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EXECUTIVE SUMMARY

The influence of housing costs on the economic well-being of Australian households is widely acknowledged, but to date there has been little exploration of this relationship at a regional level. In addition, the regional impact of housing assistance on financial disadvantage is unclear. Rents and house prices differ substantially across Australian regions, but the Commonwealth Rent Assistance program parameters do not vary across regions, reducing the potential impact of this program on financial disadvantage in areas with high housing costs.

This project aims to fill this gap in evidence, and has three broad aims:

- To examine regional disadvantage before and after taking into account housing costs.
- To examine before and after housing cost financial disadvantage by household characteristics at a national and regional level.
- To simulate policy changes and evaluate the impact of these changes on before and after housing costs financial disadvantage at a national and regional level.

These questions will be addressed as far as possible at a small area level, in order to provide the greatest level of information possible about regional differences in disadvantage and in policy impacts.

The project has several important contributions to make towards our understanding of disadvantage. It will update previous work on measuring income poverty before and after housing costs, providing critical information about the possible effects on financial disadvantage of the large increases in housing costs in recent years. Second, it will allow us to examine the role that housing costs may play in maintaining or widening existing gaps between disadvantaged Australians and their more affluent counterparts. Its focus on small areas will provide unique information about the nature and extent of spatial inequality and polarisation. Finally, its use of microsimulation modelling means that the potential effects of government policy changes on disadvantage at a small area level can be measured and analysed.

Financial disadvantage is measured here as income poverty: we compare differences in income poverty rates for different groups and across different regions using a cash income measure and a cash income less housing costs measure. The work is located broadly within a deprivation approach to poverty and disadvantage, with the deduction of housing costs from income designed to better capture the relative ability of households to purchase resources than would be the case with a cash income only measure. Large variations in housing costs between Australians at different life cycle stages, in different tenure arrangements, and in different regions, make this type of study essential in forwarding our understanding of disadvantage, and providing adequate evidence for informed policy making.

Because detailed data about housing costs and income are not available at a small area level in Australia, this study uses spatial microsimulation techniques to generate this data, and model policy scenarios. Spatial microsimulation creates synthetic microdata at a small area level. The methodology used in this study builds on earlier NATSEM-AHURI work, and uses the HOUSEMOD spatial microsimulation model, which has been designed specifically for the modelling of housing policy at a small area level.

Research questions which this study will address include:

- What is the nature of the relationship between housing assistance, housing costs and financial disadvantage at a small area level? Which regions are affected? Are metropolitan areas more financially disadvantaged because of higher housing costs?

- What impact does house value and tenure have on financial disadvantage? Does the amount of equity in the house affect financial disadvantage?
- What types of households are impacted by the inclusion of housing costs? What is the impact of housing costs on the financial disadvantage of older people?
- What is the impact on financial disadvantage at a small area level if the upper limit for Commonwealth Rent Assistance was removed? What are the implications for Government?
- What is the impact on financial disadvantage of people going from renting to purchasing housing? What policies can ameliorate this impact? What initiatives are most effective at reducing financial disadvantage?

1 INTRODUCTION

Housing costs have a significant influence on the living standards of Australian households, and these costs vary substantially across Australian regions (Wood and Kelly 2004). Housing costs represent a very large part of the budget of most Australian households. Recent data suggests that households with mortgages on average spend 17 per cent of their gross income on housing costs, while this figure rises to 20 per cent for households renting in the private market (ABS 2005a). This makes it important for us to understand how these costs affect poverty rates, and how policy intervention may affect housing-related financial disadvantage. While the importance of housing costs in assessing disadvantage has been acknowledged in a number of studies (Bradbury et al. 1993; Harding & Szukalska 2000a, 2000b; Saunders & Siminski 2005; Siminski & Saunders 2004), the regional dimensions of this issue have been explored only at a broad level, despite an increasing understanding of the complex nature of inequalities within broad regions (Stimson 2001).

The project has a strong regional focus, with a primary aim of examining financial disadvantage at a *small area level*, producing rates of income poverty for each Statistical Local Area in Australia before and after taking into account housing costs. No previous Australian research has examined the impact of housing costs on poverty at this level of spatial disaggregation. Our methodology will also allow for the examination of before and after housing cost financial disadvantage by household characteristics at a national and regional level, including housing-specific characteristics such as tenure type.

An important additional aim of the project is to simulate policy changes and evaluate the impact of these changes on after housing costs financial disadvantage at a national and regional level. The spatial microsimulation techniques which will be used to produce the base data for before and after housing costs financial disadvantage allow for the simulation of policy changes, and will enable us to evaluate regional differences in the effectiveness of housing-related policy on reducing financial disadvantage.

The project will use the regional microsimulation model, HOUSEMOD, developed for previous AHURI work. A detailed description of HOUSEMOD is presented in Kelly et al. (2005).

The project has several important contributions to make towards our understanding of disadvantage. It will update and expand previous work on measuring income poverty before and after housing costs, providing critical information about the possible effects on financial disadvantage of the large increases in housing costs in recent years. In particular, it will provide the first estimates of after-housing income poverty at a small area level. Second, it will allow us to examine the role that housing costs may play in maintaining or widening existing gaps between disadvantaged Australians and their more affluent counterparts. Its focus on small areas will provide unique information about the nature and extent of spatial inequality and polarisation. Finally, its use of microsimulation modelling means that the potential effects of government policy changes on financial disadvantage at a small area level can be measured and analysed.

This study has important potential implications for housing policy. Regional differences in disadvantage, especially those generated and maintained by differences in housing costs, are important to understand in order to appropriately target policy designed to alleviate the causes and consequences of financial disadvantage. High housing costs in metropolitan areas, for example, may act as a barrier to disadvantaged people from less prosperous areas moving to cities to improve their circumstances in stronger job markets, potentially locking some households into long term financial disadvantage.

Within the broad aims of the project, a number of specific research questions will be addressed. The primary set of research questions to be addressed are:

1a What is the nature of the relationship between housing assistance, housing costs and financial disadvantage at a small area level?

1b Which regions are affected?

1c Are metropolitan areas more financially disadvantaged because of higher housing costs?

Additional questions about differences in the types of households which are in financial disadvantage before and after taking housing costs into account are:

2a What impact does house value and tenure have on financial disadvantage? Does the amount of equity in the house affect financial disadvantage?

2b What types of households are impacted by the inclusion of housing costs? What is the impact of housing costs on the financial disadvantage of older people?

The final focus of this study – that is, the impact of possible policy changes on after-housing financial disadvantage, is addressed in the final two research questions:

3a What is the impact on financial disadvantage at a small area level if the upper limit for Commonwealth Rent Assistance was removed? What are the implications for Government?

3b What is the impact on financial disadvantage of people going from renting to purchasing housing? What policies can ameliorate this impact? What initiatives are most effective at reducing financial disadvantage?

The conceptualisation and measurement of poverty and disadvantage is a highly-contested area of debate among researchers, policy makers and social service providers. In this paper, we outline some of the key theoretical frameworks that have been used in Australia to understand poverty and disadvantage. We then review previous literature that has examined the relationship between housing costs and poverty, discuss the policy context and outline a range of issues related to measurement, and how we propose to address these issues in this study.

In this project we use the term “financial disadvantage” rather than poverty, in part to acknowledge the multidimensional nature of poverty, and the impossibility of capturing all these dimensions using a single measure. By using the term “financial disadvantage” we make it clear that we are basing our analysis on the financial aspects of poverty (cash income, and income after housing costs), rather than on a broader definition of this concept. Further discussion of alternative views of poverty and disadvantage is provided in the literature review below.

The remainder of the paper includes a review of relevant theoretical and empirical literature, including the conceptual framework for this study and the policy context (Section 2) and an outline of our proposed methodology, including a discussion of a range of measurement issues that need to be addressed (Section 3). Section 4 provides a brief summary of the paper, and the next steps in the project. An appendix is also included, providing more detail about our proposed approach to specific research questions.

2 LITERATURE REVIEW

In this review, we focus first on outlining a few of the theoretical approaches that have been used as the basis for studies of poverty, and particularly after-housing poverty, in Australia (Section 2.1). **The framework that will be used in this study is then explained (Section 2.2).** We go on to discuss the research questions to be covered in this study in the context of previous studies of before and after housing poverty and other relevant research and policy (Sections 2.3 and 2.4). We then deal in more detail with the ways in which previous authors have approached measurement issues relevant to this study, both in relation to financial disadvantage (Section 2.5) and the deduction of housing costs from income (Section 2.6).

2.1 Theoretical frameworks

Numerous theoretical and conceptual explanations for poverty and disadvantage exist. Saunders (2005) summarises three recent theoretical frameworks in the context of Australian poverty research.¹ The first of these he describes as the “deprivation” approach, which focuses on the denial of “the resources and opportunities required to achieve full membership of society and gain access to the opportunities it provides” (p. 63). Deprivation has generally been measured by a process of identifying numbers of people who cannot access widely-accepted social needs because of insufficient money. While this would be most accurately measured by capturing actual individual and household consumption, enormous practical difficulties in undertaking this type of measurement mean that generally proxy indicators of deprivation have been used (see Headey 2005). An example of deprivation-focused measurement is the series of questions included in the ABS Household Expenditure Survey regarding financial stress (McColl et al. 2002). The budget standards approach to poverty (Saunders 1998), in which estimates are made of how much money is required to meet the needs of particular families, also fits in with the deprivation framework

The second theoretical framework for understanding poverty that Saunders discusses is the “capability” framework, which is based in the work of Amartya Sen (see Saunders 2005, pp. 68 ff). Sen’s work emphasises that in order to achieve an adequate level of well-being, people need capabilities in a range of areas, which allow them to function well in society. Headey (2005) uses Sen’s capability framework as the basis for measuring multidimensional aspects of capability, functioning, and outcomes using data from the longitudinal HILDA survey, and Scutella and Smyth (2005) use a capabilities-based theoretical framework for their work on child poverty.

The final theoretical model which Saunders (2005) discusses is social exclusion. Social exclusion, like poverty, is a term which has been defined in numerous ways, but generally incorporates some degree of concern with social and economic participation, highlights the multidimensional nature of poverty and disadvantage, and addresses questions of causation in relation to poverty. Saunders notes that in the Australian context, approaches to social exclusion have tended to focus rather narrowly on reducing welfare dependency (Saunders 2005, pp 76-77), but that the concept has great potential in informing research about poverty.

The frameworks described above represent only a small proportion of the many theoretical and conceptual approaches to poverty and disadvantage. Each of the approaches gives rise to a number of definitional and measurement issues, and these are discussed in more detail in Section 2.5.

¹ Headey (2005) presents similar material, but also includes the low income approach as a separate framework.

The notion of discretionary income has also been an important concept within poverty research. Discretionary income is the income left over after essential costs have been paid, and it has been argued that differences in discretionary income, rather than just cash income, better reflect actual differences in disadvantage (Citro & Michael 1995; Greenwell, Lloyd & Harding 2001). After-housing studies of poverty fit broadly within this framework. Housing is such a major cost for most Australian households, and particularly for low income households (Harding, Lloyd & Greenwell 2003) that there is a strong case for taking out this cost before assessing the relative value of remaining household income. Not only are housing costs a large expense for many households, but they are also a variable one. The major variations in housing costs relate to life cycle and to region of residence, as well as to tenure type, with recent large increases in the price of housing differentially affecting people in different tenure arrangements (Bradbury et al. 1993; Harding & Szukalska 2000a). Thus measuring income after housing costs have been taken out may provide a better indication of disadvantage than before-housing income. Ritakallio (2003) notes the importance of taking housing costs and tenure into account in measuring cross-national disadvantage, particularly when comparing countries like Australia, with traditionally high rates of home ownership, with countries in which other tenure types are more common.

In an Australian context, variations in housing costs have also been linked to increasing spatial disparities between the advantaged and the disadvantaged (Reynolds & Wulff 2005). Yates (2002) reviews the literature surrounding increases in regional inequality, and the factors which may be affecting these trends. Large increases in the costs of home ownership in recent years, accompanied by a tightening of the public housing sector – housing options that have traditionally helped to reduce after-housing poverty among people with these tenure types (Burke 1998) – makes the re-calculation of after-housing poverty critical to understanding how these changes may have affected households at the bottom end of the income distribution. The contribution of increasing house prices and rent differentials to spatial income inequality is an important issue that deserves attention.

While the conceptual basis for removing housing costs from income to compare the relative well-being of households at different life-cycle stages is straightforward, some debate does exist around the basis for deducting housing costs from income when regional differences are the focus of interest. Siminski and Saunders (2004) discuss this issue, starting from the premise that, unlike other goods, the utility of housing is different in different places, and it is arguable that houses in different regions are really different commodities, not the same commodity at a different price. However, they argue that housing prices are higher in cities partly because people prefer to live there (implying that housing costs are then a function of consumption preferences) and are partly higher because of constraints imposed on consumers' purchase of housing by the lower wage rates and fewer available jobs in regional areas than in cities. They argue that the proportion of housing expense that is due to the need to live near available and adequately paid work should be regarded as "intermediate consumption" rather than "final consumption", and that there is a strong conceptual basis for deducting this component of housing expenses before comparing incomes (2004, pp 4-5). In practice, however, they note that the variation in the location component of prices due to consumption preferences is small, and suggest that all three components of housing price (dwelling type, location related to consumption preferences, and location related to work requirements) should be deducted from cash income.

Criticisms of the before- and after-housing cost approach to measuring financial disadvantage include concerns that this approach is still based on income, which is in itself an incomplete measure of advantage and disadvantage, and that simply deducting actual housing costs from income fails to take into account the greater economic vulnerability of renters than home owners (Chotikapanich et al 2003). After-housing studies of poverty take only the financial costs of housing into account – they do not also consider the additional benefits (in terms of cultural meanings, social capital, wealth accumulation, and security) of home ownership versus renting. The issues around the non-monetary advantages and disadvantages of particular tenure types, and the literature in this area, are addressed by Yates (2002). There is also no consensus about the best way to measure after-housing financial disadvantage (Harding & Szukalska 2000a), and these measurement issues are dealt with in Section 2.6.

2.2 Conceptual framework for this study

Our work on measuring before and after housing poverty fits most closely within the deprivation framework outlined in Section 2.1, in that our purpose in examining after-housing poverty is to more accurately measure the amount of money households have left for consumption after housing costs have been paid. By taking housing costs into account, we are lowering the risk of overstating the deprivation of some households who may be able to purchase substantially more goods and services with their cash income due to very low housing costs than households with comparable income but higher housing costs.

We also agree with the position put forward by Siminski and Saunders (2004) in relation to the theoretical basis for deducting housing costs from income for the purposes of regional income comparisons. That is, while it may be that some proportion of regional differences in housing expenditure are the result of consumer preferences, price differences between regions are driven largely by the need to be near available work, and thus can legitimately be deducted from income for the purposes of cross-region comparison.

While the deprivation framework incorporates empirical approaches which focus more strongly on expenditure than income, such as the budget standards approach to measuring poverty, for this study we are intending to use income as our base measure. Income-based measures of poverty, despite their limitations (discussed more fully below) are widely accepted and understood, nationally and internationally. The contribution of this study is to regionalise an indicator of financial disadvantage, and use spatial microsimulation techniques to model regional financial disadvantage. Our focus here is on comparisons between regions, particularly how these comparisons changes after housing costs are taken into account, so that our priority is to use a consistent and well-understood measure of disadvantage.

2.3 Before and after-housing costs financial disadvantage: previous studies

The primary set of research questions for this project, as noted above, focus on the regional distribution of before and after housing financial disadvantage (questions 1a, 1b and 1c), and an additional set of questions (2a, 2b) explore the effects of housing costs on the level of financial disadvantage of different household types. Both these sets of questions fit within the body of literature examining before and after-housing costs poverty, but extend previous work in a number of ways, particularly through the focus on small area analysis.

International literature relevant to after-housing poverty has tended to focus on the effects of the value of housing equity on the relative well-being of older households (see, for example, Hurd 1990; Rendall & Speare 1993). Australian studies have also focused on life-cycle issues, as well as the impact of housing costs on regional differences in poverty and income distribution, and the relative disadvantage of households in various tenure types. (Bradbury, Rossiter & Vipond 1986; Burke 1998; Chotikapanich et al. 2003; Harding & Szukalska 2000a, 2000b; Harding, Lloyd & Greenwell 2001; King 1998; Ritakallio 2003; Saunders & Siminski 2005). Relatively strong Australian interest in the relationship of housing costs to poverty may perhaps be due to the cultural importance of home ownership in Australia, and to the very large number of income-poor older Australians who are outright home owners. Key Australian studies are summarised in Table 1. Despite differences in measurement of both cash income and housing costs (discussed in detail in Sections 2.5 and 2.6), some clear findings emerge from previous Australian research.

The two most common findings from studies specifically examining after-housing poverty rates have been:

- 1) in recent studies, generally after-housing poverty rates (where a relative poverty line based on a percentage of median income is used) for the whole population are higher than before-housing rates, due to housing costs being a more substantial proportion of income for poorer households than more affluent ones²; and
- 2) rates of poverty after housing costs are taken into account fall substantially for some groups, most noticeably for older households, because the proportion of outright home owners amongst this group is higher than average (Bradbury et al 1986; Harding & Szukalska 2000a; Harding Lloyd & Greenwell 2001; Chotikapanich et al 2003). Studies of changes in poverty rates once housing costs are taken into account for particular household types have not generally incorporated a regional dimension.

² Relatively early studies of before and after housing poverty (such as Bradbury et al. 1986; Burke 1998; King 1998) generally used the Henderson Poverty Line, rather than a relative poverty line based on a percentage of median income, and tended to find that aggregate after-housing poverty rates were lower than before-housing rates. The difference in relative poverty rates between older and newer studies may be due in part to the use of the Henderson Poverty Line, as well as changes between the early 1980s and the mid 1990s onwards in the housing market, in the real costs of housing for families with low incomes, and changes in the composition of low income families in terms of housing tenure (Harding & Szukalska 2000b). Older and newer studies, however, report similar findings on changes in the composition of households in poverty (such as a fall in the number of older households in poverty) once housing costs are taken into account.

Previous regional findings

Regional differences in before-housing and after-housing poverty rates have, as noted above, only been examined to date at a broad regional level (due to an absence of adequate data at a sufficiently disaggregated geographical level), but even at a fairly low level of spatial disaggregation, findings have not been clear cut. Siminski and Saunders (2004) examined before and after housing mean equivalised disposable incomes, comparing Australia's major urban areas with the balance of Australia, and found that while the difference in terms of mean income between these two areas are reduced once housing costs are deducted from income, mean income for urban areas is still substantially (12 per cent) higher than mean income in the balance of Australia. However, when examining the proportion of people living in low income households, Saunders and Siminski (2005) found that the gap between urban and rural areas greatly narrowed when using an after housing measure of income. Siminski and Norris (2003) found that, once direct housing costs were removed from income, the proportion of people in low income households decreased with remoteness, whereas before housing costs were removed, this relationship was the reverse. Inner regional areas, however, were the exception to this trend, having the highest proportion of after-housing low income of any area. Harding & Szukalska (2000a) found mixed results when comparing before and after-housing gaps between capital city and regional poverty rates, although in most states they found after-housing poverty was still higher in regional areas than capital cities, despite higher housing costs in capital cities. There is some debate in the literature about the extent to which the narrowing of the gap between urban and rural poverty when after-housing rates are examined is due to partly to differences in tenure type rather than to differences in price (see Siminski & Saunders 2004).

The issue of regional variations in travel costs and whether these offset regional variations in housing costs has also been considered (Siminski & Saunders 2004).³ If this were the case, then measuring income after housing costs would be less appropriate, as the amount of cash income left over for expenditure would tend to be overstated in rural areas. However, Australian empirical evidence regarding this hypothesis is mixed (see Siminski & Saunders 2004). When major cities are compared with the balance of Australia, transport costs are actually higher in cities, so that higher housing costs in major cities are not offset by lower transport costs. However, within-region variations in travel costs tell a different story, with the difference in travel costs between "other urban" areas and "rural" areas more than outweighing the differences in housing costs between these areas. These figures, however, are based on data from the late 1990s (the ABS Household Expenditure Survey 1998/99), and these relationships may have changed in the interim, especially given the rapidly rising housing costs in Australia's capital cities since that time.

³ Davidson, Khan & Rao (2001) use an adjusted measure of poverty which takes into account both the higher and lower costs of various goods and services associated with regional residence, including transport, based on the calculation that the overall cost of living in regional areas is approximately 80 per cent of that in capital cities. However, other authors conclude that, while it is important to acknowledge the differences in costs of living (and therefore in disadvantage thresholds) across regions, the calculation of more precise regional differences in standards of living is complicated by lack of geographically-disaggregated data, and the inability of simple differences in price to capture the totality of regional differences (Siminski & Saunders 2004).

While none of the previous research in Australia on the regional dimensions of after-housing poverty has examined this issue at a small area level, studies have been conducted at a small area level focusing on income poverty (Lloyd, Harding & Greenwell 2001), housing affordability (Taylor et al 2004) and Commonwealth Rent Assistance (Melhuish, King & Taylor 2004). All the above studies use spatial microsimulation techniques (as proposed for this study) to examine issues of disadvantage at a small area level. An additional series of studies by Gregory and Hunter have used census data to map regional disparities in advantage and disadvantage within Australia's cities, focusing on income and employment patterns within small areas (Gregory and Hunter 1996; Gregory and Hunter 2001; Hunter 1995; Hunter 2003). These studies have found evidence of widening intra-urban inequality.

Previous household-type findings

Most studies of differences in before and after-housing poverty or changes in income distribution between cash income and after-housing income have focused on differences by age/life cycle group or tenure type, especially outright home owners versus purchasers and/or renters (see, for example, Bradbury et al 1993; Saunders & Siminski, 2005; Yates 1994). The weight of evidence from these studies suggests that owner occupiers and later life cycle households tend to move up the income distribution when after-housing costs income is used as the basis for analysis, and that after-housing poverty rates tend to be lower for these types of households than before-housing poverty (Harding & Szukalska 2000a; Harding, Lloyd & Greenwell 2001). However, there is some variation in results, and Chotikapanich et al (1993) find that differences in relation to tenure type may be fairly sensitive to differences in the calculation of after-housing poverty. Chotikapanich et al (1993) incorporate imputed rent of owner occupiers in their measure of income, as well as including the rent such owner-occupiers would have to pay for equivalent accommodation in their calculation of housing costs (to come up with after-housing poverty). They find that when only imputed rent is added to income, poverty rates among owner-occupiers are substantially reduced. However, when their after-housing poverty rates are calculated based on the amount of rent they would have had to pay in equivalent housing, outright home owners' poverty rate rises again, although poverty rates for owner-purchasers fall (demonstrating lower renting than mortgage costs for relatively low income households).

Table 1 Previous Australian studies of before and after housing disadvantage

	Housing costs measure used	Poverty line used	Regional dimension
Bradbury et al, 1986	Deduct actual housing costs	Henderson poverty line	National analysis
Yates, 1994	Imputed rent base on National Accounts formula	Examined income distribution only	Includes state –level comparisons
Bradbury et al, 1993	Deduct actual housing costs	Examined income distribution only	National analysis
Harding & Szukalska 2000a	Deduct actual housing costs	Half –average and half median poverty lines	State level and capital city/balance of state
Harding & Szukalska 2000b	Deduct actual housing costs	Half –average, half median and Henderson poverty lines	National analysis of child poverty
Flatau & Wood, 2000	Imputed rent adjustments based on opportunity cost approach	Henderson poverty line	National analysis
Harding, Lloyd & Greenwell, 2001	Deduct actual housing costs	Half average poverty line	National analysis
Chotikapanich et al, 2003	Imputed rent adjustments based on opportunity cost approach	Henderson poverty line Foster poverty measure	National analysis
Ritakallio, 2003	Imputed rent and actual housing costs	Fifty per cent of average equivalised income, plus other lines incorporating housing cost adjustment	Comparison between Australia and Finland
Siminski & Norris, 2003	Deduct actual housing costs	Don't use a poverty line – examine bottom 20 per cent of income distribution	ARIA index of remoteness
Siminski & Saunders 2004	Deduct actual housing costs, and also examine regional differences in transport costs	Don't use a poverty line – examine bottom 20 per cent of income distribution	ABS Section of State
Saunders & Siminski, 2005	Used imputed rent adjustments for owners, public housing tenants and rent-free occupiers; also deducted actual housing costs	Don't use a poverty line – examine bottom 20 per cent of income distribution	National analysis

2.4 Modelling housing policy changes: policy context and previous studies

Part of this project involves the simulation of policy changes, and the effects such changes would have on before and after housing financial disadvantage. There are a number of state and Commonwealth government housing policies, but only those most relevant to the modelling proposed for this project are discussed here.⁴ The reduced housing costs available for public housing tenants, and the supplement paid to low income private renters through Commonwealth Rent Assistance are both included in our modelling.

Funding for public housing comes primarily from the Commonwealth Government, through the Commonwealth-State Housing Agreement (CSHA). State and Territory Governments provide some additional funds for public housing, and are responsible for the stock of public housing, and administering this. The direction of the CSHA, however, has moved away from constructing new public housing units, towards working with other housing providers and investors (Melhuish & King 2004). Tenants in public housing generally pay 25 per cent of their assessable income as rent, although if their income is too high to qualify for this reduction, they pay market rent.

The Commonwealth Government's main form of assistance to people not in public housing is Commonwealth Rent Assistance (CRA). Commonwealth Rent Assistance is an amount added to the benefit payment for a household, designed to offset some of the costs of renting for income support recipients not in public housing. Anyone receiving an income support payment, more than the base rate of Family Tax Benefit, or a service pension is eligible. The amount is calculated as 75c for every dollar of rent paid over a specified minimum until the maximum rate is reached. This assistance is paid as an addition to income support payments, rather than directly applied as a rent reduction. Commonwealth government expenditure on CRA increased in real terms by 27.9 per cent between 1992/03 and 2001/02, while CSHA expenditure fell in real terms over the same period (Kelly et al. 2005).

A number of Commonwealth and State/Territory schemes exist to provide assistance to home purchasers, most notably the First Home Owner Grant Scheme. While these may affect movements from renting to home ownership, especially among lower income households, these schemes are not included in our modelling, largely due to insufficient data. However, some modelling of possible subsidies to mortgages will be undertaken.

⁴ Other Commonwealth and state housing initiatives (like the Supported Accommodation Assistance Program), are targeted at particular groups in special need of housing assistance, and are not taken into account in this analysis.

While none of the after-housing poverty literature specifically incorporates the possible effects of policy changes on after-housing financial disadvantage (regional or otherwise), some studies do note the impact of housing-related policy on income distribution (see, for example, Bradbury et al 1993). In addition, some work in the area of housing affordability has focused on policy change simulation, examining the effects of changes on housing affordability. Although the current study is focusing specifically on after-housing financial disadvantage, it is important to note that the issue of unaffordable housing has been an additional focus of the literature surrounding the relationship between housing and economic well-being, as well as a key focus for housing policy. This body of literature, including a discussion of the debates around the definition and measurement of housing affordability and related terms such as housing stress, is reviewed by Gabriel et al. (2005).

Housing unaffordability can be defined in a number of ways, but one commonly used measure in Australia is to define housing as unaffordable if housing costs take up more than a pre-defined proportion of income for low income families. Harding et al. (2004), for example, define income units as being in unaffordable housing if they fall within the bottom two quintiles of the equivalised income distribution and are spending more than 30 per cent of their disposable income on housing costs. Others (for example, Taylor et al 2004; ABS 2004b) use slightly different measures. The ABS, using the term housing stress, define this as housing costs over 30 per cent of gross income for households with incomes between the bottom 10 and bottom 40 per cent of the equivalised income distribution. Taylor et al. (2004) also use 30 per cent of gross income as the affordability threshold.

Ratio measures of housing affordability such as these involve resolving some measurement issues similar to those faced in measuring before- and after-housing financial disadvantage, and our discussion of measurement issues in the following sections incorporates insights from the housing affordability literature.

Of most relevance to this project is an earlier AHURI project, undertaken by NATSEM, which examined the regional impact of Commonwealth Rent Assistance on housing affordability (Melhuish, King & Taylor 2004), and used spatial microsimulation techniques similar to those proposed here. In addition, work by Yates and Gabriel (2006) includes calculations of housing affordability based on measures of residual income (that is, income that remains after housing costs are paid), and these measures of affordability are comparable to after housing costs financial disadvantage.

2.5 Measurement issues: defining and measuring financial disadvantage

The theoretical frameworks outlined in Section 2.1 give rise to a range of approaches for measuring poverty. The capabilities and social exclusion approaches emphasise multidimensional measures, while the deprivation framework focuses more on expenditure and material wellbeing (although it can be expanded to consider wider measures of deprivation). There is a large body of literature in Australia and internationally discussing the relative merits of differing approaches to the measurement of poverty.

In this project, as noted above, we have decided to focus on an income-based measure of poverty, within a broad deprivation framework, so we will deal only with the definitional and measurement issues related to income-based approaches. We feel that the major contribution of this project is the regionalisation of financial disadvantage measures, and the effect of housing policy on financial disadvantage, so as long as we are using the same measure for all regions, it is the comparison between regions that we are most interested in, not so much the absolute values. However, in order to clarify the limitations of our chosen approach, we present below some discussion of the most common criticisms of income-based approaches to poverty, as well as ways to address some of these issues.

Income based approaches to the measurement of poverty have been criticised from both a conceptual and methodological perspective. Conceptually, as is clear from Saunders' (2005) discussion of theoretical frameworks for thinking about poverty, income captures only one aspect of disadvantage, and fails to address underlying causes or consequences of poverty.

Even if we accept these limitations, a number of debates exist within the literature that focuses on income-based measures of poverty concerning problems with measurement. A number of these issues relate to how we actually go about counting the number of people who are in income poverty – that is, how incomes should be measured, where the poverty line should be set, and to what extent deficiencies in income-related data affect poverty rates.

Recent commentators have tended to refer to disagreements among researchers on these and related issues as “sterile debates”, which draw attention away from underlying concerns about disadvantage and inequality (see, for example, Saunders 2005; Scutella & Smyth 2005). However, as we will be relying on an income-based measure of poverty for this study, it seems important to briefly address these issues.⁵

First, income poverty researchers have noted deficiencies in the available income data which make it difficult to accurately measure incomes at the bottom end of the income distribution. Research has suggested that many households that report very low, zero or negative incomes in fact have standards of living that do not reflect these figures (Bradbury 1996; Johnson & Scutella 2003; Siminski et al. 2003). Analysis of very low income earners by the ABS, for example, revealed that many of these low income earners had average incomes at about the level of the single pension, were predominantly single person households with average age of the reference person being 53, but with expenditure above the average of households in the second income decile, which is consistent with the use of assets to supplement their income (see ABS 2005b). Some researchers address this issue by removing households with zero or negative income from analyses of income distribution (for example, McNamara et al. 2004), and the ABS excludes the bottom decile of the income distribution from their recent analyses of low income households (for example, ABS 2004a). Such an approach, however, may exclude analysis of those people in the bottom decile who are truly disadvantaged (Gabriel et al. 2005).

Debates about where to draw the poverty line also abound, as small shifts in drawing the poverty line can result in substantial apparent movements into or out of poverty, a tendency that is exacerbated by the benchmarking of some income support payments to poverty lines. Some analyses include data using more than one poverty line, so that differences in overall poverty rates generated by where the line is set can be observed (Harding & Szukalska 2000a, 2000b; Harding, Lloyd & Greenwell 2001).

⁵ Greenwell et al. (2001) also provide a useful introduction to technical issues related to the measurement of income poverty.

An additional concern about income poverty measurement focuses on the relative worth of headcount measures of poverty (that is, how many people, households or income units fall below a given poverty line) and more sophisticated measures of poverty that capture the intensity of poverty for different groups. Headcount measures of poverty are very sensitive to small movements in income, or small adjustments to the poverty line, and also fail to take into account the depth or severity of income poverty (Harding & Szukalska 2000a; Chotikapanich et al. 2003).

Alternative measures include the “poverty gap measure” - that is, the difference between income and the poverty line. In addition, other more sophisticated measures of poverty exist, which essentially decompose poverty, examining the intensity of poverty for different groups such as couples, sole parents, the aged, children and so on. These measures include the Foster class of poverty measures, which take into account the intensity of poverty, including differences in levels of poverty among groups who fall below the poverty line (Chotikapanich et al. 2003; Foster, Greer & Thorbecke 1984). Rodgers and Rodgers (2000) note that these more sophisticated poverty indices tend to be difficult to interpret, and instead use them as the basis for developing a poverty intensity measure, which shows the intensity of poverty suffered by a group compared to the population as a whole.

Finally, income poverty measures which rely on cross-sectional data are open to criticism because they fail to take into account the length of time that people spend below the poverty line. Recent research (Abello & Harding 2004; Headey 2005; Headey, Marks & Wooden 2005) suggests that longitudinal measures of income poverty show that many people who are in poverty at one period escape poverty in subsequent years, although there is also evidence to suggest that some people who move out of poverty nevertheless remain economically vulnerable (Marks & Wooden 2005). When longitudinal data is available over a greater period of time researchers will be able to better gauge how much “churning” occurs around the poverty line over time - it may be that many low income people move in and out of poverty over a long period.

Despite the flaws in income-based measures, income-based poverty lines continue to play an important role in research and policy around poverty. Peter Saunders, in his review of poverty measurement debates, states that the poverty line

remains an invaluable tool for assessing the adequacy of income support benefits, for evaluating the impact of economic and social trends on poverty, for identifying which groups are most in need of support, and for comparing poverty rates over time and internationally (Saunders 2005, p. 49).

Headey notes that, despite measurement problems, low income is nevertheless an important aspect of poverty and disadvantage, and is included as part of almost all multidimensional measures of poverty (Headey 2005, pp. 7-8). In addition, it may be that income poverty is a reasonable proxy for other dimensions of disadvantage, as recent Australian data suggests that associations between low income and some other dimensions of disadvantage (such as poor health and unemployment) appear quite strong (Saunders 2005, pp. 80-81). In this study, we are focusing on income poverty, while taking account of one of the other dimensions of disadvantage by examining levels of financial disadvantage before and after housing costs.

One alternative approach to poverty measurement, that still falls broadly within an income-based framework, is the budget standards approach. This approach aims to measure the adequacy of income for achieving a certain standard of living. To establish this budget, the researcher needs to specify what items to include, how many of them, the quality and the price. The Social Policy Research Centre developed budget standards for Australia in 1998, and updated these in 2003 (see Saunders 1998; 2003), and they have been used for both research and service targeting. Recently, updated SPRC budget standards were used to assess housing affordability and were also regionalised to Queensland using regional price indices for Statistical Divisions (see Waite & Henman 2005). Budget standards approaches have a number of advantages in research on economic well-being, including their ability to more accurately measure differences in income adequacy between different household types than commonly used equivalence scales (see Gabriel et al. 2005; Waite & Henman 2005). However, while budget standards offer important insights into standards of living in Australia, they have not been widely used for comparing incomes across regions in Australia, and are not as broadly recognised as poverty lines based on equivalised income. The emphasis in the budget standards approach on relatively high numbers of household types also makes this method complex to apply, and there is no widely-accepted methodology for regionalising the standards across Australia.

2.6 Measurement issues: measuring housing costs

Saunders and Siminski (2005) note that the impact of housing on income can be measured in two ways, either it can be seen as “providing a supplement to cash income, or as a cost that must be financed out of cash income” (p. 12). To measure housing as a supplement to income, imputed income (rent) available from owner-occupied housing is added to cash income. To measure housing as a cost to be financed out of income, actual housing costs (such as mortgage payments, rent and rates) are deducted from income.

The imputed rent approach

The Australian Bureau of Statistics supports the inclusion of imputed rent in work examining income distribution (Saunders & Siminski 2005). Yates (1994) and Saunders and Siminski (2005) describe the conceptual and empirical issues involved in calculating imputed rent, and provide some outcome analysis of income distribution using various techniques for calculating imputed rent and adding it to income.

Saunders and Siminski (2005) describe the two main approaches used to calculate imputed rent as the market value approach and the opportunity cost approach. Yates (1994) uses the market value approach, which involves using Australian National Accounts data as the basis for coming up with an estimated rent based on a fixed percentage of the gross value of the house, also taking into account the costs associated with home ownership such as rates, insurance, and mortgage interest. Among other findings, she notes the relatively high imputed rent values for older people at the lower end of the income distribution, which is due to their high incidence of outright ownership of homes (Yates 1994, p. 55), and that the effect of including imputed rent in income is greatest on incomes at the bottom end of the distribution. She finds that, once imputed rent is added to income, young people, renters and owner-purchasers tend to move down the income distribution, while older people and outright owners move up the distribution. Saunders & Siminski (2005) also use the market value approach, and extend it further by imputing rents for public housing tenants and rent-free housing occupants. They found that imputing rent has a substantial effect on low income households, and results in an equalising of the income distribution.

An alternative methodology, the “opportunity cost” approach, used by Flatau and Wood (2000) and Chotikapanich et al. (2003) is based on estimating the amount of annualized income home owners would receive by converting the equity in their house into another investment. The costs associated with equity conversion (such as the loss of a pension and transaction costs of the sale) are also incorporated into the imputed rent.

The actual housing costs approach

As noted above, an alternative way of taking housing into account in income distribution is by deducting actual housing costs (such as rent and mortgage payments) from cash income. Owner-occupiers with large amounts of equity in their home would generally have very low actual housing costs, so that the monetary benefits of imputed rent can be approximately taken into account by deducting actual housing costs, as deductions will be quite small for households who would have had relatively large sums added to their incomes using the imputed rent approach (Bradbury et al. 1986).

There are advantages and disadvantages to the varying approaches for taking housing costs into account. Siminski and Saunders (2004) summarise these in the context of regional comparisons of income, and note that neither method of after-housing income measurement is perfect. Measures that deduct actual housing costs from income ignore regional differences in housing quality, and adding imputed rent to owner-occupiers’ income ignores the link between rental price differences and regional differences in access to employment (2004, p.6).

Previous researchers who have specifically examined before and after housing incomes have approached the measurement issues outlined above in various ways. In general, imputed rent for owner-occupiers has more often been calculated in studies of inequality and income distribution (Saunders & Siminski 2005; Yates 1994) than in studies of poverty, which have tended to deduct housing costs from cash income (Bradbury, Rossiter & Vipond 1986; Harding & Szukalska 2000a, 2000b; Harding Lloyd & Greenwell 2001; King, 1998). An exception to this is the work by Chotikapanich et al (2003) and Flatau and Wood (2000), which does use an imputed rent approach to study before and after housing poverty. Also, while Saunders & Siminski (2005) do not examine poverty per se, they do examine changes in the bottom 20 per cent of the income distribution to avoid the controversial issues surrounding the measurement of poverty (pp. 11-12). The latter authors used both an imputed rent adjustment to disposable income and an after-housing costs measure of disposable income and found that the proportion of low income households in various tenure types were similar using either approach (private renters more likely to be low income and home owners less likely to be low income than when disposable income is examined without any adjustment for housing costs). They also found that both approaches to adjusting for housing costs substantially reduce the representation of older households in the bottom income quintile (pp. 13-14).

3 PROPOSED METHODOLOGY

In this section, we first outline our overall methodological approach, including our data sources. We then go on to discuss specific measurement issues that need to be resolved for this project. We give an outline of our approach to the specific research questions in the Appendix.

3.1 Data sources

Spatial microsimulation attempts to overcome the lack of detailed information available in Australia at a small area level by combining the high level of spatial disaggregation available in census data, with the detailed population information available in income surveys. The two specific data sources which we combine for this project are the 2001 Census of Population and Housing, and the 1998-99 Household Expenditure Survey.

3.1.1 Census

The ABS Census of Population and Housing is the only data source available for the whole of Australia at a small area level that provides the demographic and economic detail required for our analysis, and the latest available data is from the 2001 census. A detailed description of the selection of variables from the census for use in housing-related spatial microsimulation is available in Melhuish et al (2004).

3.1.2 Income survey

The survey used as the basis for the microsimulation model HOUSEMOD is the Household Expenditure Survey (HES) from 1998-99. This survey provides a great deal of information on household income and expenditure, including demographic data (age/sex), income data (including source of income), loan data (including principal outstanding, term, weekly repayment amount), indicators of financial stress, and full expenditure details on over 600 items. As described below, NATSEM's microsimulation model of Australia's tax and transfer system, STINMOD, is used to update the HES, and is also used to impute CRA receipt onto the HES basefile.

The 1998/99 HES has records for 13,694 persons aged 15 and over and 6,892 households.

The new ABS Household Income and Expenditure Survey (HIES) will be available in 2006, but not in time to incorporate into this project.

3.2 Spatial microsimulation

Spatial microsimulation is a term used to describe those techniques that create synthetic microdata for small geographic areas and allow assessment of the spatial impact of policy change (Melhuish, Blake and Day 2002). These techniques generally rely on creating synthetic individuals or households that match the socio-demographic characteristics of the small areas of interest.

Spatial microsimulation is a technique that combines individual or household microdata, currently available only for large spatial areas, with spatially disaggregated data to create synthetic microdata estimates for small areas. (This aspect of the modelling is sometimes termed 'synthetic estimation' in the international literature.) There are two possible methods by which this can be achieved - 'synthetic reconstruction' or 'reweighting' (Williamson et al, 1998). Reweighting is used for this project.

Reweighting is achieved by altering the weights for each individual or household in the survey. As national sample surveys are based on a sample of the population, each individual or household within the survey must be weighted to represent the estimated total number of that type of household within the Australian population. In a similar manner, the same sample can be reweighted so that it represents the population within a small area.

HOUSEMOD (Kelly et al, 2005) has been designed specifically for the modelling of housing policy at a small area level. HOUSEMOD uses the SYNAGI (**SYN**thetic **AU**stralian **G**eo-demographic **I**nformation) approach developed by NATSEM. This approach uses the reweighting method to combine the census and ABS sample survey data together to create a synthetic unit record file for every Statistical Local Area (SLA) in Australia.

HOUSEMOD uses selected census tables that represent the demographics of a given SLA as benchmarks for the reweighting of the ABS sample survey, the Household Expenditure Survey (HES). The benchmarks taken from the census include individual and household variables for SLAs such as age and sex, household type, dwelling structure and tenure type. These variables are called the constrained variables, and are replicated in the model output.

Any variable that is available in the HES but that has not been benchmarked in the model is considered an unconstrained variable. The extent to which synthetic values for unconstrained variables reflect actual values at a small area level depends on how closely related the unconstrained variables are to the variables used as benchmarks in the model – that is, the model’s accuracy in predicting the values of unconstrained variables is determined by the degree of correlation of the benchmark variables with the unconstrained variables. For example, the census does not tell us the number of age pensioners in each small area. If we were interested in these numbers we would rely on the constrained variables being closely correlated with age pensioner numbers. HOUSEMOD is constrained by age and sex groups and also household income levels. These variables are strongly correlated with age pensioner numbers, so we could have reasonable confidence in the accuracy of the model’s predictions of pensioner numbers for SLAs. Alternatively, if our interest was duration of unemployment then the constrained variables are not likely to be well correlated with this variable and any predictions may be unreliable for SLAs. Validation of outputs for unconstrained variables from HOUSEMOD has been conducted (see Kelly et al 2005). Financial disadvantage and housing costs – the key variables of interest in this project – are highly correlated with a number of the benchmark variables used in HOUSEMOD. A full list of the benchmark variables used in HOUSEMOD appears below in Table 2.

Table 2: Benchmarks used in the HOUSEMOD reweighting algorithm

Census XCP ⁽¹⁾ table	Benchmark	Level
X46b Income By Tenure By Household Type	HHTYPE	HH
X13 Labour Force Status by Sex and Age	SEXP*LFS*AGEP	PERS
X44 Landlord Type By Weekly Rent	DTENU*RENT	HH
X46b Income By Tenure By Household Type	DTENU*HHTYPE	HH
X46 Income By Tenure By Household Type	DTENU*HHINCOME	HH
X45 Type of non-private dwelling	NPdtype	PERS
X41 Monthly Housing Loan Repayment by Weekly Household Income	MORT*HHINCOME	HH
X47 Dwelling Structure by Household Type by Family Type	DWSTR*DCOMP	HH
X48 Number of persons usually resident	NPERSONS	HH
X40 Wkly Rent by Wkly Household Income	RENT*HHINCOME	HH

Note: (1) XCP refers to the Census 2001 Expanded Community Profile Tables

Source: Kelly et al. 2005.

Previous validation of HOUSEMOD output against external benchmarks revealed that while synthetic estimates closely matched external data for the vast majority of SLAs in Australia, 190 SLAs (out of 1353 SLAs in total) failed to match benchmark data with sufficient accuracy (Kelly et al, 2005). These SLAs were generally those with very few households, or inner city suburbs that have unusual characteristics difficult to replicate with modelling. These 190 SLAs were removed from any analysis in previous work with HOUSEMOD, and it is proposed that they also be removed in this project. The Northern Territory and the Australian Capital Territory were the most affected by the removal of these SLAs, with almost half the Northern Territory SLAs and one-quarter of Australian Capital Territory SLAs being removed. Further information about these SLAs, and the methodology for rejecting estimates for these areas is available in Kelly et al. 2005.

While HOUSEMOD will form the basis of the microsimulation work in this project, substantial additional modelling will be required. Financial disadvantage has not previously been modelled spatially using HOUSEMOD, and the research questions we will be addressing in this study go beyond those used for earlier AHURI work. In particular, the focus in this study on home purchasers and home owners, in addition to public and private renters, as well as the need to model a number of policy scenarios, will require substantial coding work.

3.3 Measurement issues to be addressed

From the discussion in Section 2, it is clear that numerous measurement issues need to be resolved in relation both to financial disadvantage and housing costs. A brief discussion of each key issue, including the way we have decided to resolve the issue, follows. Measurement decisions are made with a view to the overall purpose and conceptual framework underlying this study, but are also constrained by data and methodological limitations.

Which unit of analysis will we use?

In all poverty analysis, the 'income sharing group' needs to be decided. This usually involves some assumptions about whether income is owned individually (as it may be in group houses), shared across the family (as it may be in a traditional nuclear family), or shared across the household (as it may be in an extended household, with children, parents and grandparents living in the same house).

In order to compare incomes, it is necessary to define one 'sharing group', although clearly this approach is unable to distinguish between different degrees of actual income sharing in different households. While many Australian studies on financial disadvantage have used the ABS income unit (which approximates a nuclear family) as the unit of analysis, the household is also used fairly frequently, and the ABS itself is increasingly using household-level analysis for the presentation of income-related data (see, for example, ABS 2004a; 2005b). The household can also be argued to be the best unit of analysis for research related to housing policy (Yates & Gabriel 2006).

For this study, we therefore propose to use household as the unit of analysis. Thus poverty rates will be calculated at a household level (rather than income unit level). It should be noted, however, that the unit of analysis selected can have an effect on poverty estimates, with broader units of analysis generally being associated with somewhat lower measures of poverty (Harding, Lloyd & Greenwell 2001).

How will we address zero, negative and very low incomes?

As outlined in the literature review, research suggests that some very low income earners have expenditure patterns which do not match their apparently low income.

There are a number of options to correct for this, and these include:

- Set negative incomes to zero;
- Exclude negative/zero incomes;
- Exclude self-employed;
- Exclude bottom 10 per cent of income distribution.

We intend to perform some initial analysis of the data examining the effects of these approaches, before making a final decision about how to treat very low income earners.

Which measure of income will we use?

Choices of income measures for studying poverty are discussed in some detail by Greenwell et al. (2001), who note that disposable income is the most common indicator of resources used in poverty studies. Disposable income is the income which remains after taxes are paid, and inclusive of government transfers, and is the baseline measure of resources that will be used for this study.

The time period across which income is measured is also important. While current income, usually measured as weekly disposable income, is the most common measure used, it may not always capture usual income, as some households' income fluctuates from week to week. Measures of permanent income – that is, usual or average income across the working years, sometimes calculated using a measure of aggregate consumption expenditure – are more accurate estimates of income, but are difficult to calculate using available sources of data. Sometimes annual income is used a proxy measure of permanent income. However, although the HES dataset we are using does include an annual income measure, it is only total annual income, not split by type of income, and detailed income information is necessary for some of our modelling. Thus we are using current (weekly) income for this study.

Which equivalence scale will we use?

In studies of income poverty, it is important to adjust incomes to take account of household size and composition – for example, an income unit consisting of a single person with \$30,000 per year would be reasonably well-off, while an income unit with the same income, but consisting of two adults and three children would not be able to achieve the same standard of living with this income as the single person. There are a number of different equivalence scales that can be used to take household size and composition into account (see Greenwell, Lloyd & Harding 2001), but the one most commonly used in after-housing studies of poverty is the Henderson equivalence scale because it “explicitly differentiates between the equivalence adjustments required for cash disposable income, and for disposable income after housing costs” (Siminski & Saunders 2004, p. 10).

Another very widely used equivalence scale is the modified OECD scale. This is the scale the ABS uses in their income publications (see for example ABS 2005b), and has the widest acceptance among Australian analysts of income distribution, and is very well recognised internationally. However, it is much less detailed than the Henderson scale, and in particular does not explicitly take into account housing costs.

We propose to use both the modified OECD scale and the Henderson scale in this study, comparing results from the two methods to provide some insight into the sensitivity of our results to the use of different equivalence scales.

What poverty line will we use?

As mentioned in the literature review, the poverty line chosen can significantly affect the number of households found to be in poverty. In previous studies, many authors have used a number of poverty lines, to provide some sensitivity analysis (see, for instance, Harding et al 2001). The most widely accepted income poverty line in Australia at present is 50 per cent of median equivalised disposable income.

For this study, we propose using two methods of calculating poverty. The first will be the 50 per cent of median equivalised disposable household income poverty line (both before and after housing costs), which we will use in all our analyses. The second is to examine poverty intensity, using the method described by Rodgers and Rodgers (2000), also looking at changes in poverty intensity before and after housing. This latter method is likely to be difficult to apply and present regionally, but we intend to present some before and after housing poverty intensity results for the whole of Australia.

What is our approach to housing costs going to be? Imputed rent or actual costs?

Imputed rent in owner-occupied dwellings has been used more often in income distribution/inequality studies than in poverty studies, and may be more desirable if the main focus of the research is life cycle issues rather than regional issues. While we are interested in both these here, our main focus is regional differences in financial disadvantage. Saunders and Siminski (2005) found little difference between the two methods compared to a cash income only measure. Technically, deducting actual housing costs is more straightforward, and likely to lead to better estimates of regional income levels when using spatial microsimulation. We will, therefore, deduct actual costs of housing in order to calculate after-housing financial disadvantage.

How will we treat CRA and public housing rental assistance?

Both the concessional rent for public housing and Commonwealth Rental Assistance (CRA) have a direct effect on our model. On the database we are using (the 1998/99 Household Expenditure Survey), the rebate to public housing is excluded from rent because the rent identified by the household is the reduced amount. However, the amount is calculated by the ABS as the amount of rent paid by the household, less the market rent for that type of house in that area. It is then identified separately on the CURF. While we may conduct some cross-tabulations of the value of concessional public housing rents with financial disadvantage, most of our analysis will capture concessional rents directly through the actual amount of rent paid by tenants.

The CRA is recorded in the HES as a part of “other pension/allowance income”, but is not separately identified. However, in HOUSEMOD, the actual amount of CRA income is imputed by using STINMOD to uprate the HES file.

The two payments (public housing rebate and CRA) are treated differently by the ABS, mainly because of the way they are paid. The reduced public housing rental means the household pays less rent (that is, a reduction in housing costs), and the CRA is a payment added on to benefits paid to a household (that is, an increase in income). However, it can be argued that as CRA is only available to privately renting households as assistance specifically towards housing costs, it should be excluded from housing costs and income, or from housing costs only.

Yates and Gabriel (2006) present housing affordability estimates using several different approaches to the treatment of CRA. For the majority of their analysis, they include CRA in income, and do not adjust housing costs for the amount of CRA received. In order to compare these results with different approaches to CRA, they produce some results in which they also define housing costs net of CRA, and both housing costs and income net of CRA. They find that both alternative measures reduce the numbers of privately renting households in unaffordable housing. They also present some results related to the adequacy of the residual incomes (that is, after-housing incomes) of low income households, and for this analysis, they always include CRA as income.

We also propose to conduct some sensitivity analysis in relation to the treatment of CRA, examining the effects on rates of financial disadvantage of differing approaches to the treatment of CRA. However, we propose to conduct most of our analysis by including CRA as income, and not netting out CRA from housing costs, so that our results will be comparable with other before and after-housing poverty studies.

Which housing costs will we deduct?

Siminski & Saunders (2004) note that decisions about which housing costs to deduct are determined to some extent by the detail available in the data being used, but they emphasise that as far as possible housing costs of renters and owners should be measured consistently. We will adopt their preferred measure of direct housing costs. For renters, this is simply rent paid. For owner-occupiers, this is mortgage repayments (principal and interest - see discussion of this below), rates, house insurance, repairs and maintenance, loans for alterations and additions and body corporate payments (Siminski & Saunders 2004).

Ideally, contents insurance should be excluded from housing costs for owners, as this is not incorporated into rent payments in the same way that other owner-occupier expenses are. However, contents insurance is not always separable from house insurance in the available data. In the HES CURF, there are items for house insurance and contents insurance separately, but there is also an item for ‘House and Contents Insurance Inseparable’. Where we can take into account housing insurance separately, we will, and where it is combined with contents insurance, we will use the combined figure. Contents insurance generally represents a smaller proportion of the total insurance costs than house insurance, so where it is combined, we expect the housing insurance to be the major component.

It can be argued that the proportion of mortgage payments devoted to the loan principal is in fact a form of saving, and that in addition some households pay additional principal amounts, building up home equity (see, for example, Siminski & Saunders 2004). Because our interest in deducting housing costs from cash income is to better compare the amount of income left over after housing costs, we tend to the view that both principal and interest should be deducted from housing costs. In addition, if it is often higher income households paying additional amounts of principal, these household incomes are still likely to be sufficiently high to keep them above our cut-off for financial disadvantage, so that deducting full repayments will have little effect on measures of financial disadvantage.

However, we propose to test the effect of including the principal component of the loan in housing costs by calculating before and after housing poverty with the interest only, and with principal and interest.

As noted in the literature review, evidence about the extent to which regional differences in transport costs may partly offset regional differences in housing costs is mixed. The inclusion of transport costs in this study could potentially shed further light on our findings about connections between housing costs and regional financial disadvantage, particularly in relation to urban fringe areas where both housing costs and transport costs may be reasonably high. However, the technical difficulties involved in the inclusion of transport costs within our modelling would be very large. In particular, the census variables which we currently use to benchmark the model (and which allow us to estimate data at a regional level) are not closely related to transport costs, and therefore would be unlikely to result in accurate estimates of such costs. Substantial additional work would need to be undertaken to investigate whether other data could be incorporated to allow for the modelling of transport costs, but this would not be a trivial undertaking, and is beyond the scope of the current project. We therefore do not propose to include transport costs in our modelling at this stage.

Table 3 provides a summary of our proposed treatment of housing costs and housing assistance for different tenure types.

Table 3 Summary of proposed methodology for treatment of housing costs and assistance

	Income	Housing costs
Public housing tenants	Cash income	Actual rent paid
Privately renting tenants	Cash income including CRA (plus sensitivity analysis excluding CRA from income)	Actual rent paid (plus sensitivity analysis using rent net of CRA)
Home owners/purchasers	Cash income	Mortgage repayments (principal and interest or interest only), rates, house insurance, repairs and maintenance, loans for alterations and additions and body corporate payments

What unit of spatial disaggregation will we use?

The HOUSEMOD model is calculated at the Statistical Local Area (SLA) level. There are 1,353 SLAs in Australia in the 2001 Australian Standard Geographical Classification (ASGC). The reasons for the selection of SLA as the base spatial unit for housing-related spatial microsimulation are explained in Melhuish et al. 2004.

Other larger areas may also be useful for policy analysis, for instance, Local Government Areas (LGA). LGAs are the areas proclaimed by various state government authorities. There are 633 LGAs in Australia. They are easily identifiable and are part of the standard classification. However, unlike SLAs, they do not cover the whole of Australia and do not aggregate to form larger spatial units such as Statistical Subdivisions and Statistical Divisions.

All spatial microsimulation modelling will be conducted at the SLA level, but some output may be aggregated up to LGA level or higher. Some of the research questions of interest to policy makers (as noted below) may only be able to be addressed at a national or very broad regional level, as the generation of synthetic estimates depends on the availability of appropriate benchmark variables in the census. As we investigate these issues further in the course of modelling, we will trial possible broader regional breakdowns for analyses which cannot be presented at an SLA level. These might include using the ABS section of state categories, or a measure of remoteness.

3.4 Proposed approach to research questions

As this study addresses a number of different research questions, and as our approach to these depends in part on the availability of adequate data to reliably estimate regional characteristics, we have incorporated an Appendix to this paper outlining our proposed approach to the research questions. This helps clarify the type of output that can be expected from the project, and the areas where final output is uncertain until the actual modelling has been attempted.

4 SUMMARY AND NEXT STAGE

In this paper, we have reviewed the literature relevant to the research questions posed in this project, and placed this study within the broad conceptual framework of a deprivation approach to poverty and disadvantage. We then provided a brief explanation of the spatial microsimulation methodology that will be used in this project. Previous work by NATSEM and others in relation to financial disadvantage (including the calculation of financial disadvantage net of housing costs), highlights a large number of methodological and measurement issues. We have addressed these issues, and provided a rationale for the measurement approaches we intend to take in this project. Some of these issues will only be finally resolved in the next stage of the process, once further analysis of the data has been done. Finally, we give some information about our proposed approach to the research questions, and the likely output which the project will produce (in the Appendix).

The next stages of the project are summarised below:

- Conducting some initial data analysis to resolve remaining measurement issues.
- Writing and testing additional code for HOUSEMOD specific to financial disadvantage and other variables not yet addressed in this model (eg. home ownership and equity), and validating these initial results.
- Modelling base case and additional scenarios.
- Producing output and writing up the analysis.

This work may also be expanded in the future beyond the bounds of this project. This study is likely to produce important information about the contribution of housing costs to spatial differences in advantage and disadvantage across Australia. Future work may be able to build on these findings, perhaps through an examination of trends over time, so that evidence about whether Australia is experiencing increasing spatial polarisation can be assessed, and so that further questions about the degree to which housing costs may be shaping the geography of inequality can be answered.

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APPENDIX

Proposed approach to research questions

1a, b, c. What is the nature of the relationship between housing assistance, housing costs and financial disadvantage at a small area level? Which regions are affected? Are metropolitan areas more financially disadvantaged because of higher housing costs?

These are the most fundamental of the research questions in this study, and we propose to look at the relationship in several ways. First, we will present data at a national level about before and after housing differences in the numbers of households in financial disadvantage, and the intensity of this disadvantage among different demographic groups. Secondly, we will present results that show the regional differences in financial disadvantage both before and after housing costs are taken into account, which will provide information about the ways in which housing costs affect levels of financial disadvantage regionally. Of particular interest here is the extent to which higher metropolitan housing costs may offset the higher incomes available in cities. We will present these results mapped by SLA, and do some aggregation of outputs to highlight the differences in the effects of housing costs on financial disadvantage in metropolitan and non-metropolitan areas.

Finally, we will examine the relationship between housing assistance and financial disadvantage by looking at the impact of both reduced rent to public housing tenants and CRA payments on financial disadvantage. We will map the average receipt levels of these two benefits by SLA, and also calculate the impact of these payments by looking at what the rates of after-housing financial disadvantage would be without the use of these benefits. We will pay particular attention to spatial differences in the relative importance of these forms of assistance to the reduction of after-housing financial disadvantage.

2a. What impact does house value and tenure have on financial disadvantage? Does the amount of equity in the house affect financial disadvantage?

These research questions focus on aspects of home ownership, and are designed to test a number of these. The amount of housing equity which households have access to, which is partly determined by house values, provides a potential source of economic security, a form of savings which could be drawn down to address financial disadvantage. Spatial patterns in housing wealth may have important implications for deepening our understanding of the geography of disadvantage, particularly if in the future both housing equity and financial advantage become increasingly spatially concentrated.

Some initial insights into relationships between house value, home equity and financial advantage and disadvantage can be provided by cross-tabulating before and after housing financial disadvantage by house value and home equity.

House value is on the HES, and home equity can be calculated from other variables in the HES. However, these are unconstrained variables, and some initial analysis of their correlation with constrained variables such as income, age, dwelling structure and mortgage payments will need to be conducted before deciding the extent to which analysis at a small area level could be done in relation to these research questions. However, at least differences between capital cities and rest of state in the relationship between house value, equity and financial disadvantage, could be analysed. Results of such an analysis would appear in something like the form proposed in Table 4, below.

Table 4 Proposed table for research question 2a

House Value (or equity)	Capital City		Rest of State	
	Proportion of households in before housing financial disadvantage	Proportion of households in after housing financial disadvantage	Proportion of households in before housing financial disadvantage	Proportion of households in after housing financial disadvantage
<200,000				
200,000 – 300,000				
300,000 – 400,000				
400,000 – 500,000				
500,000 – 600,000				
600,000 – 700,000				
700,000 – 800,000				
800,000 – 900,000				
900,000 – 1,000,000				
> 1,000,000				

Note: Further geographical breakdown (eg. by SLA) may be possible, depending on outcomes of initial data analysis.

Finally, this question addresses the relationship between tenure type and before and after housing financial disadvantage. Tenure type is one of the benchmarked variables in HOUSEMOD, so that small area analysis of the relationship between tenure type and financial disadvantage will be possible. It is most likely, however that some sort of aggregation of the output will be undertaken, as cross-tabulations of before and after housing financial disadvantage by tenure type at SLA level would produce very large amounts of data. Once again, at least a capital city/rest of state split would be provided, as outlined in Table 5.

Table 5 Proposed table for research question 2a

	Capital city		Rest of state	
Tenure type	Proportion of households in before housing financial disadvantage	Proportion of households in after housing financial disadvantage	Proportion of households in before housing financial disadvantage	Proportion of households in after housing financial disadvantage
Owned Outright				
Being Bought				
Private Renting				
Public Renting				
Other tenures (eg, DHA)				

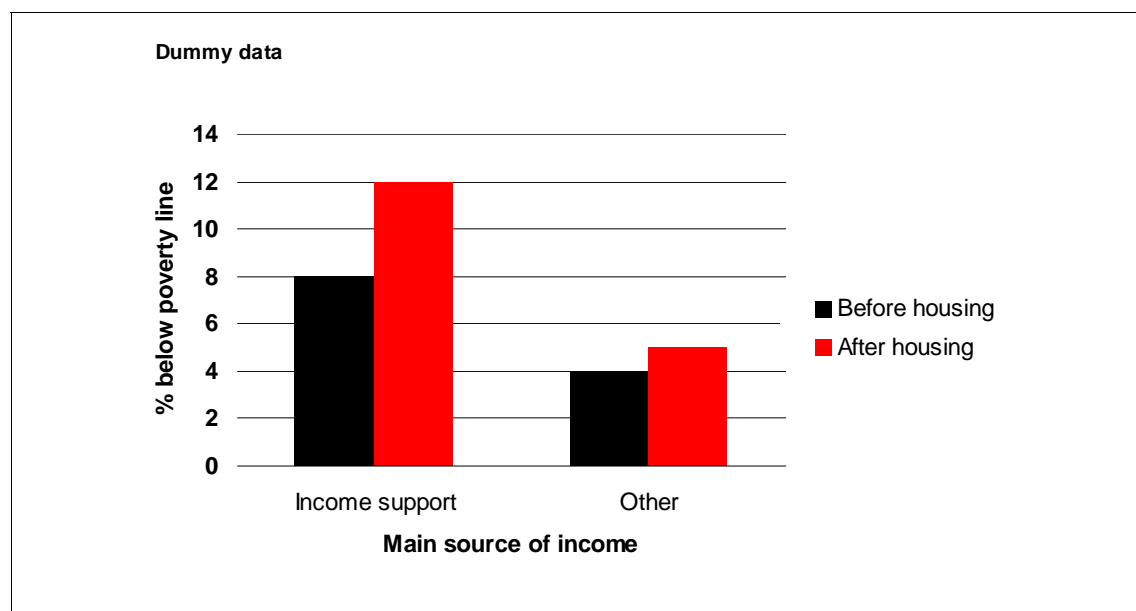
Note: Further geographical breakdown (eg. by SLA) may be possible, depending on outcomes of initial data analysis.

2b. What types of households are impacted by the inclusion of housing costs? What is the impact of housing costs on the financial disadvantage of older people?

This set of research question focuses on how the distribution of financial disadvantage changes for subgroups of the population after housing costs are taken into account. Subgroups to be examined might include household type (couples with children, sole parents, lone persons and so on) and households with government transfer payments as their main source of income. Once again, our ability to model some of these distributional changes at a regional level will need to be assessed in the modelling phase of the project, but at least national and broad regional data will be produced.

Figure 1 shows a sample graph demonstrating the type of output that might be produced in relation to the effect of housing costs on the financial disadvantage of income support recipients. This is based on dummy data, but shows how the (possibly) differential effect of housing costs can be represented.

Figure 1 Sample chart research question 2b



Note: Chart based on dummy data

This type of graph would be produced in relation to a number of household characteristics, including household type, employment status of reference person, age of the reference person and the number of retired persons in the household.

3a. What is the impact on financial disadvantage at a small area level if the upper limit for CRA was removed? What are the implications for Government?

This modelling builds to some extent on earlier NATSEM-AHURI modelling work regarding the impact on housing affordability of changes to CRA maximum entitlements (see Melhuish et al. 2004). We will focus on the effects of CRA policy change on after housing financial disadvantage, and look at differences at the SLA level between the base scenario (current CRA rules) and the upper limit of CRA removed scenario. We will present some tabulated output for these results by SLA (see example in Table 6), but will also present these results in maps, highlighting SLAs where there were changes in the profile of financial disadvantage after the change to CRA rules.

Our modelling will also allow us to calculate the total cost to government of this expenditure, and to present some national-level results for this scenario broken down by household characteristics.

The removal of the upper limit on CRA would be likely to have behavioural effects: for example, landlords may raise rents in response to such a policy change, or renters may rent more expensive housing because the increased value of the CRA allows them to do so. While the full effects of such behavioural changes cannot be modelled (for example, moves into more expensive rented accommodation may represent a move from inadequate to adequate housing), we can model the possible effects on financial disadvantage of a number of different assumptions. These might include scenarios in which it is assumed that different proportions of the increase in income due to increased CRA entitlements is taken up by increased rents.

Table 6 Proposed table research question 3a

SLA ID	SLA Name	Total number of households	Number of households in after-housing financial disadvantage (existing rules)	Proportion of households in after housing financial disadvantage (existing rules)	Proportion of households in after housing financial disadvantage (no CRA maximum)

3b. What is the impact on financial disadvantage of people going from renting to purchasing housing? What policies can ameliorate this impact? What initiatives are most effective at reducing financial disadvantage?

In order to model this set of research questions, we first need to simulate a move to purchasing from renting. To do this, we will use the estimated dwelling value, available on the HES. We can then assign a proportion of renters a loan payment, based on the dwelling value, current interest rates and an assumed loan period. We can then re-estimate financial disadvantage with this loan payment rather than the rent payment. This measure of after housing costs financial disadvantage can then be compared to after housing costs financial disadvantage before this simulation, looking at regional effects and differences by household characteristics. We would expect that, especially in metropolitan areas, after-housing financial disadvantage may increase.

The next step would then be to simulate policy changes which could reduce the impact of moving from purchasing to renting. One such policy may be to provide subsidised loans. This could be simulated by reducing the interest rate in the above simulation. A number of different scenarios could be simulated within this broad framework, including variations to the amount of the subsidy, and different ways of targeting the subsidy (eg. to all former renters with mortgages more than 30 per cent of total income; to low income former renters with mortgages more than 30 per cent of total income). A sample template for this type of output is provided in Table 7.

Another method may be to provide the amount that was being paid in CRA as a loan subsidy, and this could be simulated by reducing the weekly loan payment by the CRA amount. In addition, as meeting the up-front deposit requirement for home purchasing is one of the most important difficulties facing first home buyers, we could also calculate this requirement on a regional basis based on some assumptions (for example, setting the deposit at 10 per cent of median house price at the local level) and then conduct simulations about regional differences in the effectiveness of this subsidy.

Table 7 Proposed table research question 3b

Region	Proportion of renters in financial disadvantage (base case)	Proportion of former renters in financial disadvantage (renters to purchasers)	Subsidy scenario 1	Subsidy scenario 2
Capital city				
Balance of state				

Note: Regional disaggregation may be increased, depending on initial analysis of data.

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