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Skill Shortages in Regional New South Wales: Modelling the Causes and Effects using Data from the Riverina

Presenter:

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Presentation is based on Kishor Sharma, Edward Oczkowski and John Hicks (2015)

Structure of Presentation

- 1. Motivation for the Study and Its Aims**
- 2. Research Method, Data Collection and Analysis**
- 3. Modelling the Effects of Business Characteristics on Skill Shortages**
- 4. Policy Implications**

Motivation for the Study

- The years between 2005–2014 witnessed several media comments & reports, indicating skill shortages
- Consequently, number of programs were introduced...
- However, skill shortages remain a problem, particularly in the rural and regional Australia, causing.....
- Despite this, studies examining the causes & effects of such shortages are very limited
- EBSCohost Journal Database search– 1,344 citations (May'16)
- This is not surprising ...

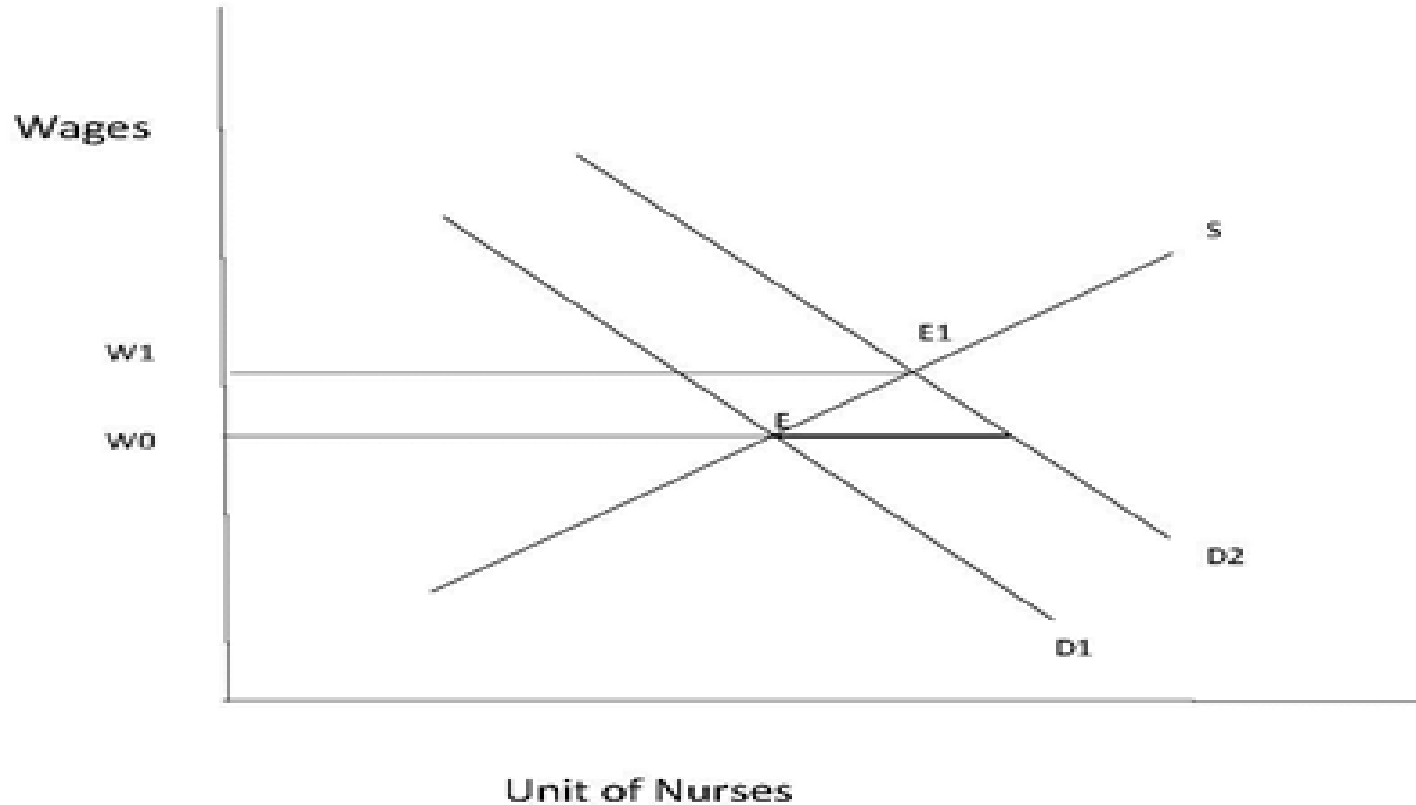
Motivation for the Study...

- Approached RDA-R to shed light on this issue
- Measure skill shortages in the Riverina (by locations, industry types, size & occupations) and also identify causes & effects

Why the Riverina region ?

- (i) A major producer of agricultural products: wine, meat, rice etc
- (ii) Seen a very vibrant region in NSW
- (iii) Despite these, capacity to attract & retain workers remain a problem

Defining skill shortage



Why does it occur & What are its consequences?

Our aims in this Study

1. To measure business perceptions about the causes of skill shortages & their implications
2. To investigate how business characteristics affect skill shortages
3. To identify the strategies businesses employ for addressing skill shortages
4. To identify business perceptions about the (i) role of Government & (ii) TAFE & University sectors in addressing skill shortages

Research Method: Data Collection

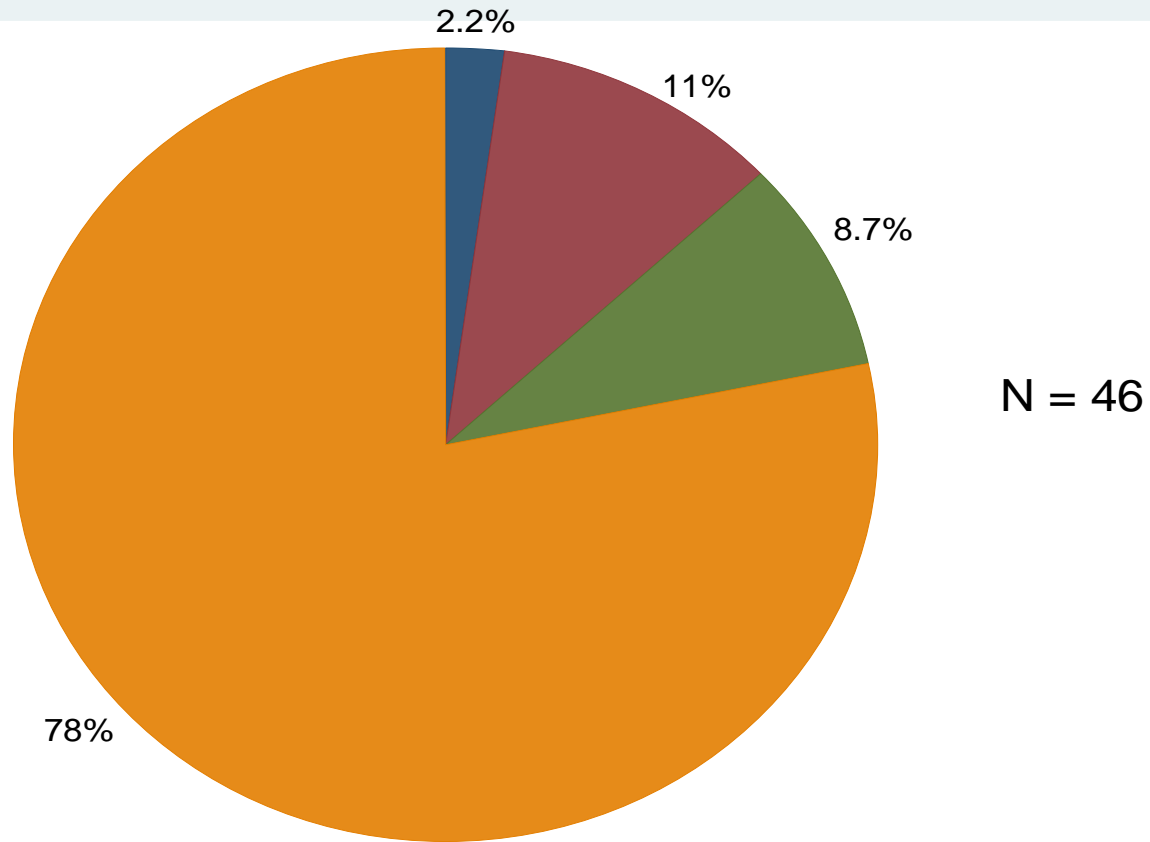
- Primary data collected using survey
- Questionnaire was developed, discussed with key stakeholders & distributed using the SurveyMonkey
- Used RDA-R mailing list (178 registered businesses)
- A media release and media interviews for the motivation
- The survey was open for 6 weeks during July-Aug 2015
- Initial invitation plus two follow-up email reminders
- 93 responses were initiated, but only 46 usable responses-26%

Sample Characteristics

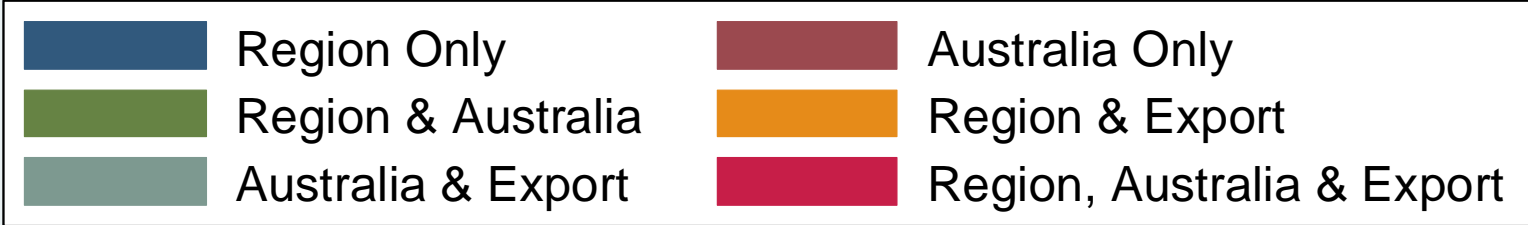
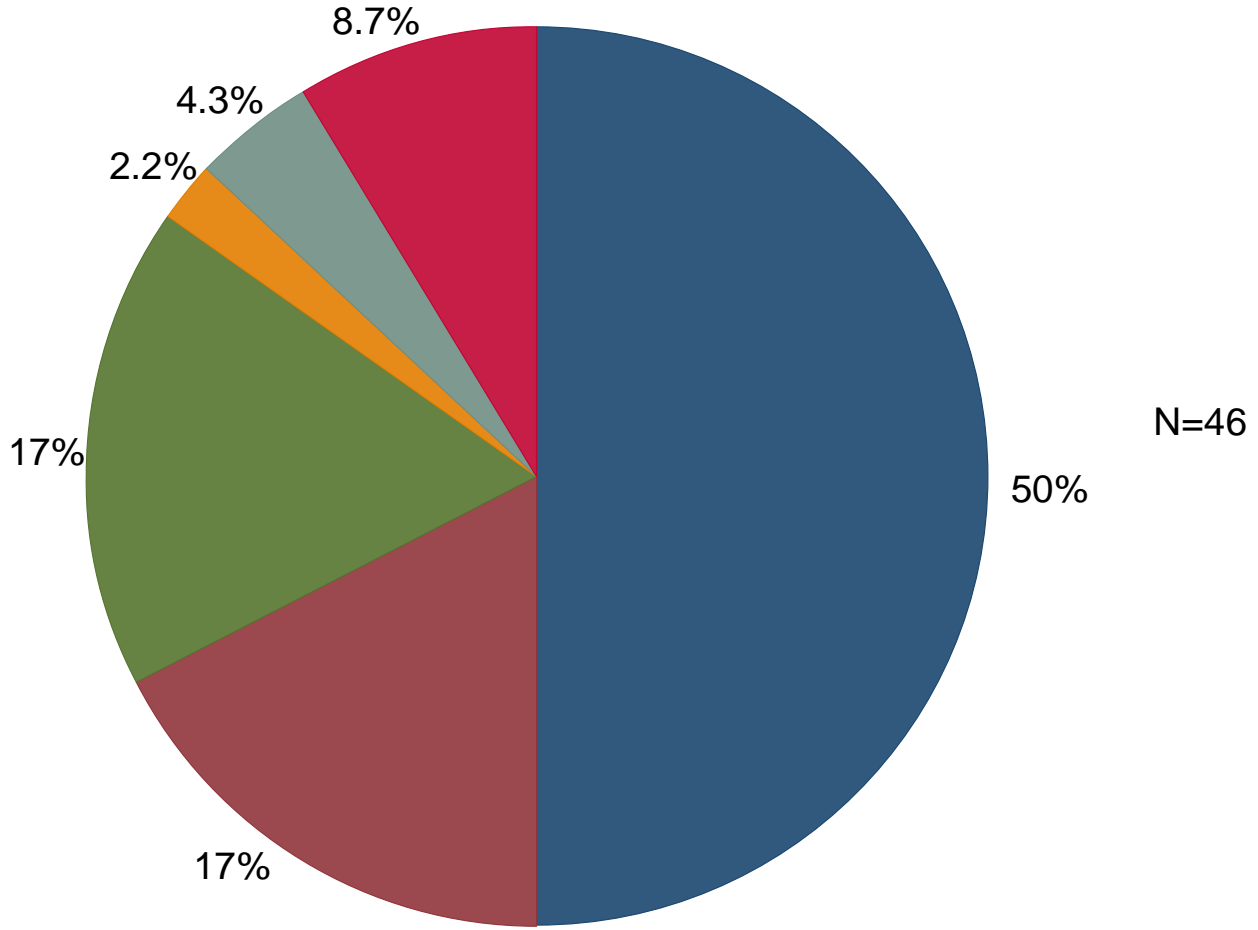
- **Location:** responses from 9 out of 16 LGAs
- **Industry Type:** responses from 13 out of 19 types
 - Manufacturing (n = 11, 24%), Agriculture (n = 7, 15%)
 - Accommodation & Food (n = 5, 11%),
 - Health Care (n = 5, 11%)
- **Employee Size:** responses from all 4 categories
 - 1-4: (n = 9, 20%), 5-19: (n = 15, 33%),
 - 20-199: (n = 17, 37%), 200 +: (n = 5, 11%)

Nature of Businesses

Years of Operation



Location of Sales



Data Analysis and Results

- How to measure skill shortages ?
- A commonly used indicator of skill shortages is the **Vacancy Rate (VR)**.
- **The VR is defined as:** the number of unfilled vacancies divided by the number of unfilled vacancies plus total employment, multiplied by 100.

Vacancy Rates by LGA Area *

Local Govt Area	N	Vacancy Rate	% of Businesses with Vacancies
Bland	1	<u>20.0</u> (20.0)	100.0
Cootamundra	3	<u>41.7</u> (41.7)	66.7
Griffith	16	3.7 (11.5)	62.5
Leeton	4	<u>8.9</u> (2.2)	25.0
Murrumbidgee	2	3.2 (3.2)	50.0
Narrandera	6	2.8 (13.6)	33.3
Temora	4	5.4 (1.8)	25.0
Tumut	1	0 (0)	0
Wagga Wagga	9	3.6 (9.2)	44.4
All	46	3.7 (13.5)	47.8

* Weighted by employee size estimates in parentheses

Vacancy Rates by Industry Type*

Industry Type	N	Vacancy Rate	% of Businesses Vacancies
Agriculture, Forestry & Fishing	7	4.3 (9.7)	57.1
Manufacturing	11	3.1 (10.9)	63.6
Electricity, Gas, Water & Waste Services	2	<u>15.8 (20.7)</u>	100
Construction	2	4.2 (2.5)	50.0
Retail Trade	1	0 (0)	0
Accommodation & Food Services	5	<u>28.4 (35.6)</u>	60.0
Information Media & Telecommunications	1	0 (0)	0
Financial & Insurance Services	2	12.5 (29.2)	50.0
Professional, Scientific & Technical Services	3	<u>18.2 (11.5)</u>	33.3
Administrative & Support Services	1	0 (0)	0
Public Administration & Safety	4	0.8 (0.8)	25.0
Health Care & Social Assistance	5	1.1 (0.9)	20.0
Arts & Recreation Services	2	8.3 (19.5)	50.0
All	46	3.7 (13.5)	47.8

* Weighted by employee size estimates in parentheses.

Vacancy Rates by Occupation Type*

Occupation Type	N	Vacancy Rate	% of Businesses with Vacancies
Accounting, finance & administration	29	<u>3.2 (12.0)</u>	17.2
Sales & marketing	17	<u>2.8 (5.8)</u>	29.4
Mechanical engineering	12	1.6 (4.8)	16.7
Information technology	13	1.1 (1.2)	15.4
Production & process workers	20	<u>2.8 (6.1)</u>	25.0
Trades	22	2.1 (9.7)	40.9
Managers & other professionals	32	<u>3.3 (8.9)</u>	28.1

Vacancy Rates by Business Employee Size*

Employee Size	N	Vacancy Rate	% of Businesses with Vacancies
1-4	9	25.9	44.5
5-19	15	16.8	33.3
20-199	11	5.7	48.8
200 or more	5	0.9	60.0
Total Average	46	3.7 (13.5)	47.8

- Weighted by employee size estimates in parentheses for all businesses.
- Note that weighing by size does not affect the within group size estimates

Causes of Skill Shortages

(% of strongly agree/agree responses)

Shortage of qualified applicants:	81%
Applicants lack sufficient experience:	72%
Lack of technical ability:	67%
Unattractive pay rates:	40%
Competition from other employers:	40%
Lack of succession planning:	13%

Table 1: Modelling Results- Effects of Business Characteristics on Skill Shortages

	Vacancy Rate Tobit Estimates	Vacancy Rate Weighted Tobit Estimates
Constant	7.377 (0.71)	27.41*** (4.77)
Firm Size	-3.795 (-0.94) [-1.316]	0.424 (1.24) [0.184]
Firm Age	-2.589 (-0.20) [-0.783]	-28.69*** (-5.28) [-12.46]
Regional Market Focus	-15.627 (-1.54) [-5.420]	-3.045 (-1.07) [-1.322]
Pseudo R ²	0.027	0.105
Normality Test	2.02	
Homoscedasticity Test	17.42***	

Notes: ***, **, * denotes significance at the 1%, 5% and 10% levels respectively, t-ratios in (parentheses), margins on positive observed data in [brackets], n = 46, weighted tobit assumes variance proportional to: 1 / (employee size)², conditional moment normality and homoscedasticity tests are distributed as $\chi^2(df = 2)$.

Consequences of Skill Shortages

(% of strongly agree/agree responses)

Failure to meet deadlines:	58%
Impact on company's credibility:	54%
Low productivity:	50%
Higher running costs:	48%
Impact on company's viability:	45%
Lower quality goods/services:	41%
Loss of orders:	29%

Modelling Consequences of Skill Shortages:

-The DV are a five point Likert scale (strongly agree to disagree responses)

-Standard regress technique employed

Table 2: Modelling Results- Consequences of Skill Shortages by Business Characteristics

	Low productivity	Loss of orders	Lower quality of goods/ services	Higher running costs	Failure to meet deadlines	Impact on company's credibility	Impact on company's viability
Constant	2.500*** (4.11)	3.153*** (6.77)	5.108*** (6.93)	3.292*** (8.60)	2.123*** (3.84)	3.531*** (5.85)	4.035*** (15.3)
Firm Size	-0.262*** (-2.93)	-0.315*** (-3.23)	-0.235 (-1.40)	-0.437*** (-3.78)	-0.152 (-0.91)	-0.101 (-1.00)	-0.181 (-1.69)
Firm Age	-0.710** (-2.06)	0.202 (0.41)	-0.412 (-0.66)	0.710* (1.84)	-0.413 (-0.76)	-0.520 (-0.85)	-0.309 (-0.80)
Regional Market Focus	-0.710** (-2.06)	0.041 (0.12)	0.049 (0.15)	-0.867** (-2.48)	0.557 (1.63)	0.525 (1.58)	-0.108 (-0.29)
N	42	42	42	42	43	43	42
R ²	0.570	0.324	0.614	0.383	0.550	0.419	0.572
Jarque-Bera Normality Test	2.48	0.78	2.29	1.79	3.66	2.73	1.63

Notes: ***, **, * denotes significance at the 1%,5% and 10% levels respectively, heteroscedastic robust t-ratios in (parentheses), normality test is distributed as $\chi^2(df = 2)$.

Strategies taken to address Skill Shortages

(% of strongly agree/agree responses)

Train existing staff:	71%
Just carry on looking for workers:	67%
Recruit less qualified staff:	47%
Increase reliance on automation:	41%
Recruit from other companies:	28%
Recruit internationally:	28%
Increase salaries:	26%

Role of Government in addressing Skill Shortages

(% of most important/important responses)

Improve services, facilities & infrastructure:	79%
Provide tax incentives:	76%
Invest in TAFE & Universities:	52%
Improve recruitment process for skill migrants:	33%

TAFE & University Graduate Skills Required by Business

(% of most important/important responses)

Communication	86%
Information Technology	67%
Accounting, Finance & Admin	60%
Research & Development	57%
Engineering	57%
Manufacturing & Production	52%
Sales & Marketing	48%
Design	38%

Summary of the Results

While most businesses have experienced skill shortages, the severely affected are:

Industry:	Accommodation & Food
Employee Size:	1-4 employees
Occupations:	Trades and Managers

Survey results indicate that skill shortages :

Result from shortage of qualified applicants & lack of sufficient experience applicants,

Modelling results suggest that :

Skill shortages are negatively related to firms age, while other business characteristics appears to have no statistically significant impact

Consequences of skill shortages include lower productivity, loss of orders & higher running costs in large firms.

Policy Implications

Main roles for Government include:

- Improving services, facilities & infrastructure
- Providing tax incentives

TAFE and Universities need to develop Graduates skills in the area of:

Effective Communication Skills

Information Technology Skills

Results and recommendations are at best preliminary and suggestive given the sample limitations.