

Skills Shortages - Will they derail the Australian Rail Transport Industry (ARTI)?

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by

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Abstract:

The prevalence of skills shortages in numerous sectors of the Australian economy has been a prominent topic of discussion in many circles including amongst various government, industry and employer groups, as well as the media. One industry where skills shortages have become a particular area of concern in recent times is in the Australian Rail Transport Industry (ARTI). Like other industries the ARTI experienced substantial rationalisation of its workforce during the 1990's which resulted in considerable downsizing of employee numbers, reduced intake of young recruits and a significant decrease in training investment and skills development. The combined effect has left the ARTI facing several personnel problems including widespread labour shortfalls, an aging workforce and difficulties in relation to staff attraction and retention. Using information derived from the latest ABS Census statistics and primary data acquired from over twenty rail operators across Australia through questionnaires and in depth interviews, this paper builds on previous study findings to present a contemporary profile of the national rail workforce. This includes a current analysis of skills shortages and employment trends within the ARTI, along with a brief discussion of measures that are likely to assist in reducing the severity of the current skills crisis.

1. Introduction

Despite the fact that the term 'skills shortage' is commonly used, it should be acknowledged that there is no widely accepted definition of the term. It is occasionally used to refer to shortages arising from general shortfalls in the total number of individuals in a labour force (Shah & Burke 2005). It has also been used to denote potential mismatches between the skills of available workers and the skills needs of employers, a situation otherwise known as a "skill gap" (Barnow & Bawden 1991). This situation is also sometimes characterised by the existence of many unfilled vacancies in highly skilled occupations and high unemployment levels amongst less skilled workers (Barnow, Trutko & Lerman 1998). The Identification and interpretation of skills shortages therefore varies significantly depending upon one's perspective, and as the different incentives facing workers, employers and the government are considered. This should thus be an important point to bear in mind when interpreting the research findings, and particularly in assessing the qualitative evidence on employers' perceptions.

According to the US Department of Labor (1989), a labour shortage is defined to occur when there is "a market disequilibrium between supply and demand in which the quantity of workers demanded exceeds the supply available and willing to work at a particular wage and working conditions at a particular place and point in time." This definition refers to a shortage as a disequilibrium situation in which the amount of labour workers are willing to provide at the prevailing wage is less than the amount employers are demanding. This is in contrast to a state of equilibrium in a labour market, where the amount of labour that workers are willing to supply at the market price equates to the amount of labour that employers are wanting to buy (Barnow 1996). Consequently disequilibrium situations in labour markets arise when there are differences between the quantity of labour that workers will provide and the quantity of labour that firms wish to purchase at the prevailing price (Ehrenberg & Smith 1993). Thus a surplus results when the quantity of labour offered at the market price exceeds the levels

demand by employers. Conversely a shortage arises when the opposite occurs and the amount of demand for labour from firms is greater than the supply of labour provided by workers.

There are also various dimensions of labour shortages including some of the following:

Geographic Scope: Labour markets can be national or regional in scope, depending on the occupation and nature of the market involved. Consequently specific occupations may experience shortages which are limited to a few labour markets or a particular region of a country or there may be a more general, nationwide shortage.

Longevity: Since several different factors can influence whether a market is in or out of equilibrium, the duration of a specific shortage can vary considerably. For example some shortages are considered prolonged and long term lasting for one or more years, while others are comparatively brief only existing for a few weeks or months.

Severity: In contrast to the other two dimensions mentioned above, it is far more difficult to develop good measures to accurately gauge the severity of a shortage. Conceptually the severity of a shortage can be measured by the magnitude of the changes in wages required to restore equilibrium or by the quantity of additional workers required to alleviate the persistence of vacancies (Barnow, Trutko & Lerman 1998). However these measures present various difficulties. Firstly since the supply and demand curves for specific occupations aren't generally observed, it may not be possible to accurately evaluate the extent of the relevant wage or labour gap. In addition, even if it was possible to accurately estimate supply and demand, problems are likely to arise with regard to effectively classifying a specific gap as being indicative of a small or large shortage. This would be particularly pertinent when making comparisons across occupations due to the variations that occur between occupations in their normal levels of wage dispersion and vacancy rates. For example a high rate of vacancy in one occupation which is experiencing a shortage may actually resemble the equilibrium state for another occupation.

Sub-speciality Shortages: These derive from the fact that not all occupations are internally uniform, with many being differentiated within on the basis of specialised training, level of experience and/or sub-speciality. Consequently there may be an occupation wide shortage or alternatively the shortage may only be applicable to a subgroup of workers within the particular occupation. The main distinguishing factor as to whether shortages exist amongst sub-speciality groups within an occupation, depends on all workers within the occupation being appropriate substitutes for each other (Barnow, Trutko & Lerman 1998). If this condition is not satisfied then a shortage may prevail within an occupation even though other subgroups within the occupation are in equilibrium or even in surplus.

The Australian rail transport sector is one industry that is currently facing significant constraints with regard to the availability of appropriately skilled labour to meet its growth potential. To shed more light on the situation, the Centre for Labour Market Research (CLMR) undertook a study to analyse some of the workforce issues currently facing Australian rail operators. This paper thus summarises some of the findings derived from the research that was undertaken.

2. Profile of the ARTI workforce based on Analysis of ABS Census Data

This section provides a thorough, contemporary analysis of the current profile of the Australian rail transport industry workforce and of recent employment trends in the sector. Specifically it examines data from the four most recent ABS Population and Housing Censuses including the 1991, 1996, 2001 and 2006 Census. Data on rail employment is available from a number of existing published reports. Estimates of employment vary according to the methodology that is used and depending on how the 'rail industry' is defined. The only existing data source on employment in the Australian rail transport industry (ARTI) that is comprehensive enough to enable a detailed analysis is the full population Census.

2.1 Aggregate Employment

The 2006 ABS Census data reveals that there were 29,383 workers employed in the Australian Rail Transport Industry (ARTI). This is a decrease from the corresponding 1996 Census figure of 33,295 and represents a significant fall from the 54,677 rail transport employees recorded by the 1991 Census. Collectively the Australian rail workforce was downsized by over 85 percent in the time span between 1991 and 2006. Total employment in all industries grew by almost 9 percent over the 15 year period. In contrast, between 1991 and 2006, the ARTI's share of employment more than halved, declining from 0.77 percent of total employment in 1991 to only 0.32 percent in 2006. Between 2001 and 2006, there was however a slight rise in employment within the rail transport industry across Australia of 1.7 percent.

2.2 Employment by Occupation

The 2006 Census Data indicates that there is still a predominant concentration of rail workers within the occupational category "intermediate production and transport workers", as was also apparent in the national rail workforce data from 2001 and 1996 Censuses. The most prevalent occupation within the "intermediate production & transport workers" category is that of drivers, representing over 70 percent of jobs in the occupational group and about one fifth of all jobs in the rail sector. "Intermediate plant operators" are another prominent group of professionals within the "intermediate production & transport workers" category, accounting for approximately 23 percent of employees within the occupational group. The 2006 Census data also reveals that more than 80 percent of trade personnel in the ARTI were employed within the fabrication engineering trades and the electrical trades.

Table 1: AUS- Employment shares by occupation, Rail and All industries, 2006

	Rail Industry					All Industries
	1996 share (1)	2001 share (2)	2006 share (3)	Change in share (3) - (2) % pts	Change in share (3) - (1) % pts	2006 Share
1. Managerial	2.9%	4.9%	5.7%	0.8%	2.8%	9.2%
2. Professionals	4.9%	7.4%	9.7%	2.3%	4.8%	19.6%
3. Associate Professionals	6.4%	8.7%	8.8%	0.1%	2.4%	12.2%
4. Tradespersons	14.2%	11.0%	11.0%	0.0%	-3.2%	12.3%
5. Advanced Clerical & Service Workers	1.5%	1.8%	1.7%	-0.1%	0.2%	3.2%
6. Intermediate Clerical & Service Workers	10.6%	11.4%	9.9%	-1.5%	-0.7%	17.2%
7. Intermediate Production & Transport Workers	31.7%	31.5%	30.2%	-1.3%	-1.5%	8.2%
8. Elementary Clerical, Sales & Service Workers	12.9%	13.6%	15.0%	1.4%	2.1%	9.6%
9. Labourers & Related Workers	15.0%	9.8%	8.0%	-1.8%	-7.0%	8.5%
Total	100.0%	100.0%	100.0%			100.0%

In absolute terms, the greatest falls in employment in the ARTI between 1996 and 2006 were within the “labourers and related workers” occupational group (down by 2587 workers) with the vast majority of the decline within this group being recorded amongst “other labourers & related workers” (loss of 2065 workers). A large decrease in employee numbers was also recorded in the period between 1996 and 2006 amongst “intermediate production & transport workers” (down by 1623 workers), with falls being recorded for all professions classified within this occupational group. The largest quantitative fall in employee numbers within the occupational group was however reported amongst “intermediate plant operators” (recorded a decrease of 758 workers) and “road and rail transport drivers” (down by 502 workers).

Large falls were also reported among the number of workers employed within trade professions (down by 1452 workers). The greatest declines in jobs within this occupational group were among mechanical & fabrication engineering tradespersons (reported a decrease of 494 workers), electrical & electronics tradespersons (recorded a fall of 423 workers) and construction tradespersons (down by 369 workers). Another occupational group in which a considerable decrease in employment was reported was amongst “intermediate clerical, sales & service workers” (decreased by 599 workers). Most of the decline in employment within this occupational group was recorded for intermediate clerical workers (down by 544 workers). The largest increase in employment in absolute terms within the ARTI between 1996 and 2006 was recorded for the occupational group “professionals” (increased by 1226 workers). Increases in employment over the decade between 1996 and 2006 were also reported for “managerial” staff (increased by 692 workers) and “associate professionals” (increased by 476 workers).

2.3 Employment by Qualification

Table 2: AUS- Employment shares by level of qualification, Rail and All industries, 2006

	Rail Industry					All Industries		
	1996 share (1)	2001 share (2)	2006 share (3)	Change in share (3) - (2) % pts	Change in share (3) - (1) % pts	2001 Share (4)	2006 Share (5)	Change in share (5) - (4) % pts
Postgraduate Degree	0.80%	1.6%	2.9%	1.3%	2.1%	2.9%	4.0%	1.1%
Grad Diploma & Grad Certificate	0.40%	0.9%	1.2%	0.3%	0.8%	2.2%	2.2%	0.0%
Bachelor Degree	4.20%	7.2%	10.3%	3.1%	6.1%	14.9%	17.1%	2.2%
Advanced Diploma & Diploma	3.40%	4.7%	6.7%	2.0%	3.3%	8.2%	9.5%	1.3%
Certificate Level	*24.5%	26.2%	29.8%	3.6%	5.3%	21.6%	22.7%	1.1%
No Recognised Qualification	66.60%	59.5%	49.1%	-10.4%	-17.5%	50.3%	44.5%	-5.8%
Total	100.0%	100.0%	100.0%			100.0%	100.0%	

The 2006 Census data indicates that the rail transport sector has largely maintained its status as a relatively lowly skilled industry, a standing which is reflective of the formally recognised skill level of the great majority of workers employed in the Transport & Storage Industry (TDT 2005). According to the figures the vast majority of rail employees have no recognised qualification with almost half of the workers nationally, identified as falling into this category. This group of unskilled rail workers however was the only group to report a fall in employment share between 2001 and 2006 (recorded a decline of more than 10 percent). This decrease in employment share was almost double what was reported for the same category of workers for all industries over the same period. In the ten years from 1996, the employment share of rail transport workers without a recognised qualification fell by more than 17 percent.

The 2006 Census data also revealed that approximately 30 percent of rail workers possessed certificate level qualifications, thereby representing the qualification that most rail employees were likely to have. The Census figures also indicate that the rate of growth in the proportion of employees with certificate level qualifications was also higher between 2001 and 2006 for the ARTI compared to all industries (with the rate of growth for the rail industry being more than three times what was recorded for all industries). The employment share of rail workers with bachelor degrees and or advanced diplomas & diplomas also increased between the two most recent Census periods. However despite growth in these groups of workers between 2001 and 2006 being higher in the ARTI compared to what was reported for all industries, the proportion of rail employees with either of these qualifications was still noticeably lower than the average recorded for employees in all industries. Workers with postgraduate degrees and/or graduate diplomas & graduate certificates had the lowest employment share, accounting for less than 5 percent of the national rail workforce.

2.4 Age Profile

Figures 1 and 2 clearly indicate the aging phenomena which has occurred within the Australian rail workforce. In the comparison of the age profiles for the ARTI between 1991 and 2006 presented in Figure 1, the significantly lower representation of workers aged 15-34 years in 2006 is clearly evident. The percentage of rail transport employees aged less than 35 years in 1991 was 40 percent. However 15 years later, the figure representing rail workers belonging to the same age group was only about 24 percent. This is indicative of a disturbing fall in the recruitment of entry level workers within the industry.

Figure 1: Age profile of the rail workforce; 1991 and 2006

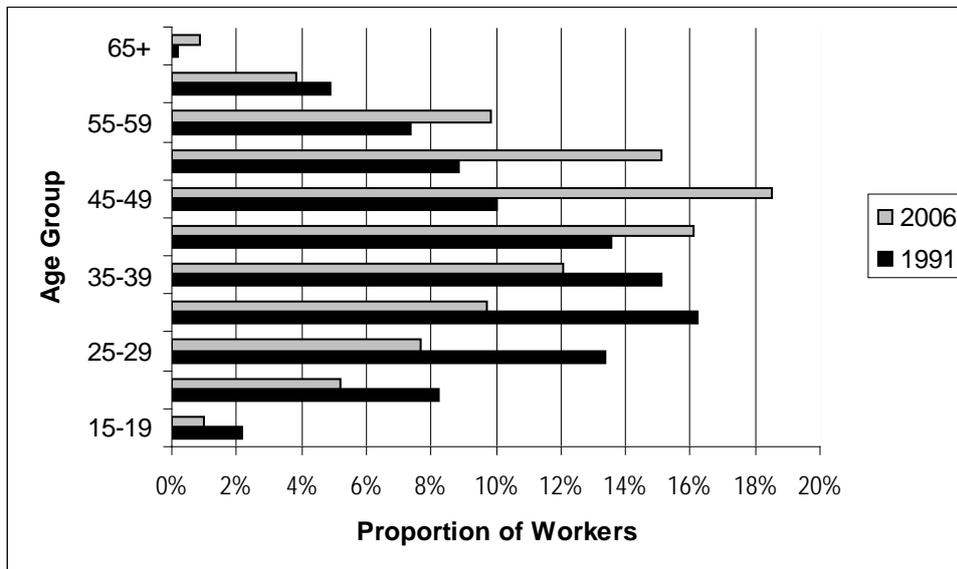
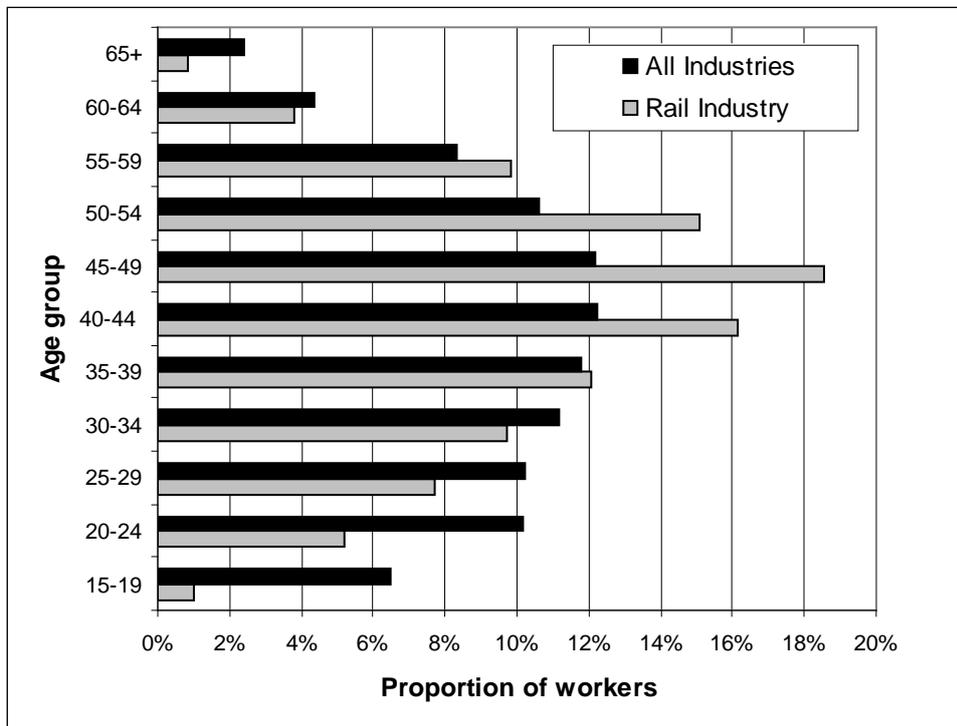


Figure 2: Age profile of the workforce; rail industry and all industries, 2006



The higher proportion of workers in the 35-59 age group and the under-representation of employees younger than 35 in the rail industry relative to all industries nationally in 2006, is clearly depicted in Figure 2. According to the 2006 Census data, workers aged less than 35 comprised approximately 38 percent of the overall Australian workforce compared to 24 percent in the rail transport sector. The rail industry also had a considerably higher percentage of employees aged between 35-59 years with this age group constituting almost 72 percent of its total workforce, while the corresponding figure for workers in this age group in all industries was only 55 percent.

The 1991 Census figures revealed that the average age of employees in the rail sector was 39, compared to 37 for workers in all Australian industries. By 2006 the average age of rail transport workers had rose to 42.9 years, which was almost 3.5 years older than the average age of employees in all industries. A comparison of the average age of workers in the rail industry and the wider Australian workforce by occupational group based on 2006 Census data, is presented in Table 3. The figures indicate that male rail employees in each occupational category are on average older than their counterparts in other industries. Consistent with findings from the 2001 Census, the average age of female rail employees was less than was the case in the general workforce in all occupational groups with the exception of intermediate and elementary clerical, sales and service workers and labourers and related workers. However due to the relatively small proportion of female rail employees in the ARTI, this finding has little bearing on the overall age profile of the rail workforce.

Table 3: Average age by occupation and gender, rail industry and all industries, 2006.

	Males		Females	
	Rail	All Industries	Rail	All Industries
Managers	45.8	45.6	39.5	44.0
Professionals	42.2	41.8	34.6	40.3
Associate Professionals	44.8	41.2	38.0	39.9
Tradespersons & Related Workers	40.4	37.5	32.6	36.8
Advanced Clerical & Service Workers	45.0	41.5	37.1	41.9
Intermediate Clerical, Sales & Service Workers	45.2	38.5	38.1	38.1
Intermediate Production & Transport Workers	44.8	40.8	37.2	40.0
Elementary Clerical, Sales & Service Workers	42.2	34.0	39.1	33.0
Labourers & Related Workers	43.5	37.1	44.4	41.1
Total all Occupations	43.7	40.0	38.0	38.9

2.5 *Employment by Gender*

Data from the 2006 ABS Census revealed that female employees comprised approximately 15 percent of all rail workers nationally. This represented a slight increase of 3 percent from the figure for female representation derived from the 2001 ABS statistics. The Census figures also indicated that there was an increase in the percentage of female rail workers recorded for all occupational groups between 2001 and 2006. This was most pronounced amongst professional personnel, which as an occupational group experienced an almost 7 percent increase in the representation of females. Other occupational groups where growth in the proportion of women workers was evident was in relation to managers, associate professionals & intermediate clerical and sales workers for whom a 3-4 percent rise was reported. These findings seem to indicate a trend towards the increased employment of women in intermediate to highly skilled professions within the rail industry between 2001 and 2006.

It is evident from Table 4 that approximately 56 percent of all female rail workers were employed in clerical, sales and service positions. The total percentage of males employed in occupations within the advanced, intermediate or elementary clerical, sales and service occupational group was less than half that of females at around 22 percent. The occupational categories that did have a high proportion of male employees included the trade professions, intermediate production and transport workers and labourers and related workers. Looking at specific occupations more closely, women workers represent just over 1 percent of trade workers, 2.4 percent of transport drivers, 2.6 percent of intermediate plant operators and more than 98 percent of secretaries and personal assistants. The Census also indicated that the high degree of occupational segregation by gender has remained relatively unchanged between 1991 and 2006.

Table 4: Employment by occupation and gender, 2006, Australian rail industry

	Number Employed		% Female	Share of Employment	
	Male	Female		Male	Female
Managers	1402	241	14.7%	5.7%	5.7%
Professionals	2112	699	24.9%	8.6%	16.5%
Associate Professionals	2064	492	19.2%	8.4%	11.6%
Trades & Related Workers	3138	36	1.1%	12.7%	0.8%
Adv. Clerical & Service Workers	169	321	65.5%	0.7%	7.6%
Interm. Clerical, Sales & Service Workers	1905	941	33.1%	7.7%	22.2%
Interm. Production & Transport Workers	8491	231	2.6%	34.5%	5.4%
Elem. Clerical, Sales & Service Workers	3247	1090	25.1%	13.2%	25.7%
Labourers & Related Workers	2115	195	8.4%	8.6%	4.6%
Total all Occupations	24643	4246	14.7%	100.0%	100.0%

3. Overview of ARTI Workforce from Study Results

This section of the paper presents an in-depth profile of the Australian rail transport industry workforce using data that was forwarded by rail operators participating in the study. The findings presented in the following section are thus based on information acquired from the participants through the mail out questionnaires and in depth interviews. Specifically data was sourced from rail operators in the questionnaires as to the number of workers by gender and age group in a list of occupational categories, which were broadly based on similar occupational classifications used to report data on the Australian rail workforce with the ABS Census information.

3.1 Employment by Occupation

The results revealed that the 22 rail operators who provided employment data through the questionnaires in the study, employed a total of 46 048 workers. The study data revealed that over one third of the workers of the rail operators surveyed were currently employed as train drivers and/or assistants or in clerical and customer service roles. This would appear to resonate with the findings from the analysis of the ABS Census data in Section 2.2, which indicated that there was a concentration of employment in elementary to intermediary skilled occupations. According to the figures derived from rail operators participating in the study, workers employed as tradespersons represented approximately 14 percent of employees.

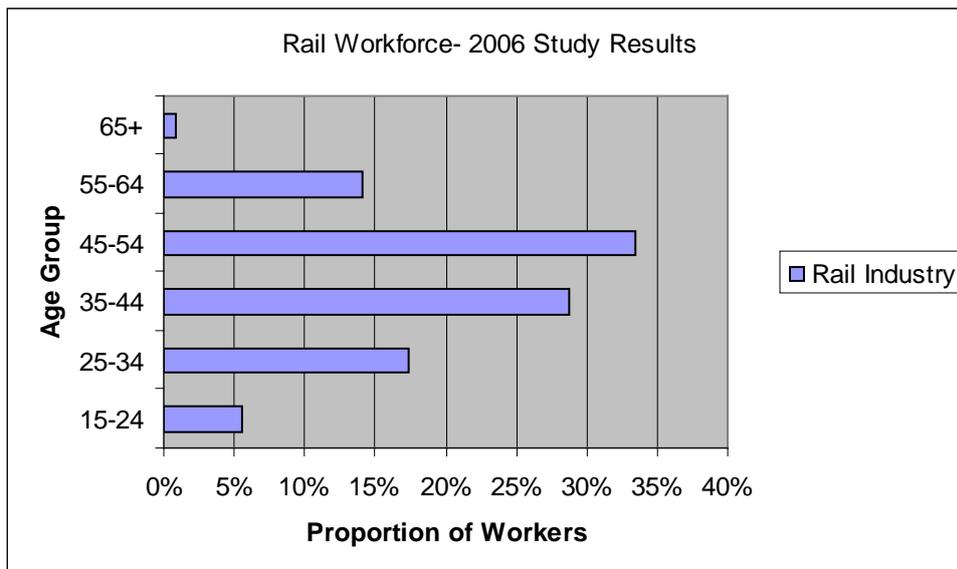
In total, workers employed in professional vocations comprised almost 14 percent of all rail employees, based on the data provided by the rail operators participating in the study. More than 50 percent of these professional workers were engineers. Most of the other professional workers were classed as 'business, finance or IT professionals', with 'other professionals' only representing a very small proportion of all professionals. Almost all associate professional workers identified in the study were 'engineering associate professionals'. This group represented 98 percent of all employees classified as associate professionals, with only

a smaller number of ‘other associate professionals’ being reported by the study participants. In total, associate professionals comprised roughly 3 percent of all rail workers reported by operators in the study.

3.2 The Age Profile of the Rail Transport Workforce

Analysis of age data derived from the study indicates that over 75 percent of workers employed by the study participants are 35 years or older and that almost half of the workers are aged 45 years or above. There is also an evident under-representation of rail transport employees in the 15-34 age group, with these workers representing only 23 percent of all employees. Another interesting finding is that there is a high concentration of workers aged 35-54 years, with over 60 percent of employees falling into this age group. These trends are consistent with the ABS Census figures relating to the ARTI workforce, as outlined in Section 2.4 and are clearly depicted in Figure 3.

Figure 3: Age Profile of Rail Workers from 2006 Study Results



According to the data from the rail operators collated through the study, their ageing concerns with regard to workers is more acute for some occupational groups than others. Interestingly the data appears to support the assertions made by many of the study participants in the interviews about their ageing concerns relating to their engineering personnel, managerial staff, train drivers and assistants and other plant and machine operators. The data from the operators indicated that 55 percent of workers in almost all these occupational groups were aged over 45 years, with most having almost 40 percent of their workers in the 45-54 age group. These occupational groups also had a comparatively low proportion of workers aged 15-34 years with most having less than 15 percent of their workers belonging to this age group.

Consequently many of the operators interviewed stated that the ageing of their rail workforce was a major issue for them, with 22 of the 24 respondents identifying ageing as a concern in at least one occupational group (92 percent). A large proportion of the respondents identified

train drivers as being an occupational group in which ageing was of particular concern with 46 percent (11 out of the 24 operators interviewed) making this assertion. This appears to be a logical concern given that an average age of nearly 45 was calculated for train drivers from the workforce data that was supplied by the study participants (see Table 5). Engineers was another group of professionals that many interviewees were apprehensive about with regard to ageing, with one third of respondents stating they had ageing concerns associated with this occupational group.

Roughly 29 percent of rail operators acknowledged ageing amongst their trades staff including electrical and mechanical tradespeople as a primary concern for their organisations. One quarter of the respondents also identified ageing concerns amongst their managerial staff and over one fifth (21 percent) had similar concerns with their labourers and related workers. Both of these were occupational groups which were found to have relatively high average age amongst their workers (as indicated in the Table 5) with the average age for managers being above 45 and the average age for labourers and related workers being roughly 44. Rail operators also had ageing concerns relating to their operational staff with approximately 17 percent reporting that this was the case. According to the study data, other plant and machine operators were also found to have a comparatively high average age of above 44 years. Retirement rates of around 20 percent over the next five years were nominated for train drivers and for controllers and signallers by several operators. High average ages were also evident amongst the engineering and other associate professionals who were employed by the rail operators surveyed, with their average age being around 45. The occupations which rail operators felt most uncomfortable about with regard to the ageing of their workers also appear to be ones that they identify skill shortages in.

Table 5: Average age by occupation, rail industry, 2006.

Occupational Group Name	Average Age
Business, Finance or IT Professionals	42.1
Clerical & Customer Service Staff	41.1
Electrical Tradespersons	42.1
Engineering Associate Professionals	44.7
Engineers	43.4
Labourers & Related Workers	43.6
Managerial Staff	45.2
Mechanical & Fabrication Tradespersons	42.7
Other	36.3
Other Associate Professionals	45.0
Other Plant & Machine Operators	44.2
Other Professionals	40.4
Other Tradespersons	43.2
Rail Controllers & Signallers	43.5
Rail Guards & Attendants	43.4
Technical Officers/Technicians	43.1
Train Drivers & Assistants	44.7
TOTAL	43.0

3.3 Employment by Gender

The fact that the Australian rail transport industry is dominated by male employees is further supported by the data provided by the rail operators in the study, with male workers accounting for almost 87 percent of the reported workforce. The representation of female employees at roughly 13 percent of the total is similar to the 15 percent figure which was derived from the 2006 Census data. Occupations which had a very low proportion of female employees included trade staff (i.e. electrical tradespersons, mechanical and fabrication tradespersons, other tradespersons), other plant and machine operators and train drivers and assistants. In each of these occupational groups more than 96 percent of the workers were male. Other occupational groups which had high percentages of male employees included technical officers/technicians, rail controllers and signallers and labourers and related workers, with all these having around 90 percent or more of their workers being male. The percentage of female workers was highest amongst business, finance and IT professionals along with clerical and customer service staff, with these two groups accounting for more than half the number of female employees reported by the rail operators surveyed in the study. These findings indicating there is a fairly high degree of occupational segregation by gender amongst workers in the Australian rail industry, is consistent with similar patterns that were reflected in the 2006 ABS Census data.

Table 6: Employment by occupation and gender, (From Study Data - 2006), Australian rail industry

Occupational Group	Number employed			%	Share of Employment		
	Total	Males	Female	Female	Total	Male	Female
Business, Finance or IT Professionals	2566	1808	758	29.5%	5.6%	3.9%	1.7%
Clerical & Customer Service Staff	7722	5162	2560	33.2%	16.8%	11.2%	5.6%
Electrical Tradespersons	1391	1376	15	1.1%	3.0%	3.0%	0.0%
Engineering Associate Professionals	1519	1495	24	1.6%	3.3%	3.3%	0.1%
Engineers	3831	3293	538	14.0%	8.3%	7.2%	1.2%
Labourers & Related Workers	4747	4448	299	6.3%	10.3%	9.7%	0.6%
Managerial Staff	2859	2387	472	16.5%	6.2%	5.2%	1.0%
Mechanical & Fabrication Tradespersons	3763	3730	33	0.9%	8.2%	8.1%	0.1%
Other	998	900	98	9.8%	2.2%	1.9%	0.2%
Other Associate Professionals	31	26	5	16.1%	0.1%	0.1%	0.0%
Other Plant & Machine Operators	1363	1313	50	3.7%	3.0%	2.8%	0.1%
Other Professionals	157	88	69	43.9%	0.3%	0.2%	0.1%
Other Tradespersons	1402	1385	17	1.2%	3.0%	3.0%	0.0%
Rail Controllers & Signallers	1990	1861	129	6.5%	4.3%	4.0%	0.3%
Rail Guards & Attendants	3900	3221	679	17.4%	8.5%	7.0%	1.5%
Technical Officers/Technicians	424	377	47	11.1%	0.9%	0.8%	0.1%
Train Drivers & Assistants	7385	7112	273	3.7%	16.0%	15.4%	0.6%
TOTAL	46048	39982	6066	13.2%	100.0%	86.8%	13.2%

4. Skills Shortages by Occupation - Qualitative Evidence

The following results are based on data provided by rail operators participating in the study. The information was acquired through questionnaires and in-depth interviews that were completed with the rail organisations. Almost all respondents stated that they were experiencing difficulties in recruiting and/or retaining workers in at least one occupation, which is consistent with the proposition that the ARTI is currently facing significant labour shortages. Moreover, it was predominately in the higher skilled occupations in which recruitment difficulties were nominated. The operators' perceptions of skill shortages are summarised below, with the discussion organised by occupational group.

Tradespersons

The occupational group for which shortages were most commonly reported was tradespersons, with 45 percent of rail operators experiencing shortfalls in trade staff. This included shortages in electrical tradespeople such as electrical fitters and electricians, with approximately 27 percent of rail operators experiencing shortages of workers in this occupational group. Some operators indicated that they were unable to attract applicants with the appropriate experience, while others indicated that they hadn't been able to attract any applicants at all. Operators facing shortages of electrical tradespersons generally attributed the shortage to the current tight labour market conditions, although one participant blamed competition from foreign firms for the shortfall. Operators also identified recruitment difficulties in other trades, including boilermakers and mechanical tradespersons.

Signalling Staff

In addition, 32 percent of the study participants identified having difficulties in attracting or retaining signalling staff, including signal electricians, signal maintainers and signal technicians. The shortages amongst signalling staff were generally attributed to a lack of applicants with the appropriate qualifications and or experience. However, in the case of signal technicians, the rail operators in the study stated that they had no applicants at all. Factors that the respondents believed contributed to the shortages in signalling staff included increased competition for these workers due to the current booms in the resources and construction industries and an inability to compete with the rates of pay offered by firms in these competing industries and other organisations, including foreign companies.

Professionals- Engineers

Around 32 percent of respondents indicated difficulties in attracting or retaining engineers. In particular, a lack of appropriately tertiary qualified applicants with the necessary specialisations in civil, electrical, mechanical engineering and signal maintenance engineering was identified. Rail operators participating in the study attributed the shortages in

engineering personnel to competition from other rail operators and increased demand for engineering professionals due to the booms currently occurring in the mining and resources sector, as well as the building and construction industries.

Train Drivers

A number of rail operators (around 27 percent) reported shortages among train drivers. The majority stated that this was because there were insufficient numbers of applicants who were appropriately qualified and experienced to assume train-driving positions within their organisations. Two study participants indicated they had no applicants at all for these positions. A shortage of train driver assistants was reported by two of the rail operators who had stated that they were also experiencing difficulties in recruiting train drivers. Both of these operators indicated that applicants for these positions did not possess the necessary qualifications and one also stated that applicants lacked adequate experience.

5. Conclusion

The results of the study indicate that to effectively address the workforce issues they face with regard to labour shortages, rail operators will need to enhance the recruitment of personnel and the embodiment of the requisite skills in those workers. Given the specificity of skills required in the rail industry it is not feasible, by and large, that experienced workers who already possess the required skills can be recruited in sufficient numbers. Such a strategy may work for individual operators, but it is unlikely to be effective for the industry as a whole. Rather, the ARTI needs to simultaneously attract workers and address their training needs, or secure an adequate flow of entry level workers from relevant training courses.

The largely unfavourable image of the rail industry and its lack of career appeal to many potential recruits mean that it is likely to be quite a challenge to ensure sustainable and adequate levels of staff recruitment are achieved. In the case of managers and intermediate production and transport workers it also seems imperative that rail operators should place greater emphasis on recruiting younger workers due to the consistently higher average age of workers in these occupational groups, as indicated by the study results.

One potential strategy to address the ageing workforce problem and labour shortages within the ARTI would be to attempt to attract women re-entering the labour force into rail occupations currently dominated by men. It is important to remember however that gender biases in employment patterns are typically strongly rooted in social norms that are not easily overturned. Another strategy would be to achieve net retention rates amongst existing employees that are comparatively much higher than the average for all industries, given the workers' ages. Net retention rates can be enhanced by increasing the rate of entry of new recruits or by reducing the rate at which existing workers leave the industry. In either case,

the success of any such strategy would depend on improving the attractiveness of the rail sector as an industry of employment relative to other industries.

Rail operators could also offer and sponsor more training opportunities for employees in a bid to further minimise the skills shortages they face. This would be particularly pertinent to rail employers who have previously not trained workers. For example in occupations that don't require a tertiary qualification, promoting more apprenticeship programs would be an effective method of training employees for specialised roles through a combination of classroom and on the job training. Rail operators could thus boost their efforts to deliver more internal training to new recruits and existing workers. Other training options available to rail operators would be to develop more collaborative training programs in cooperation with affiliated training organisations and educational institutions such as universities and TAFEs. In some cases, rail employers may not even have to bear the full cost of such training because it may be partially funded by government bodies, workers and/or industry groups.

An alternative approach could be to try to encourage older rail workers to delay retirement. This is likely to involve offering older employees more flexible working conditions and improved financial incentives. Such measures have been perceived as necessary, to address the challenges of population ageing in the wider Australian economy. If this could be achieved in the ARTI, it would smooth the anticipated spike in wastage rates associated with the concentration of workers in the older age groups and at least delay emerging skills shortages, thus allowing greater time for human resource adjustments to be made.

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