

1 **Residential respite care use is associated with fewer overall days in residential aged care**

2 Stephanie L Harrison*^{1,2}, Catherine Lang¹, Craig Whitehead², Maria Crotty², Megan Corlis³,

3 Steve Wesselingh⁴, Maria Inacio¹

4 ¹Registry of Older South Australians, Health Ageing Research Consortium, South Australian
5 Health and Medical Research Institute, Adelaide, SA 5000, Australia

6 ²Department of Rehabilitation, Aged and Extended Care, Flinders University, Rehabilitation
7 building, Flinders Medical Centre, Bedford Park, SA 5042, Australia

8 ³Helping Hand Aged Care, North Adelaide, SA 5006, Australia

9 ⁴South Australian Health and Medical Research Institute, Adelaide, SA 5000, Australia

10 *Corresponding author

11 Correspondence: Stephanie Harrison, Registry of Older South Australians, Healthy Ageing
12 Research Consortium, PO Box 11060, Adelaide, SA 5001, Australia

13 stephanie.harrison@sahmri.com, <tel:+61881284357>

14 **Running title:** Respite and associations with long-term care

15 **Key words:** Respite care, long-term aged care, dementia, nursing homes

16 **Funding sources**

17 This work is supported by the South Australian Government Premier's Research and Industry
18 Fund (2017-2021).

19 **Brief summary**

20 Residential respite care was associated with fewer overall days in residential care if people
21 went home after using respite. Residential respite care may help older people stay living at
22 home longer.

23 **Acknowledgements**

24 We would like to acknowledge the Healthy Ageing Research Consortium Investigator Team
25 and the Registry of Older South Australians (ROSA) Research Team at the South Australian
26 Health and Medical Research Institute for ensuring the success of the ROSA and support with
27 this study. We also acknowledge the Australian Government who provide us with support
28 through the Premier's Research and Industry Fund (2017-2021) to conduct this work and the
29 Australian Institute of Health and Welfare (AIHW) for the provision of the raw data used in
30 the ROSA. The funders had no role in study design, methods, data collection and analysis,
31 decision to publish or preparation of this manuscript.

32 **Abstract**

33 Objectives: To examine the use of residential respite care and determine associations between
34 respite care and total days spent in residential care (respite days plus long-term care days).

35 Design: A retrospective cohort study of individuals accessing aged care services in Australia
36 was conducted as part of the National Historical cohort of the Registry of Older South
37 Australians.

38 Setting: Residential respite care (short stays in residential aged care homes) and long-term
39 residential care accessed in all government-subsidised residential aged care homes in
40 Australia.

41 Participants: This study included people who were approved for government-subsidised
42 residential respite care between January 2005 and June 2012 (n=480,862) and included a two-
43 year follow-up period.

44 Methods: Poisson regression models were used to examine associations between use of
45 residential respite care and number of days spent in residential care.

46 Results: Of people approved for residential respite care, 36.9% used their approval within 12
47 months (32.0% used respite once and went directly to long-term care without returning home,
48 40.7% used respite once and did not go directly to long-term care and 27.3% used respite ≥ 2
49 times). Compared to people who did not use respite care, using respite care once and not
50 going directly to long-term care was associated with less total days in residential care
51 (Incidence Rate Ratio, 95% Confidence Interval: 0.68, 0.67-0.69, $p < 0.001$) and using respite
52 care ≥ 2 times was also associated with less days (0.86, 0.84-0.87, $p < 0.001$). Using respite
53 care once and going directly to long-term care was associated with more days in residential
54 care (1.11, 1.10-1.12, $p < 0.001$).

55 Conclusions and Implications: Using residential respite care reduces the number of days
56 people spend in residential care when people return home after using respite. The findings

- 57 suggest that using residential respite as intended by returning home after use achieves the
- 58 goal to help people stay living at home longer.

59 **Introduction**

60 Residential respite care services involve short stays in residential aged care homes (nursing
61 homes) with the aim of providing planned or emergency care to people who have been
62 assessed and approved to receive it and to give a carer or care recipient a break from their
63 usual care arrangements.¹ In Australia there are over 75,000 admissions annually to
64 residential respite care at a cost of approximately AUD\$313 million to the Australian
65 Government.² Residential respite care is considered a key aged care service to support carers
66 and delay entry of older people to long-term residential aged care for as long as is practical³.
67 Yet, the evidence regarding the benefits of respite care in terms of delaying entry to long-
68 term residential care is lacking.^{4, 5}

69 Informal carers (family or friends who provide unpaid care) are an invaluable resource to
70 support older people to stay living in the community in their own homes for as long as is
71 possible⁶, which is the general preference for the clear majority of people.⁷ Living with a
72 carer reduces the risk that people will start long-term residential aged care.⁸ Residential
73 respite care is an option that may help temporarily reduce carer burden, carer stress-related
74 outcomes and behavioural changes for people with dementia.⁹ Some qualitative research has
75 suggested that carers have found respite services beneficial in terms of reporting high levels
76 of satisfaction with the respite care, but there is a lack of high-quality research internationally
77 to demonstrate the benefits or unintended consequences associated with respite care.^{4, 10, 11}

78 There is a lack of consensus regarding what defines effective respite care, but the impact of
79 respite care on rates of entry to long-term care and days spent in residential care is of high
80 interest due to the preference of people to stay living at home and the high financial costs
81 associated with residential care.^{4, 7, 10, 12} Therefore, the current study was performed to
82 determine if respite care reduces the total number of days someone spends in residential care,
83 inclusive of residential respite and residential long-term care days. We combined residential

84 respite and residential long-term days as an outcome of interest because of the high financial
85 cost associated with days spent in residential care and as a proxy for number of days spent
86 living at home e.g. fewer days in respite and long-term care may suggest more days spent at
87 home.

88 Specifically, the primary objectives of this study were to examine associations between the
89 use of residential respite care and (1) entry into long term care and (2) number of days spent
90 in residential care (respite days plus long-term care days).

91 **Materials and Methods**

92 *Study design, setting and participants*

93 A retrospective study was conducted using the National Historical cohort of the Registry of
94 Older South Australians (ROSA).¹³ In brief, ROSA captures all people who accessed
95 government-subsidised aged care services between 1997 and June 2014 in Australia. In
96 ROSA, de-identified data collected during aged care eligibility assessments were linked to
97 information on mortality and information on the aged care services the person received
98 (including the date the person started using the service and the date the person stopped using
99 the service).

100 Starting in 2003, aged care eligibility assessments have been conducted by a team of medical
101 and allied health professionals who collect information in an interview about the person's
102 sociodemographic characteristics, carer information and physical and psychological health
103 using a standardised questionnaire to determine which aged care services are appropriate for
104 the individual.¹⁴ Approval for residential respite care in Australia is based on the information
105 collected at the time of the aged care eligibility assessment. There are no set eligibility
106 criteria for residential respite, but the aged care assessment team use the information
107 collected in the assessments to determine which aged care services the person should be
108 approved for, including home care, residential respite care and long-term residential care.
109 The current study includes all people aged 65 years or older or aged 50 years or older if they
110 identified as Aboriginal or Torres Strait Islander, who had aged care assessments between
111 January 2005 and June 2012 and had a subsequent approval for residential respite care.

112 *Residential respite care use*

113 We determined all respite use within a 12-month period after the participant's aged care
114 eligibility assessment and categorised respite use as: one use with entry directly to long-term
115 care, one use but did not go directly to long-term care or multiple respite uses (≥ 2 separate
116 stays in residential respite) within this period. This categorisation was chosen because respite

117 care can be used multiple times and at times be used immediately before entry into long-term
118 care. In Australia, after aged care eligibility approval, an individual is eligible to access
119 residential respite care for up to 63 days per financial year, which can be divided several
120 times as required. Furthermore, the person can apply to extend their respite care in portions of
121 21 extra days if an eligibility assessment confirms this extra time is necessary and this can be
122 applied for multiple times.¹ The purpose of residential respite care is for an individual to have
123 short stays in an aged care home with the intention of returning home after the stay.

124 *Outcome of interest*

125 The main outcomes of interest were 1) entry to long-term care (dichotomous variable yes/no)
126 and 2) total days in residential care including residential respite care days plus long-term
127 residential care days within two years following aged care eligibility assessment. The number
128 of days in residential care was determined by totalling the number of days in residential
129 respite care and the number of days in long-term residential care by examining the dates in to
130 and out of care or date of death within the two-year time period. To ensure each person has
131 two years follow-up, only people who had an aged care assessment between 2005 and June
132 2012 and had follow up until June 2014 were included in this analysis. We limited all
133 analyses to two years following the date of aged care eligibility assessment, so all participants
134 had the same follow-up time, unless they died within two years of their eligibility assessment
135 then the follow-up period will have been until date of death.

136 *Covariates*

137 Covariates were chosen from examining existing literature and were obtained from aged care
138 eligibility assessments. Recent studies on predictors of admission to residential care have
139 reported consistently that age, ethnicity, whether the person has a partner, activity limitations,
140 physical illness, depression scores, dementia and cognitive function scores are associated
141 with care home admission.¹⁵⁻¹⁸ Therefore, the following available variables were included in

142 this analysis: 1) demographic information: age, sex, location (state), country of birth
143 (Australia or overseas); 2) whether the person had a carer (yes/no); 3) health conditions
144 (including depression) and 4) activity limitations.

145 The aged care eligibility assessments can record up to 10 health conditions, which are
146 mapped to equivalent health condition codes in the International Statistical Classification of
147 Disease and Related Health Problems-Tenth Revision-Australian Modification (ICD-10-
148 AM). In this analysis we examined health conditions that are included in commonly used co-
149 morbidity indices: the Charlson, Elixhauser and Rx-Risk-V¹⁹⁻²¹. Activity limitations included
150 moving around, self-care, social and community participation, transport, communication,
151 domestic assistance, health care tasks, home maintenance, meals, movement activities and
152 other.

153 *Statistical analyses*

154 Descriptive statistics by whether the participants used their approval for residential respite
155 within 12 months are presented. Cox proportional hazard models were used to examine
156 associations between use of residential respite care and use of long-term residential care.
157 Hazard ratios (HR) with 95% confidence intervals (95%CI) are presented. Proportional
158 hazard assumptions were tested based on Schoenfeld residuals after fitting a model. Poisson
159 regression models were used to examine associations between use of residential respite care
160 and number of days in residential care. The number of days in residential care was examined
161 as a rate of the number of days in the study (to the end of the two-year follow-up period or
162 until date of death). Incidence Rate Ratios (IRR) with 95%CIs are presented. Models were
163 adjusted for all covariates. Statistical analyses were performed using Stata v.15.0 (Stata Corp
164 LP, College Station, TX, USA).

165 *Sensitivity Analysis*

166 Previous research has suggested that people living with dementia are more likely to use their
167 approval for residential respite care.²² Carers of people with dementia are at a high risk of
168 carer stress and have identified respite care as a key support service to help them continue
169 with their caregiving role.^{3, 23-25} Therefore, due to the high interest in the effectiveness of
170 respite services for people living with dementia, results were stratified by whether people
171 were identified as having dementia at the time of their aged care assessment.

172 *Ethical Approval*

173 The study received ethical approval from Details removed for double-blind review process.

174 **Results**

175 *Participant characteristics*

176 Between January 2005 and June 2012, 480,862 people had a first-time approval for
177 residential respite care services. Table 1 shows the characteristics of people by whether they
178 accessed residential respite care within one year of their aged care assessment. Of people who
179 were approved for residential respite care 37.7% did not have a concurrent approval for home
180 care or long-term care. The mean (standard deviation (SD)) age of people approved for
181 residential respite care was 83.0 (7.0), the majority were female (61.1%) and were born in
182 Australia (70.0%). In this cohort 23.6% of people approved for residential respite care had
183 their assessment in a hospital. Most people had a carer (86.9%), over half had a female carer
184 (56.2%) and 45.1% of people approved for respite had a carer who was a son or daughter.
185 Hypertension (43.7%), gout (36.3%) and dementia (28.3%) were the most common health
186 conditions reported for people who were approved for residential respite care at the time of
187 the assessment (see Supplementary Table 1 for the full list of health conditions). Of those
188 approved for residential respite care, 27.4% died within one year of their assessment.

189 *Use of residential respite care services 2005-2012*

190 Of those approved for residential respite care, 36.9% (n=177,596) used their approval to
191 access residential respite care services at least once in the 12 months following their aged
192 care eligibility assessment (Supplementary Figure 1). Of those people who accessed
193 residential respite care services within 12 months, 32.0% used residential respite care once
194 and went directly to long-term residential care (within 2 weeks of respite care), 40.7% used
195 respite care once within 12 months and did not go directly to long-term care and 27.3% used
196 respite ≥ 2 times within 12 months (Supplementary Figure 2).

197 *Use of residential respite care and use of long-term care*

198 Of those approved for residential respite care, 55.8% started long-term residential care within
199 two years of their aged care eligibility assessment (Table 2). This was lower for people who
200 used respite once and did not go directly to long-term care (40.4%), compared to people who
201 did not use residential respite care (48.8%), but this was higher for people who used respite
202 ≥ 2 times (71.2%).

203 After adjustment for covariates, using respite care once and not going directly to long-term
204 care was associated with a lower risk of using long-term care (HR (95%CI): 0.58 (0.57,
205 0.59)) but using respite care ≥ 2 times was associated with a higher risk of using long-term
206 care (1.07 (1.06, 1.08)) (Table 3). For people with dementia, using respite care once and not
207 going directly to long-term care was associated with a lower risk of using long-term care
208 (0.52 (0.51, 0.53)) and using respite care ≥ 2 times was also associated with a lower risk of
209 using long-term care (0.85 (0.83, 0.87)).

210 *Use of residential respite care and number of days in residential care*

211 When including only those who did go on to access long-term care, the total number of days
212 in residential care (respite days plus long-term care days) was lower for people who accessed
213 respite once and did not go directly to long-term care (median (IQR) 323 (159-509)) or used
214 respite ≥ 2 times (435 (254-582)) compared to people who did not use respite care (507 (184-
215 676)). The total number of days in residential care was higher for people who accessed
216 respite care once and went directly to long-term care (598 (366-701)).

217 Accessing respite care once and not going directly to long-term care was associated with
218 fewer days spent in residential care (residential respite days plus long-term care days)
219 compared to those who did not use respite care (IRR (95% CI) 0.68 (0.67, 0.69), $p < 0.001$)
220 when only including those who accessed long-term care in the two-year period (Table 4).

221 Accessing respite care ≥ 2 times was also associated with fewer days spent in residential care

222 compared to those who did not use respite care (0.86 (0.84, 0.87), $p < 0.001$). Using respite
223 once and going directly to long-term care was associated with significantly more days in
224 residential care compared to those who did not use respite care (1.11 (1.10, 1.12), $p < 0.001$)
225 (Table 4), and this was similar when stratifying by whether people were living with dementia.

226 **Discussion**

227 This study utilises data from the largest study of older people accessing aged care services in
228 Australia and is the first study to examine associations between use of residential respite care
229 and use of long-term residential care in a nationally representative cohort. This study showed
230 that using residential respite care once and not going directly to long-term care was
231 associated with both a lower risk of going into long-term care and fewer overall days in
232 residential care. For people using residential respite care two or more times, while they were
233 more likely to go into long-term residential care, they used overall less days in care compared
234 to people who did not access respite care. However, for people with dementia using
235 residential respite care two or more times continued to be associated with a lower risk of
236 using long-term residential care.

237 The findings suggest that the use of residential respite care delayed people's entry to long-
238 term care if people returned home after their first stay in respite. Prior to this study there was
239 little evidence to support the effectiveness of residential respite care to delay entry to long-
240 term care for older people. One controlled trial from 1989 reported that respite care for
241 people with Alzheimer's disease compared to no respite led to people living 22 extra days in
242 the community before starting long-term residential care.²⁶ Multiple uses of residential respite
243 care in this study were associated with fewer overall days in residential care but the amount
244 of days reduced was not as high as for those who only used residential respite care once. The
245 results suggest the utilisation of residential respite care could lead to a cost saving for the
246 government in terms of a reduction in the number of days spent in residential care. In
247 addition, delaying entry to long-term residential care for people with and without dementia is
248 the preference for the majority of people who access aged care services and their carers⁷ and
249 this study suggests the use of residential respite care may help them to stay at home for as
250 long as is feasible.

251 In this study a high proportion of people went directly to long-term care from their first
252 respite use, it has been suggested that residential respite care is being utilised as a method of
253 transitioning to long-term care. Residential respite may be preferred by some consumers and
254 aged care providers as a first step before becoming a long-term resident while financial
255 arrangements are processed or people using residential respite care as a “trial” before starting
256 long-term care.²⁷ We also found that only 37% of those approved for residential respite care
257 used their approval and accessed respite. We could not explore the underlying reasons for this
258 further in this study, but there are likely to be multiple reasons including barriers to access
259 such as availability of places,²⁷ people choosing to use only home services or enter long-term
260 care or people may die before they are able to use the service as we showed 27% of people
261 approved for residential respite died within 12 months of their aged care assessment.

262 Most people with dementia live in the community (83% of men and 71% of women living
263 with dementia) and 91% of these individuals rely on an informal carer to support them (either
264 with or without additional formal care services).^{6, 28}

265 Informal carers help people to stay living in their homes and delays the need for older people
266 to start long-term residential care.^{3, 7} Previous qualitative research has suggested that respite
267 care provided in a residential aged care home on a planned or emergency basis is more than
268 just a “short break” and can positively impact the person receiving care and their carer by
269 reducing carer burden, carer stress-related outcomes and improving mood.⁹ Some research
270 has also suggested that respite care may improve quality of life for the person and their
271 carer.³ However, research is lacking to gain a clear understanding if residential respite care
272 improves carer well-being.¹⁰ In this study we found for people with dementia using
273 residential respite multiple times was associated with a lower risk of using long-term care,
274 which may suggest that residential respite is more effective for people with dementia in terms
275 of supporting the carer and care recipient to stay living at home. We could not explore the

276 reasons for this further, but a systematic review has suggested day respite care in a residential
277 aged care home may help to reduce behavioural changes for people living with dementia, but
278 there is a lack of evidence regarding respite provided as short stays in a residential aged care
279 home.⁹ Longitudinal studies are needed to examine behavioural changes and other outcomes
280 for people with and without dementia before and after using residential respite services.
281 Moving from living at home to a long-term residential aged care home is not only financially
282 costly for the individual and the government but the experience can be daunting for the
283 individual and their family and can negatively impact the health and the well-being of the
284 individual and their carer.²⁹ Therefore, the effectiveness of interventions to help people live at
285 home for longer, such as residential respite care, is critical for the individuals receiving care,
286 their families, aged care providers and policy makers.

287 *Strengths and limitations*

288 This is a large-scale, nationally representative study of all people who accessed or were
289 approved for government-subsidised residential respite care services in Australia over an
290 eight-year period with two years follow-up for all participants. We were able to determine
291 whether the participants accessed long-term residential care, how many days they accessed
292 residential respite and long-term residential care for and when they died.

293 With the comprehensive data collected we were able to adjust for many health conditions that
294 may have contributed to differences in how participants used respite care. However, the aged
295 care eligibility assessments can only list up to ten health conditions and conditions that affect
296 the person's need for aged care services are more likely to be reported; therefore, we may not
297 have a complete capture of the range of co-morbidities that people have. We did not have
298 information detailing the reasons for why people chose to use residential respite care or long-
299 term care, so the underlying reasons could not be further explored. There is also the potential
300 for residual confounding for factors that are not captured in the aged care assessments. This

301 study is limited to exploring the use of residential respite care but the full portfolio of respite
302 care in Australia includes both community-based respite and residential respite care.

303 **Conclusions and Implications**

304 By utilising the largest study of people accessing aged care services in Australia, we showed
305 that using residential respite care was associated with fewer days spent in residential care
306 overall when people did not go directly to long-term care from their first residential respite
307 stay. Going directly to long-term care after first use of residential respite care was associated
308 with a greater number of days spent in residential care. These findings are critical in Australia
309 and internationally to the planning of future aged care services. This research supports the use
310 of residential respite care services being optimised for the future ageing population as a
311 means of delaying entry to long-term residential care. Methods to improve residential aged
312 care may include methods to improve access such as increasing the availability of residential
313 respite care places and long-term care places. Increases in long-term care places may reduce
314 the need for people using respite care while waiting for a long-term care place to become
315 available. An additional care program may be needed for people currently using residential
316 respite as a way of entering long-term care or as a trial of long-term care. In addition,
317 variation in quality of care provided in residential respite services should be further examined
318 to determine optimal models of care.

319

320 **Conflicts of Interest**

321 The authors do not declare any conflicts of interest.

322 **References**

- 323 1. My Aged Care. Respite care; 2017. [https://www.myagedcare.gov.au/respite-](https://www.myagedcare.gov.au/respite-care?fragment=residential)
324 [care?fragment=residential](https://www.myagedcare.gov.au/respite-care?fragment=residential). Accessed 10/05/2019.
- 325 2. Australian Government Department of Health. 2016-17 Report on the Operation of the Aged
326 Care Act 1997. Canberra; 2017.
- 327 3. Bruen, W, Howe, A. Respite Care for People Living with Dementia "It's more than just a short
328 break". Alzheimer's Australia; 2009.
- 329 4. Maayan, N, Soares-Weiser, K, Lee, H. Respite care for people with dementia and their carers.
330 The Cochrane database of systematic reviews 2014;(1):Cd004396.
- 331 5. Mason, A, Weatherly, H, Spilsbury, K, et al. The effectiveness and cost-effectiveness of
332 respite for caregivers of frail older people. Journal of the American Geriatrics Society
333 2007;55(2):290-299.
- 334 6. Brooks, D, Ross, C, Beattie, E. Caring for someone with dementia: The economic, social and
335 health impacts of caring and evidence based support for carers. Alzheimer's Australia.; 2015.
- 336 7. Australian Government Productivity Commission. Housing Decisions of Older Australians
337 Productivity Commission Research Paper. 2015.
- 338 8. Cepoiu-Martin, M, Tam-Tham, H, Patten, S, et al. Predictors of long-term care placement in
339 persons with dementia: a systematic review and meta-analysis. International journal of
340 geriatric psychiatry 2016;31(11):1151-1171.
- 341 9. Vandepitte, S, Van Den Noortgate, N, Putman, K, et al. Effectiveness of respite care in
342 supporting informal caregivers of persons with dementia: a systematic review. International
343 journal of geriatric psychiatry 2016;31(12):1277-1288.
- 344 10. Eagar, K, Owen, A, Williams, K, et al. Effective Caring: a synthesis of the international
345 evidence on carer needs and interventions. Centre for Health Services Development; 2007.
- 346 11. Commonwealth of Australia. Interventions to support carers of people with dementia. 2018.
- 347 12. Gnanamanickam, ES, Dyer, SM, Milte, R, et al. Direct health and residential care costs of
348 people living with dementia in Australian residential aged care. International journal of
349 geriatric psychiatry 2018;33(7):859-866.
- 350 13. Visvanathan, R, Amare, AT, Wesselingh, S, et al. Prolonged Wait Time Prior to Entry to Home
351 Care Packages Increases the Risk of Mortality and Transition to Permanent Residential Aged
352 Care Services: Findings from the Registry of Older South Australians (ROSA). The journal of
353 nutrition, health & aging 2018.
- 354 14. Australian Government. Aged Care Assessment Program Data Dictionary Version 1.0; 2002.
355 [https://www.aihw.gov.au/reports/aged-care/aged-care-assessment-program-data-](https://www.aihw.gov.au/reports/aged-care/aged-care-assessment-program-data-dictionary-versi/contents/table-of-contents)
356 [dictionary-versi/contents/table-of-contents](https://www.aihw.gov.au/reports/aged-care/aged-care-assessment-program-data-dictionary-versi/contents/table-of-contents). Accessed 10/05/2019.
- 357 15. Knapp, M, Chua, K-C, Broadbent, M, et al. Predictors of care home and hospital admissions
358 and their costs for older people with Alzheimer's disease: findings from a large
359 London case register. BMJ Open 2016;6(11):e013591.
- 360 16. Gaugler, JE, Duval, S, Anderson, KA, et al. Predicting nursing home admission in the U.S: a
361 meta-analysis. BMC geriatrics 2007;7:13.
- 362 17. Greiner, MA, Qualls, LG, Iwata, I, et al. Predicting nursing home placement among home-
363 and community-based services program participants. The American journal of managed care
364 2014;20(12):e535-536.
- 365 18. Lippa, M, Luck, T, Weyerer, S, et al. Prediction of institutionalization in the elderly. A
366 systematic review. Age and ageing 2010;39(1):31-38.

- 367 19. Sundararajan, V, Henderson, T, Perry, C, et al. New ICD-10 version of the Charlson
368 comorbidity index predicted in-hospital mortality. *Journal of clinical epidemiology*
369 2004;57(12):1288-1294.
- 370 20. Elixhauser, A, Steiner, C, Harris, DR, et al. Comorbidity measures for use with administrative
371 data. *Medical care* 1998;36(1):8-27.
- 372 21. Sloan, KL, Sales, AE, Liu, CF, et al. Construction and characteristics of the RxRisk-V: a VA-
373 adapted pharmacy-based case-mix instrument. *Medical care* 2003;41(6):761-774.
- 374 22. Australian Government Australian Institute of Health and Welfare. *Dementia and the take-up*
375 *of residential respite care*. 2010.
- 376 23. Guideline Adaptation Committee. *Clinical Practice Guidelines and Principles of Care for*
377 *People with Dementia*. Sydney; 2016.
- 378 24. Brodaty, H, Donkin, M. Family caregivers of people with dementia. *Dialogues in clinical*
379 *neuroscience* 2009;11(2):217-228.
- 380 25. Sorensen, S, Conwell, Y. Issues in dementia caregiving: effects on mental and physical health,
381 intervention strategies, and research needs. *The American journal of geriatric psychiatry* :
382 official journal of the American Association for Geriatric Psychiatry 2011;19(6):491-496.
- 383 26. Lawton, MP, Brody, EM, Saperstein, AR. A controlled study of respite service for caregivers
384 of Alzheimer's patients. *The Gerontologist* 1989;29(1):8-16.
- 385 27. Aged Care Financing Authority. *Report on respite care for aged care recipients*. 2018.
- 386 28. Brown, L, Hansnata, E, Anh La, H. Economic Cost of Dementia In Australia 2016–2056. In:
387 Australia, As, ed. Canberra; 2017.
- 388 29. Sury, L, Burns, K, Brodaty, H. Moving in: adjustment of people living with dementia going
389 into a nursing home and their families. *International psychogeriatrics* 2013;25(6):867-876.

390

Appendix 1

Supplementary Table 1. Health conditions for people who had approval for residential respite care, January 2005 to June 2012.

Supplementary Figure 1. Proportion of people who used residential respite care within 12 months of their aged care eligibility assessment (N=480,862).

Supplementary Figure 2. Proportion of people who used residential respite care once or multiple times within 12 months of their aged care eligibility assessment (N=177,596).