



Report 1: Data Analysis

Labour market and training issues in the baking industry

March 2011

This AgriFood Skills Australia project was conducted by Dumbrell Consulting Pty Ltd at the request of the Baking Associations of Australia. Support was provided by the Queensland, New South Wales, Victoria, South Australia, West Australia and Tasmanian baking industry associations.

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Executive Summary

This paper is the first report for the study of the labour market for bakers and pastry cooks in Australia on behalf of AgriFoods Skills Australia by Dumbrell Consulting Pty Ltd. This report examines a range of statistical data on the food industry, the employment of bakers and pastry cooks, trends in apprenticeships for bakers and pastry cooks and the impact of immigration on the supply of skilled bakers and pastry cooks. Most of the data examined is for at least the last 10 years. The main data sources used are the Australian Bureau of Statistics (Census, Labour Force Survey and industry data), the National Centre for Vocational Education Research (NCVER) for apprenticeship data and the Department of Immigration and Citizenship for immigration data.

The main findings from this analysis are:

- Nearly 60% of bakers and pastry cooks are employed in the food retailing sector, an industry that has shown strong growth over the last 25 years.
- About 25% of bakers and pastry cooks work in the food manufacturing sector – an industry that has grown quite slowly over the last 25 years.
- Close to half of the bakers and pastry cooks counted in the last Census held no formal post-school qualifications.
- The majority of bakers and pastry cooks are aged under 40, an age distribution pattern unlike many other trade categories.
- Immigration has been a very variable source of skilled bakers and pastry cooks over the last 15 years. While immigrant numbers peaked over the period 2006-07 to 2008-09, when the supply of migrants was comparable with the number of completing apprentices, in other years migration has been only a minor source of supply, especially for bakers.
- Apprenticeship commencements in baking and pastry cooking peaked in 2002 and by 2010 were only at about 57% of the level in 2002.
- Rates of attrition among apprentices in the baking and pastry cooking trades are among the highest of any trades.
- If apprenticeship attrition rates had been around the total apprenticeship rate of 50% there would have been an additional 1500 bakers and pastry cooks available to the Australian labour market over the last 10 years.
- The situation for apprentice bakers and pastry cooks appears to be worse in NSW than elsewhere in the country, while training rates in NSW and South Australia are poor in comparison with the other states.
- The level of apprenticeship commencements in recent years indicates that there is unlikely to be any significant improvement in the availability of qualified bakers and pastry cooks from domestic sources over the next 3 to 4 years.

Analysis of the data

The data sources

This Section of the Report examines a range of data on the baking and pastry cooking industries. Several sources of data are used in this report including Census data from the Australian Bureau of Statistics (ABS), national apprenticeship data from the National Centre for Vocational Education Research (NCVER) and migration data from the Australian Department of Immigration and Citizenship (DIAC).

Any labour market analysis at the level of individual occupations such as bakers and pastry cooks needs to rely on Census data. It is unfortunate that the latest Census data is from the Census conducted in 2006, with a new Census scheduled for later in 2011. The reason for this reliance on Census data is that other ABS data on the labour market is almost exclusively based on their monthly Labour Force Survey. To quote from the ABS, *“The Labour Force Survey is based on a multi-stage area sample of private dwellings (currently approximately 29,000 houses, flats, etc.) and a list sample of non-private dwellings (hotels, motels, etc.), and covers approximately 0.33% of the civilian population of Australia aged 15 years and over.”* Any sample that covers just one-third of one percent of the population cannot be used to give reliable estimates of employment at the individual occupation level (such as bakers or pastry cooks) nor at the level of the industry “class” level (the 4-digit ANZSIC classification which distinguishes between, for example, bread manufacturing [code 1171] and cake and pastry manufacturing [code 1172]).

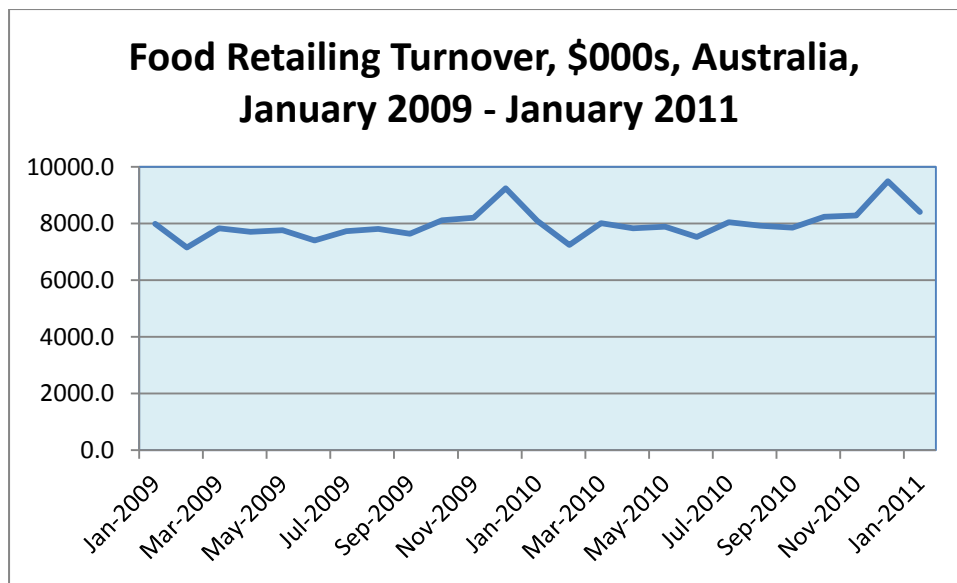
The data from the NCVER is based on reports provided from each state/territory training authority. For most of the apprenticeship data used in this report the most up to date data are for the year ending September 2010. Data provided by DIAC on migration is current to February 2011.

Bakers and Pastry Cooks in Australia

Economic trends

Over the last 2 years turnover in the food retailing sector, which includes baking and pastry products retailing, was relatively flat, as shown in the following chart.

Figure 1: Trends in Food Retailing, Australia, 2009-2011

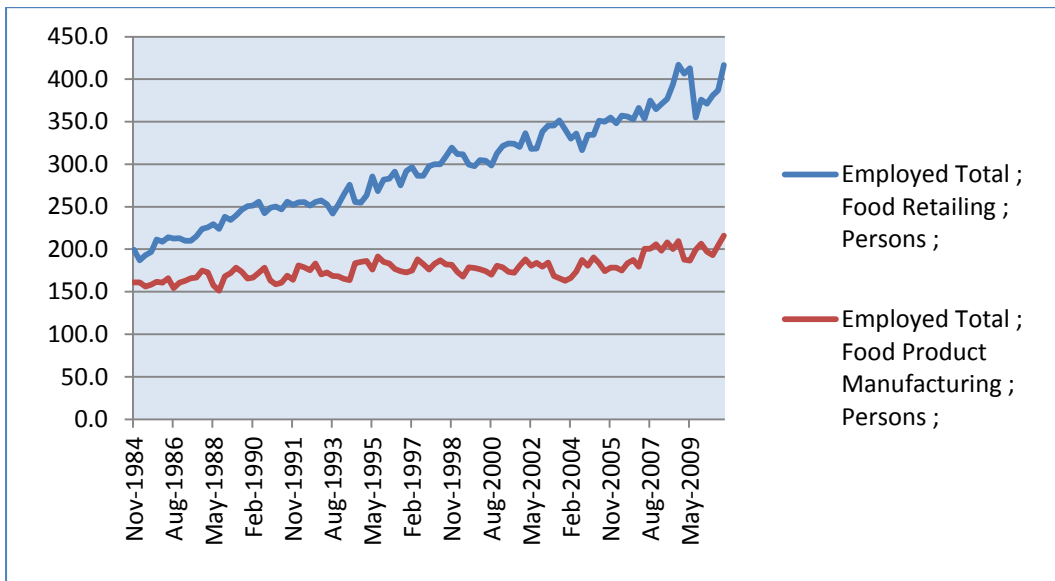


Anecdotal evidence suggests however that, while overall food retailing activity has been relatively flat, there has been a growing focus on bakery products within the food retailing sector with the major chains increasing their presence in the fresh bread sector through more on-site production. This factor has probably increased demand for bakers within the retail baking sector.

Current data on the manufacturing aspect of baking and pastry cooking is also not available, with reasonably up to date data also only available at the level of food product manufacturing. Over the 3 years from 2006-07 to 2008-09 employment in this sector rose between 2006-07 and 2007-08, but then fell slightly in 2008-09 from 220,000 to 213,000 persons. It is not possible to determine how the baking industry individually performed over this period. Over the 3 years operating profit before tax and capital expenditure in food manufacturing followed a similar trend. The manufacturing aspect of the Baking Industry represents about 6% of the food processing industry in Australia. The available data are not sufficient to indicate however whether there has been a shift in demand for bakers from the manufacturing to the retailing sectors.

Overall employment levels in both food retailing and food manufacturing have risen in Australia over the last 26 years, although the retailing sector showed much stronger growth than manufacturing. The following chart shows data from the ABS Labour Force Survey at the industry sub-division level. A further breakdown of these data to baking and pastry cooking is not possible for the reasons explained earlier in this report.

Figure 2: Employed persons, Australia, Food Retailing and Food Product Manufacturing, 1984 – 2010



Labour Market Characteristics of Bakers and Pastry Cooks

Distribution by Industry Sector and State

Stage 2 of the project involves a series of interviews with employers and their staff in a representative cross-section of firms across all states. Because it is likely that different labour market factors affect the different sectors of the industry it is important to ensure that all significant sectors are represented in our sample of employers interviewed. The firms were selected using the following data as a guide. The most up-to-date data on the industry sectors employing bakers and pastry cooks come from the 2006 Population Census. It shows the following industry distribution of employment:

Table 1: Employment of Bakers and Pastrycooks by Industry Sector, 2006 Census

Industry	No. of bakers & pastrycooks	Percentage	Number of employers needed in sample
Food Retailing	13517	57.56	17-18
Food, Beverage & Tobacco Manufacturing	5686	24.21	7-8
Accommodation, cafés & restaurants	1819	7.75	2
Personal & Household Goods Wholesaling	1205	5.13	1
Remainder*	1255	5.34	0
<i>Total</i>	23482	100	28

*Most of these are in undefined industries and are in reality likely to be mostly in the larger sectors listed above.

Table 2: Distribution of Bakers and Pastry Cooks by State, 2006 Census

State	Number	Bakers & Pastry Cooks: Percentage of Australia	Total population share (2006 Census)
NSW	7277	30.99	32.98
VIC	6562	27.94	24.84
QLD	4556	19.40	19.67
SA	1857	7.91	7.63
WA	2149	9.15	9.87
TAS	634	2.70	2.40
Total 6 States	23035	98.10	97.39
AUS TOTAL	23482	100.00	100.00

This shows that there are only about 450 bakers and pastrycooks outside the 6 States. Ignoring this small number in the sample should not raise any problems.

Table 2 also shows that by sampling about the same number of firms in each State there is a minor bias towards the smaller States. It is our view that sampling by industry sector rather than by state is preferable as it is more likely that supply and demand issues will vary more by industry sector than by state.

It is interesting to note that Victoria has a high proportion of bakers and pastry cooks (28%) compared to its population share of about 25%, while NSW seems to have a relatively low share, 31% compared to its population share of about 33%. These differences might point to labour market differences between these two states in regard to bakers and pastry cooks. Variations between the other states are minor.

Trends in Employment since 1996

Data from the Censuses of 1996, 2001 and 2006 show that there was a gradual rise in the number of bakers and pastry cooks employed in Australia over the period 1996 to 2006. The following tables summarises this increase. The most noticeable trend has been the rapid rise in the number of females, up 61% compared with the rise in males of just 6.5% between 1996 and 2006.

Table 3: Employed bakers and pastry cooks, Australia 1996, 2001 & 2006 Censuses

	Males	Females	Persons
2006	17,296	6,186	23,482
2001	17,840	4,707	22,707
1996	16,246	3,834	20,110

(Note: male + female numbers do not add to total but this is not an error.)

Over the 10 year period there was a slight decline in the total share of employment in NSW while Victoria and Western Australia increased their share of bakers and pastry cooks. The following table summarises the changes over that period.

Table 4: Inter-censal change in employment, bakers and pastry cooks, States and territories

Census Year>	2006		2001		1996	
State	Number	Percentage of Australia	Number	Percentage of Australia	Number	Percentage of Australia
NSW	7,277	31.0	7,055	31.1	6,578	32.7
VIC	6,562	27.9	6,243	27.5	5,307	26.4
QLD	4,556	19.4	4,432	19.5	3,935	19.6
SA	1,857	7.9	1,811	8.0	1,612	8.0
WA	2,149	9.2	2,044	9.0	1,753	8.7
TAS	634	2.7	614	2.7	525	2.6
Total 6 States	23,035	98.1	22,199	97.8	19,710	98.0
Other territories	447	1.9	508	2.2	400	2.0
AUS TOTAL	23,482	100.0	22,707	100.0	20,110	100.0

Census data allows for several classifications within the bakers and pastry cooks occupational group – bakers & pastry cooks, supervising bakers & pastry cooks, bakers, and pastry cooks. Numbers at the 2001 Census showed about 15% in the category bakers &

pastry cooks and supervising bakers & pastry cooks, with the remainder almost evenly divided between bakers and pastry cooks. Given that apprentices in baking far outnumber those in pastry cooking (see later section) it appears that the training rate of pastry cooks is very low in Australia and that much reliance is being placed on either unqualified or migrant labour in this occupation.

Apprenticeship completion data shown later in this report indicate that there were 2157 completions from 2001 to 2005 although the number of bakers and pastry cooks rose by considerably more than this - almost 2600. Given that there would have been some natural attrition through age-related retirement it is clear that there have been other significant sources of supply operating – including unqualified people entering the occupations. Another source of skills traditionally used in Australia has been immigration. The following section examines the contribution of immigration to the supply of bakers and pastry cooks.

Immigration as a source of skills

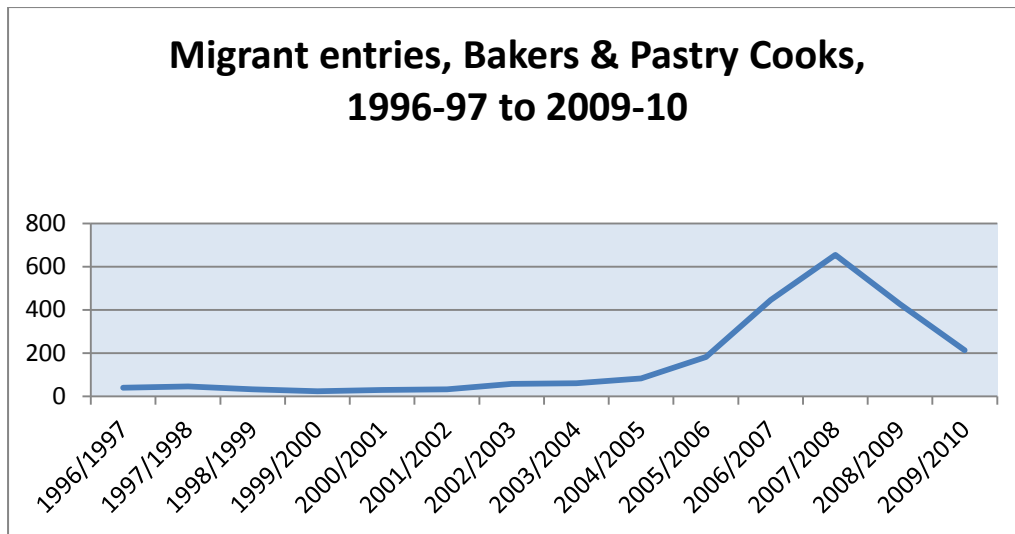
Migration data is available on a financial year basis. Over the almost 15 year period from 1996-97 to 2010-February 2011 almost 2500 bakers and pastry cooks migrated to Australia under the General Skilled and Employer Sponsored categories or on average about 170 per year. While this was the occupation shown on the arrival details there is no guarantee that these individuals actually entered employment in these categories. Migrants were either classified as bakers, bakers and pastry cooks or pastry cooks. The largest group within this number were classified as pastry cooks, as shown in the following table.

Table 5: Migration to Australia, 1996-97 to 2010-(February) 2011, Bakers and Pastry Cooks

Bakers	506
Bakers & Pastry Cooks	85
Pastry Cooks	1884
Total	2475

This intake pattern was not at all uniform over time however, with about one quarter of these migrants arriving in just one year, 2007-08, and more than 60% of the total arriving over the 3 years from 2005-06 to 2008-09 as shown in Figure 3 below.

Figure 3: Migration to Australia, 1996-97 to 2009-10, Bakers and Pastry Cooks, by year of arrival

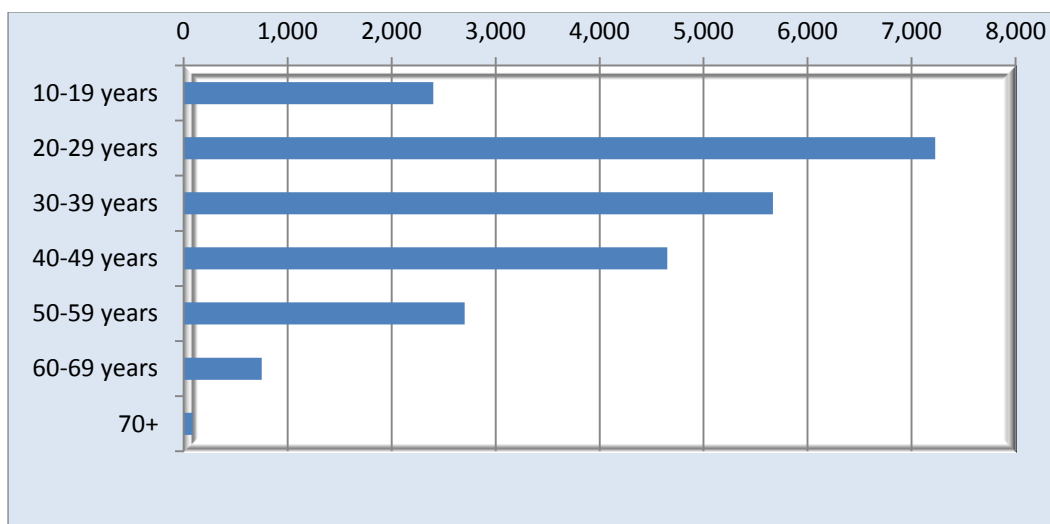


Over this peak 3 year period of arrivals the number of migrant bakers and pastry cooks arriving in Australia was comparable with the number of apprentices completing their training in Australia. The decline in 2009-10 appears to be continuing into 2010-11 with 151 entries up to February 2011 or an annualised number of about 226 if present trends continue for the rest of this financial year – a level comparable with 2009-10. With apprenticeship numbers still well below those of 10 years ago (see below) it appears that the supply of bakers and pastry cooks is being constrained from both major sources of supply.

Age characteristics of Bakers and Pastry Cooks

Most bakers and pastry cooks are under 40, an age distribution pattern unlike some other trades. This is significant as there are many trades with a preponderance of tradespersons over 40, meaning that age related retirements are not as significant for bakers and pastry cooks as for some other trades known to be in shortage.

Figure 4: Age of Bakers and Pastry Cooks, 2006 Census



Note: These data include apprentices.

The above chart might indicate that a high proportion of bakers and pastry cooks leave their trade as they grow older. While the chart could also reflect the relatively rapid growth in the number of bakers and pastry cooks commencing apprenticeships over the last 20 years, completions of apprenticeships, at least over the last 10 years have been quite flat. One possibility is that some apprentices who do not complete their apprenticeship still go on to work as bakers and pastry cooks.

Alternatively, the chart could also indicate that there has been a rapid growth in unqualified bakers and pastry cooks entering the trade in recent years. These issues will be examined further during employer and industry consultations.

Education and qualifications of Bakers and Pastry Cooks

Most bakers and pastry cooks who hold formal qualifications as would be expected have those qualifications in Food and Hospitality. A surprisingly high 45% of bakers and pastry cooks hold no formal post-school qualifications. About 54% of all females in these occupations hold no formal post-school qualification while the comparable figure for males is 42%. The following table shows the *field of study* for the highest level of post-school qualifications held by those working as bakers and pastry cooks at the 2006 Census.

Table 6: Highest qualification by field of study, Bakers and Pastry Cooks, 2006 Census

	Males	Females	Persons	Percentage
Field of study not stated	836	268	1,104	4.70
Engineering and Related Technologies, nfd	114	6	120	0.51
Information Technology, nfd	117	24	141	0.60
Accounting	84	55	139	0.59
Business and Management	190	142	332	1.41
Sales and Marketing	66	117	183	0.78
Food and Hospitality	7,463	1,511	8,974	38.21
Not applicable*	7,284	3,332	10,616	45.20
Sub-total above fields	16,154	5,455	21,609	92.01
Total	17,299	6,186	23,485	100.00
*indicates no post-school qualifications				

As at the 2006 Census, as would be expected, the most common level of qualification was a Certificate III or IV. More than 3% of bakers and pastry cooks held a bachelor's degree. Where the level of education was not stated it is quite likely that those respondents also lacked any post-school qualifications, indicating that the proportion of bakers and pastry cooks without qualifications in 2006 was close to 50%. It is of interest that the proportion of bakers and pastry cooks without qualifications fell between 2001 and 2006. This was not, however, wholly a result of an increase in the number of traditionally qualified trades people with a Certificate III or IV who grew by 268. The largest increase, 356, in the supply was from bakers and pastry cooks possessing a bachelor's degree.

The following table shows the *level of qualification* that represented the highest qualification held by bakers and pastry cooks at the 2001 and 2006 Censuses.

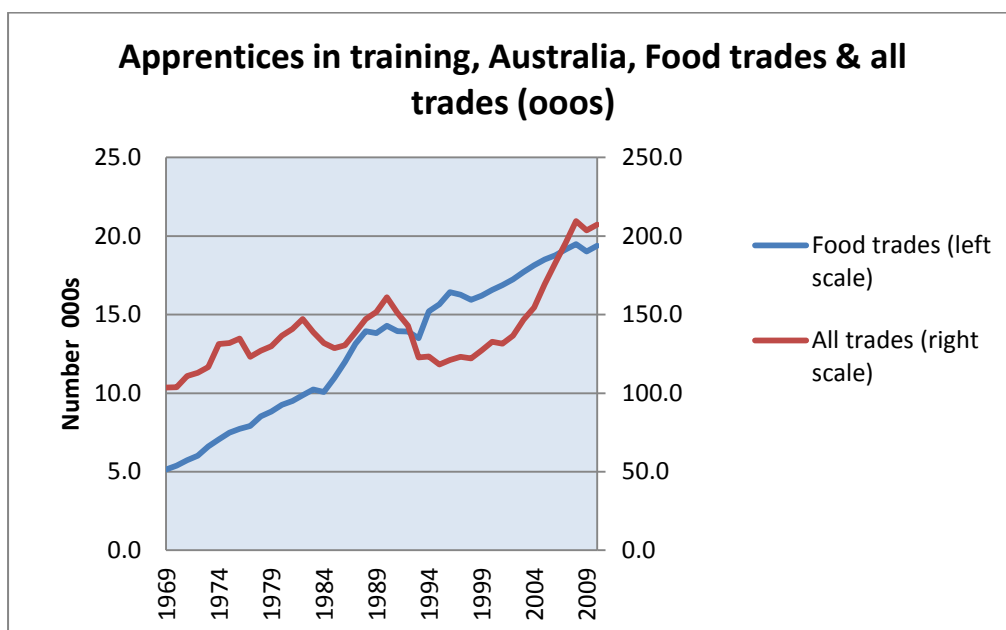
Table 7: Highest qualification by level of study, Bakers and Pastry Cooks, 2001 and 2006 Censuses

	2001	%	2006	%
Doctoral Degree Level	0	0	3	0.0
Master Degree Level	23	0.1	90	0.4
Graduate Diploma Level	23	0.1	28	0.1
Graduate Certificate Level	0	0.0	3	0.0
Bachelor Degree Level	403	1.8	759	3.2
Advanced Diploma and Diploma Level, nfd	16	0.1	19	0.1
Advanced Diploma and Associate Degree Level	321	1.4	390	1.7
Diploma Level	202	0.9	425	1.8
Certificate Level, nfd	65	0.3	190	0.8
Certificate III & IV Level	9292	40.9	9560	40.7
Certificate I & II Level	240	1.1	242	1.0
Level of education not stated	961	4.2	925	3.9
Level of education inadequately described	123	0.5	235	1.0
No qualifications	11037	48.6	10615	45.2
<i>Total</i>	22706	100.0	23484	100.0

Apprenticeships in Baking and Pastry Cooking

Nationally the number of apprentices in training in the food trades overall (which includes cooks and chefs as well as bakers and pastry cooks) has risen quite strongly over the last 40 years. The following figure compares the number of apprentices in training across Australia since 1969 with the number of apprentices in the food trades. It shows relatively strong growth in the food trades apprenticeships until about 2004. Since then, however, numbers have flattened out. Baking and pastry cooking apprenticeships have however not performed as well as the food trades overall. Nevertheless, the following chart shows that since 1969 food trade apprenticeships have risen from just 5% of all trades to almost 10% now.

Figure 5: Apprentices in training, Australia, Food Trades apprentices vs total apprentices in training



On the latest data as at September 2010 there were 1894 baking apprentices and 389 pastry cooking apprentices in Australia.

The following analysis looks at the two apprenticeship categories of baking and pastry cooking separately since the year 2000. The number of apprentices in baking and pastry cooking fell sharply after 2003, indicating that apprentice numbers in the other food trades have held or risen a little in that period. Apprentice numbers in baking and pastry cooking have only recovered a little since 2003, bottoming out in 2007 and rising by only around 6.6% since then.

Apprentice Bakers

The number of apprentice bakers in training across Australia has declined markedly - by 41% - since peaking in 2003. The decline occurred across all states and territories, as shown in the following table. There has been a slight improvement since bottoming out in 2007 however the number in training is well below the level of 10 years ago.

Table 8: Apprentice Bakers in training Australia by state, year to September 2000 to 2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New South Wales	595	693	796	855	718	547	430	405	425	453	491
Victoria	396	837	1,039	1,079	1,055	853	749	677	644	695	658
Queensland	703	677	683	663	505	328	294	331	400	389	381
South Australia	145	171	169	196	163	119	102	90	123	125	119
Western Australia	281	251	276	275	250	206	168	168	163	180	155
Tasmania	43	44	42	64	67	80	73	86	89	78	52
Northern Territory	22	41	39	37	42	20	9	8	4	6	9
Australian Capital Territory	38	44	44	42	48	21	11	11	12	16	29
Australia	2,223	2,758	3,088	3,211	2,848	2,174	1,836	1,776	1,860	1,941	1,894

The following table shows commencements in baking apprenticeships by state since 2000. Commencements peaked in 2002 but declined sharply after 2004. The relatively low number of commencements in NSW is disturbing, representing only 25% of all commencements in 2010 and consistently fewer than in Victoria. Commencements have, as with the numbers in training, increased since the low point in 2005 but are still well below the level in 2002 and do not appear to be growing on the latest data.

Table 9: Apprenticeship commencements, Baking, Australia by state, year to September 2000 to 2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New South Wales	261	334	477	401	223	186	193	212	209	193	235
Victoria	263	680	608	559	736	370	378	440	376	438	345
Queensland	294	322	290	289	160	103	149	207	236	199	196
South Australia	65	73	88	97	51	27	50	35	99	48	30
Western Australia	103	110	136	129	94	81	76	114	93	126	87
Tasmania	14	22	11	42	43	52	24	35	33	30	12
Northern Territory	9	33	21	24	21	4	3	3	4	5	4
Australian Capital Territory	11	36	30	17	17	5	7	6	9	14	17
Australia	1,020	1,610	1,661	1,558	1,345	828	880	1,052	1,059	1,053	927

While trends in commencements are important, the most critical measure of the supply of skills to the industry is the output from the apprenticeship system, as measured by data on completions, shown in the next table.

Table 10: Apprenticeship completions, Baking, Australia by state, year to September 2000 to 2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New South Wales	109	92	120	99	124	143	149	109	76	48	77
Victoria	24	19	59	79	115	156	173	182	111	117	118
Queensland	135	134	135	139	143	120	101	59	59	91	109
South Australia	33	16	30	21	38	38	47	27	41	17	12
Western Australia	43	60	41	42	46	38	52	40	36	42	49
Tasmania	17	13	6	8	15	12	13	4	7	14	16
Northern Territory	5	5	7	8	1	12	3	1	2	0	1
Australian Capital Territory	1	5	8	3	0	7	10	0	2	4	4
Australia	367	344	406	399	482	526	548	422	334	333	386

Reflecting the high commencements in 2001, 2002 and 2003 completions peaked from 2004 to 2006 but fell away significantly after that year. More importantly, the gap between the number of commencements and completions shows a very high level of drop outs from the apprenticeship. In fact the published data on attrition rates show the food trades as having the highest attrition rates of all trades. The attrition rate in the food trades for training contracts starting in 2004 was 66%, the highest of all trade groups, with about 45% of food trades apprentices withdrawing within the first 12 months of their training contract, both rates being considerably higher than in other major trades groups. Attrition rates for bakers and pastry cooks are considered in more detail later.

When the poor level of recent commencements compared with the levels of ten years ago and the ongoing problem of poor retention rates are considered together it is apparent that there is unlikely to be any significant improvement in the supply of qualified bakers over the next 3 to 4 years at least. However, a slight improvement in completions can be expected over the period 2011-2014 given that commencements over 2008-2010 were about 10% higher than over the 2005-2007 period.

Apprentice Pastry Cooks

Pastry cooking is a small trade, with total Australian pastry cooking apprentices in training declining over recent years. The following table shows the numbers in training by state between 2000 and 2010, in the year to September of each year.

Table 11: Apprentice Pastry Cooks in training Australia by state, year to September 2000 to 2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
NSW	291	264	215	162	130	109	82	61	50	49	73
Victoria	201	143	145	138	152	178	176	178	143	142	142
Queensland	52	45	39	46	48	54	63	67	60	54	59
South Australia	15	15	18	16	13	15	19	19	26	27	23
Western Australia	39	37	34	34	44	59	67	56	54	46	53
Tasmania	17	16	9	10	9	13	17	17	36	47	34
Northern Territory	3	3	2	3	6	1	0	0	0	0	0
ACT	16	9	0	0	0	0	1	1	3	6	4
Australia	634	532	462	409	402	429	425	399	372	370	389

While the numbers in training have declined over the last decade, commencements in the trade have remained relatively stable, with around 200 commencements each year. As with baking, apprenticeships in pastry cooking are higher in Victoria than in NSW, despite NSW having more people working as bakers and pastry cooks. The decline in the number in training in NSW is especially pronounced, being about twice the rate for Australia overall.

Table 12: Apprenticeship commencements, Pastry Cooking, Australia by state, year to September 2000 to 2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
NSW	102	106	60	55	42	48	39	31	34	34	50
Victoria	76	65	89	80	96	101	92	82	76	83	85
Queensland	23	32	15	25	28	21	39	41	39	26	35
South Australia	7	6	7	7	2	7	11	7	13	10	8
Western Australia	13	13	14	17	25	26	39	31	29	23	36
Tasmania	6	5	3	10	3	7	16	7	29	32	21
Northern Territory	0	1	1	6	6	1	0	0	0	0	0
ACT	16	11	1	0	0	0	1	0	2	4	2
Australia	243	239	190	200	202	211	237	199	222	212	238

The number of completions in pastry cooking apprenticeships by state are presented in the following table. In recent years the completion rates in NSW appear to have been the worst in Australia, with the number of completing apprentices in NSW lower than *all* the other states in 2010. While the apprenticeship system across Australia does not appear to be functioning effectively for both pastry cooks and bakers the performance in NSW appears to be clearly the worst. The failure to convert commencing apprentices into fully qualified tradespersons is likely to be a major factor in producing any skill shortages in these trades.

Table 13: Apprenticeship completions, Pastry Cooking, Australia by state, year to September 2000 to 2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
NSW	55	53	55	51	33	24	21	14	4	7	4
Victoria	18	13	22	21	19	15	28	29	43	41	25
Queensland	14	15	8	4	9	6	12	9	12	19	10
South Australia	4	3	4	5	0	4	3	2	3	3	6
Western Australia	7	6	9	7	5	6	14	15	15	20	15
Tasmania	7	5	3	5	2	4	2	2	1	9	24
Northern Territory	1	1	2	0	1	0	0	0	0	0	0
ACT	5	3	2	0	0	0	0	0	0	0	1
Australia	111	99	105	93	69	59	80	71	78	99	85

The issue of apprenticeship attrition rates is examined in more detail in the following section.

Apprenticeship Attrition Rates

As noted above, attrition rates among apprentices in the food trades are the highest of the main apprenticeship groups. The rates for these main apprenticeship groups are summarised below. Note that this table shows the attrition rate over the full term of the apprenticeship for contracts starting in 2004, the latest date for which sufficiently reliable attrition rate data are available according to NCVER.

Table 14: Attrition rates in main apprenticeship categories, contracts commencing in 2004, Australia

Trade category	Attrition rate (%)
Automotive & engineering	44.9
Construction trades	49.9
Electrotechnology/telecoms	38.1
Hairdressing	59.3
Food trades	66.1
All trades	49.4

Unpublished data from the National Centre for Vocational Education Research (NCVER), available only up to the year ending September 2008, show attrition rates in baking and pastry cooking were well above the rate for all apprenticeships. This table shows data for the apprenticeships starting in the year shown, so that the data under the year 2004 is comparable with the table above. The attrition rates for bakers and pastry cooks are slightly lower than for the food trades overall but still noticeably higher than in other trades. The lower figures for 2008 might not reflect an improvement in retention but rather under-reporting of withdrawals. Full tables from NCVER are provided in the Appendix to this report showing attrition rates and duration of apprenticeships and traineeships in all occupational groups.

Table 15: Apprenticeship attrition rates, percentages, Bakers & Pastry Cooks, Australia, 2004-2008¹

	2004	2005	2006	2007	2008
Bakers	62.3	60.6	61.4	62.1	56.3
Pastry Cooks	63.9	60.1	61.6	65.4	57.1

While the number of apprentices in the smaller states and territories make using attrition rate data for those regions unreliable, the data for NSW, Victoria and Queensland are quite consistent over the time period shown in the following table. There is no doubt that these levels of attrition indicate that the baking and pastry cooking apprenticeship system is experiencing major problems.

The following table shows attrition rates by state over the period 2004-08. The large fluctuations among the smaller states, particularly South Australia and Tasmania, reflect the small numbers of completions in those states.

Table 16: Attrition rates (percentages) for baking and pastry cooking apprentices by state, 2004-2008

	2004		2005		2006		2007		2008	
	Bakers	Pastry Cooks	Bakers	Pastry Cooks	Bakers	Pastry Cooks	Bakers	Pastry Cooks	Bakers	Pastry Cooks
NSW	65.5	78.3	62.5	73.7	64.0	87.0	59.2	74.4	58.1	61.5
VIC	58.9	57.5	61.1	55.6	64.2	60.4	64.6	56.3	61.6	63.2
QLD	65.3	70.6	61.4	59.3	61.3	62.5	62.9	78.3	51.5	59.1
SA	51.0	50.0	63.0	57.1	20.0	36.4	37.1	100.0	34.3	15.4
WA	66.0	46.2	63.3	50.0	60.7	45.0	66.9	62.5	62.4	58.1
TAS	68.9	66.7	36.5	62.5	69.0	56.3	48.6	42.9	54.1	44.8

There are potentially many reasons why drop out rates in these apprenticeships are high. Recent research has shown that:

- *Most of the reasons given for not completing an apprenticeship or traineeship vary by how far the individual is into their training contract*
- *The desire to do something different (such as study at university) or better (such as getting a better-paid job) is the only reason remaining constant throughout the duration of the training contract. It appears that apprentices and trainees are always looking out for a better alternative.*
- *By contrast, poor working conditions or non-sympathetic bosses or workmates have an immediate effect for many, but then decrease in importance with duration.²*

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Note that the number of commencements form a very small base for some of the calculated proportions. Inferring any underlying rates based on these proportions should be avoided. This observation applies particularly to Tasmania and the territories.

Note that delays in reporting completions and attrition give rise to recent years tending to show higher proportions of contracts "continuing or not known".

² "How reasons for not completing apprenticeships and traineeships change with duration", Tom Karmel, Peter Mlotkowski, NCVET 2010, Occasional paper
<http://www.ncver.edu.au/publications/2234.html>

Given that most drop outs occur within the first 12 months of the baking and pastry cooking apprenticeships (see Table 20 in Appendix) it is most likely that the third set of causes is most relevant to this sector. The authors of that paper comment on possible solutions for improving retention rates, saying *“At the very least, prospective apprentices and trainees should be adequately informed about the nature of the work and what the boss expects. The other is to work with employers to improve conditions and relationships.”*³

Training Rates

One way of considering the adequacy of current apprenticeship levels is to look at the training rate, or what percentage of the total work force is represented by those in training. Because of the complication of a sizeable proportion of the baking and pastry cooking work force being combined as one occupation, the following estimates combine bakers and pastry cooks together. The table shows what percentage the number of apprentices in training represent as a percentage of the total baking and pastry cooking work force.

Table 17: Estimated training rates by major states, bakers and pastry cooks combined

NSW	7.75
VIC	12.19
QLD	9.66
SA	7.65
WA	9.68
TAS	13.56

In this way of looking at apprenticeship numbers the higher numbers are better, indicating more apprentices in training relative to the number of tradespersons in baking and pastry cooking. Clearly Victoria and Tasmania are performing better than the other states, with NSW and South Australia being the worst performers. The following NCVET table shows overall training rates for Australia covering all trades categories.

Table 18: Training rates all trades, Australia 1999-2009

Year	Trade apprentices and trainees as a proportion of trade employment
1999	9.2
2000	9.5
2001	9.5
2002	10.1
2003	10.0
2004	10.7
2005	11.3
2006	11.6
2007	12.0
2008	12.2
2009	12.1

³ *ibid.* p.14

While the training rates in other trades are not substantially different than in the best states for bakers and pastry the higher attrition rates in baking and pastry cooking mean that fewer apprentices are converted into qualified bakers and pastry cooks.

A New Scenario?

This section considers what impact there would be on the supply of qualified bakers and pastry cooks in Australia if the retention rate for apprentices in baking and pastry cooking could be improved to match the overall rate for all apprentices. This *hypothetical* scenario shown in the table below indicates that if a retention rate of 50% had been achieved, over the last 10 years (2000 to 2010) there would have been at least an additional 1340 bakers and 163 pastry cooks available on the Australian labour market.

Table 19: What if retention rates for apprentices had been improved?

Bakers	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Increase over 10 years
Actual commencements	1,610	1,661	1,558	1,345	828	880	1,052	1,059	1,053	927	
Actual completions				344	406	399	482	526	548	422	
Completions @ 50% retention				805	831	779	673	414	440	526	
Potential increase in supply				461	425	380	191	-112	-108	104	1340
Pastry cooks											
Actual commencements	239	190	200	202	211	237	199	222	212	238	
Actual completions				99	105	93	69	59	80	71	
Completions @ 50% retention				120	95	100	101	106	119	100	
Potential increase in supply				21	-10	7	32	47	39	29	163

Note: Above table is for Australia as a whole.

In the above table it is assumed that all completions would have been within 4 years so the 50% completion rate for 2004 represents 50% of the commencements in 2001 and so on for the later years. The table probably under-estimates the benefit of an improvement in retention as the negative values for bakers in 2008 and 2009 could reflect under-reporting of withdrawals rather than a real improvement in retention for those periods. An increase of this order would represent more than a 5% increase in the total number of qualified bakers and pastry cooks in Australia. The table also under-estimates the increase because commencements data prior to 2001 are not included and hence no estimates of the increased number of completions are available for the years 2001 to 2003.

Appendix 1 - Immigration entries granted, Bakers and Pastry Cooks, 1996-97 - February 2011

Occupation	Category	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	1 July 2010- 28 Feb 2011
BAKER	Employer Nomination Scheme	1	2					1	1		4	5	7	17	30	25
	RSMS						1		2	1	4	5	2	15	18	25
	Skilled Australian Sponsored		2	2	1	3	2	3	4	5	5	9	4	8		1
	Skilled Independent		1	3	4	4	4	18	15	10	11	40	93	42	2	
	State/Territory Sponsored Visa									1	9	1	5	9	19	
Total		1	5	5	5	7	7	22	22	17	33	60	111	91	69	51
BAKERS AND PASTRYCOOKS	ENS	4	3	1	1		1				2	2			1	
	Skilled Australian Sponsored	14	10	4	1	2			1	1	1					
	Skilled Independent	20	10	1	1	1						2		1		
Total		38	23	6	3	3	1	0	1	1	3	4	0	1	1	0
PASTRYCOOK	ENS		7	2		4	4	2	1	5	22	12	18	32	61	32
	RSMS								1	1	1	4	2	7	10	15
	Skilled Australian Sponsored		6	8	4	6	2	3	6	9	7	8	15	22	3	1
	Skilled Independent		5	11	11	9	18	29	27	41	112	350	504	186	12	4
	State/Territory Sponsored Visa							1	2	9	4	8	5	88	57	48
Total		0	18	21	15	19	24	35	37	65	146	382	544	335	143	100
Grand Total		39	46	32	23	29	32	57	60	83	182	446	655	427	213	151

Appendix 2 – Apprenticeship attrition rates

Table 20: Cross-sectional completion and attrition rates by selected occupation for contracts commencing in December quarter 2007–09

Occupation (ANZSCO) group ³	Completion and attrition rates (%) by commencing cohort ^{1,2}					
	Completion rates			Attrition rates		
	2007	2008	2009	2007	2008	2009
Managers	59.9	51.8	62.0	33.6	38.8	29.8
Professionals	*	76.0	77.3	*	22.2	19.3
Technicians and trades workers	43.3	44.7	44.5	52.3	51.7	52.5
31 Engineering, ICT and science technicians	62.1	64.0	67.5	34.4	30.6	26.4
32 Automotive and engineering	46.6	48.5	47.1	50.0	49.1	51.0
33 Construction trades workers	44.2	43.6	42.2	52.0	52.5	54.8
34 Electrotechnology and telecommunications trades	54.6	55.4	52.5	40.5	40.3	44.3
35 Food trades workers	25.2	26.9	29.1	70.9	68.8	67.1
36 Skilled animal and horticultural workers	49.1	48.9	52.6	44.0	45.3	41.7
39 Other technicians and trades workers	41.7	43.1	44.1	54.8	54.4	53.7
391 Hairdressers	38.1	37.2	34.2	59.6	61.3	64.9
392 Printing trades workers	52.6	62.8	52.2	32.9	32.1	39.9
394 Wood trades workers	38.0	37.9	39.6	59.0	59.4	57.5
399 Miscellaneous	60.9	64.3	69.4	35.5	31.7	25.0
Community and personal service workers	58.8	57.1	59.8	37.9	38.9	34.5
41 Health and welfare support workers	69.6	71.8	59.9	25.5	24.5	29.8
42 Carers and aides	65.9	64.5	67.4	31.7	32.1	29.3
43 Hospitality workers	49.1	50.8	51.7	47.6	45.0	41.6
45 Sports and personal service workers	57.3	56.8	66.7	40.6	40.5	30.3
Clerical and administrative workers	57.5	61.1	64.0	36.3	32.8	27.8
51 Office managers and program administrators	58.7	61.1	64.8	30.7	27.2	21.3
53 General clerical workers	61.1	63.4	66.3	37.3	35.2	31.7
54 Inquiry clerks and receptionists	47.9	51.9	54.7	47.3	43.9	40.5
55 Numerical clerks	51.5	61.8	66.4	38.9	32.1	27.4
59 Other clerical and administrative workers	62.0	61.8	60.1	31.9	29.6	28.2
Sales workers	46.0	51.0	55.8	46.9	42.7	37.0
61 Sales representatives and agents	39.7	51.7	65.3	46.2	43.5	28.1
62 Sales assistants and salespersons	46.3	50.8	55.4	47.0	42.5	37.5
Machinery operators and drivers	60.6	62.8	62.3	35.7	33.3	28.2
71 Machine and stationary plant operators	62.6	65.8	67.4	33.8	31.5	21.5
72 Mobile plant operators	60.5	62.9	58.8	36.4	35.6	33.8
73 Road and rail drivers	56.6	61.3	54.2	39.7	33.9	35.1
74 Storepersons	62.4	59.7	68.0	33.3	34.3	25.5
Labourers	51.0	52.0	55.0	44.8	45.5	42.0
81 Cleaners and laundry workers	62.4	63.9	71.3	31.8	33.6	25.4
82 Construction and mining labourers	47.8	50.8	51.1	48.2	46.5	46.3
83 Factory process workers	45.0	48.1	46.0	50.6	49.4	51.0
84 Farm, forestry and garden workers	56.8	54.8	66.7	41.0	43.0	31.6
85 Food preparation assistants	37.3	20.7	28.0	57.2	76.2	70.1
89 Other labourers	51.0	52.1	48.9	46.2	45.2	47.7
Total	50.8	53.2	56.2	43.5	42.1	38.8

* Estimate not shown due to there being too few commencements to derive a reliable estimate.

Source: Experimental completion and attrition rates for latest commencing apprentices and trainees, NCVET, <http://www.ncvet.edu.au/publications/2265.html> Commonwealth of Australia, 2010

Table 21: Cross-sectional attrition rates by selected occupation³ and time of cancellation/withdrawal for contracts commencing in December quarter 2009

Occupation (ANZSCO) group ³	Attrition rates (%), cancelling/withdrawing within ⁴ :						
	Same quarter	1 quarter	2 quarters	1 year	2 years	3 years	4 years
Managers	2.5	8.7	16.0	23.0	28.8	29.8	29.8
Professionals	1.9	5.1	9.5	15.8	18.9	19.2	19.3
Technicians and trades workers	4.5	16.1	23.9	34.1	46.8	51.4	52.5
31 Engineering, ICT and science technicians	2.5	6.8	10.5	20.4	25.3	26.4	26.4
32 Automotive and engineering	3.4	14.2	20.5	29.7	43.5	49.5	51.0
33 Construction trades workers	5.0	16.8	24.6	34.7	48.4	53.7	54.7
34 Electrotechnology and telecommunications	2.5	8.5	14.6	23.3	35.8	42.3	44.3
35 Food trades workers	6.5	23.8	36.4	50.5	63.1	66.7	67.1
36 Skilled animal and horticultural workers	5.5	15.9	22.1	29.8	38.8	40.9	41.7
39 Other technicians and trades workers	4.6	17.5	25.1	36.7	50.0	53.1	53.6
391 Hairdressers	5.2	21.3	32.1	46.2	61.2	64.4	64.8
392 Printing trades workers	6.1	14.8	22.0	27.3	37.1	39.1	39.9
394 Wood trades workers	6.7	23.0	28.1	36.6	51.7	56.0	57.5
399 Miscellaneous	0.7	5.7	9.3	16.3	23.0	24.7	25.0
Community and personal service workers	5.0	15.8	23.4	30.4	33.7	34.4	34.5
41 Health and welfare support workers	3.0	8.3	16.4	23.8	28.3	29.6	29.8
42 Carers and aides	5.1	14.4	20.0	26.1	29.0	29.3	29.3
43 Hospitality workers	6.1	18.9	27.9	36.2	40.7	41.5	41.6
45 Sports and personal service workers	2.2	15.0	21.8	28.1	30.0	30.3	30.3
Clerical and administrative workers	3.6	12.3	18.5	24.2	27.2	27.7	27.7
51 Office managers and program administrators	2.4	7.5	12.0	16.8	20.8	21.2	21.3
53 General clerical workers	4.1	15.4	24.2	29.7	31.6	31.7	31.7
54 Inquiry clerks and receptionists	6.9	24.0	31.7	38.7	40.4	40.5	40.5
55 Numerical clerks	2.6	10.7	17.8	23.8	26.2	27.2	27.4
59 Other clerical and administrative workers	2.8	11.6	16.3	22.0	26.6	27.9	28.0
Sales workers	4.8	16.6	25.5	32.8	36.5	36.9	37.0
61 Sales representatives and agents	2.4	11.1	18.2	25.2	28.1	28.1	28.1
62 Sales assistants and salespersons	5.0	17.1	26.1	33.4	36.9	37.3	37.5
Machinery operators and drivers	3.6	10.1	16.1	23.1	27.4	28.1	28.2
71 Machine and stationary plant operators	1.8	5.3	10.1	16.5	20.3	21.5	21.5
72 Mobile plant operators	3.8	10.4	17.3	24.8	31.8	33.4	33.8
73 Road and rail drivers	5.7	14.1	21.9	29.9	34.5	35.0	35.1
74 Storepersons	3.1	10.3	15.1	21.4	25.3	25.5	25.5
Labourers	7.5	20.5	30.7	39.3	41.9	42.0	42.0
81 Cleaners and laundry workers	2.9	10.6	17.1	22.8	25.1	25.3	25.4
82 Construction and mining labourers	5.3	17.7	31.2	41.9	46.0	46.3	46.3
83 Factory process workers	11.4	28.7	41.0	49.0	51.0	51.0	51.0
84 Farm, forestry and garden workers	5.5	15.7	23.0	29.8	31.5	31.6	31.6
85 Food preparation assistants	5.8	38.3	53.9	60.7	69.5	70.1	70.1
89 Other labourers	5.4	14.9	26.5	41.9	47.6	47.7	47.7
Total	4.5	14.6	22.2	30.2	36.5	38.4	38.8

Source: Experimental completion and attrition rates for latest commencing apprentices and trainees, NCVET, <http://www.ncvet.edu.au/publications/2265.html> Commonwealth of Australia, 2010