

DEPARTMENT OF ECONOMICS

***MACQUARIE ECONOMICS  
RESEARCH PAPERS***

*Ownership of Residential Aged Care Facilities in  
Australia*

W. Kathy Tannous and Kehui Luo

Number 8/2006  
ISSN 1834-2469

November 2006

# OWNERSHIP OF RESIDENTIAL AGED CARE FACILITIES IN AUSTRALIA

**Dr. W. Kathy Tannous**  
[ktannous@efs.mq.edu.au](mailto:ktannous@efs.mq.edu.au)

and

**Dr. Kehui Luo**  
[kluo@efs.mq.edu.au](mailto:kluo@efs.mq.edu.au)

## ABSTRACT

Market failure exists in the provision of residential aged care services in Australia due to imperfection of competition that arises out of government actions. The Commonwealth Government has the exclusive right to grant provider rights and control over the number of beds that will be funded to suppliers. This results in making competition in the provision of the service less than perfect. Further imperfection occurs, with the regulation of pricing with the government providing most of the revenue for the provision of services. This paper uses primary national data collected for residential aged care facilities in late 2004 to test the significance of ownership in the design and implementation of occupational health and safety management systems. As part of this paper, the importance of other factors in determining the implementation of these systems was also examined. This study finds that ownership is significant using logistic regression. The results from logistic regression were broadly consistent with those from preliminary analyses. Relatively fewer for-profit facilities operated in less than highly accessible regions and were more likely in larger sized compared to those not-for-profit. This is going to have important future impact on the availability of facilities in rural and remote regions. Increasingly not-for-profit operators are closing their facilities or moving away from the provision of aged care and they may not be necessarily replaced with for-profit providers.

**Keywords:** ownership, aged care, management, logistic regression

**JEL Classification:** H0, H2, H3

**Methodology:** primarily empirical

## **Acknowledgements**

This research was supported by a Macquarie University New Staff research grant. An earlier version of the paper was presented at the Business and Economics Society International conference in Florence, Italy in July 2006. We would like to thank the reviewers and discussants of the paper.

## **1. Introduction**

The relation between corporate ownership structure and firm value has been the subject of numerous studies, dating back to Berle and Means (1932). The literature is lacking when it comes to explaining the allocation of economic activities over a wide range of ownership structures that keeps in mind the opportunity costs of alternative ownership institutions. Hansmann (1996), Hansmann (1988), Fama and Jensen (1983), and Putterman (1993) are the few contributions to a more general economic theory.

Australia, like many other developed economies, is facing an ageing population with increased longevity, and advances in medical care have meant greater demand for residential aged services. Residential aged care is for older people who can no longer live at home. Entry into residential aged care can be for a number of reasons including illness, disability, the needs of the carer or because it is no longer possible to manage at home without help. The proportion of people aged 80 years or more is expected to almost treble, from 3.3 per cent of the population in 2002–03 to 9.1 percent in 2044–45, expecting to put upward pressure on aged care expenditure, in particular residential aged care. This group constitutes the main users of aged care services; therefore the ageing of the Australian population will result in significantly increased demand for aged care (Productivity Commission 2005). Australian residential aged care comprises of two levels: low level and high level care. Low level of care facilities, previously referred to as hostels, provide in general accommodation and personal care with occasional nursing care. High level care, previously known as nursing homes, provides care to those who often need continuous nursing care (Department of Health and Ageing 2005). Aged care services are provided on the basis of frailty or functional disability rather than specific age criteria (Steering Committee for the Review of Government Service Provision 2006). The number of low- and high-care residents in residential aged care services is projected to increase by 180 percent to 250 percent by 2044–45 dependent on the level of reduction in disability rates (Productivity Commission 2005). Ownership and operation of residential aged care are by private for-profit, state and local government, and the nonprofit. As at June 2005 (Table 1), of all subsidized residential aged care, 31.2

percent were provided by the private for-profit organizations, 7.8% by the State, Territory and local governments and the remaining 61% was by nonprofit organizations, religious based, community based and nonprofit (Steering Committee for the Review of Government Service Provision 2006).

**Table 1. Ownership of aged care residential places June 2005 <sup>(a)</sup>**

	<b>Number of Places</b>	<b>Proportion of total places %</b>
Private for profit	49 583	31.2
State, Territory and local government	12 376	7.8
State and Territory government	9 408	5.9
Local government	2 968	1.9
Nonprofit	96 942	61.0
Religious	48 355	30.4
Community based <sup>(b)</sup>	23 406	14.7
Charitable <sup>(c)</sup>	25 181	15.8
<b>Total <sup>(d)</sup></b>	<b>158 901</b>	<b>100.0</b>

(a) This table is based on the status of the residential aged care service operator or provider. Excludes Multi-Purpose Services and flexibly funded services.

(b) Services to an identifiable community based on locality or ethnicity, not for individual gain.

(c) Services to the general community or an appreciable section of the public, not for individual gain.

(d) Totals may not add a result of rounding.

Source: Department of Health and Ageing (unpublished) referenced in Steering Committee for the Review of Government Service Provision (2006).

Regulation of government subsidized residential aged care service including accreditation of service and certification of the standard of the facility is primarily the responsibility of the Australian government. The national government has the exclusive right to grant suppliers the right to offer this service and control over the number of beds that will be funded to suppliers. All firms who wish to provide residential aged care must apply to the government and be approved under the Australian Aged Care Act, 1997, of a provider number for aged care. As well, once a year, the national government announces the release of a certain number of beds in different regions of the country at differing level or type of care needs, and

thereby level of funding or pricing, that firms have to competitively tender for. The method for accessing of residential aged care service is regulated and controlled by the Australian government by way of gate keeping the entry and thereby demand into the facility. All individuals requesting aged care service need to be assessed by a government body, the Aged Care Assessment Team (ACAT) for eligibility. Once an individual is admitted into the service, then ACAT determines the level of care required and thus the subsidy paid to such services. The average Australian government payments, including subsidies and supplements, totalled \$39,336 per annum per high care resident and \$14,109 per annum per low care resident (Steering Committee for the Review of Government Service Provision 2006). For the organization providing care, regulation by the Australian government results in the quantity to be provided, the nature of the service and clientele to serve and thereby the prices of the services to be dictated by the government regulators. As well, the national government has implemented a number of measures to monitor and the quality of care and services provided in government funded aged care facilities. This includes the requirement of all funded facilities needing to meet required accreditation standards with the Aged Care Standards and Accreditation Agency assessing and monitoring their ongoing compliance. The organization's only controls in providing its services are more on the input side or operation within the confines of accreditation standards. In profit maximization, since the total revenue is controlled or dictated by the allocation of beds by the government, the firms' main focus maybe on the resources that it uses.

For-profit organization's focus is on the traditionally explored issue of maximizing profit. As was noted in Table 1, the majority of the firms providing residential aged care are operated by the nonprofit organizations; thereby it is important to examine their nature. Nonprofit organizations are the product of commitment by groups of people to provide a service for themselves or others, to represent their interests or lobby on behalf of others, or to practice a religion. They are not part of government, even though they may perform a public service; neither are they established or operated to make a profit for their owners. Australia's nonprofit organizations operations focus on health and community

services, of which residential aged care is one part. Because nonprofit services are generally the product of people's enthusiasms or commitments, they are strongly value driven (Lyons, 1999).

The location of the majority of residential aged care services operated by the for-profit sector has been in the capital area. The nonprofit operators provide most of the services in the remote and rural areas (Table 2).

**Table 2: Services by remoteness<sup>(a)</sup> and organization type at 30 June 2005**

Organization type	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
Number						
Private	629	107	26	0	0	762
State and Local government	86	133	104	13	8	344
State government	50	119	80	8	6	263
Local government	36	14	24	5	2	81
Nonprofit	1,049	501	237	27	13	1,827
Charitable	282	110	39	1	2	434
Community Based	167	196	126	20	6	515
Religious	600	195	72	6	5	878
<b>Total services</b>	<b>1,764</b>	<b>741</b>	<b>367</b>	<b>40</b>	<b>21</b>	<b>2,933</b>
% (column)						
Private	35.7	14.4	7.1	0.0	0.0	26.0
State and Local government	4.9	17.9	28.3	32.5	38.1	11.7
State government	2.8	16.1	21.8	20.0	28.6	9.0
Local government	2.0	1.9	6.5	12.5	9.5	2.8
Nonprofit	59.5	67.6	64.6	67.5	61.9	62.3
Charitable	16.0	14.8	10.6	2.5	9.5	14.8
Community Based	9.5	26.5	34.3	50.0	28.6	17.6
Religious	34.0	26.3	19.6	15.0	23.8	29.9
<b>Total services</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) Refers to the location of the services.

Source: Australian Institute of Health and Welfare, 2006.

The vast majority of empirical literature on ownership differences in the residential aged care industry has examined the cost, resource input, quality of care, and size as related to ownership type. The literature generally demonstrates that for-profit residential aged care has lower costs than nonprofit residential aged

care (Arling et al. 1987; Bishop 1988; Caswell and Cleverly 1983; Davis 1993; Fresh and Ginsberg 1981; Hawes and Phillips 1986; Koetting 1980; Schlenker and Shaughnessy 1984; Ullman 1983). Although studies vary in the reported magnitude of the cost differences as a proportion of the number of places, the data suggest that the average costs of for profit range from 5% to 15% lower than the average costs of nonprofit facilities, even after controlling for patient, service, and facility characteristics.

A number of researchers believe that profit and public responsibilities are not compatible. Private nursing homes are often seen as profit oriented and as a result may provide lower quality care (Harrington, et al. 2001; Davis 1993; Elwell 1984; Greene and Monahan 1981; Koetting 1980; Serow et al. 1993; Schlesinger et al. 1987). The existence of information asymmetries in private nursing homes (Schlesinger et al. 1987) where health care consumers are less knowledgeable about the quality of medical care than are health care providers can result in the provision of poorer quality care (and less costly to produce) in the for-profit setting. The argument is that profit-maximizing organizations will skimp on undetectable quality to enhance profit margins. Lack of knowledge and resulting vulnerabilities are especially likely in the case of long-term care residents due to their physical dependence and cognitive impairment (Bishop 1988; Butler 1976; Fottler et al. 1981; Weisbrod and Schesinger 1986). Nonprofit nursing homes are often seen as more responsible and as a result may provide higher quality care (Gottesman 1974; Zinn et al. 1993).

Several studies have found significant differences in resource inputs, such as nursing hours per patient, with nonprofit nursing homes having more resource inputs than for-profit nursing homes (Fottler et al. 1981; Greene and Monahan 1981; Rosko et al. 1995; US Department of Health, Education, and Welfare 1975, 1979; Winn 1974; Zinn 1993; Serow et al. 1993). Yet other studies have found no or only limited differences with respect to staffing levels and physical aspects of the facilities (Aaronson et al. 1994; Holmberg and Anderson 1968; Holmes 1996; Levey et al. 1973). Davis (1993) found a higher registered nurse (RN) ratio in for-profit facilities but also lower quality of care in for-profit facilities. He hypothesized that this may be due to for-profit nursing homes either reducing staff

training or reducing the numbers of staff members other than RNs (Castle and Shea 1998). With respect to resource input, more similarities than differences were found between for-profit and nonprofit operators.

This study examines the importance of ownership on the input used by aged care firms specifically the management systems put in place to protect workers' health and safety. Section 2 describes the importance and types of ownership. Section 3 details the ownership structure in Australian residential aged care facilities. Section 4 describes the methodology and the results. And Section 5 provides a conclusion and discusses the potential policy importance of the findings.

## **2. Ownership**

Ownership can take three forms: government funded and operated, private for-profit ownership and nonprofit sector. The private for-profit ownership can be in two forms of private ownership with no government funding and private ownership with partial government support. Nonprofit ownership can be private operation by organizations or groups but not for profit. Nonprofit organizations are the product of commitments by groups of people to provide a service for themselves or others, to represent their interests or lobby on behalf of others, or to practice a religion; are not part of government, even though they may perform a public service; and are not established or operated to make a profit for their owners.

According to Guy (2006) ownership status, whether nonprofit or for profit, represents a choice. For some, the choice goes back to intrinsic differences in objectives across individuals with the opportunist choosing to organize for profit while the altruist will choose to organize as a nonprofit. In healthcare, including aged care, it has been traditionally dominated in Australia by nonprofit explained potentially by the role of uncertainty and incomplete markets for risk according to Arrow (1963). The idea being the residential aged care user is often not well informed about the quality of the service being purchased and is frequently less informed than the supplier (Guy 2006).

In Australia, nonprofit institutions are defined in 'legal or social entities created for the purpose of producing goods and services whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them'. (SNA93, paragraph 4.54). Nonprofit firms are subdivided between those that are predominantly engaged in market production (called market nonprofit institutions). Market nonprofit institutions sell their output at economically significant prices; and predominantly engaged in non-market production (called non-market nonprofit institutions). Non-market nonprofit institutions dispose of their output free of charge or at prices that are not economically significant. However, nonprofit institutions that are created by associations of businesses in order to provide services to association members (e.g. trade associations, employer groups, industry chambers, lobbying organizations) are regarded as engaged in market production irrespective of the method of disposing of their output.

The two general views of nonprofit firms have emerged: nonprofit firms are inefficient and wasteful, and nonprofit firms are a response to market failure and thus may actually improve efficiency. Newhouse (1970) modelling and analysis of nonprofit enterprises portrays the decision maker in nonprofit institutions as desiring to maximise the quantity and quality of the service provided but subjecting to the constraint that revenues must equal costs, and concludes that nonprofit institutions will produce excessive output and quality and minimize costs. He compares efficiency between nonprofit enterprises in seemingly imperfect product markets and for-profit firms in perfect markets. Newhouse's work in health care sector observed that excessive quality with nonprofit of nursing homes likely to substitute higher-quality registered nurses for licensed practical nurses, was often used in for-profit nursing homes and expensive equipment for open-heart surgery is more often found in nonprofit hospitals than for-profit hospitals (Newhouse 1970). Clarkson (1972) maintains that nonprofit entities produce identical outputs but use over-qualified or excessive numbers of inputs to produce the outputs, and views for-profit managers as having a strong incentive through bonuses to maximise the present value of the wealth of the stockholders who have property rights to the value of the firms through

minimizing costs. Nonprofit institutions monitor managerial behaviour through intricate sets of rules that prevent certain kinds of shirking by hiring more congenial workers, but may fail in monitoring the work environment rigorously, and so on. Weisbrod (1975) observed that nonprofit institutions may emerge to provide services with public good attributes that would not be satisfactorily provided in the public sector. If goods and services provided by firms in an industry lie along a continuum from pure private goods to pure public goods, one might expect private services to be provided by for-profit firms and public services to be provided by both nonprofit and governmental organizations. Ben-Ner (1986) views nonprofit enterprises as a consumers' cooperative that produces output as an individual consumption good and quality of output as a public consumption good for all consumers of the product.

Hansmann (1981) found that nonprofit institutions charge for the services, sell services that are not pure public goods and have high fixed costs. Large set-up costs are necessary to make the service available to potential customers, but fees charged for the service are not sufficient to pay for the enterprise's initial expenditures. Thereby the need for external contributions arise either from sister organizations, voluntary donations or government. Hotlmann (1988) concluded that some studies showed evidence of waste and inefficiency among nonprofit enterprises and others gave support that nonprofit firms provide a unit set of services. Nonprofit organizations providing health, education, community and other human services are often referred to as public-serving nonprofits. This is because they are mostly established to provide services for people who are not their members (self-help organizations, such as Alcoholics Anonymous, are the exception to this generalisation). Public-serving nonprofits are contrasted with member-serving organizations, established primarily to serve the interests of their members. Nonprofits provide a significant minority of both nursing home and hospital beds. Another important set of nonprofit organizations in the health field are those that are set up in response to various types of illnesses, or chronic conditions such as heart disease, cancer, sudden infant death syndrome, and so on.

### **3. Australian aged care provision**

The number of Australian aged is increasing at an increasing rate, particularly for the old. A significant proportion of the elderly have core activity restriction as a result of their level of disability and an even greater number have some cognitive loss associated with dementia. The Australian family structure has been changing over the past century, with both women and men being active in the labour market, having smaller families, and being quite mobile geographically. This has started to impact on the level of intergenerational support that can be provided to older relatives, with a consequent need for more formal systems of community care. As people age and their health deteriorates, they may need to access residential aged care, an option generally considered only as a last resort. To access these services people undergo assessment by the ACAT and have their level of dependency rated as low or high care. The number of places providing residential aged care is highly regulated by the national Government resulting in an average occupancy rate of 95 percent at June 2005. Occupancy rates differ between states and territories, but range from a low of 93.4% to 98.0% (Table 3). Residential aged care services are operated by the private for-profit and the private nonprofit, with location and size differences.

Differences between for-profit nursing homes and nonprofit nursing homes were found when the institutions were stratified by size (Riportella-Muller and Slesinger 1982; Castle and Shea 1998). The size of the facility is an important factor as it may determine the structure, process and outcome of the service provided to the residents (Castle and Shea 1998). The nonprofit owners operated the small sized facilities, with almost 70% of the residential aged care services being less than 50 beds. (Mathur 1996: 46). Almost half of all Australian nursing home beds are owned by the private for-profit sector, and one third by the private nonprofit sector. Almost all hostels (93.0%) are owned by the private nonprofit organizations. Service operated by the for-profit sector have been in the capital area while the nonprofit operators operated most of the services in the remote and rural areas

**Table 3 Size and distribution of mixed residential aged care services June 2005**

	Unit	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Residential services	no.	303	282	238	94	126	40	16	5	1 104
Places	no.	18 071	985	776	176	818	073	933	112	944
Occupancy rate	%	94.8	93.8	96.5	93.4	97.2	96.7	98.0	96.5	95.1
Places by locality										
Major Cities	%	60.3	69.3	52.3	71.6	69.8	..	100.0	..	61.3
Inner Regional	%	30.6	23.7	30.8	18.1	15.1	79.0	–	..	27.3
Outer Regional	%	8.6	6.9	15.3	8.6	13.4	18.8	..	44.6	10.4
Remote	%	0.5	0.1	1.0	1.4	1.7	2.3	..	53.6	0.8
Very Remote	%	–	..	0.7	0.3	–	–	..	1.8	0.2
Service size										
1–20 places	%	2.0	1.3	2.0	1.3	1.9	3.5	2.1	33.9	1.9
21–40 places	%	14.4	16.1	11.3	15.8	19.9	18.2	8.3	21.4	14.9
41–60 places	%	24.6	32.3	35.1	32.5	27.5	24.2	12.1	44.6	29.6
61+ places	%	58.9	50.4	51.6	50.4	50.7	54.1	77.5	–	53.6

Notes: The occupancy rate is defined as the number of residents in care as a proportion of available places.

Services have been defined as high care, low care or mixed care based on the proportion of high care and low care residents in each service. Excludes Multi-Purpose Services and flexibly funded services.

Source: Steering Committee for the Review of Government Service Provision (2006)

Residential aged care facilities combine the living environment for the aged, a management setting for the operators and managers, and a work setting for the workers undertaking the provision of care. These facilities operate within a highly regulated setting at the national, state or territory and local area standards and guidelines (Newman et al. 2001; Tannous 2003). These regulations incorporate all aspects of building design, location, provision of equipment, type of residents that can be housed, background and type of service and staff and so on. They differ for the type of care provided, low or high care, by geographical location, and by the type of residents being cared for.

The work environment is the management system and the nature of management combined with the physical environment in which they are

operating. For constitutional reasons occupational health and safety (OHS) has traditionally fallen within the domain of the state and territory governments in Australia. Regulation of OHS in Australia has been principally in the form of direct legal enactment and the associated enforcement apparatuses (Johnstone and Quinlan 1993; Russell 1999). The common attribute of the regulation of residential aged care operators is the duty of care to all those who access their services; residents, families, workers, contractors, professionals, and visitors. All those who influence the risks to health and safety at the workplace have a duty of care – employers, suppliers of equipment and others who effect those risks (Industry Commission 1995; Johnstone 1997). The duty of care to employees is defined as the provision of safe and healthy place of work; safe and sufficient equipment appropriate for the task; and safe system of work, including supervision (Commonwealth Department of Health and Family Services 1996; Industry Commission 1995).

Residential aged care services' compliance with the regulation and its primary goals can be voluntary or from fear of penalties from non-compliance. Australia's OHS and aged care regulatory compliance is based on the worldwide trend of deregulation and movement to self-regulation (Parker 2000). Self-regulation is based on the notion that the industry will comply with the guidelines and regulations without having an incentive or being motivated to comply with threatened inspection and possible penalties. Researchers have found that organizations like the United States' Occupational Safety and Health Administration (OSHA) have been 'marginally successful at best' with respect to compliance with OSHA regulations. They concluded that OSAH regulatory activity have little or no positive effect or influence on industrial compliance investment (Pederson 2000). Some residential aged care services in Australia and the United States have demonstrated their insufficient monitoring and inspection has resulted in a rise in work hazards (Harrington and Carrillo 1999; United States General Accounting Office 1999). Firms in general are not motivated to proactively comply with health and safety regulations as the likelihood of non-compliance detection for prosecution is low (Wright 1998).

Best practice is a process of continuous improvement achieved by benchmarking practices and performance. Benchmarking involves the analysis of services' policies and procedures and measuring how well they are implemented. They are then compared with like organizations, and identification and adoption is made of applicable practices (Worksafe 1998; National Occupational Health and Safety Commission 1996). Benchmarking is systematic and, as OHS is integral to all key business process, benchmarking can contribute to improvements in all management systems (National Occupational Health and Safety Commission 1996). In terms of benchmarking OHS, the management system (that is the processes used to manage OHS) is benchmarked rather than OHS performance standards per se (Shaw 1994).

#### **4. Methodology and results**

In recognition that the Australian aged care industry has one of the highest rates of injuries sustained from manual handling and being hit by a person coupled with increasing concern over the inability of the aged care industry to recruit and retain staff, particularly nursing staff, Tannous (2003) developed a new instrument to benchmark occupational health and safety (OHS) management systems. The Tannous OHS Benchmarking tool comprises of 11 domains, 47 scales and 234 items and added outcome indicators such as infection rates, accident rates, and so on. Reliability and stability was demonstrated for the Refined OHS Benchmarking Tool. Construct and divergent validation was observed internally using multitrait-multimethod and confirmatory factor analysis (Tannous 2005, Tannous 2003). Tannous (2003) study concluded that the residential aged care industry had available to it a valid instrument specifically tailored for its use as both a guide and benchmarking tool. The instrument was identified to have broader application across the residential aged care industry in states other than NSW and by services that are for-profit and not just the not-for-profit services studied by Tannous (2003). The Tannous OHS Benchmarking Tool assessed the following eleven major factors:

1. Management Commitment to OHS (RF1);
2. OHS Committee or OHS Consultative Group (RF2);
3. Employment and OHS (RF3);
4. Training (RF4);
5. Safe Living Environment (RF5);
6. Hazard Management (RF6);
7. Accident and Equipment Management (RF7);
8. Chemicals Management (RF8);
9. Emergency Measures (RF9);
10. Infection Control (RF10); and
11. Hospitality Services (RF11).

This instrument was applied to all Australian residential aged care facilities yielding a response rate of 30%, or 625 completed surveys. Tannous (2005) describes the process of survey design and implementation.

There were 625 facilities participated this study. Of them, 15 did not want to be identified. No information on profit status (for-profit or nonprofit) was available for 48 facilities (including those 15 unidentified facilities), and one facility with its service type missing, and thus those 49 facilities were not included in further analyses. A number of characteristics of aged care facilities were examined in relation to whether it is for-profit or nonprofit organization. The preliminary analysis shows that nursing home is much more likely to be for-profit facility comparing with hostel, about 35.1% vs 8.6%. The for-profit facilities are more likely to be classified as highly accessible (92.4% vs 75.5%), and to be medium to large sized (84.9% vs 61.3%), compared to nonprofit facilities. Western Australia had the highest proportion of for-profit aged care facilities (35.6%), followed by Australian Capital Territory (33.3%) and Victoria (27.3%), and then Queensland (18.8%), New South Wales (15.3%) and South Australia (13.9%), and Tasmania had the lowest proportion (8.3%). It should note that there were only 3 facilities in Australian Capital Territory included in the study. It was combined with Western Australia in further analyses.

For-profit and nonprofit facilities were also compared in terms of their performance in each of management areas, RF1 to RF11. There did not appear much different in average performance level between the two kinds of facilities (for-profit vs nonprofit) in any management area studied. However, those performance management scores were further examined using more sophisticated statistical model, logistic regression, in relation to their profit status, for-profit vs nonprofit. Those characteristics of facilities were also adjusted in the same model.

**Table 4: Results from the logistic regression**

	B	S.E.	Wald $\chi^2$	df	Sig.	Odds ratio	95% CI of true OR	
New South Wales	Ref group							
Queensland	0.515	0.404	1.624	1	0.202	1.674	0.758	3.697
South Australia	-0.066	0.445	0.022	1	0.883	0.937	0.392	2.239
Tasmania	-0.325	0.831	0.152	1	0.696	0.723	0.142	3.686
Victoria	1.016	0.343	8.781	1	<b>0.003</b>	2.761	<b>1.410</b>	<b>5.405</b>
Western Australia and Australian Capital Territory	1.267	0.403	9.909	1	<b>0.002</b>	3.550	<b>1.613</b>	<b>7.815</b>
Nursing home	Ref Gr							
Hostel	-1.899	0.272	48.716	1	<b>0.000</b>	<b>0.150</b>	<b>0.088</b>	<b>0.255</b>
Highly accessible	Ref Gr							
Accessible	-0.918	0.458	4.016	1	<b>0.045</b>	<b>0.399</b>	<b>0.163</b>	<b>0.980</b>
Less accessible	-1.483	0.849	3.048	1	0.081	0.227	0.043	1.199
Large size	Ref Gr							
Medium size	-0.255	0.277	0.847	1	0.357	0.775	0.451	1.333
Small size	-1.453	0.373	15.208	1	<b>0.000</b>	<b>0.234</b>	<b>0.113</b>	<b>0.485</b>
RF8 (Chemicals Management)	0.038	0.015	6.532	1	<b>0.011</b>	<b>1.039</b>	<b>1.009</b>	<b>1.070</b>
RF10 (Infection control)	-0.037	0.015	6.422	1	<b>0.011</b>	<b>0.963</b>	<b>0.936</b>	<b>0.992</b>

As shown in the preliminary analyses, there was no difference in average management levels between for-profit and nonprofit facilities in each performance area studied, when each was examined separately. However, after adjusting for other factors shown in Table 4, both chemicals management and infection control were significantly related to profit status. For-profit facilities had slightly higher average for chemicals management score but lower in average infection control score on average. This is particularly of concern given that infection control is

deemed to be most important for health care workers and residential aged care specifically given the type of residents that are moving into residential aged care, those that are more frail and more in need of medical support with staffing needing to manage more complex and diverse types of medical problems (International Committee of Occupational Health and Safety 2004; Mooney 2005; Gilmore 2004; Zerr et al 2005; Damani 1997). The people providing care also are changing and are coming from a wider range of backgrounds and experience with regard to clinical training. Two critical areas of infection control for residential aged care are airborne and physical transfer of residents or materials, such as linen, to those caring for them.

## **5. Discussion**

There is an increased societal recognition of the potential negative health effects of airborne micro-organisms and other bacteria. In institutions, like that of residential aged care services, this is particularly an issue as the people in care are those who are the frailest and most susceptible to infections (West 1984; Damani 1997; Burnard 1991; Waldron and Lunn 1991). Management of these facilities have a duty of care with respect to safety for all those who access their services including their residents, workers, volunteers, visitors and contractors. As such, increased vigilance to infection control procedures, safe working practices, and monitoring of general incidents is recognized as vital. This is deemed to be of particular concern for the for-profit operators of residential aged care services.

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