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DISCUSSION PAPER SERIES

IZA DP No. 15623

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ABSTRACT

Job Preferences of Aged Care Workers in Australia: Results from a Discrete Choice Experiment*

Using a Discrete Choice Experiment we estimate the relative value attached by workers on core job attributes identified by previous qualitative research on the Aged Care workforce in Australia: salary (hourly); work hours; training/skill development; staffing numbers; processes for managing work-related stress; and freedom in the job. In this mostly part-time employed workforce, the opportunity for more workhours is welcome, but relatively less important. Nurses (enrolled and more so registered, being typically better-paid and higher-qualified) value pay rises less and training opportunities more than their (typically lower-paid and lower-qualified) care worker counterparts. Casual/temporary workers prefer workplaces that are adequately staffed relatively more than their permanently employed counterparts. In the context of increasing demand for more and for better-quality Aged Care services, the paper's overall findings can inform the current multi-faceted debate about a sustainable way for the Aged Care sector to attract, retain and utilize its workforce.

JEL Classification: J14, J21, J39, C25, I19

Keywords: aged care workforce, discrete choice experiments, job attributes, job preferences

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1. Introduction

Within the aged care system in Australia, demand for services has reached unprecedented levels and, with a rapidly ageing population, will continue to expand into the future. The recent Productivity Commission Inquiry into aged care highlighted that the sector is facing several concurrent challenges with regard to increased demand for residential aged care placements and Home Care Packages, the flexible delivery of these services, ensuring high-quality care and the expansion of consumer directed care (CDC). With the ageing of the population, the aged care sector needs to secure a significant expansion of its workforce at a time when the specific and possibly the broader labour market could be tightening. The sector is therefore entering a critical phase in its national workforce development. However, there is currently little empirical evidence as to how the aged care sector and its workforce can expand and change to meet these challenges.

In this paper, we use the Discrete Choice Experiment (DCE) methodology to estimate the preferences of aged care workers over different attributes, aiming to identify the key factors that influence the aged care workers' decision to work in the sector. DCEs are based upon the elicitation of stated preferences and are designed to establish the relative importance and impact of individual attributes, or characteristics, upon overall utility or satisfaction. With strong theoretical foundations originating in Lancaster's characteristics approach to micro-economic consumer theory (Lancaster 1996), DCEs have been widely utilised in health economics to elicit patient and general population preferences for health and health care services (De Bekker-Grob et al 2012). They have also been successfully applied to examine decision-maker and workforce preferences including within the health care sector (Ratcliffe et al 2009; Scott et al 2015). The key contribution of the current paper to the literature is that, to our best knowledge, it offers the first DCE analysis of the aged care workforce.

2. Data and estimation method

Design of the Discrete Choice Experiment (DCE)

The DCE used an orthogonal design with thirty-six sets and four blocks. Each survey respondent was provided with nine sets of job positions with related attributes and levels. The choice of the DCE job preference attributes was informed by two sources: (1) data drawn from qualitative interviews with aged care workers, and (2) a review of the relevant literature. The qualitative interviews were conducted with 32 direct care workers from three aged care organisations (Xiao et al. 2020). Interview participants were asked about the factors which influenced their intentions to stay or leave the aged care sector and an analysis of this data assisted in informing the choice of attributes for the DCE. A literature review was also conducted to inform the DCE. This review involved an examination of relevant studies, i.e. previous DCEs conducted with healthcare and social assistance workers, and studies within the aged care sector which focused on factors influencing attraction and retention (Isherwood et al. 2018).

From the qualitative data analysis and the literature review, six job preference attributes were identified for use in the DCE. Three levels were specified for each of these attributes. The attributes and their levels were: (1) salary/earnings (per hour) – 10% decrease, current, 10% increase; (2) Work hours – 5% decrease, current, 5% increase (for full-time respondents), 10% decrease, current, 10% increase (for part-time respondents); (3) Training/skill development – none, occasional, regular; (4) Staffing numbers – regularly not enough, sometimes enough, always enough; (5) Processes for work-related stress – poor, adequate, very good; (6) Autonomy (i.e. freedom in the job) – not at all, somewhat, very much.

A structured questionnaire was developed for administration via an online survey. The DCE section of the survey asked respondents to evaluate their preferences for different sets of aged

care positions as described by the six key attributes. For each set, a two-stage selection process was used whereby respondents were firstly asked to state which of two positions (Job A or B) was preferable. They were then asked which employment position they would choose (A, B or their current position). The survey also contained additional questions relating to individual socio-demographic characteristics, job role, employment status, work history, future work plans and job satisfaction. These questions were adapted from the National Aged Care Workforce Census and Survey 2016 (Mavromaras et al 2017).

Ethical approval for the study was granted by the University of South Australia Human Research Ethics Committee. Recruitment of participants occurred through the distribution of an invitation email to all direct care staff at three aged care organisations. The email included a description of the DCE survey, an invitation to participate in the study, and the provision of an online survey link. All respondents received a $30 gift card as recompense for the time taken to complete the survey.

Data analysis approach

The theoretical foundation for DCE data analysis is the random utility model. In our specific case, individual *n* is assumed to choose between *J* alternative jobs and the choice will be the one with the highest utility level (*U*). In other words, individual *n* will choose job *i* over *j* if and only if

$$U_{ni} > U_{nj} \quad \forall i \neq j \in J$$

The utility of a choice in the random utility model can be specified as

$$U_{ni} = X_{ni}\beta' + \varepsilon_{ni} \qquad (1)$$

Where *X* is a vector of attributes, β is the coefficient vector which measures the strength of preference for each attribute level and ε is the unobserved random term that is assumed to be independent and identically distributed, following a logistic distribution. In our main model, *X* includes the six attributes used in the DCE, of which hourly salary/earnings and work hours

are measured as continuous variables while the others (training/skill development, staffing numbers, processes for work-related stress and autonomy) are measured as binary variables. Besides, a constant dummy variable is included for the Status Quo, assuming the common preference coefficients for all the alternatives and the difference between the Status Quo and other choices is only reflected in the constant.

Within this framework, the probability of choosing job *i* conditional on β can be expressed as

$$P_i = \frac{\exp(X_i\beta')}{\sum_{j=1}^{J}\exp(X_j\beta')} \quad (2)$$

In order to take into account unobserved heterogeneity of preferences, we adopt the mixed logit model for estimation, in which preferences heterogeneity has been considered by treating the coefficients as random rather than fixed, allowing coefficients to vary across individuals.[1] In our estimations, all binary attribute variables are specified as having a random component while hourly salary/earnings and work hours are specified as fixed.[2] The STATA 'mixlogit' command is used with 1000 halton draws.

The results obtained from the mixed logit model are then used for a number of further estimations. First, we use the estimates of coefficient means (β) and their standard deviations (*SD*), to calculate the proportion of respondents for whom a job attribute (with random coefficients) has the same sign of effect (i.e. positive or negative) as β, which is given by $\Phi(\beta/SD)$, where Φ is the standard normal cumulative distribution function.

Second, the estimates of coefficient mean (β) are used to derive workers' willingness to pay (WTP) for job attributes, which measures the monetary value of each attribute. In our case, the WTP quantifies how much salary a respondent would be willing to give up in order to

[1] In the current framework, preference is assumed to be constant over time and over jobs.

[2] The variable of hourly salary/earnings is specified as fixed to avoid possible problems with dividing distributions on distributions when calculation willingness to pay (see Ryan et al 2012 for example). The variable of work hours is specified as fixed because when it is specified as random the estimate of its standard deviation is not statistically significant.

have an improvement in one of the other aspects of their job. Using equation (1) and denoting x_1 as the salary attribute, the WTP of a job attribute x_m can be expressed as $\frac{\beta_m}{\beta_1}$.

Further, we estimate the proportion of respondents that would choose a job *i* over the baseline job *j* (defined as hourly salary and weekly work hours at the sample mean and the reference category for all dummies) and the formula is given by:

$$P_{ij} = \frac{\exp(X_i\beta')}{\exp(X_i\beta')+\exp(X_j\beta')} \quad (3)$$

We also investigate how the probability of choosing a job will change as levels of attributes change by comparing the predicted probability of accepting a job at different levels of attributes, using the STATA 'mixlpred' command.

In order to examine how individual characteristics may affect preferences for job choices, we carry out additional estimations by splitting the sample into subgroups and using interaction terms. In particular, we estimate the effects of the six main job attributes for nurses and carers separately and compare the WTP of each attribute between the two subgroups. In another model, we include interaction terms between the job attributes and key individual characteristics (gender, age, occupation, type of contract, country of birth, financial dependents, and marital status) to investigate whether individual coefficients may differ by these characteristics.

3. Estimation results

Descriptive statistics

Table 1 presents the descriptive statistics of the sample used for estimation. In total, 106 direct care workers participated in the survey, including 44 nurses, 50 carers and 12 allied health workers, accounting for 41.5%, 47.2% and 11.3% of the total sample, respectively.[3]

Table 1: Characteristics of direct care workers in the DCE

	Mean
Nurses	0.415
Allied health workers	0.113
Carers (reference category)	0.472
Male	0.160
Age	39.066
16-24	0.066
25-34	0.349
35-44	0.236
45-54	0.217
55-64	0.132
Non-permanent contract	0.226
Born overseas	0.396
With a financial dependent	0.613
Not married or living with a partner	0.368
Total number of respondents	106

The Direct care workers from our sample are predominantly female (84.0%), their average age is 39, and about 40 percent of them were born overseas. In terms of their type of employment contract, 22.6 percent of respondents are employed under a non-permanent (casual or fixed term) contract, with 75.5 percent of them working part-time.[4] With regard to

[3] The occupation category of nurses includes two types of nurses in Australia, enrolled and registered. The former typically hold a vocational education and training qualification and the latter are university graduates. The aged care sector utilises their skills differently and this is reflected in their responsibilities and pay. Our sample size is too small to distinguish between these two sub-categories within the nursing profession, hence the main comparisons we make are between nurses as a whole and care workers as a whole. A more detailed analysis would be a useful development for understanding the sector's specific use of the nursing profession.

[4] The term "casual employment" has a specific meaning under Australian law, the main attribute being that it has no hours associated in the contract, so employment is arranged on a day-to-day basis with no entitlement or expectation of any regular hours of work. Further, casual employment does not include any sick leave, pension

their family structure, 63.2 percent of respondents are married or living with a partner while 61.3 percent have at least one financial dependent.

The distribution of choice between the three alternative jobs (Job A, Job B or Current Job) in the DCE experiment is shown in Table 2. Since each respondent is provided with 9 choice sets, we obtain a total of 954 choice sets completed by the 106 direct care workers. We find that 570 sets (59.7%) chose the option of 'stay with my current job', which indicates that there is a strong preference for their current job relative to Job A and Job B.[5]

Table 2: Distribution of choice between jobs in the DCE

	Number	Percent
Job A	177	18.6
Job B	207	21.7
Stay with my current job	570	59.7
Total choice sets	954	100.0

Main estimation results

Table 3 below shows the estimation results from the main model, which only includes the six job attributes and the constant dummy for the current job. We find that the coefficients of all job attributes are statistically significant, which indicates that all these job attributes have a significant influence on how aged care workers are likely to be making their job choices. Thus, aged care workers are more likely to choose a job that offers higher salary and work hours, provides more regular opportunities for education/skill development, is adequately staffed (has sufficient staff numbers), has better processes for the management of work stress and allows more autonomy (greater freedom in the job). Further, among these attributes, the largest coefficient is observed for 'always enough staffing numbers', suggesting it is the most important job attribute item to direct care workers in the aged care sector. In contrast, the

contributions or holidays pay. Instead, casual employees are paid by law a premium (the "casual loading") of about 15 percent over the usual wage for the same job under a temporary or continuing contract.

[5] This finding suggests that there is a high level of job satisfaction among the sector's workers. This finding is confirmed by the 2016 Aged Care Workforce national survey which reports high levels of job satisfaction using a nationally representative sample of approx. 5,000 workers.

lowest importance is attached to having more work hours, indicating that, although three quarters of the respondents were part time employees, increasing work hours may only modestly increase the likelihood they would choose a job. The weak effect of work hours may indicate that aged care workers are in general satisfied with their hours of work, which is evident by their response to a further question within the DCE survey about satisfaction with work hours. On a scale from 1-7 (where a higher score indicates greater satisfaction with work hours), 64 percent of respondents chose a value 5 or above while fewer than 20 percent chose 3 or below.

Table 3: Regression results from the main model

	Coefficient means (SE)	SD (SE)	% Positive
Constant (current job)	1.309*** (0.169)		
Hourly salary/earnings	0.367*** (0.039)		
Weekly work hours	0.092** (0.038)		
Education/skill development opportunities (relative to none)			
Occasional	0.816*** (0.216)	-0.274 (0.845)	99.9
Regular	1.620*** (0.25)	0.906** (0.373)	96.3
Staffing numbers (relative to regularly not enough)			
Sometimes enough	0.859*** (0.207)	0.9*** (0.277)	83.0
Always enough	2.014*** (0.258)	1.279*** (0.276)	94.2
Processes for management of work stress(relative to poor)			
Adequate	1.593*** (0.227)	0.594 (0.408)	99.6
Very good	1.862*** (0.246)	0.899*** (0.275)	98.1
Autonomy in job (relative to not at all)			
Somewhat	1.381*** (0.253)	1.051*** (0.293)	90.6
Very much	1.787*** (0.249)	0.999*** (0.314)	96.3
No. of observations	2,862		
Log likelihood	-614.707		
Wald χ^2 (df)	94.95*** (8)		

Note: *, **, *** denote significance at the 10, 5 and 1% level respectively.

In terms of the standard deviation of the regression coefficients, we find the standard deviation of all the binary attribute variables are statistically significant except ‘occasional

education/skill development opportunities' and 'adequate processes for management of work stress'. This finding indicates that preferences over these particular job attributes vary significantly among respondents. Nevertheless, the last column of Table 3 shows the proportion of respondents for whom a job attribute has a same sign of effect as the mean estimate, which is all positive in our case. We find that for almost all the attribute dummies, over 90 percent of the respondents have a positive preference for the level of job attribute relative to the reference category while the only attribute dummy with a proportion less than 90 percent of positive preference is 'sometimes enough staffing numbers', which is still high at over 80 percent.

The monetary value of each job attribute (willingness to pay) is shown in Table 4.

Table 4: Willingness to pay of job attributes

	WTP	95% confidence interval	
		Lower bound	Upper bound
Weekly work hours	0.25**	0.04	0.46
Education/skill development opportunities (relative to none)			
Occasional	2.22***	1.02	3.43
Regular	4.41***	2.93	5.89
Staffing numbers (relative to regularly not enough)			
Sometimes enough	2.34***	1.17	3.51
Always enough	5.48***	3.95	7.02
Processes for management of work stress (relative to poor)			
Adequate	4.34***	2.98	5.70
Very good	5.07***	3.55	6.59
Autonomy in job (relative to not at all)			
Somewhat	3.76***	2.33	5.20
Very much	4.87***	3.44	6.29

Note: *, **, *** denote significance at the 10, 5 and 1% level respectively.

We find that the signs of the willingness to pay for all the attributes in Table 4 are positive and statistically significant at least at the 5% level. This finding suggests that aged care

workers would be willing to sacrifice some hourly salary to have an improvement in other aspects of a job, including increased work hours, improved opportunities for education/skill development, increased number of staff, better processes for the management of work stress and greater freedom in the job. Also, we find the willingness to pay value for the four categorical attributes are far higher than the continuous attribute of work hours. For example, the largest willingness to pay value is observed for the category of 'always enough staffing numbers', indicating that an average respondent would be willing to sacrifice $5.48 of their hourly salary to work in a facility where staffing levels are always enough, relative to where staffing levels are regularly not enough. In contrast, they would be only willing to give up a modest amount of $0.25 per hour to increase weekly work hours by one hour.

Table 5 below shows the preference of direct care workers for alternative jobs.

Table 5: Simulated preference for alternative jobs

	Proportion	95% confidence interval	
		Lower bound	Upper bound
10% increase in hourly salary	75.8	71.4	80.1
10% increase in weekly work hours	57.2	51.5	62.9
Education/skill development opportunities			
Occasional	69.3	60.3	78.3
Regular	83.5	76.7	90.2
Staffing numbers			
Sometimes enough	70.2	61.7	78.7
Always enough	88.2	83.0	93.5
Processes for management of work stress			
Adequate	83.1	76.8	89.4
Very good	86.6	80.9	92.2
Autonomy in job			
Somewhat	79.9	72.0	87.9
Very much	85.7	79.7	91.7

Note: Compared with a baseline situation defined as: hourly salary: $31.0 (sample mean); weekly work hours: 31.4 (sample mean); the reference category for all dummies.

To this purpose, Table 5 makes the comparison between a number of simulated scenarios with different levels of each attribute and the baseline situation, holding other attributes constant. We find that the proportions of workers choosing these simulated jobs over the

baseline job are all above 50 percent, which confirms that aged care workers are more likely to choose a job with higher levels of these six attributes. Among these simulated jobs, changing the level of the four categorical attributes has a relatively strong effect. Over 80 percent of the aged care workers would choose a job which provided the top level of education/skill development opportunities, staffing numbers, processes for the management of work stress or autonomy against the baseline situation. On the contrary, the effect of increasing work hours is relatively small. Increasing the weekly work hours by 10% would only lead to 57.2 percent of the workers choosing the job against the baseline.

Findings from Table 5 are also supported by additional evidence drawn from the comparison of the predicted probability of accepting a job at different levels of attributes in Table 6.

Table 6: Predicted probability of accepting a job given the level of attributes

Hourly salary	Estimation sample 0.327		10% increase 0.448
Weekly work hours	Estimation sample 0.327		10% increase 0.357
Education/skill development opportunities	None 0.230	Occasional 0.310	Regular 0.395
Staffing numbers	Regularly not enough 0.238	Sometimes enough 0.320	Always enough 0.445
Processes for management of work stress	Poor 0.205	Adequate 0.359	Very good 0.390
Autonomy in job	Not at all 0.204	Somewhat 0.338	Very much 0.385

As shown in Table 6, enhancing the level of any of these six attributes will increase the probability that aged care workers select a job. The four categorical attributes play a relatively larger role in accepting a job in comparison to the continuous attributes (salary and work hours). Increasing each of these four attributes from the bottom to the top level would lead to an increase in the probability of selecting a job from around 20 percent to 40 percent.

In contrast, an increase in weekly work hours by 10% would only increase the probability marginally (from 32.7 percent to 35.7 percent).

Differences by occupation

Table 7 below shows the estimation results for nurses and personal carer workers (the two main occupational groups in our sample) separately. It appears that the effects of job attributes on job choice follow a similar pattern between nurses and carers.

Table 7 about here

The coefficients of all the job attributes are statistically significant, except work hours for carers. Also, the sign and magnitude of the coefficients are consistent with our main model. In addition, the effect of work hours is weakest for both nurses and carers, which further confirms that 'work hours' is not as crucial as other attributes in affecting job choice. Results from the standard deviation show that about half of the attribute variables are statistically significant, which are far fewer than the main model. This finding may be due to the smaller sample sizes when we estimate by occupation, but it may also emerge if preferences over these job attributes vary less within each of the two occupations, than between the two occupations.

A comparison of the willingness to pay of each job attribute between nurses and carers is presented in Table 8.[6] The ranking of job attributes in terms of willingness to pay is similar between nurses and carers.

[6] We remind the reader the distinction between Enrolled Nurses and Registered Nurses, which is not dealt with in this paper.

Table 8 around here

An interesting finding in this context is the observation that nurses are estimated to be willing to sacrifice about twice the salary than carers to have an improvement in other attributes of a job, a relative amount which is beyond the salary difference between the two occupations (the mean hourly salaries for nurses and carers in our sample are $35.9 and $25.6 respectively).

Tables 9 and 10 further compare the predicted probably of accepting a job at different levels of attributes, separately for nurses and carers. It has been confirmed that enhancing the level of any of these six attributes will increase the probability of both nurses and carers to take a job.

Tables 9 and 10 around here

However, increasing hourly salary has a much larger impact on choices made by carers than nurses. An increase in hourly salary by 10% would enhance the probability for a carer to accept a job by 16.3 percentage points (from 32.8 percent to 49.1 percent), while the change in the probability for a nurse is 10.8 percentage points (from 32.7 percent to 43.5 percent). On the contrary, opportunity for training/skill development has a larger effect on nurses than carers. Increasing the available level of training/skill development from ‘none’ to ‘regular’ would lead to an increase of the probability of accepting a job by 20.6 percentage points (from 19.9 percent to 40.5 percent) for nurses, compared with 12.5 percentage points (25.6 percent to 38.1 percent) for carers. With regards to the other four attributes, their magnitude of effect is marginally larger for nurses than carers.

Exploring interaction terms

Finally, we explore the impacts of individual characteristics on the preferences for job choices for the full sample of direct care workers (Table 11). We find that only a few interaction terms are statistically significant.

Table 11 around here

First, allied health workers in Table 11 have a weaker relative preference for higher salary and a job with higher level of freedom, relative to carers. In contrast, the preference of nurses is not significantly different from carers. We do not observe any gender differences. Second, older workers and those who are married or in a *de facto* relationship have a weaker preference for more work hours than their younger or unpartnered counterparts. Third, non-permanent workers value salary and the sufficiency of staffing numbers more than those under a permeant contract. In contrast, overseas-born workers are more tolerant of a workplace employing insufficient staff numbers than workers born in Australia. In addition, workers with a person financially dependent on them, place a higher value on a job with higher salary and with better processes for the management of work stress than those without a person financially dependent on them.

4. Conclusion

This paper examined the key factors that influence the decisions of aged care workers to work in the sector. The paper applied a DCE methodology to estimate the preferences of workers over a set of six attributes: salary/earnings (per hour), work hours, training/skills development, adequacy of staffing numbers, processes for managing work-related stress and autonomy/freedom in the job.

Estimating a mixed logit model, the paper finds that all six job attributes have a significant influence on the job choices of aged care workers, but this influence can be substantially different for different workers and under different circumstances. Aged Care workers are shown to be more likely to choose a job that offers a higher salary and the opportunity of longer work hours. Aged Care workers are also shown to prefer jobs where the workplace offers opportunities for training and skills development, workplaces that are adequately staffed (staff numbers), workplaces with established processes for the management of work-related stress and, finally, jobs with autonomy (freedom in the job). An interesting result is that having the opportunity to work for longer hours does not appear to be highly valued by the staff, especially so for personal care workers. Given that aged care workers are predominantly working part-time, their relative indifference for longer hours is noteworthy.

The paper went further and explored the relative strength of the preferences over different attributes within and between the two main occupational groups in the aged care sector, the nurses and the personal care workers.[7] These are distinctly different occupations: presently, the former are better-qualified, better-paid and with stronger career prospects. The paper found that nurses attach a relatively lower value than personal carers to jobs that would pay more. One of the reasons for this finding may be that nurses are paid more anyway. The paper also found that personal carers attach a relatively lower value than nurses to jobs that offer opportunities for training and skills development. One of the reasons for this finding may be that personal carers have weaker career prospects than nurses.

The paper also found that workers on casual/non-permanent employment contracts tend to consider adequate staffing numbers as relatively more important than their permanently

[7] We remind the reader that we refer to both enrolled and registered nurses as one group, as our data does not allow us to make the distinction in our estimations. Notwithstanding this caveat, the findings about the differences between all nurses and all care workers are clearly informative.

employed counterparts, not surprisingly, since they are more likely to be faced with a much harder job in workplaces that are not adequately staffed, their job often being to fill in for these inadequacies.

From the policy point of view, in the context of increasing demand in the aged care sector for a larger number of care workers with more qualifications and able to provide a higher quality service, the paper's findings give rise to some clear messages. First, the salary of personal care workers requires change. In the context of this critical professional grouping being paid at or near the national minimum wage and experiencing attraction and retention difficulties, the message for wage increases is clear. In contrast, aged care nurses appear to be less concerned about increasing their pay levels and more about being given the opportunity for regular training and skills development. In the context of the increasing professionalisation of the nursing occupation, this study confirms the importance of offering more training opportunities as a route for better pay and better conditions in order to attract and retain nurses in the sector. Notwithstanding the importance of these interpretations and conclusions, the reader should always remember that the estimated valuations offer a relative and not an absolute measure of how attractive each occupation and job may be.

Table 7: Regression results from the model for nurses and carers separately

	Nurses		Carers	
	Coefficient means (SE)	SD (SE)	Coefficient means (SE)	SD (SE)
Constant (current job)	1.173*** (0.267)		1.457*** (0.262)	
Hourly salary/earnings	0.357*** (0.057)		0.491*** (0.076)	
Weekly work hours	0.122* (0.063)		0.07 (0.051)	
Education/skill development opportunities (relative to none)				
Occasional	1.278*** (0.362)	-0.341 (0.867)	0.559* (0.326)	0.723* (0.413)
Regular	2.193*** (0.441)	1.063** (0.453)	1.22*** (0.338)	0.735 (0.545)
Staffing numbers (relative to regularly not enough)				
Sometimes enough	1.064*** (0.308)	-0.017 (0.637)	0.755** (0.303)	1.045** (0.432)
Always enough	2.383*** (0.471)	1.763*** (0.443)	1.948*** (0.326)	0.713 (0.472)
Processes for management of work stress (relative to poor)				
Adequate	2.138*** (0.377)	-0.006 (0.73)	1.412*** (0.342)	1.081*** (0.356)
Very good	2.383*** (0.405)	0.687 (0.528)	1.778*** (0.312)	-0.316 (0.604)
Autonomy in job (relative to not at all)				
Somewhat	1.854*** (0.438)	0.968** (0.444)	1.408*** (0.363)	1.000** (0.403)
Very much	2.344*** (0.434)	-0.099 (0.866)	1.919*** (0.349)	0.732 (0.502)
No. of observations	1,188		1,350	
Log likelihood	-231.894		-290.382	
Wald χ^2 (df)	36.87*** (8)		38.71*** (8)	

Table 8: Willingness to pay of job attributes for nurses and carers

	Nurses			Carers		
	WTP	95% confidence interval		WTP	95% confidence interval	
		Lower bound	Upper bound		Lower bound	Upper bound
Weekly work hours	0.34*	-0.01	0.70	0.14	-0.07	0.35
Education/skill development opportunities (relative to none)						
Occasional	3.58***	1.50	5.65	1.14*	-0.21	2.49
Regular	6.14***	3.46	8.82	2.48***	1.06	3.90
Staffing numbers (relative to regularly not enough)						
Sometimes enough	2.98***	1.18	4.78	1.54**	0.27	2.80
Always enough	6.67***	3.86	9.48	3.96***	2.48	5.45
Processes for management of work stress (relative to poor)						
Adequate	5.99***	3.56	8.42	2.87***	1.46	4.29
Very good	6.67***	4.00	9.35	3.62***	2.20	5.03
Autonomy in job (relative to not at all)						
Somewhat	5.19***	2.75	7.64	2.87***	1.30	4.43
Very much	6.56***	4.25	8.88	3.91***	2.35	5.46

Table 9: Predicted probability of accepting a job given the level of attributes (nurses)

Hourly salary	Estimation sample 0.327		10% increase 0.435
Weekly work hours	Estimation sample 0.327		10% increase 0.363
Education/skill development opportunties	None 0.199	Occasional 0.314	Regular 0.405
Staffing numbers	Regularly not enough 0.226	Sometimes enough 0.321	Always enough 0.455
Processes for management of work stress	Poor 0.177	Adequate 0.370	Very good 0.396
Autonomy in job	Not at all 0.177	Somewhat 0.341	Very much 0.393

Table 10: Predicted probability of accepting a job given the level of attributes (carers)

Hourly salary	Estimation sample 0.328		10% increase 0.491
Weekly work hours	Estimation sample 0.328		10% increase 0.351
Education/skill developmentopportunities	None 0.256	Occasional 0.312	Regular 0.381
Staffing numbers	Regularly not enough 0.244	Sometimes enough 0.317	Always enough 0.445
Processes for management of work stress	Poor 0.215	Adequate 0.353	Very good 0.396
Autonomy in job	Not at all 0.200	Somewhat 0.335	Very much 0.394

Table 11: Regression results from the model with interaction terms

		X Nurses	X AH	X Male	X Age	X Non-permanent contract	X Born overseas	X With a financial dependent	X Not married/ partnered
Hourly salary/earnings	0.225	-0.055	-0.227*	-0.009	0.004	0.26**	-0.129	0.199**	-0.022
	(0.177)	(0.092)	(0.117)	(0.109)	(0.003)	(0.118)	(0.083)	(0.087)	(0.083)
Weekly work hours	0.275	-0.002	-0.053	0.146	-0.007**	-0.032	0.048	0.038	0.24**
	(0.198)	(0.095)	(0.142)	(0.114)	(0.004)	(0.116)	(0.087)	(0.092)	(0.099)
Education/skill development opportunities									
Occasional	-0.105	0.353	-0.342	-0.022	0.025	0.031	-0.361	0.113	-0.253
	(1.016)	(0.518)	(0.723)	(0.653)	(0.019)	(0.612)	(0.47)	(0.48)	(0.507)
Regular	1.900*	0.760	0.503	0.267	-0.025	0.190	0.131	0.338	-0.027
	(1.072)	(0.567)	(0.741)	(0.709)	(0.021)	(0.624)	(0.507)	(0.537)	(0.562)
Staffing numbers									
Sometimes enough	1.486	0.394	-0.034	0.177	-0.007	1.316**	-1.000**	-0.381	-0.301
	(1.096)	(0.523)	(0.756)	(0.618)	(0.02)	(0.622)	(0.486)	(0.527)	(0.546)
Always enough	2.866**	0.584	-0.621	0.338	-0.012	0.670	-1.033*	0.201	-0.454
	(1.136)	(0.564)	(0.813)	(0.739)	(0.021)	(0.676)	(0.529)	(0.575)	(0.589)
Processes for management of work stress									
Adequate	1.205	0.227	-0.701	0.576	0.001	-1.026	0.744	0.706	0.244
	(1.144)	(0.557)	(0.756)	(0.667)	(0.021)	(0.636)	(0.503)	(0.53)	(0.533)
Very good	1.112	0.020	-1.018	0.524	0.004	-1.013	0.697	1.301**	0.192
	(1.122)	(0.581)	(0.785)	(0.735)	(0.021)	(0.656)	(0.524)	(0.557)	(0.557)
Autonomy in job									
Somewhat	3.257***	0.178	-1.561**	-0.017	-0.028	-0.337	0.116	-0.762	0.019
	(1.145)	(0.572)	(0.766)	(0.726)	(0.021)	(0.633)	(0.514)	(0.536)	(0.56)
Very much	1.709	0.310	-1.897***	-0.488	0.004	-0.410	-0.089	0.315	0.712
	(1.049)	(0.573)	(0.69)	(0.695)	(0.019)	(0.639)	(0.505)	(0.523)	(0.559)
No. of observations					2,862				
Log likelihood					-560.370				
Wald χ^2 (df)					51.73*** (8)				

References

De Bekker-Grob, E., Ryan, M. & Gerard, K. (2012). Discrete choice experiments in health economics: a review of the literature. *Health Economics*, 21:145-172 27.

Lancaster, K. (1966). A new approach to consumer theory. *Journal of Political Economy*, 34:134-157. 26.

Isherwood, L., Mavromaras, K., Moskos, M. and Wei, Z. (2018). Attraction, Retention and Utilisation of the Aged Care Workforce, Report prepared for the Australian Government Aged Cage Workforce Strategy Taskforce, University of Adelaide.

Mavromaras, K., Knight, G., Isherwood, L., Crettenden, A., Flavel, J., Karmel, T., Moskos. M., Smith, L., Walton, H. & Wei, Z. (2017). The 2016 National Aged Care Census and Survey - The Aged Care Workforce, 2016. Canberra: Australian Government Department of Health.

Ratcliffe, J., Bekker, H., Dolan, P. & Edlin, R. (2009). Examining the attitudes and preferences of health care decision-makers in relation to access, equity and cost-effectiveness: A discrete choice experiment. *Health Policy*, 90, 1, 45-57. 29.

Ryan M., Kolstad J., Rockers P. and Dolea C. (2012). How to conduct a discrete choice experiment for health workforce recruitment and retention in remote and rural areas: A user guide with case studies, Geneva: World Health Organization.

Scott, A., Witt, J., Humphreys, J., Duffield, C., & Kalb, G. (2015). What do nurses and midwives value about their jobs? Results from a discrete choice experiment. *Journal of Health Services Research & Policy*, 20 (1), 31-38.

Xiao, L. D., Harrington, A., Mavromaras, K., Ratcliffe, J., Mahuteau, S., Isherwood, L., & Gregoric, C. (2021). Care workers' perspectives of factors affecting a sustainable aged care workforce. *International Nursing Review*, 68(1), 49-58. https://doi.org/https://doi.org/10.1111/inr.12635