data or previous year's estimate. Some of these households change their form each year ('in situ changes'). Additional households are generated by the household formation model, which itself takes important influences from the Housing Market module including variables derived from the DCLG model. Net migration also makes a small addition to household numbers. The main negatives come from household dissolutions; like in situ changes, these are mainly demographically driven and not much influenced by the economic and market variables.

Figure 6.6: Schematic picture of household change process
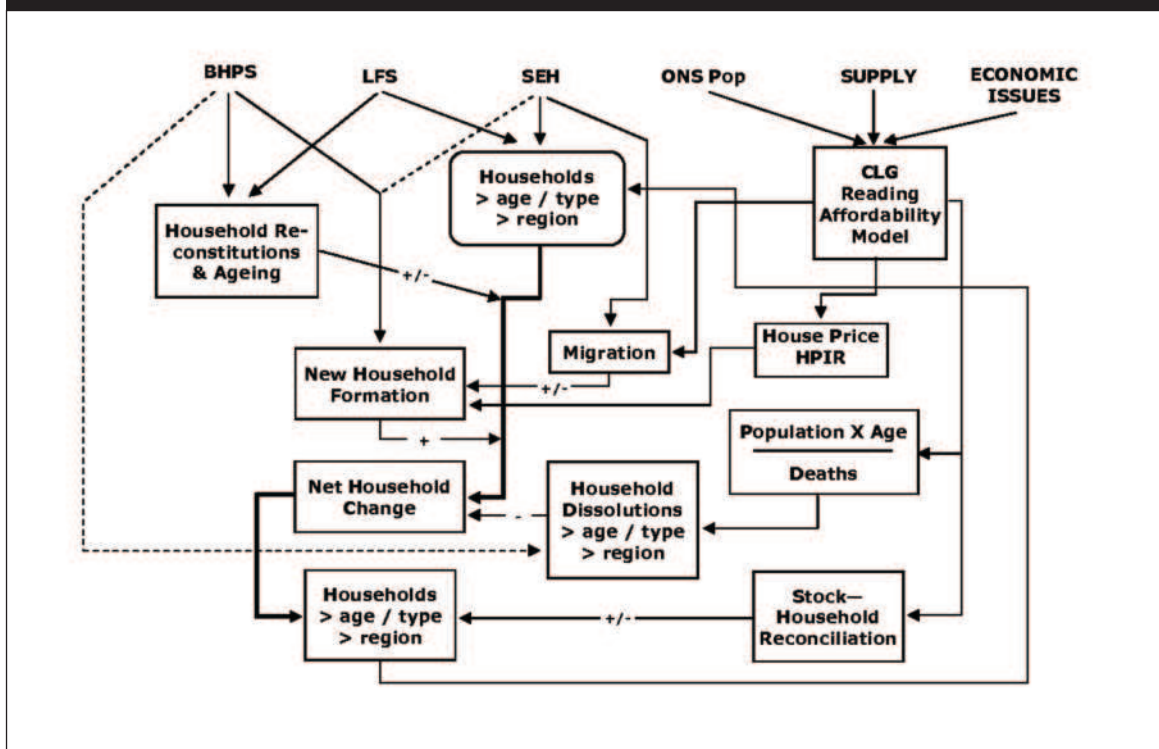
Regional Drivers

6.27   The econometric models used for household formation, mobility, tenure choice and specific needs all include selections from a range of variables measuring the socio-economic characteristics of households or areas in particular periods. In the context of the simulation model we refer to these as 'regional driver' variables. These are the factors which change over time, and in different ways in different regions. The model uses the estimated effects of these variables, from the econometric models described in Chapter 5, to translate these regional changes in the socio-economic factors to changes in the forecast household changes, moves or tenure choices.

6.28   The driver variables come in broadly four categories.:

-    the first group are derived from the output of the DCLG model, which generates values for each year (e.g house prices, earnings, migration, employment population by age, RTB sales)

-    a second group of endogenous variables have values generated within the model, and generally 1-year lagged values of these are used (e.g. private rents, tenure shares, social lettings, vacancies, new households, overcrowding, households in temporary accommodation)

-    a third group of variables are projected using trend changes derived mainly from the LFS for the period 1992-2008 at regional level (e.g. high and low socio-economic groups, ethnic groups, students, terraced houses and flats, central heating and bathrooms, sick and disabled)

-    a fourth group comprises variables for which we currently have no suitable data or models to forecast any change in values from the base period (e.g. deprivation, cars, crime), although it is possible to envisage developing forecasts for these in the future.

6.29   It should be noted that although the econometric equations for predicting mobility, tenure choice or specific needs include demographic structure variables corresponding to the age-type breakdown, these are excluded from the set included in the composite function of driver variables, because age-type structure evolution is modelled separately (as described above).

Tenure choice

6.30   The tenure choice module is presented schematically in Figure 6.7. The background to the approach and the econometric estimations of these relationships was described in Chapter 5. Figure 6.7 is effectively a flow chart for households. Households start off in one of four categories: newly forming, existing owners, existing social and private tenants. For the existing households, the first step is to predict the probability of them moving in a year. Non-movers remain in the stock of households for next year. The next step in the sequence, for all four groups, is to ask whether they a likely to buy. If so, they are channelled into the new buyers category or (in the case of

existing owners) the owners turnover category. If not buying, the next step is to look at the likelihood of the household moving into social renting, so contributing to the new social renters category (or if existing social tenants, to transfer activity). If none of these options apply, the new or moving households end up in the private rented sector.

6.31   Figure 6.7 emphasises the importance of the CLG affordability model outputs on tenure choice, particularly at the buying stage. However, the same broad range of demographic, socio-economic and market factors are taken account of in these models. The comments about 'regional drivers' above apply to these models as well.

6.32   The initial approach tried applying 'elasticities at the mean' to model the effects of changes in determinant variables to the base level 'rates' of moving to particular tenures by region and household age-type. This does not work for the tenure choices by moving households, because the rates vary so widely between different sub-groups, and we have to take account of the non-linear functional form of the logic models. Calculating the log-odds for each sub-group and time period and deriving probabilities from this works much more satisfactorily.

6.33   Although not shown here, there are in fact a couple of extra stages in the process of estimating tenure flows. Firstly, social rented inflows cannot exceed available lettings plus any possible reduction in vacancies. Secondly, moves into the private rented sector are ultimately limited by the size of the stock and some minimum level of vacancies. The way the model implements these constraints is described below.

Figure 6.7: Schematic picture of tenure choice (TC) and flows within model
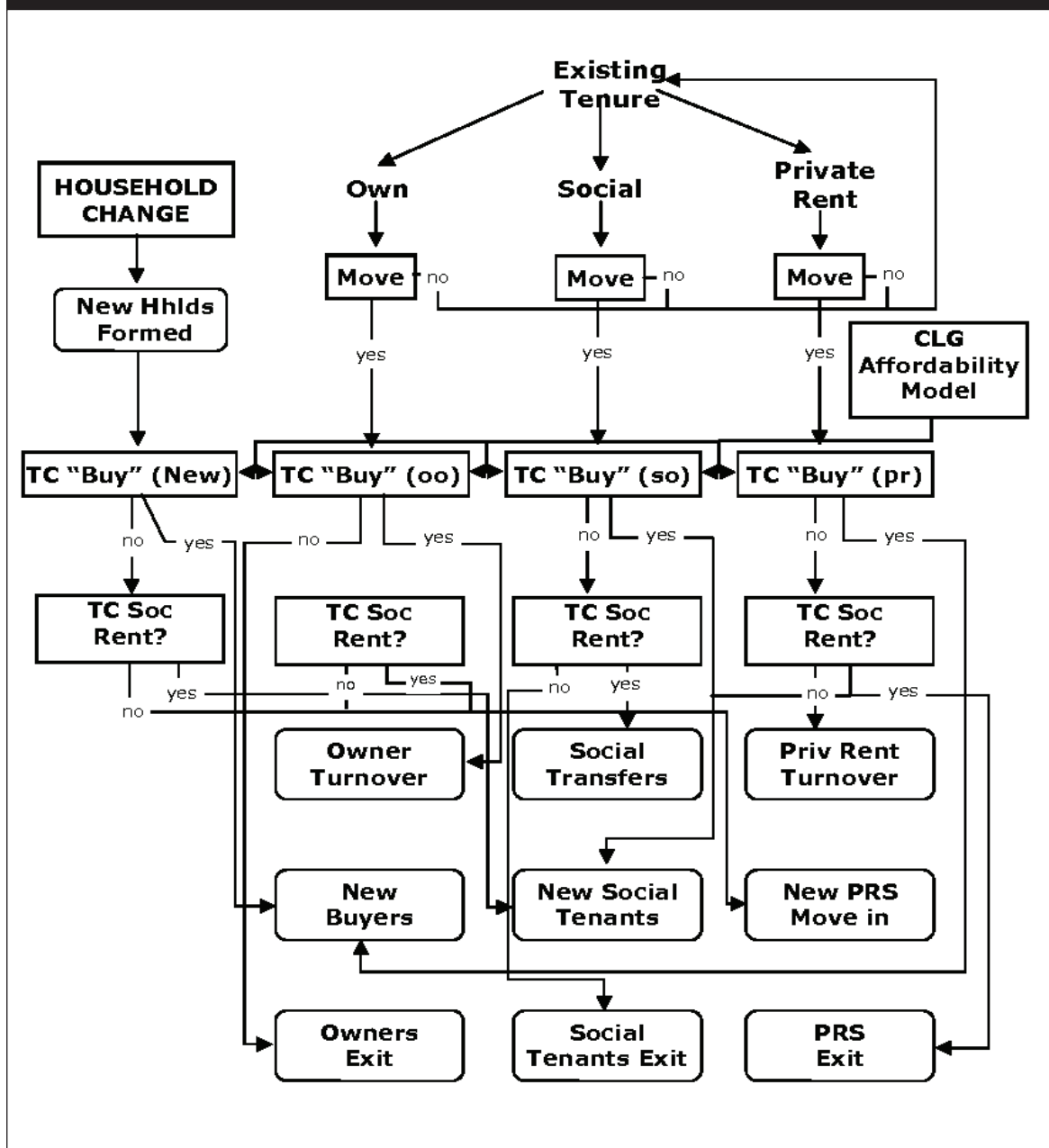
Interface with DCLG Affordability model

6.34   It has always been a central requirement of the needs model that it should work in tandem with the DCLG Affordability model. This is accomplished by pasting values of a range of outputs for each region and year into a sheet within the needs simulation workbook. Formulae in the needs simulation then refer to values from this DCLG model outputs sheet. Most of the formulae use proportional changes in these values to generate predicted changes in the relevant variable. For example, the household formation model uses changes in the following variables derived from the DCLG model: migration; share of population aged 20-29; births; working; unemployment; house price; earnings.

6.35   We added a single sheet to our version of the DCLG model to bring all of the values to be transferred into one place. It is then only necessary to perform a single copy and paste operation. Several different scenarios are held within the EHN workbook, in addition to a base run scenario, to facilitate easy comparison.

6.36   The base run of the DCLG Affordability model currently in use includes allowances for the effects of the credit crunch, including application of a credit rationing term in 2008 and several subsequent years (tapering off to 2014) and consequent effects on prices. The new supply trajectory is informed by evidence on recent and current output levels and a judgement about the rate of recovery in output. Income growth is also curtailed over several years, leading to incomes in 2014 being nearly 10 per cent below what they would have been under a 'business as usual' trend of 2.5 per cent p.a. real increase. Prices and HPIR are then forecast within the DCLG model. The current baseline run entails a static level of social housing net additions, based on recent levels. We can then easily look at the impact of increases in social additions relative to this trajectory.

6.37   Within the needs model, it was found necessary to apply an additional adjustment to the HPIR indicator, to reflect the abnormal effects of credit rationing in restricting effective affordability and access to buy. This 'shadow price of credit rationing' is a judgemental figure related to the extent of credit rationing in the year in question. The basis for the assumed value in 2009 is discussed in Appendix 5 (pp.17-19) and reflects observed falls in mortgage lending and demand elasticities derived from our mobility and tenure choice models. Thus we apply a figure of 1.9 in 2009, falling to 1.50 in 2010 and then tapering to 1.10 from 2015 onwards. This means that the effect of credit rationing is equivalent to HPIR being 90 per cent higher than the observed/forecast figure for 2009[65]. This parameter, which is also applied to house prices in relevant equations, can be readily altered by the user.

6.38   Although incomes are curtailed during the current downturn period in the base scenario, employment and unemployment do not appear to be affected within the DCLG model. This is not a realistic scenario now, with unemployment having risen as a result of the economic cycle. We go on in Chapter 7 to describe the effects of including a spike in unemployment rates. However, there are some limitations on the ways in which current versions of the two models can be worked together on this issue.

---

[65] Using data to August 2009 we estimated the the flow of new mortgaged buyers was down by 50 per cent on 2007. Using the estimated elasticities of choice to buy across the three groups (new, social and private renters) gives a combined price elasticity of -0.561; this implies that prices would have to rise by 89 per cent to halve the flow of new buyers. This estimate is subject to uncertainty because of the complex effects of other factors in this period, including the recession. Thus it is important to test sensitivity to different assumptions as described in Chapter 7.

Model operation

Lagged endogenous variables

6.39   The model structure developed inevitably has a number of variables which, while 'endogenous', are at the same time used in helping to predict other variables in the model. This means that they are determined by the functions in the model and forecast afresh for each year. If we use the current year's value of these variables, we have a potentially simultaneous equation situation, where A depends on B while B depends on A. This does not necessarily apply in all cases; it may be that B depends on A while C depends on B, etc down the chain. This is called a 'recursive' system.

6.40   In the spirit of minimising complexity and avoiding potential computation problems, we are aiming to make it a recursive model. This is achieved partly by the sequence of calculations conducted for each year. Where that is insufficient to overcome the problem, we use lagged values of the variable - generally the value for the previous time period (the previous year in the forward projection). This provides an additional reason for modelling in one-year steps. Important examples of variables for which we used lagged values in the predictor equations for other variables (as well as themselves) include: social sector lettings rate; private rents; vacancies; market flow demand numbers (e.g. numbers moving into rented housing). The relationship of the needs model with the DCLG Affordability model is also recursive. One consequence of the extensive use of one-year lags is that the some variables can show a tendency to change, not in a smooth way, but in a series of steps or a short (two-year) cyclical pattern. This is most noticeable with social renting households and vacancies.

Social renting flows adjustments

6.41   Although the econometric models governing tenure flows provide a first estimate for flows into social renting, a further adjustment is generally necessary in order to balance this with the actual number of lettings available in any particular region and time period. This adjustment is of policy and analytical significance in its own right, as an indicator of 'extra rationing' (compared with the base period).

6.42   We have therefore set up the model to provide indicators of this degree of supply shortfall (or surplus). A parameter is then applied to scale moves into social renting up or down by a proportional amount in each region. Where inflows to social renting are reduced (or increased) in this way, the model now diverts the households involved into the private rented sector. The values of this constraint parameter provide an indicator of the degree of differential rationing of social housing over time and between regions.

6.43   In the baseline scenario, the numbers rationed out in this way are modest in 2004 (20,000) but rise significantly to 2007 (52,000) and 2011-12 (61-63,000). This is an indication of the worsening situation of pressure and supply shortfall. Initially this is mainly an issue in London and the south; by 2009 it is affecting all regions except the NE.

6.44   This allocation constraint parameter is set manually for 2007 and 2009, in order to match observed data for those periods, then via an automated algorithm which applies in the forward forecast from 2010 onwards. This mechanism, described in more detail in Appendix 5 (section A5.10), takes account of the following factors:

- changes in the flow of forecast inflows (before applying any constraint) relative to the supply of lettings (new + outflows)

- social vacancy rates, with a strong effect to resist vacancies going below 2.5 per cent, and a weaker effect to bring vacancies down from higher levels towards 2.5 per cent

- whether there were more or less lettings made than supplied last year

- a minimum value floor of 0.1

6.45   For some regions in some years the rationing constraint is greater than 1.0. This implies that rationing in that year can be less restrictive than it was in the base period. In some instances (e.g. the North East) the figure can get to be quite high (e.g. 1.5). This may be taken as indicative of a state of relatively low demand for social renting in certain regions.

Stock-household reconciliation

6.46   The overall model design also always envisaged that there would need to be a method of reconciling dwelling stock and household numbers for each year and region. This is shown at the bottom of the schematic diagram in Figure 6.6 above. Stock and households are linked by an identity relationship (Households=Stock-Vacancies-Second Homes+Sharing Households-Shared Dwellings) and we have to have a way of ensuring that this is satisfied.

6.47   A relatively simple reconciliation mechanism has been developed, built around the concept of a 'natural vacancy rate' for the private sector. This is set as a parameter (which the user may wish to change), currently 3.5 per cent. If private vacancies fall below 3.5 per cent, on the basis of the initial calculation of flows of demand and supply and the stock adjusted for net additions, a required numerical reduction in households is calculated. This is currently set at one-half of the difference between the trial vacancy rate and 3.5 per cent. If trial vacancies exceed 3.5 per cent, no adjustment is made, however.

6.48   How is this reduction in households achieved? The two main options are to increase sharing or to reduce new household formation (implying a possible increase in concealed households). The evidence from LFS and SEH indicates that sharing has been on a longer term declining trend and is now at a relatively low level. We believe that this reflects structural changes in the private rented sector, with a decline in traditional low quality multi-occupied houses, and accompanied by a greater trend in conversions to create small self-contained units. This decline may also be associated with the trend for more low income single people to be housed in the social rented sector. Therefore, we believe the main adjustment should fall on household formation, with some knock-on effect on concealed households. The following description outlines the process, which is described in more detail in Appendix 5 (s.A5.9).

6.49   The reduction is applied to single person new households going into the private rented sector, with a greater share in the under-30 age group and a smaller part in the 30-59 group. If the numbers in a region are large, these 'ripple out' to affect other groups as well, such as couples aged 30-59 (this is necessary to avoid any household type becoming negative). Small offsetting increases are made in the numbers of 'multi-adult' households in both age groups – this reflects the greater tendency for single persons to live together in such households (mostly not counted as sharing, because they would share either a living room or meals). The final private vacancy and household numbers, in total and in the private rented sector, reflect these adjustments.

6.50   Logically, this adjustment would increase the number of households containing concealed household members, one of our specific need categories. The concealed household incidence in multi-adult households is accordingly increased by the amount of the increase in these households affected by the reconciliation adjustment.

6.51   We also believe there should be some effect on sharing in these circumstances. Therefore we increase the incidence of sharing for single person households in the under-30 and 30-59 groups, but by an amount equal to half of the change allocated by the reconciliation adjustment.

6.52   To sum up, when the private sector vacancy rate falls below the natural rate (3.5 per cent), household formation is curtailed, less households set up in the private rented sector and in total, while backlog needs in the sharing and concealed categories increase somewhat over and above the level predicted by the relevant specific need models. However, this is a partial adjustment which still allows vacancies to be below 4 per cent. Possible impacts on private rents are discussed below.

Temporary or permanent?

6.53   There are downstream consequences to be considered, related to this mechanism. If a temporary shortage of available housing causes an abnormal bulge in the 'backlog' of concealed and sharing households, and reduced new household formation, arguably some of this bulge should be fed back into the household formation process (and removed from concealed and sharing households) in the following period, as supply becomes available. We have now programmed in mechanisms to achieve this, with a 1-2 year lag.

6.54   However, it has been found that, for the model to perform in a stable fashion, only a proportion of these suppressed new households (30-40 per cent) can in practice be fed back in. This would imply that the majority of this deterred of household formation is permanent. However, we do not see a good reason in theory for the deterrence being permanent; economic/behavioural theory implies it would depend on the supply of housing and on affordability. Therefore we include in the model a further facility, whereby the 'pool' of deterred potential households' is carried forward from year to year, and if extra supply (private vacancies) become available then in due course most of those potential households will eventually form.

6.55   It should be noted that this process imparts a degree of path-dependence to the determination of these need categories. In the light of our initial assessment of models for specific needs discussed in Chapter 3, we regard such path-dependence as desirable and consistent with the notion of a cumulative 'backlog'.

Private rents and private renting

6.56   In our original proposal we did not give particular attention to the issue of modelling the behaviour of the private rented sector and of private rents. However, on reflection and as we have developed the model, it has become clear that it is necessary for the housing needs model to address these matters explicitly. There is limited coverage of the issue in the DCLG Affordability model, so this was a further reason for giving it more consideration.

6.57   The private rented sector is disproportionately important for housing needs. Many new and moving households move into or through the private rented sector, and the incidence of most needs is higher in this tenure.

6.58   Private rents should in principle be included in the functions for household formation and tenure choice, and potentially in several of the specific needs models. In practice, the private rent term is not always significant, because it is quite collinear with house prices and/or house price to income ratios. This problem may be compounded by limitations in our measure of private rents. Nevertheless, private rents do feature in the current models for propensity to move, moves to social renting, and three of the specific needs – rental affordability problems, sharing and concealed households (the latter two cases using change in private rents). Therefore it is necessary to have a way of forecasting private rent levels and changes.

6.59   We considered the possibility of trying to estimate a structural model of supply and demand for the private rented sector. However, in practice our attempts at doing this were not satisfactory, perhaps because of a lack of evidence on independent determinants of supply to help identify this function. What proved to be more practical was to estimate a plausible and relatively simple reduced form equation to predict private rents[66].

6.60   The private rent variable used for this estimation was first derived from SEH data over the base period (1997-2006). Observed values were for recent movers into the private rented sector not on housing benefit. A hedonic model was fitted to these data and from this predicted values were obtained for a 'standard' private rental unit: a 2-bedroom flat with no sharing, one bathroom, central heating, no garage and not new. Predicted values for this standard unit were aggregated to a subregional set of areas for each year of the base period. The subregions were large enough to have sufficient observations for this purpose. Each GO region was divided into two or three sub-units, based on whether metropolitan or not and for broad divisions of the regions, giving 21 units in total.

---

[66] A reduced form means a single equation to predict rents, rather than a structural model with separate supply and demand functions assumed to equate in equilibrium.

6.61 Using the aggregated dataset for the 21 subregions over 10 years, we then fitted a simple reduced form equation to predict rent levels. Table 6.1 below shows the resulting model.

Table 6.1: Regression model for private rents at subregional level 1997-2006				
Explanatory variable	*Coeff B*	*Std Coeff Beta*	*t stat*	*signif*
Constant	-32.074		-2.562	0.011
Opp cost cap value * int £pw	0.410	0.574	8.913	0.000
Cap value growth 3yr pa £pw	-0.013	-0.144	-2.595	0.010
Household income £ pw	0.107	0.210	4.753	0.000
Flow demand per cent hhd	7.492	0.369	8.395	0.000
Vacancy rate per cent (priv)	9.085	0.181	4.739	0.000
	Model summary			
	R	R Sq	Adj R Sq	S E Est
	0.871	0.758	0.752	22.464
		ANOVA		
	Sum of Sq	Deg Frdm	Mn Sq	F Ratio
Regression	323047	5	64609	128.029
Residual	102948	204	504.6	Signif
Total	425995	209		0.000

6.62 The average value at 2006 prices for this standard unit market rent is £113.64, with a standard deviation of £45.15 and a range of values at subregional level between £70.40 and £296.93 (Central London).

6.63 This model predicts weekly rent for the standard 2-bed flat and explains three-quarters of the variance. The variables included in the model are as follows:

- the opportunity cost of the capital value of the dwelling times the real interest rate in £ per week

- real capital value growth per annum over the preceding 3 years expressed as £ per week

- real household income expressed as £ per week

- a measure of flow demand in the market expressed as a percentage of households

- the vacancy rate in the private sector as a percent.

6.64 All variables have positive coefficients except the capital growth term which is, as expected, negative. The only coefficient whose sign is not as expected is the vacancy rate.

6.65   The general rationale for this model is that this captures the main expected
        influences on rents from both the supply and the demand sides. On the
        supply side, economic theory suggests that landlords will seek to equate rent
        with their user cost of capital plus running costs. User cost of capital is
        primarily determined by the opportunity cost of the capital tied up in the
        dwelling, with a negative offset for expected capital growth. However, since
        capital growth is volatile and uncertain, it is heavily discounted. This is
        reflected in the small size of the negative coefficient on this term. Running
        costs are likely to reflect real wages, so part of the rationale for the income
        term is to reflect this. On the demand side, consumers' ability to pay will also
        be related to income, providing a further reason for including this variable. A
        flow perspective on the market suggests that the scale of the flow of new
        and moving households in the private market will exert some influence on
        rents, and this is borne out by the above results.

6.66   We would also expect vacancies to exert a negative influence on rent-setting,
        but our results for this period do not support this. A possible interpretation is
        that, in this period, there was significant 'speculative' buy-to-let investment,
        at least in some areas, and this may have led to a tendency for vacancies to
        increase in areas and years where this was more pronounced[67]. This could
        account for the positive relationship between vacancies and rents shown in
        the above model.

6.67   This private rent equation seems broadly robust and in line with expectations,
        except arguably in relation to vacancies[68]. We therefore use this within the
        simulation model, except that we have imposed a relationship with vacancies
        (differences below the threshold 'natural' vacancy rate, taken as 3.5 per cent,
        are now assumed to lead to an increase in rents). Values are predicted for
        each year and region. As noted earlier, this endogenous variable is used in its
        one-year lagged form in the various predictor equations for mobility, tenure
        choice and specific needs.[69]

6.68   Private rents (2-bed flat) expressed as a percentage 'rate of return' on lower
        quartile prices range between 3.76 per cent (2007) and 5.53 per cent
        (2010), settling to a level around 4.2 per cent later in the period in the
        baseline simulation. Rents are forecast to rise in real terms from £119 pw in
        2007 to £163 pw in 2014 and £197 pw in 2021. The rates of return noted
        just above imply that this increase would broadly be 'in step' with prices,
        although in fact the increase 2007-2021 for rents is 3.6 per cent pa above
        inflation, compared with 2.9 per cent for prices. We can say that the increase
        in rents is driven by the increase in both prices and earnings, somewhat
        reinforced by low vacancies and high levels of flow demand.

---

[67] By 'speculative' we mean motivated as much or more by expected capital gain as by earning rental income. This
could account for an unexpected inverse relationship between prices and rents, on the one hand, and vacancy levels on
the other hand. Evidence for this phenomenon in the early 2000s is to be found in Bramley *et al* (2007, 2008).

[68] Consideration of the results in the baseline simulation reported below suggests a possible problem relating to the
positive relationship with vacancies, particularly in later years as private sector vacancies build up but rents do not fall.
We have imposed a different value on this coefficient as well, although this may well not be enough to deal with the
longer term 'rising vacancies' issue.

[69] Use of the predicted private rental values in the simulation presented some problems, particularly in relation to the
predicted mobility functions, and in the case of the owner-occupier and private rental equations the coefficient on
private rents has been set to zero. Evidence from the SEH equations would support this.

6.69   The quantity of private rental accommodation in the simulation derives from the outcomes of the mobility and tenure choice processes. Private renting is the residual tenure after households have been accommodated in social renting (subject to rationing constraints) and owner occupation (subject to affordability constraints). Numbers are further constrained year by year through the stock-household reconciliation process described above.

Forecasting needs

6.70   The final stage of the simulation model entails forecasting need outcomes, given the modelled changes in the system in terms of household and tenure stocks and flows and the associated economic and market conditions. These models work in a similar way to those for mobility. Changes in regional drivers and endogenous variables are applied, using estimated elasticities from the needs models, to predict proportional changes in needs incidence from year to year, which are applied to the previous period's incidence for each household age-type group in each region.

6.71   The models used to predict specific needs were described in Chapter 3. In the course of the research these models were refined to reflect key issues identified. One specific issue was that it was desirable for these needs to exhibit some 'path-dependence', because they are in the nature of a cumulative backlog. We now do this for all of the need categories by including a term for the lagged average value of these variables at sub-regional level. This coefficient was derived by running a second stage estimation of the need model at the subregional level, with composite driver variables derived from the first stage (micro) estimation model[70]. This second stage model also picks up time trend effects where relevant.

6.72   A second concern was that, to make best use of the overall model framework, it was desirable that specific needs should respond to relevant changes in stock and flow variables generated within the model (i.e. endogenous variables). Thus, in re-estimating some of these functions, we have tested and included where significant variables which reflect those changes in market conditions potentially impacting on the need in question. Examples of such variables include private rent levels and changes, social sector lettings, vacancies in the private and social sectors, measures of the balance of flows of households into and out of the market, households in temporary accommodation, numbers within and moving into the private rented sector (where many needs are more concentrated), and migration.

6.73   A third concern was to take account of direct evidence from CORE data (which now includes the LA sector) on the proportions of lettings associated with particular types of need, identified in CORE using the 'reason for rehousing' variable. The coefficients (elasticities) for the lettings supply variable are based on this evidence, rather than the values obtained from the econometric estimation. An additional advantage of this approach is that it enables the model user to test the impact of changing allocation priorities between need groups, including the general balance of allocations towards needs versus other criteria. This facility is illustrated in Chapter 7.

---

[70] Further details of these aggregated models is provided in Appendix 2.

6.74   For the six categories of specific need which constitute the current backlog estimate, we have had to work from a rather broader definition, which does not apply all of the filters considered (particularly relating to age). This is necessary because of data limitations in the base period. However, we apply an adjustment factor to the predicted totals to get back to a level consistent with a more stringently filtered set of definitions. This adjustment factor also discounts for overlap between needs, by an amount established from the base period data. The combined adjustment factor is region-specific but is assumed to remain constant over the forecast period[71].

6.75   Models have been developed for the flow of homeless acceptances and the stock of homeless households in temporary accommodation, as described in Chapter 3. The models are now fitted to data for all local authorities over a 15-year period to 2007. Particular attention is paid to modelling the effects of increased prevention activity. The resulting predicted values used in the overall simulation model assume a constant application of a full set of prevention measures. The temporary accommodation function adjusts this stock incrementally from the previous year's value, using a regression equation fitted to the LA data, but again assuming a flow of new acceptances controlling for active prevention.

6.76   Another new model forecasts the proportion of private tenants on housing benefit (now local housing allowance). This was intended to facilitate links with the 'housing related support' module, but it also helps to complete the picture of households receiving assistance when taken in conjunction with the numbers in the social housing sector. However, it should be reiterated that Housing Support activity and needs estimates are made for only one year, 2007, and not projected forward into the future.

Low cost home ownership

6.77   One other addition to the simulation model should be briefly described at this point. The original model specification did not highlight the intermediate sector (which primarily comprises low cost home ownership) as a specific element to be modelled. However, in discussion with DCLG it became apparent that some treatment of this aspect of affordable housing provision would be of value. This element of the model is described in more detail in Appendix 5 (s. A5.13)

6.78   We had considered the possibility of modelling the potential demand for low cost home ownership and suggested various ways of doing this, one of which is simply to reduce the effective price level to buy using the credit rationing parameter. However, we formed the view that this would not be very useful, except as a way of indicating some sort of upper limit on this policy. Exploration of the tenure choice models suggested that it would be difficult to capture the exact nature of the low cost home ownership offer, in terms of access to capital gains, deposit requirements and so forth. In reality, current and prospective levels of low cost home ownership provision fall well short of this theoretical maximum.

[71] It could be argued that the ratio reflecting overlap and filtering may vary, when applied to changes at the margin, compared with its average value in the base period. It is a bit difficult to speculate as to the direction of bias here. Overlap is likely to become more prevalent as needs increase, whereas less of the additional households might be filtered out because of factors such as preferences.

6.79   Therefore, what was proposed as more useful was a way of modelling the impact of a given level of provision, assumed to be below the theoretical maximum demand. The aim is to trace the effects of this provision on (a) tenure flows through the system, and (b) housing need. The evidence base for this exercise is primarily data from the CORE sales log for 2006/7-2007/8 provided by CLG. This gives a good profile of the takeup of the main relevant types of low cost home ownership (Shared Ownership, New Build Homebuy, SO resales and Open Market Homebuy, now Homebuy Direct).

6.80   We are able to tabulate the profile of takeup in terms of the age-type of household, region, previous tenure (including new households), and some direct or indirect indicators of previous housing need (although this is limited/incomplete). In view of numbers of cases, we group regions into four broader groupings (North, Midlands, South, London).

6.81   We have a good fix on the previous tenure of low cost home ownership cases by age-type of household and by broad region. This can be used to drive the tenure flows part of the model. It is necessary to make judgements about new households entering low cost home ownership: how many are additional newly forming households, how many are households which would have formed anyway but are diverted from social renting or private renting. These proportions are input as user-controlled assumptions, currently set at 50 per cent, 20 per cent and 30 per cent respectively.

6.82   For the need impacts, we make a number of assumptions and inferences, varying according to the category of need. These are informed by reference back to earlier studies as well as use of the CORE data[72].

6.83   Overall, the estimated share of cases having one of the six need categories used in the model adds up to 36 per cent, which may be equivalent to 23.4 per cent after allowing for overlap and filtering. The largest category is concealed households, followed by rental payment difficulties and crowding. This is rather below the estimates in the previous studies, but that is expected given that low cost home ownership programmes have become more focused on key workers, who are less likely to be in need. We also do not predict variations in need incidence between regions, as this is not apparent from the data and would be explained by (a) the greater prevalence of key workers in the south and (b) the disproportionate targeting of the programme on the south.

6.84   We can estimate the direct needs reduction impact from these data. The full simulation includes both this effect and any consequential second order effects from the tenure changes (e.g. reduction in private renting, increase in social lets). It should be noted that 10 per cent of low cost home ownership purchasers come from the social rented sector, and these release an extra letting to someone who is likely to be in need.

---

[72] Fuller details are provided in Technical Appendix 2. The previous studies referred to include Bramley *et al* (2002) and Morgan *et al* (2005).

6.85   The model, as implemented, assumes (a) low cost home ownership ('intermediate') provision leads to people becoming owner-occupiers; (b) all low cost home ownership buyers are additional buyers; (c) the low cost home ownership provision is either Open Market/Homebuy Direct or, if new build, effectively a diversion of part of the given private sector supply line; (d) no change in market prices. If users want to vary assumption (c) by making (some of) the low cost home ownership an addition to new build, they would need to run this extra new private build through the CLG Affordability model and use pasted results from this in the EHN model.

Controlling and running simulations

6.86   The spreadsheet model is set up to enable users to control a range of parameters and then to look quickly at the main results gathered together in one place. There is a sheet in the workbook called 'Control' which is the place where the parameters can be changed. There is another sheet (called 'Results2') where at the top a national summary table provides key outputs from the current model run over the simulation period, differences from the baseline values, and a series of tables with some associated charts providing more detail for selected years, regions, tenures and household age-types. Below this on the same sheet, the results of the baseline run and a series of variant scenarios are pasted for comparison. A set of charts show timelines for key outputs in the baseline at national level.

6.87   Another sheet in the workbook called 'Guide' provides a guide to what is contained in each of the component sheets and where it is located on those sheets. This also contains basic instructions on the normal sequence involved in running scenarios. This is slightly more complicated for scenarios involving changes in supply or certain economic variables, which have to be first run through the DCLG model and then have the results of this pasted into appropriate sheets in the EHN model. Altogether, the current workbook contains 31 sheets, including fourteen referring to individual years and a number of others containing tables of background evidence on needs, household composition and changes and many of the predictive models used. These are more fully described in Technical Appendix 5.

6.88   The Control sheet contains values for a number of parameters which can be set or changed by the user, and associated information to help with this task. Some of these parameters relate to policy inputs or assumptions; others are technical parameters required to enable the model to run in a satisfactory fashion. The latter may be based on judgement or informed by indirect evidence.

6.89   Examples of '*policy*' parameters subject to user control are:

- new social supply profile (relative to base from DCLG model)[73]

- low cost home ownership supply

- profile of unemployment relative to baseline

---

[73] Normally both social and private supply should first be entered in the Reading model and reseults carried across to EHN model. This parameter enables a direct change to be made within the EHN model, but such a change will not capture the full market effects.

- level of Right-to-Buy sales profile relative to baseline (from DCLG model)
- level and profile of net migration relative to baseline (from DCLG model)
- variation in regional allocation of new social housing provision, relative to baseline
- level of priority in social allocations to different household age-types, relative to baseline
- level of priority in social housing allocations to the six main need groups relative to baseline (with a residual category, 'other or none')
- variation in regional allocation of new low cost home ownership provision relative to baseline.

6.90 Examples of '*technical' parameters* subject to user control are:

- level and profile of the shadow price of credit rationing
- adjustment to effective interest rates to reflect abnormal conditions immediately following Credit Crunch
- natural vacancy rate in the private sector
- sensitivity of private rents to private vacancy rate below natural rate
- proportion of backlog in deterred household formation added back to new formation in the following two years, and proportion of pool added back in later years when vacancies are higher
- base period adjustment and trend parameters for household formation
- household dissolution adjustment in initial year
- tenure relativities in household dissolution rates
- proportions of new households buying low cost home ownership who are additional new households, diverted from social renting, or diverted from private renting

Box 6.l

Examples of model impacts

This box presents two examples which trace the effects through the model of changes in key inputs on housing needs and other housing outcomes. The discussion focuses mainly on the national level, although in some cases the effects are different across regions.

Example 1: Higher new supply

This example is that of a moderate increase in the supply of both social and private housing, as identified in Chapter 7 (Table 7.1 (col 3) and paras 7.32 & 7.42). In this scenario, new social rented provision is increased progressively to 40,000 units per year, 24,000 (140 per cent) above baseline, while new private additions rise progressively to 223,000, 37,000 (20 per cent) above baseline. Over the whole period from 2009 to 2021 an additional 200,000 social units and 293,000 private units are added to the stock.

This increase in supply would have a gradual (longer term) effect in reducing the house price: income ratio. The reduction would be 0.03 in 2014 and 0.32 (3.8 per cent lower) in 2021. These results come from the CLG Affordability Model.

A consequence of this longer term improvement in affordability would be a modest absolute increase in the number of owner occupiers. There would also be effects on household formation and needs, as described below.

The extra social rented additions would feed directly into additional social lettings and a growth in the overall size of the tenure.

The improved affordability and also the increased social lettings would both contribute to increased new household formation. Household numbers would grow both because of this effect and also because there would be rather more slack in the private sector, with slightly more vacancies. This would have the effect of reducing the number of would-be new households in the private rented sector who would not be able to find separate accommodation and who would therefore have to either share or live with others as concealed households.

This is one direct way in which increased supply would reduce backlog needs. Another relatively direct route is that social sector lettings go predominantly to households in need. The model assumes, based on CORE data (for 2007-08, and assuming unchanged allocation priorities), that of every 100 new lettings, 29 go to concealed households, 12 go to overcrowded households, 13 go to unsuitably housed households, and so forth.

In addition to these direct effects, the predictive models for needs pick up further indirect or subsidiary mechanisms by which needs are affected. These models show that affordability (prices relative to incomes) affects all categories of backlog need to varying degrees, with a relatively strong effect on mortgage difficulties, overcrowding and concealed households. This effect would come mainly in the later part of the period.

Private rents would be marginally lower under this scenario and this would have some effect on rental affordability. The lower proportionate share of private renting (particularly in the south) would reduce rental affordability problems and also sharing and concealed households. The more favourable balance of flow demand vs supply for rented housing and the slight reduction in homeless temporary accommodation would both reduce sharing and overcrowding slightly. *(continued)*

The overall effect on reducing backlog need would only build up slowly, reaching -38,000 (-2.1 per cent) in 2014, -90,000 (-5.3 per cent) by 2017 and -185,000 (-11.2 per cent) by 2021. The largest element of this reduction would be in concealed households (-77,000 or -14 per cent), but there would also be sizeable reductions in sharing (-45,000, -17 per cent) and overcrowding (-47,000, -11 per cent).

Example 2: Extended credit rationing

Chapter 7 shows that, following the 'Credit Crunch' of 2007-09, the extent and persistence of credit rationing in the mortgage market would make a major difference to need outcomes. We describe here the way the scenario of 'higher and more persistent credit rationing' would affect modelled need and other outcomes.

Credit rationing entails the use of more restrictive terms in mortgage lending, for example the requirement for large minimum deposits. The model takes account of this by applying a parameter called 'the shadow price of credit rationing' to the affordability (price:income) ratio. This expresses the effect of the credit restriction as an equivalent price adjustment, i.e. the amount the price would have to change, in normal circumstances, to achieve the same reduction in demand.

In our baseline forecast, we assume that this credit rationing parameter takes a high value in 2009 (1.9), but falls back quite a lot by 2011 (1.35) and back to a level just above the base period (1.10) by 2015. The 'high/persistent credit rationing' scenario has a peak value of 2.0, a value of 1.65 in 2011, and only drops back to 1.20 by 2016. So in 2011 affordability is effectively 22 per cent worse than in the baseline.

Social lettings would fall by around 10,000 a year (6 per cent) in the early period, but this reduction would be smaller, about 5,000 a year later. This is because fewer people would be able to afford to move out of social renting into owner occupation.

Fewer people would be able to afford to buy so owner occupation would actually decline in absolute numbers, particularly in the years 2010-15, with a quarter of a million less owners by 2021. Private renting would expand by even more than this, particularly in the earlier part of the period, as people were diverted from the other tenures.

Overall household growth would not be very different over the whole period, but there would be pressure on the private rental stock in the early part of the period, leading to more concealed and sharing households.

Because of the effective cost and availability of credit, and because of the pressure of demand, private rents would rise by between £13-£27 per week (8-16 per cent). This would affect housing need, particularly rental affordability problems

The worse effective affordability ratio would increase all needs, to varying amounts, with the largest relative effect on rental affordability difficulties, and a substantial effect on overcrowding, mortgage difficulties and concealed households, and smaller effects on other needs such as unsuitable accommodation and homelessness.

The shift of more households into private renting would increase needs generally, particularly rental payment difficulties but also sharing, concealed households and other needs to a smaller extent. Recent movers into private renting have a higher incidence of sharing, concealed households or crowding, as well. The estimated balance of flow demand to move into rented housing relative to the flow supply also affects sharing and crowding. *(continued)*

Needs would increase quite sharply in the early period. For example by 2011 needs would be higher by 258,000 (14 per cent). Proportionately the sharpest increase would be in serious mortgage payment difficulties (+30 per cent), but in absolute terms the number would be less substantial (28,000) than the increases in concealed households (82,000, +14 per cent) and overcrowding (77,000, +17 per cent).

Backlog needs persist from year to year, but to varying degrees; overcrowding, concealed households and unsuitability are more persistent than rental payment difficulties and sharing, for example. This affects the pattern in later years of this scenario, when the affordability effects lessen. By 2017, the overall backlog need would be 167,000 (10 per cent) higher than in the baseline. Serious mortgage difficulties would have fallen back to only 10,000 (+12 per cent) above baseline, whereas overcrowding would remain 53,000 (+13 per cent) above baseline.

Conclusions

6.91   We have developed a spreadsheet-based simulation model which integrates the outputs of the main elements of the research within a framework which projects forward the evolution of the English housing system at regional level given specified economic, demographic and policy scenarios. The principal outputs of this simulation model are (for each region):

- the size and household composition of the main tenure groups at future dates

- the incidence of a range of specific need categories at future dates

6.92   The model can be represented at a high level in terms of a structure with five main modules covering household change, the housing market, tenure flows, specific needs and overall simulation. Each of these can in turn be represented schematically in greater detail.

6.93   Base period data for the model are derived primarily from the SEH pooled over 11 years to 2007/8, supplemented by data from LFS (1992-2008), BHPS and CORE. Processes and outcomes are modelled at the level of 12 household age-type groups by three main tenures and 9 regions, and conditional forecasts are made annually for 2009-2021.

6.94   We demonstrate significant differences in the household profile of both tenures and regions and, in particular, highlight the substantial differences in needs incidence between household groups, and between London and the other regions.

6.95   The basic model operation is described, highlighting the interaction of household composition changes with the effects of changes in regional socio-economic and market drivers, using the results of the earlier econometric modelling to quantify these effects. Tenure flows are generated using the sequential approach to modelling developed in Chapter 5, while needs are forecast using the models described in Chapter 3. Endogenous variables within the model are generally accommodated through a recursive structure and/or the use of lagged values.

6.96   The EHN model operates by taking forecasts for a number of variables from the DCLG Affordability Model. Both models contain adjustments for the current episode of credit rationing. Some limitations on the ability to model labour market changes are noted.

6.97   Semi-automatic mechanisms are incorporated to ration social housing inflows to available supply, and to reconcile total household and stock numbers in the private sector. These have various feedback effects on household formation, tenure numbers and on needs, and reveal particular pressures on the housing system in the recent period.

6.98   A method of forecasting private rents is developed, so that the effects of rents on certain tenure flows and needs can be incorporated in the model. This is reasonably robust for the purposes of the main model although one aspect (the link with vacancies) is changed on the basis of judgements about how this would operate under normal conditions.

6.99   Consideration of the requirements of the needs forecasting model led to modified approaches in some elements of the models derived from Chapter 3, to better reflect path dependency (or the cumulative nature of need backlogs), tenure flows, and direct evidence on the needs of new social housing tenants. An additional feature included in the final model is an ability to simulate the impact of low cost home ownership provision on needs and tenure flows.

6.100   Brief reference is made to the structure of the spreadsheet model, and in particular attention is drawn to the range of policy and technical parameters which can be changed by users and the way in which summary results are presented. Illustrative examples are provided of how the effects of changes in certain key inputs are reflected over time in changes in housing need and other outcomes.

Chapter 7

Modelling housing need scenarios

Introduction

7.1   The preceding chapters have set the scene by presenting the evidence and analysis on how the housing system behaves and what determines particular outcomes, and describing the approach developed to simulating the operation of the system as a whole. This chapter now proceeds to present our main findings from the application of this simulation model, which are in effect the key outputs of this research.

7.2   The simulation model produces what may be termed 'conditional forecasts' of housing outcomes. They are forecasts, rather than simple projections, because they are based on a set of behavioural relationships and not just on extrapolations from the past. But they are conditional on many assumptions, about the external economic environment for example, as well as about the robustness and continuance of relationships established on past data.

7.3   The findings fall into two broad groups. The first constitute the key features and outcomes of our 'baseline' scenario, which is what the model predicts will happen under assumptions which could be characterised as a best guess of future conditions, relatively neutral assumptions which might be described as 'carrying on as we are'. The second part looks at the impact of varying key assumptions about policy or the economic environment.

Baseline scenario

7.4   National baseline forecast results are presented mainly as time series charts, with bar charts used to show some regional and household type profiles[74].

Supply and affordability

7.5   The baseline supply scenario[75] is shown in Figure 7.1. Private net additions were rising gradually during the 2000s, up to 2007, but they then fall steeply following the Credit Crunch, to under 100,000 in 2010, before recovering to (almost) 2004 levels in 2013 and to a level somewhat above recent output by 2014, levelling off thereafter. Private output is shown as relatively static, to facilitate comparisons of different levels of additional output[76].

---

[74] The time series charts show 'actual' past values for '1999', '2004' and 2007, where the former two years' values are based on pooled data over 5 years while the latter is based on a mixture of actuals data for that year and model estimates. All figures from 2009 on are model forecasts. Fuller tabular data on scenario outputs is included in Technical Appendix 6.

[75] These scenarios are not forecasts of future supply. They are used to illustrate how the housing needs model interacts with the DCLG Affordability model at a practical level.

[76] This is lower than current government plans, which envisage a rise from 17-20,000 in the base period to a level of roughly double this (c.35,000) from 2013.

Figure 7.1: Private and social supply net additions
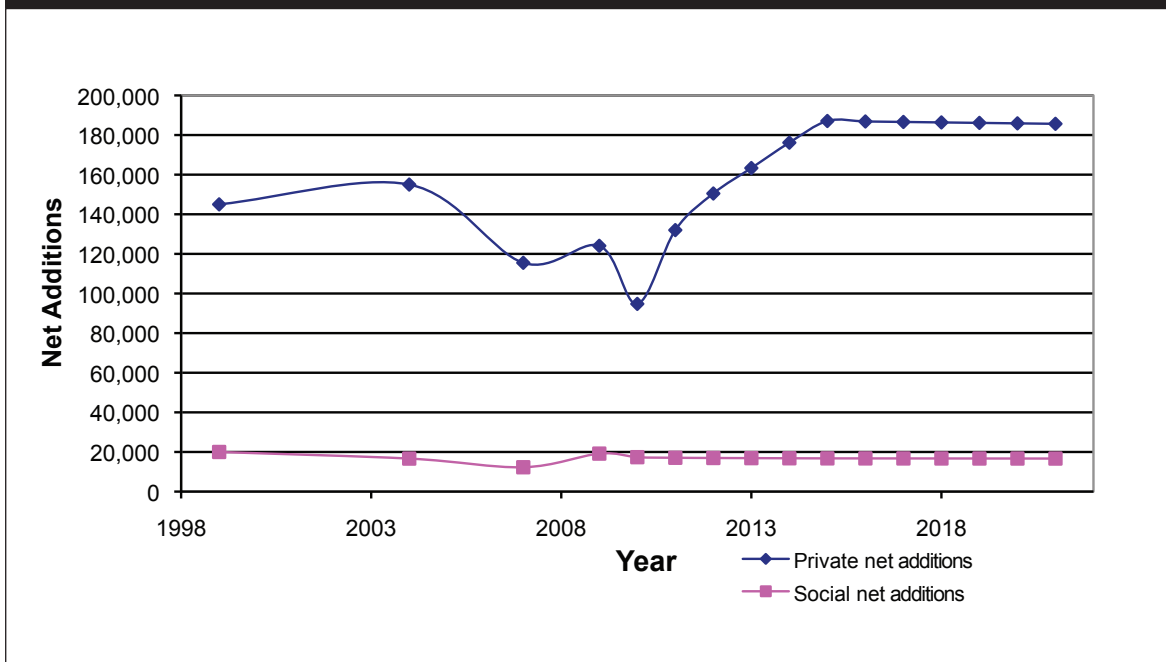
7.6   The plateau level of supply in this scenario is around 203,000 net additions for both sectors together after 2015. This is below the Government's previous 240,000 target and the recent household projections (262,000), but above recent actual performance in most years.

7.7   HPIR or house price:income ratio ('affordability') rises (i.e. deteriorates) from 4.29 in 1999 and 6.26 in 2004 to 7.18 in 2007 and 11.52 in 2009 (Figure7. 2). But it should be noted that the latter figure is after applying the shadow price of credit rationing adjustment[77]. It then falls to around 8.2 in the period 2011-12 before climbing gradually to 9.25 in 2021. These changes reflect the interactions of lower income growth, credit rationing, and supply fluctuations, and are all derived from the CLG Affordability model.

---

[77] The observed affordability ratio would be 6.06.

Figure 7.2: Adjusted affordability ratio (adj for credit rating)
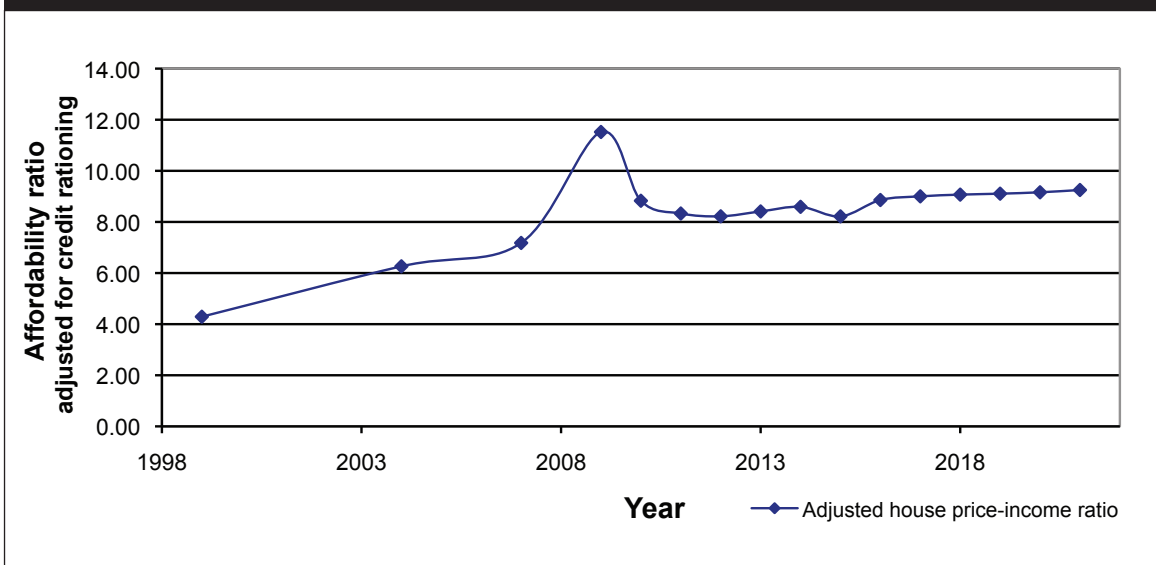
Figure 7.3: Private market rents
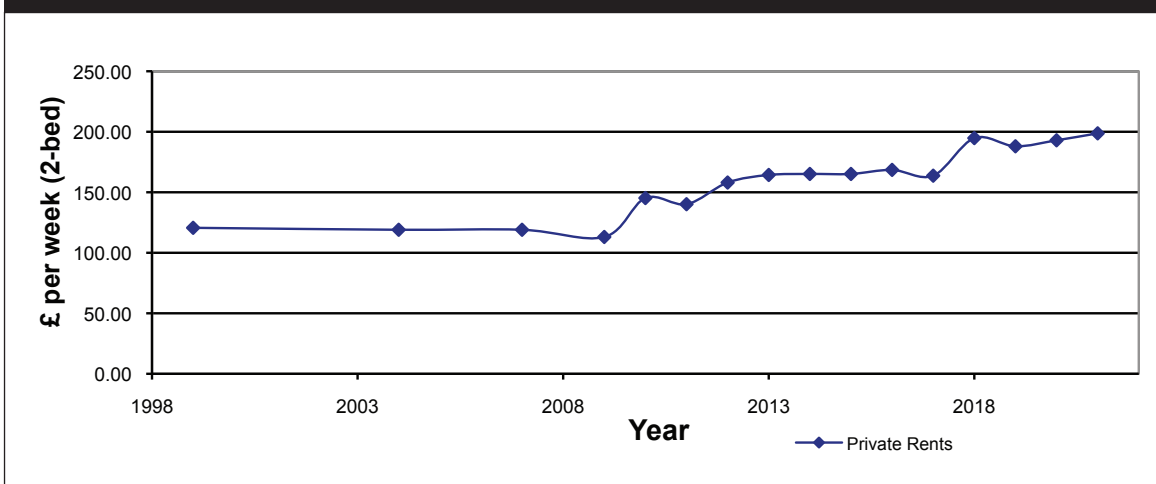
7.8   Real private rents were relatively static or falling slightly up to 2009. They are forecast to fluctuate a bit but on a gradually rising trend, reaching a level of nearly £199pw, 65 per cent above 1999 (or 2007) in real terms (Figure 7.3). Recent evidence is consistent in showing a fall in actual rents in the last year following relatively low growth rates (similar to earnings) in the preceding few years The reasons for the falling/static rents include the big fall in prices and the very low income growth in the early part of the period. Rising prices and incomes and rising demand are primary drivers of later forecast rises in rents[78].

---

[78] It was not a primary aim of this research to forecast private rents, but it emerged as a useful and probably necessary element in the overall model. The rental forecast model is described in Chapter 6 and Appendix 5 and provides a reasonably-fitting and logical account of rent patterns and changes at subregional level. However, this model has its limitations, particularly in terms of inputs relating to supply side influences.

Household growth

7.9   Household growth is forecast endogenously in this model, and clearly diverges substantially from the official household projections after 2004 (Figure 7.4). Annual growth drops to a low level in 2010, fluctuates around 150-170,000 until 2016, before climbing back up to around 180-200,000 in 2017-21. The sharp drop in 2009-2010 is an inevitable consequence of the sharp drop in net additions to the dwelling stock, given the identity relationship between stock and households.

Figure 7.4: Past and forecast household growth
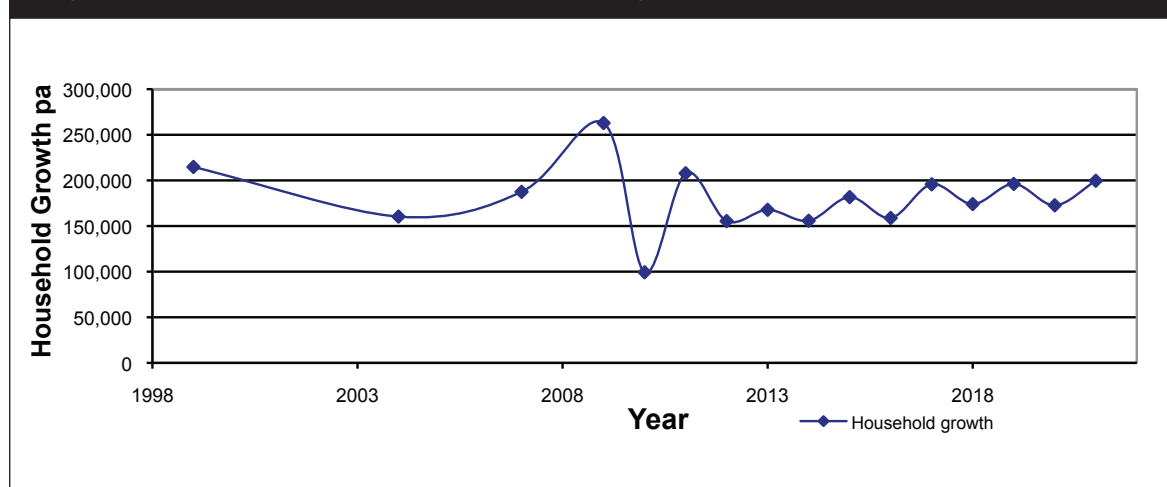
7.10   Over the whole period 2002-2021, household growth averages 175,000 p.a. which is clearly well below official projection levels, but is the same as the feasible growth suggested by net dwelling additions (174,000). The forecast rates of new household formation, reflecting factors of income growth, affordability, social lets and other factors, are generally rather above the 500,000 p.a. level, but depressed somewhat in certain years (especially 2007-09, also 2016-18). Figure 7.4 shows that net household growth drops sharply in 2010 and is relatively low in the period 2012-16[79]. We believe the underlying model for household formation is sound, and that one can account for the reduced rate in terms of key drivers, plus the logical operation of the dwelling-stock reconciliation[80].

7.11   In the short run, it is an inevitable consequence of reduced supply that actual household growth must be constrained. This is reinforced by our view that the scope for increases in sharing is limited. The medium term prospects may be more arguable. However, what the model is saying is that, even in the medium term, there is a persistent problem of supply shortfall in most regions, so that new household formation continues to be suppressed in those regions. In the baseline, that situation pertains in most regions for most years.

___

[79] The main reason for depressed household growth in those years is the shortfall in new supply, associated with the Credit Crunch and the recession, but reinforced by the direct effects on new formation of credit rationing (effective affordability) and by depressed income growth. The reasons for the smaller cyclical fluctuations post-2012 are the effects of lags in the model.

[80] As noted in Chapter 6, the final version of the model contains mechanisms to 'feed back' potential households, deterred from forming by a lack of supply in one year, into the gross formation flows in later years.

Tenure change

7.12   Figure 7.5 shows net changes in the size of the three main tenures. Owner-occupation growth actually fell in the recent period and may actually go negative in 2009, but generally tends to show substantial net growth in later years; this reflects lower prices and the easing of credit rationing from 2010. However, this is not sufficient to increase the homeownership share, which flatlines at just below 67 per cent in the later period.

Figure 7.5: Annual change in forecast household growth by tenure
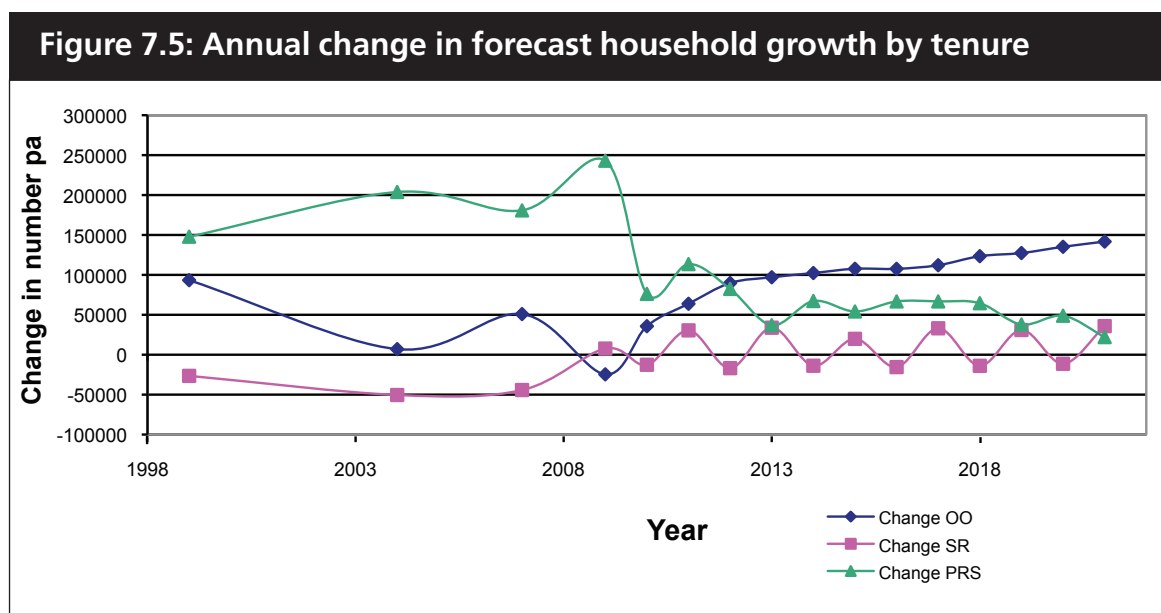
7.13   Social renting moves from a previous decline to a neutral or slightly positive position after 2010, as new provision equals or exceeds RTB sales (which remain subdued)[81]. The year-to-year fluctuations in Figure 7.5 reflect the lagged adjustments to rationing constraints for the sector.

7.14   Private renting numbers increased significantly in the period 1997-2006, and this is forecast to have continued until the present time. However, this drops significantly from 2010, with moderate positive private rented sector growth, particularly in the period 2014-18, but declining at the end of the period. Private renting changes tend to be broadly the mirror image of owner occupation changes, but are also affected by the stock-household reconciliation constraints.

---

[81] Right To Buy sales are estimated for the base period by region and household age-type using SEH data. Year-to-year changes in expected RTB numbers by region are drawn from the Reading model forecast. Latest CLG figures in fact show that in the recent exceptional market conditions, RTB sales have virtually ceased. The combined total for LAs and RSLs for 2008/09 was under 4,000 as compared with 84,000 in 2003/04 and 22,000 in 2006/07 (Chart 671 – CLG Live Tables).

Social sector supply

7.15   New social lettings (i.e. net relets plus new supply, or lettings to new tenants[82]) were much higher in 1999 than in later years, falling from 300,000 to 247,000 in 2004, about 188,000 in 2007[83] and forecast to be 159,000 in 2009 (Figure 7.6). Actual recent evidence of falling lettings is reasonably consistent with this. The forecast is for a slight recovery to 175,000 in 2010-12 before lettings fall back progressively to a level of only 150,000 in 2021. This relatively low supply is a concerning prospect, suggesting that future social lettings supply may be not much more than half the level experienced twenty years earlier. Worsening affordability and the declining share of younger households in social renting account for this change.

Figure 7.6: Net social lets
(excluding moves within sector and supporting housing)
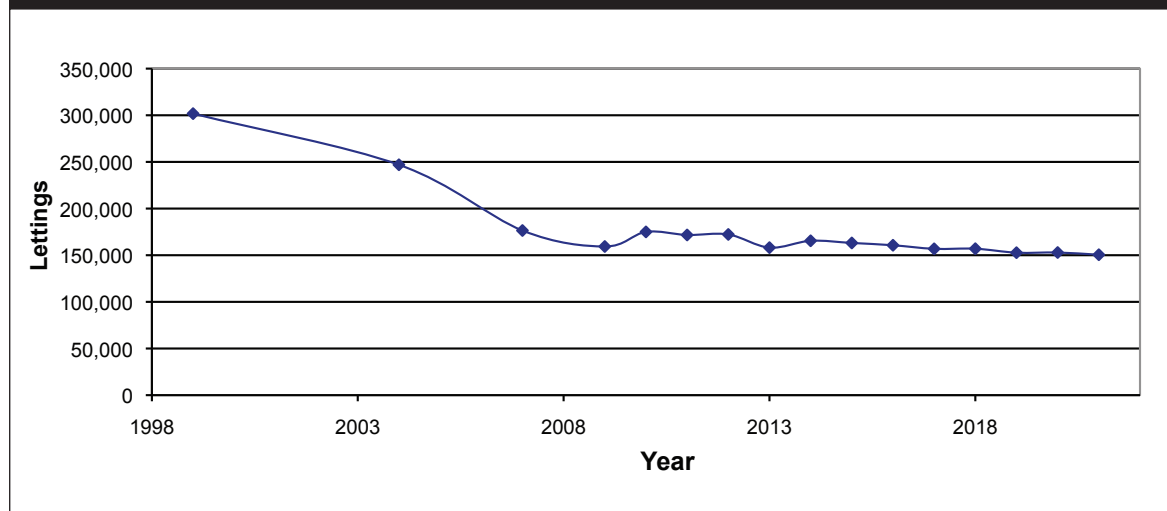
7.16   Figure 7.7 shows the number of extra households 'rationed out' of the sector each year by the model's rationing mechanism, compared with the average level of rationing in the base period 1997-2006. This rose from only 5,000 in 1999 to nearly 20,000 in 2004; 53,000 in 2009 and a peak of 63,000 in 2012, before falling gradually back to lower levels at the end of the period.

---

[82] Net lettings are of general needs accommodation excluding most supported housing and moves within the social sector.

[83] Based on S.E.H.; CORE and HSSA show slightly higher numbers but may include some counting of moves within the social sector.

Figure 7.7: Households rationed out of social sector (relative to base period)

Number of households pa
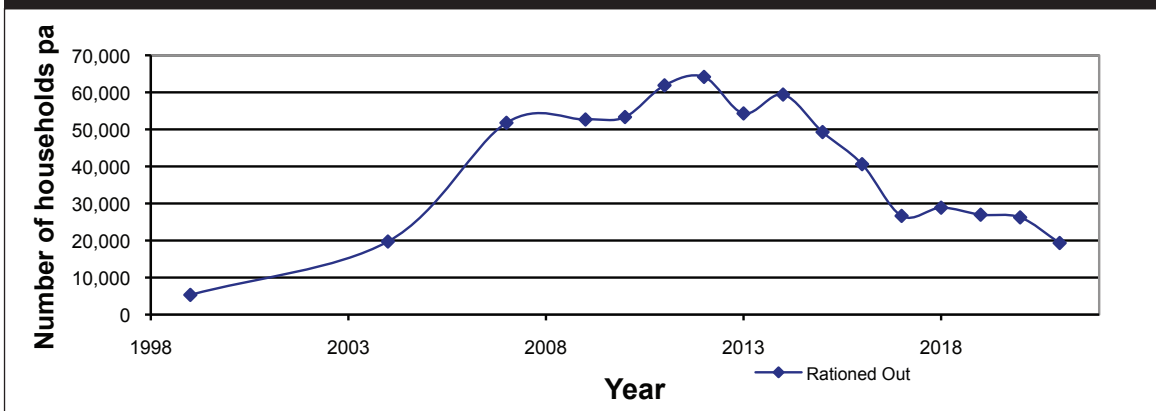
Backlog need

7.17   The next output considered (Figure 7.8) is probably the single most important output of the model. This shows the estimated total backlog need in each year, and its breakdown between types of need. The total stood at 1.24m in 1999 and 1.29m in 2004 (6.1 per cent of households), rising to 1.61m (7.3 per cent) in 2007. By 2009 it is forecast to have risen to 1.99m (8.8 per cent). This rise in need would be substantial and significant, an overall increase of 54 per cent in five years. Such a rise is, however, consistent with a range of recent evidence[84].

Figure 7.8: Type of need profile over projection period
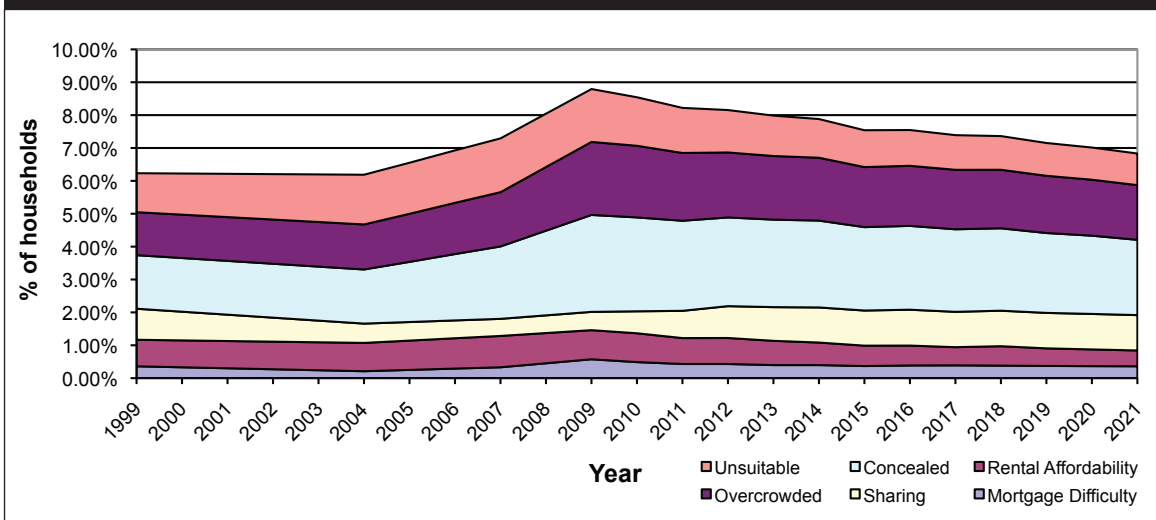
7.18   The forecast is then for a slow reduction in backlog need through the rest of the forecast period, reaching a level of 1.64m, (6.8 per cent) by 2021. The basic story is that market conditions and supply shortages have generated, and may be expected to generate, a substantial increase in the incidence of needs (or the 'backlog') over the last five years. The increase mainly takes the form of concealed and sharing households, overcrowding, and mortgage difficulties.

---

[84] The figures for 2007 are our best estimate of actuals, on a consistent S.E.H.-based definitional basis, but triangulated against other survey sources including LFS and EHCS – see Appendix 2. The figures for 2009 onwards are forecasts.

This is driven primarily by worsening affordability, including the recent effects of credit rationing, exacerbated by the recent downturn in supply. The level of supply and other conditions in this baseline scenario, although recovering to levels similar to the period 2005-07, are barely sufficient to achieve a reduction below base period levels over the following 12 years. There would still be more households in need in 2021 than there were in 2004, and about the same number (although a lower percentage) than in 2007.

7.19   The moderate reduction in need forecast for 2010-2015 is driven by some fall in price: income ratio and the assumption that credit rationing is significantly eased (but not completely eliminated), together with an assumption that output recovers reasonably quickly towards previous levels. It would of course be possible to make more pessimistic assumptions on these key drivers. Although supply does not match official household projections, there is not a one-for-one relationship between suppressed household formation and additional need as defined here. Many of the people involved would simply be living with families for longer, and many of these would not be counted as concealed households as defined here, and not necessarily overcrowded, except in some instances.

7.20   All of the need categories show increases in the recent and current period, but it is noteworthy that the largest increases are in concealed households, followed by overcrowding. Mortgage difficulties increase sharply in proportional terms between 2004 and 2009, but remain smaller in absolute scale and fall back from 2010 as affordability and credit rationing ease. Concealed households and sharing increase sharply as a result of the absolute shortage of supply around 2009-2010, as well as the adverse affordability conditions. Overcrowding is mainly affected by the adverse affordability conditions. In the later period, most categories tend to decrease but there is an increase for sharing, mainly due to the household-stock reconciliation process, and there is a fair degree of persistence in concealed household and overcrowding problems. At the same time, rental affordability problems and unsuitability categories of need appear to fall quite markedly[85].

Homelessness

7.21   The model includes homeless acceptances and temporary accommodation (Figure 7.9), but it should be noted that these numbers are as estimated on the basis of a constant application of a full range of prevention measures. On this basis, homeless demand would have risen by 18 per cent between 1999 and 2009-11, then falling very gradually back to its original level. However, the variation is within a quite narrow range.

---

[85] The negative trend of unsuitability and the positive trend for overcrowding are evidenced from aggregate subregional needs regression models. It is less clear what lies behind the rental affordability trend and how realistic this is, particularly in the light of policy changes including the Local Housing Allowance. Factors within the model include quite a strong negative effect from future income growth, with only a modest offsetting effect from house prices and the fact that private rental growth itself is not that steep. In addition, the estimated 'persistence' of backlog need in this case is very low. There is a case for further research into both the measurement and the modelling of rental affordability problems, probably using different data sources and possibly linked to studies of poverty and income distribution as well as work on the housing benefit/local housing allowance system.

[86] The current baseline may understate the extent to which temporary accommodation may be reduced, particularly if authorities target more lettings on this group, as allowed by a parameter within the model.

7.22 However, given this flow of new cases accepted, temporary accommodation cases, after peaking at 84,000 in 2004, would fall significantly, by about 25 per cent to 63,000 in 2009, before rising gradually again to 82,000 by 2021[86].

Figure 7.9: Homeless acceptances and in temporary accomodation
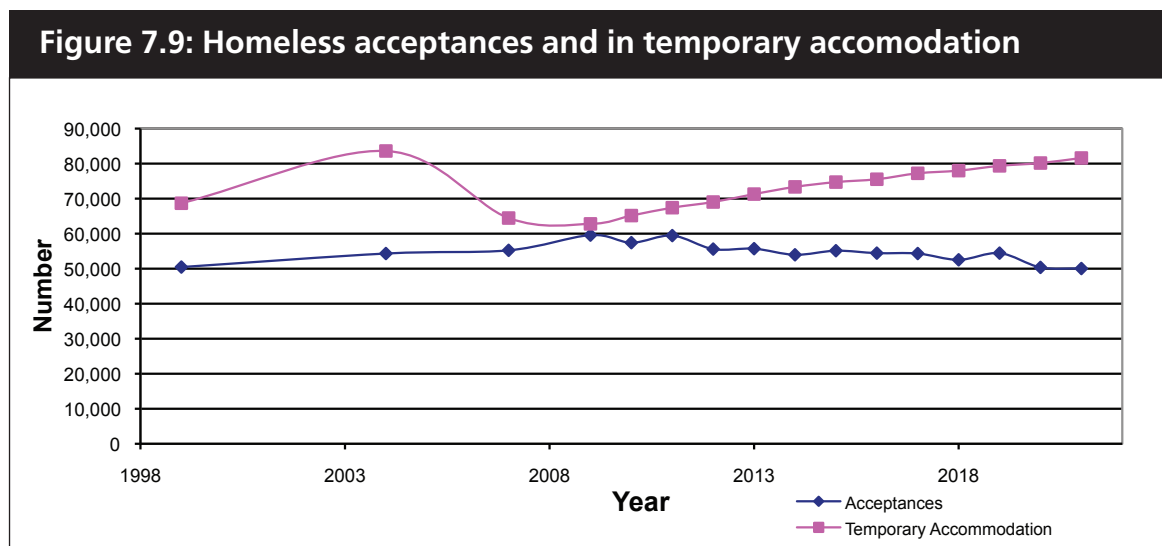
7.23 Private renters on housing benefit (local housing allowance) are estimated to account a fifth of the sector (21 per cent) in 2009, up from 19.4 per cent in 2004. The forecast is for slight fluctuations with a minor reduction to 19 per cent by 2021[87]. Basically, with the current model this indicator moves in a fairly narrow range (but responding in relevant tests to unemployment rates). Similar comments apply to the proportion of total households 'assisted'.

Vacancies

7.24 The model also forecasts vacancy rates in the private and social sectors; these outcomes are closely linked to the social rationing and overall stock-household reconciliation processes. The social sector rate tends to fluctuate in the 2-2.7 per cent range, while the private sector rate shows signs of increasing slightly in some regions later in the period. Further consideration may need to be given to whether the model has realistic-enough adjustment mechanisms to prevent large upward movements in private vacancies[88], although in the scenarios tested this is not really an issue as dwelling growth remains below potential household growth.

---

[86] The current baseline may understate the extent to which temporary accommodation may be reduced, particularly if authorities target more lettings on this group, as allowed by a parameter within the model.

[87] Based on SEH data; DWP data suggest the proportion is higher, as noted in Chapter 4.

[88] It should be noted in this context that there is no explicit separate modelling of demand and supply for private lettings, only a single function for private rents.

Baseline results by tenure, region and household type

7.25 It is useful to look at these baseline results for key outcomes at regional level, in order to highlight key patterns and change. Although all regions see an increase in the price:income ratio over the whole period 2004-21, this is higher in the southern regions and London, and also the North West, and lower in the Midlands.

7.26 It is perhaps interesting to compare tenure mix forecast at the end of the period with the output of the DCLG Affordability model in the baseline scenario. Although in 2021, the tenure shares from our model are somewhat different to those from the DCLG model (-3.1 per cent own, +1.2 per cent social, +1.7 per cent private), some of those differences were already in place by 2009[89].

7.27 Figure 7.10 looks at home-ownership rates by region at three points in time. All regions see a fall from 2004 to 2009. In the period up to 2021 there is an interesting divergence, with several northern and midland regions, plus London, seeing an increase in home-ownership, while the southern regions see a slight further reduction. This would mean some convergence in homeownership rates.

Figure 7.10: Home-ownership by region, 2004-2021

---
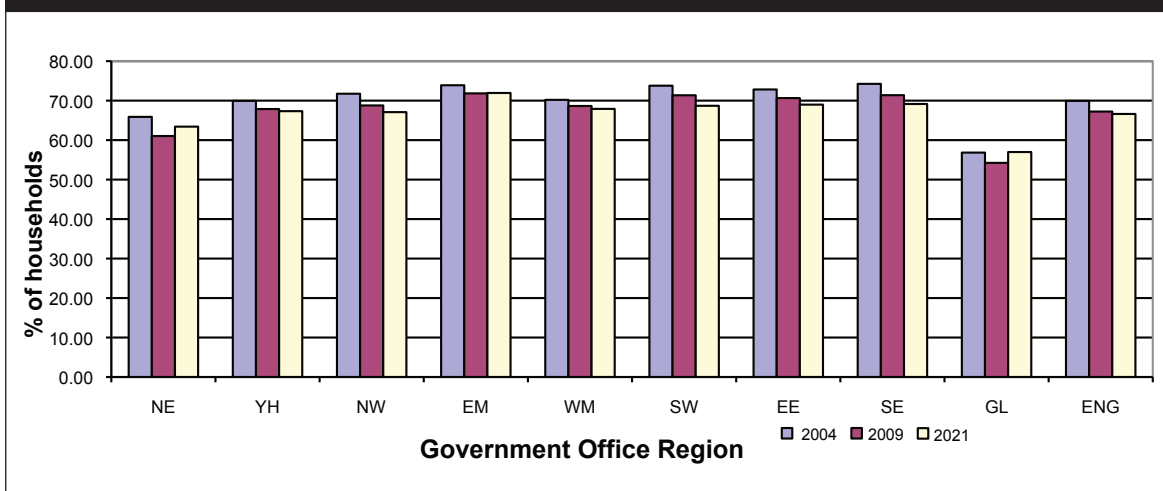
[89] These differences may reflect the supply constraints in terms of private housing stock, which more directly affect tenure outcomes in our model, and also the assumptions made about credit rationing.

Figure 7.11: Profile of backlog need by region
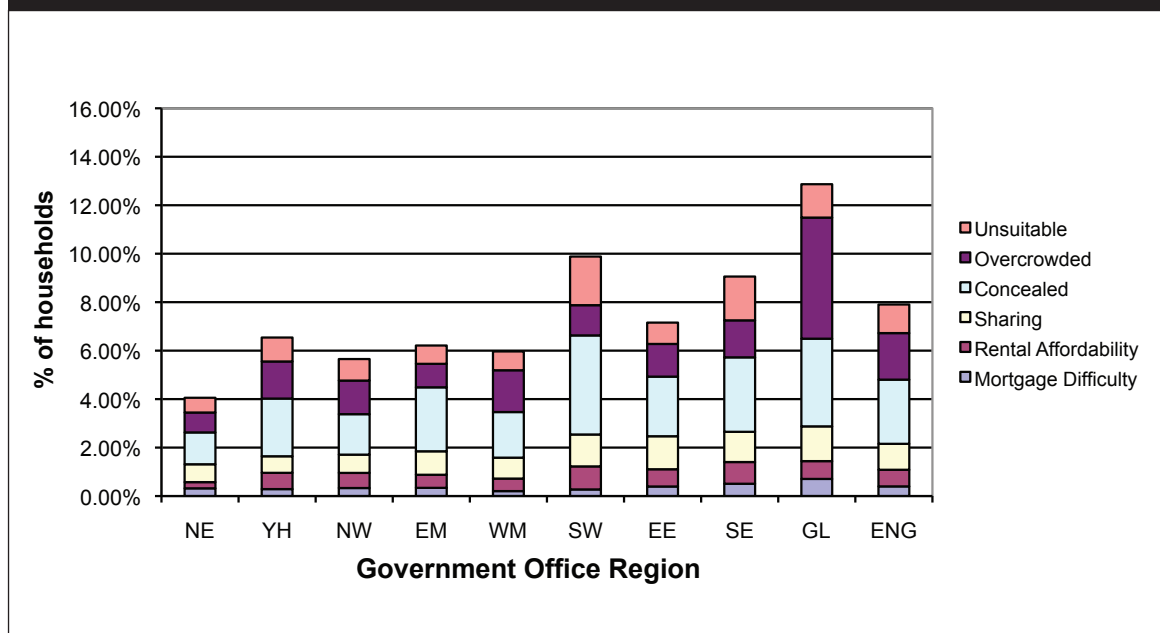
7.28   Backlog need is perhaps the most important outcome forecast in this model. Figure 7.11 shows the profile of backlog needs in each region in 2014, and may be compared with Figure 3.13 at the end of Chapter 3. While in four regions needs fall noticeably from 2007 to 2014, as a percentage, in four regions needs either rise to a higher level over this period. This applies to the South West, East of England, South East and East Midlands. The largest component of the increases for these regions is concealed households, but sharing also contributes. The adverse position and trend for the SW region is consistent with a range of other evidence, for example the work of Wilcox (2005, 2007).

7.29   The main regional feature of the homelessness forecasts are that use of temporary accommodation will remain focussed heavily on London and, indeed, will become more so.

7.30   The model forecasts the future composition of social rented tenure in terms of age-household type combinations. The broad trends indicated are for there to be fewer younger singles, lone parents and couples/multi-adults under 30; and fewer 30-59 singles and lone parents. At the same time there will be more couple families (over 30), multi-adult households (30-59), and older households particularly 'other' types (over 60). Younger households, especially singles, are particularly affected by the ease or difficulty of getting into the social rented sector. As noted earlier, this has a knock-on effect onto subsequent relet availability, as these younger households have much higher mobility rates. Singles aged 30-59, a group expected to first decline in share after previously growing up to 2009, will include significant numbers with support needs (see Chapter 4).

7.31 This changing household composition of social renting suggests that pressures and needs within the tenure, such as overcrowding and concealed households, could become more prevalent and will certainly remain as issues.

7.32 Chapter 6 underlined the high incidence of need among younger households, in general, as well as among lone parent households of all ages, multi-adult households and older complex households. Some of these groups also see a marked further increase in need incidence over the period. This may be significant when one comes to consider policy options and debates. The changes forecast over the period include a marked worsening in the position of single person households, particularly those aged under 30. This group are most affected by restricted supply (in all tenures).

Impacts of different policy scenarios

Increased supply

7.33 Clearly one of the most important aspects of policy is the level of supply of new housing. Government has fairly strong control over new social housing investment, but more indirect influence over the private sector through planning and other regulatory or fiscal measures. In current practice, a majority of new social housing is facilitated through Section 106 planning agreements on sites providing both market and affordable housing, so there is a stronger link between overall land release and the potential for social provision. For any given amount of land release, more affordable housing will mean less new market provision.

7.34 The EHN model is designed to trace the impacts of different supply scenarios, but to do this it is first necessary to run these through the DCLG Affordability model. In this section we describe four variant scenarios, one focusing mainly on increasing social rented provision, one focussed on private output, and the other two being a mixture of the two at different overall levels. Table 7.1 compares the cumulative numerical impact of these three scenarios, while Figure 7.12 shows the time profile of the impact on need, expressed as a percentage of the extra supply to date.

Social supply

7.35 Increasing social supply by 269,000 up to 2021 would increase household growth by a relatively large number, 235,000, which is about 87 per cent of the supply increase. This would work primarily through extra gross household formation but would be reinforced slightly by stock-household reconciliation. This is a proportionately bigger household numbers impact than happens with the private sector supply-led scenario, where the impact on gross new household formation is small but the stock-household reconciliation effect is much bigger (fewer households deterred from forming). The former effect confirms the relationship between these two factors revealed by household formation modelling – as discussed in Chapter 5.

7.36   Not only would the 'expanded social supply' scenario result in a substantial increase in the number of social renting households; there would also be a sizeable increase in homeownership (130,000), with these gains being at the expense of private renting households (-147,000). This level of supply increase would tend to increase vacancies, but only slightly given the tight overall supply context.

7.37   There would be a moderate reduction in the extent of 'extra rationing' of social rented housing, amounting to 25,000 over the period. The most important need outcome measure in this model is the total backlog need, What effect would building these extra social units have on the need backlog? The answer in this case is that, by the end of the period, need backlog would fall by 168,000 (62 per cent of the extra social units). That ratio is likely to vary between different time periods, regions and scenarios; Figure 7.12 illustrates the variation over time, showing an initially high impact, falling over 3 years, and then returning to a plateau just over 60 per cent.

7.38   The overall reduction in backlog need by 2021 is 10 per cent of the baseline forecast total for England. Need incidence would be 6.1 per cent of households rather than the 6.8 per cent in the baseline. This underlines that reducing backlog need can be achieved but is quite a long slow process. Indeed it is in the nature of housing need that it is unlikely to be possible to completely eliminate it; any targets should be about achieving certain reductions.

7.39   It is important to understand some of the reasons why there is not necessarily a one-for-one relationship between new social housing output and reduction in backlog need (even within the context of a heavily rationed approach to tenancy allocations). As we have already noted, many new households may form, and there may be an increase in vacancies (this would be more significant in an overall higher supply scenario). In addition, social lettings may go to private tenants who were in need, but there is usually nothing to prevent someone else occupying that private unit, without it necessarily being suitable for them. On the other hand, some effects induced through chains of moves may lead to a greater than one-for-one effect. In addition, the general reduction in price-income ratios (HPIR affordability) also creates additional need reductions.

Table 7.1: Impacts of four supply scenarios relative to baseline, 2009-2021				
Impact Summary	*Hi Social*	*Hi Private*	*Med Both*	*Hi Both*
Extra Social Net Additions	268,845	9,021	200,003	267,201
Extra Private Net Additions	-3,005	435,243	292,695	430,697
Household Growth	235,285	347,247	406,299	567,487
New Household Formation	208,963	19,175	162,753	231,404
stock-hhd reconcil adjustment	93,188	309,844	270,525	364,352
Change Own Occ Hhlds	130,292	113,216	168,231	232,168
Change Soc Rent Hhlds	246,491	13,734	187,448	251,721
Change Priv Rent Hhlds	-146,829	201,766	44,215	78,227
New Social Lettings	282,479	17,358	216,960	287,731
Hhlds 'Rationed Out' of Soc Rent	-25,138	2,699	-10,827	-19,684
Private Vacancies at 2021	8,770	46,701	36,015	48,693
Social Vacancies at 2021	13,258	-5,026	5,689	6,628
Total Need backlog at 2021	-167,902	-90,787	-184,554	-252,150

7.40   The types of need reduced by extra social housebuilding are particularly concealed households (61,000, an 11 per cent reduction) – this is as expected in the light of the discussion of how the model treats social supply. Overcrowding is reduced (by 49,000, or 12 per cent less), sharing by 22,000 (8 per cent), with significant reductions in other problems including rental affordability (19,000, -16 per cent) and unsuitability (34,000, -14 per cent).

7.41   The absolute and proportional reductions in need are greatest in London, the South East and South West regions (-1.08 per cent, -1.27 per cent and -1.18 per cent points). These patterns partly reflect the simple amplification of current (2007) Affordable Housing Programme investment distribution, since this is already fairly strongly focused on the regions with the greatest need. The groups benefitting most would be younger households, particularly singles and multi-adults.

Private supply

7.42   Table 7.1 also shows the impact of increased private supply (an extra 435,000 units to 2021), and two mixed enhanced-supply options. One of the most important mechanisms linking private supply to housing needs is the house price:income ratio. The impact here only starts to appear in 2013 and is still quite modest before 2016. By 2021 this ratio would by lower by 0.38 across England as a whole (8.87, vs 9.25), a reduction of 4.1 per cent. This is not a massive reduction but it is a worthwhile gain. It should also be noted that this impact of new private output on the headline 'affordability ratio' is three times the equivalent impact of a similar increase in social housing output. It is important to stress that these results are a direct product of the DCLG Affordability model, but that our own model predicts a continually growing impact from an increase in the rate of new supply (basically as the stock expands).

7.43   Nevertheless, with the medium term horizon adopted for this study, this magnitude suggests that the consequential impacts on housing need could also be quite modest at that stage.

7.44   As with the social supply scenario, increased private new supply would have a positive effect on household growth, but as already noted this is a bit smaller in this case at around 79 per cent of the supply increase. As the table shows, this would mainly work through the stock-household reconciliation process; in a previously tight market, normal rates of household formation become possible, that would otherwise have been suppressed by a shortage of available accommodation. This mechanism also implies some effects on sharing and concealed households.

7.45   This scenario has little impact on the rationing of social housing or the volume of lettings. The effect on backlog need is negligible before 2013 but gradually builds up to 30,000 by 2016 and 91,000 reduction by 2021. This number is about a third of the impact of the social housing scenario, relative to the supply injection (20 per cent vs 63 per cent). The time trajectory is similar between social and private output, as is shown graphically in Figure 7.12; but at a lower level.

7.46   The types of need which would be impacted would be similar to those aided by the social supply scenario: concealed households (49,000) and sharing (46,000), but with less impact on crowding (14,000) and with only slight reductions in the other needs. The need impacts would be slightly higher in the southern regions.

7.47   The other effects which are of some note are those on private renting and private vacancies. It might be expected that increased private supply would be essentially building for owner occupation and that there would be a comparable increase in home-owning households. The model results suggest that, in this period and conjunction of circumstances that would only happen to a moderate extent. The increase in owner occupiers is 113,000, only a quarter of the overall supply increase. There would be a larger increase in private renting (202,000).

7.48   The results suggest that private sector vacancies would increase somewhat in response to this high supply scenario. They would be 0.22 percentage points higher in 2021 - equivalent to an extra 47,000 vacant dwellings, 11 per cent of the extra additions to the stock. This leakage into private vacancies would be greater in a context of substantially higher overall supply. The current model does not have many adjustment mechanisms to respond to a situation of housing stock running ahead of household numbers, once vacancies rise above the 'natural' rate[90].

---

[90] House prices, migration and demolitions are modelled in the Reading model, so some adjustment is possible there. Private rents only have a limited (imposed) relationship with vacancy rates, and private rents have little effect on household formation.

7.49   Table 7.1 also shows two mixed supply increase scenarios. Broadly the impacts lie between those from the two just discussed. However, the total supply increase is greater, especially in the fourth scenario, and this is associated with larger absolute reductions in need. Both of these mixed supply scenarios are associated with greater increases in home-ownership and more modest increases in private renting.


Figure 7.12: Impact on need overtime of extra housing supply
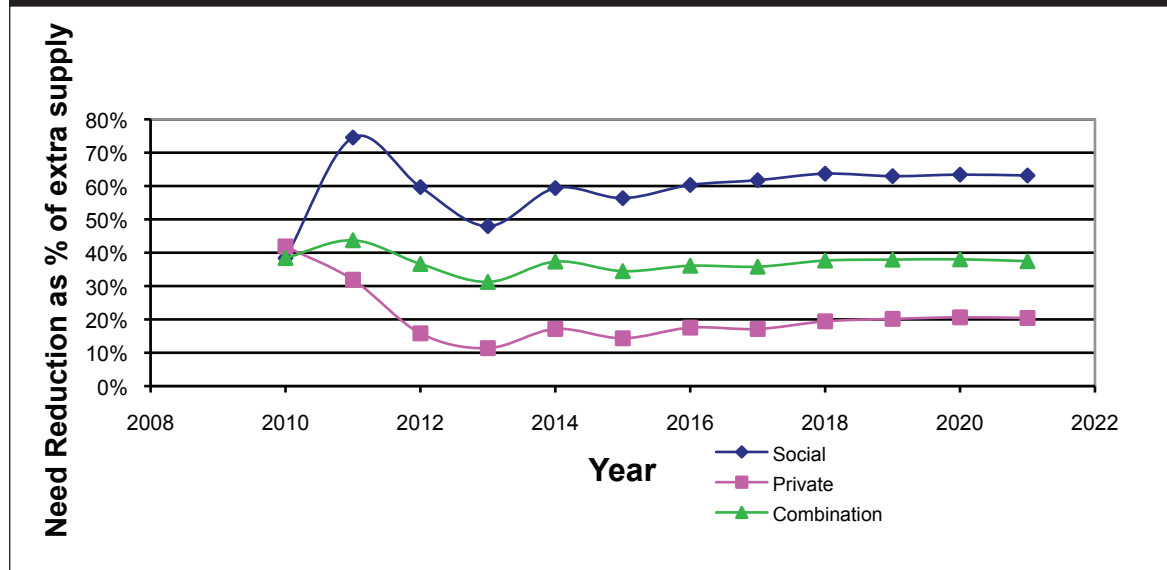
Low cost home ownership

7.50   This is an appropriate point to consider the impact of low cost home ownership as a variant supply option. As explained in Chapter 6, we did not consider it fruitful to explore the potential demand for low cost home ownership, as it seems clear it is well in excess of likely supply[91]. In other words, it is another rationed tenure like social renting.

---

[91] We used the model in a simple way to demonstrate that availability of a 25 per cent discounted Homebuy product 'on tap' could generate an additional flow into ownership averaging 49,000 per year and as high as 62,000 in the early period. Current low cost home ownership programmes amount to around 10,000pa, so we believe demand would not be the main constraint on expanding these.

7.51

Summary impact of low cost home ownership (LCHO)	Cumulative		Annual Average	
Tripling programme	2014	2021	2014	2021
LCHO Programme	97,500	237,500	16,250	20,000
Affordability HPIR %	0.0%	0.0%		
Private Rents %	0.0%	0.0%		
Household Growth	-1,262	-13,476	-210	-1,745
New Household Formation gross	22,839	61,440	3,806	5,515
stock-hhd reconcil adjustment	-10,819	-44,383	-1,803	-4,795
Change Own Occ Hhlds	72,785	141,515	12,131	9,819
Change Soc Rent Hhlds	4,410	740	735	-524
Change Priv Rent Hhlds	-78,458	-163,687	-13,076	-12,175
New Social Lettings	9,667	23,765	1,611	2,014
Extra Hhlds 'Rationed Out' of Soc Rent	842	6,479	140	805
Private Vacancies	0	-6,421	0	-917
Social Vacancies	0	1,989	0	284
Total Need backlog (6 cats)	-44,270	-93,354	-7,378	-7,012
Need impact (% of change in LCHO)	-45.4%	-39.3%	-45.4%	-35.1%
Need impact (% of baseline)	-2.5%	-5.7%		

Table 7.2: Summary impact of tripling low cost home ownership programme

Figure 7.13: Impact of cumulative additional LCHO provision on backlog needs 2009 -21
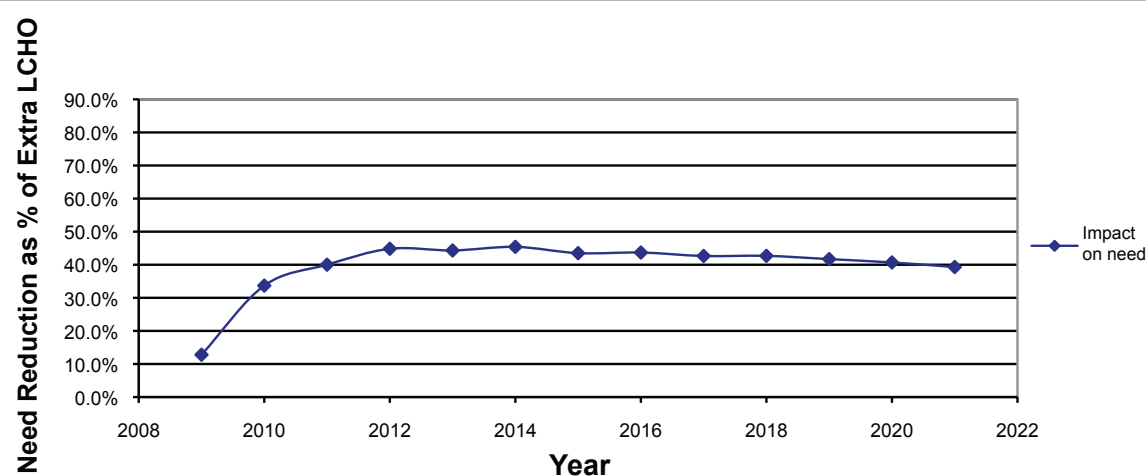
7.52   Table 7.2 shows the main impacts of a tripling of the current low cost home ownership programme (probably at the upper end of plausible high-low cost home ownership options). In this particular test, total supply is not increased; the low cost home ownership units would be diverted from new private supply or 'open market' provision. The impact of this scenario on household growth would be modest, while there would be an increase in home-ownership and a decline in private renting. The impact on need would be about 39 per cent of the 237,500 extra low cost home ownership units by the end of the period (i.e. 93,000), but the impact would be slightly greater than this earlier in the period, as shown in Figure 7.13. This need impact is broadly in line with what might have been expected from the CORE data used to build the model and other evidence on characteristics of new low cost home ownership buyers. However, it appears that there are some favourable second order effects resulting from the moves triggered by this provision, which increase the overall need impact.

Social housing allocation policies

Why and how

7.53   One of the policy areas associated with social housing which has been discussed a good deal recently is that of allocation priorities. There are arguments about what groups social housing is (or should be) for, and about the terms and expectations associated with social tenancies in general or for different groups. Access through the homelessness route has already been substantially modified through rigorous prevention policies. Choice-based lettings have represented some shift away from a heavily-needs-based approach.

7.54   There are various rationales for such strategies. More needs-based allocations appeal to arguments about cost-effectiveness and social justice in targeting scarce publicly subsidised housing on the more needy groups. However, there are limits in how much further we can go in this direction given the existing predominantly needs-oriented approach in most areas. Less needs-based allocations may be justified by arguments about giving people more choice, making social renting more of a 'tenure of choice', making social housing estates less 'residualised' and polarised in socio-economic terms, and perhaps by seeing a greater role for private renting in housing groups in need.

7.55   The EHN model can be used for the assessment of such policy options, applied across the national system. It is possible to change the distribution of lettings across different need groups, or household age-types. We illustrate this by running two scenarios, which we characterise as 'more needs based' and 'less needs based'. The former involves increasing the proportions of lets allocated to specific need groups including concealed and overcrowded households, by 30 per cent and reducing the proportion going to the 'other or none' category to close to zero (i.e. the limiting case). The latter involves the opposite shift, by about the same amount. We also adjust the priority given to rehousing homeless households in temporary accommodation (temporary accommodation) by a similar amount.

More or less (needs-based)

7.56   Table 7.3 presents a summary of the impacts of these two variant scenarios, relative to the baseline, up to 2021. The former strategy (more needs-based) would reduce household growth moderately, by 33,000 (1.4 per cent) over the period. More of this reduction in household numbers would be manifested in the private rented sector. There would be a small decrease in social lettings (turnover) and slightly fewer households would be rationed out. The impact on backlog housing need would be very sizeable, a reduction of 228,000 or 13.9 per cent by 2021. This reduction would actually mainly impact in the early-middle part of the period, so that by 2013 the reduction would have reached 114,000, with 2016 seeing a 164,000 reduction.

7.57   The less needs-based scenario would provide a broadly mirror image of this, although with some differences in the magnitudes. Household growth would be higher by 31,000, with the largest part of the increase in private renting. While this strategy could be seen as one of substituting private renting as a solution for some households in need, while allowing more new households to form and go into social renting, the quantitative size of this shift is actually small. However, the impact on backlog need would be an *increase* of 304,000 households in need, or 18.5 per cent, by 2021. Again, this increase would be front-loaded. Under this scenario, there would be little difference in vacancies.

Table 7.3: Impact summary for more vs less needs-based allocations		
Impact Summary Extra	*More Needs Based*	*Less Needs based*
Household Growth	-32,744	31,228
New Household Formation	-46,809	48,045
stock-hhd reconcil adjustment	11,811	-9,418
Change Own Occ Hhlds	-7,849	9,152
Change Soc Rent Hhlds	-3,379	-6,350
Change Priv Rent Hhlds	-10,976	14,214
New Social Lettings	-7,526	7,961
Hhlds 'Rationed Out' of Soc Rent	-20,766	3,582
Private Vacancies at 2021	5,729	-9,253
Social Vacancies at 2021	-68	9,685
Total Need backlog at 2021	-228,475	304,260
Total Need backlog at 2021 (%)	-13.9%	18.5%

7.58   The need impacts would be spread across the regions, but generally larger in absolute and percentage point terms in the south, especially in London and the South East. There would be relatively modest impacts on private rent levels – lower in the first scenario, higher in the second – and on homelessness and benefit dependency.

7.59   More needs-based allocation would see the social sector housing slightly more younger families and older couples, while less needs-based policies would have the opposite effect (favouring older singles particularly).

7.60.   The effects of these two scenarios are rather striking, particularly in respect of the backlog need numbers which are treated as the key outcome in this study. These results raise some questions about the case for making social housing allocations less needs-based. They show that there is a weighty policy trade-off here between achieving potential benefits in terms of choice and social balance and worsening the extent of unmet housing needs.

7.61   The results also suggest indirectly that a strategy of relying more on private renting to house traditional clients of social housing risks exacerbating the needs and problems which this group experience, so long as the private rented sector operates as a 'free market'. This is not to say that the sector might not be used in a more 'managed' fashion; for example, through leasing or management agreements, in a way which lessened these dangers, albeit possibly at extra subsidy cost.

7.62   It should be noted that in these scenarios we made a proportional change in the priority assigned to rehousing homeless in temporary accommodation. This had the effect of reducing (increasing) the numbers in temporary accommodation by 6-7,000 (around 10 per cent) in the middle and later years of the simulation.

Regional allocation of social housing investment

7.63   A further type of policy impact test we have conducted relates to the regional allocation social housing investment. In the past this regional allocation has been a bone of contention, reflected in debates about former Housing Needs Index (HNI) measures and whether system paid enough attention to affordability or low demand.

7.64   We have tested a zero-sum redistribution of baseline social and low cost home ownership housing additions, basically further increasing allocations to the most pressured southern regions (especially SW, but also SE, EE,) and to London, while reducing those to the north and midlands by varying amounts (largest reductions for NE and WM). A simple index was used to guide this, based on relative need incidence in the baseline forecast for 2014, and the relative rate of change in need incidence between 2004 and 2014. Values above average would increase the allocation, and vice versa. The adjustment multipliers ranged from 1.25 times (London) to 0.63 times (NE). We also tested a mirror image scenario, shifting affordable housing investment towards the midlands and north by a similar amount.

7.65   The results of this particular pair of tests are muted, to say the least. Backlog need is hardly changes for England as a whole in either 2014 or 2021, and the impacts on household growth or tenure change are also relatively slight Essentially these are zero-sum redistributive exercises (leaving aside any consideration of new building subsidy costs). While under the baseline scenario, London would have 3.06 times the need incidence of the North East,

and the 'south' would be 1.75 times the 'north', under the redistribution towards London and the south these ratios would change to 2.84 and 1.69 in 2021. Conversely, a similar degree of redistribution in the other direction would raise the London:NE ratio to 3.29 and the south:north ratio to 1.84.

7.66   We may conclude from this test that changing the regional allocation is not a route to achieving major need reductions at national level. However, targeted attention to 'hot spots' may be worthwhile.

Other economic and policy scenarios

Effects of higher unemployment

7.67   In view of the current economic downturn affecting the wider economy we feel it would be helpful to demonstrate through the model the effects of greater unemployment during this period. However, attempting to do this has run into some difficulties and uncertainties concerning the way this should be represented in the DCLG Affordability model. The existing baseline already incorporates a downturn in income growth, but unemployment and employment are fairly stable. For technical reasons we do not present a full simulation of this kind using both models[92].

7.68   Tests involving changing the unemployment rates and the employment rates within the needs model, as well as a judgementally-based price effect via the 'credit rationing' parameter, suggest that this would affect the level of backlog needs, and also other aspects of the market simulation. The results of this test should be treated with considerable caution, because they are somewhat ad hoc and have not been generated through either the DCLG model or other similar national/regional economic models. The results, nevertheless, are illustrated in Figure 7.14, which is based on a 'spike' in unemployment rates across the country rising two double their base levels by 2010, remaining at that level in 2011, then falling back more gradually to 2016.

Figure 7.14: Impact of unemployment 'spike" on household growth and need backlog

---
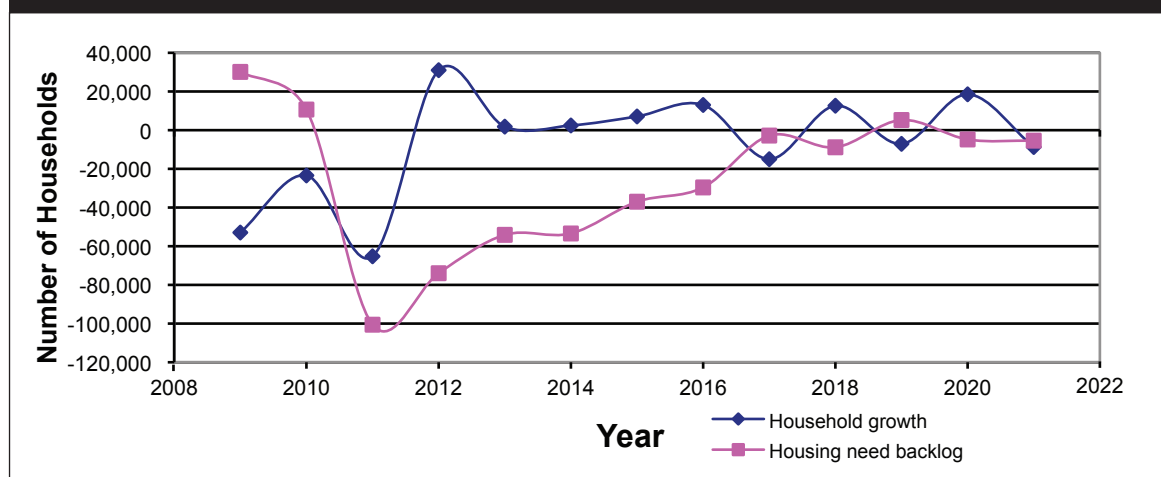
92 Based on information available it does not appear possible to vary employment and unemployment rates within the CLG Affordability model; they are 'endogenous' functions within it.

7.69   Higher unemployment would have an immediate effect in increasing needs; the total backlog rises initially in step with the unemployment rate, but the maximum increase is modest and reached at an early stage. It is interesting to note that need then falls sharply to a lower level than in the baseline after 2011, and remains at this lower level (by about 315,000, or 20 per cent) for the remaining period after the end of the unemployment perturbation. The reasons for this possibly counter-intuitive picture include two key factors. Firstly, we have included a negative price effect from the unemployment, which will improve affordability and reduce most needs. Secondly, there is a large early drop in household formation (apparent in Figure 7.14), and therefore less pressure via the stock-household reconciliation mechanism (which directly affects concealed and sharing households).

7.70   Homeless acceptances and temporary accommodation would fall slightly under this scenario. Private renters on housing benefit would increase markedly (by nearly 8 per cent points) with the unemployment peak, then fall more slowly to a level slightly above its previous level.

7.71   Another persistent effect of the unemployment spike would be a reduction in the number (-240,000) and proportion of owner occupiers. Private renting would grow slightly in absolute as well as relative terms. The social sector does not change much in size, but the unemployment cycle would be associated with an increase in social lettings turnover. Vacancies would be somewhat higher in both sectors, but particularly in the private sector. Private rents would rise a bit earlier on but be slightly lower later.

7.72   The impacts revealed through this scenario, even though they should be treated with caution and may not tell the full story, do indicate that some of the housing system effects of external shocks, such as a recession, can be complex, not wholly intuitively predictable, and subject to 'echoing' waves of consequential effects for some time after the initial shock has finished.

Variations in migration

7.73   Another type of exogenous socio-economic/demographic factor which the model can be used to explore the effects of is migration. Again, this is an example of where interactions with the DCLG Affordability model are potentially involved. As with the labour market, we understand that migration is modelled endogenously, and therefore is difficult to manipulate directly, although there is a facility to change the assumed level of international migration. It is probably true that the main migration issues from a policy viewpoint relate to international migration, rather than domestic; and certainly true that the main variation in the England-wide average net migration rate is driven by the international component.

7.74   Perhaps the key uncertainty concerns the level of net (international) migration over the next few years – will it remain at the historically relatively high positive level seen over the last few years (including the effects of the A8 EU enlargement), or will it fall back to a somewhat (or much) lower level? It would not be unreasonable to expect net migration to fall for a period of

time, because of the impact and severity of the recession in the UK labour market. In the longer term, it is more debateable at what level it will settle, and what the policy framework influencing this should be. Net migration consists of a number of distinct gross flows involving different regions of the world and different primary motivations and drivers. It is important to consider outflows as well as inflows. However, the operation of the EHN model means that this is treated effectively as though it is a fall in gross in-migration without any change in the rate of out-migration.

Table 7.4: Impacts of lower migration scenario		
Impacts on	*to 2014*	*to 2021*
Household Growth	-70,896	-42,927
New Household Formation	-128,413	-229,077
stock-hhd reconcil adjustment	132,585	392,950
Change Own Occ Hhlds	-116,831	-166,616
Change Soc Rent Hhlds	-52,919	-15,048
Change Priv Rent Hhlds	99,837	202,303
Hhlds 'Rationed Out' of Soc Rent	-78,948	-101,140
Private Vacancies (%pt)	0.13%	0.15%
Social Vacancies (%pt)	0.85%	-0.11%
Homeless Acceptances	-13,596	-46,728
Homeless TA	-374	382
PR tenants on HB (%pt)	0.01%	-0.05%
Total Need backlog	-33,016	-74,277

7.75   The EHN model can be used to examine the impact of a differential future trajectory for international migration, in a fairly simple way. The tests exemplified here exclude possible effects via housing market prices, or induced domestic migration, because we have not run such a differential migration scenario through the DCLG model. A further caveat is that the current model treats all 'migrants' as a single group. We reduce the net migration rate (percentage of population/households) by an amount that varies over time, with a maximum reduction of -0.20 percentage points in 2010 dropping to 0.07 percentage points by 2021. Thus, this is a scenario of a larger impact in the short term but some lingering impact in the longer term. This downward shift term is applied to all regions; it has the effect of pushing some regions (further) into negative net migration. Over the whole period the effect is to reduce net in-migration in household equivalent units by 38 per cent or 28,000 per year over the whole period (or 369,000 in total).

7.76   The results of this test are not entirely in line with expectations, and suggest that the way we are using the model here may be 'too simple' and potentially misleading. Table 7.3 provides a summary, showing impacts by 2014 and 2021.

7.77 It is expected that lower migration would lead to lower household growth, and this is borne out by the figures in the Table, although the reduction in total household numbers is far less than the cumulative direct effect of migration. Although gross new household formation falls substantially, there is a larger offsetting effect from the stock-household reconciliation process. Secondly, it appears that this low migration scenario would lead to a lower level of homeownership as well as more private renting, with a small reduction in social renting as well. The large fall in ownership seems counter-intuitive, if we think of international migrants as typically mobile groups who make disproportionate use of the private rented sector. This is where our model may be partially misleading us, because the 'migrant' flag variable used in various specific need, mobility and tenure choice models does not distinguish between domestic and international migrants. Domestic migrants are more likely to become home owners.

7.78. Total need backlog would appear to be moderately lower in both years, a reduction of 74,000 or 4.5 per cent by 2021. One would expect lower migration (ceteris paribus) to reduce need, for example by reducing pressures of crowding or sharing in the private rented sector. The reductions are almost entirely in sharing and concealed households.

7.79 A possible line of refinement in the modelling would be to try to distinguish more clearly UK migrants from international migrants. These groups may have different profiles and different degrees and types of advantage/disadvantage in the housing market. It is possible, with the S.E.H. dataset, to flag those households whose most recent move was from abroad. We have tested the separate effects of international and domestic migrants within some of the specific needs models. This indicates that, in the cases of sharing and concealed households, both types of migrant are associated with a higher incidence of needs, but that the international migrants have a bigger effect. For overcrowding, international migrants have a strong positive effect, while domestic migrants show no association. For mortgage difficulties, domestic migration has a significant positive effect while international migrant is not significant. For rental affordability and for unsuitability, neither migration variable is significant, although ethnic indicators are still significant.

7.80 The exploratory analysis just described is interesting and suggestive, indicating that our broad findings on the positive association of migration and needs is probably robust. Nevertheless, it would be desirable in the future to carry out a more comprehensive analysis, working the distinction between international and domestic migrants through all elements of the model including household formation, mobility and tenure choice. This further modelling should also consider the possibility of area concentration effects at sub-regional level as well as individual propensities.

Right to buy

7.81   The model can be used to track the impact of different scenarios for future trends in RTB sales. The baseline level of sales, national and regional, is taken from the DCLG Affordability model. The incidence by age/type of household is based on our own analysis of SEH[93]. The future number of sales is expected to remain quite modest, after recovering from the current very low level (e.g. 15,000 in 2015), and then to decline further in the medium term (e.g. 4,100 in 2021). This future decline assumes current caps on discounts apply.

7.82   The model provides for the possibility that future RTB might be at a higher or lower level. We do not go into the detail of how this might be achieved – changing the discounts would be the most likely mechanism to effect such changes. However, these changes are from a pretty low base, and are therefore not very significant. From an illustrative scenario where RTB rises progressively to triple its baseline level, we find that there is the expected effect of owner occupation growing somewhat more at the expense of social renting. However, this would mean owner occupation being only 0.45 per cent points higher in 2021. Household growth would be unaffected, and housing need would be higher by a relatively tiny amount (4,000 in 2021).

Social sector relets

7.83   It is possible to test a scenario entailing a higher level of social relets, arising from a relatively autonomous source. A motive for this scenario test is some concern about whether the measured level of social lettings reflected in the model for the year 2007 was correct. Without rehearsing all of the detail of this, there is evidence from the S.E.H. that the model figure for lettings in that year is on the low side, by about 11,000 units (177,000 vs 188,000)[94]. Comparison of various sources suggest that the discrepancy is most likely to be due to an underestimate of dissolutions by social rented households[95]. There is therefore some logic to testing the impact of a higher level of social lettings associated with higher household dissolutions by social tenants, although we assume an offsetting lower level of dissolutions in the other tenures to keep the household growth scenario approximately neutral.

7.84   The result of this test is to show that a higher level of social relets (averaging just under 10,000 a year over the whole period) would lead to a reduction in backlog need of 64,000 by 2014 rising to 107,000 by 2021. The impact is particularly high (more than one-for-one) in the initial period, but drops back somewhat later on, although even at 2021 the reduction is 83 per cent of cumulative extra lettings, which compares favourably with the impact of new

---

[93] We also modelled RTB as a function of market variables and discount levels. The model was not wholly satisfactory as an account of temporal changes, but its forecasts are similar to the CLG model.

[94] Local authority HSSA returns and CORE statistics suggest the discrepancy may be greater, possibly of the order of 25,000, although there are some concerns that the former source may include some double counting. There are also concerns about the inconsistent treatment of lettings of sheltered housing in different contexts. This issue is discussed further in Appendix 4.

[95] Dissolutions are indicated, rather than moves out of social renting to other tenures, since the modelled numbers of moves are exactly the same as the S.E.H. figures for 2007, and because a separate estimate of dissolutions by Holmans (2009) gives a higher figure. Dissolutions estimates are discussed in Appendix 1.

building reported earlier. Part of the reason for this is that, in the tight supply situation of 2011-12, there would be less suppression of household formation and therefore less generation of concealed and sharing households. The scenario would have minor effects on tenure balance (more owners, less private renters), slightly lower rents, slightly fewer private tenants on housing benefit (local housing allowance), and slightly fewer homeless in temporary accommodation.
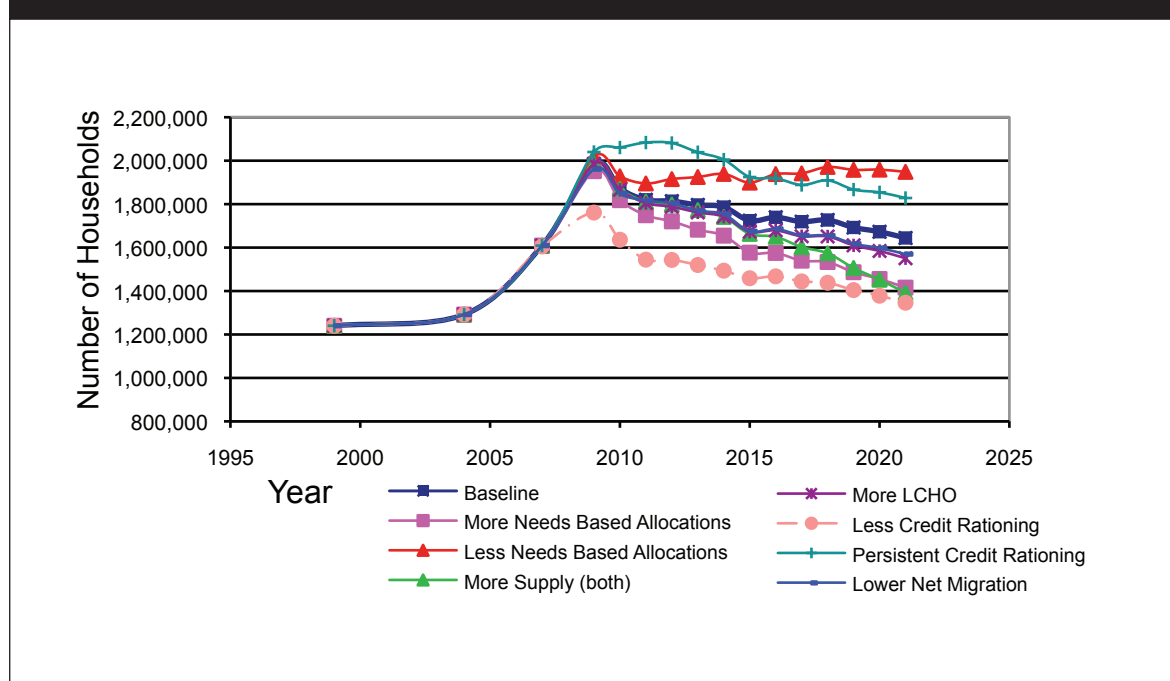
Conclusions

7.85   In this chapter we have taken the model constructed as described in Chapter 6, and built on the research described in earlier chapters, and put this to work in producing conditional forecasts of household, tenure and housing need outcomes. Much work has gone into testing, tuning and de-bugging the model, including technical sensitivity tests.

7.86   The main substantive conclusions are that we have demonstrated the way in which recent market changes have generated a higher level of unmet need, and that looking forward a higher level of needs can be anticipated to persist over a number of years if social housing supply is not increased – and even if it is increased to some extent. In the medium term (up to 2021) some reduction in backlog need from its 2009 peak may be anticipated, although this is unlikely to bring need down to the levels of the early 2000s.

7.87   We have shown that increasing social housing supply would have a sizeable impact on backlog needs in the short-medium run, although this impact is less than one-for-one. This is partly because this intervention would also have a large effect in terms of increasing household growth, from its current very suppressed level.

7.88   The model suggests that increasing private housing supply would have a smaller impact on needs, particularly in the initial period owing to time lags in building up supply and in the affordability impacts working through. On the medium-to-longer term this strategy would have a more sustained impact in reducing need, but the need reduction would remain much smaller per unit of supply than that obtained from social housing investment. It would also have a somewhat smaller impact on household growth, and would not increase owner occupation as much as private renting, while also increasing vacancies.

7.89   We have also used the model to examine a scenario where output is increased in both private and social sectors. While this broadly provides a middle set of outcomes between the two just summarised, it suggests that this mixed strategy would deliver slightly more reductions in need in the early years.

7.90   Both higher and lower supply scenarios have bigger impacts on need in the regions where need is expected to be higher, namely London and the southern regions of England, especially the South West which seems to be something of a need 'hot spot'. The types of need which are most sensitive to supply are concealed and sharing households, although there are also significant impacts on crowding, affordability and other problems.

7.91   This analysis also highlights the situation whereby, on current trends, younger households are getting less access to social housing and experiencing a growing incidence of need. An indirect effect of this is to further lower the turnover supply of social lettings.

7.92   The model can be used to test certain types of change in social housing allocation priorities, in terms of household types and/or need groups. We test scenarios involving more or less needs-based allocation priorities, and find that this has a substantial effect on the level of backlog need - of the order of a quarter of a million fewer or more households in need at the end of the period (- 13 per cent/+18 per cent). This suggests that there are substantial tradeoffs between policies for widening choice and social balance, on the one hand, and meeting need on the other. A further test suggests that, if appropriate ways could be found of releasing additional social sector relets, this could have a sizeable impact in tackling needs.

7.93   The model can also be used to explore changes in the regional allocation of social housing investment (or indeed private new build distribution). While, traditionally, housing needs have been much higher in London and less variable between other regions, a range of indications in the projections suggest that the regions where greatest increases in need may be expected are SE and SW. Our initial test here suggests that the overall national reduction in need from a more strongly needs-based regional allocation of social housing investment is very modest, and that such strategies are mainly about the distribution of need and associated equity issues.

7.94   There are difficulties in modelling the economic recession including its labour market effects using the DCLG Affordability model, although we can make a partial test of the expected spike in unemployment within the EHN model. This suggests an immediate effect in terms of pushing up backlog needs and certain other need factors like the proportion of renters on housing benefit. However, needs appear to fall back quickly to a lower level, partly because household formation is reduced and partly because we assume some fall in prices. There would also be a persistent fall in owner occupation as a result of such a labour market recession.

7.95   Migration is another topical issue, and the model can be used, with considerable caveats, to assess the impact on housing need of certain migration scenarios. A 'low migration' scenario is offered, which the model suggests would entail a fall in homeownership, and a significant reduction in backlog need (particularly sharing and concealed households). Further work on this issue, distinguishing international migrants and taking account of price effects, may be appropriate.

7.96   The model can be used to track the impact of different scenarios for the future of RTB sales. Although the effects are in the expected direction, the scale of impacts is relatively small, partly because the baseline forecast rate of such sales falls to a very low level during this period anyway.

7.97   More interesting impacts may be associated with policies for low cost home ownership. Tripling the current programme to 30,000 units per year would increase owner occupation vs. private renting, increase household growth slightly, and reduce backlog need by 3.5 per cent in 2014 and 8 per cent in 2021. Low cost home ownership has positive indirect as well as direct effects on need.

7.98   Figure 7.15 provides a fitting way of summing up the impact of different scenarios tested on the trajectory of backlog need in England. It shows that the biggest reduction would be associated with less severe and less persistent credit rationing, whilst higher and more persistent credit rationing would lead to the worst need outcomes in the next 5 years. A sizeable reduction could be achieved by making social housing allocation as strongly needs-based as possible, while much less needs-based allocation would leave needs at a high level later in the period. While the effects of greater supply, particularly involving social housing and low cost home ownership, are positive, the magnitude of their effects are less initially than the scenarios just mentioned, although comparable by the end of the period. However, it is important to recognise that there are other important arguments concerning the role and functioning of social housing which have to be weighed against the criterion of meeting need, arguments which we have not examined in this research project.

Figure 7.15: Backlog need under different policy & contextual scenarios

Chapter 8

Overall conclusions

8.1   This chapter briefly draws out key overarching conclusions from the research. It highlights main findings, identifies key themes cutting across the different chapters and elements of the work, and suggests some possible implications for both policy and future research and analysis. It tries to offer a balanced judgement on the achievements and limitations of the research and its main product, the Estimating Housing Needs model. It is deliberately short, and does not seek to repeat all the specific conclusions from earlier chapters.

8.2   Needs necessarily involve value judgements, and there is more consensus about some of these than others. Given particular judgements there is a growing body of survey and other data to quantify the incidence of particular or combinations of needs, although practical implementation may involve compromise at this stage. Previous general models for needs contained many insights and valuable elements, but fell short of meeting key criteria in several respects, particularly in dealing with economic and behavioural responses and also in not fully specifying all aspects of the system.

8.3   Unmet need has shown signs of increasing in the last few years, and is forecast to rise sharply in the period of the Credit Crunch up to 2009. This rise reflects demographic and economic pressures, inadequate supply and the effects of credit rationing. Need will probably remain at a relatively high level for some years, with the prospect of only gradual improvement over time. Overcrowding has increased significantly, and concealed households will be a particularly important form of need in the coming period. Affordability affects all needs to varying degrees, while specific affordability problems in private renting appear to be much more numerous than better-publicised mortgage difficulties, although there are difficulties in measuring these in a comparable way.

8.4   Homelessness overlaps with other needs, and homeless numbers can be shown to respond to affordability as well as poverty and demographics. However, this analysis also shows clearly the strong impact of prevention measures in reducing numbers. It is difficult to eliminate the use of temporary accommodation, certainly given current homelessness legislation, but most of this involves placements in mainstream housing and provides reasonable conditions.

8.5   Most needs are highest, in both absolute and percentage terms, in London although the size of the margin varies, while growing need pressures are most apparent in the South West and South East.

8.6.   Housing related support activity shows some relationship with obvious age and deprivation indicators, but placing this alongside main model estimates suggests there are still regional imbalances. Support for older people releases supply for general needs, but the socially excluded client group use a lot of lettings and this outcome of existing social landlord tenancy allocation policies poses issues about community sustainability.

8.7   Household formation by young people fell recently, especially in the south. Household formation is influenced by income, prices, employment, unemployment and social housing supply, as well as demographics. Modelling tenure flows takes account of the higher mobility of younger, higher income and private renter households, with more mobile groups less likely to buy or socially rent. Affordability is an important determinant of house purchase, although demographic factors still play a role.

8.8   Looking at households by age and type shows that certain groups disproportionately experience need, and that current trends and conditions are significantly worsening prospects for younger households.

8.9   These behavioural models and baseline evidence can be brought together in a medium sized spreadsheet-based simulation model to produce medium term conditional forecasts of housing outcomes, subject to a wide range of user-controlled assumptions or policy inputs.

8.10   Increasing social housing supply has a larger and earlier impact on need than private supply, although there is a good case for a balance of provision including intermediate tenures. Social housing allocation policies appear to have quite a significant impact on need trajectories, but this finding must be weighed with other considerations. Credit rationing is having a significant impact on the market and on housing needs at present, and future prospects for mortgage availability have a strong bearing on prospective need outcomes.

8.11   The approach to developing this model exemplifies an outcome-oriented approach, rather than a traditional single-number need estimate. The model is intended to embed realistic behavioural models, within which economic factors have pervasive influences, alongside demographics. Flows of households in the active market are important, but these have to be related to the underling stocks. Reconciliation of fundamental identities has a significant impact on outcomes, and may signal stresses in the system (or in the model).

8.12   We believe this approach will be of value to government, given policymakers' requirements for estimates and conditional forecasts for a range of purposes. The model offers flexibility to look at different needs, apply different standards, and test different policy interventions. Although we do not attempt to evaluate policy options, the model reveals that some policy tools clearly have more impact than others (e.g. social housing investment vs planning numbers; lettings allocation policies vs Right to Buy).

8.13   Inevitably, a number of areas remain for further research and analysis. Bottoming out some of the differences between sources on base period needs incidence would be valuable. The interface with the DCLG Affordability model or other economic models could be explored further in relation to such issues as the labour market, migration and demolitions. The private rented sector should be explored further, particularly in relation to the supply side, the rents model, and possible modes of intervention. More refined way of modelling household change, including dissolutions and in situ changes, would also enhance robustness, as would more refinement of the mobility and tenure choice models based on longer data runs and the testing of different forms and hypotheses.

8.14.   Inevitably, there are some weaknesses and limitations within what has been quite an ambitious project. There will always be debates about what should be counted as needs, and compromises have to be made between 'ideal' definitions and data which are available in suitable form for modelling. Adjustment mechanisms to cope with supply running ahead of demand are weak in the current model. We have probably not fully exploited the potential of the DCLG Affordability model, although the design of this does not make it easy to test some scenarios; there will always be some tensions within a 'two-model' approach. House condition is not integrated in the main model, for various reasons, and housing related support is only partially integrated with the main model.

8.15.   We would claim to have produced a model that works in a plausible way, and which is capable of being used by government analysts in a flexible fashion to address a range of policy questions. It provides a genuinely fresh way of looking at housing need and policy issues, based around outcomes. For first time we can offer an evidenced answer to questions about what happens if we do or do not provide particular numbers of extra homes in different tenures.

Annex 1

List of technical appendices (available separately)

www.sbe.hw.ac.uk/ResearchandBusiness/Housing%20and%20urban%20society/
downloads.htm?pane-6

Technical appendix 1 – Household demography

Technical appendix 2 – Specific needs

Technical appendix 3 – Tenure choice and mobility

Technical appendix 4 – Supporting People analysis

Technical appendix 5 – Construction of overall simulation model

Technical appendix 6 – Model results and sensitivity tests

List of figures and tables

References

Anderson, I.; Kemp, P.A.; and Quilgars, D. (1993) *Single Homeless People* London: HMSO.

Andrew (2005), "*The Changing Route to Owner Occupation: Household Formation and the Impact of Borrowing Constraints on Young Adult Homeownership in Britain*", Mimeo.

Andrew M, Evans A, Koundouri P and Meen G (2003), Residential Stamp Duty: Time for a Change, *CML Research Report*.

Andrew, M. and Meen, G. (2003). "*Housing Transactions and the Changing Decisions of Young Households in Britain: The Microeconomic Evidence*", *Real Estate Economics,* 31(1): 117-138

Andrew, M. and White, M. (2006) E*xplaining the Route to Owner Occupation: The Role of Transactions Costs*. Mimeo.

Association of London Government (2005) *Prevention Works: London Councils' homelessness prevention initiatives;* London: ALG

Barker, K. (2003) *Review of Housing Supply: Securing our Future Housing Needs.* Interim Report - Analysis. London: TSO/H M Treasury.

Barker, K. (2004) *Review of Housing Supply*: *Delivering Stability: Securing our Future Housing Needs.* Final Report & Recommendations. London: TSO/H M Treasury.

Barry, B. (1965) *Political Argument.* London: Routledge & Kegan Paul.

Biewen, M. (2004), "Measuring State dependence in Individual Poverty Status: Are There Feedback Effects to employment Decisions and Household Composition?", ZA Discussion paper No. 1138, Bonn.

Boehm T.P. (1981), "Tenure Choice and Expected Mobility: A Synthesis", *Journal of Urban Economics*, 10. pp. 375 – 389.

Box-Steffensmeir J.M. and Jones B (2004), E*vent History Modelling: A Guide for Social Scientists*, Cambridge University Press.

Bramley, G. & Karley, N.K. (2005) 'How much extra affordable housing is needed in England?', *Housing Studies*. 20:5, 685-715.

Bramley, G. & Leishman, C. (2005) 'Planning and housing supply in two-speed Britain: modelling local market outcomes', *Urban Studies.*

Bramley, G. & Watkins, C. (1995) Circular Projections: *new housebuilding, household growth and the household projections*. London: Council for Protection of Rural England.

Bramley, G. (1990) *Equalization Grants and Local Expenditure Needs*: the price of equality. Aldershot: Avebury.

Bramley, G. (2004) *Local Housing Need and Affordability Model for Scotland – Update Report 34.* Edinburgh: Communities Scotland.

Bramley, G., Champion, T. & Fisher, T. (2006) 'Exploring the Household Impacts of Migration in Britain Using Panel Survey Data', *Regional Studies.*

Bramley, G., Karley, N. K., & Watkins, D. (2006) *Local Housing Need and Affordability Model for Scotland – Update (2005-base)*. Report 72. Edinburgh: Communities Scotland.

Bramley, G., Munro, M. & Lancaster, S. (1997) *The Economic Determinants of Household Formation: A Literature Review.* DETR, London.

Bramley, G., Pawson, H. & Third, H. (2000) *Low Demand Housing and Unpopular Neighbourhoods. Housing Research Report*. London: DETR.

Bramley, G., Pawson, H., Satsangi, M. & Third, H. (1999) *Local Housing Needs Assessment: a review of current practice and the need for guidance.* Research Paper 73. School of Planning & Housing, Edinburgh College of Art. See also DETR Housing Research Summary102.

Bramley, G., Satsangi, M. & Pryce, G. (1999) *The Supply Responsiveness of the Private Rented Sector: an international comparison*. DETR Housing Research Report.

Chamberlain, G. (1984). "Panel Data", in S. Griliches and M. Intriligator (eds), *Handbook of Econometrics*, Amsterdam, North-Holland, pp. 1247-318.

Champion, A.J., Fotheringham, S., Boyle, P.., Rees, P., & Stilwell, J.(1998) *The Determinants of Migration Flows in England: a review of existing data and evidence.* Report to DETR. London: DETR.

Chandler, J., Williams, M., Maconachie, M., Collett, T., & Dodgeon, B (2004) 'Living alone: its place in household formation and change', *Sociological Research Online*, 9(3).

Cho, Y. Monk, S. & Whitehead, C.(2007) *Modelling The Future Take-Up Of Low Cost Home Ownership Products* Research Progress Report to CLG 31 May 2007.

Clark, W.A.V. and Huang, Y. (2003) The Life Course and Residential Mobility in British Housing Markets. *Environment and Planning* A 35, 323-339.

Clark, W.A.V. and Mulder, C.H. (2000) Leaving Home and Entering the Housing Market. *Environment and Planning* A 32, 1657-1671.

Communities & Local Government (2007) Homelessness Statistics, June 2007 and Local Authority Survey of Homelessness Prevention; London: CLG http://www.communities.gov.uk/publications/housing/homelessnessstatisticslocal

Communities and Local Government (CLG) (2007) *Strategic Housing Market Assessments*: Practice Guidance. London: CLG

Corner, I. (1992) *A technical summary of the DOE household projection method*. BRE Note 57/92. Watford: Building Research Establishment.

Croucher, K., Hicks, L. and Jackson, K. 2006. *Housing with care for later life: A review of the Literature*. Joseph Rowntree Foundation.

DETR ((1999b) *Projections of Households in England to 2021*. London: TSO.

DETR ((1999b) *Projections of Households in England to 2021*. London: TSO.

DETR (2000) *Local Housing Needs Assessment: A Guide to Good Practice*. Housing Research Report. London: DETR.

DETR (Department Of Environment, Transport And The Regions (1999a) *An Economic Model of the Demand and Need for Social Housing*. London; Department of Environment, Transport and the Regions.

Di Salvo, P. and Ermisch, J. (1997) Analysis of the Dynamics of Housing Tenure Choice in Britain, *Journal of Urban Economics*, 42, 1-17.

DOE (Department of the Environment) (1995) *Projections of Households in England to 2016.* London: HMSO.

DOE (Department Of The Environment) (1996) *Household Growth: where shall we live?* Cm 3471. London: TSO.

Dougherty A and Van Order R (1982), "Inflation, housing costs, and the consumer price index", *American Economic Review*, No. 72, pp. 154-164.

Doyal, L. & Gough, I. (1984) 'A Theory of Human Needs', *Critical Social Policy,* 10, 6-38.

DTLR (Department of Transport, Local Government and the Regions) (2002) '*Further work on an economic model of the demand and need for social housing' Housing Research Summary* 153. London: DTLR.

Ermisch, J. (1999) Prices, Parents and Young People's Household Formation. *Journal of Urban Economics,* 45, 47-71.

Fitzpatrick, S. (2004) Homelessness policy in Scotland; in Sim, D. (ed) *Housing and Public Policy in Post-devolution* Scotland; Coventry: CIH

Fordham, R., Findlay, S., Gardner, J., MacMillan, A. Muldoon, C. Taylor, G. and Welch, G. (1998) *Housing Need and the Need for Housing*. Aldershot: Gower.

Foster, P. (1983) *Access to Welfare: an introduction to welfare rationing*. London: MacMillan.

Greater London Authority and Opinion Research Services (2004) *Greater London* Housing Requirements Study: *Report of Findings*. London: GLA.

Greene, W.H. (2002), *Econometric Analysis*, Fifth Edition, Prentice-Hall, New Jersey.

Hall, D. & Lee, J. (1998) *Surveying and Modelling Housing Needs: the ORS approach.* Opinion Research Services/University of Wales, Swansea.

Hall, R. & Ogden, P.E. (2003) 'The rise of living alone in Inner London: trends among the population of working age', *Environment & Planning* A, 35(5), 871-888.

Haurin, D.R, Hendershott, P.H and Kim, D (1992) "The Impact of Real Rents and Wages on Household Formation", *Review of Economics and Statistics,* 75: 284-293.

Haurin, D.R. and E.C.Chung. (1998). "The Demand for Owner-Occupied Housing: Implications from Intertemporal Analysis", *Journal of Housing Economics,* 7: 49-68

Haurin, D.R. and H.L.Gill. (2002). "The Impact of Transaction Costs and the Expected Length of Stay on Homeownership", *Journal of Urban Economics*, 51: 563-584.

Haurin, D.R., Hendershott, P.H. and Kim, D. (1994). "Housing Decisions of American Youth", *Journal of Urban Economics* 35: 28-44.

Haurin, D.R., Hendershott, P.H. and S. Wachter. (1997). "Borrowing Constraints and the Tenure Choice of Young Households", *Journal of Housing Research* 8(2): 137-154.

Hendershott P.H. and Shilling J.D. (1982), "The Economics of Tenure Choice, 1955-1979", in *Research in Real Estate*", (C.F. Sirmans, Ed), JAI Press, Greenwich CT.

Henderson J.V. and Ioannides Y.M. (1989), "Dynamic Aspects of Consumer Decisions in Housing Markets", *Journal of Urban Economics,* No. 26, pp. 212 2-30.

Henley, A. (1998) "Residential Mobility, Housing Equity and the Labour Market", *Economic Journal*, Vol. 91, No. 447, pp. 910-939.

HGO Consultancy (2008) *The Need for Support and Supported Housing Services in the North West* 2008-2020 Wigan: 4NW.

Hill & Bramley 1986, ch.4; Bramley 1990, ch.3; Foster 1983; Soper 1981; Springborg 1981; Barry 1965; Williams 1974; Miller 1976; Plant *et al* 1980; Weale 1983; Townsend 1979; Doyal & Gough 1984; le Grand (19xx); Sen 19xx

Hill, M. & Bramley, G. (1990) *Analysing Social Policy.* Oxford: Blackwell.

Hills, J. (2007) *Ends and Means: the Future Role of Social Housing in England*, London School of Economics.

Holmans, A. (1995) *Housing Demand and Need in England 1991-2011*. York: Joseph Rowntree Foundation.

Holmans, A. (2000) 'Estimates of future housing need and demand' in Monk, S. & Whitehead, C. (eds) *Restructuring Housing Systems: from social to affordable housing?*. pp.9-20. York: York Publishing Services.

Holmans, A. (2001) *Housing Demand and Need in England 1996-2016*. ISBN 0 902797 97 2. London: Town and Country Planning Association/National Housing Federation.

Holmans, A., Morrison, N. & Whitehead, C. (1998) *How Many Homes will we Need?*. London: Shelter.

*Hooper, A., Dunmore, K. & Hughes, M. (1998) Home Alone. Amersha*m:Housing Research Foundation.

House of Commons (1996) Housing Need. Second Report of the Environment Committee, Session 1995-96. Vols I & II.

Housing Corporation (2003) *A Home of My Own*. Final Report of the Government's Low Cost Home Ownership Working Party. London: Housing Corporation..

Kaufman, J. C. (1994) 'One-person households in Europe', *Populatio*n, 49(4-5), 935-958.

Le Grand, J. (1991) *Equity and Choice. An Essay in Economics and Applied Philosophy*. London: Harper Collins.

Liverpool City Council (2007) *Updated Supporting People Needs Assessment for Socially Excluded Groups* Liverpool: Liverpool City Council

Malley, J.; Wittenberg, R.; Comas-Herrera, A.; Pickard, L. and King, D. (2005) *Long Term Expenditure for Older People, Projections to 2022 for Great Britain* PSSRU Discussion Paper 2252: University of Kent.

Meen, G. (1998) 'Modelling sustainable home ownership: demographics or economics?', *Urban Studies*, 35, 1919-34.

Miller, D. (1976) *Social Justice*. Oxford: Clarendon Press.

ODPM (2003a) *Achieving Positive Outcomes on Homelessness: A Homelessness Directorate Advice Note To Local Authorities* London: ODPM: London

ODPM (2003b) *Reducing B&B Use and Tackling Homelessness – What's Working;* London: ODPM

ODPM (2005a) *Affordability Targets: Implications for Housing Supply.* Report by G. Meen and 14 others. London: ODPM.

ODPM (2005b) *Affordability Targets: Implications for Housing Supply. Technical Appendix.* London: ODPM.

ODPM (2006) 'New projections of households for England and the Regions to 2026', *ODPM Statistical Release* 2006/0042.

ODPM (Office Of The Deputy Prime Minister) (2002) *Development of a Migration Model*. Report by the University of Newcastle and others. London: ODPM.

Parmar, A. & Sampson, A. (2005) *Tackling Domestic Violence: providing advocacy and support to survivors of domestic violence,* Home Office Development and Practice Report 34, London, Home Office.

Pawson, H., Brown, C. & Jones, A. (2008) *Exploring Local Authority Policy and Practice on Housing Allocations;* report to CLG (unpublished)

Pawson, H., Donohoe, A., Jones, C., Watkins, D., Fancy, C., Netto, G., Clegg, S. & Thomas, A. (2006) *Monitoring the Longer-term Impact of Choice-based Lettings;* London: DCLG. http://www.communities.gov.uk/publications/housing/monitoring

Pawson, H., Netto, G. Jones, C., Wager, F., Fancy, C. & Lomax, D (2007) *Evaluating Homelessness Prevention*; London: CLG http://www.communities.gov.uk/publications/housing/preventhomelessness

Peter Fletcher Associates (2004) *Supporting People Needs Analysis for South Tyneside MBC.*

Peter Fletcher Associates (2006) *Supporting People Needs Analysis For Redcar and Cleveland Borough Council*

Peter Fletcher Associates (2007) *Supporting People Bedfordshire: Independent Needs Analysis Bedfordshire County Council.*

Pickles, A. and Davis, R. (1985), "The Longitudinal Analysis of Housing Careers", Journal of *Regional Science,* 25(1): 85-111.

Plant, R., Lesser, H. & Taylor-Gooby, P. (1980) *Political Philosophy and Social 'Welfare: essays on the normative basis of welfare provision*. London: Routledge & Kegan Paul.

Pleace *et al* (2008) *Statutory Homelessness in England: The experiences of families and 16-17 year olds*; London: CLG http://www.york.ac.uk/inst/chp/publications/PDF/familyhomelessness.pdf

Prescott-Clarke, P., and others (1994) *Routes into Local Authority Housing*. London: HMSO.

Prescott-Clarke, P., and others (1994) *Routes into Local Authority Housing;* London: HMSO.

Rogers, N.; Goldup, M. and O'Leary, C. (2007) Building for All: Identifying the need for supported housing in London London: National Housing Federation and the Housing Corporation.

Rogers, N.; Goldup, M. and O'Leary, C. (2007a) *Building for All: Identifying the need for supported housing in London: Using the toolkit: full technical report and appendix* London: National Housing Federation and the Housing Corporation.

Rosenthal S (1988), "A Residence Time Model of Housing Markets", *Journal of Public Economics*, Vol. 36, pp. 98-109.

Rossi P H and Weber E (1996), "The Social Benefits of Homeownership: empirical Evidence from National Surveys", *Housing Policy Debate*, Vol. 7(1) pp. 1-33.

Scottish Executive (2002) *Research for the Homelessness Task Force: A Summary;* Edinburgh: Scottish Executive

Scottish Government (2008) *Housing Statistics for Scotland – Housing Lists*; Live tables: http://www.scotland.gov.uk/Topics/Statistics/Browse/Housing-Regeneration/HSfS/HousingLists

Sen, A.K. (1992) *Poverty Re-Examined* Cambridge, Mass.: Harvard University Press

Smith, N. & Middleton, S. (2007) *A Review of Poverty Dynamics Research in the UK.* York: York Publishing Services for the Joseph Rowntree Foundation.

Soper, K. (1981) *On Human Need*. Sussex: Harvester.

Springborg, P. (1981) *The Problem of Human Needs and the Critique of Civilisation.* London George Allen & Unwin.

Starfish Consulting (2004) *Needs Analysis for Supporting People Services:* London Borough of Lambeth

Townsend, P. (1979) *Poverty in the United Kingdom.* Harmondsworth: Penguin.

Warwickshire County Council (2008) *Supporting People Needs Analyses* http://www.warwickshire.gov.uk/Web/corporate/pages.nsf/Links/FAC1470F2C93E18E 802572E30050D33A

Weale, A. (1983) *Political Theory and Social Policy* London: Routledge & Kegan Paul.

Whitehead, C. & Kleinman, M. (1992) *A Review of Approaches to Estimating Housing Need.* London: Housing Corporation.

Wilcox, S. (2003) *Can Work, Can't Buy*. York: Joseph Rowntree Foundation.

Wilcox, S. (2005) *Affordability and the Intermediate Market*. York: Joseph Rowntree Foundation.

Wilcox, S. (2009) *UK Housing Review* 2009-10. Coventry: Chartered Institute of Housing.

Williams, A. (1974) '"Need" as a demand concept (with special reference to health)', in A. Culyer (ed) *Economic Problems and Social Goals*. London: Martin Robertson.

Wittenberg, R.; Malley, J.; Comas-Herrera, A.; King, D.; Snell, T and Pickard, L. (2008a) *Future Demand for Social Care, 2005 to 2041: Projections for Demand for Social Care and Disability Benefits for Younger People in England* PSSRU Discussion Paper 2512: University of Kent.

Wittenberg, R.; Pickard, L.; Malley, J.; King, D.; Comas-Herrera, A. and Darton, R. (2008) *Future Demand for Social Care, 2005 to 2041: Projections for Demand for Social Care for Older People in England* PSSRU Discussion Paper 2514: University of Kent.

Wooldridge, J.M. (2002), *Econometric Analysis of Cross Section and Panel Data,* The MIT Press, Cambridge, Massachusetts, USA.

9 781409 826262