

*Final Report*

# Housing assistance: the lifetime impacts

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# EXECUTIVE SUMMARY

## Background

A full picture of the value of housing assistance is fundamental to major debate about the extent and nature of such assistance. Our view of the value of housing assistance, however, tends to be narrow. It tends to concentrate on the direct impacts of assistance – the impact of a rent subsidy, for example, on a household's housing costs and as an element of government outlays.

This focus on the direct impacts of housing assistance is despite a growing appreciation of the possible indirect effects of housing assistance on other aspects of people's lives. Housing assistance can have positive effects, for example, on people's education and health, on their employment prospects, on crime and community cohesion and so forth. There is ample evidence of the existence of these indirect impacts, with much current research into their scale and nature – often referred to as research into the 'non-shelter' or 'whole of government' impacts of housing. These indirect impacts of housing assistance can be at the individual or family level, such as impacts on education and employment, or at the community level, such as impacts on community cohesion. This study is concerned with the first of these levels – impacts at the individual or family level and the associated impacts on government.

The potential importance of these indirect effects in assessing the full value of housing assistance is amplified by the fact that many of these areas of indirect impact can have lasting effects over people's lifetimes. Thus, an increase in educational attainment can have an impact over a whole lifetime – through, for example, improving employment prospects, earnings, savings and retirement income. A lifetime perspective on the value of housing assistance is important.

## Aims

This research was designed to broaden the valuation of housing assistance beyond consideration of just the direct impacts of housing assistance – by adding the indirect impacts and the lifetime perspective. In particular, the aims were:

- to establish a framework to incorporate the non-housing and lifetime impacts in a valuation of housing assistance;
- to demonstrate the magnitude and nature of these impacts through first estimates using the framework (model); and
- to consider the sensitivity of the estimates to variations in people's circumstances, aspects of the future environment, and aspects of the impact.

## The hypothetical lifetime model

The framework for analysis is in the form of a hypothetical model of people's lifetimes. This entails constructing 'typical' lifetimes for people and estimating the direct and indirect impacts of housing assistance year-by-year over these lifetimes. This is a method commonly used in other areas of policy analysis where intervention is seen to have lifetime impacts, such as education and provision for retirement incomes.

The model covers the following aspects of people's lives:

- education (participation, private costs, government costs);
- labour market activity (labour force status, earnings);
- housing (tenure, private and government costs, asset values);
- income support (pensions, allowances and Rent Assistance);
- superannuation (contributions, accumulation and retirement incomes); and
- taxation (income tax and superannuation tax).

This version of the model includes the capacity to analyse potential impacts on labour market activity and education with assistance provided through Commonwealth Rent Assistance (CRA) or public rental housing – with distinction between the impacts on individuals and the impacts on government. The model includes the provision for considerable flexibility regarding matters such as the specification of people’s lifetimes, policy settings, and the future environment. It is readily amenable to the inclusion of other forms of housing assistance – such as assistance with owner-occupation – and can be extended to cover other types of non-shelter impact.

## **An illustrative example**

The nature and capabilities of the model – and the magnitude of potential lifetime impacts – are demonstrated using an illustrative example. This is the case of a single male and the potential lifetime impacts of CRA.

The starting point has the person renting privately, and the first step in the example is to add the provision of CRA (but with no non-housing impacts). Using a discount rate of 6%, the provision of CRA is calculated to amount to an investment of about \$17 000 in housing assistance over the lifetime for this individual.

The next step is to assume that the provision of CRA has an impact on the person’s labour force activity. This is modelled by assuming that the provision of CRA enables the individual to move to a higher rent area – an area where the higher housing costs reflect better access to employment (and education) opportunities. The improvement in the individual’s labour force activity, offset by higher housing costs, results in an estimated additional lifetime benefit to the individual of around \$47 000 and to government of \$75 000 (primarily through increased income tax revenue and reduced outlays on base income support).

Finally, the case is examined where there is also an increase in participation in education – which has a further effect on labour force activity and an important effect on earnings. In this case, the additional lifetime benefit is around \$85 000 to the individual and around \$103 000 to government.

This illustrative example shows that, when examined over the lifetime, the costs of providing CRA can look very small compared to the potential returns – to both the individual and government – if CRA can induce a positive labour market and/or education response. That said, it is stressed that these findings should not be generalised. They refer to a specific case, which has been designed to be plausible but could not be seen as ‘average’ or ‘typical’. The illustrative example has been used to present the basic picture in terms of the mechanics of the framework and the potential orders of magnitude.

## **Variations and sensitivity**

Section 5 of the report covers the results with variations to the illustrative example, and the sensitivity of the results to certain aspects.

The form of housing assistance is addressed with the case of public rental housing rather than CRA (section 5.1). This shows, in particular, variations in the direct housing costs to government over the lifetime. Care does need to be taken in avoiding extension of these results to a general comparison of assistance provided through CRA and public rental housing.

The results with the CRA example for different family types – single male, single female, couple without children, and a couple with two children – are covered in section 5.2. The results vary in line with variations in labour force profiles and earnings, in rent levels, and application of income support and CRA entitlement rules. Still, in all cases, the potential lifetime returns to government are between five and ten times higher than the basic outlay on CRA.

Sensitivity to some terms of the simulation is included in section 5.3.

- The sensitivity of the results to the discount rate is shown – particularly the magnitude of the results, but also comparisons between simulations when there are different time profiles of costs and benefits.
- The assumed rate of growth in real earnings has an important impact on potential benefits to the individual, with a smaller but still significant impact on potential government benefits.
- The assumed rate of growth in land values has only a small impact on the estimated lifetime outcomes for CRA, but will be more important with forms of assistance involving land purchase – such as public rental housing or assistance with owner-occupation.
- Generally, indexation of aspects of the model – indexation, for example, of earnings, housing costs, and the tax and income support systems – can have a significant impact on the results. It is important that the indexation assumptions used for these different areas of the model are consistent with each other.

Some variations in the scope and nature of impacts are considered in section 5.4. These include the results with a marginal labour market impact, where the government still reaps a small but significant benefit, though the individual can remain worse off due to the higher housing costs faced. Some general points are made about the possible impact on the results if health impacts are included, and if the impacts on children are also covered.

## **Matters of interpretation**

The report concludes with some pointers to interpretation of the analysis. These include the following points.

- The examples presented in this report primarily refer to a single specific case, and a specific set of assumptions about the housing circumstances of that case, the future environment, and the nature of education and labour market impacts. The example is illustrative and not intended to be typical. The examples show the potential lifetime impacts.
- While the focus in this research is on housing assistance in lifetime investment terms, it needs to be remembered that this is a secondary dimension to housing assistance. The primary purpose of housing assistance is adequate and affordable housing. Thus, no ‘investment’ return to government does not negate the value of the investment in housing assistance.
- While government costs and benefits have been consolidated in the analysis, it should be recognised that the level of government bearing the costs will not always be the same level that is enjoying the benefits.
- The analysis does not provide the basis for a general comparison of housing assistance provided through CRA and public rental housing because of its restriction to specific cases.

Perhaps the most important qualification is that the illustrative examples used in the report have assumed certain non-housing impacts from housing assistance. They thus show potential lifetime impacts. When the empirical evidence on non-shelter impacts becomes available from other AHURI research currently underway, then the model will be in a better position to be used to make sound estimates of the actual lifetime value of housing assistance.

That said, the analysis in this report does show that housing assistance can be an excellent investment. The indirect impacts can have lifetime benefits to government and individuals that far outweigh the cost of providing housing assistance. Accordingly, there is much to be gained by designing and providing housing assistance in a way which maximises the likelihood of positive indirect impacts over the lifetime – and much to be lost by not doing so.

# 1. INTRODUCTION

A full picture of the value of housing assistance is fundamental to debate about the extent and nature of such assistance. Our view of the value of housing assistance, however, tends to be narrow. It tends to concentrate on the direct impacts of assistance – the impact of a rent subsidy, for example, on a household's housing costs and as an element of government outlays.

This focus on the direct impacts of housing assistance is despite a growing appreciation of the possible indirect effects of housing assistance on other aspects of people's lives. Housing assistance can have positive effects, for example, on people's education and health, on their employment prospects, on crime and community cohesion and so forth. There is ample evidence of the existence of these indirect impacts, with much current research into their scale and nature – often referred to as research into the 'non-shelter' or 'whole of government' impacts of housing. 'Non-shelter' impacts means those impacts that affect aspects of people's well being other than simply meeting housing needs. 'Whole of government' impacts means the scope covers impacts across all functional areas of government and across all levels of government. The indirect impacts of housing assistance can be at the individual or family level, such as impacts on education and employment, or at the community level, such as impacts on community cohesion. This study is concerned with the first of these levels – impacts at the individual or family level and the associated impacts on government.

The potential importance of these indirect effects in assessing the full value of housing assistance is amplified by the fact that many of these areas of indirect impact can have lasting effects over people's lifetimes. Thus, an increase in educational attainment can have an impact over a whole lifetime – through, for example, improving employment prospects, earnings, savings and retirement income. A lifetime perspective on the value of housing assistance is important.

This report presents the results from an AHURI study, which has developed a framework to broaden the valuation of housing assistance beyond consideration of just the direct impacts of housing assistance – by adding the indirect impacts and the lifetime perspective. The Positioning Paper for the project (King 2001a) set out the policy and research contexts for the study and outlined the methodology to be pursued. Early results were presented in a Work in Progress report (King 2001b) and a conference presentation (King 2001c).

The broad aim of the study has been to assess the impact that these potential indirect effects of housing assistance over a lifetime can make on our assessment of:

1. the value of housing assistance in general; and
2. the value of different forms of housing assistance.

It should be stressed that the focus of this research has been on developing a framework for broader valuation of the impacts of housing assistance in a lifetime perspective. It does not directly address the important research gap of determining the magnitude and nature of the non-shelter outcomes of housing assistance – to what extent can housing assistance have an impact on labour force performance, and so forth. That gap is being addressed by a number of other AHURI research projects. This research does, however, have scope to make 'first estimates' of the estimated lifetime impacts, and to explore their sensitivity to different circumstances and assumptions about the impacts.

The background to the research is set out in section 2, in terms of the policy and research contexts. An account of the lifetime framework developed for this study is then provided in section 3, with the detailed results for an illustrative case – a single male receiving Commonwealth Rent Assistance – presented in section 4. Section 5 expands the analysis, looking at the picture with a different form of housing assistance (public rental housing), for different family types, and under different assumptions about the future environment. Section 6 concludes the report with some pointers to the interpretation of the analysis, and identification of useful extensions to the work.

## 2. THE LIFETIME PERSPECTIVE

The motivation for this study lies in a perceived mismatch between the way we see the benefits of housing assistance and the way in which we value housing assistance in policy development. The bases for this perception are set out below, followed by an account of research approaches which can assist in addressing this mismatch.

### 2.1 Why take a lifetime perspective?

The broad policy context for this research is the role of program evaluation as an integral part of policy development. This in turn requires a means of measuring outcomes against program and policy objectives – using measures which capture the range of such objectives. The research aims to promote a better match between what is measured and program/policy objectives – to better enable performance measures to capture objectives. The two sides of this issue are expanded upon below with accounts of developments in the policy objectives attached to housing assistance and in the performance measures for housing assistance.

While the continuing requirements for good evaluation alone provide the basic but important policy context for the research, the value of the work is thrown into sharper focus by the possibility of a phase of potential major reform of Australian housing assistance with the renegotiation of the Commonwealth State Housing Agreement (CSHA), with the next CSHA to begin from July 2003.

#### *The objectives of housing assistance*

The stated role of the Housing Support function of the Commonwealth Department of Family and Community Services is in:

- assisting low and moderate-income households access appropriate affordable housing
- supporting initiatives to assist homeless people.

(Department of Family and Community Services 2001b, p104)

The objectives of housing assistance under the CSHA are set out broadly in the 'Guiding Principles' for the Agreement. Under the 1999-2003 CSHA, the first principle is that:

The purpose of funding is to assist those whose needs for appropriate housing cannot be met by the private market. The duration of assistance provided should be based upon those needs;

(Commonwealth of Australia 1999, p5)

A similarly basic objective is ascribed to housing assistance by the Australian Institute of Health and Welfare (AIHW).

The aim of housing assistance is to overcome the problems households face in obtaining or retaining suitable accommodation – whether due to cost, availability or adequacy – and to provide households with the flexibility to meet changing demand.

(AIHW 2001, p47)

These statements embody the basic elements of providing targeted assistance to help people obtain affordable and appropriate housing – elements which can be found in almost any discussion of housing assistance policy. However, it is also widely recognised that there is much more to housing than just shelter or accommodation. For example, the Industry Commission began its 1993 report on public housing with the statement that 'Housing underpins the quality of life of all Australians' (1993, p1), and a recent AHURI overview of current housing policy

issues begins with an account of the many levels of the importance of housing (AHURI 2000, pp 1-2). A notably succinct statement of this importance, from overseas but equally relevant to Australia, can be found in the opening paragraph of the recent United Kingdom Housing Green Paper:

Housing is a basic requirement for everyone. Our homes influence our well-being, our sense of worth, and our ties to our families, communities and work. If we live in decent housing we are more likely to benefit from good health, higher educational attainment and better-paid work.

(UK Department of the Environment, Transport and the Regions 2000, para 1.1)

While this recognition of the broad role of housing is widespread, how does it translate into the breadth of the policy objectives for housing assistance? The CSHA guiding principles touch on the broader aspects, through mention of work disincentives and the principle that housing assistance should have regard to 'the economic, social and environmental objectives of government' (Commonwealth of Australia 1999, p6). Perhaps there is some recognition of the broader aspects of housing assistance in the location of housing support within the 'Stronger Communities' strategic outcome area for the Commonwealth Department of Family and Community services. By the same token, that it is not included under the 'Economic and Social Participation' strategic outcome could be seen to signify that the Commonwealth views housing assistance as of greater relevance to community development than to economic and social participation. The Reference Group on Welfare Reform (2000) did see some broader aspects of housing assistance as falling within its terms of reference – namely, the relationship between housing assistance and employment, in terms of employment disincentives and the role of housing assistance in regional development. But, by and large, the Commonwealth appears very focused on the immediate objectives of housing assistance.

This focused view of housing assistance taken by the Commonwealth may be seen as a reflection of the predominance of two programs in its housing assistance function – Commonwealth Rent Assistance as an element of income support, and CSHA funding with its specific principles as discussed above. More flexibility in how housing assistance is delivered is then in the hands of the States and Territories. Indeed, recognition of the broad role of housing assistance is very evident at the level of program design and delivery. Community development approaches in the area of public housing estate renewal, for example, are firmly grounded in an understanding of the manifold potential benefits of housing assistance – benefits in terms of employment prospects, health and so forth (Badcock and Harris, 1998). More generally, the perspective from this level can be seen in the New South Wales 1999 Background Paper on housing assistance reform. It begins by making a clear link between the broad roles of housing and the roles of housing assistance:

Secure, affordable and appropriate housing is crucial to individual well being. It is also critical to community well being, underpinning the capacity of individuals to contribute to the economic and social health of the community. It is within this context that housing assistance programs play an important role.

(NSW Department of Housing 1999, p1)

and, accordingly, includes the broad role to accompany the basic objectives of housing assistance – a system of housing assistance that:

builds sustainable communities and contributes to the social and economic well being of the broader community.

(NSW Department of Housing 1999, p16)

The import attached to the broader role of housing is also very evident in the AHURI Research Agenda. Among the research areas identified in the Agenda, a number deal explicitly with the linkages between housing and other policy areas. These cover a whole of government perspective on housing assistance, and linkages between housing assistance and other services, the labour market, strengthening

communities and regional disadvantage. Similarly, the AHURI policy issues paper concluded with the observation that 'Housing policy issues are complex, interwoven with other aspects of economic and social policy, and significant for the quality of life for all Australians' (AHURI 2000, p8).

The role of housing assistance is clearly widely recognised as extending well beyond immediate shelter outcomes, even if policy objectives are often expressed more narrowly. Housing assistance accordingly needs to be viewed in this wider context. But do our ways of measuring the performance of housing assistance allow us to do so?

### *Measuring performance*

A key finding from the 1993 Industry Commission inquiry into public housing was that there was no systematic means for measuring the performance of public and community housing assistance programs.

It is not easy to trace the use of housing assistance funds or to evaluate how well the funds are spent. Indeed, the full costs of housing assistance are not recorded and governments do not know whether assistance is well targeted or delivered efficiently. (Industry Commission 1993, p xv)

This has led to the establishment of national standards for performance monitoring. The 1996-99 CSHA included a core set of nationally consistent outcome measures relating to:

- (a) the total amount of assistance provided;
- (b) the targeting of assistance to those in need;
- (c) the affordability of assistance provided;
- (d) the standard of rental housing provided;
- (e) the levels of overcrowding and under-use of rental housing;
- (f) consumer satisfaction;
- (g) timeliness of assistance;
- (h) efficient use of assets;
- (i) the value of assets. (Commonwealth of Australia 1996)

This was a start, though was clearly very focused on the direct housing outcomes. Subsequently, the framework of performance measures has broadened and become more formalised with the National Housing Data Agreement (NHDA) which is a subsidiary agreement to the 1999-2003 CSHA. The NHDA brings together the housing authorities, the Australian Institute of Health and Welfare and the Australian Bureau of Statistics (ABS) with the task of developing a core set of nationally consistent indicators and data for benchmarking purposes. The framework of performance measures developed under the NHDA is exemplified by the performance indicators for public housing used by the Productivity Commission in its reporting on the performance of government services (Productivity Commission 2002). There are also frameworks for measuring the performance of Commonwealth Rent Assistance, for community housing and for the Aboriginal Rental Housing Program.

The framework for public housing performance measurement shows a comprehensive structure, within the focused objectives of the CSHA. It is not designed to cover the broader aspects of the performance of housing assistance, though the elements in the 'appropriateness' branch of the structure are potentially indicators of these impacts. The appropriateness elements include, for example, measures of affordability and location. The other point to note about the framework is that the actual indicators used are very specific and necessarily tied to relevant available data. 'Amenity/location', for example, is covered by a single indicator which

is a survey-based figure on the proportion of tenants satisfied with these aspects of their dwelling. It does not extend to cover other aspects of the location such as access to employment opportunities or services.

In summary, the recent developments in the performance measurement of housing assistance mark a major advance, but one within the confines of the direct impacts of housing assistance. We are now much more able to assess these direct impacts, but they do not extend to capturing the broader impacts.

### *The risks with narrow measures*

The current established measures of the effectiveness and efficiency of housing assistance programs focus on costs and narrow program outcomes (with outcomes expressed in a simple manner amenable to ready monitoring and reporting). These measures are important. We need to be able to measure and report on program outcomes for the operational monitoring of the delivery of assistance, and for the comparison of program delivery by different jurisdictions.

These performance measures can, however, only partially meet the needs of policy development and we need to be careful that these tightly defined measures do not blind us to the bigger picture. For example, a reliance on the current framework of performance measures would tend to:

- discount (ignore) the non-shelter outcomes of housing assistance – which may lead to an undervaluing of housing assistance in general and of those programs with significant non-shelter outcomes; and
- discount (ignore) any lasting impacts of housing assistance (such as education, employment and health outcomes) – which may lead to a misplaced emphasis on those programs found to have impacts which are more highly concentrated in the short-term.

Neither of these outcomes would be conducive to strategic policy development where there is an aim that housing assistance fits into a broader policy agenda; notably an agenda which has a focus on lasting impacts in terms, for example, of strengthening communities and avoiding welfare dependence.

### *Policy relevance – an overview*

The Australian system of housing assistance is in a phase of review and possibly major reform. Basic questions in this review will include assessment of the value of housing assistance and the relative value of different types of housing assistance. A proper response to these questions, in turn, will rely on a good picture of the value of housing assistance.

This is where this project is designed to advance the quality of policy development – by providing a tool which will help us, move toward a more complete picture of the value of housing assistance. Most commonly, the value of housing assistance is seen in a partial and short-term manner – for example, in terms of the impact on the amount of weekly incomes remaining after the payment of housing costs. That view is now being extended by other research to incorporate the non-shelter impacts of housing assistance. This study takes the further step of adding the lifetime dimension – taking into account any lasting impacts of housing assistance.

## **2.2 Approaches to examining the broader impacts**

Two perspectives in housing research and analysis are drawn together in this study:

1. the whole of government perspective, which seeks to view housing policy in the context of its broad impacts, not only those directly related to housing; and
2. the lifetime perspective, which seeks to view impacts not just at a point in time, but over people's lifetimes.

### *The whole of government perspective*

As was noted above, a whole of government perspective is commonly manifest in general statements about housing policy. Until recently, however, recognition at that level had not translated to the same extent into housing policy research – at least, with research into the evaluation of housing assistance. With an awareness of this gap, the Australian Housing Research Fund recently supported a scoping study to devise a methodology to measure the whole-of-government social and economic impacts of unmet housing need (Phibbs, 2000). In effect, the focus of the study was on the impacts of housing assistance, with the work revolving around comparison of people's circumstances before and after the receipt of housing assistance. That study proceeded to provide a very useful account of the 'state of the art' in this area of housing research.

The research reported by Phibbs (2000) had two principal outcomes: evidence on the whole-of-government impacts of housing, and a consideration of the methodological issues entailed in measuring these impacts. Through a review of the literature and a program of case studies, evidence was found of negative impacts from unmet housing need on health, education, crime, employment prospects, and family and community relationships (Phibbs 2000, p1). Measuring these impacts in quantitative terms, let alone putting a dollar cost on them, emerged, however, as a relatively undeveloped area of activity. The study canvassed a number of alternative approaches and concluded with a proposed methodology for empirical measurement of the whole-of-government costs of unmet housing need.

The approach proposed by Phibbs (2000) involved a longitudinal study of a sample of applicants for housing assistance, with the study comparing their circumstances before and after the receipt of housing assistance. This research has subsequently been funded by AHURI with the project 'Housing Assistance and Non-Shelter Outcomes' being conducted by the AHURI Sydney Research Centre. The study combines the initial 12-month phase of a longitudinal survey (with the foreshadowing of a request for funding to extend the survey) and in-depth case studies. The aims of the study (AHURI Sydney Research Centre 2000, pp 3-4) have a very close connection with those of the research that is the subject of this report. They include:

- (describing) the changed social and economic well-being of individuals and families before and after receipt of housing assistance and other housing changes which include tenure, location and type;
- (providing) an impact analysis on the reduction/withdrawal of housing assistance; and
- (using) the information on non-shelter impacts to construct a whole-of-government cost-benefit analysis of the provision of housing assistance.

Research into the non-shelter outcomes of housing assistance has been one of the emphases in the AHURI Research Agenda and the AHURI Sydney Research Centre study on 'Housing and Non-Shelter Outcomes' is only one of a number of current AHURI research projects in this area. These projects, which cover the relationships between housing and/or housing assistance and a range of non-shelter outcomes, were listed in the Positioning Paper for this study (King 2001a), with further details available from the AHURI website ([www.ahuri.edu.au](http://www.ahuri.edu.au)). There is thus considerable research effort in this area. Completion of these research projects will see a substantial increase in the empirical evidence about the relationship between Australian housing assistance and non-shelter outcomes, and we can expect a commensurate advance in our understanding of this relationship.

### *The lifetime perspective*

Much housing research and analysis takes a lifetime perspective. The process of home purchase, for example, is sensibly seen in the context of lifetime asset accumulation or as an element in the provision for retirement (Senate Select Committee on Superannuation 1994, Econtech 1996, King and Baekgaard 1996). More generally, investment in housing – by owner-occupiers, private investors or housing authorities – typically involves some analysis of the financial costs and returns over people's lifetimes or over the lifetimes of the physical investment. There is also a continuing interest in housing careers – changes in housing as circumstances and needs change across the life course (Kendig 1990, Winter and Stone 1998). Collectively, there is a central lifetime dimension – in terms of an area's population moving through the life course – running through much analysis of urban change (see, for example, Department of Infrastructure 1998).

The lifetime perspective is thus a very common strand in housing studies. But a review of the literature shows it to have hardly found its way into the evaluation of housing assistance programs. It does emerge naturally in comparisons of rental assistance and home purchase assistance – in terms of the lifetime profile of reducing housing costs with home-ownership – and, at least, indirectly in studies of housing subsidies (Flood and Yates 1987, Flood 1993). However, consideration of the lifetime perspective in studies of housing assistance is certainly the exception rather than the rule. This stands in contrast to other areas of policy evaluation concerned with 'investments in people's future well-being' – notably education, health and retirement income policy – where a lifetime perspective is the rule rather than the exception (see, for example, Quiggin 1999 and King 1999 on education; Mathers and Stephenson 1999 and Walker 1999 on health; Tinnion and Rothman 1999, ASFA Research Centre 1999, and King 2001 on retirement incomes).

A notable exception in the case of the evaluation of housing assistance policy is the recent work undertaken by Spiller Gibbins Swan Pty Ltd (2000) on the evaluation of estate renewal programs. Spiller Gibbins Swan began with a review of the Australian and overseas experiences with housing estate renewal. One of the lessons gleaned from overseas was that a common theme was 'realisation of the necessity to improve the life position of people in disadvantaged areas' (p52). Non-shelter outcomes, such as education and employment, were important, as were long-term results. Thus, we have recognition of both the non-shelter (or whole of government) and lifetime dimensions. Spiller Gibbins Swan proceeded with an overview of alternative evaluation techniques before coming down on the side of cost benefit analysis – a framework amenable to the incorporation of a wide range of different impacts and the time profile of these impacts. Application of the technique involves identifying the direct and indirect costs/benefits of a project, valuing them, and discounting future costs or benefits. The aim is to arrive at a bottom line figure that encompasses the future streams of the range of different costs and benefits. The report includes examples of how this might be applied in the case of evaluation of estate renewal – what are the direct and indirect costs and benefits, how they might be valued – and a useful discussion of conceptual issues in cost benefit analysis. In practice, the report recommended applying any such cost benefit analysis in a stepwise manner, starting with consideration of the direct impacts over the short-term and then extending to include indirect and longer-term impacts.

### *Where this research fits in*

This study has brought the non-shelter (or whole of government) and lifetime dimensions of housing assistance together in a method for more fully assessing the value of housing assistance and comparing alternative forms of housing assistance. These two dimensions are both recognised as important, though have not been

incorporated in measures of the value of housing assistance. Spiller Gibbins Swan Pty Ltd (2000) has proposed the use of cost benefit analysis as a means of doing so and, while this study has used a different method, it has much in common with the techniques of cost benefit analysis.

The research has developed a framework for considering the whole of government lifetime impacts of housing assistance, and for producing first estimates of these impacts. Given the considerable amount of related empirical work underway, might the undertaking have been premature, pending emergence of the findings from the other research efforts? That is not the case because it will be some time before the findings from the other relevant research become available – particularly those from the AHURI Sydney Research Centre project on ‘Housing Assistance and Non-Shelter Outcomes’. In the meantime, it has still been possible to provide early indicative results – particularly with the sensitivity element of this study. The framework is amenable to elaboration and to the entering of firmer numbers as other research results come in.

### 3. THE LIFETIME MODEL

The method used here to assess the broader value of housing assistance is a 'hypothetical' model of people's lifetimes. This entails constructing 'typical' lifetimes for people and estimating the direct and indirect impacts of housing assistance year-by-year over these lifetimes. This is a method commonly used in other areas of policy analysis where intervention is seen to have lifetime impacts – such as research into education (Maglen 1994, Johnson and Lloyd 2000) or superannuation (Tinnion and Rothman 1999, ASFA 1999, King 2001d). Its use here reflects the view that housing, too, can have lifetime impacts – housing assistance can be seen as an investment in people's futures.

The model developed for this study is outlined below in terms of its scope, the development of hypothetical lifetimes, incorporation of the policy environment, and housing details. Some additional technical details are provided in appendix A. Given this outline of the model, a clearer picture of its operation and capabilities will emerge as we trace through the examples and sensitivities in sections 4 and 5.

#### 3.1 Scope

The model covers the following aspects of people's lives:

- education (participation, private costs, government costs);
- labour market activity (labour force status, earnings);
- housing (tenure, private and government costs, asset values);
- income support (pensions, allowances and Rent Assistance);
- superannuation (contributions, accumulation and retirement incomes); and
- taxation (income tax and superannuation tax).

With regard to the possible indirect impacts of housing assistance, this initial version of the model is confined to two areas:

1. educational attainment; and
2. labour force activity.

Among the range of areas where housing assistance may have a potential impact, these two areas of educational attainment and labour force activity were chosen for this version because:

- they emerge repeatedly in the research as important aspects of the possible indirect impacts of housing assistance;
- they each have potentially large lifetime effects; and
- they can be reasonably readily incorporated into a framework for assessing housing assistance by drawing on research undertaken in other areas of public policy analysis.

It was originally hoped to also include health impacts in this version, but readily available data for costing such impacts could not be obtained. Estimates of average private and government health costs for people across the lifetime are available, but not broken down by some measure of people's health status.

With scope in this model to cover education and labour market impacts, we can examine, for example, the full impact over the lifetime of, say, increased labour force activity stemming from the provision of housing assistance. The full impact – covering costs and benefits incident on individuals and government – is worked out through a comparison of simulated lifetimes. In this example, we can consider three lifetimes:

1. a 'base' case lifetime in the absence of housing assistance;
2. a lifetime with housing assistance (but no labour market impact); and
3. a lifetime with housing assistance and the labour market impact.

Comparison of the first two lifetimes gives the narrow housing impact – the impact on individuals' housing costs, and on government's housing assistance outlays. This is the narrow housing impact, but still amounts to an advance over conventional assessments through its consideration of the impacts over a lifetime. Comparison of the second and third lifetimes in the above list then gives the additional labour market impact over the lifetime. This impact is assessed over the lifetime through its manifestations in changes in earnings, in income support entitlements, in housing assistance entitlements, in taxation, and in superannuation accumulation.

### **3.2 Hypothetical lifetimes**

Construction of the hypothetical lifetimes involves compiling consistent sets of lifetime characteristics for a limited number of illustrative individuals/families.

#### *Demographics*

##### *Family types*

The model has been constructed to handle three family types – single people, couples without children and couples with two children. Lifetimes are examined from the age of 25 years on. This starting age is selected as approximating the age at which people tend to move from living in the parental home to independent living. In June 2000, 46% of 20-24 year olds were living in the parental home, while this was the case with just 12% of 25-34 year olds (ABS 2000a, Table 26).

##### *Life events*

Details on the timing of life events for the hypothetical cases have been based on ABS demographic statistics and ABS survey data (ABS 1998, 2000b). In the case of couples, they are taken to be married (in a de jure or de facto sense) by age 25, and to both be the same age. In the case of the couple with two children, the first child is taken to be born when the mother is 24 years old, and the second two years later. This timing reflects patterns according to level of mother's educational attainment – with our base cases having low educational attainment (see below). Lives are taken to continue to the age of 77 years for males and 82 years for females. These are the life expectancies for a 25 year old in the latest Australian life tables (ABS 2001).

##### *Education*

The hypothetical cases – before any educational impacts – have a low level of educational qualifications; namely, no post-school qualifications. This is in line with the pattern of qualifications among the population that may be considered to be potential recipients of housing assistance. This population is approximated here as people in the bottom two quintiles of the income distribution, and about 60 per cent of males and 75 per cent of females in this group have no post-school qualifications (see figures 2.1 and 2.2 in King 2001b).

Possible educational impacts for adults are then simulated as the undertaking of a 3-year part-time TAFE course leading to a new level of educational qualification – post-secondary non-degree. Undertaking such study involves private costs for the individual and government costs in providing the education. The level of educational attainment directly links to labour force activity and earnings with the lifetime profiles for these varied according to highest qualification.

##### *Labour force*

There is no ready source of information on lifetime labour force profiles and these have needed to be derived from cross-sectional information. The basic information is the recent pattern of labour force activity by age, sex and highest qualification taken from ABS survey data (ABS 1998). Following Harding (1993) and other applications by NATSEM, within each sex and education group the lifetime profiles are related to a further disaggregation into four groups according to their activities up to retirement:

1. those with full-time employment only;
2. those with full-time and part-time employment;
3. those with full-time and part-time employment, and some unemployment; and
4. those with chronic unemployment (as well as full-time and part-time employment).

Additional considerations in devising the profiles include the assumption that it is females in couples who reduce their labour force participation when there are young children present, and an assumed age of permanent retirement at 65. This age of permanent retirement is used in the superannuation calculations and does not preclude the possibility of someone being effectively retired earlier – that is, leaving the labour force before the age of 65 years.

These lifetime labour force profiles are accordingly grounded in current and recent behaviour. It could sensibly be argued that they should be set, instead, according to one's views about what future labour market behaviour will look like. The response to this point is to note that the model has the flexibility to insert any lifetime labour force profile. For these first estimates, however, the labour force profiles are those grounded in current patterns. At some later stage, the model can be used to explore alternative views of possible future labour force profiles. Note that these points about flexibility and reference to possible future behaviour rather than to current behaviour apply to much of the model.

For the first estimates from the model, the base case families are initially assigned a lifetime labour force profile from the 'no post-secondary qualifications' group. An improvement in lifetime labour force activity is then treated by shifting to a higher-level profile within the 'no post-secondary qualifications' group or, if there is also a change in education, by shifting to a profile from the 'post-school non-degree qualifications' group. There is, of course, also the capacity to look at different degrees of labour market change as is illustrated in section 5. The actual labour force profiles used in the analyses reported here are given in table A1 in appendix A.

### *Earnings*

Like the labour force profiles, lifetime earnings profiles are derived from recent cross-sectional data. The basic profiles have been derived using unit record data from the 1996-97 and 1997-98 ABS Survey of Incomes and Housing Costs (ABS 1998). They are specified separately for males and females and by level of educational attainment, cover earnings from wages/salaries and earnings from self-employment, are based on median earnings, and have been updated in line with movements in average weekly earnings to 2000-01 levels. The profiles are specified for full-time workers, with part-time earnings then calculated as 40% of full-time earnings – on the basis of a comparison of full-time and part-time earnings data from the ABS surveys.

The resulting full-time earnings profiles for males and females are shown in figures A1 and A2 in appendix A. While the model is operated in real terms, abstracting from the effects of possible inflation, there is a parameter for real earnings growth.

## **3.3 The Policy environment**

This section sets out elements of the policy environment included in the model other than those related directly to housing assistance which are covered separately in section 3.4.

### *Income support*

Eligibility for and entitlements to the following income support payments are calculated in the model:

- Newstart Allowance;
- Family Tax Benefit Parts A and B;
- Mature Age Allowance;
- Age Pension (including Pharmaceutical Allowance); and
- Rent Assistance.

Incorporation of these payments includes testing for eligibility and then calculating entitlements. Entitlements are calculated with reference to:

- average rates of payment for the 2000-01 financial year;
- income-testing provisions; and
- assets-testing provisions.

The assets test effectively only applies to the Age Pension as the model covers no assessable assets prior to retirement and the receipt of a superannuation benefit. Application of the assets test makes distinction between the separate thresholds that apply to home-owners and others.

Note that the Age Pension eligibility age for women is gradually being increased from 60 years to 65 years. It will have reached 65 years by 2013, and is set at 65 years in the model. Otherwise the elements of income support covered are specified according to arrangements in 2000-01.

At present, the social security system is generally subject to CPI-indexation, though the Age Pension is also indexed to a measure of average weekly earnings<sup>1</sup>. The model thus operates with two parameters for real indexation of the social security system. The Age Pension system is indexed in line with the real earnings inflator, while the rest of the income support system is maintained constant in real terms as a default (though with provision for applying indexation).

### *Taxation*

This version of the model includes income taxation and taxation of superannuation. Taxation of superannuation is dealt with in the account of superannuation below, with this part of the description confined to income tax. The income tax system modelled is according to 2000-01 arrangements and includes the following elements:

- distinction between assessable and non-assessable income (Family Tax Benefit and Rent Assistance are examples of the latter);
- tax deductions (applied across the board as a 4% deduction on income from earnings);
- tax rates and scales;
- rebates (pensioner rebate, beneficiary rebate, low income rebate and low income aged persons rebate); and
- Medicare.

Indexation of the income tax system is governed by an index parameter that as a default is linked to assumed real earnings growth.

The GST could be added to a subsequent version of the model. This would have the effect, for example, of shifting more of any increase in earnings from the individual benefit side to the government benefit side.

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<sup>1</sup> The Age Pension is indexed to either average earnings or the CPI – whichever is the higher.

## *Superannuation*

Superannuation is an important element of the framework – extending any benefits from increased earnings through to increased private retirement incomes and reduced age pension outlays. The incorporation of superannuation includes the following:

- 9% employer contributions – the rate payable under the Superannuation Guarantee from 2002-03;
- superannuation tax on fund earnings and benefits;
- a default superannuation fund real earnings rate of 4.5% per annum;
- superannuation benefit taken as a lump sum and/or complying income stream (with the default being 100% complying income stream);
- application of the particular income tax and means-testing provisions that apply to superannuation pensions.

### **3.4 Housing elements**

With housing being the focus of this study, there is considerable scope in the model for variation of the housing parameters. This initial version of the model has been developed to cover the two major forms of Australian housing assistance – Commonwealth Rent Assistance (CRA) and public rental housing.

CRA is covered in the model as part of the detailed modelling of the eligibility and entitlements for income support, together with an element for administration costs. Public rental housing is modelled with a rent-setting formula and variable assumptions about government costs in providing public rental housing – property acquisition costs, repairs and maintenance, administration and rates and charges. The specific treatment of these two forms of housing assistance is provided in the relevant parts of the report below – section 4 for CRA, and section 5.1 for public rental housing.

The model can be readily extended to other forms of housing assistance, such as assistance with owner-occupation or some specified form of community housing.

#### *The base cases*

For the 'base' lifetimes – in the absence of housing assistance – the hypothetical individuals/families are assumed to be in private rental housing. Default rent levels are used in the examples presented below (see appendix A) though, like most aspects of the model, these rent levels can be varied.

## 4. FIRST ESTIMATES – THE BASIC PICTURE

The basic picture from this lifetime framework for analysis is drawn using a single illustrative example of the lifetime costings in the case where Commonwealth Rent Assistance improves someone's labour force activity and level of education. A number of variations on this basic picture are presented in the following section 5 – including variations in the form of housing assistance, family type, the future environment, and the degree of non-housing impacts.

### 4.1 The hypothetical experiment

The case in question is a single male, with his life covered from the age of 25 years to death at 77 years. He has a low level of educational attainment (no post-secondary qualifications) and low labour force activity. We then look at the returns (the net costs and benefits) to this individual and to government of paying Commonwealth Rent Assistance where:

1. there is no impact on labour force activity and education;
2. there is an impact on labour force activity;
3. there is an impact on education and associated labour force activity; and
4. there is an impact on education and associated labour force activity and earnings level.

Some general aspects of the analysis include the following:

- The simulation is undertaken in real terms (2000-01 dollars).
- The example does not include any real earnings growth (or associated indexation of the age pension or tax system), or real growth in rent levels.
- Policy parameters (tax rates, social security entitlements etc) are set at 2000-01 levels.
- Permanent retirement from the workforce – and drawing on superannuation (based on 9% employer contributions and benefit in the form of a complying income stream) – occurs at age 65.
- The individual is assumed to spend their whole lifetime from age 25 years living alone in private rental housing.

### 4.2 The case with no impact

Our starting point, in the absence of Commonwealth Rent Assistance, has the single male paying \$100 per week for rent<sup>2</sup>. Their labour force career is that of a 'chronically unemployed' person (see appendix A) with no post-secondary educational qualifications. Only half of their 40 years between the ages of 25 and 64 is spent in employment – 16 years of full-time work and 4 years of part-time work. The remaining 20 years before permanent retirement comprise 15 years of unemployment and five years out of the labour force.

Now, we introduce Commonwealth Rent Assistance (CRA). Paying weekly rent of \$100, the single male is entitled to the maximum CRA payment (of about \$2200 per year) for those years when he is receiving base income support (when he is either unemployed or out of the labour force). This amounts to 32 years – 15 years receiving Newstart Allowance, 5 years receiving Mature Age Allowance, and 12 years on Age Pension after reaching the age of 65 years. The total lifetime outlay on CRA is \$71 600 – with a corresponding benefit to the individual.

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<sup>2</sup> For comparison, Wulff (2000, p28) reported the findings of a 1998 survey of Commonwealth Rent Assistance recipients conducted by the Department of Family and Community Services. Among singles living alone, just under a half were paying rent of less than \$100 per week, with most of the remainder paying \$100 to \$149 per week.

The costs to government of providing CRA also include administrative costs. With the payment of CRA attached to the delivery of general income support, these administrative costs are low and difficult to isolate. Following an estimate reported by the Productivity Commission (2001, p793), these administrative costs are estimated to be just \$23 per year<sup>3</sup>. This element marginally increases the total government outlay on CRA to \$72 300.

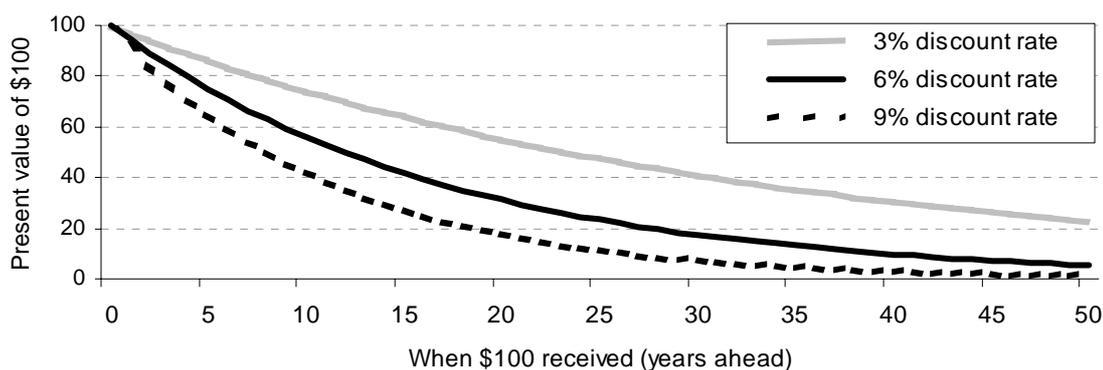
### Discounting

Looking at housing assistance as an investment and, particularly, because we are interested in comparing these outlays with future streams of possible returns and costs, we need to discount the total lifetime outlay to 'present value' terms. The present value of the future payments is the sum that would be needed at the outset to fund the future CRA payments. This is considerably less than the simple sum of the outlays because the initial sum can be invested to generate the required funds in future years. The present value of a future stream of outlays (or costs or benefits) will thus depend on the assumed interest rate – or 'discount' rate. Here, we use a discount rate of 6% (close to the average value of the real bond rate over the past 15 years).

Discounted to present value terms, the \$72 300 outlay on CRA reduces to a figure of just \$16 700 (and, after removing the small administration component, a lifetime benefit to the CRA recipient of \$16 500). What this means is that a starting amount of \$16 700 and an interest rate of 6% would provide the sum required to fund the particular time sequence of CRA payments in this illustrative example. We are looking at a CRA investment of \$16 700.

The effect of discounting is to accord far more weight to costs and benefits that occur in the near future than to those that appear in the distant future – \$100 now is worth more than \$100 in the future. The dramatic impact of discounting, and the sensitivity to the discount rate, are illustrated in figure 4.1 which shows the present value of \$100 at increasing times from now under alternative discount rates. The higher the discount rate, the lower is the present value of future costs and benefits.

Figure 4.1 The impact of discounting



<sup>3</sup> The Productivity Commission (2001, p793) refers to an estimate that CRA running costs in 1998-99 were \$21 650 per 1000 CRA recipients. Allowance for subsequent inflation gives the estimate used here for 2000-01 of \$23 per recipient.

### *An investment with no return?*

In this case, where there is no impact of CRA on the person's labour force activity or education, we identify no return to the investment in CRA. This is an appropriate point to draw attention to an important feature of how this analysis should be interpreted. When we say there is no return to the investment in CRA, it is not suggested that the payment of CRA is a waste of money. While we are looking at CRA from an investment perspective, we need to remember that the fundamental purpose of CRA is to leave adequate incomes for other needs after the payment of housing costs for those in need.

In this case we can imagine that the supplementary income provided by CRA is used to meet everyday demands and simply affords the recipient a more adequate standard of living. Without CRA, the case under consideration here is paying over 50% of his gross income in rent for the many years of his lifetime when he is primarily dependent on income support. With CRA, housing costs over these years are reduced markedly to around 33% of income<sup>4</sup>. This in itself can be enough to justify the payment of CRA. It is money well spent even in the absence of any returns on the investment in the particular sense in which they are being covered here. Were there also broader returns, it would be money even better spent.

### **4.3 The case with an impact on labour force activity**

Now let us look at the case where the payment of CRA has an impact on the person's labour force career. How might this happen? Suppose the payment of CRA allows the single male to move to an area with far better access to employment (and education) – better access which is reflected in higher rent accommodation. Translating such a move into an improvement in labour force career does, of course, assume that the reasons for the person's low level of labour force activity are related to locational disadvantage rather than to any personal characteristics. This is the implicit assumption in this hypothetical case.

The improvement in labour force career is simulated here by a qualitative shift in the person's labour force activity – from the 'chronic unemployment' to the 'some unemployment' group (see appendix A). This shift amounts to 10 years less of unemployment and 2 years less of part-time employment, with a corresponding 12 more years of full-time employment. Still, there are 10 years spent unemployed or out of the labour force during the period from age 25 to permanent retirement at 65.

The new level of private rent paid in this case is calculated on the basis that a large part of the CRA entitlement is used to supplement the amount of rent paid. With an initial rent of \$100 per week and maximum CRA of \$41.30 per week<sup>5</sup>, the new weekly rent is set at \$130. The move to this new rent level is taken to be a permanent move – the individual does not, for example, return to the low rent area in those years when he is unemployed.

#### *The range of impacts*

The range of impacts which flow from the improved labour force career is set out in table 4.1.

Firstly, there is the increase in earnings which stems from the increased time spent employed. This is manifest in benefits of increased after-tax earnings for the individual and increased income tax receipts for government. It also flows through the compulsory 9% employer superannuation contribution into increased superannuation

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<sup>4</sup> This calculation of the rent to income ratio is on the basis that CRA is a rent subsidy, rather than an income supplement.

<sup>5</sup> Income support rates are a weighted average of the rates prevailing over the 2000-01 financial year.

accumulation. This has the benefits of increased private retirement income for the individual, and increased superannuation tax receipts (during the period of accumulation and benefit payout) and income tax receipts for government.

Secondly, the individual's need for and entitlement to income support is reduced by higher private income both before and after retirement. Where this removes all entitlement to base income support, any entitlement to CRA also disappears. So, here we see benefits to government (and corresponding costs to the individual) through reduced income support outlays (base income support and CRA). There is also an impact on CRA administration costs.

Finally, there is the cost to the individual of the increased housing costs faced by the move to the higher-cost location. Other factors which could be added to this framework would include aspects such as the costs of working and GST revenues.

**Table 4.1 Nature of impacts from increased labour force activity**

Individual		Government	
Benefits	Costs	Benefits	Costs
Increase in earnings		Increase in income tax	
Increase in private retirement income		Increase in superannuation tax	
Reduced income support		Reduced income support	
Reduced CRA		Reduced CRA	
		Reduced CRA admin	
Increased housing costs			

### *Costing the impacts*

The returns (costs and benefits) of the impacts in this case of investment in CRA with the specified labour force impact are set out in table 4.2. To show the impact of discounting, the table shows both the undiscounted and discounted values of the costs and benefits. The table shows the differences from the 'base case' of no impact described in section 4.2.

Looking firstly at the undiscounted values (the first column of table 4.2) and at the benefits for the individual, we see a substantial increase in gross earnings of \$361 300 (full-time employment having replaced 10 years of unemployment and 2 years of part-time employment) and also a notable increase in private retirement income of \$64 300 flowing from the increased superannuation contributions.

On the cost side, the individual incurs increased income tax liabilities and has lower entitlements to income support. The reduction in base income support entitlements totals \$94 700 (with most of this falling in the pre-retirement years). Over the pre-retirement years, the reduction in base income support is the result of the number of years in which the person is no longer unemployed and entitled to Newstart Allowance. With the loss of eligibility for Newstart Allowance, any entitlement to Rent Assistance is lost and there is a commensurate reduction in CRA entitlements over the pre-retirement years – amounting to \$22 400. After retirement, however, the increase in private retirement income reduces but does not extinguish the entitlement to Age Pension. CRA eligibility remains and there is no change in CRA entitlement after retirement. Finally, the individual has the continuing additional rent to pay, amounting to \$81 100 over the lifetime.

**Table 4.2 Additional return on CRA investment with labour market impact: illustrative single male, undiscounted and discounted at 6%, 2000-01 dollars**

	Change from case with no impact	
	Undiscounted	Discounted (6%)
	\$000	\$000
<b>Individual</b>		
<i>Benefits</i>		
Increased gross earnings	361.3	139.3
Increased private retirement income	64.3	4.6
<b>Subtotal (individual benefits)</b>	<b>425.6</b>	<b>143.9</b>
<i>Costs</i>		
Increased income tax	97.8	30.0
Reduced base income support	94.7	33.0
Reduced CRA	22.4	8.1
Increased rent	81.1	26.2
<b>Subtotal (individual costs)</b>	<b>296.0</b>	<b>97.3</b>
<b>Net total for individual</b>	<b>129.6</b>	<b>46.6</b>
<b>Government</b>		
<i>Benefits</i>		
Increased income tax	97.8	30.0
Increased superannuation tax	21.2	4.2
Reduced base income support	94.7	33.0
Reduced CRA	22.4	8.1
Reduced CRA admin costs	0.2	0.1
<b>Subtotal (govt benefits)</b>	<b>236.3</b>	<b>75.4</b>
<i>Costs</i>		
<b>Subtotal (government costs)</b>	<b>0.0</b>	<b>0.0</b>
<b>Net total for government</b>	<b>236.3</b>	<b>75.4</b>

Source: NATSEM simulations. See text

The benefits to government are largely the counterparts to the tax-transfer changes for the individual in the areas of income tax, base income support and CRA. There is also an increase in superannuation tax to the value of \$21 200, and a small reduction in CRA administration costs. No costs to government associated with this labour market response are identified.

Turning now to the discounted values, the impact of discounting (with a 6% discount rate) is very evident. The values of costs and benefits are all much reduced when seen in present value terms. This is particularly the case for the costs and benefits occurring furthest into the future – such as the increased private retirement income. Broadly, discounting reduces the value of the pre-retirement costs and benefits to 35-40% of their undiscounted value, and the value of the post-retirement costs and benefits to under 10% of their undiscounted value.

The 'bottom line' in table 4.2 is the right hand column. With the labour market impact, the simulated lifetime benefit of the investment in CRA of \$16 700 (from section 4.2) in discounted terms is:

- for individuals – the basic CRA payment of \$16 500 (from section 4.2) plus additional net benefits of \$46 600 generated by the labour market impact, giving a total lifetime benefit of \$63 100.
- for government – against an initial outlay of \$16 700, benefits of \$75 400 generated by the labour market impact.

### *What does this mean?*

From the perspective of a government investment in housing assistance, the results of the simulation reported above show a \$16 700 investment yielding a \$75 400 return to the government. This looks like an extremely attractive use of government money but care does need to be taken with interpretation of this result. For a start, it is specific to the particular hypothetical case in question and there is of course great diversity in the circumstances and possible labour market impacts for CRA recipients (some variations in circumstances and impacts are covered in section 5). What we can say is that there are potentially large investment returns from CRA above the basic income support function of the payment.

If the case analysed was typical of one in four or five of such CRA recipients, then CRA would be a revenue neutral payment for this group in the long term<sup>6</sup>. We do not yet know whether this is a realistic proposition – other AHURI research is exploring this aspect of the non-shelter outcomes of housing assistance – and it most probably is not. The points remain, though, that a positive labour market impact can have major lifetime benefits for government and the individual, and that any return on the investment is a bonus from CRA payment and effectively goes some way to offsetting the cost of CRA.

Another issue in interpreting the result concerns the partial nature of the analysis. It is concerned with a single individual and results can not necessarily be scaled up to cover all CRA recipients (irrespective of the point about their diversity). Even if every CRA recipient was like the particular case analysed, we could not, for example, say on the basis of the above that it looks like a good idea to boost CRA (to the extent that people can move to higher-cost areas) and thereby largely get rid of unemployment. System-wide effects would need to be taken into account. Large scale changes to CRA could have an impact on the private rental market. There are also important labour market considerations. A clue to these is provided by the benefits in table 4.2 which are not simply transfers between the individual and government. Where does the money come from for increased earnings and superannuation contributions? Has our case gained more employment at the expense of someone else? Is it a case of displacement or of new employment being created? These would be crucial considerations in any expanded interpretation of the results.

## **4.4 Adding the impact of education**

The single male in our hypothetical example has no post-secondary educational qualifications but has moved to an area which offers both better employment prospects and improved access to education. Suppose he now takes the opportunity to further his education through three years (from age 25 to 27) of part-time TAFE study.

This introduces a number of additional impacts into the equation. Firstly, there are impacts associated with undertaking education – foregone earnings, private costs of education, and government costs of providing education. Secondly, the lifetime labour force profile shifts to that associated with post-secondary non-degree educational attainment (see appendix A). Thirdly, earnings increase in line with the increased level of skill (see appendix A). The discounted results from this extension of the simulation are given in table 4.3.

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<sup>6</sup> The relevant group of CRA recipients is not just confined to single male CRA recipients living alone – who amount to around 15% of the CRA population (derived from pp 17-18 and table A5 in Wulff 2000). It is confined further to those in similar circumstances to the hypothetical case examined – with, for example, similar labour force and education characteristics and facing similar barriers to increased labour market activity. It is hard to estimate just how large this specific group would be.

**Table 4.3 Additional return on CRA investment with education and labour market impacts: illustrative single male, discounted at 6%, 2000-01 dollars**

	Change from case with no impact	
	Excluding impact of higher earnings rate	Including impact of higher earnings rate
	\$000	\$000
<b>Individual</b>		
<i>Benefits</i>		
Increased gross earnings	158.8	215.4
Increased priv. retirement inc.	5.7	7.7
<b>Subtotal (individual benefits)</b>	<b>164.5</b>	<b>223.1</b>
<i>Costs</i>		
Increased income tax	31.7	49.7
Reduced base income support	48.5	48.7
Reduced CRA	11.9	11.9
Increased rent	26.2	26.2
Education costs	1.5	1.5
<b>Subtotal (individual costs)</b>	<b>119.8</b>	<b>138.0</b>
<b>Net total for individual</b>	<b>44.7</b>	<b>85.1</b>
<b>Government</b>		
<i>Benefits</i>		
Increased income tax	31.7	49.7
Increased superannuation tax	4.7	6.4
Reduced base income support	48.5	48.7
Reduced CRA	11.9	11.9
Reduced CRA admin costs	0.1	0.1
<b>Subtotal (govt benefits)</b>	<b>96.9</b>	<b>116.8</b>
<i>Costs</i>		
Education costs	14.2	14.2
<b>Subtotal (government costs)</b>	<b>14.2</b>	<b>14.2</b>
<b>Net total for government</b>	<b>82.7</b>	<b>102.6</b>

Source: NATSEM simulations. See text

The first column of table 4.3 includes the impacts associated with undertaking education and with the changed labour market profile. The second column then adds the further impact of the higher earnings associated with the increased skill level. Note that these impacts are expressed as variations from the picture with no impact, rather than being the additional impacts on top of the impacts associated with increased labour force activity which were presented in section 4.3.

For individuals the net return from only a labour market activity impact was \$46 600 (table 4.2). When we add in some of the impacts of education – the costs of undertaking education and the labour activity change associated with the higher level of educational attainment – the return is slightly lower at \$44 700. The additional costs of undertaking education (notably the foregone earnings early in the lifetime) are not being outweighed by the later increase in labour market activity. But when we also add in the effect of shifting to a higher earnings profile in line with higher skill, the net lifetime return is markedly higher at \$85 100. Basically, what we are seeing here is the return to education partly offset by increased housing costs.

In the case of government, the impact of education results in higher net returns with or without consideration of the increased earnings. With the full impact, the estimated net total return to government is \$102 600, against the initial investment in CRA of \$16 700. Clearly, if the payment of housing assistance can induce this type of positive education response, the potential returns from the investment in housing assistance are considerable.

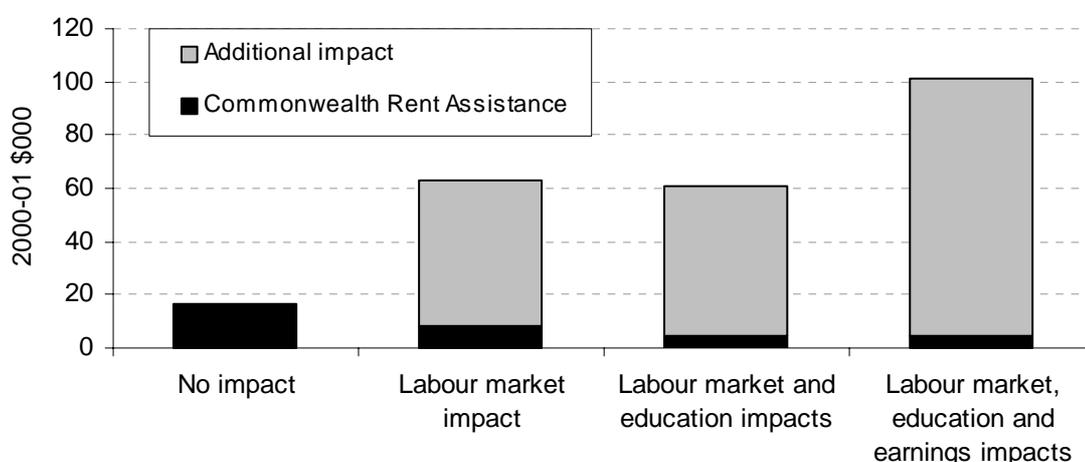
In studies of the returns to education, only part of the difference in earnings is typically attributed to education – part is attributed to ‘talent’. Whether a similar approach should be applied here is not, however, clear. In the example used, the housing assistance provides the opportunity to secure returns to both education and talent. So, it can be argued that it is appropriate to include the whole change in earnings, which is what has been done here.

#### 4.5 Summary of the basic picture

The basic picture presented above is summarised in figures 4.2 and 4.3. Figure 4.2 shows the net lifetime benefits to the individual from CRA with different degrees of impacts covered. First, there is the case with no non-housing impacts, where the benefit simply amounts to the receipt of CRA – a discounted value of \$16 500 over the lifetime. The results with progressively more impacts are then shown. These show the diminishing entitlement to CRA, but mainly the impacts of increased labour force activity and, in the latter two cases, of a higher earnings profile. In calculating the net impact, these benefits are partially offset by the increased rent level and the costs of education.

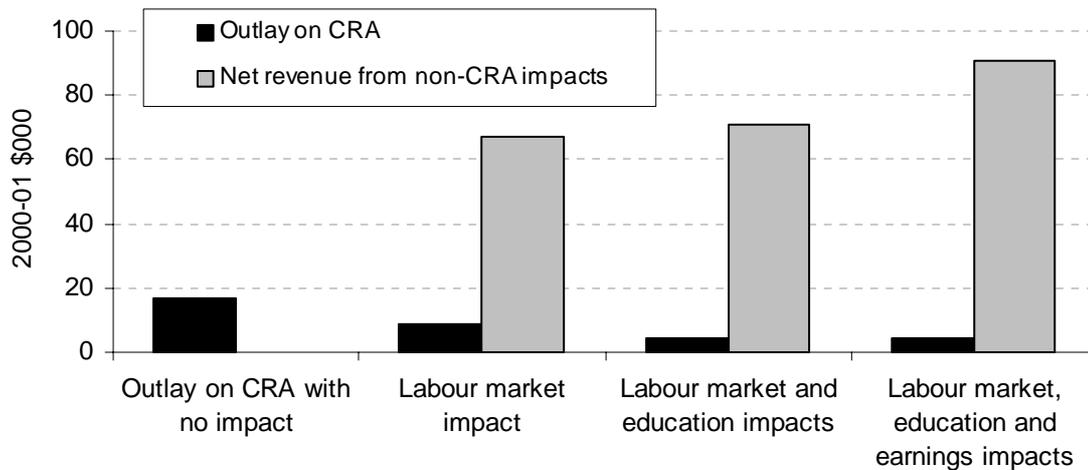
The government side of the picture is summarised in figure 4.3, showing outlays on CRA and net revenue from other impacts. The first column shows the discounted outlay on CRA in the event of no non-housing impacts. The other columns show the results in the event of non-housing impacts, distinguishing between the reduction in CRA entitlement and other impacts on net government revenue. To look at the overall impact on government, the outlay on CRA needs to be subtracted from the other impacts. Thus, in the case covering all impacts for example, discounted CRA outlays of just \$4 700 are offset by other impacts to the value of \$90 600 – giving a net outcome to government of \$85 900. The difference between this amount and the net outcome in the case of no impact (a cost to government of \$16 700) is \$102 600 (see table 4.3).

**Figure 4.2 Net lifetime benefits to illustrative single male from Commonwealth Rent Assistance with labour market, education and earnings impacts: discounted at 6%, 2000-01 dollars**



Source: NATSEM simulations. See text.

**Figure 4.3 Lifetime impacts on government in the case of illustrative single male receiving Commonwealth Rent Assistance with labour market, education and earnings impacts: discounted at 6%, 2000-01 dollars**



Source: NATSEM simulations. See text.

Now, while the decimal points in the numbers underlying figures 4.2 and 4.3 do not matter, the orders of magnitude do. They show that, when examined over the lifetime, the costs of providing CRA can look very small compared to the potential returns – to both the individual and government – if CRA can induce a positive labour market and/or education response. That said, it is worth stressing again that these findings should not be generalised. They refer to a specific case, which has been designed to be plausible but could not be seen as ‘average’ or ‘typical’. The illustrative case has been used to present the basic picture in terms of the mechanics of the framework and the potential orders of magnitude. In the next section, the picture is filled out by looking at the lifetime impacts for different cases and under different assumptions.

## 5. FIRST ESTIMATES – VARIATIONS AND SENSITIVITY

Having used a single specific case to present the basic picture and illustrate the model, this section covers the results for different cases and under different assumptions. The specific variations covered are:

- variation in the form of housing assistance (section 5.1):
  - using the example of public rental housing;
- variations in family type (section 5.2);
- variations in the terms of the simulation (section 5.3):
  - sensitivity to the discount rate
  - sensitivity to the growth in real earnings
  - sensitivity to the growth in real land prices; and
- variation in the impacts (section 5.4):
  - variation in the degree of labour market impacts
  - some broad effects of extending the scope of impacts covered.

Throughout, these results are compared with those found for the basic case covered in section 4, using the comparison between the case with no impact and the case with an impact on labour force activity, education and earnings. In the interests of legibility, some of the presentation in this section is restricted to summary figures. Where this is done, the supporting detailed tables, which identify the various costs and benefits, are provided in appendix B.

### 5.1 The form of housing assistance – public rental

Using the same example of the single male covered in section 4, how do the numbers look if housing assistance is provided through public rental housing rather than through CRA?

#### *Modelling public rental housing assistance*

Whereas CRA is a reasonably straightforward form of housing assistance to model, this is not the case with public rental housing. Besides some differences in the terms of assistance provided by the various housing authorities across the country<sup>7</sup>, the financing of public rental housing – with pooling, for example, across properties and across time – is complex. Here, a number of simplifying assumptions are used to create what might be termed a stylised representation of public rental housing.

The basic assumption is that a public housing dwelling is tied to the recipient case. The single male at age 25 is eligible for housing assistance and the response is taken to be spot purchase of a new dwelling. To enable comparison with the CRA example, the dwelling is assumed to be identical to that being privately rented in the previous example – a property with a value of \$100 000 and generating a market rent of \$100 per week<sup>8</sup>.

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<sup>7</sup> There are, for example, some differences in the rent-setting formulae used (see appendix E in Department of Family and Community Services 2001a).

<sup>8</sup> The linking of a weekly rent of \$100 to a property value of \$100 000 represents a gross rental yield of a little over 5%. Rental yields vary – by location, by dwelling type, by property value, and over time – and AHURI & The Allen Consulting Group (2001, pp 12-13) cite recent estimates of gross rental yields ranging between 4% and 8%. Rental yields tend to be higher for lower value properties, so the assumed 5% in this case is probably on the low side. The assumed rental yield in this exercise will clearly have a beating on the capital costs faced by the public rental housing authority.

The public purchase of this dwelling is financed independently of the broader operations of the housing authority, though the terms of the assumed financing reflect the nature of the borrower. The dwelling is purchased with a long-term mortgage taken out over the life of the dwelling, with no deposit, and with a real mortgage rate on the low side – 2.5%<sup>9</sup>. While recognising the moves toward periodic review of continued eligibility for public rental assistance, there is security of tenure in this example and the tenant remains in the property for life. In this case, that means for 51 years and this period is also conveniently used as the life of the dwelling<sup>10</sup>. At the end of the tenant's life, the dwelling then has no value, but the land is sold. The land value is assumed to amount to 40% of the total property value at the time of the initial dwelling purchase, and this example assumes no real increase over time in land value.

Besides mortgage repayments, the running costs attached to the public rental housing include the following elements, with assumed values derived from the financial analysis of public housing rental operations undertaken by the Industry Commission (1993, p32)<sup>11</sup>:

- administration cost – set at 7.5% of market rent;
- maintenance costs – set at 1% of initial dwelling value;
- rates and charges – set at 1% of land value.

Finally, rent charged is set at 25% of the tenant's gross income up to a maximum payment at the market rent level.

The general terms of the analysis – for example, its conduct in real terms and the assumption of no real earnings growth – are the same as those used in the previous example and set out in section 4.1.

### *The case with no impact*

The basic picture of the lifetime costs and benefits of public rental assistance where there is no impact on education or labour market activity is given in table 5.1. For comparison, the results for CRA (as presented in section 4.2) are also shown. Both discounted and undiscounted results are included as they provide another good illustration of the importance of discounting.

Looking first at the undiscounted figures, public rental appears to provide a greater level of housing assistance over the lifetime and at a considerably lower cost than does CRA. But the true picture lies in the timing of these costs and benefits which is taken into account by discounting. The costs to government of public rental fall more heavily in the earlier years – due particularly to the profile of mortgage payments – while the benefits – notably the sale of land – are mainly enjoyed in the later years. Discounting changes the picture markedly. In discounted terms, the bottom line is that public rental in this example provides a level of lifetime assistance about 60% higher than does CRA, though at about a 75% higher cost. While lifetime assistance through CRA amounts in this case to an investment of \$16 700, an investment of \$29 300 is required with assistance provided with public rental housing.

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<sup>9</sup> The mortgage calculation is the credit foncier type and assumes 3% inflation. Thus repayments are calculated on the basis of a 5.5% nominal interest rate before their conversion to the real terms of the rest of the analysis.

<sup>10</sup> This is realistic given the 50 year life for dwellings commonly used by housing authorities in their asset accounting.

<sup>11</sup> The Industry Commission analysis referred to 1991-92 and just as cost structures may have changed since then, they are also likely to vary from one housing authority to another. In this stylised representation of public housing, the assumptions for these first estimates are designed to be realistic and of an appropriate order of magnitude, rather than precise. The important point is that these costs are variable parameters in the model.

**Table 5.1 Private and government lifetime costs and benefits of CRA and public housing with no impacts on labour market and education: illustrative single male, discounted at 6%, 2000-01 dollars**

	Not discounted		Discounted at 6%	
	CRA	Public rental	CRA	Public rental
	\$000	\$000	\$000	\$000
<b>Government</b>				
<i>Costs</i>				
Income support paid (CRA)	71.6	-	16.5	-
Administration	0.7	20.3	0.2	6.6
Mortgage repayments	-	158.0	-	69.0
Repairs and maintenance	-	31.2	-	10.1
Rates and charges	-	20.8	-	6.7
<b>Subtotal (govt costs)</b>	<b>72.3</b>	<b>230.3</b>	<b>16.7</b>	<b>92.4</b>
<i>Benefits</i>				
Rent received	-	172.1	-	61.1
Sale of land at end of life	-	40.0	-	2.0
<b>Subtotal (government benefits)</b>	<b>0.0</b>	<b>212.1</b>	<b>0.0</b>	<b>63.1</b>
<b>Net total cost for government</b>	<b>72.3</b>	<b>18.2</b>	<b>16.7</b>	<b>29.3</b>
<b>Individual benefits</b>				
Income support (CRA)	71.6	-	16.5	-
Rent subsidy (rebated rent)	-	98.3	-	26.3
<b>Net total benefit for individual</b>	<b>71.6</b>	<b>98.3</b>	<b>16.5</b>	<b>26.3</b>

Source: NATSEM simulations. See text

It must be stressed that the results for this illustrative example should not be taken as a general cost-effectiveness comparison of providing housing assistance through CRA and through public rental housing. The results are specific to the case in question - including a very specific labour force profile - and to the simulation assumptions. The equation would change with different assumptions about matters such as growth in real land values or the appropriate discount rate. Moreover, different levels of assistance in terms of rent subsidy (ignoring any differences in matters such as security of tenure) are being provided here in the CRA and public rental examples and, because of means-testing arrangements, the relationship between cost and benefit provided is not linear. Thus, for example, if we amend the CRA provisions so that the lifetime rent subsidies under the two options are the same, and add 1% per annum real growth in land values, then the two options deliver the same level of lifetime assistance at very similar costs to government. If we then reduce the discount rate by 1 percentage point to 5%, public rental housing appears cheaper. Perhaps most importantly though, we cannot assume that the two forms of housing assistance are equally likely to induce the non-housing impacts covered in these examples.

#### *Labour market and education impacts*

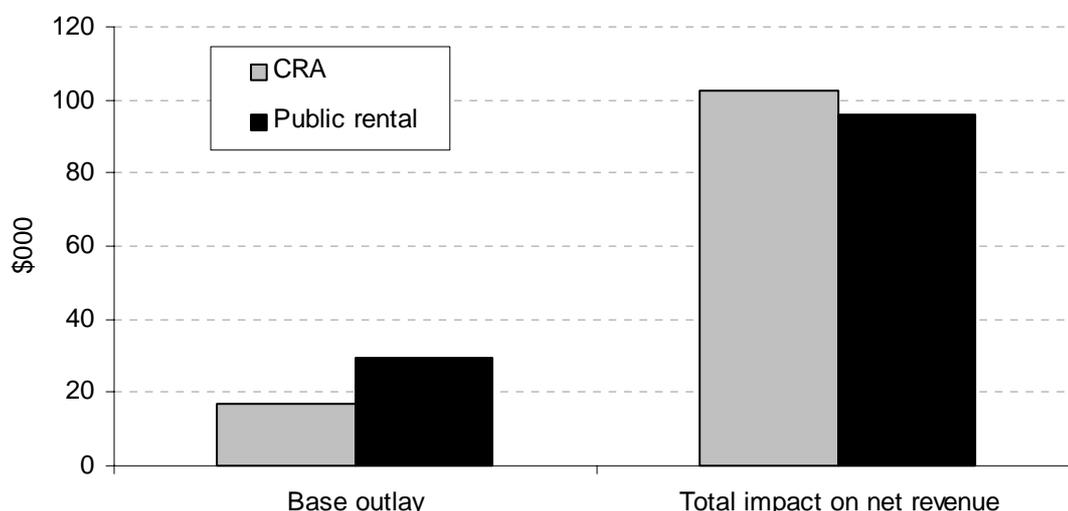
The same possible labour market and education impacts are examined here as in the previous example. In this case, the move to an area with higher housing costs is dealt with by increasing the value of the public rental property to \$130 000 – commensurate with the higher market rent of \$130 per week<sup>12</sup>. The detailed discounted results from the simulation are provided in table B1 (in appendix B), with the key features summarised below in comparison with the CRA example.

<sup>12</sup> This treatment of the move to an area with higher housing costs assumes a degree of mobility in the public rental sector equal to that in the private rental sector. In reality, mobility is far more limited within the public rental sector.

The starting picture for the illustrative single male used in these examples – in the absence of any indirect impacts – was that the provision of housing assistance over his lifetime amounted to a government investment of \$16 700 in CRA, or an investment of \$29 300 if assistance was provided through public rental housing. The simple housing cost benefits that flow to the individual largely reflect the relative scale of the housing assistance investment – a discounted lifetime benefit of \$16 500 through CRA or \$26 300 through the more generous public rental assistance.

As seen in section 4.4, if the provision of housing assistance leads to indirect labour market and education impacts, the additional net lifetime benefits for both government and the individual can be considerable. This is true for assistance provided either through CRA or public rental housing. As we assume in this comparison the same labour market and education impacts, the difference between the lifetime impacts under the two forms of assistance relates back to the effects on housing assistance. The impacts under CRA and public rental housing are summarised in figures 5.1 and 5.2.

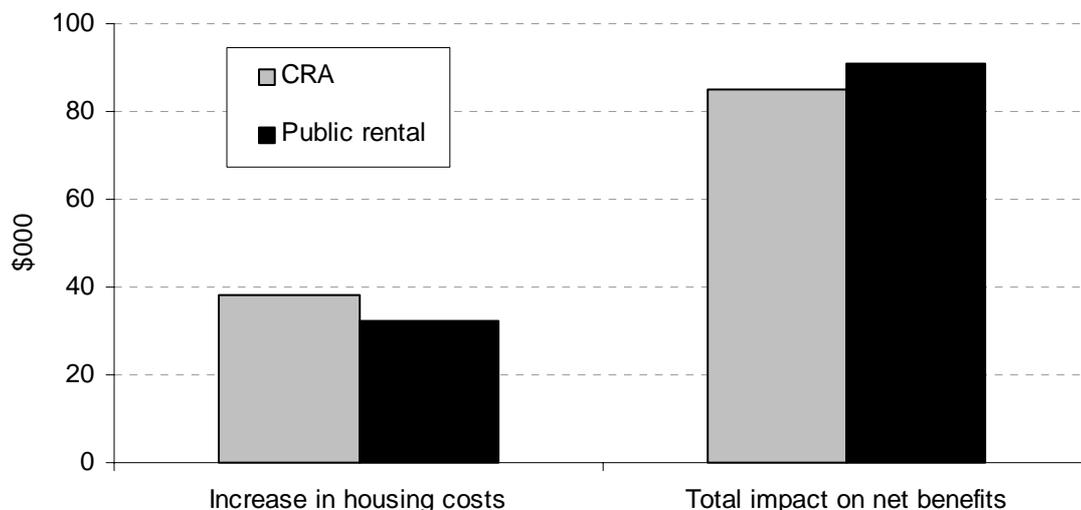
**Figure 5.1 Net benefits to government from labour market and education impacts, with CRA and public rental housing: illustrative single male, discounted at 6%, 2000-01 dollars**



Source: NATSEM simulations. See text

Figure 5.1 shows the total net benefits to government stemming from the labour market and education impacts in the cases of CRA and public rental assistance. For perspective, these total net benefits are held up against the initial outlays (from table 5.1). The total net benefits are similarly large – totalling around \$100 000 (in discounted present value terms) – where assistance is provided through CRA and public rental housing. The total net benefits to government are, however, somewhat higher in the CRA case than in the public rental case. This reflects in particular the switching on and off of CRA assistance – which is tied to base income support entitlements – while the possibility of means-tested assistance through public rental is continuous over the lifetime in this example with assumed security of tenure. Under public rental, the tenant does find themselves paying market rent for many years, though the government continues to incur capital and running costs associated with the property.

**Figure 5.2 Net benefits to individual from labour market and education impacts, with CRA and public rental housing: illustrative single male, discounted at 6%, 2000-01 dollars**



Source: NATSEM simulations. See text

The other side of the coin – the additional net benefit for the individual – is summarised in figure 5.2. Corresponding to the pattern seen above for government benefits, public rental yields slightly higher net lifetime benefits than does CRA. The reason is seen clearly in the left hand side of the figure which shows the impact on housing costs. With public rental housing assistance responding less than CRA to an improvement in the individual's circumstances, they face a smaller increase in housing costs when in public rental housing. This difference accounts for the greater total net benefits to the individual in public rental housing than if receiving CRA assistance.

#### *Other forms of assistance*

The framework can equally be applied to cover other forms of housing assistance. For example, assistance with owner-occupation can be treated in terms of deposit assistance and/or mortgage relief. If assistance is provided through one-off deposit assistance, then the discounted government outlay is simply the amount of assistance provided. Thus, using the example set out above, the same level of housing assistance (in terms of an investment by government) could be provided through a deposit subsidy of \$16 700 – if we compare it with CRA outlays. Assessment of assistance with owner-occupation does, however, also need to take into account continuing future capacity to meet mortgage payments and the other costs of owner-occupation (maintenance, rates). Also, if entry into owner-occupation still requires use of private savings, then the return on those private savings invested elsewhere would need to be incorporated in any comparison of the returns under different forms of housing assistance.

Community housing models can vary considerably and they can be covered, for example, by varying administration costs or rent-setting provisions or, possibly, including shared equity arrangements. In considering these extensions, however, it is worth reiterating the point made earlier that the comparison of lifetime costs and benefits under alternative forms of housing assistance in this section has assumed the same impact on labour force and education activity. A very important input into a full comparison of the lifetime impacts under alternative forms of housing assistance will be evidence on the extent to which different types of assistance can promote different degrees and patterns of impacts. That evidence is not yet available.

## 5.2 Variations in family type

So far, the lifetime costings presented have been for the case of a single male. How different are they for other family types? The corresponding results for a single female, a couple without children and a couple with two children are examined here. They use the same example of CRA and a labour force and education impact. The results presented focus on the impacts of government (table 5.2 and figure 5.3), with the detailed results for both government and the individuals/families provided in table B2 in appendix B.

**Table 5.2 Lifetime impact on government from investment in CRA with full impact, by family type: discounted at 6%, 2000-01 dollars**

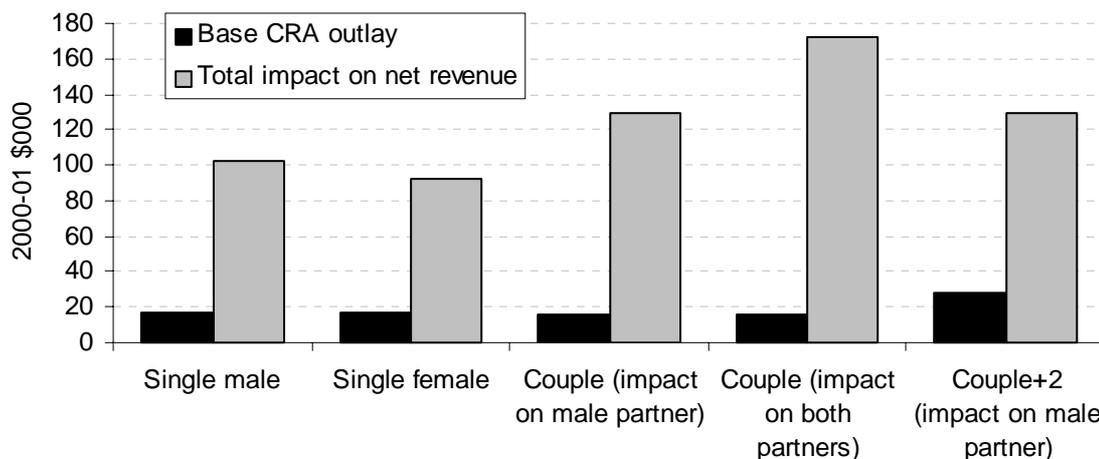
Family type	Outlay on CRA			Non-housing benefit	Total benefit
	Base	With impact	Reduction with impact		
	\$000	\$000	\$000	\$000	\$000
Single male	16.7	4.6	12.0	90.5	102.6
Single female	17.1	5.1	12.1	80.0	92.1
Couple (impact on male partner)	16.2	7.2	9.0	120.1	129.0
Couple (impact on both partners)	16.2	4.8	11.3	161.2	172.6
Couple + 2 (impact on male partner)	28.4	21.8	6.6	123.3	129.9

Source: NATSEM simulations. See text.

In table 5.2, the first column shows the discounted lifetime outlay on CRA in the base case with no impact. The second column shows the reduced CRA outlay in the case with extended impact, with the difference between the two given in the third column. The fourth column is the net impact on government revenues stemming from sources other than CRA – taxation, base income support, education costs. The total impact is the sum of this and the impact on CRA outlays, with this sum given in the final column. The picture is summarised in figure 5.3 which shows the first and fifth columns from the table.

The outcomes for the single male are those which were reported in section 4. Turning now to the single female, her case is identical to the single male except for two aspects. She has a five-year longer life and her earnings profiles are lower than those of the male. The difference in the lifetime impacts for single males and females reflect these two aspects. CRA outlays for the single female are slightly higher because of her longer life, though the differences between these outlays under the base and impact cases are practically the same for the single male and single female. The difference in total government benefits is driven by the female's lower earnings which flow, for example, into a lower change in income taxation revenue from the boost to labour force activity and earnings. In figure 5.3, we see slightly lower extended impacts on government in the case of the single female, against a slightly higher base outlay on CRA.

**Figure 5.3 Lifetime impact on government from investment in CRA with full impact, by family type: discounted at 6%, 2000-01 dollars**



Data source: NATSEM simulations. See text.

In the case of the couple with no children, two variants are presented – one where only the male partner experiences the extended impact, and one where both partners do. The labour force and earnings profiles for the members of the couple are taken to be the same as for the single male and female, though the rent level is higher. In the base case, rent is assumed to be \$160 per week, rising to \$190 per week with the move to an area of higher housing costs –and greater education and labour market opportunity (see appendix A).

Base CRA outlays in the case of the couple are slightly lower than in the single cases because of the slightly lower maximum rate of CRA that applies. The reduction in CRA outlays which occurs with extended impact is similar in the case where both partners experience the extended impact, but not so great in the case where only the male partner experiences the impact. This is because in the very early years the male's increased earnings are not always enough to extinguish his partner's entitlement to income support. Generally, however, the males's increased earnings do have this effect which is why the impact on government revenue is markedly greater where the male is a member of a couple rather than a single person. Where the effects are experienced by both partners, the impact on government revenue is further increased due to the female's increased earnings.

The final family type under consideration is a couple with two children. Labour force and earnings profiles are as before with the exception that the female partner is assumed to be out of the labour force while they have a child aged 0-5 years, and to only work part-time during those years she is in paid work with a child aged 6-11 years. The children are assumed to have been born when the mother was aged 24 and 26 years old. The assumed rent levels in this case are \$200 per week in the base case and \$240 per week with the extended impact – which in this case is assumed to be experienced only by the male partner. The base CRA outlay is much higher in this case than the others because of the higher maximum rate for a couple with two children. And the reduction in CRA is notably low because the entitlement is retained for more years due to the presence of dependent children and the receipt of more than base rate Family Tax Benefit Part A. Otherwise, the non-housing benefit is similar to that in the corresponding case of a couple without children. What we do need to remember here, however, is that we are only covering education and labour market impacts for the parents. The greatest impacts may well be most likely to be enjoyed by children through greater school retention and so on. Accordingly, this is a conservative estimate of the potential impacts in the case of a couple with children.

While family type clearly has an effect on the estimated lifetime broader impacts of CRA, the key point from the summary in figure 5.3 is that, in all cases, the potential broad returns to government greatly exceed the base outlay on CRA. They are between around five and ten times higher.

### 5.3 Sensitivity to the general terms of the estimates

How sensitive are the results to the broad assumptions about the future environment? We look here at their sensitivity to the choice of discount rate and to the assumptions about future real earnings growth and real growth in land values. The analysis is undertaken for the case of the illustrative single male and the lifetime costs and benefits stemming from CRA and an impact on labour market and education activity. Detailed results are given in table B3 in appendix B.

#### *Sensitivity to the discount rate*

The discount rate is used to convert streams of future costs and benefits to 'present values', and the choice of rate reflects our valuation of benefits received in the future compared to benefits received now (see section 4.2). The higher the discount rate chosen, the lower is the calculated present value of future costs and benefits. If future streams of costs and benefits have different time profiles, then the net impact can look quite different according to the particular discount rate chosen.

So, how does the choice of discount rate affect the findings presented in this report? Table 5.3 summarises the outcomes under different discount rates for the lifetime impacts on government with the labour market and education impact on the single male receiving CRA. Looking first at the base CRA outlays, the large effect that the choice of discount rate has on the present value of a future stream of outlays is very clear. We can view the lifetime outlay on CRA as an investment of \$30 900 if we choose the low 3% discount rate, or just \$10 900 if we choose the high 9% discount rate.

**Table 5.3 Lifetime impact on government from investment in CRA with full impact, illustrative single male, sensitivity to the discount rate: 2000-01 dollars**

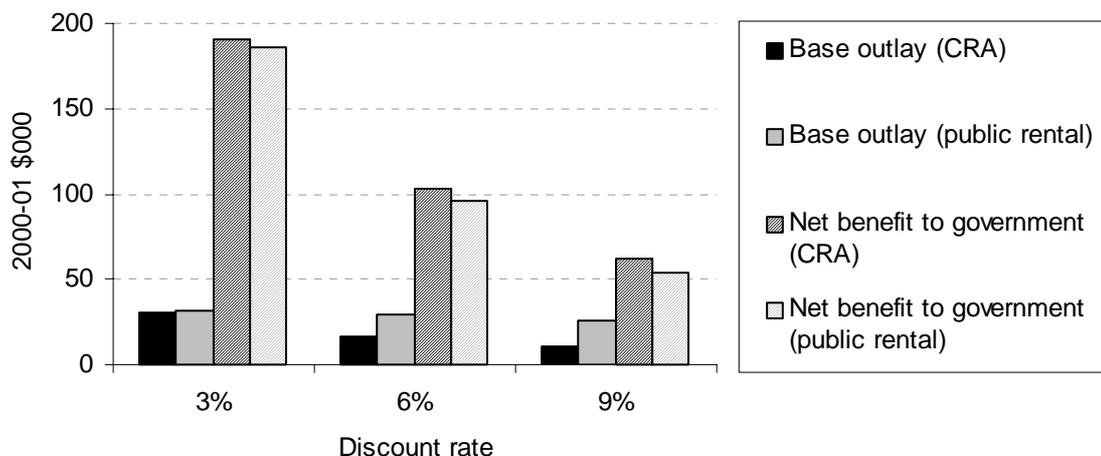
Discount rate	Outlay on CRA			Non-housing benefit	Total benefit
	Base	With impact	Reduction with impact		
	\$000	\$000	\$000	\$000	\$000
3%	30.9	11.4	19.6	170.6	190.1
6%	16.7	4.6	12.1	90.5	102.6
9%	10.9	2.6	8.4	53.5	61.9

Source: NATSEM simulations. See text.

The present value of the total benefits varies similarly, though the different time profiles of base CRA outlays and benefits means that the changes for each component do not move exactly in line. Thus, for example, CRA outlays are seen to be reduced with the impact by 63% if a 3% discount rate is used, but by 77% if a 9% discount rate is used (table 5.3).

Varying the discount rate varies the weight given to costs and benefits occurring at different times into the future. The choice of discount rate then becomes particularly important when comparing simulations with different time profiles of costs and benefits. Any comparison of the outcomes with assistance through CRA and through public rental is a case in point, and in figure 5.4 we look at the picture presented in figure 5.2 (with a 6% discount rate) in comparison to the pictures with a 3% and 9% discount rate.

**Figure 5.4 Sensitivity to discount rate: net benefits to government from labour market and education impacts, with CRA and public rental housing: illustrative single male, 2000-01 dollars**



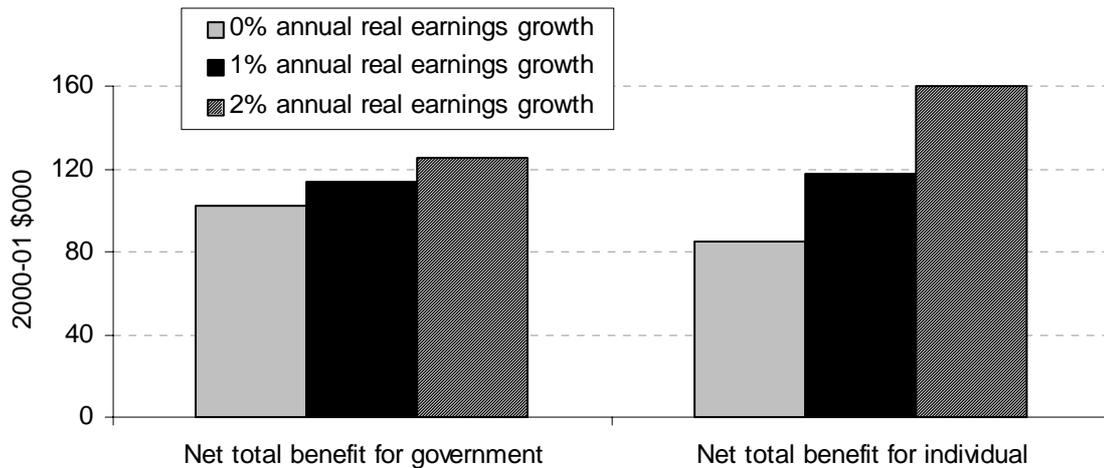
Source: NATSEM simulations. See text

Figure 5.4 shows first that the comparison of the lifetime outlays on housing assistance through CRA or public rental alters dramatically with the discount rate. With a 3% discount rate, the investments in CRA and public rental are virtually the same; with a 9% discount rate, a far greater investment is required with public rental than with CRA. This result stems from the public rental outlays – notably the dwelling purchase component – being concentrated in the earlier years and thereby being less sensitive to the choice of discount rate. A similar, though less marked, result is evident with the net benefits to government – the difference between the estimates under CRA and public rental diminishes as the discount rate is reduced. The choice of discount rate is thus important not only in terms of the magnitude of costs and benefits in present value terms, but also when it comes to comparing lifetimes with different time profiles of costs and benefits.

#### *Sensitivity to real earnings growth*

The assumed degree of real earnings growth will have an obvious impact on simulated lifetime earnings. This is apparent from figure 5.5 where we see the lifetime net benefit to the individual from the labour market and education impact is about \$40 000 higher for each percentage point of assumed annual real earnings growth. The effects also flow to the government side through elements such as income and superannuation tax, though the impact is not as pronounced for government because increased earnings/tax constitute a smaller part of the total impact.

**Figure 5.5 Sensitivity to real earnings growth: net benefits to government and individual from labour market and education impacts: CRA, illustrative single male, discounted at 6%, 2000-01 dollars**



Data source: NATSEM simulations. See text

Besides the impact on simulation outcomes, consideration of the assumed rate of growth in real earnings also draws attention to the important general issue of indexation in a lifetime simulation. In the examples presented in this report, the analysis is conducted in real terms so aspects which are subject to CPI-indexation, such as much of the income support system, are maintained constant, while indexation is applied to aspects where real growth is assumed. To assume some real growth in earnings – in reflection of productivity increases – is a standard approach in these types of simulation. The key question is what should also be indexed in line with real growth in earnings. In these examples, we index the Age Pension system and certain retirement income parameters to real earnings growth – as in current provisions – and also the tax system. If the tax system was not also indexed, average tax rates would gradually increase over time. But what about the CPI-indexed elements of the income support system? Should these be indexed at least partly in line with assumed real earnings growth? If not, the gap between, say Newstart Allowance, and a measure of earnings will progressively widen and over 30 years or so the gap will have widened considerably. Is this realistic? The answer is probably not.

The point here is that the outcomes of a lifetime simulation are very sensitive to different indexation of different components. Accordingly, it is necessary to take care devising plausible combinations of indexation assumptions. Apart from the possible connections to real earnings growth noted above, the issue also concerns housing costs. For example, should assumed growth in real earnings flow in part to assumed growth in real dwelling prices, and on to real rent levels? In the illustrative example of the framework which was presented in section 4, we side-stepped these issues by assuming no real growth in earnings or other aspects, but they would need to be addressed in any working application.

### *Sensitivity to land values*

The assumed rate of growth in real land values has little impact on the simulation outcomes in the CRA example (see table B3). The small apparent impact on the individual's lifetime costs stems from the way land values flow through into rent levels. Growth in real land values will, however, assume greater importance in simulations concerned with housing assistance involving land acquisition – such as public rental housing, or assistance with owner-occupation.

## 5.4 The scope and extent of impacts

As has been repeatedly stressed above, application of the lifetime framework to the analysis of housing assistance does require good information on the nature and magnitude of non-shelter impacts of housing assistance. Good information on those aspects is still to be revealed by other AHURI research which is underway. Until it is available it is, however, still possible to conduct analysis using assumed impacts. This is essentially what was done in section 4 using an illustrative example and a specified possible impact on labour market and education activity. So, what are the likely effects on the analysis if the extent of impact is different, or if the scope of impacts is broadened – to cover other types of impact or other family members? These questions are addressed here with a quantitative examination of the effect of a reduced labour market impact and some general comments about broadening the scope of the impact covered.

### *A marginal change in labour force activity*

The illustrative case presented in section 4 involved a rather dramatic impact on the single male's lifetime labour force activity. What would it look like if there was a much more modest labour market impact? Here, we take the simple example of an increase in labour market activity which was described in section 4.3. That case involved 10 years less of unemployment and 2 years less of part-time employment, with a corresponding 12 more years of full-time employment. How different are the results if the labour market impact is restricted to changing just one year of unemployment to a year of full-time employment? Two variants are covered – with this change in status occurring at age 28 and age 52. The discounted results are summarised in table 5.4.

In these two cases, the far more modest impact on lifetime labour market activity has the correspondingly greatly reduced net benefits to the individual and to government. The time at which the labour force status change takes place is also shown to be important in the result. The discounted impact of an additional year of full-time employment at age 28 years is far greater than an additional year of full-time employment at the age of 52 years. Besides these expected results, table 5.4 also provides the basis for two important points.

Firstly, the net return to government is positive in both cases – small but not insignificant in the context of the \$16 700 investment in CRA. This illustrates the point that even a small impact on labour force activity can provide a significant return to government.

Secondly, the net returns to the individual are negative in both cases. Basically, the returns from increased employment for one year are outweighed by the impact of paying higher rent over a lifetime. In these cases, the individual would have been better off remaining in lower cost housing in an area with poorer employment prospects. Committing to higher housing costs on the presumption of increased earnings may be a risky move. In reality, of course, the person would be unlikely to remain in the higher-cost rental housing in the event that a marked improvement in labour force activity was not forthcoming. The point though is that the risk of this outcome may mean that the inertia to make the initial move is not overcome – a lifetime low income trap founded on perceived risk.

**Table 5.4 Additional return on CRA investment with marginal labour market impact: illustrative single male, discounted at 6%, 2000-01 dollars**

	Change from case with no impact		
	Full labour market impact (as in table 4.2)	Only one extra year of full-time employment at age 28	Only one extra year of full-time employment at age 52
	\$000	\$000	\$000
<b>Individual</b>			
<i>Benefits</i>			
Increased gross earnings	139.3	25.8	6.7
Increased priv. retirement inc.	4.6	0.7	0.3
<b>Subtotal (individual benefits)</b>	<b>143.9</b>	<b>26.5</b>	<b>7.0</b>
<i>Costs</i>			
Increased income tax	30.0	5.1	1.0
Reduced base income support	33.0	7.6	1.9
Reduced CRA	8.1	1.9	0.5
Increased rent	26.2	26.2	26.2
<b>Subtotal (individual costs)</b>	<b>97.3</b>	<b>40.8</b>	<b>29.6</b>
<b>Net total for individual</b>	<b>46.6</b>	<b>- 14.3</b>	<b>- 22.6</b>
<b>Government</b>			
<i>Benefits</i>			
Increased income tax	30.0	5.1	1.0
Increased superannuation tax	4.2	0.8	0.2
Reduced base income support	33.0	7.6	1.9
Reduced CRA	8.1	1.9	0.5
Reduced CRA admin costs	0.1	0.0	0.0
<b>Subtotal (govt benefits)</b>	<b>75.4</b>	<b>15.4</b>	<b>3.6</b>
<i>Costs</i>			
<b>Subtotal (government costs)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Net total for government</b>	<b>75.4</b>	<b>15.4</b>	<b>3.6</b>

Source: NATSEM simulations. See text

### *Extending the scope of impacts covered*

It is recognised that housing assistance has the potential to generate non-shelter impacts across a range of areas – such as: education, health, labour market activity, crime, family and community relationships. The illustrative examples presented in this report have, however, been confined to education and labour market activity. This was because the resources for the study constrained the analysis to those impacts for which readily available costing bases were available. It was originally hoped to also include the possible impact on health costs in the illustrative example, but the required data to do so were not available.

What might it look like if health costs could be incorporated? How much might they change the picture? From some broad calculations based on total public and private health expenditure and some data on health expenditure by sex and age group, we can say that a 10% reduction in average health costs across a lifetime would amount to a discounted (at 6%) benefit to the individual of the order of \$1000 and a benefit to government of the order of \$2000<sup>13</sup>. These are small numbers compared to those

<sup>13</sup> This is simply the benefit in terms of direct expenditures on health and does not include, for example, any further impacts on labour market activity.

presented above for other impacts. They are small because health costs on average increase rapidly with older age, and it is thus at the older ages that the bulk of a 10% reduction in average health costs is experienced. Discounting then greatly reduces the present value of these benefits received far in the future. That said, average health costs are probably a poor indicator of the lifetime costs faced by those people for whom housing assistance may have a benefit for their health. Health costs – and their profile over the lifetime – are very specific to particular health conditions. Depending on the particular nature of the health condition and the impact of housing assistance, there could be a substantial discounted benefit to the individual and government, especially if any flow-on effects on labour market activity are also included.

Another dimension to the scope of impacts covered concerns the individuals in a family who are assumed to receive some non-shelter benefit from housing assistance. The examples in this report have confined such benefits to adults but, as was noted in section 5.2 with regard to the couple with two children, the greatest impacts may well be most likely to be enjoyed by children through greater school retention and so on. What would happen if we extended the scope of impacts to children? The benefits to both the individuals and to government from, say, a lifetime of greater labour force activity and higher earnings would be multiplied. Or, if it was assumed that the children were the only beneficiaries, then a similarly high order of benefits might be found though they would be enjoyed by different family members. In this regard, and in particular the possibility that housing assistance may have an impact on school retention, it is worth noting some 1999 estimates of the cost to Australia of early school-leaving – or, correspondingly, the benefits of school retention. The estimated cost (discounted at 6%) was around \$75 000 per school leaver, including individual costs, government costs and social costs (King 1999). Covering the non-shelter impacts of housing assistance on children could clearly have an important bearing on the picture.

## 6. CONCLUDING COMMENTS

The research covered by this report was designed to establish a framework to incorporate non-shelter and lifetime impacts in a valuation of housing assistance. This has been done through development of a hypothetical model of people's lifetimes – a technique common in other areas of policy analysis. This version of the model includes the capacity to analyse potential impacts on labour market activity and education with assistance provided through CRA or public rental housing. The model includes the provision for considerable flexibility regarding matters such as the specification of people's lifetimes, policy settings, and the future environment. It is readily amenable to the inclusion of other forms of housing assistance – such as assistance with owner-occupation – and can be extended to cover other types of non-shelter impact.

The capacity and nature of the model was demonstrated in section 4 with the illustrative example of a single male receiving CRA, with a number of variations to this simulation covered in section 5. This type of analysis can generate some dramatic numbers which, while useful for demonstrating the scale and pattern of potential impacts, do need to be interpreted with some care. What does the illustrative analysis show and what does it not show?

First, a general caveat is in order. The examples presented in this report primarily refer to a single specific case, and a specific set of assumptions about their housing circumstances, the future environment, and the nature of education and labour market impacts. The example is illustrative and not intended to be typical. The simulation does not cover the diversity of the population, the full range of possible indirect impacts, nor the complexity of issues encountered in the provision of housing assistance – note the stylised treatment of public rental housing.

Second, while the focus in this research is on housing assistance in lifetime investment terms, it needs to be remembered that this is a secondary dimension to housing assistance. The primary purpose of housing assistance is adequate and affordable housing. Thus, no 'investment' return to government does not negate the value of the investment in housing assistance. Similarly, for example, the analysis does not imply that housing assistance should be targeted at the young because they have greater scope for indirect benefits over their lifetimes.

Third, while government costs and benefits have been consolidated in the analysis, it should be recognised that the level of government bearing the costs will not always be the same level that is enjoying the benefits.

Fourth, does the analysis in section 5.1 show that CRA is a better form of housing assistance than public rental housing? After all, the examples presented show it is cheaper in terms of the level of direct assistance per dollar of investment, and the indirect benefits are slightly higher. Given the above qualifications about the specific nature of the example used, it cannot be used as the basis for a general comparison. Moreover, this type of comparison is sensitive to matters such as the discount rate and the assumed growth in real land values as was shown elsewhere in section 5.

But perhaps the most important qualification is that any such comparison depends crucially on whether CRA and public rental assistance have different likelihoods of promoting indirect impacts. This is a fundamental question which is being addressed by some of the other AHURI research in this area. When the empirical evidence on non-shelter impacts becomes available, then the model will be in a better position to be used to make sound estimates of the actual lifetime value of housing assistance. The illustrative examples presented in the report are based on certain assumed impacts, and show the potential value if these impacts were to occur.

So, finally, does the analysis show that housing assistance is an excellent investment? It does show that it can be, that the indirect impacts can have lifetime benefits to government and individuals that far outweigh the cost of providing housing assistance. Accordingly, there is much to be gained by designing and providing housing assistance in a way which maximises the likelihood of positive indirect impacts over the lifetime – and much to be lost by not doing so.

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## **A. TECHNICAL NOTES**

This appendix includes technical information on the model supplementary to that provided in the main text.

### **A.1 Labour force profiles**

The labour force profiles used in the illustrative examples and sensitivity analysis are shown in table A1. The basis for these profiles was outlined in section 3.2.

In the analysis reported in section 4, the labour force profile for the single male in the base case is profile (1). The case with a labour force impact uses profile (2), while the case with an education and labour force impact uses profile (3).

With the analysis of different family types in section 5.2, some simplifying assumptions were made in the assignment of labour force profiles. This was done to allow clearer identification of the reasons for different outcomes without the blurring from slightly different labour force profiles. Thus, while we have separate labour force profiles for single males and females, the male labour force profile was used for both. Similarly, in a couple without children, the labour force profiles were set as the same as those for singles. In the case of a couple with children, however, the labour force profile for the female partner was amended to be 'not in the labour force' when there is a child aged 0-4 years, and to be employed part-time for those periods of employment when there is a child aged 5-12 years.

There is clearly considerable scope for variation in the labour force profiles, with particular complexities in the case of couples.

**Table A1 Lifetime labour force profiles<sup>a</sup> used in the illustrative examples**

Age	Single male		Female in couple with children	
	No post-school qualifications	Post-secondary non-degree	No post-school qualifications	
	Chronic unemployment	Some unemployment	Some unemployment	Chronic unemployment
	(1)	(2)	(3)	(4)
25	U	U	PT	NLF
26	PT	PT	PT	NLF
27	PT	FT	PT	NLF
28	U	FT	U	NLF
29	FT	FT	FT	NLF
30	FT	FT	FT	NLF
31	U	FT	FT	U
32	FT	U	FT	PT
33	FT	FT	FT	PT
34	U	FT	FT	U
35	FT	FT	FT	PT
36	FT	FT	FT	PT
37	U	FT	FT	U
38	FT	FT	FT	PT
39	FT	FT	FT	FT
40	U	FT	FT	U
41	FT	FT	FT	FT
42	FT	FT	FT	FT
43	U	FT	FT	U
44	FT	FT	FT	FT
45	FT	FT	FT	FT
46	U	U	FT	U
47	FT	FT	FT	FT
48	FT	FT	FT	FT
49	U	FT	FT	U
50	FT	FT	FT	FT
51	FT	FT	FT	FT
52	U	FT	FT	U
53	PT	U	FT	PT
54	PT	FT	FT	PT
55	U	FT	FT	U
56	U	FT	FT	U
57	U	FT	FT	U
58	U	PT	FT	U
59	U	U	FT	U
60	NLF	NLF	FT	NLF
61	NLF	NLF	PT	NLF
62	NLF	NLF	U	NLF
63	NLF	NLF	NLF	NLF
64	NLF	NLF	NLF	NLF
65 <sup>b</sup>	NLF	NLF	NLF	NLF

<sup>a</sup> FT = employed full-time; PT = employed part-time; U = unemployed; NLF = not in labour force

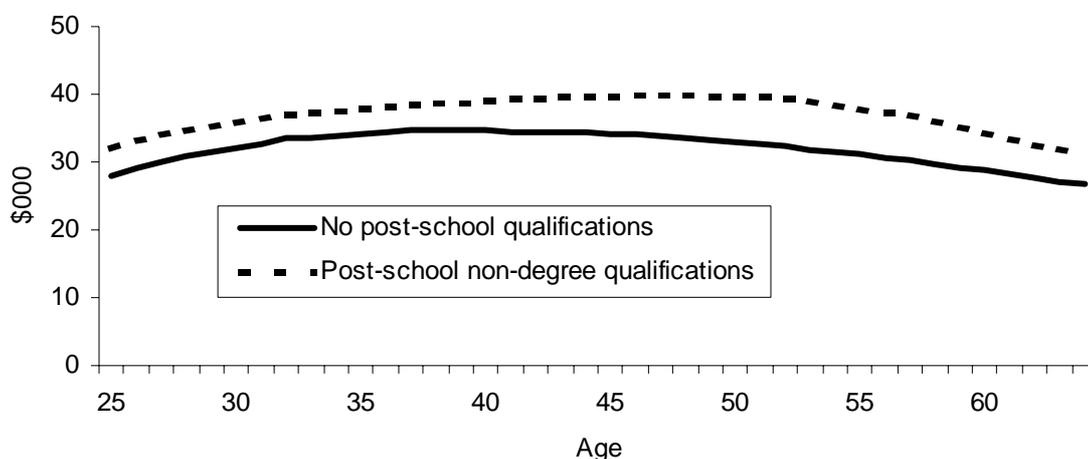
<sup>b</sup> NLF for remainder of lifetime from age 65 years

Source: NATSEM simulations, see text.

## A.2 Earnings

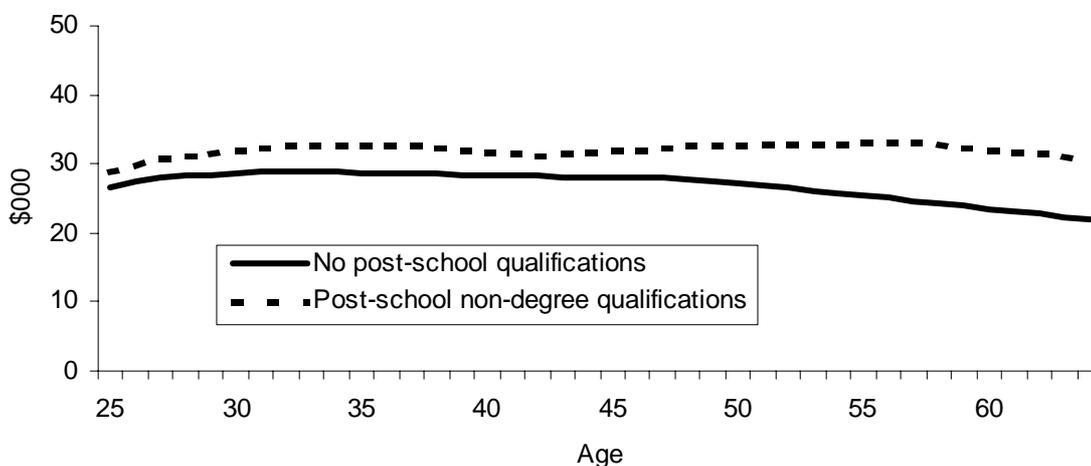
The full-time earnings profiles used in the examples in this report (described in section 3.2) are shown in figures A1 (males) and A2 (females).

Figure A1 Full-time earnings profiles for males: 2000-01 (\$000/year)



Data source: Derived from ABS 1996-97 and 1997-98 Survey of Incomes and Housing Costs, unit record data

Figure A2 Full-time earnings profiles for females: 2000-01 (\$000/year)



Data source: Derived from ABS 1996-97 and 1997-98 Survey of Incomes and Housing Costs, unit record data

## A.3 Education costs

The simulations use annual costs for part-time TAFE study of \$516 for private costs (derived from data from the 1991 ABS Student Finances Survey) and \$5000 for government costs (derived from Commonwealth education data).

## A.4 Rent levels

The rent levels used in the simulations are given in table A2. As described in section 4.2, the rent level for a single male in the base case was related to survey findings on rent paid by CRA recipients. The higher rent, in the case of an induced move to an area of higher housing costs, was then based on the assumption that around 75% of CRA was devoted to paying an increased rent. The rents for the two other family types in the base cases are then set broadly in line with the relativities in the rent floors for CRA entitlements, with the higher rents then using the same assumption of 75% of CRA being used to pay a higher rent.

**Table A2** Rent levels used in the illustrative examples

	Single person	Couple	Couple with two children
	\$/week	\$/week	\$/week
Base case	100	160	200
Induced move to higher rent area	130	190	240

*Source:* See text.

## B. SUPPLEMENTARY TABLES

**Table B1 Lifetime impacts in public rental case with education and labour market impacts: illustrative single male, discounted at 6%, 2000-01 dollars**

	No impact	With labour market and education impacts	Difference with education and labour market impact
	\$000	\$000	\$000
<b>Individual</b>			
<i>Benefits</i>			
Gross earnings	268.9	484.3	215.4
Private retirement income	13.5	21.2	7.7
<b>Subtotal (individual benefits)</b>	<b>282.4</b>	<b>505.5</b>	<b>223.1</b>
<i>Costs</i>			
Income tax	51.5	101.2	49.7
Base income support	-67.7	-19.0	48.7
Rent	61.1	93.3	32.2
Education costs	0.0	1.5	1.5
<b>Subtotal (individual costs)</b>	<b>44.9</b>	<b>177.0</b>	<b>132.1</b>
<b>Net total for individual</b>	<b>237.5</b>	<b>328.5</b>	<b>91.0</b>
<b>Government</b>			
<i>Benefits</i>			
Income tax	51.5	101.2	49.7
Superannuation tax	9.2	15.6	6.4
Base income support	-67.7	-19.0	48.7
Rent received	61.1	93.3	32.2
Revenue from sale of land	2.0	2.7	0.7
<b>Subtotal (govt benefits)</b>	<b>56.1</b>	<b>193.8</b>	<b>137.7</b>
<i>Costs</i>			
Mortgage costs	69.0	89.7	20.7
Administration costs	6.6	8.5	1.9
Repairs and maintenance	10.1	13.1	3.0
Rates and charges	6.7	8.7	2.0
Education costs	0.0	14.2	14.2
<b>Subtotal (government costs)</b>	<b>92.4</b>	<b>134.2</b>	<b>41.8</b>
<b>Net total for government</b>	<b>-36.3</b>	<b>59.6</b>	<b>95.9</b>

Source: NATSEM simulations. See text

**Table B2 Additional return on CRA investment with education and labour market impacts, by family type: discounted at 6%, 2000-01 dollars**

	Single male	Single female	Change from case with no impact		
			Couple (no children)	Couple with two children	
	\$000	\$000	\$000	\$000	\$000
<b>Individual</b>					
<i>Benefits</i>					
Increased gross earnings	215.4	185.3	215.4	400.8	215.4
Increased priv. retirement inc.	7.7	6.3	7.7	14.0	7.7
<b>Subtotal (individual benefits)</b>	<b>223.1</b>	<b>191.7</b>	<b>223.2</b>	<b>414.8</b>	<b>223.2</b>
<i>Costs</i>					
Increased income tax	49.7	40.0	49.3	89.3	49.3
Reduced base income support	48.7	48.7	78.6	88.5	81.8
Reduced CRA	11.9	11.9	8.9	11.2	4.2
Increased rent	26.2	26.6	26.6	26.6	35.4
Education costs	1.5	1.5	1.5	2.9	1.5
<b>Subtotal (individual costs)</b>	<b>138.0</b>	<b>128.7</b>	<b>164.8</b>	<b>218.4</b>	<b>172.2</b>
<b>Net total for individual</b>	<b>85.1</b>	<b>63.0</b>	<b>58.4</b>	<b>196.4</b>	<b>51.0</b>
<b>Government</b>					
<i>Benefits</i>					
Increased income tax	49.7	40.0	49.3	89.3	49.3
Increased superannuation tax	6.4	5.5	6.4	11.9	6.4
Reduced base income support	48.7	48.7	78.6	88.5	81.8
Reduced CRA	11.9	11.9	8.9	11.2	4.2
Reduced CRA admin costs	0.1	0.1	0.1	0.1	0.0
<b>Subtotal (govt benefits)</b>	<b>116.8</b>	<b>106.3</b>	<b>143.2</b>	<b>200.9</b>	<b>141.7</b>
<i>Costs</i>					
Education costs	14.2	14.2	14.2	28.3	14.2
<b>Subtotal (government costs)</b>	<b>14.2</b>	<b>14.2</b>	<b>14.2</b>	<b>28.3</b>	<b>14.2</b>
<b>Net total for government</b>	<b>102.6</b>	<b>92.1</b>	<b>129.0</b>	<b>172.6</b>	<b>127.6</b>

Source: NATSEM simulations. See text

**Table B3 Additional return on CRA investment with education and labour market impacts, illustrative single male, sensitivity to discount rate, real earnings growth and growth in real land values: 2000-01 dollars**

	Change from case with no impact						
	'Central' case discount rate = 6% earnings = 0% land value = 0%	Discount rate		Growth in real earnings		Growth in real land values	
		3%	9%	1%	2%	1%	2%
	\$000	\$000	\$000	\$000	\$000	\$000	\$000
<b>Individual</b>							
<i>Benefits</i>							
Increased gross earnings	215.4	364.6	139.7	256.1	306.9	215.4	215.4
Increased priv. retirement inc.	7.7	28.1	2.2	9.4	11.8	7.7	7.7
<b>Subtotal (individual benefits)</b>	<b>223.1</b>	<b>392.7</b>	<b>141.9</b>	<b>265.5</b>	<b>318.8</b>	<b>223.1</b>	<b>223.1</b>
<i>Costs</i>							
Increased income tax	49.7	90.8	30.6	59.6	71.1	49.7	49.7
Reduced base income support	48.7	80.3	33.4	48.5	48.1	48.7	48.7
Reduced CRA	11.9	19.4	8.3	11.9	11.9	11.9	11.9
Increased rent	26.2	42.0	18.7	26.2	26.2	27.9	30.0
Education costs	1.5	1.5	1.4	1.5	1.5	1.5	1.5
<b>Subtotal (individual costs)</b>	<b>138.0</b>	<b>234.0</b>	<b>92.4</b>	<b>147.7</b>	<b>158.9</b>	<b>139.6</b>	<b>141.8</b>
<b>Net total for individual</b>	<b>85.1</b>	<b>158.6</b>	<b>49.6</b>	<b>117.8</b>	<b>159.9</b>	<b>83.5</b>	<b>81.3</b>
<b>Government</b>							
<i>Benefits</i>							
Increased income tax	49.7	90.8	30.6	59.6	71.1	49.7	49.7
Increased superannuation tax	6.4	14.0	3.4	7.5	8.6	6.4	6.4
Reduced base income support	48.7	80.3	33.4	48.5	48.1	48.7	48.7
Reduced CRA	11.9	19.4	8.3	11.9	11.9	11.9	11.9
Reduced CRA admin costs	0.1	0.2	0.1	0.1	0.2	0.1	0.1
<b>Subtotal (govt benefits)</b>	<b>116.8</b>	<b>204.7</b>	<b>75.7</b>	<b>127.7</b>	<b>139.9</b>	<b>116.8</b>	<b>116.8</b>
<i>Costs</i>							
Education costs	14.2	14.6	13.8	14.2	14.2	14.2	14.2
<b>Subtotal (government costs)</b>	<b>14.2</b>	<b>14.6</b>	<b>13.8</b>	<b>14.2</b>	<b>14.2</b>	<b>14.2</b>	<b>14.2</b>
<b>Net total for government</b>	<b>102.6</b>	<b>190.1</b>	<b>61.9</b>	<b>113.5</b>	<b>125.8</b>	<b>102.6</b>	<b>102.6</b>

Source: NATSEM simulations. See text

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