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Australian Institute of Health and Welfare

Board Chair

Hon. Peter Collins, AM, QC

Director

Penny Allbon

Any enquiries about or comments on this publication should be directed to:

Data Linkage Unit

Australian Institute of Health and Welfare

GPO Box 570

Canberra ACT 2601

Phone: (02) 6244 1000

Email: phil.anderson@aihw.gov.au

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Abbreviations

ACAP	Aged Care Assessment Program
ACAT	Aged Care Assessment Team
ADL	Activities of Daily Living
AIHW	Australian Institute of Health and Welfare
CALD	culturally and linguistically diverse
CACP	Community Aged Care Package
DoHA	Department of Health and Ageing
EACH	Extended Aged Care at Home
EP	English proficiency
HACC	Home and Community Care
IADL	Instrumental Activities of Daily Living
ICD	International Classification of Diseases
NDI	National Death Index
NDR	National Data Registry
NMDS	National Minimum Data Set
NRCP	National Respite for Carers Program
PIAC	Pathways in Aged Care
RAC	residential aged care
RRC	residential respite care
VHC	Veterans' Home Care

Summary

Caregivers regularly identify respite as their most urgent care need, and the provision of respite care has developed in response to this. Current evidence about respite use patterns for people with dementia and their carers is largely based on small-scale studies and qualitative research. This report assesses the take-up of residential respite care (RRC) following an Aged Care Assessment Team (ACAT) approval for people with and without dementia. It analyses data from the Pathways in Aged Care (PIAC) project which uses record linkage to identify use of aged care programs following an assessment by an ACAT. It focuses on the take-up of RRC by 32,000 people who were living in the community and had a relevant ACAT approval in the 2003–04 financial year.

Take-up of residential respite care

Only about a quarter (27%) of people approved for RRC actually used it within 12 months of their approval. This was true for both those recommended to live in the community and those recommended to live in residential care.

Dementia

A somewhat greater proportion of people with dementia took up RRC (32%) than those without dementia (25%). Statistical modelling showed that people with dementia were more likely than others to take up RRC even when controlling for a range of other factors.

Carer status

Having a carer increased the likelihood of a client taking up RRC. Among those recommended to live in the community, people with a carer were more likely to take up RRC (29%) than those who did not have a carer (21%). A similar pattern was observed for those recommended to live in residential care. This carer effect was apparent even when taking other factors into account.

English proficiency

For people recommended to live in the community, those born in non-English-speaking countries had a lower take-up rate (24%) than those born in English-speaking countries (28%). However, for those recommended to live in residential care, there was no significant difference in take-up rate.

A number of other factors were associated with take-up of RRC. These varied according to whether people were recommended to be living in the community or in residential care.

Movement into permanent residential care after using respite care

Among people recommended to live in the community, statistical modelling showed there was an increased likelihood of admission into permanent residential care within 12 weeks of take-up of RRC if the person had dementia or no carer.

1. Introduction

1.1 Background and hypotheses

Respite care, which can take a variety of forms, is a key service designed to provide support for carers and those they care for. Carers may require a break from providing assistance. Care recipients may also require a break from the demands of caring for themselves or to receive opportunities for social interaction. The recent parliamentary inquiry into Better Support for Carers commented that ‘the overwhelming evidence received by the committee indicates that respite services are an essential support for sustaining carers in their caring role’ and concluded there was considerable unmet need for respite care (House of Representatives Standing Committee on Family, Community, Housing and Youth 2009).

Respite care is an especially important type of assistance for people with dementia and their carers. Dementia is a highly disabling health condition (AIHW 2007b) (see Box 1.1 for definition) and much of the burden of providing care for people with dementia in the community falls on family, friends and others providing informal care. Over half (57%) of all people with dementia are living in private households (AIHW 2007b: Table 4.3), and among those who need assistance with core activities (self-care, mobility and communication) 57% receive support only from informal carers (AIHW 2007b: Table 5.38) and a further 29% receive both informal and formal care.

Box 1.1: Definition of dementia

The International Statistical Classification of Diseases and Related Health Problems (ICD), 10th Revision (NCCH 2000) defines dementia as:

a syndrome due to disease of the brain, usually of a chronic or progressive nature, in which there is disturbance of multiple higher cortical functions, including memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgement. Consciousness is not clouded. The impairments of cognitive function are commonly accompanied, and occasionally preceded, by deterioration in emotional control, social behaviour, or motivation. This syndrome occurs in Alzheimer’s disease, in cerebrovascular disease, and in other conditions primarily or secondarily affecting the brain.

The demands of caring for someone with dementia are heavy and involve the provision of increasing amounts of physical, psychological, cognitive and social support as dementia severity increases. The experience of caring also entails observing the decline in competence and independence of a loved one (Draper 2004); substantial and unremitting time demands resulting from behaviour changes and increasing needs for care and supervision (Draper 2004; Schofield et al. 1998; Bruce et al. 2005), restrictions on social contacts (Leong et al. 2001; LoGiudice et al. 1999; Brodaty & Hadzi-Pavlovic 1990; Bindoff et al. 1997) and, in some cases, heightened conflict or relationship difficulties with other family members (Luscombe et al. 1998). Unsurprisingly caregivers of people with dementia are particularly at risk of high carer stress often associated with lower levels of psychological wellbeing (AIHW: Hales et al. 2006; Bruce & Paterson 2000) including anxiety and depression (Brodaty & Hadzi-Pavlovic 1990).

Respite care has been identified by those caring for a person with dementia as one of their most urgent needs (Kosloski & Montgomery 1993; Adler et al. 1995) and increased availability and flexibility of respite care are common requests in carer studies (Lee & Cameron 2004). More recently, consumer views reported in a discussion paper released by Alzheimer's Australia noted that 'respite care was one of the key supports carers say they need to help them continue caring' (Bruen & Howe 2009).

Utilisation patterns of respite care by carers of people with dementia, however, appear to belie both the validity of the policy assumptions about, and the stated need for, respite care. Reasons for generally low levels of service use in the face of high need have been explored in a number of studies. For example, Kosloski & Montgomery (1993) found caregiver perceptions of the usefulness, quality and convenience of services directly affect the level of actual respite use; Leong et al. (2001) found carers had difficulty in accessing appropriate types of respite care particularly at short notice; Brodaty et al. (2005) found carers' perceptions of their need for respite care was a major factor explaining low utilisation levels; while consumer views reported by Bruen & Howe (2009) emphasise the need for flexible services responsive to the full range of consumer and carer needs (see also Leong et al. 2001).

Some of these concerns are amenable to policy and service responses, for example, by varying supply, changing conditions attached to the use of respite care, providing information and counselling for carers, and improving the design and funding of particular types of respite care. However, current evidence about respite use patterns for people with dementia and their carers in Australia is largely based on small-scale studies, qualitative research or the analysis of data from single aged care programs. A recent systematic review of the literature about transitions in care of people with dementia found there is little evidence describing common pathways and transitions between care types, including the use or efficacy of respite care (Runge et al. 2009).

In 2008, the Dementia Collaborative Research Centre (DCRC) for Assessment and Better Care Outcomes provided funding to AIHW (as a member of the DCRC Transitions in Care node) to strengthen the evidence about utilisation patterns of residential respite care by people with dementia and their carers. The study uses national-level aged care data from the Aged Care Assessment Program and residential aged care (RAC). These data have been linked as part of the Pathways in Aged Care (PIAC) cohort study.

Residential respite care

The focus of this study is on utilisation patterns of residential respite care (RRC) among a cohort of people eligible to use the service. RRC provides emergency or planned care in a RAC home on a short-term basis. At any point in time respite residents make up only about 2% of all aged care residents, but the short length of stay means that the total number of people using respite care during the year is much higher. During 2005–06, respite care accounted for about 48% of all admissions (49,727 respite admissions) with each nominal respite place being used by about 15 to 17 people per year (AIHW 2007a). Overall, throughout 2005–2006 23 people out of every 1,000 aged 75 or over accessed RRC (AIHW 2007a).

The provision and use of RRC is highly regulated and also subject to provider discretion (Bruen & Howe 2009). It is one of the least flexible forms of respite care and the associated costs to users may also be significant.

Accessing and using residential respite care

An approval from an Aged Care Assessment Team (ACAT) is required to access either low or high level RRC and, during the period covered by this study, an approval remained valid for up to 12 months (see Box 1.2).

A completed ACAT assessment results in recommendations for long-term care and program support as part of a care plan that may include approvals to use certain programs (Box 1.2). In particular, an ACAT can provide recommendations and approvals for respite care which includes RRC, non-residential respite care, or both residential and non-residential respite care. ACATs do not make any recommendations on the use of respite care for people recommended to live long term in residential care, hospital or other institutional care. However, those clients may still get an approval for RRC.

Box 1.2: ACAT recommendations and approvals for care and support

A completed ACAT assessment results in recommendations for long-term care and program support as part of a care plan. Only one long-term care setting can be recommended (either community or residential), but clients can be approved for use of more than one type of care. For example, a client may receive a recommendation for residential care, and be approved to use permanent residential care as well as a community care package and/or residential respite care.

Differences between recommendations and approvals may arise because:

- some approvals are 'just in case', where a client may be recommended to live in the community but is eligible for residential care and approved for this care in case it is required
- some approvals are for support that is 'interim until entry to residential care', such as for the client in the example above who is recommended to live in residential care but packaged care and residential respite care may be provided in the interim.

In cases where the assessor and the client do not agree on the outcome of the assessment, approvals may reflect the client's views, whereas the recommendation reflects the assessor's view.

Once approval is granted, the client's receipt of services is subject to the availability of places and other considerations. Clients can be reassessed within the 12-month period if their care needs or attitudes change to the extent that a different level or type of care is required or desired.

Sources: ACAP NDR 2006; AIHW 2007a.

A person with a valid approval may use up to 63 days of respite care in a financial year. This care may be taken in 'blocks' (often fixed blocks of one or two weeks) subject to the availability of services. Extensions of RRC for periods of 21 days can be approved by an ACAT based on such considerations as carer stress, the severity of the care recipient's condition or absence of the person's carer (DoHA 2009). Respite residents pay the basic daily fee at the minimum rate but do not pay an accommodation charge or bond.

Study hypotheses

Some of the service characteristics of RRC (relative inflexibility, cost, difficulties in accessing residential respite care and system complexity) may act as barriers to take-up by a wide range of carers (see House of Representatives Standing Committee on Family, Community, Housing and Youth 2009) as well as those caring for someone with dementia (AIHW: Hales et al. 2006). However, there are some factors specific to people with dementia which may increase their reluctance to use RRC even when approved by an ACAT. Harking back to the issues raised in Kosloski & Montgomery (1993) these include concerns about usefulness to the care recipient and the carer (e.g. that the unfamiliar environment and routines in RRC will result in increased levels of confusion, disorientation and deterioration in terms of behavioural symptoms and cognitive function (Bruen & Howe 2009)); and concerns about quality (e.g. that the residential respite service will be unable to provide care appropriate to the complexity of care recipient needs, that the RRC experience represents too great a disruption to the individual's overall care plan and that the experience is highly distressing to the individual (AIHW: Hales et al. 2006; Bruen & Howe 2009). Therefore this study hypothesised:

- that people with dementia would be less likely to take up ACAT recommendations for residential respite care than people without dementia (*Hypothesis 1*).

Carers provide a range of assistance and support with daily activities as well as emotional and practical support. Formal services such as respite care play an important role in supplementing this informal care: however it is also important to recognise that the presence of family carers can be a conduit to the person with dementia receiving formal service intervention. A number of pilot services funded by the Innovative Pool Dementia Pilot accepted referrals only for people who had access to daily care from family (AIHW: Hales et al. 2006). From this we may infer that it could be difficult for a person with dementia to access community care services, perhaps because of the level of risk to the person and the service provider, but also because it is the service-seeking behaviour of family members that often results in the formal service intervention. Therefore this study hypothesised:

- that people with dementia who had a carer were more likely to take up respite care recommendations than those without a carer, and that the effect of having a carer on take-up was different for those with and without dementia (that is, there was an interaction effect) (*Hypothesis 2*).

Little information has been published in Australia or internationally about dementia in persons from culturally and linguistically diverse (CALD) backgrounds (Low et al. 2009, Runge et al. 2009). Some qualitative studies suggest that some CALD migrants regard dementia as part of normal ageing and hence may be less likely to seek support or assistance (Low et al. 2009). Carers from some CALD backgrounds may also face barriers to accessing services such as language proficiency, family and cultural attitudes to the appropriateness of formal care assistance and stigma associated with dementia and/or apparent inability to cope with their caring responsibilities (Low et al. 2009). In addition, usage rates of permanent residential care are typically lower among people born overseas in a non-English-speaking country than among those born in Australia or in English-speaking countries (AIHW 2009c). This study therefore hypothesised:

- that people with dementia who were born overseas in non-English speaking countries were less likely to take up respite care recommendations than those born in Australia or in English-speaking countries, and that the effect of English proficiency on take-up was

different for those with and without dementia (that is, there was an interaction effect) (*Hypothesis 3*).

RRC plays an important role in care pathways, sometimes acting as a 'stepping stone' towards permanent RAC placement and sometimes delaying entry. Recent Australian analysis of national linked aged care data found that 40% of people who completed a period of RRC were admitted to permanent residential care soon after (AIHW: Karmel 2006). However, the rate of entry to permanent residential care was lower for those people who had also used community care services. A number of studies reviewed by Runge et al. (2009) indicated that people with dementia often first access short-term care such as respite programs before moving to institutions (Adler et al. 1995; Butler et al. 2002; Cohen & Pushkar 1999). In addition, there is consistent evidence that dementia and cognitive impairment are strongly associated with, or predictive of, institutionalisation (e.g. Banaszak-Holl et al. 2004; McCallum et al. 2005; Miller & Weissert 2000). This study therefore hypothesised:

- that people with dementia were more likely to move from respite care to permanent residential care within 12 weeks of admission than people without dementia (*Hypothesis 4*).

People with dementia are less likely than other frail older people to be able to continue living at home on their own. For example, 89% of Extended Aged Care at Home (EACH) package recipients have an available carer, but this is the case for 95% of EACH Dementia package recipients (AIHW 2009a). Similarly EACH Dementia package recipients are less likely to live alone (22%) compared with EACH package recipients (29%). This study therefore hypothesised:

- that people with dementia who did not have a carer were more likely to move from respite care to permanent residential care within 12 weeks of admission than those with a carer, and that the effect of having a carer on movement into permanent residential aged care was different for those with and without dementia (that is, there was an interaction effect) (*Hypothesis 5*).

1.2 Data

The project builds on and uses the capacity and data infrastructure created through the National Health and Medical Research Council-funded Pathways in Aged Care (PIAC) project being undertaken by AIHW, La Trobe University and the University of Queensland. The PIAC project linked data sets for several aged care programs, for the years 2002–03 to 2005–06, to 2003–04 Aged Care Assessment Program (ACAP) data (AIHW 2009b). These programs included residential aged care and the following community care programs: Home and Community Care (HACC), Veterans' Home Care (VHC), Community Aged Care Package (CACP) and Extended Aged Care at Home (EACH). Clients were also linked to the national death register to establish whether clients died. The PIAC cohort consists of 105,077 people who had at least one completed ACAT assessment in 2003–04 reported on the client level ACAP National Minimum Data Set (NMDS) Version 2 (Figure 1.1). Out of the full cohort, 77,437 people had not previously used programs which required an ACAT assessment. These people comprised the 'PIAC new-pathways cohort', as they can be considered to be starting out on their aged care pathway.

Note that there were no approval data available for this study for people from Queensland or South Australia in 2003–04: Queensland was not included in ACAP NMDS Version 2 in

that year and all approval data were missing for South Australia. Also, in New South Wales 40% of ACAT assessment records were not reported to the ACAP National Data Registry (NDR) using ACAP NMDS Version 2. This incompleteness of the data set affects the utility of the linked data for this analysis to the extent that there are regional differences specific to those areas not covered.

Table 1.1: PIAC new-pathways cohort: state/territory of usual residence and residential respite care approval status at the reference assessment by recommended living arrangement (per cent)

	People with a completed ACAT assessment			
	Recommended to live in the community	Recommended to live in residential care ^(a)	Total	Number
With approval for RRC				
New South Wales	27.4	44.7	34.7	11,141
Victoria	53.4	33.0	44.7	14,345
Western Australia	6.2	13.2	9.2	2,942
Tasmania	6.2	6.3	6.3	2,005
Northern Territory	0.9	0.5	0.7	224
Australian Capital Territory	6.0	2.4	4.5	1,435
Total	100.0	100.0	100.0	..
Total number	18,442	13,650	..	32,092
Without approval for RRC				
New South Wales	39.7	28.1	35.3	12,823
Victoria	42.1	48.8	44.6	16,208
Western Australia	15.1	19.5	16.8	6,088
Tasmania	2.0	2.9	2.4	854
Northern Territory	1.0	0.3	0.8	277
Australian Capital Territory	0.1	0.3	0.2	75
Total	100.0	100.0	100.0	..
Total number	22,577	13,748	..	36,325
Approval rates (%)				
New South Wales	36.0	61.2	46.5	29,364
Victoria	50.9	40.1	47.0	30,553
Western Australia	25.1	40.1	32.6	9,030
Tasmania	71.4	68.5	70.1	2,859
Northern Territory	40.8	58.7	44.7	501
Australian Capital Territory	97.3	88.1	95.0	1,510
Total	45.0	49.8	46.9	..
Total number	41,019	27,398	..	68,417

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Notes

1. Table excludes 100 records with a care pathway that showed death before receipt of care indicating linkage errors.
2. Table excludes 8,920 records from South Australia where the RRC approval item was missing.
3. Table excludes all assessments not reported using ACAP NMDS Version 2 (i.e. all of Queensland and 40% of NSW assessments).

Nationally, of those in the PIAC new-pathways cohort (excluding South Australia), 47% (32,092 people) had an approval for RRC in 2003–04 (Table 1.1). RRC approval rates varied considerably across the jurisdictions. The Australian Capital Territory had the highest rate at 95%, followed by Tasmania with 70%. Western Australia had the lowest at 33% (Table 1.1). The remainder of the report considers only those new-pathways cohort members with an approval for RRC. In terms of recommended long-term living arrangements, people recommended to live in residential care had a higher approval rate than those recommended

to live in the community (50% versus 45%), although this varied considerably across jurisdictions. Among people with an approval for RRC, the majority were recommended to live in the community (57%, 18,442), with 43% (13,650) recommended to live in residential care.

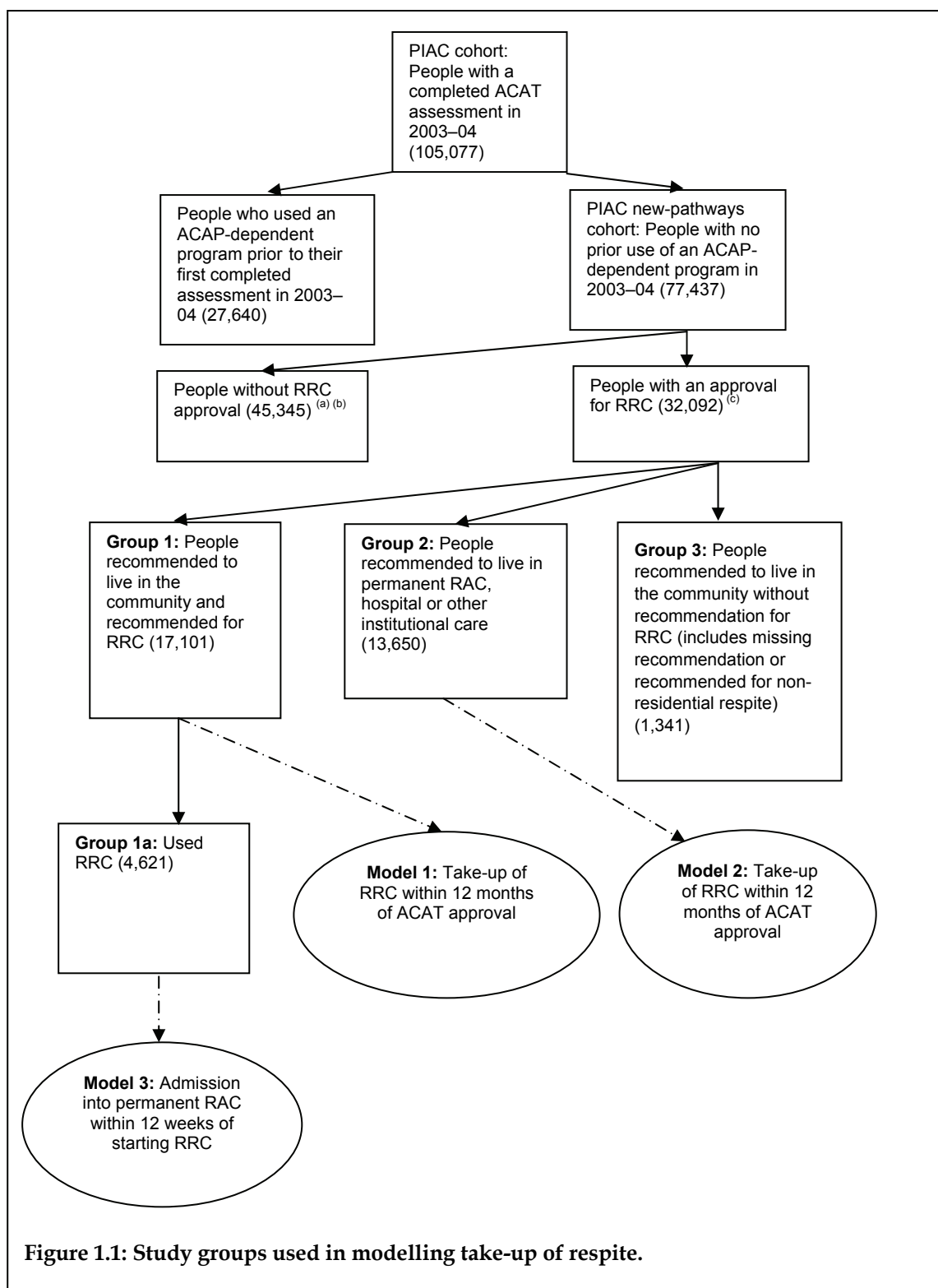
Study groups

This study focuses on those people in the new-pathways cohort who were approved by an ACAT during 2003–04 for RRC before they had used any programs requiring an ACAT approval (32,092 people) (Figure 1.1). However, people may have previously received community care through programs which do not require an ACAT approval (i.e. HACC and/or VHC). Overall, 60% of people in this study had used these community care programs prior to their ACAT approval. There is an expectation that people recommended to live long term in residential care would have different take-up rates and factors affecting take-up of RRC than those recommended to live long term in the community. Hence for modelling purposes, the population of those approved for RRC was split into the following groups:

- Group 1: recommended to live long term in the community and recommended for residential respite (17,101 people)
- Group 1a: those among Group 1 who took up RRC (4,621 people).
- Group 2: recommended to live long term in residential care; including residential aged care, hospital or other institutional care (13,650 people)
- Group 3: recommended to live long term in the community, with an approval for RRC but not recommended for RRC (includes missing recommendation or recommended for non-residential respite) (1,341 people).

Throughout the report Group 1 is referred to as those recommended to live in the community, Group 2 is referred to as those recommended to live in residential care, and Group 3 is referred to as other people.

Note that we are primarily interested in the effect of dementia status on take-up of RRC. Therefore we have excluded as missing data those cases where no health conditions were reported as affecting an individual's care needs.



(a) Includes 8,920 records from South Australia where the RRC approval item was missing.

(b) Includes people who used another ACAP dependent program before their first ACAT approval for RRC.

(c) Includes 401 cases with no stated health condition affecting care needs.

1.3 Methods

To assess the hypotheses of interest in Sections 4 and 5 both cross tabulations and logistic regression modelling were used. No modelling was done for Group 3 as this is a small group with poor respite approval/recommendation data.

Cross tabulations

Tabulations were used in order to obtain a basic understanding of how a particular data item varies in relation to another. For example, producing a basic two-way table of living arrangements by take-up of RRC will suggest how a client's take-up of RRC varies in relation to their living arrangements. While this method can be useful for investigations it can be restrictive as only a small number of variables can be considered at a time.

Logistic regression modelling

The logistic regression models estimate the probability of the event of interest happening or not. Logistic regression has significant power over basic tabulations as one can look at how multiple factors simultaneously affect the probability of an outcome (e.g. take-up of RRC within 12 months of ACAT approval).

The models

Logistic regression was used to test the five hypotheses of interest, as well as to determine which personal characteristics and ACAT assessment information were important in predicting the take-up of RRC. The *reference assessment* used in the analysis was the first completed ACAT assessment in 2003–04 with an approval for RRC.

Three models were used:

- Model 1: Take-up of RRC within 12 months of ACAT approval when recommended to live in the community
- Model 2: Take-up of RRC within 12 months of ACAT approval when recommended to live in residential care
- Model 3: Movement into permanent RAC within 12 weeks of take-up of RRC when recommended to live in the community at the time of the reference ACAT assessment.

Figure 1.1 shows the relationship between the models being fitted and the study groups. The variables used in the modelling were based on client and assessment characteristics at the time of the *reference assessment*.

Prior to fitting each model certain model assumptions were tested to ensure that relationships between explanatory variables were not unduly affecting the results. Finally, the overall goodness-of-fit of each model was also assessed. Appendix A provides a complete list of variables included in the modelling process, an overview of the assumptions tested and how overall goodness-of-fit was assessed.

The final models are presented in detail in Appendix A as parameter estimates with their confidence intervals and significance levels, and as odds ratios and their confidence intervals. Goodness-of-fit statistics are also given. A small number of interaction terms were

tested, in particular, interactions between dementia and English proficiency, and dementia and carer characteristics. For ease of interpreting the models only main effects (non-interaction terms) are presented in detail. Interaction effects are discussed separately.

1.4 Structure of report

Section 2 provides a profile of the study groups using simple tabulations and Section 3 provides group level distributions of time to take-up and length of stay in RRC. The analyses of take-up of respite by those recommended to live in the community and those recommended to live in residential care are provided in Section 4. The final section (Section 5) examines movement from residential respite care to permanent RAC within 12 weeks for those recommended to live in the community. Appendix A contains technical details and results for the fitted models.

2. Profile of study groups

To provide context for the analysis of take-up of RRC, characteristics of the study groups are considered including locality of residence, demographics, health and care needs and sources of care. Where applicable, the effect of dementia status is considered, with a person being identified as having dementia if it was reported among the health conditions affecting care needs in the reference ACAT assessment.

2.1 Locality

Just over 70% of people approved for RRC were from a major city and 21% were from an inner regional area (Table 2.1). The remainder lived in outer regional areas (7%) or in remote and very remote areas (1%). People from major cities made up a slightly higher proportion of people recommended to live in the community (73%) than among those recommended to live in residential care (68%).

Table 2.1: PIAC new-pathways cohort with an approval for residential respite care: remoteness by study group (per cent).

	People with an ACAT approval for RRC			Total	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other		
Major city	72.5	67.9	69.9	70.4	22,323
Inner regional	19.7	21.8	19.1	20.6	6,521
Outer regional	5.4	7.9	7.3	6.5	2,060
Remote/Very remote	1.0	0.9	1.4	1.0	316
Missing	1.4	1.5	2.3	1.5	471
Total	100.0	100.0	100.0	100.0	..
Total number	16,963	13,438	1,290	..	31,691

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Note: Table excludes 401 observations where no health conditions were stated.

2.2 Age and sex

The average age of those who had a completed ACAT approval in 2003–04 and an approval for RRC was 81.3 years (Table 2.2). People who were recommended to live in residential care had a slightly older age profile than those recommended to live in the community. Consequently, the average age of those recommended to live in residential care was 81.8 years compared with 81.0 years for those recommended to live long term in the community. There were similar age differences within those groups with and without dementia (Table 2.3).

There was little variation in the age distribution of those with and without dementia. The average age of a person with dementia was estimated to be 81.4 years, as opposed to 81.3 years for those without dementia (Table 2.3).

Overall, women accounted for almost two-thirds of those in the PIAC new-pathways cohort with an RRC approval (20,135 women (64%) and 11,542 men (36%)) (Table 2.2). A similar gender balance is seen for both those with and without dementia (Table 2.3).

For each sex there was little difference in terms of the average age of people with or without dementia. The average age of women with and without dementia was the same (82.0 years) while men with dementia were, on average, only slightly older than men without dementia (80.4 years and 79.9 years respectively) (Table 2.3).

Table 2.2: PIAC new-pathways cohort with an approval for residential respite care: age and sex by study group (per cent).

	People with an ACAT approval for RRC				Overall per cent	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other	Total		
Males						
Under 65	5.4	6.1	5.4	5.7	2.1	656
65–74	16.1	14.9	17.5	15.7	5.7	1,810
75–84	47.8	44.7	47.5	46.5	16.9	5,369
85–94	29.0	32.3	28.5	30.3	11.0	3,501
95 plus	1.6	2.1	1.1	1.8	0.7	206
Total	100.0	100.0	100.0	100.0	36.4	..
Total number	6,337	4,759	446	..	..	11,542
Average age (years)	79.9	80.2	79.6	80.0	..	..
Females						
Under 65	3.4	2.7	2.6	3.1	1.9	617
65–74	12.3	9.8	13.0	11.2	7.1	2,265
75–84	46.4	44.3	47.8	45.5	28.9	9,168
85–94	35.6	40.1	34.0	37.5	23.8	7,549
95 plus	2.4	3.0	2.5	2.7	1.7	536
Total	100.0	100.0	100.00	100.0	63.5	..
Total number	10,617	8,675	843	..	..	20,135
Average age (years)	81.6	82.6	81.6	82.0	..	..
Total						
Under 65	4.2	3.9	3.6	4.0	..	1,273
65–74	13.7	11.6	14.6	12.9	..	4,078
75–84	46.9	44.4	47.7	45.9	..	14,543
85–94	33.1	37.3	32.2	34.9	..	11,055
95 plus	2.1	2.7	2.0	2.3	..	742
Total	100.0	100.0	100.0	100.0	100.0	..
Total number	16,963	13,438	1,290	..	..	31,691
Average age (years)	81.0	81.8	80.9	81.3	..	..

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Note: Table excludes 401 observations where no health conditions were stated.

Table 2.3: PIAC new-pathways cohort with an approval for residential respite care: age, sex, dementia status by study group (per cent).

	People with an ACAT approval for RRC				Overall per cent	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other	Total		
With dementia (male)						
Under 65	3.4	3.6	2.9	3.4	0.3	110
65–74	15.6	13.5	11.8	14.5	1.5	464
75–84	54.5	49.6	51.0	52.2	5.3	1,665
85–94	25.4	31.6	34.3	28.5	2.9	909
95 plus	1.0	1.7	-	1.3	0.1	42
Total	100.0	100.0	100.0	100.0	10.1	..
Total number	1,655	1,433	102	..	..	3,190
Average age (years)	80.0	80.9	81.1	80.4	..	..
With dementia (female)						
Under 65	2.8	1.7	0.5	2.1	0.4	113
65–74	11.7	9.7	14.0	10.8	1.8	569
75–84	50.3	48.6	52.5	49.5	8.3	2,616
85–94	33.8	37.5	30.0	35.6	5.9	1,879
95 plus	1.4	2.4	3.0	2.0	0.3	105
Total	100.0	100.0	100.00	100.0	16.7	..
Total number	2,388	2,694	200	..	..	5,282
Average age (years)	81.6	82.4	82.2	82.0	..	..
Without dementia (male)						
Under 65	6.1	7.2	6.1	6.5	1.7	546
65–74	16.3	15.5	19.2	16.1	4.2	1,346
75–84	45.5	42.5	46.5	44.3	11.7	3,704
85–94	30.2	32.6	26.7	31.0	8.2	2,592
95 plus	1.8	2.2	1.5	2.0	0.5	164
Total	100.0	100.0	100.0	100.0	26.4	..
Total number	4,682	3,326	344	..	..	8,352
Average age (years)	79.9	80.0	79.2	79.9	..	..
Without dementia (female)						
Under 65	3.6	3.1	3.3	3.4	1.6	504
65–74	12.4	9.9	12.8	11.4	5.4	1,696
75–84	45.2	42.4	46.3	44.1	20.7	6,552
85–94	36.2	41.3	35.3	38.2	17.9	5,670
95 plus	2.6	3.3	2.3	2.9	1.4	431
Total	100.0	100.0	100.00	100.0	46.9	..
Total number	8,229	5,981	643	..	..	14,853
Average age (years)	81.6	82.7	81.5	82.0	..	..

Table 2.3 (continued): PIAC new-pathways cohort with an approval for residential respite care: age, sex, dementia status by study group (per cent).

	People with an ACAT approval for RRC			Total	Overall per cent	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other			
With dementia (all)						
Under 65	3.0	2.4	1.3	2.6	0.7	223
65–74	13.3	11.0	13.2	12.2	3.3	1,033
75–84	52.0	48.9	52.0	50.5	13.5	4,281
85–94	30.4	35.5	31.5	32.9	8.8	2,788
95 plus	1.2	2.2	2.0	1.7	0.5	147
Total	100.0	100.0	100.0	100.0	26.7	..
Total number	4,043	4,127	302	..	..	8,472
Average age (years)	80.9	81.9	81.8	81.4	..	..
Without dementia (all)						
Under 65	4.5	4.6	4.3	4.5	3.3	1,050
65–74	13.8	11.9	15.0	13.1	9.6	3,045
75–84	45.3	42.4	46.4	44.2	32.4	10,262
85–94	34.0	38.2	32.4	35.6	26.1	8,267
95 plus	2.4	2.9	2.0	2.6	1.9	595
Total	100.0	100.0	100.00	100.0	73.3	..
Total number	12,920	9,311	988	..	..	23,219
Average age (years)	81.0	81.7	80.7	81.3	..	..
All	16,963	13,438	1,290	..	..	31,691

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Notes

1. Table excludes 401 observations where no health conditions were stated.
2. Table excludes 14 records where sex is missing.
3. A person who recorded dementia as any health condition has been defined as having dementia.

2.3 Health conditions

The type and number of health conditions a person has affects the amount of assistance he or she requires, whether from a formal service such as RRC or from an informal source, for example a daughter who lives with her mother. The ACAP NMDS records diseases and disorders that have an impact on the person's need for assistance with activities of daily living and social participation (AIHW 2002). Up to 10 such health conditions may be reported on an ACAT assessment form. In this analysis, all health conditions reported for a person were used to identify clients as having a particular health condition.

Among people with an approval for RRC the top five health conditions reported as affecting people's need for assistance were:

1. Diseases of musculoskeletal system and connective tissue (43%)
2. Circulatory system disease other than cerebrovascular or heart disease (36%)
3. Heart disease (32%)
4. Dementia (27%)
5. Symptoms, signs and abnormal findings, such as falls and abnormalities of gait and mobility (23%) (Table 2.4).

Overall, people in the study cohort averaged 3.7 health conditions. Those recommended to live in the community and those recommended to live in residential care averaged a similar number of health conditions (3.7 and 3.8 respectively).

The prevalence of most health conditions affecting care needs was similar for those recommended for community living or to live in residential care. The most noticeable difference was the higher prevalence of dementia among those recommended for residential care (31%, versus 24% for those recommended to live in the community). There was also a slightly lower prevalence of musculoskeletal conditions for this group (40% versus 45%) (Table 2.4).

Table 2.4: PIAC new-pathways cohort with an approval for residential respite care: any health condition at the reference assessment by study group (per cent)

Health condition	People with an ACAT approval for RRC			Total	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other		
Infectious and parasitic diseases	0.6	0.6	0.4	0.6	194
Neoplasms	11.1	13.2	10.7	12.0	3,799
Blood, blood-forming organs and immunological disorders	3.7	4.0	4.0	3.9	1,224
Endocrine, nutritional and metabolic diseases	21.8	20.4	20.5	21.2	6,703
Mental/behavioural disorders - dementia	23.8	30.7	23.4	26.7	8,472
Mental/behavioural disorders-other	15.3	16.3	12.9	15.6	4,948
Nervous system	13.8	12.4	11.9	13.1	4,159
Eye and adnexa	18.0	16.9	16.0	17.4	5,528
Ear and mastoid process	9.7	9.1	8.8	9.4	2,974
Circulatory system - heart disease	32.4	32.5	29.5	32.3	10,241
Circulatory system - cerebrovascular	15.1	15.8	12.2	15.3	4,844
Circulatory system - other	36.1	35.8	34.3	35.9	11,380
Respiratory system	15.2	15.4	15.3	15.3	4,843
Digestive system	12.8	12.3	10.2	12.5	3,961
Skin and subcutaneous tissue	3.1	3.1	2.7	3.1	978
Musculoskeletal system and connective tissue	44.6	40.3	40.6	42.6	13,506
Genitourinary system	10.9	11.8	9.2	11.2	3,550
Congenital malformations	0.1	0.1	0.3	0.1	36
Injury, poisoning and other consequences of external causes	11.0	12.5	9.1	11.6	3,665
Symptoms, signs and abnormal findings ^(b)	21.5	25.1	21.2	23.0	7,281
Other (not elsewhere stated)	2.4	3.2	2.2	2.7	861
Average number	3.7	3.8	3.3	3.7	..
Total	16,963	13,438	1,290	..	31,691

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

(b) The most common 'symptoms, signs and abnormal findings' include falls and abnormalities of gait and mobility.

Notes

1. Table excludes 401 observations where no health conditions were stated.
2. A person may report multiple health conditions, therefore percentages do not total to 100.

2.4 Client care needs

In this report, client care needs have been assessed using two concepts:

- Instrumental activities of daily living (IADLs), defined as a series of life functions necessary for maintaining a person's immediate environment, for example obtaining food, cooking, laundering, housecleaning, managing one's medications, phone use. Consequently, IADLs measure a person's ability to live independently.
- Activities of daily living (ADLs), defined as routine activities that people tend to do everyday without needing assistance. There are six basic ADLs: eating, bathing, dressing, toileting, transferring (walking), and continence. An individual's ability to perform ADLs is important for determining what type of long-term care the individual needs.

The ACAP NMDS records data on five IADLs (transport, activities involved in social and community participation, domestic assistance, meals and home maintenance) and five ADLs (self-care, movement activities, moving around places at or away from home, communication and health care tasks). IADL and ADL scores were derived by counting the number of IADL and ADL care needs reported, ranging from 0 (no care needs) to 5 (all care needs reported). There is an expectation the IADL scores will be higher than the ADL scores. This is because people lose the ability to drive and go shopping (IADL tasks) before the ability to perform tasks like self-care and movement activities (ADL tasks). In terms of dementia, it has been shown in other studies that people with dementia have a higher IADL dependence, and to a lesser extent, higher ADL dependence than those without dementia (AIHW 2007b).

Instrumental activities of daily living (IADL)

Overall, the average IADL score for the study group was 3.9. That is, each client required, on average, assistance in 3.9 out of 5 IADL needs (Table 2.5). As expected, the average IADL score for those with dementia was higher (4.1) than that for those without dementia (3.8). Moreover, over three-quarters of people with dementia had an IADL score of 4 or 5 compared with 62% of those without dementia. The patterns were similar for those recommended to live in the community and those recommended to live in residential care.

Activities of daily living (ADL)

Each client required assistance with, on average, 2.1 out of 5 ADL needs (Table 2.6). As expected, this result is considerably lower than the average number of IADL care needs (3.9) (Table 2.5 and Table 2.6 respectively).

The average ADL score for those with dementia (2.4) was higher than that for those without dementia (1.9) (Table 2.6). Of those with dementia, persons who were recommended to live in residential care had a higher rate of dependency than those who were recommended to stay in the community. For example, over a quarter (29%) of people with dementia who were recommended to live in residential care had an ADL score of 4 or 5 whereas only 18% of people who were recommended to live in the community had such high ADL scores (Table 2.6).

Table 2.5: PIAC new-pathways cohort with an approval for residential respite care: IADL score at the reference assessment by study group (per cent)

IADL score	People with an ACAT approval for RRC			Total	Overall percent	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other			
With dementia						
None	0.9	1.6	1.3	1.3	0.3	107
One	2.1	2.1	4.0	2.2	0.6	183
Two	5.5	6.8	9.3	6.3	1.7	532
Three	11.9	10.6	14.6	11.4	3.0	962
Four	26.9	27.6	27.2	27.2	7.3	2,307
Five	50.1	49.2	42.4	49.4	13.2	4,184
Unable to be determined	0.1	0.0	-	0.0	0.0	4
Not stated	2.7	2.0	1.3	2.3	0.6	193
Total	100.0	100.0	100.0	100.0	26.7	..
Total number	4,043	4,127	302	..	..	8,472
Average IADL score	4.2	4.1	3.9	4.1	..	..
Without dementia						
None	1.7	2.5	3.6	2.1	1.5	483
One	4.1	3.4	5.3	3.9	2.8	896
Two	9.5	9.5	12.8	9.7	7.1	2,246
Three	16.2	14.9	21.2	15.9	11.7	3,693
Four	25.6	27.1	24.4	26.1	19.2	6,071
Five	34.7	38.4	31.3	36.1	26.4	8,375
Unable to be determined	0.0	0.1	-	0.0	0.0	11
Not stated	8.2	4.0	1.5	6.2	4.6	1,444
Total	100.0	100.0	100.0	100.0	73.3	..
Total number	12,920	9,311	988	..	..	23,219
Average IADL score	3.8	3.8	3.5	3.8	..	..
All						
None	1.5	2.2	3.1	1.9	..	590
One	3.6	3.0	5.0	3.4	..	1,079
Two	8.6	8.7	11.9	8.8	..	2,778
Three	15.2	13.6	19.6	14.7	..	4,655
Four	25.9	27.3	25.0	26.4	..	8,378
Five	38.4	41.8	33.9	39.6	..	12,559
Unable to be determined	0.0	0.1	-	0.0	..	15
Not stated	6.9	3.4	1.5	5.2	..	1,637
Total	100.0	100.0	100.0	100.0	..	..
Total number	16,963	13,438	1,290	..	..	31,691
Average IADL score	3.9	3.9	3.6	3.9	..	..

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Notes

1. Table excludes 401 observations where no health conditions were stated.
2. Average score is based on clients with stated care needs only.

Table 2.6: PIAC new-pathways cohort with an approval for residential respite care: ADL score at the reference assessment by study group (per cent)

ADL score	People with an ACAT approval for RRC			Total	Overall percent	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other			
With dementia						
None	8.5	5.8	11.9	7.3	2.0	620
One	23.6	15.8	29.5	20.0	5.4	1,697
Two	27.0	24.2	22.2	25.4	6.8	2,156
Three	19.9	23.2	17.5	21.4	5.7	1,816
Four	12.7	18.3	11.6	15.4	4.1	1,306
Five	5.5	10.6	6.0	8.0	2.1	680
Unable to be determined	0.1	0.0	-	0.0	0.0	4
Not stated	2.7	2.0	1.3	2.3	0.6	193
Total	100.0	100.0	100.0	100.00	26.7	..
Total number	4,043	4,127	302	..	..	8,472
Average ADL score	2.2	2.7	2.1	2.4	..	..
Without dementia						
None	20.1	14.6	26.6	18.2	13.3	4,215
One	24.5	19.7	27.1	22.7	16.6	5,263
Two	21.5	22.3	19.4	21.8	15.9	5,054
Three	14.3	17.2	14.6	15.5	11.4	3,601
Four	8.5	15.6	8.2	11.3	8.3	2,630
Five	2.9	6.5	2.5	4.3	3.2	1,001
Unable to be determined	0.0	0.1	-	0.0	0.0	11
Not stated	8.2	4.0	1.5	6.2	4.6	1,444
Total	100.0	100.0	100.0	100.0	73.3	..
Total number	12,920	9,311	988	..	..	23,219
Average ADL score	1.7	2.2	1.6	1.9	..	..
All						
None	17.3	11.9	23.2	15.3	..	4,835
One	24.3	18.5	27.7	22.0	..	6,960
Two	22.8	22.9	20.1	22.8	..	7,210
Three	15.7	19.1	15.3	17.1	..	5,417
Four	9.5	16.4	9.0	12.4	..	3,936
Five	3.5	7.8	3.3	5.3	..	1,681
Unable to be determined	0.0	0.1	-	0.0	..	15
Not stated	6.9	3.4	1.5	5.2	..	1,637
Total	100.0	100.0	100.0	100.0	..	..
Total number	16,963	13,438	1,290	..	..	31,691
Average ADL score	1.9	2.3	1.7	2.1	..	..

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Notes

1. Table excludes 401 observations where no health conditions were stated.
2. Average score is based on clients with stated care needs only.

2.5 Care

People can receive different types of care, including informal and formal care. Informal care is given by a person such as a family member, friend or neighbour who provides regular and sustained care and assistance to the care recipient (AIHW 2008). These carers play a pivotal role in supporting older people, in particular helping individuals to remain in the community. Care can also be obtained through a number of government programs, or people may obtain services privately. Such care is often termed 'formal care'.

As described in the previous section, people with dementia have higher care needs than those without dementia. If these needs are not being (or can no longer be) met by assistance from a carer, the person is more likely to be recommended to live in residential care. This section investigates the availability of informal carers and sources of care being accessed by people at the time of their reference assessment.

Carer availability

The data show that approximately 73% of people with approval for RRC were recorded as having an informal carer, 18% had no carer and the remaining 8% had no information recorded on carer status, possibly due to the assessor not being able to ask or obtain the necessary information (Table 2.7). People with and without dementia had different carer profiles. Of those with dementia, the most frequently reported informal carer was a spouse or co-resident partner (over 36% across the study group) with daughters being the next common carer group (25%, 11% co-resident). Nearly 60% of people with dementia had a co-resident carer. For those without dementia, 21% had no reported carer and a similar proportion reported a co-resident partner as the carer (20%). In addition, 25% were cared for by daughters (8% co-resident). Overall nearly two-fifths (39%) had a co-resident carer.

The carer profile varied across the study groups within dementia status. For example, for those with dementia and recommended to live long term in community care the most common carer was a co-resident partner (44%) whereas for those without dementia and recommended for residential care the largest group was that without a carer (26%) (Table 2.7).

Sources of care

Informal care

Three quarters of people were reported as receiving informal assistance with IADL care needs (74%, Table 2.8), as opposed to only 55% of those requiring assistance with ADL care needs (Table 2.9). This difference can be explained by people losing the ability to drive and go shopping (IADL tasks) before they lose the ability to perform tasks like self-care and movement activities (ADL tasks).

A higher proportion of people with dementia were using informal IADL care services (79%) as opposed to those without dementia (72%, Table 2.8). Similarly, the use of informal ADL care services was greater among those with dementia (69%) as opposed to those without dementia (50%, Table 2.9).

The above results reflect the effects of dementia as a health condition that severely disables a person's ability to perform everyday activities. This is most apparent for the group of people

with dementia and without a carer (779 study members), among whom almost twice as many people were recommended to live in residential care than recommended to live in the community (537 versus 242, derived from Table 2.7).

Formal care

Formal care is provided to a lesser extent than informal care. A total of 41% of people were reported as receiving formal assistance with IADL care needs (Table 2.8), as opposed to only 35% of those requiring assistance with ADL care needs (Table 2.9). Again, this difference is because people lose the ability to drive and go shopping (IADL tasks) before the ability to perform tasks like self-care and movement activities (ADL tasks).

A higher proportion of people without dementia were using formal IADL care services (45%) as opposed to those with dementia (33%, Table 2.8). Similarly, the use of formal ADL care services was greater among those without dementia (36%) as opposed to those with dementia (32%, Table 2.9).

Table 2.7: PIAC new-pathways cohort with an approval for residential respite care: carer characteristics at the reference assessment by study group (per cent)

People with an ACAT approval for RRC							
Carer characteristics	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other	Total	Overall percent	Number	
With dementia							
Partner: co-resident	44.2	28.1	36.8	36.1	9.6	3,057	
Partner: non-resident	0.3	0.3	0.3	0.3	0.1	26	
Daughter: co-resident	12.3	10.1	12.3	11.2	3.0	951	
Daughter: non-resident	12.4	16.1	10.9	14.2	3.8	1,199	
Son: co-resident	4.6	5.6	7.0	5.2	1.4	439	
Son: non-resident	5.4	6.6	5.0	5.9	1.6	503	
Other male: co-resident	2.9	3.0	4.6	3.0	0.8	253	
Other male: non-resident	3.3	5.4	4.0	4.3	1.2	367	
Other female: co-resident	0.7	0.8	1.3	0.8	0.2	66	
Other female: non-resident	0.8	1.5	-	1.1	0.3	94	
Unknown: co-resident	2.3	1.9	1.3	2.1	0.6	175	
Unknown: non-resident	0.8	1.8	1.0	1.3	0.3	107	
<i>Co-resident carer</i>	<i>67.0</i>	<i>49.5</i>	<i>63.2</i>	<i>58.3</i>	<i>15.6</i>	<i>4,941</i>	
<i>Non-resident carer</i>	<i>23.0</i>	<i>31.5</i>	<i>21.2</i>	<i>27.1</i>	<i>7.2</i>	<i>2,296</i>	
No carer	6.0	13.0	11.9	9.7	2.6	818	
Missing	4.0	5.9	3.6	4.9	1.3	417	
Total	100.0	100.0	100.0	100.0	26.7	..	
Total number	4,043	4,127	302	..	..	8,472	
Without dementia							
Partner: co-resident	24.1	15.1	20.7	20.3	14.9	4,721	
Partner: non-resident	0.2	0.2	0.1	0.2	0.1	43	
Daughter: co-resident	9.2	7.4	7.8	8.4	6.2	1,958	
Daughter: non-resident	15.8	16.5	16.1	16.1	11.8	3,746	
Son: co-resident	4.1	4.0	3.4	4.0	2.9	933	
Son: non-resident	6.3	7.4	6.0	6.7	4.9	1,558	
Other male: co-resident	2.9	2.9	2.6	2.9	2.1	672	
Other male: non-resident	4.6	5.5	3.7	4.9	3.6	1,143	
Other female: co-resident	0.8	0.8	1.3	0.8	0.6	190	
Other female: non-resident	1.0	1.5	1.3	1.2	0.9	280	
Unknown: co-resident	2.2	1.7	1.7	2.0	1.4	456	
Unknown: non-resident	1.8	2.4	1.6	2.1	1.5	477	
<i>Co-resident carer</i>	<i>43.3</i>	<i>31.9</i>	<i>37.7</i>	<i>38.5</i>	<i>28.2</i>	<i>8,930</i>	
<i>Non-resident carer</i>	<i>29.6</i>	<i>33.7</i>	<i>28.8</i>	<i>31.2</i>	<i>22.9</i>	<i>7,247</i>	
No carer	17.0	25.6	27.3	20.9	15.3	4,847	
Missing	10.1	8.8	6.2	9.5	6.9	2,195	
Total	100.0	100.0	100.0	100.0	73.3	..	
Total number	12,920	9,311	988	..	..	23,219	
All	16,963	13,438	1,290	..	100.0	31,691	

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Note: Table excludes 401 observations where no health conditions were stated.

Table 2.8: PIAC new-pathways cohort with an approval for residential respite care: provision of IADL services at the reference assessment by study group (per cent)

	People with an ACAT approval for RRC			Total	Overall percent	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other			
With dementia						
None	6.3	8.7	7.9	7.5	2.0	636
Both	25.9	23.3	21.5	24.5	6.5	2,074
Informal only	59.3	49.1	52.3	54.1	14.5	4,582
Formal only	6.5	9.3	10.9	8.0	2.1	679
Unable to be determined	1.7	8.0	7.3	5.0	1.3	422
Not applicable	0.3	1.6	-	0.9	0.2	79
Total	100.0	100.0	100.0	100.0	26.7	..
Total number	4,043	4,127	302	..	..	8,472
Without dementia						
None	7.4	11.3	14.3	9.3	6.8	2,151
Both	32.7	29.0	24.0	30.8	22.6	7,163
Informal only	44.1	37.2	41.5	41.2	30.2	9,564
Formal only	13.5	14.5	13.8	13.9	10.2	3,232
Unable to be determined	2.1	7.0	6.2	4.3	3.1	987
Not applicable	0.2	1.0	0.3	0.5	0.4	122
Total	100.0	100.0	100.0	100.0	73.3	..
Total number	12,920	9,311	988	..	..	23,219
All						
None	7.2	10.5	12.8	8.8	..	2,787
Both	31.1	27.2	23.4	29.1	..	9,237
Informal only	47.7	40.8	44.0	44.6	..	14,146
Formal only	11.8	12.9	13.1	12.3	..	3,911
Unable to be determined	2.0	7.3	6.4	4.4	..	1,409
Not applicable	0.2	1.2	0.2	0.6	..	201
Total	100.0	100.0	100.0	100.0	..	..
Total number	16,963	13,438	1,290	..	..	31,691

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Notes

1. Table excludes 401 observations where no health conditions were stated.
2. Provision of services was derived by using Question 24 of the ACAT assessment form. If a person indicated they were receiving assistance from at least one informal care source and at least one formal care source they were categorised as receiving 'both' services. A person is counted in one category only.

Table 2.9: PIAC new-pathways cohort with an approval for residential respite care: provision of ADL services at the reference assessment by study group (per cent)

	People with an ACAT approval for RRC			Total	Overall percent	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other			
With dementia						
None	16.0	16.2	23.5	16.4	4.3	1,386
Both	24.1	22.5	15.9	23.1	6.2	1,953
Informal only	50.8	41.3	46.4	46.0	12.3	3,899
Formal only	7.1	10.3	7.0	8.7	2.3	733
Unable to be determined	1.7	8.0	7.3	5.0	1.3	422
Not applicable	0.3	1.6	-	0.9	0.2	79
Total	100.0	100.0	100.0	100.0	26.7	..
Total number	4,043	4,127	302	..	..	8,472
Without dementia						
None	30.7	28.7	37.4	30.2	22.1	7,002
Both	22.5	20.9	16.4	21.6	15.8	5,014
Informal only	30.2	27.0	28.3	28.8	21.1	6,698
Formal only	14.3	15.4	11.3	14.6	10.7	3,396
Unable to be determined	2.1	7.0	6.2	4.3	3.1	987
Not applicable	0.2	1.0	0.3	0.5	0.4	122
Total	100.0	100.0	100.0	100.0	73.3	..
Total number	12,920	9,311	988	..	..	23,219
All						
None	27.1	24.9	34.2	26.5	..	8,388
Both	22.9	21.4	16.3	22.0	..	6,967
Informal only	35.1	31.4	32.6	33.4	..	10,597
Formal only	12.6	13.8	10.3	13.0	..	4,129
Unable to be determined	2.0	7.3	6.4	4.4	..	1,409
Not applicable	0.2	1.2	0.2	0.6	..	201
Total	100.0	100.0	100.0	100.0	..	..
Total number	16,963	13,438	1,290	..	..	31,691

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Notes

1. Table excludes 401 observations where no health conditions were stated.
2. Provision of services was derived by using Question 24 of the ACAT assessment form. If a person indicated they were receiving assistance from at least one informal care source and at least one formal care source they were categorised as receiving 'both' services. A person is counted in one category only.

2.6 Time to death

Circumstances may prevent some people from using RRC. For example, people may die soon after an assessment, and have only a limited time before death in which to take up RRC. Overall, 18% of people died within 12 months of their reference assessment (Table 2.10). Not surprisingly, this proportion was higher among those who were recommended to live in residential care than those who were recommended to live in the community (23% versus 15%).

A slightly lower proportion of people with dementia died in 12 months than those without dementia (16% versus 19%, Table 2.10). This was also observed across each of the study groups. For example, of those recommended to live in residential care, 19% of those with dementia died within 12 months as opposed to 24% for those without.

Table 2.10: PIAC new-pathways cohort with an approval for residential respite care: time to death by study group (per cent)

	People with an ACAT approval for RRC				
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other	Total	Number
Time to death					
With dementia					
Less than 4 weeks	0.6	2.2	1.0	1.4	116
Between 4 and 8 weeks	0.9	2.5	1.0	1.7	141
Between 8 and 12 weeks	1.1	1.9	3.0	1.5	129
Between 12 and 16 weeks	0.9	1.8	0.3	1.3	113
Between 16 and 20 weeks	1.0	1.5	1.0	1.2	104
Between 20 and 36 weeks	4.5	5.4	4.0	4.9	415
Between 36 and 52 weeks	4.0	4.0	5.3	4.0	343
<i>Died in 12 months</i>	<i>13.0</i>	<i>19.1</i>	<i>15.6</i>	<i>16.1</i>	<i>1,361</i>
Did not die in 12 months	87.0	80.9	84.4	83.9	7,111
Total	100.0	100.0	100.0	100.0	..
Total number	4,043	4,127	302	..	8,472
Without dementia					
Less than 4 weeks	1.2	3.8	1.6	2.3	530
Between 4 and 8 weeks	1.6	3.4	1.1	2.3	533
Between 8 and 12 weeks	1.5	2.8	1.4	2.0	469
Between 12 and 16 weeks	1.4	2.2	1.0	1.7	392
Between 16 and 20 weeks	1.2	1.9	1.4	1.5	349
Between 20 and 36 weeks	4.3	5.6	5.5	4.9	1,129
Between 36 and 52 weeks	3.9	4.1	3.6	4.0	920
<i>Died in 12 months</i>	<i>15.0</i>	<i>24.0</i>	<i>15.7</i>	<i>18.6</i>	<i>4,322</i>
Did not die in 12 months	85.0	76.0	84.3	81.4	18,897
Total	100.0	100.0	100.0	100.0	..
Total number	12,920	9,311	988	..	23,219
All					
Less than 4 weeks	1.1	3.3	1.5	2.0	646
Between 4 and 8 weeks	1.5	3.1	1.1	2.1	674
Between 8 and 12 weeks	1.4	2.5	1.8	1.9	598
Between 12 and 16 weeks	1.3	2.1	0.9	1.6	505
Between 16 and 20 weeks	1.2	1.8	1.3	1.4	453
Between 20 and 36 weeks	4.3	5.6	5.1	4.9	1,544
Between 36 and 52 weeks	3.9	4.1	4.0	4.0	1,263
<i>Died in 12 months</i>	<i>14.5</i>	<i>22.5</i>	<i>15.7</i>	<i>17.9</i>	<i>5,683</i>
Did not die 12 months	85.5	77.5	84.3	82.1	26,008
Total	100.0	100.0	100.0	100.0	..
Total number	16,963	13,438	1,290	..	31,691

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Notes

1. Table excludes 401 observations where no health conditions were stated.
2. Time is from the end of the reference assessment.

3. Use of residential respite care

General results on the take-up of RRC within study groups are discussed below. Both time to take-up and length of stay are examined, as well as first program use after the reference assessment and movement from RRC to permanent RAC.

3.1 Time to take-up

RRC plays an important role in care pathways, sometimes acting as a stepping stone towards permanent residential aged care and sometimes providing support to carers of those living in the community. Because of the different purpose of RRC for people recommended to live in the community and in residential care, we would expect to see different take-up rates in the two groups. However, around 27% of people used RRC with 12 months of ACAT approval irrespective of whether they were recommended to live long term in the community or in residential care (Table 3.1). Nevertheless, the stepping stone effect can be seen as a higher proportion of people recommended to live in residential care used RRC within the first 3 months of the ACAT approval than those recommended to live in the community (19% versus 14%) (Table 3.1). This effect was seen for those with and without dementia.

In all time periods and study groups, people with dementia were slightly more likely than those without dementia to take up RRC during the year for which the approval was valid (Table 3.1). Overall, 32% of people with dementia had taken up RRC within the year compared with 25% of people without dementia. This means that, despite being approved for RRC, 68% of people with dementia and 75% of those without dementia did not use this service within 1 year of approval.

Possible reasons for the low usage rate for those with carers

There are a number of reasons why people do not take up recommended care, including entry into residential care and death. As recently documented in an Australian Government report (House of Representatives Standing Committee on Family, Community, Housing and Youth 2009), other reasons why a person may not take up residential respite include:

- **Affordability:** Services like respite need not only to be available, but also to be affordable. As reported in Australia's Welfare 2007 the fee for residential respite care is set at 85% of the pension (\$30.77 a day as at 1 March 2007, AIHW 2007a). As quoted by a Tasmanian carer who cares for his wife 'We are allowed at present nine weeks a year for respite. How can we possibly afford respite when the full pension is taken off the patient when they go into respite care?'
- **Being able to navigate the service maze:** Even for carers seeking to access a single type of service, such as respite care, the challenges of finding the appropriate service from among all those available can be daunting. As quoted by the Macarthur Aged and Disability Forum 'There are so many services that have been set up for respite but all of them are run by different agencies and have different guidelines. In Macarthur no one service provides the range of respite options carers require'.

Table 3.1: PIAC new-pathways cohort with an approval for residential respite care: time to take-up of residential respite care by study group (per cent)

Time to take-up of RRC	People with an ACAT approval for RRC				Total	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other			
With dementia						
0–91 days	15.2	20.5	12.3	17.7	1,498	
92–183 days	8.8	5.2	7.0	7.0	592	
184–274 days	5.3	2.9	4.6	4.1	348	
275–365 days	4.0	2.0	5.0	3.1	261	
<i>Within the year</i>	33.3	30.7	28.8	31.9	2,699	
Within 1–2 years	9.6	4.1	9.6	6.9	585	
Not within 2 years	57.1	65.3	61.6	61.2	5,188	
Total	100.0	100.0	100.0	100.0	..	
Total number	4,043	4,127	302	..	8,472	
Without dementia						
0–91 days	13.7	18.7	7.8	15.5	3,592	
92–183 days	5.4	4.1	4.0	4.8	1,113	
184–274 days	3.3	2.0	3.6	2.8	648	
275–365 days	2.6	1.3	1.9	2.1	479	
<i>Within the year</i>	25.0	26.1	17.4	25.1	5,832	
Within 1–2 years	6.6	3.2	6.8	5.3	1,220	
Not within 2 years	68.4	70.7	75.8	69.6	16,167	
Total	100.0	100.0	100.0	100.0	..	
Total number	12,920	9,311	988	..	23,219	
All						
0–91 days	14.1	19.3	8.8	16.1	5,090	
92–183 days	6.2	4.4	4.7	5.4	1,705	
184–274 days	3.8	2.3	3.9	3.1	996	
275–365 days	3.0	1.5	2.6	2.3	740	
<i>Within the year</i>	27.0	27.5	20.1	26.9	8,531	
Within 1–2 years	7.3	3.5	7.4	5.7	1,805	
Not within 2 years	65.7	69.0	72.5	67.4	21,355	
Total	100.0	100.0	100.0	100.0	..	
Total number	16,963	13,438	1,290	..	31,691	

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Note: Table excludes 401 observations where no health conditions were stated.

3.2 Length of stay

RRC is funded to provide short-term assistance. Consequently there are limits on the amount of government subsidised RRC a person can have in a year (usually 63 days in a financial year unless specifically approved for more, see Section 1.1). Overall, more than half (54%) of all residential respite users in the study cohort stayed for 2 weeks or less in their first period of RRC (Table 3.2), and the median length of stay was 14 days for those both with or without dementia. The median length of stay was slightly longer for those recommended to live in residential care than for those recommended to live in the community irrespective of dementia status (Table 3.2). This might reflect the use of respite as a stepping stone into permanent residential care.

Overall, 3% of people who used RRC were in this care for more than 63 days for their first period of use. Note, however, that these stays may have extended across more than one financial year. Of those with dementia, in 3.2% of cases people had more than 63 days of respite care in their first period of use (Table 3.2) compared with 2.7% for those without dementia. Such long periods in RRC were more common among those recommended to live in residential care than among those recommended to live in the community. Together these two patterns mean that people without dementia and recommended to live long term in the community had the smallest proportion with such extended stays (1.8%), while those with dementia and recommended to live in residential care had the highest proportion (4.5%).

Table 3.2: PIAC new-pathways cohort with an approval for residential respite care: length of stay in residential respite care on first use by study group (per cent)

	People with an ACAT approval for RRC						
Length of stay in RRC	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other	Total	Overall percent	Number	
With dementia							
Less than 1 week	11.0	8.8	10.3	9.9	3.1	268	
1–2 weeks	50.5	36.1	51.7	43.8	13.9	1,182	
2–3 weeks	15.9	18.1	10.3	16.7	5.3	452	
3–4 weeks	9.7	10.8	10.3	10.2	3.2	276	
1–2 months	8.9	16.8	9.2	12.6	4.0	341	
2–3 months	3.3	7.7	6.9	5.4	1.7	147	
3 + months	0.8	1.7	1.1	1.2	0.4	33	
63 days or less	98.1	95.5	95.4	96.8	30.6	2,612	
64 days or more	1.9	4.5	4.6	3.2	1.0	87	
Median stay (days)	14	17	14	..	..	14	
Total	100.0	100.0	100.0	100.0	..	..	
Total number	1,347	1,265	87	..	..	2,699	
Without dementia							
Less than 1 week	8.8	8.8	12.8	8.9	6.1	520	
1–2 weeks	51.1	39.3	41.3	45.9	31.4	2,675	
2–3 weeks	17.0	16.0	15.1	16.5	11.3	963	
3–4 weeks	8.7	11.2	10.5	9.8	6.7	571	
1–2 months	10.9	16.4	12.2	13.2	9.0	770	
2–3 months	3.1	6.8	7.0	4.8	3.3	279	
3 + months	0.5	1.4	1.2	0.9	0.6	54	
63 days or less	98.3	96.1	96.5	97.3	66.5	5,676	
64 days or more	1.7	3.9	3.5	2.7	1.8	156	
Median stay (days)	14	15	14	..	..	14	
Total	100.0	100.0	100.0	100.0	..	..	
Total number	3,230	2,430	172	..	..	5,832	
All							
Less than 1 week	9.4	8.8	12.0	9.2	..	788	
1–2 weeks	50.9	38.2	44.8	45.2	..	3,857	
2–3 weeks	16.6	16.7	13.5	16.6	..	1,415	
3–4 weeks	9.0	11.1	10.4	9.9	..	847	
1–2 months	10.3	16.5	11.2	13.0	..	1,111	
2–3 months	3.2	7.1	6.9	5.0	..	426	
3 + months	0.6	1.5	1.2	1.0	..	87	
63 days or less	98.2	95.9	96.1	97.2	..	8,288	
64 days or more	1.8	4.1	3.9	2.8	..	243	
Median stay (days)	14	16	14	..	..	14	
Total	100.0	100.0	100.0	100.0	..	..	
Total number	4,577	3,695	259	..	..	8,531	

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Note: Table excludes 83 observations where no health conditions were stated.

3.3 Program use after reference assessment

This report focuses on those in the new-pathways cohort who were approved for RRC by an ACAT, and who had not used ACAP-dependent programs before this approval. However, people may have already received care through programs which do not require an ACAT approval, in particular through HACC or VHC. Overall, 60% of the people in the study had used HACC or VHC services before their ACAT approval for RRC. The analysis below is based on service use directly after this approval.

Overall, excluding ACAT assessments, RRC (25%) was the most common program to be used first after the reference assessment by our cohort with an approval for RRC. The second most common was permanent residential aged care (23%), with HACC being the third (18%, including both those who are accessing HACC for the first time and those who are re-accessing HACC) (Table 3.3).

Different patterns were observed for the various study groups. Of those recommended to live in the community, the most frequent service used first was RRC, occurring 25% of the time. The second most common service was HACC (22%), with just 12% using permanent residential aged care after the reference assessment.

Of those recommended to live in residential care, the most frequent step to follow was, not unexpectedly, a movement into permanent residential care (for 37% of people). Movement into RRC occurred in one-quarter of cases (Table 3.3).

Table 3.3: PIAC new-pathways cohort with an approval for residential respite care: next program use by study group (per cent)

First program used after reference assessment	People with an ACAT approval for RRC			Total	Number
	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care	Group3: Other		
Permanent RAC	11.8	37.1	12.4	22.5	7,146
RRC	24.7	25.4	17.9	24.7	7,835
Death	8.7	8.9	9.7	8.8	2,801
HACC	22.1	12.1	21.4	17.9	5,659
CACP	14.8	5.8	19.4	11.2	3,537
EACH	0.7	0.4	0.3	0.6	179
Veterans' Home Care	2.5	1.7	2.8	2.2	695
No program use in 2 years	14.6	8.5	16.1	12.1	3,839
Total	100.0	100.0	100.0	100.0	..
Total number	16,963	13,438	1,290	..	31,691

Note: Table excludes 401 observations where no health conditions were stated.

Movement from residential respite care to permanent residential care

Hypothesis 4 and Hypothesis 5 stated in Section 1.1 relate to movements of clients from RRC to permanent residential aged care (RAC). Of our study cohort, just over 8,500 people took up RRC within 12 months of their reference assessment (Table 3.4). Of these, 38% did not subsequently use permanent RAC. However, 30% moved into PRAC within 12 weeks of the start of their period of RRC.

Overall, the movement from RRC to permanent RAC within 12 weeks was more common among those who had dementia than among those who did not (37% versus 27%) (Table 3.4).

In Group 1, that is those recommended to live in the community, 42% used permanent RAC within 1 year of starting RRC, with 21% using permanent RAC within 12 weeks of starting RRC. Despite being recommended to live in the community, 28% of people with dementia were in permanent RAC within 12 weeks of RRC. This compares with only 18% of those without dementia.

Of those recommended to live in residential care, 64% used permanent RAC in the year after entry into RRC, with 41% moving into permanent RAC within 12 weeks (Table 3.4). As for Group 2, a higher proportion of people with dementia were admitted into permanent RAC after RRC than those without dementia (72% versus 60% within a year).

Table 3.4: PIAC new-pathways cohort with an approval for residential respite care: dementia status and time to use of permanent residential aged care (PRAC) after start of use of residential respite care by study group (per cent)

	People with an ACAT approval for RRC				
Time to use of permanent RAC after RRC	Group 1: Recommended to live in the community	Group 2: Recommended to live in residential care ^(a)	Group 3: Other	Total	Number
With dementia					
Less than 4 weeks	9.7	19.6	19.5	14.6	395
Between 4 and 8 weeks	8.7	14.9	5.7	11.5	310
Between 8 and 12 weeks	9.4	11.7	10.3	10.5	284
<i>Used PRAC in 12 weeks</i>	<i>27.8</i>	<i>46.2</i>	<i>35.5</i>	<i>36.6</i>	<i>989</i>
Between 12 and 16 weeks	4.6	5.5	6.9	5.1	137
Between 16 and 20 weeks	2.1	3.9	3.4	3.0	80
Between 20 and 36 weeks	11.8	9.9	5.7	10.7	289
Between 36 and 52 weeks	9.1	6.2	9.2	7.7	209
<i>Within 1 year</i>	<i>55.4</i>	<i>71.7</i>	<i>60.7</i>	<i>63.1</i>	<i>1,704</i>
1 – 2 years	14.7	6.4	14.9	10.8	292
Did not use PRAC in 2 yrs	30.0	22.0	24.1	26.0	703
Total	100.0	100.0	100.0	100.0	..
Total number	1,347	1,265	87	..	2,699
Without dementia					
Less than 4 weeks	6.1	16.1	7.6	10.3	602
Between 4 and 8 weeks	6.2	12.7	9.9	9.0	527
Between 8 and 12 weeks	5.5	9.8	8.7	7.4	432
<i>Used PRAC in 12 weeks</i>	<i>17.8</i>	<i>38.6</i>	<i>26.2</i>	<i>26.7</i>	<i>1,561</i>
Between 12 and 16 weeks	3.1	4.4	1.7	3.6	209
Between 16 and 20 weeks	3.1	3.2	2.9	3.1	182
Between 20 and 36 weeks	7.4	8.6	4.7	7.8	455
Between 36 and 52 weeks	5.1	4.7	5.8	5.0	290
<i>Within 1 year</i>	<i>36.5</i>	<i>59.5</i>	<i>41.3</i>	<i>46.2</i>	<i>2,697</i>
1 – 2 years	12.2	7.7	9.9	10.2	597
Did not use PRAC in 2 yrs	51.3	32.8	48.8	43.5	2,538
Total	100.0	100.0	100.0	100.0	..
Total number	3,230	2,430	172	..	5,832
All					
Less than 4 weeks	7.1	17.3	11.6	11.7	997
Between 4 and 8 weeks	6.9	13.5	8.5	9.8	837
Between 8 and 12 weeks	6.7	10.5	9.3	8.4	716
<i>Used PRAC in 12 weeks</i>	<i>20.7</i>	<i>41.3</i>	<i>29.4</i>	<i>29.9</i>	<i>2,550</i>
Between 12 and 16 weeks	3.5	4.8	3.5	4.1	346
Between 16 and 20 weeks	2.8	3.4	3.1	3.1	262
Between 20 and 36 weeks	8.7	9.0	5.0	8.7	744
Between 36 and 52 weeks	6.3	5.3	6.9	5.8	499
<i>Within 1 year</i>	<i>42.0</i>	<i>63.8</i>	<i>47.9</i>	<i>51.6</i>	<i>4,401</i>
1 – 2 years	12.9	7.3	11.6	10.4	889
Did not use PRAC in 2 yrs	45.1	29.1	40.5	38.0	3,241
Total	100.0	100.0	100.0	100.0	..
Total number	4,577	3,695	259	..	8,531

(a) Residential care includes those recommended to live in residential aged care, hospital or other institutional care. Hospital and other institutional care makes up only 0.1% of this group.

Note: Table excludes 83 observations where no health conditions were stated.

4. Factors affecting take-up of residential respite care

This section focuses on identifying factors affecting the take-up of RRC within 12 months of ACAT approval. Because of their different circumstances, there is an expectation that people recommended to live long term in residential care (Group 2) would have different factors affecting take-up of RRC than those recommended to live long term in the community (Group 1). Hence the analysis has been carried out separately for these two groups.

The following analysis focuses on the first three research questions posed in Section 1:

- Hypothesis 1: That people with dementia would be less likely to take up ACAT recommendations for residential respite care than people without dementia
- Hypothesis 2: That people with dementia who had a carer were more likely to take up respite care recommendations than those without a carer, and that the effect of having a carer on take-up was different for those with and without dementia (that is, there was an interaction effect)
- Hypothesis 3: That people with dementia who were born overseas in non-English speaking countries were less likely to take up respite care recommendations than those born in Australia or in English-speaking countries, and that the effect of English proficiency on take-up was different for those with and without dementia (that is, there was an interaction effect).

These questions are assessed primarily using logistic regression to allow examination of how multiple factors simultaneously affect take-up of respite care. Simple cross tabulations are included to aid the discussion. In the analysis of the tabulations, unless stated otherwise only differences that are statistically significant at the 95% level are discussed.

Using logistic regression models, the probability that a person with certain characteristics would take up RRC can be estimated. An explanation of the logistic regression model, interpretation of results, specifications of the variables included and the final fitted models (including goodness-of-fit statistics) are given in Appendix A. Take-up rates within categories for particular variables included in the model are also given.

The effects of particular variables can be seen by comparing predicted probabilities of taking up RRC for people with different characteristics. Such comparisons are most easily understood in reference to a person with specific characteristics. The probabilities then relate to a person with characteristics the same as those of the reference person except for the difference in the single variable whose effect is being considered. In the discussion of the modelling results for Group 1 and Group 2, the characteristics of the reference person were chosen because within each variable they were the most common category for the people in the group.

Note that in some cases, it is necessary to change more than one characteristic of the reference person in order to make a sensible comparison, for example, in considering the predicted probability of a person who lives alone. Since a person cannot live alone and have a co-resident carer (as in the case for the reference person) both living arrangements and carer status would have to be changed for the comparison to be meaningful.

4.1 Take-up among people recommended to live in the community (Group 1)

A logistic regression model was fitted for people in Group 1 to identify the factors affecting the take-up of RRC within 12 months of ACAT approval for those recommended to live in the community (Model 1).

Results for this model are given in Table A.1 (parameters and one-way take-up rates), Table A.2 (odds ratios) and Table A.3 (goodness-of-fit test). The characteristics of the reference person used when discussing the results for Model 1 are described in Box 4.1.

Someone with the same characteristics as the reference person had a predicted probability of 29% of taking up RRC within 12 months of ACAT approval, compared with the observed rate of 27% across all people in Group 1 (that is, people in the PIAC new-pathways cohort who were approved for RRC and recommended to live in the community).

Results

From Model 1, the most statistically significant predictors of take-up of RRC for those recommended to live in the community included:

- carer status
- priority of assessment (assigned by ACAT)
- having another ACAT assessment within 12 weeks of receiving the initial ACAT approval
- time to death
- usual place of residence (state/territory)
- dementia status.

In this model, time to death can be regarded as controlling for the time available in which a person has the opportunity to take up RRC. Not surprisingly, the earlier clients died after the reference assessment the less likely they were to take up RRC (Table A.2). Almost 7% of Group 1 died within 20 weeks of the end of the reference assessment (Table 2.10).

Box 4. 1: Reference person for comparison for Model 1 (take-up of RRC within 12 months of ACAT approval – recommended to live in the community)

For Model 1 the reference person had the following characteristics at the time of assessment:

- 75–84 years old at completion of ACAT assessment
- Female
- Born in Australia or an EP Group 1 country (see Box 4. 2)
- Not Indigenous
- Usual place of residence in New South Wales
- Usual place of residence in a major city
- Face-to-face contact between client and ACAT member took place in a location other than a hospital, other inpatient setting or residential aged care (that is, generally at home in the community)
- Lives with their family
- Had a partner co-resident carer
- Had no ADL client needs recorded
- In receipt of formal ADL services only
- Reported as in receipt of one government service for community care
- Reported as recommended to receive one government service for community care
- Did not have Neoplasms recorded as a health condition affecting care needs
- Did not have Blood, blood forming organs and immunological disorders recorded as a health condition affecting care needs
- Did not have Mental/behavioural disorders-dementia recorded as a health condition affecting care needs
- Did not have Musculoskeletal system and connective tissue recorded as a health condition affecting care needs
- Professions involved in the assessment included only one broad stated profession
- Priority category of ACAT assessment was more than 14 days
- First ACAT assessment was completed in less than 1 week
- Did not start another ACAT assessment within 12 weeks of ACAT assessment
- Did not die within 1 year of completion of ACAT assessment.

These values were chosen because within each variable they were the most common characteristic of the people in Group 1 thereby providing a useful basis for comparisons in the analysis. Only variables included in the final model are specified for the reference person.

Given that this person has been approved for RRC and recommended to live in the community, the predicted probability of her using RRC within 12 months is 28.7%. Hence, the predicted probability of this person not using RRC in the next 12 months is 71.3%. Details of how to calculate predicted probabilities of take-up of RRC for other combinations of variable values are given in Appendix A.

Factors related to research questions

Dementia

Among people recommended to live in the community, one-third of those with dementia took up respite care within 12 months of their reference assessment compared with only a quarter of those without dementia (Table 4.1). This result is replicated in Model 1, with an estimated odds ratio of 1.3 for people with dementia compared with those without dementia (Table A.2). Looking at predicted probabilities, the reference person with dementia had a 34% probability of take-up compared with 29% when dementia was absent (Table A.2). These results suggest that people with dementia are more likely to take up recommendations for RRC than people without dementia.

Table 4.1: Group 1: dementia status by take-up of residential respite care (per cent)

Dementia status	People with an ACAT approval for RRC		Total	Number
	Did not take up respite within 12 months of ACAT approval	Took up respite within 12 months of ACAT approval		
With dementia	66.7	33.3	100.0	4,043
Without dementia	75.0	25.0	100.0	12,920
Total	73.0	27.0	100.0	..
Total (number)	12,386	4,577	..	16,963

Note: Table excludes 138 observations where no health conditions were stated.

Carer status

Carer versus no carer

Table 4. 2 shows that people without a carer were less likely to take up RRC than those with a carer (21% versus 29%). In terms of probability of take-up of RRC, people without a carer had a relatively low take-up rate, and were less likely to use RRC than a person with a co-resident partner carer (odds ratio 0.63, Table A.2). In particular, our reference person who had a partner co-resident carer had a 29% probability of take-up of RRC. A similar person without a carer had a 20% probability. These results provide evidence that people without a carer are less likely to take up RRC than those with a carer.

Co-resident versus non-resident carer

For those with carers, the residency of the carer is also related to the take-up of RRC. Take-up was more likely among those with a co-resident carer (31%) than those with a non-resident carer (25%) (Table 4.2). The fitted model also suggests that people with a co-resident carer generally had an increased likelihood of taking up RRC than those with a non-resident carer (Table A.2). For example, our reference person who had a co-resident partner carer was more likely to take up RRC (29%) than a similar person with a non-resident daughter carer (23%), non-resident son carer (20%) or other non-resident male carer (21%).

Table 4.2: Group 1: dementia status and carer status by take-up of residential respite care (per cent)

Carer status	People with an ACAT approval for RRC					
	With dementia		Without dementia		All	
	Take-up (%)	Number	Take-up (%)	Number	Take-up (%)	Number
Partner co-resident	35.2	1,788	25.4	3,112	29.0	4,900
Partner non-resident	14.3	14	25.0	24	21.1	38
Daughter co-resident	39.8	497	33.2	1,189	35.2	1,686
Daughter non-resident	28.7	502	25.0	2,047	25.7	2,549
Son co-resident	35.8	187	27.9	530	30.0	717
Son non-resident	28.6	217	21.1	811	22.7	1,028
Other co-resident male	39.7	116	36.7	373	37.4	489
Other non-resident male	23.5	132	25.1	590	24.8	722
Other co-resident female	25.9	27	26.5	102	26.4	129
Other non-resident female	23.5	34	22.8	123	22.9	157
Unknown co-resident	37.6	93	45.2	283	43.4	376
Unknown non-resident	41.9	31	32.2	233	33.3	264
Co-resident carer	36.3	2,708	29.1	5,589	31.4	8,297
Non-resident carer	28.0	930	24.5	3,828	25.2	4,758
Carer	34.2	3,638	27.2	9,417	29.2	13,055
No carer	24.2	244	21.1	2,193	21.4	2,437
Missing	28.0	161	15.4	1,310	16.8	1,471
Total	33.3	4,043	25.0	12,920	27.0	16,963

Note: Table excludes 138 observations where no health conditions were stated.

English proficiency

The problem of finding suitable services is particularly challenging for people from culturally and linguistically diverse backgrounds (House of Representatives Standing Committee on Family Community Housing and Youth 2009). Hence, there is an expectation that people who had dementia and who did not have an English-speaking background would be less likely to take up RRC than a person with dementia and born in Australia or another English-speaking country). In the current analysis the effect of cultural and linguistic diversity on take-up of RRC was examined using English proficiency. The English Proficiency (EP) group classification indicates a migrant's level of EP is based on their country of birth (Box 4.2). Under this classification, people in EP1 are those born in English-speaking countries other than Australia; groups EP2–4 include all others born overseas. In the discussion below, people born in 'English speaking countries' include those born in Australia and EP1 countries.

Overall, people born in EP2–4 countries were less likely than those born in Australia or another English-speaking country to take up RRC (24% versus 28%, Table 4.3). This difference was statistically significant at the 95% level.

The modelling results also indicate that people in the lower proficiency groups were less likely than others to take up RRC, and that the difference was statistically significant (Table A.2). However, the effect was not great, as seen when using our reference person example: a person born in a country in one of the EP2–EP4 groups had a lower predicted probability of take-up (26%) than our reference person born in Australia or other EP1 countries (29%).

Box 4.2: English Proficiency groups

The English Proficiency (EP) groups classification is used to indicate a migrant's level of English proficiency using an English proficiency index, the person's country of birth and the number of that country's immigrants living in Australia (DIMA 2003). The EP index is defined as the percentage of recent immigrants (those entering in the 5 years before the Census) who speak English only or another language and good English. Good English is defined as those who reported at the Census that they spoke 'English Only' or spoke English 'Very Well' or 'Well'. The 2001 English proficiency groups are defined as follows:

EP1 = All countries rating 98.5% or higher with at least 10,000 residents in Australia. This group includes Canada, Ireland, New Zealand, United Kingdom, United States of America, South Africa and Zimbabwe.

EP2 = Countries rating 84.5% or higher on the EP index, other than those in EP1. Common countries of origin in this group include Austria, Germany, India, Indonesia, Sri Lanka, Netherlands and Poland.

EP3 = Countries rating 57.5% to less than 84.5%. Common countries of origin in this group include Croatia, China, Egypt, Greece, Iran, Italy, Japan and South Korea.

EP4 = Countries rating less than 57.5%. Common countries of origin in this group include Vietnam, Turkey and Cambodia.

Source: DIMA 2003, AIHW: Gibson et al. 2001.

Table 4.3: Group 1: dementia status and English proficiency by take-up of residential respite care (per cent)

English proficiency	People with an ACAT approval for RRC					
	With dementia		Without dementia		All	
	Take-up (%)	Number	Take-up (%)	Number	Take-up (%)	Number
Australia/EP1	33.8	3,109	26.0	10,349	27.8	13,458
EP2	34.4	253	24.9	711	27.4	964
EP3	30.2	540	19.7	1,410	22.6	1,950
EP4	28.6	14	25.0	48	25.8	62
EP2–4	31.5	807	21.5	2,169	24.2	2,976
EP unknown	32.3	127	18.4	402	21.7	529
Total	33.3	4,043	25.0	12,920	27.0	16,963

Note: Table excludes 138 observations where no health conditions were stated.

Interaction effects

Dementia and carer status

Several interaction effects with dementia status were tested. In particular, we assessed whether there was a relationship between dementia and carer status in the take-up of RRC. The cross tabulations suggest that for people with dementia those who have a carer are more likely to take up respite than those without a carer (34% versus 24%, Table 4.2). This result is seen across all the informal carer groups, excluding non-resident partner, other non-resident female and male carers. For these groups the differences were not statistically significant possibly due to small group sizes. A similar pattern was seen for those without dementia, although the differences were not as marked. When a dementia-carer status interaction term

was added to the final model it was not statistically significant, indicating that the dementia and carer status effects are independent.

Dementia and English proficiency

The tabulations by dementia status and English proficiency found no statistically significant difference in RRC take-up for people with dementia by EP group using basic cross tabulations but significant differences for people without dementia, suggesting an interaction effect (Table 4.3). However, after controlling for other factors, the modelling showed no interaction effect between dementia status and English proficiency.

Other factors

Priority of assessment

The priority of assessment refers to the duration of time after the initial referral to an ACAT assessment within which the person needs contact of a clinical nature by an ACAT, based on the urgency of the person's need. In the fitted model, the later a person required contact of a clinical nature the less likely they were to take up RRC (Table A.2). For example, our reference person who did not require ACAT contact within 14 days was less likely (29% probability) than a similar person who required assessment within 48 hours (34%) or within 3 to 14 days (33%) to take up RRC.

Having another ACAT assessment within 12 weeks of having the initial ACAT approval

Having another ACAT assessment within 12 weeks of their initial ACAT approval may indicate changing circumstances. Our reference person who did not have another ACAT in this period was much less likely (29%) to take up RRC than a person who had (43%) (Table A.2).

Place of usual residence (state/territory)

The probability of take-up of RRC varied across jurisdictions (Table A.2). For example, our reference person living in New South Wales was more likely to take up RRC (29%) than a similar person living in Victoria (23%) or Western Australia (24%).

Other factors

Further factors associated with a *higher* take-up rate of RRC for those recommended to live in the community were:

- usual residence in an inner or outer regional area
- having had the ACAT assessment in residential aged care
- receiving informal, and not formal, ADL care services
- use of government assistance services at the time of assessment
- the need for assistance with a minimum of two ADLs.

Other factors associated with a *lower* take-up rate of RRC for those recommended to live in the community were:

- having a neoplasm (tumours/cancers)
- having diseases of the blood and blood forming organs and immune mechanism
- having diseases of the musculoskeletal system and connective tissue
- taking more than 1 week to complete an ACAT assessment from the time of referral to the sign-off.

Conclusions

The preceding analysis shows that for people recommended to live in the community:

- Carer status was the most statistically significant predictor of take-up of RRC. The relationships observed in the basic cross tabulations were confirmed in the modelling:
 - A person with a carer was more likely to take up RRC than a person without a carer.
 - A person with a co-resident carer was more likely to take up RRC than a person with a non-resident carer.
- People with dementia were more likely (rather than less likely as posed in Hypothesis 1) than other people to use RRC within 12 months of their reference assessment. This result is supported by the simple tabulations (Table 4. 1) and the logistic modelling results (Table A.2).
- Dementia status and carer status act independently on the probability of take-up of respite care. After specific testing, the logistic model shows no statistically significant interaction, leading to the rejection of Hypothesis 2.
- People who were born in non-English-speaking countries (EP groups 2, 3 and 4) were less likely to take up RRC than people born in Australia or in English-speaking countries (EP group 1). However, no interaction effects between dementia status and EP were found (reject Hypothesis 3).

4.2 Take-up among people recommended to live in residential care (Group 2)

As for people recommended to live in the community, a logistic regression model (Model 2) was fitted to identify the factors affecting the take-up of RRC within 12 months of ACAT approval for those recommended to live in residential care (Group 2). The final fitted models are given in Appendix A.5. Take-up rates within categories for particular variables included in the model are given in Table A.4.

Again the effects of particular variables are seen by comparing predicted probabilities with reference to a person with specific characteristics. The characteristics of the reference person used for the following discussion are described in Box 4.3. Someone with the same characteristics as the reference person in Box 4.3 had a predicted probability of 31% take-up of RRC within 12 months of ACAT approval, compared with the observed take-up rate of 28% across all people in the PIAC new-pathways cohort who had been approved for RRC and recommended to live in residential care.

Results

From Model 2, the most statistically significant predictors of take-up of RRC for those recommended to live in the residential care included:

- time to death
- number of government assistance services received
- usual place of residence (state/territory)
- usual place of residence (remoteness)
- IADL indicator of care source (formal/informal)
- dementia status.

Again, time to death can be regarded as controlling for the time available in which a person has the opportunity to take up RRC. As expected, the odds ratios show that the earlier a person died after their reference assessment the less likely they were to take up RRC (Table A.5).

Box 4.3: Reference person for comparison for Model 2 (take-up of RRC within 12 months of ACAT approval – recommended for residential care)

For Model 2 the reference person has the following characteristics at the time of assessment:

- 75–84 years old at completion of ACAT assessment
- Female
- Usual place of residence in New South Wales
- Usual place of residence in a major city
- Face-to-face contact between client and ACAT member took place in a location other than a hospital, other inpatient setting or residential aged care (that is, generally at home in the community)
- Lives with their family
- Had a partner co-resident carer
- Usual accommodation is private residence-owned / purchasing
- Had no ADL client needs recorded
- In receipt of only formal service IADL services addressing care needs
- Did not have Neoplasms recorded as a health condition affecting care needs
- Did not have Mental/behavioural disorders-dementia recorded as a health condition affecting care needs
- Did not have Mental/behavioural disorders-other recorded as a health condition affecting care needs
- Did not have Musculoskeletal system and connective tissue recorded as a health condition affecting care needs
- Did not have Eye and adnexa problems recorded as a health condition affecting care needs
- Only one health condition was reported as affecting care needs
- Reported as in receipt of one government service for community care
- There was only one broad type of profession involved in the assessment
- Priority category of ACAT assessment was more than 14 days
- First ACAT assessment was completed in less than 1 week
- Did not start another ACAT assessment within 12 weeks
- Did not die within 1 year of completion of ACAT assessment.

These values were chosen because for each variable they were the most common characteristic providing a useful basis for comparisons in the analysis. Only variables included in the final model are specified for the reference person.

Given that this person has been approved for RRC and recommended to live long term in residential care, the predicted probability of her using RRC within 12 months is 31.0%. Hence, the predicted probability of this person not using RRC in the next 12 months is 69.0%. Details of how to calculate predicted probabilities of take-up of RRC for other combinations of variable values are given in Appendix A.

Factors related to research questions

Dementia

As with those recommended to live long term in community care, people recommended to live in residential care with dementia had a higher proportion using respite care (31%) than those without dementia (26%, Table 4.4). This was reflected in Model 2: with an estimated odds ratios of 1.13 for people with dementia compared with those who did not have dementia (Table A.5). However, in practical terms the effect is not large: our reference person with dementia had a 34% probability of take-up compared with 31% for a similar person without dementia (Table A.5). This indicates that people recommended to live in residential care with dementia were more likely to take up recommendations for respite care than people without dementia.

Table 4.4: Group 2: dementia status by take-up of residential respite care (per cent)

Dementia status	People with an ACAT approval for RRC		Total	Number
	Did not take up respite within 12 months of ACAT assessment	Took up respite within 12 months of ACAT assessment		
With dementia	69.3	30.7	100.0	4,127
Without dementia	73.9	26.1	100.0	9,311
Total	72.5	27.5	100.0	..
Total (number)	9,743	3,695	..	13,438

Note: Table excludes 212 observations where no health conditions were stated.

Carer status

Carer versus no carer

Of those recommended to live in residential care, people without a carer were less likely to take up RRC than those with a carer (24% and 29% respectively) (Table 4.5). In terms of probability of take-up of RRC, people without a carer had a relatively low take-up rate compared with a person with a co-resident partner carer (odds ratio 0.76, Table A.5). In particular, our reference person who had a co-resident partner carer had a 31% probability of take-up of RRC while a similar person without a carer had a 26% probability. The results provide evidence that people without a carer were less likely to take up RRC than those with a carer.

Co-resident versus non-resident carer

Unlike those recommended to live in the community, cross tabulations did not show a co-resident/non-resident effect as take-up of respite care was the same for those with a co-resident carer or a non-resident carer (29%, Table 4.5). Such effects were also not evident in Model 2 (Table A.4 and Table A.5).

Table 4.5: Group 2: dementia status and carer status by take-up of residential respite care (per cent)

Carer status	People with an ACAT approval for RRC					
	With dementia		Without dementia		All	
	Take-up (%)	Number	Take-up (%)	Number	Take-up (%)	Number
Partner co-resident	31.2	1,158	22.4	1,404	26.3	2,562
Partner non-resident	9.1	11	33.3	18	24.1	29
Daughter co-resident	37.4	417	31.9	692	34.0	1,109
Daughter non-resident	29.2	664	28.6	1,540	28.8	2,204
Son co-resident	33.3	231	28.7	369	30.5	600
Son non-resident	32.1	271	26.7	688	28.3	959
Other co-resident male	33.3	123	28.6	273	30.1	396
Other non-resident male	31.8	223	26.4	516	28.0	739
Other co-resident female	25.7	35	33.3	75	30.9	110
Other non-resident female	26.7	60	27.8	144	27.5	204
Unknown co-resident	37.2	78	36.5	156	36.8	234
Unknown non-resident	34.2	73	32.9	228	33.2	301
Co-resident carer	33.0	2,042	27.0	2,969	29.4	5,011
Non-resident carer	30.3	1,302	28.1	3,134	28.7	4,436
Carer	31.9	3,344	27.6	6,103	29.1	9,447
No carer	24.7	538	23.8	2,384	24.0	2,922
Missing	26.5	245	22.0	824	23.0	1,069
Total	30.7	4,127	26.1	9,311	27.5	13,438

Note: Table excludes 212 observations where no health conditions were stated.

English proficiency

Overall, there was no statistically significant difference in the take-up of RRC by people born in EP2-4 countries and born in Australia or EP1 countries (25% versus 28%, the difference was not statistically significant at the 95% level, Table 4.6). This result was replicated in the modelling phase where EP was not a statistically significant term when taking into account other factors.

Table 4.6: Group 2: dementia status and English proficiency by take-up of residential respite care (per cent)

English proficiency	People with an ACAT approval for RRC					
	With dementia		Without dementia		All	
	Take-up (%)	Number	Take-up (%)	Number	Take-up (%)	Number
Australia/EP1	31.5	3,259	26.4	7,734	27.9	10,993
EP2	26.3	251	23.9	457	24.7	708
EP3	28.8	469	23.9	811	25.7	1,280
EP4	23.1	13	26.3	38	25.5	51
EP2-4	27.8	733	24.0	1,306	25.4	2,039
EP unknown	24.4	135	26.9	271	26.1	406
Total	31.5	4,127	26.1	9,311	27.5	13,438

Note: Table excludes 212 observations where no health conditions were stated.

Interaction terms

Dementia and carer status

We assessed whether there was any relationship between dementia status and carer status in predicting take-up of RRC, taking into account other main effects. Cross tabulations show that, within dementia status, people with a carer were more likely to take up RRC care than those without a carer. For example, 33% of people with dementia and a co-resident son used RRC compared with 25% of those who did not have a carer (Table 4.5). However, similar effects were also seen for those without dementia. When the interaction term was added to the final model it was not statistically significant, indicating that the dementia status and carer status effects were acting independently.

Dementia and English proficiency

We also assessed if there was an interaction between dementia status and English proficiency in predicting take-up of RRC. Overall, there was less take-up of RRC by those with dementia and born in non-English-speaking countries (28%, Table 4.6), compared with those born in Australia or EP1 countries (32%). Similar differences were also seen for those without dementia. Model 2 provided no evidence of an interaction between dementia status and English proficiency.

Other factors

Number of government services received

The more government services a person was receiving at the time of assessment the more likely they were to take up RRC. Thus our reference person who had one government service for community care was more likely to take up RRC than a similar person who was not receiving any government services (31% compared with 27%). On the other hand, a similar person who was receiving two government services was more likely to take up RRC than a similar person who had only received one government service (43%, Table A.5).

Usual place of residence (state/territory)

State/territory of the usual residence of the person plays a significant role in predicting take-up of RRC for those recommended to live in residential care. For example, our reference person whose usual residence was in New South Wales was more likely to take up RRC (31%) than a similar person who lived in Western Australia (21%), Tasmania (23%) or Victoria (24%) (Table A.5).

Usual place of residence (remoteness)

There was also variation in the take-up of respite across remoteness levels. Our reference person whose usual residence was in a major city was less likely to take up RRC than a similar person who lived in an inner (36%) or outer (40%) regional area (Table A.5).

IADL indicator of care source (formal/informal)

The source of assistance (that is, formal or informal care) that people were receiving appears to affect the likelihood of take-up of respite care. A client like the reference person who had received informal assistance only with IADL services was more likely to take up respite (36%) than a similar person who had used at least one formal IADL service (31%, Table A.5).

Other factors

Other factors associated with a *higher* take-up rate of RRC for those recommended to live in residential care were:

- the presence of up to three ADL care needs
- having had other mental and behavioural disorders
- having had another ACAT assessment within 12 weeks of their reference assessment.

Further factors associated with a *lower* take-up rate of RRC for those recommended to live in residential care were:

- having had a neoplasm (tumours/cancers)
- having had an eye or adnexa condition
- having had diseases of the musculoskeletal system and connective tissue
- having had the ACAT assessment in a hospital (acute or non-acute care)
- taking more than 1 week to complete an ACAT assessment, from the time of referral to the sign-off.

Conclusions

The preceding analysis shows that for people recommended to live in residential care:

- Carer status was a statistically significant predictor of take-up of RRC:
 - A person with a carer was more likely to take up RRC than a person without a carer.
 - Unlike those recommended to live in the community, a person with a co-resident carer was *not* more likely to take up RRC than a person with a non-resident carer.
- People with dementia were more likely than other people to use RRC within 12 months of their reference assessment (although Hypothesis 1 proposed that people with dementia would be less likely). This result is supported by both the tabulations (Table 4.4) and the logistic modelling results.
- Dementia status and carer status act independently on the probability of take-up of respite care. After specific testing, the logistic model shows no statistically significant interaction, leading to the rejection of Hypothesis 2.
- The tabulations suggested that there was no statistically significant difference in the take-up of RRC for people born in EP2–4 countries and English-speaking countries. Specific testing of dementia status and English proficiency interaction terms indicated that any effects were not statistically significant. As a result, we reject Hypothesis 3.

5. Factors affecting admission into permanent residential care

In section 3.3 the extent of use of permanent residential aged care after using RRC was examined across the study groups (Table 3.4). This section focuses on identifying factors associated with admission into permanent residential aged care within 12 weeks of starting RRC for those recommended to live in the community. A similar analysis was not carried out for those recommended to live permanently in residential aged care as RRC can be used as an interim arrangement for this group: among this group, 41% of those who used RRC moved into permanent care within 12 weeks of starting the period of respite care (Table 3.4).

The following analysis of subsequent use of permanent residential aged care focuses on two propositions:

- Hypothesis 4: That people with dementia were more likely to move from respite care to permanent residential care within 12 weeks of admission than people without dementia
- Hypothesis 5: That people with dementia who did not have a carer were more likely to move from respite care to permanent residential care within 12 weeks of admission than those with a carer, and that the effect of having a carer on movement into permanent residential aged care was different for those with and without dementia (that is, there was an interaction effect).

As when looking at take-up of RRC, these questions are examined using cross tabulations and logistic regression. The analysis included around 4,600 people who were recommended to live in the community, had an approval for RRC and who had used RRC within 12 months (i.e. Group 1a in Figure 1.1).

5.1 Analysis

A logistic regression model was again fitted to identify the factors affecting the likelihood of admission into permanent residential aged care within 12 weeks of starting RRC for those recommended to live in the community (Model 3 fitted to Group 1a). Specifications of the variables used in Model 3 are listed in Appendix A, with the final fitted model given in Tables A.7 to A.9. Admission rates within categories for particular variables included in the model are included in Table A.7.

As with the earlier analyses, the effects of particular variables are examined by comparing predicted probabilities of subsequent admission into permanent RAC within 12 weeks of start of RRC with reference to a person with specific characteristics. The characteristics of the reference person used for the following discussion are described in Box 5.1. Someone with the same characteristics as this reference person had a predicted probability of 11% of admission into permanent RAC within 12 weeks of starting RRC, compared with the overall observed rate of 23% for Group 1a.

Box 5.1: Reference person for comparison for Model 3 (movement into permanent RAC within 12 weeks of take-up of RRC – recommended to live in the community)

For Model 3 the reference person has the following characteristics at the time of assessment:

- 75–84 years old at completion of ACAT assessment
- Female
- Had a co-resident spouse/partner carer
- Did not have Mental/behavioural disorders-dementia recorded as a health condition affecting care needs
- Did not have Musculoskeletal system and connective tissue recorded as a health condition affecting care needs
- Did not have Circulatory system – Cerebrovascular recorded as a health condition affecting care needs
- Did not have Skin and subcutaneous tissue problems recorded as a health condition affecting care needs
- Did not have Symptoms, signs and abnormal findings recorded as a health condition affecting care needs
- Did not have approval for permanent residential care and did not have an assessment between their reference approval and take-up of RRC
- Did not die within 1 year of completion of ACAT assessment.

These values were chosen because for each variable they were the most common characteristic of people in the group, providing a useful basis for comparisons in the analysis. Only variables included in the final model are specified for the reference person.

Given that this person has had an ACAT approval and has taken up RRC, the predicted probability of them using permanent residential aged care is 11.0%. Hence, the predicted probability of this person not using permanent residential aged care within 12 weeks of starting RRC is 89.0%. Details of how to calculate predicted probabilities for other combinations of variable values are given in Appendix A.

Results

When fitting Model 3, the most statistically significant predictors of admission into permanent residential aged care within 12 weeks of starting RRC for those recommended to live in the community included:

- whether the person had been approved for permanent residential aged care at their first assessment, and had an additional assessment before taking up RRC
- dementia status
- carer status
- time to death (again acting as a control variable)
- diseases of the musculoskeletal system and connective tissue.

Factors related to research questions

Dementia

Overall for people recommended to live long term in the community with dementia a higher proportion was admitted into permanent residential care within 12 weeks of starting RRC (30%) than of those without dementia (20%) (Table 5.1). Model 3 also found that people with dementia were more likely to be admitted into permanent residential aged care within 12 weeks of starting RRC than those who did not have dementia (odds ratio of 1.83, Table A.8). Our reference person with dementia had a 19% probability of take-up compared with 11% when dementia was absent (Table A.8). Therefore people with dementia were more likely to move from respite care to permanent residential care within 12 weeks of admission than people without dementia.

Table 5.1: Group 1a: dementia status by admission into permanent RAC (per cent)

Dementia status	People with an ACAT approval for RRC		Total	Number
	Not admitted into permanent RAC within 12 weeks of starting RRC	Admission into permanent RAC within 12 weeks of starting RRC		
With dementia	69.9	30.1	100.0	1,347
Without dementia	80.1	19.9	100.0	3,230
Total	77.1	22.9	100.0	..
Total (number)	3,529	1,048	..	4,577

Note: Table excludes 44 observations where no health conditions were stated.

Carer status

Overall, similar proportions of those with and without a carer were admitted into permanent residential aged care within 12 weeks of starting RRC (23% and 24% respectively) (Table 5.2). However, the tabular results suggest that carer availability and residency should be considered together. For example, those without a carer were more likely (24%) to be admitted into permanent residential aged care than those with a co-resident carer (19%) and less likely than those with a non-resident carer (31%, Table 5.2). Results from Model 3 supported this finding (Table A.8). For example, our reference person who had a partner co-resident carer was less likely to take up RRC (11%) than a similar person without a carer (16%) and less likely than a person with a non-resident daughter carer (18%) or non-resident son carer (22%).

These results indicate that a person without a carer was more likely to be admitted into permanent residential aged care than a person with a co-resident carer and less likely than a person with a non-resident carer.

Table 5.2: Group 1a: dementia status and carer status by admission into permanent RAC (per cent)

Carer status	People with an ACAT approval for RRC					
	With dementia		Without dementia		All	
	Admission (%)	Number	Admission (%)	Number	Admission (%)	Number
Partner co-resident	27.9	630	14.7	791	20.5	1,421
Partner non-resident	50.0	<8	33.3	<8	37.5	8
Daughter co-resident	19.7	198	12.9	395	15.2	593
Daughter non-resident	43.1	144	26.4	511	30.1	655
Son co-resident	25.4	67	15.5	148	18.6	215
Son non-resident	51.6	62	31.6	171	36.9	233
Other co-resident male	30.4	46	12.4	137	16.9	183
Other non-resident male	29.0	31	25.7	148	26.3	179
Other co-resident female	57.1	7	14.8	27	23.5	34
Other non-resident female	25.0	8	25.0	28	25.0	36
Unknown co-resident	28.6	35	15.6	128	18.4	163
Unknown non-resident	46.2	13	26.7	75	29.5	88
<i>Co-resident carer</i>	26.4	983	14.2	1,626	18.8	2,609
<i>Non-resident carer</i>	43.1	260	27.3	939	30.7	1,199
<i>Carer</i>	29.9	1,347	19.0	2,565	22.6	3,808
<i>No carer</i>	35.6	59	22.7	463	24.1	522
<i>Missing</i>	28.9	45	24.8	202	25.5	247
Total	30.1	..	19.9	..	22.9	..
Total (number)	..	1,347	..	3,230	..	4,577

Note: Table excludes 44 observations where no health conditions were stated.

Interaction terms

Dementia and carer status

Within dementia status, the apparent difference in the admission rate into permanent residential aged care for those with and without a carer was not statistically significant (30% and 36% respectively). However, again a significant carer availability and residency effect was seen: 36% of people with dementia and without a carer used permanent residential care within 12 weeks of starting RRC, compared with 26% among those who had a co-resident carer and 43% of those who had a non-resident carer (Table 5.2). A similar pattern (but at a less dramatic level) was also seen for people without dementia. When the dementia-carer status interaction term was added to Model 3 it was not statistically significant.

Other factors

Whether the person had been approved for permanent residential aged care at their first assessment and had a further assessment before taking up residential respite care

For those recommended to live in the community, approval for permanent residential care in conjunction with whether the person had another ACAT assessment in between their reference assessment and take-up of respite was the most significant predictor of moving into permanent RAC within 12 weeks of taking up RRC. A person who had no initial approval for permanent residential care and had another assessment before taking up RRC was much more likely to move into permanent RAC than a person who had no approval for residential care at their reference assessment and no re-assessment before taking up RRC

(odds ratio of 3.7, Table A.8). This result suggests that a change in the client's circumstances within a short period (e.g. changes in carer availability or health status) may have resulted in them having another ACAT assessment and then moving into permanent residential care.

Diseases of the Musculoskeletal system

People who had a musculoskeletal condition recorded as affecting care needs had a statistically lower chance of being admitted into permanent residential care within 12 weeks of taking up RRC than those who did not (9% compared with 11% for our reference person, Table A.8).

Other factors

Further factors associated with a *higher* admission rate into permanent residential aged care within 12 weeks of starting RRC were:

- having had diseases of the skin and subcutaneous tissue
- having had symptoms, signs and abnormal findings (this includes falls, abnormalities of gait and mobility).

A person who had diseases of the circulatory system (cerebrovascular) had a *lower* admission rate into permanent residential aged care within 12 weeks of starting RRC.

Conclusions

The above analysis shows that, for people recommended to live in community:

- Whether the person had been approved for permanent residential aged care at their reference assessment and whether they had a further assessment before taking up RRC was a key predictor of admission into permanent residential aged care. Results suggest that the move may have been caused by a change in the client's circumstances.
- Both the tabulations and Model 3 provide evidence that people with dementia were more likely than other people to be admitted into permanent residential care within 12 weeks of entering RRC (Hypothesis 4).
- Tabulations and Model 3 suggested that carer availability and residency should be considered together in predicting a move into permanent RAC. More precisely, a person without a carer was more likely to be admitted than a person with a co-resident carer and less likely than a person with a non-resident carer. Interaction effects between carer status and dementia status were not statistically significant in Model 3, suggesting that these two factors are independent. Hypothesis 5 is accepted to the extent that carer availability and residency did affect the likelihood of entering permanent RAC within 12 weeks of respite admission. However, this effect did not vary with dementia status.

Appendix A: Logistic regression models and results

Logistic regression was used to determine which personal characteristics and ACAT assessment information were important in predicting the take-up of RRC and subsequent admission to permanent residential aged care. In particular we were interested in modelling the probability of:

- Model 1: Take-up of RRC within 12 months of ACAT approval when recommended to live in the community (modelling using cohort Group 1)
- Model 2: Take-up of RRC within 12 months of ACAT approval when recommended to live in residential care (modelling using cohort Group 2)
- Model 3: Movement into permanent RAC within 12 weeks of take-up of RRC when recommend to live in the community at the time of the reference ACAT assessment (modelling using cohort Group 1a) (see Figure 1. 1).

Models 1, 2 and 3 all included the variables listed below in the model fitting process. All items were based on status of the reference assessment, where the reference assessment used in the analysis was the first completed ACAT assessment in 2003–04 with an approval for RRC.

- Age at completion of reference assessment
- Sex
- Indigenous status
- State/territory of usual residence
- Remoteness of usual residence
- English proficiency group, based on country of birth
- Presence of dementia as a health condition affecting care needs
- Presence of other health conditions affecting care needs (20 condition groups considered separately)
- Number of health conditions affecting care needs
- Carer characteristics (availability, relationship and sex)
- Usual accommodation setting
- Living arrangements
- Count of care needs requiring assistance (ADL and IADL separately)
- ADL and IADL indicators of formal/informal care use at assessment
- Time to death after the reference assessment
- Start of a second ACAT assessment within 12 weeks of the end of the reference assessment
- Length of time taken to complete the ACAT assessment from the time of referral to sign-off
- Assessment priority category

- Where face-to-face contact between the client and the ACAT took place
- Number of community care government services received
- Number of community care government services recommended
- Number of profession groups involved in the assessment (number of professions, number of medicos, health professionals and social welfare professionals).

A further variable was used in Model 3 to provide an indicator of change of circumstances:

- Whether the client had another ACAT assessment between their reference assessment and take-up of respite combined with level of approval (high, low, none) for permanent residential aged care at their first assessment.

To ensure that the effects of age and sex were controlled for, these variables were included in all models, even where not statistically significant. A variable for time to death was also included to control for the fact that some people had only a limited time before death in which to take up care.

It should be noted that there may be other factors associated with the take-up of care for which we did not have information and so could not include in the models. Further, it is not possible to infer causation from the results of the regression model; this can only be done on the basis of other knowledge.

For all models, forwards stepwise logistic regression was used. In this approach, variables are added one at a time in order of explanatory power. As variables are added, others already in the model may become less significant due to relationships between the explanatory variables. Sometimes this results in variables being dropped from the model. A significance level of 5% was used to determine inclusion or exclusion of variables. Consequently, only variables for which the statistical test had a p-value of less than 5% were included in the model.

Results for these models are presented in Tables A.1 to A.9 below. A brief technical discussion of logistic regression and interpretation of results is given below.

A.1 The model

The logistic regression model is expressed as an equation that estimates the probability of the event of interest and is of the form:

$$\text{logit}(p) = \boldsymbol{\beta}^T \mathbf{x},$$

$$\text{where } \text{logit}(p) = \ln\left(\frac{p}{1-p}\right);$$

p = probability of observing the event of interest (entering RRC for Models 1 and 2 and entering permanent RAC for Model 3)

$\boldsymbol{\beta}$ is the vector of m parameter coefficients (one coefficient for each level of each categorical variable, one for each continuous variable and one for the intercept, minus the number of categorical variables)

$\mathbf{x}$ is the vector of covariates.

The regression analysis provides estimates of the effects of each of the variables included in the model while controlling for the effects of the other variables included in the model.

Testing model assumptions

In constructing the variables to use in the analysis, particular modelling assumptions were taken into account. For example, logistic regression assumes independence between the explanatory variables (Dobson 2002). If this does not exist, small changes to the data or the model may cause large changes to the coefficients. Many of the variables collected on the ACAP forms are highly correlated, for example, care needs and care recommendations. Hence, when deriving a list of items to model, correlations between explanatory variables were examined.

For example, in the derivation of client need (ADL and IADL scores) using Q23 of the 2003–04 ACAP form, there was an expectation that these scores would be highly correlated with the ADL and IADL scores relating to use or provision of services to meet these needs (Q24 of the 2003–04 ACAP form). This was proven to be the case, with a Spearman's rho correlation score greater than 0.8 in each of the three PIAC cohort groups being used for modelling. Hence, it was decided to use the client's need scores only (ADL and IADL), and to derive a data item based on the source of current care (formal/informal use), rather than completely dismiss the data on care provision.

Model checking

Most of the tests for goodness-of-fit of a model are carried out by analysing residuals. However, such an approach is not feasible for a binary outcome as we have here (took up care or did not take up care). Hosmer and Lemeshow proposed a test statistic for this situation that they demonstrated, through simulation, is distributed as a Chi-square with degrees of freedom ($n - 2$) where n is the number of groups (Hosmer & Lemeshow 1989). The null hypothesis of this test is that the model fits the data, and the alternative is the model does not fit the data. The statistic is derived by partitioning the model population into 10 equal sized groups based on order of predicted probabilities from lowest to highest. For each group the observed and expected number of events is determined and compared. If the model explains the data well, the Hosmer-Lemeshow goodness-of-fit statistic will be small providing evidence for the null hypothesis. The Hosmer and Lemeshow goodness-of-fit statistic is presented for each fitted model in Appendix A.

A.2 Predicted probabilities

The predicted probability of the event occurring can be calculated for a person with a particular set of characteristics by using the parameter estimates obtained from the logistic regression model in the equation

$$p[\text{Event}|\mathbf{x}=\mathbf{Z}] = \frac{\exp\left[\sum_{k=1}^m \beta_k \mathbf{Z}_k\right]}{1 + \exp\left[\sum_{k=1}^m \beta_k \mathbf{Z}_k\right]},$$

where p = probability of observing the event of interest

β is the vector of m estimated parameter coefficients

$\mathbf{Z}$ is the vector of covariate values for the person of interest.

The following example demonstrates how to calculate the predicted probability of a person taking up RRC within 12 months of ACAT approval using the parameter estimates from Model 1 in Table A.1. Suppose we wish to calculate the predicted probability for a person (Mary, say) with the following personal and ACAT assessment characteristics:

- 75–84 years old at completion of ACAT assessment
- Female
- Born in an English proficiency group 2 country
- Not indigenous
- Usual residence in Victoria
- Usual place of residence in an Inner regional area
- Face-to-face contact between client and ACAT took place at home (other)
- Lived with her family
- Had a co-resident partner carer: Mary's husband
- In receipt of formal ADL services only addressing care needs
- Receiving no government service for community care
- Recommended to be in receipt of no government service for community care
- Neoplasms were not recorded as a health condition (main or other) affecting care needs
- Blood disorders were not recorded as a health condition (main or other) affecting care needs
- Dementia was not recorded as a health condition (main or other) affecting care needs
- Musculoskeletal conditions were not recorded as a health condition (main or other) affecting care needs
- Two broad profession groups were involved in the assessment
- Priority category of ACAT assessment was non-urgent (i.e. could be commenced in more than 14 days)
- Time from referral date to finish of ACAT assessment was between 1 and 4 weeks
- Did not start a further ACAT assessment within 12 weeks of the start of reference assessment

- Had two ADL care needs
- Did not die within the next 12 months.

To calculate the predicted probability we use the relevant parameter estimates (Table A.1) and enter them into the above equation. Note that the intercept estimate must also be included. Variables whose value is the reference group in the model fitting process have a parameter value equal to 0. If the parameter estimate for a variable is not significantly different to the reference group then the parameter is set to 0.

The equation above then becomes

$$\begin{aligned}
 & p[\text{Mary using RRC within 12 months of her reference assessment}] \\
 &= \frac{\exp(-0.91+0+0-0.15+0-0.29+0.24+0+0+0+0-0.22+0.21+0+0+0+0+0-0.24+0+0.16+0)}{1+\exp(-0.91+0+0-0.15+0-0.29+0.24+0+0+0+0-0.22+0.21+0+0+0+0+0-0.24+0+0.16+0)} \\
 &= \frac{\exp(-1.20)}{1+\exp(-1.20)} = \frac{0.30}{1.30} = 0.23.
 \end{aligned}$$

Therefore, a person like Mary with the above personal and ACAT assessment characteristics had a 23% predicted probability of using RRC within 12 months of ACAT approval. Consequently, she had a 77% predicted probability of not using RRC within 12 months of ACAT approval. This means that Mary's odds of take-up of respite within 12 months of ACAT approval are 0.30 (0.23/0.77). Predicted probabilities for any other set of covariate values can be calculated in a similar manner.

A.3 Odds ratios

Odds ratios are a commonly presented result from logistic regression. They are calculated for each variable in the logistic regression models (Table A.2, Table A.5 and Table A.8). The odds ratio is a relative measure which compares the odds of people in a particular group (e.g. men) experiencing an event (e.g. take-up of RRC), with the odds of people in another group (e.g. women) experiencing the same event. The odds of an event occurring are defined as:

$$\text{Odds} = \frac{\text{Probability of event occurring}}{\text{Probability of event not occurring}} = \frac{p}{1-p}$$

The odds ratio is then defined as:

$$\text{Odds ratio} = \frac{\text{Odds for people in group 2}}{\text{Odds for people in group 1}}$$

with group 1 being the reference group.

An odds ratio of 1 means that the odds of the event occurring is equal in both groups. An odds ratio of greater than 1 means that the odds of the event occurring is higher for people in group 2 than in group 1. Conversely, an odds ratio of less than 1 means that odds of the event occurring is less for people in group 2 than in group 1. More specifically, an odds ratio of 1.3 means that the odds for people in group 2 are 30% higher than the odds for people in group 1. An odds ratio of 0.6 means that the odds for people in group 2 are 40% lower than the odds for people in group 1.

If the probability of the event happening is small, say less than 10%, the odds ratio is approximately equal to the relative risk. That is, an odds ratio of 1.25 can be interpreted as

meaning that the probability of the event occurring for people in group 2 is 25% more than the probability of the event occurring for people in group 1.

In logistic regression, we obtain the odds ratio for a variable relative to the reference group, controlling for the presence of all other variables. For example, people who have dementia have an odds ratio of using RRC within 12 months of their reference assessment of 1.30 compared with people who live with their family (Table A.2). This means that the odds of RRC take-up within 12 months of their reference assessment for people who have dementia are 30% higher than the odds for people who do not have dementia.

A.4 Model 1: factors affecting take-up of residential respite care recommended to live in the community

Table A.1: Model 1 logistic regression results: parameter estimates and take-up rates

Variable(a)	Level	Order of entry into model	Parameter estimates (95% confidence interval)		Observed frequency	Observed take-up (%)
Intercept			-0.91 ***	(-1.16– -0.66)	16,963	27.0
Age	75–84 years (reference)	†	0.00	..	7,957	25.9
	0–44 years		0.53	(-0.05–1.11)	53	47.2
	45–64 years		0.13	(-0.06–0.31)	651	31.2
	65–74 years		0.01	(-0.10–0.12)	2,326	26.8
	85–94 years		0.10 *	(0.01–0.18)	5,622	28.0
	95–99 years		-0.03	(-0.31–0.24)	301	25.9
	100 years and over		-0.15	(-0.83–0.47)	53	24.5
Sex	Female (reference)	15	0.00	..	10,617	26.1
	Male		0.14 ***	(0.06– 0.22)	6,337	28.5
	Missing		0.40	(-1.19–1.77)	9	33.3
EP group	Australia/EP 1 (reference)	16	0.00	..	13,458	27.8
	EP groups 2–4		-0.15 **	(-0.25– -0.05)	2,976	24.2
	EP group unknown		-0.20	(-0.42–0.02)	529	21.7
Indigenous status	Non-Indigenous (reference)	20	0.00	..	16,432	27.1
	Indigenous		-0.44 *	(-0.87– - 0.03)	166	24.7
	Missing		-0.19	(-0.46–0.07)	365	22.5
State/territory of usual residence	New South Wales (reference)	4	0.00	..	4,403	30.6
	Victoria		-0.29 ***	(-0.38– - 0.20)	9,206	25.0
	Western Australia		-0.24 **	(-0.41– - 0.08)	1,012	31.0
	Tasmania		0.05	(-0.13–0.23)	1,110	36.9
	Australian Capital Territory		-0.42	(-0.99–0.19)	1,085	14.5
	Northern Territory		-0.11	(-0.56–0.33)	147	32.7
Remoteness	Major city	7	0.00	..	12,295	24.6
	Inner regional		0.24 ***	(0.13–0.35)	3,344	32.9
	Outer regional		0.32 ***	(0.15–0.49)	908	37.3
	Remote / Very remote		0.03	(-0.41–0.45)	174	30.5
	Missing		0.02	(-0.30–0.32)	242	25.2
Where the face-to-face contact between client and ACAT team member took place	Other (reference)	10	0.00	..	14,806	26.2
	Hospital (acute care)		0.12	(-0.03–0.27)	1,376	34.4
	Hospital (non-acute care)		-0.24 *	(-0.46– -0.01)	598	25.6
	Residential aged care service		0.83 ***	(0.49–1.17)	158	46.8
	Not stated/inadequately		-0.60	(-1.73–0.34)	25	20.0
Living arrangements	Lives with family (reference)	13	0.00	..	9,519	29.5
	Lives alone		0.39 ***	(0.23–0.54)	5,898	25.4
	Lives with others		0.12	(-0.19–0.42)	265	27.5
	Missing		0.28	(-0.17–0.71)	1,243	15.8
	Not applicable		-0.54	(-1.64–0.36)	38	13.2

(continued)

Table A.1 (continued): Model 1 logistic regression results: parameter estimates and take-up rates

Variable(a)	Level	Order of entry into model	Parameter estimates (95% confidence interval)		Observed frequency	Observed take-up (%)
Carer status	Partner co-resident (reference)	1	0.00	..	4,900	29.0
	Partner non-resident		-0.62	(-1.49–0.14)	38	21.1
	Daughter co-resident		0.42 ***	(0.29–0.55)	1,686	35.2
	Daughter non-resident		-0.28 **	(-0.45– -0.10)	2,549	25.7
	Son co-resident		0.19 *	(0.01–0.37)	717	30.0
	Son non-resident		-0.48 ***	(-0.69– -0.26)	1,028	22.7
	Other co-resident male		0.44 ***	(0.23–0.65)	489	37.4
	Other non-resident male		-0.43 ***	(-0.66– -0.19)	722	24.8
	Other co-resident female		-0.03	(-0.47–0.38)	129	26.4
	Other non-resident female		-0.52 *	(-0.94– -0.11)	157	22.9
	Unknown co-resident		0.64 ***	(0.40–0.88)	376	43.4
	Unknown non-resident		0.00	(-0.32–0.32)	264	33.3
	No carer		-0.46 ***	(-0.64– -0.29)	2,437	21.4
	Missing		-0.40 **	(-0.70– -0.11)	1,471	16.8
ADL indicator of formal / informal care use	Formal only (reference)	8	0.00	..	2,140	25.0
	None		-0.08	(-0.23–0.08)	4,605	21.0
	Both		-0.04	(-0.17–0.10)	3,885	28.9
	Informal only		0.21 ***	(0.08–0.33)	5,955	30.9
	Unable to be determined		0.12	(-0.16–0.40)	340	31.8
Number of government assistance services received	One (reference)	9	0.00	..	8,454	27.5
	None		-0.22 ***	(-0.31– -0.13)	5,275	27.0
	Two		0.21 **	(0.07–0.34)	1,313	32.4
	Three plus		0.62 ***	(0.26–0.98)	144	43.8
	Unable to be determined		-0.14	(-0.34–0.06)	1,739	19.4
Number of government services recommended to receive	One (reference)	11	0.00	..	8,959	26.2
	None		0.21 **	(0.07–0.34)	1,502	27.8
	Two		0.00	(-0.09–0.09)	4,434	27.1
	Three plus		-0.10	(-0.23–0.03)	1,636	27.8
	Unable to be determined		0.51 ***	(0.29–0.73)	432	37.5
<i>Health conditions</i>						
Neoplasms	No (reference)	14	0.00	..	15,076	27.5
	Yes		-0.23 ***	(-0.35– -0.11)	1,887	22.7
Blood	No (reference)	18	0.00	..	16,332	27.2
	Yes		-0.24 *	(-0.44– -0.05)	631	22.2
Dementia	No (reference)	5	0.00	..	12,920	25.0
	Yes		0.25 ***	(0.17–0.34)	4,043	33.3
Musculoskeletal	No (reference)	12	0.00	..	9,402	28.6
	Yes		-0.16 ***	(-0.24– -0.09)	7,561	25.0

(continued)

Table A.1 (continued): Model 1 logistic regression results: parameter estimates and take-up rates

Variable(a)	Level	Order of entry into model	Parameter estimates (95% confidence interval)		Observed frequency	Observed take-up (%)
Number of profession groups involved in the assessment	One (reference)	17	0.00	..	8,369	25.6
	None		0.01	(-0.13–0.15)	1,340	29.9
	Two		0.01	(-0.08–0.10)	4,205	27.3
	Three		0.22 ***	(0.09–0.34)	1,628	31.3
	Four		-0.02	(-0.18–0.14)	1,421	26.0
Priority category ACAT assessment	More than 14 days	2	0.00	..	9,567	23.1
	Within 48 hours		0.24 **	(0.07–0.40)	1,013	33.7
	Between 3 and 14 days		0.20 ***	(0.11–0.28)	6,303	31.8
	Not stated/inadequately		0.13	(-0.42–0.64)	80	26.3
Weeks taken to complete first ACAT assessment (from the time of referral to the sign-off)	Less than 1 week (reference)	6	0.00	..	2,906	34.8
	1–<4 weeks		-0.24 ***	(-0.35– -0.13)	7,254	28.0
	4–<8 weeks		-0.43 ***	(-0.56– -0.30)	3,838	22.4
	8–<12 weeks		-0.47 ***	(-0.64– -0.31)	1,492	22.1
	12–15 weeks		-0.43 ***	(-0.61– -0.24)	1,093	22.3
	More than 15 weeks		-0.32 *	(-0.58– -0.06)	380	27.6
Additional ACAT before take-up	No (reference)	3	0.00	..	15,811	25.9
	Yes		0.64 ***	(0.50–0.77)	1,152	41.8
Count of ADL care needs	None (reference)	19	0.00	..	2,937	20.7
	One		0.02	(-0.13–0.17)	4,116	25.7
	Two		0.16 *	(0.00–0.32)	3,874	30.4
	Three		0.17 *	(0.01–0.35)	2,657	31.3
	Four		0.25 **	(0.06–0.43)	1,614	33.0
	Five		0.14	(-0.10–0.37)	595	31.9
	Unable to be determined		0.02	(-0.59–0.60)	1,170	15.3
	Did not die within 12 months		0.00	..	14,502	27.5
Time from ACAT assessment to death	Less than 4 weeks	†	-2.11 ***	(-2.83– -1.52)	180	5.6
	Between 4 and 8 weeks		-1.34 ***	(-1.76– -0.96)	246	12.2
	Between 8 and 12 weeks		-0.66 ***	(-1.00– -0.33)	233	20.6
	Between 12 and 16 weeks		-0.66 ***	(-1.02– -0.33)	213	21.6
	Between 16 and 20 weeks		-0.54 **	(-0.90– -0.19)	197	22.3
	Between 20 and 36 weeks		-0.26 **	(-0.43– -0.08)	732	26.5
	Between 36 and 52 weeks		0.10	(-0.08–0.28)	660	31.8

* Statistically significantly different from reference group at 5% level.

** Statistically significantly different from reference group at 1% level.

*** Statistically significantly different from reference group at 0.1% level.

.. Not applicable to the model (i.e. reference category).

† Variable included as control only.

Table A.2: Model 1 logistic regression results: estimates of odds ratios and predicted probabilities

Variable	Level	Odds ratios (95% confidence interval)		Predicted probability ^(a)	Observed frequency
Age	75–84 years (reference)	1.00	..	28.7	7,957
	0–44 years	1.70	(0.96–3.03)	[‡] 28.7	53
	45–64 years	1.14	(0.95–1.37)	[‡] 28.7	651
	65–74 years	1.01	(0.91–1.13)	[‡] 28.7	2,326
	85–94 years	1.10	* (1.01–1.09)	30.6	5,622
	95–99 years	0.97	(0.74–1.27)	[‡] 28.7	301
	100 years and over	0.86	(0.45–1.64)	[‡] 28.7	53
Sex	Female (reference)	1.00	..	28.7	10,617
	Male	1.15	*** (1.06–1.25)	31.6	6,337
	Missing	1.49	(0.36–6.20)	[‡] 28.7	9
EP group	Australia/EP 1 (reference)	1.00	..	28.7	13,458
	EP groups 2–4	0.86	** (0.78–0.95)	25.6	
	EP group unknown	0.82	(0.66–1.03)	[‡] 28.7	529
Indigenous status	Non-Indigenous (reference)	1.00	..	28.7	16,432
	Indigenous	0.65	* (0.43–0.98)	20.6	166
	Missing	0.83	(0.63–1.08)	[‡] 28.7	365
State/territory of usual residence	New South Wales	1.00	..	28.7	4,403
	Victoria	0.75	*** (0.69–0.82)	23.2	9,206
	Western Australia	0.78	** (0.67–0.92)	23.9	1,012
	Tasmania	1.05	(0.88–1.26)	[‡] 28.7	1,110
	Australian Capital Territory	0.66	(0.37–1.19)	[‡] 28.7	1,085
	Northern Territory	0.90	(0.57–1.40)	[‡] 28.7	147
	Missing				
Remoteness	Major city	1.00	..	28.7	12,295
	Inner regional	1.27	*** (1.13–1.42)	33.7	3,344
	Outer regional	1.37	*** (1.16–1.63)	35.6	908
	Remote / Very remote	1.03	(0.67–1.57)	[‡] 28.7	174
	Missing	1.02	(0.75–1.39)	[‡] 28.7	242
Where the face-to-face contact between client and ACAT team member took place	Other (reference)	1.00	..	28.7	14,806
	Hospital (acute care)	1.13	(0.98–1.31)	[‡] 28.7	1,376
	Hospital (non-acute care)	0.79	* (0.63–0.99)	24.1	598
	Residential aged care	2.30	*** (1.64–3.21)	48.0	158
	Not stated/inadequately	0.55	(0.20–1.51)	[‡] 28.7	25

(continued)

Table A.2 (continued): Model 1 logistic regression results: estimates of odds ratios and predicted probabilities

Variable	Level	Odds ratios (95% confidence interval)			Predicted probability ^(a)	Observed frequency
Living arrangements	Lives with family (reference)	1.00		..	28.7	9,519
	Lives alone	1.47	***	(1.26–1.72)	— ^(a)	5,898
	Lives with others	1.13		(0.83–1.53)	‡28.7	265
	Missing	1.32		(0.85–2.05)	‡28.7	1,243
	Not applicable	0.58		(0.22–1.56)	‡28.7	38
Carer Status	Partner co-resident	1.00		..	28.7	4,900
	Partner non-resident	0.54		(0.24–1.20)	‡28.7	38
	Daughter co-resident	1.52	***	(1.34–1.73)	37.9	1,686
	Daughter non-resident	0.76	**	(0.64–0.90)	23.4	2,549
	Son co-resident	1.21	*	(1.01–1.45)	32.7	717
	Son non-resident	0.62	***	(0.50–0.77)	20.0	1,028
	Other co-resident male	1.55	***	(1.26–1.92)	38.4	489
	Other non-resident male	0.65	***	(0.52–0.83)	20.8	722
	Other co-resident female	0.97		(0.64–1.47)	‡28.7	129
	Other non-resident female	0.60	*	(0.39–0.91)	19.4	157
	Unknown co-resident	1.90	***	(1.49–2.41)	43.3	376
	Unknown non-resident	1.00		(0.73–1.38)	‡28.7	264
	No carer	0.63	***	(0.53–0.75)	20.2	2,437
	Missing	0.67	**	(0.50–0.90)	21.2	1,471
	Activities of daily living (ADL) indicator of formal/informal care use					
	Formal only (reference)	1.00		..	28.7	2,140
	None	0.93		(0.80–1.08)	‡28.7	4,605
	Both	0.97		(0.84–1.11)	‡28.7	3,885
	Informal only	1.23	***	(1.08–1.39)	33.0	5,955
	Unable to be determined	1.13		(0.86–1.49)	‡28.7	340
Number of government assistance services received	One (reference)	1.00		..	28.7	8,454
	None	0.81	***	(0.74–0.88)	24.4	5,275
	Two	1.23	**	(1.07–1.41)	33.1	1,313
	Three plus	1.87	***	(1.30–2.68)	42.9	144
	Unable to be determined	0.87		(0.71–1.07)	‡28.7	1,739
Number of government services recommended to receive	One (reference)	1.00		..	28.7	8,959
	None	1.23	**	(1.07–1.40)	33.0	1,502
	Two	1.00		(0.91–1.09)	‡28.7	4,434
	Three plus	0.91		(0.79–1.03)	‡28.7	1,636
	Unable to be determined	1.67	***	(1.34–2.08)	40.1	432
<i>Health conditions</i>						
Neoplasms	No (reference)	1.00		..	28.7	15,076
	Yes	0.79	***	(0.70–0.89)	24.1	1,887
Blood	No (reference)	1.00		..	28.7	16,332
	Yes	0.79	*	(0.64–0.96)	24.0	631
Dementia	No (reference)	1.00		..	28.7	12,920
	Yes	1.29	***	(1.18–1.40)	34.1	4,043
Musculoskeletal	No (reference)	1.00		..	28.7	9,402
	Yes	0.85	***	(0.79–0.92)	25.4	7,561

(continued)

Table A.2 (continued): Model 1 logistic regression results: estimates of odds ratios and predicted probabilities

Variable	Level	Odds ratios (95% confidence interval)		Predicted probability ^(a)	Observed frequency
Number of profession groups involved in the assessment	One (reference)	1.00	..	28.7	8,369
	None	1.01	(0.88–1.17)	‡28.7	1,340
	Two	1.01	(0.92–1.11)	‡28.7	4,205
	Three	1.24 ***	(1.10–1.41)	33.3	1,628
	Four	0.98	(0.84–1.15)	‡28.7	1,421
Priority category ACAT assessment	More than 14 days	1.00	..	28.7	9,567
	Within 48 hours	1.27 **	(1.07–1.50)	33.7	1,013
	Between 3 and 14 days	1.22 ***	(1.12–1.33)	32.9	6,303
	Not stated/inadequately	1.14	(0.67–1.93)	‡28.7	80
Weeks taken to complete first ACAT assessment (from the time of referral to the sign-off)	Less than 1 week	1.00	..	28.7	2,906
	1–<4 weeks	0.79 ***	(0.71–0.88)	24.0	7,254
	4–<8 weeks	0.65 ***	(0.57–0.74)	20.7	3,838
	8–<12 weeks	0.62 ***	(0.53–0.74)	20.0	1,492
	12–15 weeks	0.65 ***	(0.54–0.78)	20.8	1,093
	More than 15 weeks	0.73 *	(0.56–0.95)	22.7	380
Additional ACAT before take-up	No (reference)	1.00	..	28.7	15,811
	Yes	1.89 ***	(1.66–2.15)	43.1	1,152
Count of ADL care needs	None (reference)	1.00	..	28.7	2,937
	One	1.02	(0.87–1.18)	‡28.7	4,116
	Two	1.17 *	(1.00–1.37)	32.0	3,874
	Three	1.19 *	(1.01–1.41)	32.4	2,657
	Four	1.28 **	(1.06–1.54)	34.0	1,614
	Five	1.15	(0.91–1.46)	‡28.7	595
	Unable to be determined	1.02	(0.56–1.84)	‡28.7	1,170
Time from ACAT assessment to death	Did not die within 12 months	1.00	..	28.7	14,502
	Less than 4 weeks	0.12 ***	(0.06–0.23)	4.6	180
	Between 4 and 8 weeks	0.26 ***	(0.18–0.39)	9.5	246
	Between 8 and 12 weeks	0.52 ***	(0.37–0.72)	17.3	233
	Between 12 and 16 weeks	0.52 ***	(0.37–0.73)	17.1	213
	Between 16 and 20 weeks	0.59 **	(0.41–0.83)	19.1	197
	Between 20 and 36 weeks	0.77 **	(0.65–0.92)	23.7	732
	Between 36 and 52 weeks	1.11	(0.93–1.32)	‡28.7	660

* Statistically significantly different from reference group at 5% level.

** Statistically significantly different from reference group at 1% level.

*** Statistically significantly different from reference group at 0.1% level.

‡ Not significantly different to reference group and therefore predicted probability is the same as for the reference group.

.. Not applicable to the model (i.e. reference category).

(a) The predicted probabilities relate to a person with characteristics the same as those of the reference person except for the differences in the single variable whose effect is being analysed (see Box 4.1). In some cases these characteristics will contradict each other. For example, if we were to calculate the predicted probability of a person living alone, the reference person has a partner co-resident carer. These two pieces of information are contradictory and hence the predicted probability should not be calculated in this case.

Table A.3: Model 1 logistic regression results: Hosmer-Lemeshow goodness-of-fit statistic

Group	Number	Took up respite		Did not take up respite	
		Observed	Expected	Observed	Expected
1	1,696	165	172	1,531	1,524
2	1,696	228	253	1,468	1,443
3	1,696	301	306	1,395	1,390
4	1,696	372	356	1,324	1,340
5	1,696	395	404	1,301	1,292
6	1,696	468	456	1,228	1,240
7	1,696	525	512	1,171	1,184
8	1,696	608	578	1,088	1,118
9	1,696	659	671	1,037	1,025
10	1,699	856	868	843	831
Test result: Chi-squared = 8.4 with 8 degrees of freedom and p-value = 0.4					

A.5 Model 2: factors affecting take-up of residential respite care recommended to live in residential care

Table A.4: Model 2 logistic regression results: parameter estimates and take-up rates

Variable ^(a)	Level	Order of entry in model	Parameter estimates (95% confidence interval)		Observed frequency	Observed take-up (%)
Intercept			-0.80 ***	(-1.07–0.53)	13,438	27.5
Age	75–84 years (reference)	†	0.00	..	5,971	28.5
	0–44 years		-0.27	(-1.05–0.42)	45	22.2
	45–64 years		-0.02	(-0.25–0.21)	478	26.8
	65–74 years		-0.12	(-0.25–0.02)	1,564	25.6
	85–94 years		-0.03	(-0.12–0.06)	5,018	27.2
	95–99 years		-0.07	(-0.34–0.20)	319	25.1
	100 years and over		-0.09	(-0.82–0.57)	43	27.9
Sex	Female (reference)	†	0.00	..	8,675	28.4
	Male		-0.06	(-0.14–0.03)	4,759	25.8
	Missing		0.24	(-2.79–2.34)	4	25.0
State/territory of usual residence	New South Wales (reference)	2	0.00	..	5,931	30.6
	Victoria		-0.36 ***	(-0.46– -0.26)	4,458	25.1
	Western Australia		-0.51 ***	(-0.65– -0.38)	1,798	22.5
	Tasmania		-0.38 ***	(-0.57– -0.19)	855	28.0
	Australian Capital Territory		0.21	(-0.38–0.79)	64	39.1
	Northern Territory		-0.14	(-0.77–0.53)	332	27.4
Remoteness	Major city	3	0.00	..	9,126	25.8
	Inner regional		0.24 ***	(0.13–0.35)	2,931	31.0
	Outer regional		0.38 ***	(0.22–0.53)	1,058	34.8
	Remote / Very remote		0.00	(-0.46–0.44)	124	27.4
	Missing		-0.55 **	(-0.97– -0.17)	199	15.6
Where the face-to-face contact between client and ACAT team member took place	Other (reference)	12	0.00	..	8,370	29.7
	Hospital (acute care)		-0.19 **	(-0.31– -0.07)	3,582	24.4
	Hospital (non-acute care)		-0.35 ***	(-0.53– -0.17)	1,181	20.2
	Residential aged care service		0.14	(-0.13–0.41)	286	29.7
	Not stated/inadequately		0.44	(-0.65–1.42)	19	31.6
Usual accommodation	Private residence-owned / purchasing (reference)	19	0.00	..	8,814	28.6
	Private residence-private rental		-0.17 *	(-0.32– -0.02)	1,056	26.3
	Private residence-public rental or community housing		-0.02	(-0.18–0.14)	920	28.8
	Independent living within a retirement village		-0.14	(-0.29–0.00)	1,248	24.1
	Boarding house / rooming house private hotel		-0.37 *	(-0.700– -0.06)	480	16.0
	Other		-0.13	(-0.34–0.08)	525	27.2
	Not stated / inadequately described		0.35	(-0.55–1.25)	395	27.3

(continued)

Table A.4 (continued): Model 2 logistic regression results: parameter estimates and take-up rates

Variable ^(a)	Level	Order of entry in model	Parameter estimates (95% confidence interval)		Observed frequency	Observed take-up (%)
Living arrangements	Lives with family (reference)	9	0.00	..	5,943	28.0
	Lives alone		0.35 ***	(0.19–0.50)	6,250	28.1
	Lives with others		0.17	(-0.11–0.45)	357	24.6
	Missing		-0.15	(-0.76–0.44)	728	22.8
	Not applicable		-0.12	(-0.46–0.22)	160	13.1
Carer status	Partner co-resident	8	0.00	..	2,562	26.3
	Partner non-resident		-0.29	(-1.24–0.54)	29	24.1
	Daughter co-resident		0.36 ***	(0.20–0.53)	1,109	34.0
	Daughter non-resident		-0.16	(-0.36–0.03)	2,204	28.8
	Son co-resident		0.19	(-0.02–0.40)	600	30.5
	Son non-resident		-0.23 *	(-0.46– -0.01)	959	28.3
	Other co-resident male		0.15	(-0.11–0.39)	396	30.1
	Other non-resident male		-0.23	(-0.47–0.01)	739	28.0
	Other co-resident female		0.18	(-0.27–0.61)	110	30.9
	Other non-resident female		-0.20	(-0.56–0.16)	204	27.5
	Co-resident unknown		0.37 *	(0.06–0.67)	234	36.8
	Non-resident unknown		-0.03	(-0.34–0.28)	301	33.2
	No carer		-0.27 **	(-0.46– -0.08)	2,922	24.0
	Missing		-0.34 **	(-0.60– -0.09)	1,069	23.0
Count of ADL needs	None (reference)	15	0.00	..	1,599	22.6
	One		0.24 **	(0.09–0.39)	2,487	29.2
	Two		0.19 *	(0.04–0.34)	3,077	28.8
	Three		0.23 **	(0.07–0.38)	2,563	29.8
	Four		0.05	(-0.11–0.22)	2,206	25.2
	Five		0.14	(-0.06–0.34)	1,043	26.7
	Unable to be determined		0.20	(-0.45–0.81)	463	26.8
IADL indicator of formal/informal care use	Formal only (reference)	4	0.00	..	1,738	24.3
	None		0.07	(-0.10–0.24)	1,408	24.4
	Both		0.11	(-0.03–0.25)	3,658	28.2
	Informal only		0.24 ***	(0.10–0.37)	5,488	30.3
	Unable to be determined		0.02	(-0.19–0.23)	986	21.9
Number of government assistance services received	One (reference)	1	0.00	..	5,820	28.0
	None		-0.17 ***	(-0.27– -0.07)	4,636	26.0
	Two		0.51 ***	(0.34–0.67)	742	41.2
	Three plus		0.08	(-0.37–0.50)	97	35.1
	Unable to be determined		0.06	(-0.09–0.21)	1,983	25.3

(continued)

Table A.4 (continued): Model 2 logistic regression results: parameter estimates and take-up rates

Variable ^(a)	Level	Order of entry in model	Parameter estimates (95% confidence interval)		Observed frequency	Observed take-up (%)
Number of health conditions	One (reference)	16	0.00	..	1,947	28.0
	Two		-0.09	(-0.25–0.07)	1,889	26.9
	Three		-0.13	(-0.28–0.02)	2,721	26.2
	Four		-0.05	(-0.21–0.10)	2,550	26.9
	Five		0.02	(-0.15–0.19)	1,765	27.8
	Six		0.21 *	(0.02–0.40)	1,090	31.9
	Seven		-0.02	(-0.25–0.21)	645	27.4
	Eight		-0.05	(-0.33–0.21)	401	26.7
	Nine		-0.14	(-0.46–0.17)	269	25.7
	Ten		0.17	(-0.21–0.54)	161	31.7
<i>Health conditions</i>						
Neoplasms	No (reference)	13	0.00	..	11,664	28.3
	Yes		-0.22 ***	(-0.35– -0.10)	1,774	22.4
Dementia	No (reference)	5	0.00	..	9,311	26.1
	Yes		0.12 **	(0.03–0.21)	4,127	30.7
Other mental health	No (reference)	7	0.00	..	11,244	26.8
	Yes		0.16 **	(0.05–0.27)	2,194	31.0
Eye	No (reference)	14	0.00	..	11,173	27.8
	Yes		-0.18 **	(-0.29– -0.07)	2,265	25.8
Musculoskeletal	No (reference)	17	0.00	..	8,017	27.6
	Yes		-0.11 *	(-0.20– -0.02)	5,421	27.4
Number of profession groups involved in the assessment	One (reference)	10	0.00	..	4,683	28.3
	None		0.12	(-0.02–0.26)	1,440	32.8
	Two		0.07	(-0.04–0.18)	3,056	28.8
	Three		0.12 *	(-0.01–0.26)	1,794	28.0
	Four		-0.11	(-0.26–0.03)	2,465	20.8
Priority category ACAT assessment	More than 14 days	18	0.00	..	4,227	27.7
	Within 48 hours		-0.03	(-0.18–0.12)	1,875	25.2
	Between 3 and 14 days		0.07	(-0.03–0.17)	7,194	28.1
	Not stated/inadequately		-0.52 *	(-0.99–0.09)	142	19.7
Weeks taken to complete first ACAT assessment (from the time of referral to the sign-off)	Less than 1 week (reference)	11	0.00	..	4,319	28.6
	1–<4 weeks		-0.24 ***	(-0.34– -0.14)	5,816	26.8
	4–<8 weeks		-0.25 ***	(-0.39– -0.11)	1,811	27.2
	8–<12 weeks		-0.34 ***	(-0.54– -0.15)	731	26.7
	12–15 weeks		-0.26 *	(-0.48– -0.05)	539	28.4
	More than 15 weeks		-0.37 *	(-0.70– -0.05)	222	26.6
Additional ACAT before take-up	No (reference)	6	0.00	..	12,415	27.1
	Yes		0.25 ***	(0.11–0.39)	1,023	32.8

(continued)

Table A.4 (continued): Model 2 logistic regression results: parameter estimates and take-up rates

Variable ^(a)	Level	Order of entry in model	Parameter estimates (95% confidence interval)		Observed frequency	Observed take-up (%)
Time from ACAT assessment to death	Did not die within 12 months	†	0.00	..	10,418	28.8
	Less than 4 weeks		-1.33 ***	(-1.67– -1.01)	447	9.4
	Between 4 and 8 weeks		-0.82 ***	(-1.11– -0.54)	414	14.5
	Between 8 and 12 weeks		-0.54 ***	(-0.82– -0.26)	342	19.9
	Between 12 and 16 weeks		-0.54 ***	(-0.85– -0.24)	281	20.3
	Between 16 and 20 weeks		-0.26	(-0.58–0.04)	239	23.8
	Between 20 and 36 weeks		0.03	(-0.14–0.20)	746	30.6
	Between 36 and 52 weeks		0.15	(-0.04–0.34)	551	32.3

* Statistically significantly different from reference group at 5% level.

** Statistically significantly different from reference group at 1% level.

*** Statistically significantly different from reference group at 0.1% level.

.. Not applicable to the model (i.e. reference category).

† Variable included as control only.

Table A.5: Model 2 logistic regression results: estimates of odds ratios and predicted probabilities

Variable ^(a)	Level	Odds ratios (95% confidence interval)		Predicted probability ^(a)	Observed frequency
Age	75–84 years (reference)	1.00	..	31.0	5,971
	0–44 years	0.76	(0.37–1.58)	‡31.0	45
	45–64 years	0.98	(0.78–1.23)	‡31.0	478
	65–74 years	0.89	(0.78–1.02)	‡31.0	1,564
	85–94 years	0.97	(0.89–1.06)	‡31.0	5,018
	95–99 years	0.94	(0.72–1.23)	‡31.0	319
	100 years and over	0.91	(0.46–1.81)	‡31.0	43
Sex	Female (reference)	1.00	..	31.0	8,675
	Male	0.95	(0.87–1.03)	‡31.0	4,759
	Missing	1.28	(0.13–12.8)	‡31.0	4
State/territory of usual residence	New South Wales (reference)	1.00	..	31.0	5,931
	Victoria	0.70	*** (0.63–0.77)	23.8	4,458
	Western Australia	0.60	*** (0.52–0.69)	21.2	1,798
	Tasmania	0.68	*** (0.56–0.83)	23.4	855
	Australian Capital Territory	1.23	(0.69–2.21)	‡31.0	64
	Northern Territory	0.87	(0.46–1.67)	‡31.0	332
	Missing	0.58	** (0.39–0.86)	20.5	199
Remoteness	Major city	1.00	..	31.0	9,126
	Inner regional	1.27	*** (1.14–1.42)	36.3	2,931
	Outer regional	1.46	*** (1.25–1.71)	39.6	1,058
	Remote / Very remote	1.00	(0.64–1.56)	‡31.0	124
	Missing	0.58	** (0.39–0.86)	20.5	199
Where the face-to-face contact between client and ACAT team member took place	Other (reference)	1.00	..	31.0	8,370
	Hospital (acute care)	0.83	** (0.74–0.93)	27.1	3,582
	Hospital (non-acute care)	0.70	*** (0.59–0.84)	24.0	1,181
	Residential aged care service	1.15	(0.88–1.52)	‡31.0	286
	Not stated/inadequately	1.55	(0.56–4.28)	‡31.0	19
Usual accommodation	Private residence-owned / purchasing (reference)	1.00	..	31.0	8,814
	Private residence-private rental	0.84	* (0.73–0.98)	27.5	1,056
	Private residence-public rental or community housing	0.98	(0.84–1.15)	‡31.0	920
	Independent living within a retirement village	0.87	(0.75–1.01)	‡31.0	1,248
	Boarding house / rooming house private hotel	0.69	* (0.50–0.95)	23.6	480
	Other	0.88	(0.71–1.08)	‡31.0	525
	Not stated / inadequately described	1.42	(0.58–3.47)	‡31.0	395

(continued)

Table A.5 (continued): Model 2 logistic regression results: estimates of odds ratios and predicted probabilities

Variable ^(a)	Level	Odds ratios (95% confidence interval)		Predicted probability ^(a)	Observed frequency
Living arrangements	Lives with family (reference)	1.00	..	31.0	5,943
	Lives alone	1.41 ***	(1.21–1.65)	— ^(a)	6,250
	Lives with others	1.19	(0.90–1.58)	[‡] 31.0	357
	Missing	0.86	(0.47–1.56)	[‡] 31.0	728
	Not applicable	0.89	(0.64–1.25)	[‡] 31.0	160
Carer status	Partner co-resident	1.00	..	31.0	2,562
	Partner non-resident	0.75	(0.31–1.80)	[‡] 31.0	29
	Daughter co-resident	1.44 ***	(1.22–1.70)	39.2	1,109
	Daughter non-resident	0.85	(0.70–1.03)	[‡] 31.0	2,204
	Son co-resident	1.21	(0.98–1.49)	[‡] 31.0	600
	Son non-resident	0.79 *	(0.63–0.99)	26.2	959
	Other co-resident male	1.16	(0.90–1.48)	[‡] 31.0	396
	Other non-resident male	0.80	(0.63–1.01)	[‡] 31.0	739
	Other co-resident female	1.19	(0.77–1.85)	[‡] 31.0	110
	Other non-resident female	0.82	(0.57–1.18)	[‡] 31.0	204
	Unknown co-resident	1.44 *	(1.06–1.96)	39.3	234
	Unknown non-resident	0.97	(0.71–1.33)	[‡] 31.0	301
	No carer	0.76 **	(0.63–0.92)	25.5	2,922
	Missing	0.71 **	(0.55–0.92)	24.1	1,069
Count of client ADL needs	None (reference)	1.00	..	31.0	1,599
	One	1.27 **	(1.09–1.47)	36.3	2,487
	Two	1.21 *	(1.04–1.40)	35.2	3,077
	Three	1.26 **	(1.08–1.47)	36.1	2,563
	Four	1.06	(0.89–1.25)	[‡] 31.0	2,206
	Five	1.15	(0.94–1.41)	[‡] 31.0	1,043
	Unable to be determined	1.22	(0.65–2.28)	[‡] 31.0	463
IADL indicator of formal / informal care use	Formal only (reference)	1.00	..	31.0	1,738
	None	1.08	(0.91–1.28)	[‡] 31.0	1,408
	Both	1.11	(0.97–1.28)	[‡] 31.0	3,658
	Informal only	1.27 ***	(1.10–1.45)	36.2	5,488
	Unable to be determined	1.02	(0.83–1.26)	[‡] 31.0	986
Number of government assistance services received	One (reference)	1.00	..	31.0	5,820
	None	0.84 ***	(0.76–0.93)	27.4	4,636
	Two	1.66 ***	(1.41–1.96)	42.7	742
	Three plus	1.08	(0.70–1.66)	[‡] 31.0	97
	Unable to be determined	1.06	(0.92–1.24)	[‡] 31.0	1,983
Priority category ACAT assessment	More than 14 days	1.00	..	31.0	4,227
	Within 48 hours	0.97	(0.83–1.13)	[‡] 31.0	1,875
	Between 3 and 14 days	1.07	(0.97–1.18)	[‡] 31.0	7,194
	Not stated/inadequately	0.59 *	(0.38–0.93)	21.0	142

(continued)

Table A.5 (continued): Model 2 logistic regression results: estimates of odds ratios and predicted probabilities

Variable ^(a)	Level	Odds ratios (95% confidence interval)		Predicted probability ^(a)	Observed frequency
Number of health conditions	One (reference)	1.00	..	31.0	1,947
	Two	0.92	(0.78–1.07)	‡31.0	1,889
	Three	0.88	(0.76–1.02)	‡31.0	2,721
	Four	0.95	(0.81–1.11)	‡31.0	2,550
	Five	1.02	(0.86–1.21)	‡31.0	1,765
	Six	1.24 *	(1.02–1.50)	35.7	1,090
	Seven	0.98	(0.78–1.23)	‡31.0	645
	Eight	0.95	(0.72–1.24)	‡31.0	401
	Nine	0.87	(0.63–1.19)	‡31.0	269
	Ten	1.19	(0.82–1.73)	‡31.0	161
<i>Health conditions</i>					
Neoplasms	No (reference)	1.00	..	31.0	11,664
	Yes	0.80 ***	(0.70–0.91)	26.4	1,774
Dementia	No (reference)	1.00	..	31.0	9,311
	Yes	1.13 **	(1.03–1.23)	33.6	4,127
Other mental health	No (reference)	1.00	..	31.0	11,244
	Yes	1.17 **	(1.05–1.31)	34.4	2,194
Eye	No (reference)	1.00	..	31.0	11,173
	Yes	0.83 **	(0.75–0.93)	27.2	2,265
Musculoskeletal	No (reference)	1.00	..	31.0	8,017
	Yes	0.89 *	(0.82–0.98)	28.6	5,421
Number of profession groups involved in the assessment	One (reference)	1.00	..	31.0	4,683
	None	1.13	(0.98–1.30)	‡31.0	1,440
	Two	1.08	(0.97–1.20)	‡31.0	3,056
	Three	1.13 *	(0.99–1.29)	33.7	1,794
	Four	0.89	(0.77–1.03)	‡31.0	2,465
Weeks taken to complete first ACAT assessment (from the time of referral to the sign-off)	Less than 1 week (reference)	1.00	..	31.0	4,319
	1–<4 weeks	0.78 ***	(0.71–0.87)	26.0	5,816
	4–<8 weeks	0.78 ***	(0.68–0.89)	25.8	1,811
	8–<12 weeks	0.71 ***	(0.58–0.86)	24.2	731
	12–15 weeks	0.77 *	(0.62–0.96)	25.7	539
	More than 15 weeks	0.69 *	(0.50–0.96)	23.7	222
Additional ACAT before take-up	No (reference)	1.00	..	31.0	12,415
	Yes	1.28 ***	(1.11–1.48)	36.5	1,023
Time from ACAT assessment to death	Did not die within 12 months	1.00	..	31.0	10,418
	Less than 4 weeks	0.27 ***	(0.19–0.37)	10.6	447
	Between 4 and 8 weeks	0.44 ***	(0.33–0.59)	16.5	414
	Between 8 and 12 weeks	0.59 ***	(0.44–0.77)	20.8	342
	Between 12 and 16 weeks	0.58 ***	(0.43–0.79)	20.7	281
	Between 16 and 20 weeks	0.77	(0.56–1.05)	‡31.0	239
	Between 20 and 36 weeks	1.03	(0.87–1.22)	‡31.0	746
	Between 36 and 52 weeks	1.16	(0.96–1.41)	‡31.0	551

* Statistically significantly different from reference group at 5% level.

** Statistically significantly different from reference group at 1% level.

*** Statistically significantly different from reference group at 0.1% level.

‡ Not significantly different to reference group and therefore predicted probability is the same as for the reference group.

.. Not applicable to the model (i.e. variable not included).

- (a) The predicted probabilities relate to a person with characteristics the same as those of the reference person except for the differences in the single variable whose effect is being analysed (see Box 4. 3). In some cases these characteristics will contradict each other. For example, if we were to calculate the predicted probability of a person living alone, the reference person has a partner co-resident carer. These two pieces of information are contradictory and hence the predicted probability should not be calculated in this case.

Table A.6: Model 2 logistic regression results: Hosmer-Lemeshow goodness-of-fit statistic

Group	Total	Took up respite		Did not take up respite	
		Observed	Expected	Observed	Expected
1	1,344	146	142	1,198	1,202
2	1,344	204	225	1,140	1,119
3	1,344	276	273	1,068	1,071
4	1,345	319	311	1,026	1,034
5	1,344	337	347	1,007	997
6	1,344	366	380	978	964
7	1,344	406	415	938	929
8	1,344	490	457	854	887
9	1,344	536	513	808	831
10	1,341	615	632	726	709
Test result: Chi-squared = 10.2 with 8 degrees of freedom and p-value = 0.3					

A.6 Model 3: factors affecting admission into permanent residential care

Table A.7: Model 3 logistic regression results: parameter estimates and admission rates

Variable ^(a)	Level	Order of entry into model	Parameter estimates (95% confidence interval)		Observed frequency	Observed admission (%)
Intercept			-2.09 ***	(-2.35–1.83)	4,577	22.9
Age	75–84 years (reference)	†	0.00	..	2,063	23.8
	0–44 years		-0.30	(-1.59–0.76)	25	16.0
	45–64 years		-0.33	(-0.75–0.06)	203	16.7
	65–74 years		-0.31 *	(-0.56– -0.07)	623	17.7
	85–94 years		0.02	(-0.15–0.18)	1,572	24.6
	95–99 years		0.14	(-0.41–0.67)	78	26.9
	100 years and over		-1.20	(-4.12–0.50)	13	7.7
Sex	Female (reference)	†	0.00	..	2,767	24.6
	Male		-0.21 *	(-0.37– -0.04)	1,807	20.4
	Missing		-12.53	–	3	0.0
Residential care approval at reference assessment and if the client had another assessment prior to RRC take-up	No approval for residential care and no assessment between (reference)	1	0.00	..	1,797	12.9
	No approval for residential care and another assessment between		1.30 ***	(1.05–1.55)	423	37.4
	Low level approval for residential care and no assessment between		0.79 ***	(0.61–0.98)	1,604	26.4
	Low level approval for residential care and another assessment between		1.40 ***	(1.10–1.70)	247	38.9
	High level approval for residential care and no assessment between		1.00 ***	(0.74–1.26)	464	27.8
	High level approval for residential care and assessment between		0.69	(-0.13–1.42)	42	21.4
Carer status	Partner co-resident	3	0.00	..	1,421	20.5
	Partner non-resident		1.11	(-0.53–2.6)	8	37.5
	Daughter co-resident		-0.43 **	(-0.71– -0.14)	593	15.2
	Daughter non-resident		0.54 ***	(0.30–0.79)	655	30.1
	Son co-resident		-0.19	(-0.60–0.19)	215	18.6
	Son non-resident		0.79 ***	(0.47–1.12)	233	36.9
	Other co-resident male		-0.07	(-0.51–0.35)	183	16.9
	Other non-resident male		0.39	(-0.01–0.77)	179	26.3
	Other co-resident female		0.37	(-0.54–1.17)	34	23.5
	Other non-resident female		0.23	(-0.62–1.00)	36	25.0
	Co-resident unknown		0.01	(-0.44–0.43)	163	18.4
	Non-resident unknown		0.67 *	(0.15–1.17)	88	29.5
	No carer		0.46 ***	(0.19–0.73)	522	24.1
	Missing		0.26	(-0.08–0.60)	247	25.5

(continued)

Table A.7 (continued): Model 3 logistic regression results: parameter estimates and admission rates

Variable ^(a)	Level	Order of entry into model	Parameter estimates (95% confidence interval)		Observed frequency	Observed admission (%)
Health conditions						
Musculoskeletal	No (reference)	4	0.00	..	3,230	19.9
	Yes		-0.27 ***	(-0.43– -0.11)	1,347	30.1
Circulatory system – Cerebrovascular	No (reference)	5	0.00	..	3,812	24.2
	Yes		-0.35 **	(-0.57– -0.14)	765	16.3
Symptoms and signs	No (reference)	6	0.00	..	4,444	22.7
	Yes		0.26 **	(0.09–0.43)	133	29.3
Dementia	No (reference)	2	0.00	..	2,688	24.3
	Yes		0.61 ***	(0.44–0.77)	1,889	20.9
Skin	No (reference)	7	0.00	..	3,540	22.2
	Yes		0.51 *	(0.10–0.90)	1,037	25.2
Time from ACAT assessment to death	Did not die within 12 months	†	0.00	..	3,995	22.1
	Less than 4 weeks		-12.14	–	10	0.0
	Between 4 and 8 weeks		-0.23	(-1.34–0.69)	30	16.7
	Between 8 and 12 weeks		-0.30	(-1.16–0.43)	48	16.7
	Between 12 and 16 weeks		0.19	(-0.56–0.89)	46	26.1
	Between 16 and 20 weeks		1.42 ***	(0.78–2.05)	44	47.7
	Between 20 and 36 weeks		0.42 *	(0.08–0.76)	194	29.4
	Between 36 and 52 weeks		0.38 *	(0.05–0.70)	210	29.0

* Statistically significantly different from reference group at 5% level.

** Statistically significantly different from reference group at 1% level.

*** Statistically significantly different from reference group at 0.1% level.

.. Not applicable to the model (i.e. reference category).

† Variable included as control only.

Table A.8: Model 3 logistic regression results: estimates of odds ratios and predicted probabilities

Variable	Level	Odds ratios (95% confidence interval)		Predicted probability ^(a)	Observed frequency
Age	75–84 years (reference)	1.00	..	11.0	2,063
	0–44 years	0.74	(0.24–2.34)	[‡] 11.0	25
	45–64 years	0.72	(0.48–1.07)	[‡] 11.0	203
	65–74 years	0.73 *	(0.57–0.93)	8.3	623
	85–94 years	1.02	(0.87–1.20)	[‡] 11.0	1,572
	95–99 years	1.16	(0.67–1.98)	[‡] 11.0	78
	100 years and over	0.30	(0.04–2.43)	[‡] 11.0	13
Sex	Female (reference)	1.00	..	11.0	2,767
	Male	0.81 *	(0.69–0.96)	9.2	1,807
	Missing	<0.001	–	[‡] 11.0	3
Residential care approval at first such assessment by if the client had another assessment prior to respite	No approval for residential care and no assessment between (reference)	1.00	..	11.0	1,797
	No approval for residential care and another assessment between	3.66 ***	(2.85–4.70)	31.2	423
	Low level approval for residential care and no assessment between	2.20 ***	(1.83–2.65)	21.5	1,604
	Low level approval for residential care and another assessment between	4.06 ***	(3.00–5.49)	33.5	247
	High level approval for residential care and no assessment between	2.73 ***	(2.11–3.54)	25.3	464
	High level approval for residential care and assessment between	2.00	(0.93–4.32)	[‡] 11.0	42
Carer status	Partner co-resident	1.00	..	11.0	1,421
	Partner non-resident	3.04	(0.67–13.77)	[‡] 11.0	8
	Daughter co-resident	0.65 **	(0.49–0.87)	7.5	593
	Daughter non-resident	1.72 ***	(1.34–2.20)	17.6	655
	Son co-resident	0.82	(0.56–1.22)	11.0	215
	Son non-resident	2.21 ***	(1.60–3.07)	21.5	233
	Other co-resident male	0.93	(0.61–1.44)	[‡] 11.0	183
	Other non-resident male	1.47	(1.00–2.17)	[‡] 11.0	179
	Other co-resident female	1.44	(0.62–3.36)	[‡] 11.0	34
	Other non-resident female	1.26	(0.57–2.81)	[‡] 11.0	36
	Co-resident unknown	1.01	(0.65–1.56)	[‡] 11.0	163
	Non-resident unknown	1.96 *	(1.17–3.27)	19.5	88
	No carer	1.58 ***	(1.21–2.07)	16.4	522
	Missing	1.30	(0.93–1.83)	[‡] 11.0	247

(continued)

Table A.8 (continued): Model 3 logistic regression results: estimates of odds ratios and predicted probabilities

Variable	Level	Odds ratios (95% confidence interval)			Predicted probability ^(a)	Observed frequency
Health conditions						
Musculoskeletal	No (reference)	1.00		..	11.0	3,230
	Yes	0.76	***	(0.65–0.89)	8.6	1,347
Circulatory system – Cerebrovascular	No (reference)	1.00		..	11.0	3,812
	Yes	0.70	**	(0.57–0.88)	8.0	765
Symptoms and signs	No (reference)	1.00		..	11.0	4,444
	Yes	1.30	**	(1.09–1.54)	13.9	133
Dementia	No (reference)	1.00		..	11.0	2,688
	Yes	1.83	***	(1.56–2.16)	18.5	1,889
Skin	No (reference)	1.00		..	11.0	3,540
	Yes	1.66	*	(1.11–2.48)	17.1	1,037
Time from ACAT assessment to death	Did not die within 12 months (reference)	1.00		..	11.0	3,995
	Less than 4 weeks	<0.001		–	‡11.0	10
	Between 4 and 8 weeks	0.80		(0.29–2.16)	‡11.0	30
	Between 8 and 12 weeks	0.74		(0.34–1.62)	‡11.0	48
	Between 12 and 16 weeks	1.21		(0.59–2.49)	‡11.0	46
	Between 16 and 20 weeks	4.13	***	(2.19–7.79)	33.8	44
	Between 20 and 36 weeks	1.53	*	(1.09–2.15)	15.9	194
	Between 36 and 52 weeks	1.46	*	(1.05–2.02)	15.3	210

* Statistically significantly different from reference group at 5% level.

** Statistically significantly different from reference group at 1% level.

*** Statistically significantly different from reference group at 0.1% level.

‡ Not significantly different to reference group and therefore predicted probability is the same as for the reference group.

.. Not applicable to the model (i.e. variable not included).

(a) The predicted probabilities relate to a person with characteristics the same as those of the reference person except for the differences in the single variable whose effect is being analysed (see Box 5. 1).

Table A.9: Model 3 logistic regression results: Hosmer-Lemeshow goodness-of-fit statistic

Group	Number	Took up respite		Did not take up respite	
		Observed	Expected	Observed	Expected
1	459	29	28	430	431
2	456	37	44	419	412
3	458	63	59	395	399
4	455	72	71	383	384
5	460	93	87	367	373
6	454	99	103	355	351
7	460	117	121	343	339
8	458	149	140	309	318
9	458	167	168	291	290
10	459	222	226	237	233
Test result: Chi-squared = 3.4 with 8 degrees of freedom and p-value = 0.9					

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