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RESEARCH REPORT

The training requirements of foreign-born workers in different countries

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NCVER

Australian Government
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About the research

The training requirements of foreign-born workers in different countries

Chris Ryan and Mathias Sinning, Australian National University

Compared with native-born workers, immigrants possess different sets of educational qualifications and experience, gained before immigrating to Australia. Consequently, it is likely that they will have different training needs from the native-born.

The motivation for this research is to arrive at a better understanding of these differences in training needs. The relationship between skill level, skill use and participation in further training allows us to throw some light on the issue. The authors examine this relationship by using the results of the International Adult Literacy Survey (IALS) and the Adult Literacy and Life Skills Survey (ALLS) across four predominantly English-speaking countries — Australia, New Zealand, Canada and the United States.

The researchers use information on individual literacy skills and how they are used at work to calculate a measure of relative skill use. This measure allows us to make inferences about possible skill mismatches, which may help to identify groups who require further education and training.

Key messages

- In Australia, relative skill use in native-born workers and native English-speaking migrants is very similar, suggesting that the training requirements for these two groups are probably comparable. Non-native English-speaking migrants, however, tend to use their literacy skills at work less often than the other two groups, suggesting that they are working in low-level jobs.
- A similar pattern of skill use is found in the United States, where native-born workers and native English-speaking migrants are similar in their use of literacy skills in the workplace. Non-native English-speaking migrants appear to be employed in low-skilled jobs that make little use of the skills they possess.
- The use of literacy skills for native-born workers and migrants differed in New Zealand and Canada. In these two countries, native English-speaking migrants reported greater use of their literacy skills at work than native-born workers, perhaps suggesting that these migrants have a better match of skills and jobs than the native-born. But, similar to Australia and the United States, migrants with language backgrounds other than English did not tend to make full use of their skills.

The upshot of the research is that non-native English-speaking migrants are working in low-skilled jobs and that literacy-related training is not needed to do their jobs. The corollary of this is that in all probability they will need very significant literacy training if they are to escape the low-skilled jobs.

Tom Karmel
Managing Director, NCVER

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Executive summary

The training requirements of foreign-born workers may be different from those of native-born workers in similar jobs. Over recent decades Australian immigration policy has focused predominantly on accepting high-skilled migrants. Although this focus has resulted in the successful integration of foreign-born workers into the Australian labour market (Chiswick & Miller 2011), high-skilled migrant workers may require further training to upgrade their skills for high-skilled employment.

Against this backdrop, this study examines the relationship between training requirements and the migration background of workers in four (mainly) English-speaking countries (Australia, New Zealand, the United States and Canada). We are particularly interested in the extent to which the training requirements of foreign-born workers differ from those of native-born workers, and the extent to which these requirements are met in each of these countries. We pay particular attention to the differences between native English-speaking and non-native English-speaking workers within migrant populations because it seems likely that these groups have very different training requirements.

We analyse the relationship between adult literacy skills and a skill use measure that reflects the frequency with which workers undertake certain tasks in their jobs. Analysing this relationship allows us to draw inferences about the need for further training among certain groups of native- and foreign-born workers in each country. The results obtained from this analysis are then compared with an analysis of the determinants of the actual training participation of native- and foreign-born workers.

Our empirical findings reveal that foreign-born workers in Australia usually seem to receive the training they need, indicating that the integration of foreign-born workers into the Australian education and training system has been successful. While training requirements are being met in a similar way in the US and Canada, we observe that foreign-born workers in New Zealand are significantly more likely to require further training, but do not receive significantly more training than comparable native-born workers.

Further empirical findings are highlighted in the points below.

Skills of foreign-born workers

- Foreign-born workers in Australia, New Zealand and Canada are better educated than relevant groups of native-born workers. In contrast, foreign-born workers in the US exhibit much lower levels of education than US-born workers.
- In all four countries the employment rates of foreign-born persons are lower than those of native-born persons.
- Migrants have significantly higher literacy skills than Australian-born persons if they are native English-speakers. Non-native English-speaking migrants in Australia have significantly lower skills than native English-speaking migrants and Australian-born persons.
- Native English-speaking migrants are significantly more likely to be employed than Australian-born persons, while non-native English-speaking migrants are significantly less likely to be employed.

Skills and skill requirements

- Less-educated workers make little use of the skills they possess at work because they typically work in very low-skilled jobs, while highly educated native- and foreign-born workers work in relatively demanding jobs, given their apparent skills.
- Non-native English-speaking migrants in Australia work in jobs that require significantly lower skills relative to the skills they possess.

Training participation

- Non-native English-speaking migrant workers in Australia exhibit very low training participation rates, even at higher levels of education.
- There is a strong positive association between relative skill use levels and participation in further training, regardless of the birthplace and language background of individuals.
- Many non-native English-speaking migrant workers in countries with a points system work in jobs that require little further training, so their training participation rates are low.

Introduction

This study examines the relationship between training requirements and the migration background of workers in four (mainly) English-speaking countries (Australia, New Zealand, the United States and Canada). We are interested in the extent to which the training requirements of foreign-born workers differ from those of native-born workers in each of these countries and whether these requirements are generally met. Particular attention is paid to the differences between native English-speaking and non-native English-speaking workers within migrant populations because these groups will have very different English literacy skills and, most likely, training requirements for their jobs.

We analyse the relationship between adult literacy skills and a skill use measure that reflects the frequency with which workers undertake certain literacy-related tasks in their jobs. The analysis of this relationship provides information on the need for further training among certain groups of native- and foreign-born workers in each country. This analysis further informs the study of the determinants of actual training participation among native- and foreign-born workers in the four countries. We are particularly interested in addressing the following questions:

- How large are the skill differences between native- and foreign-born workers in the different countries?
- Do native-born workers use their skills more or less often at work than foreign-born workers?
- Are there differences between native- and foreign-born workers in the skill use at work relative to the skills they possess?
- How does the relative use of skills at work affect the training participation of workers? Does it have a similar effect on native- and foreign-born workers, or does it explain part of the training gap between the groups?
- Are foreign-born workers more or less likely to undertake further education than (comparable) native-born workers?

Addressing these questions allows us to investigate how training requirements in Australia are met compared with other English-speaking countries, specifically in relation to foreign-born workers. Australia, New Zealand, the US and Canada represent traditional immigration countries with similar immigration histories. All countries favoured immigration from Europe after the Second World War. While Australia, New Zealand and Canada have focused in recent decades on the selection of skilled migrants on the basis of a points system, the US placed more weight on family reunification. These immigration policies have had considerable influence on the size and skill composition of the foreign-born populations in each of the countries.

Australian research does indicate that migrants from non-English-speaking backgrounds are less likely to undertake education and training than otherwise similar Australian-born individuals (for example, Roussel 2002; Ryan & Watson 2003). Out research will establish the extent to which this is an Australian-only phenomenon among predominantly English-speaking countries and the extent to which it is a real problem, relative to the actual skills of migrants and to the training requirements in their jobs.

Our empirical analysis uses data from two cross-sections surveyed about ten years apart as part of international studies by Statistics Canada and the Organisation for Economic Co-operation and Development (OECD). We focus on four predominantly English-speaking countries because their

institutional settings and labour market regulations are relatively homogenous. Since our analysis differentiates between native English- and non-native English-speaking migrants, we do not include the predominantly French-speaking Quebec province of Canada.

Most studies of worker skills usually do not possess measures of the actual skills of individuals, so information about educational attainment is used as a proxy for skills. The data source employed in our analysis allows us to observe the outcomes of tests undertaken by subjects that cover their literacy skills and the assessment by the individuals themselves of how good their skills are for both the requirements of their jobs and the needs of their daily lives. Moreover, the data capture the use of skills in the workplace, which can then be used to construct measures of job requirements. Although indicators of skill usage do not necessarily capture all job requirements, they constitute important measures of job requirements in key dimensions. A number of variables measuring the frequency with which individuals undertake certain literacy-related tasks in their jobs are employed to construct measures of job requirements. The availability of actual skills and a measure of skill requirements provide a much richer picture of the match of workers to jobs than is typically available to researchers.

Our analysis contributes to the literature in several respects. First, we examine differences in the skills and training requirements between native- and foreign-born workers in four English-speaking countries. Knowledge of the extent to which the training requirements of foreign-born workers are being met is highly relevant because the skill matches of foreign-born workers affect their integration into the labour market. It is possible that the labour market institutions of each country meet the training needs of migrant workers in quite different ways. Second, we provide evidence on differences between native English-speaking and non-native English-speaking foreign-born workers because it seems likely that these groups face different training requirements. Third, we employ measures of actual skills and derived skill requirements for an accurate assessment of training requirements.

This report is set out as follows. The next chapter contains a more detailed description of the data used in this paper. The following chapter summarises how the observed skills of native and foreign-born workers differ in the countries studied here. The fourth chapter looks at the skill requirements of workers in their jobs, while the fifth examines their patterns of participation in training. The final chapter contains a summary of the report and some of the implications of the results.

Description of the data

This study uses data from two cross-sectional surveys collected about ten years apart. The first cross-section was part of the International Adult Literacy Survey (IALS) project led by Statistics Canada. Individuals in nine countries (Canada, France, Germany, Ireland, the Netherlands, Poland, Sweden, Switzerland and the United States) were surveyed in 1994, followed by five additional countries or territories in 1996 (Australia, the Flemish community in Belgium, Great Britain, New Zealand and Northern Ireland). Nine countries or regions participated in an additional third round of data collection in 1998 (Chile, the Czech Republic, Denmark, Finland, Hungary, Italy, Norway, Slovenia and the Italian-speaking region of Switzerland). The questionnaire and task booklets for this survey were administered in English in Australia, with people with poor English language skills excluded. As a result, many foreign-born persons (particularly from non-English-speaking countries of origin) may have been excluded from the survey.[1] While we use survey weights in our analysis so that the data broadly matches the distribution of the population by language background, the survey may not fully reflect those with the poorest English-speaking skills.

The Adult Literacy and Life Skills (ALLS) Survey constitutes the second cross-section, which was collected as part of an international study coordinated by Statistics Canada and the Organisation for Economic Cooperation and Development (OECD). This survey began in 2003 and covered Bermuda, Canada, Italy, Norway, Switzerland, the United States and the Mexican state of Nuevo Leon. Australia and New Zealand followed in a second phase in 2006, along with three additional countries (Hungary, the Netherlands and South Korea).

International Adult Literacy Survey

The International Adult Literacy Survey was designed to measure certain aspects of the literacy and numeracy skills of adults. The data includes information about the literacy and numeracy skills of individuals that are deemed necessary for using printed material typically found at work, at home, and in the community (Statistics Canada 1996).

The survey includes the following self-assessed reports by individuals of their reading, writing and basic mathematical skills for the needs of daily life and their main job:

- Respondents were asked to rate their reading, writing and basic mathematical skills.
- Information was collected about the frequency with which respondents undertook selected literacy and numeracy activities in daily life and at work, and about their English and other language skills.

In addition, respondents were asked a series of questions to obtain background socio-demographic information (such as age, gender, completed education level and so on).

The survey data also include three objective skill measures:

- *Document literacy*: the effective use of information contained in materials such as tables, schedules, charts, graphs and maps.

[1] Since remote and very remote areas were excluded from the sampling frame, Indigenous persons may also be underrepresented.

- *Prose literacy*: the skills required to understand and use information from various kinds of prose texts, including texts from newspapers, magazines and brochures.
- *Quantitative literacy*: the ability to perform arithmetic operations using numbers contained in printed texts or documents. This is a very narrow measure of the numeracy skills of individuals.

Adult Literacy and Life Skills Survey

The Adult Literacy and Life Skills (ALLS) Survey built on the survey design of the previous survey. Due to the similar design of questionnaires and largely overlapping definitions of variables, the ALLS Survey may be used as a follow-up to the IALS, that is, comparisons of many variables of the two cross-sections are possible for several countries (including those considered in our empirical analysis).

The Adult Literacy and Life Skills Survey includes four objective skill measures:

- *Document literacy*: the efficient use of information contained in various formats including job applications, payroll forms, transportation schedules, maps, tables and charts.
- *Prose literacy*: the knowledge and skills required to understand and use information from various kinds of narrative texts, including texts from newspapers, magazines and brochures.
- *Numeracy*: the ability to effectively manage and respond to the mathematical demands of diverse situations.
- *Problem-solving*: goal-directed thinking and the ability to act in situations for which no routine solution is available.

As with its predecessor, individuals also provided self-assessments of their English reading and writing skills for the needs of daily life and for their main job, and both surveys include background questionnaires to collect individual and household information, such as general demographic information, linguistic information, parental information, labour force activities, literacy and numeracy practices in daily life and at work, the frequency of reading and writing activities, participation in education and learning, social capital and wellbeing, information and communication technology, and personal and household income.

The sample of native- and foreign-born workers

Our empirical analysis focuses predominantly on workers aged 15—64 years in Australia, New Zealand, the United States and the predominantly English-speaking regions of Canada, using cross-sectional data of the survey periods 1994—96 and 2003—06, respectively. Table 1 describes the distribution of native- and foreign-born workers across countries during these time periods. The left panel of table 1 presents unweighted numbers for each subsample, while the numbers in the right panel are weighted using the respective survey weights for each survey. The weighted numbers indicate that foreign-born individuals made up about one-quarter of the Australian workforce. Moreover, while the proportion of foreign-born workers in Australia remained relatively stable over time, the proportion of foreign-born workers in New Zealand increased from 18% in 1996 to 25.7% in 2006. Only 11.4% of the workforce of the US was foreign-born in 1994. That number jumped to 14.6% in 2003. Over the same period, the proportion of foreign-born workers in Canada increased from 21.3% to 23.9%. Within the populations of foreign-born workers of the four English-speaking countries, considerable differences exist with regard to native language. While about half of the foreign-born workers in Australia and New Zealand

observed in the second survey period were native English-speakers, the corresponding proportions in the US and Canada were only 22.7% and 27.7%, respectively.

Table 1 Distribution of native- and foreign-born workers across countries, 1994–96 and 2003–06

	Percentages by country							
	Unweighted				Weighted			
	Aus.	*NZ*	*US*	*Can.*	*Aus.*	*NZ*	*US*	*Can.*
1994–96								
Full sample:								
Native-born	76.5	83.6	82.4	92.0	76.0	82.0	88.6	78.7
Foreign-born	23.5	16.4	17.6	8.0	24.0	18.0	11.4	21.3
Number of observations	6 056	2 414	2 121	2 199	6 056	2 414	2 121	2 199
Sample of foreign-born:								
English-speaking	59.6	67.3	13.9	50.8	52.8	65.9	19.3	52.7
Non-English-speaking	40.4	32.7	86.1	49.2	47.2	34.1	80.7	47.3
Number of observations	1 425	397	373	177	1 425	397	373	177
2003–06								
Full sample:								
Native-born	75.5	76.0	87.7	81.3	75.1	74.3	85.4	76.1
Foreign-born	24.5	24.0	12.3	18.7	24.9	25.7	14.6	23.9
Number of observations	4 724	5 832	2 771	12 352	4 724	5 832	2 771	12 352
Sample of foreign-born:								
English-speaking	56.1	47.5	22.2	27.5	49.5	48.6	22.7	27.7
Non-English-speaking	43.9	52.5	77.8	72.5	50.5	51.4	77.3	72.3
Number of observations	1 156	1 397	342	2 304	1 156	1 397	342	2 304

Source: ABS, Survey of Aspects of Literacy, Australia, Basic Confidentialised Unit Record File, 1996, cat.no.4228.0; ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Overall, a comparison of the unweighted and weighted numbers presented in table 1 suggests that foreign-born workers were undersampled in most surveys and oversampled in the first US cross-section. Consequently, we use survey weights in our subsequent empirical analysis to obtain results that are representative of the population of native- and foreign-born workers in each of the four countries.

Education and skill measures

One important component of our empirical analysis involves the definitions of education and skill measures for each country. Since the educational systems of the four countries are quite different, neither school nor post-school qualifications are directly comparable. To obtain a consistent measure of educational attainment in the four countries, we employ the number of years of education in our analysis. Specifically, we consider the following categories: 11 years or fewer, 12—13 years, 14—16 years and 17 years or more. Although these categories do not distinguish typical post-school qualifications in each of the four countries, they are sufficient to allow us to distinguish key educational differences between countries. Ryan and Sinning (2011a) provide a detailed description of the definition of the educational categories.

In addition to educational attainment, we employ an individual skill measure in our analysis, which allows us to compare the actual literacy-related skills of native- and foreign-born workers. Specifically, we use a document literacy measure that is provided as part of each survey. While the document literacy measure of the second cross-section comprises both an underlying, continuous score on a 0—500 range and a summary indicator in the form of a five-point scale (with known thresholds from the underlying scale), the document literacy skill levels of the Australian 1996 survey were only published on the same summary five-point scale used in 2006. We address this problem by generating a continuous scale for 1996, given the observed five-point scale scores of individuals and a small set of other characteristics. We employ a propensity score-matching approach to generate a continuous document literacy measure for 1996.[2]

The data further allow us to develop a job-task measure to reflect reports by individuals of the frequency with which they undertook literacy tasks at work. Respondents in all surveys were asked a partially overlapping set of questions about the literacy tasks they undertook at work, including, for example, how often they wrote 'reports or articles', or 'letters or memos'. We place the continuous literacy use measure onto a 0—500 range, consistent with the literacy scales provided in the data. Ryan and Sinning (2009) provide a detailed description of the empirical approach that was used to construct the literacy use measure for Australia. Ryan and Sinning (2011a) further describe the underlying variables that were used to generate the measure for the four countries.

Finally, we may consider the ratio between our literacy use measure and the literacy skill measure as a measure of relative skill use, which reflects the opportunities workers have to apply their skills at work. However, we will discuss the absolute measures in more detail before we turn to the analysis of the relative skill use measure.

[2] This approach is different from the multiple imputation technique used by Ryan and Sinning (2010). While we believe that the propensity score-matching approach provides a better estimate of the unobserved scale, the choice of the document literacy measure does not seem to affect our results qualitatively.

Native- and foreign-born workers in different countries

This chapter examines the differences in educational attainment and skill measures between native- and foreign-born workers in the four countries. Since the size and skill composition of foreign-born populations is determined by individual migration decisions and immigration policies, we begin by discussing the differences in the immigration experience between the different countries.

The four traditional immigration countries considered in our analysis favoured immigration from Europe after the Second World War, leaving little scope for immigration from other continents. Skill restrictions were not imposed. During the 1960s and 1970s, all countries moved away from selecting immigrants on the basis of national origin (Briggs 1984; Antecol, Cobb-Clark & Trejo 2003, 2004). While Australia, New Zealand and Canada began to place a relatively high weight on accepting economic migrants, using numerical testing to judge the admissibility of skilled migrants, the United States placed more weight on family reunification (Birrell 1990). The US further experienced prolonged illegal immigration of mostly unskilled Hispanic workers with low literacy levels. As a result, the proportion of skilled workers who have entered Australia, New Zealand and Canada under the points system in recent decades is much larger than the proportion of family reunion migrants (Antecol, Cobb-Clark & Trejo 2004; Department of Labour [New Zealand] 2005). In the US, this picture is reversed (Antecol, Cobb-Clark & Trejo 2004).

The different immigration policies pursued have had an impact on the skill composition of the foreign-born populations residing in the four countries today. In addition, the economic migration literature suggests that wage distributions in recipient countries influence individual migration decisions. In particular, high-skilled workers typically earn higher wages abroad if the wage distribution in the destination country is relatively more dispersed than in their home country. The skills of migrant workers are in turn highly relevant for the destination country because they may affect the labour market outcomes of native-born workers and the economy as a whole. As a result, the skills of foreign-born workers have received a great deal of attention in the literature (Borjas 1987; Chiquiar & Hanson 2005; Moraga 2011; Kaestner & Malamud 2010).[3] There is evidence that the labour market outcomes of recent migrants in many countries have declined somewhat compared with earlier cohorts of migrants (Bauer, Lofstrom & Zimmerman 2000). Evidence for Australia suggests that more recent migrants, particularly those from non-English-speaking countries, are less likely to undertake education and training activities (Roussel 2000; Ryan & Watson 2003).

To gain a better understanding of the skill differences between native- and foreign-born workers in different countries, we first consider nativity differences in educational attainment across countries. Table 2 contains the educational distributions of native- and foreign-born workers in the four countries. Due to differences in education systems, the distributions differ considerably across countries. Specifically, while about half of the native-born workers in Australia and New Zealand observed in the first survey had fewer than 12 years of education, only 12% of the US-born and 23% of

[3] Studies such as Barrett (2009) and Ferrer, Green and Riddell (2006) have shown the importance of differences between native- and foreign-born workers in literacy levels to the explanation of earnings outcomes. Statistics Canada and OECD (2005) show significant effects for skill level-migrant status interactions in the United States and Canada on the incidence of unemployment, but not on incomes.

the Canadian-born workers were in the lowest educational category. However, the gap at the bottom of the educational distribution between Australia/New Zealand and North America declined over time by about 15 to 20 percentage points. The numbers of the second survey suggest that the share of highly educated native-born workers (with 17 years of education or more) was about the same (around 15%) in all countries. In contrast, the proportion of workers with a high school degree, an intermediate level of education or lower university degree is higher in North America than in Australia or New Zealand.

While the numbers in table 2 may not be translated into cross-country differences between particular educational qualifications (such as differences in vocational education and training etc.), they provide useful insights into the relative educational attainment of foreign-born workers in each of the countries. Specifically, the numbers of the second survey indicate that foreign-born workers in Australia are considerably better educated than Australian-born workers. They also show that the levels of education of foreign-born workers in New Zealand are slightly higher than those of New Zealand-born workers. In contrast, foreign-born workers in the US exhibit much lower levels of education than US-born workers, although the share of highly educated foreign-born workers (with 17 years of education or more) is slightly higher than the corresponding share of US-born workers. Foreign-born workers in Canada have much higher levels of education than Canadian-born workers, although the share of native- and foreign-born workers is about the same at the bottom of the educational distribution. A direct comparison of foreign-born workers in the US and Canada suggests that foreign-born workers in Canada are much better educated than foreign-born workers the US.

The observed differences in educational distributions between native- and foreign-born workers in the four countries are the result of the immigration policies outlined above; that is, while Australia, New Zealand and Canada placed a high weight on skilled migrants, family reunification constituted the major channel through which immigrants could come to the US. As a result, foreign-born workers in Australia, New Zealand and Canada tend to be better educated than their native-born counterparts but are less educated in the US.

The skills of immigrants are an important determinant of their economic success (including their employment prospects and wages) and ultimately influence the integration of immigrants into the society and the labour market of their destination or host country. The economic literature suggests that the skills of immigrants are not perfectly transferrable internationally (Friedberg 2001). As a result, the labour market outcomes of immigrants may depend on the time spent in the host country (Chiswick 1978; Borjas 1987). Immigrants often invest in host-country-specific human capital (including learning the language of the host country) and 'assimilate' economically over time.[4]

[4] Economic assimilation processes have been linked to skills and may vary considerably across source countries and immigration cohorts (Borjas 1987).

Table 2 Educational attainment of native- and foreign-born workers, 1994–96 and 2003–06

	Percentages by nativity and country							
	Native-born				Foreign-born			
	Aus.	*NZ*	*US*	*Can.*	*Aus.*	*NZ*	*US*	*Can.*
1994–96								
Education								
11 years or less	48.90	52.54	11.75	22.79	39.85	41.41	28.53	21.64
12–13 years	23.08	26.89	40.66	41.71	24.67	24.95	30.26	19.35
14–16 years	18.86	12.69	32.86	21.93	22.21	17.92	23.49	25.25
17 years or more	9.17	7.87	14.73	13.57	13.27	15.72	17.72	33.76
Number of observations	4 631	2 017	1 748	2 022	1 425	397	373	177
2003–06								
Education								
11 years or fewer	*35.01*	*29.43*	*14.94*	*19.70*	*24.98*	*17.14*	*28.40*	*20.72*
12–13 years	26.51	30.61	38.51	34.07	21.03	21.40	24.37	22.09
14–16 years	24.06	24.25	32.16	28.36	32.07	33.51	28.15	31.13
17 years or more	14.43	15.71	14.39	17.87	21.92	27.95	19.08	26.06
Number of observations	3 568	4 435	2 429	10 048	1 156	1 397	342	2 304

Notes: Weighted numbers.

Source: ABS, Survey of Aspects of Literacy, Australia, Basic Confidentialised Unit Record File, 1996, cat.no.4228.0; ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Table 3 contains the employment rates and mean levels of literacy skills for the samples of employed and not-employed native-born and foreign-born persons and sample means of literacy skills, literacy use, relative skill use and training participation rates for the samples of employed native-born and foreign-born persons. The numbers suggest that the employment rates of foreign-born persons are lower than those of native-born persons in all countries. Moreover, the employment rates of both native- and foreign-born persons have slightly declined over time in Australia, but increased in New Zealand and North America. Skill differences between native- and foreign-born persons are relatively large in the US, but much smaller in the countries that allow immigration under a points system.

While average literacy skills were stable over time among native-born populations in the four countries, they have changed among foreign-born populations in New Zealand and North America. Specifically, the average skill levels of foreign-born persons in New Zealand increased from 258.4 to 271.5 over a decade. The average skills of immigrants to the US also increased, from 211.8 to 238.6, but declined from 265.7 to 256.2 in Canada. These numbers suggest considerable changes in the skill composition of the foreign-born populations in New Zealand, the US and Canada, while changes in Australia (from 263.2 to 264.8) were negligible.

Average skills are slightly higher in the samples of employed native- and foreign-born persons for all countries. The numbers indicate that average literacy skills of foreign-born workers in Australia have increased but that a gap between native- and foreign-born persons of about 12 points on the 0—500 scale remains. The literacy use measure observed in the second survey reveals that Australian-born workers have more opportunities to use their skills at work than foreign-born workers, although this difference is quite small (about seven points). On average, foreign-born workers in New Zealand make more use of their skills at work than New Zealand-born workers. In contrast, foreign-born workers in the US and Canada make less use of their skills than their native-born counterparts.

Table 3 Individual skills, skill use and training participation, 1994–96 and 2003–06

	Sample means by nativity and country							
	Native-born				Foreign-born			
	Aus.	*NZ*	*US*	*Can.*	*Aus.*	*NZ*	*US*	*Can.*
1994–96								
Sample of employed and non-employed								
Employed	0.798	0.792	0.811	0.808	0.728	0.721	0.751	0.672
	(0.402)	(0.406)	(0.392)	(0.394)	(0.445)	(0.449)	(0.433)	(0.470)
Document literacy	283.1	273.7	280.4	291.6	263.2	258.4	211.8	265.7
	(52.0)	(58.3)	(60.1)	(58.4)	(61.2)	(72.5)	(82.5)	(88.8)
Number of observations	5 906	2 597	2 221	2 729	1 970	544	521	270
Sample of employed								
Document literacy	290.1	282.6	287.4	300.6	275.0	277.1	228.3	277.3
	(47.7)	(53.7)	(57.5)	(52.2)	(59.1)	(60.9)	(78.9)	(88.7)
Document literacy use	257.3	269.4	305.3	269.2	253.0	298.7	242.8	271.3
	(168.6)	(184.8)	(183.5)	(186.4)	(175.2)	(180.5)	(202.0)	(184.3)
Relative skill use	-0.033	-0.051	0.016	0.010	0.014	0.073	-0.089	-0.053
	(0.577)	(0.687)	(0.667)	(0.634)	(0.657)	(0.754)	(0.911)	(0.746)
Training participation	0.497	0.590	0.527	0.507	0.404	0.548	0.380	0.400
	(0.500)	(0.492)	(0.499)	(0.500)	(0.491)	(0.498)	(0.486)	(0.491)
Number of observations	4 631	2 017	1 748	2 022	1 425	397	373	177
2003–06								
Sample of employed and non-employed								
Employed	0.732	0.929	0.901	0.907	0.674	0.878	0.888	0.853
	(0.443)	(0.257)	(0.299)	(0.291)	(0.469)	(0.328)	(0.315)	(0.354)
Document literacy	283.7	284.0	277.0	293.5	264.8	271.5	238.6	256.2
	(52.6)	(49.6)	(50.3)	(48.7)	(67.1)	(58.6)	(60.3)	(63.2)
Number of observations	4 974	4 833	2 717	11 539	1 699	1 601	389	2 730
Sample of employed								
Document literacy	292.1	286.5	281.5	297.7	279.6	275.2	242.5	262.8
	(49.0)	(48.1)	(48.0)	(45.9)	(59.4)	(56.3)	(59.5)	(61.2)
Document literacy use	294.6	285.0	289.8	276.5	287.7	298.9	236.2	256.5
	(174.0)	(178.1)	(176.5)	(178.0)	(175.7)	(180.4)	(199.4)	(188.4)
Relative skill use	-0.029	-0.038	0.003	-0.026	-0.025	0.059	-0.126	-0.012
	(0.622)	(0.643)	(0.651)	(0.616)	(0.654)	(0.733)	(0.804)	(0.713)
Training participation	0.658	0.642	0.681	0.641	0.607	0.666	0.468	0.511
	(0.474)	(0.479)	(0.466)	(0.480)	(0.489)	(0.472)	(0.500)	(0.500)
Number of observations	3 568	4 435	2 429	10 048	1 156	1 397	342	2 304

Notes: Weighted numbers. Standard deviations in parentheses.

Source: ABS, Survey of Aspects of Literacy, Australia, Basic Confidentialised Unit Record File, 1996, cat. no.4228.0; ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

As a result of the differences in literacy skills and literacy use measures, we can summarise the differences in the relative literacy use between native- and foreign-born workers. Specifically, we generate a relative skill use measure as the ratio between literacy use and literacy skills. We centre this measure on zero by subtracting average skill use conditioned on the observed individual skill level to ensure that the measure picks up the individual's skill use rather than the average skill use within skill groups. Due to the normalisation, the sample means of the relative skill use measure is close to zero.

Focusing on the second cross-section, the numbers reveal that native- and foreign-born workers in Australia exhibit about the same average relative literacy use, indicating that Australian-born workers use their skills at work relative to the skills they possess in much the same way as foreign-born workers. In contrast, foreign-born workers in New Zealand make much more use of their skills at work than New Zealand-born workers, suggesting that average foreign-born workers in New Zealand may be underskilled because they seem to work in jobs that require more skills than they actually have. The opposite picture is observed for the US, where foreign-born workers do not make much use of their skills at work relative to the skills they possess. The relative skill use measures observed in Canada are similar to those in Australia, except that foreign-born workers are somewhat less likely to use their skills at work than Canadian-born workers.

Relative skill use disparities may help to detect the need for further education and training. We are particularly interested in differences between native- and foreign-born workers in the propensity to undertake further education and training. The numbers presented in table 3 reveal that Australian-born workers are more likely to undertake further education and training than foreign-born workers. In contrast, the training participation rates of foreign-born workers in New Zealand observed in the second cross-section are higher than those of New Zealand-born workers. However, the training participation gap observed in Australia appears to be relatively small if compared with the training participation rates of native- and foreign-born workers in North America. Moreover, the training participation gap between Australian- and foreign-born workers has declined over time from 9.3 percentage points to 5.1 percentage points. Although a comparison of these rates does not permit inferences about the significance of the observed differences between groups, it suggests that foreign-born workers are less likely to undertake further education and training than Australian-born workers. We perform a more detailed analysis of the determinants of training participation probabilities later in the paper.

Overall, the numbers in tables 2 and 3 have shown that the skill distributions of native- and foreign-born populations differ substantially across countries and potentially affect the employment prospects of foreign-born persons in their host county. Although we did not differentiate between native English-speaking and non-native English-speaking migrants, it seems likely that literacy skills and, consequently, the employment prospects of these two groups are different. Table 4 includes the estimates of simple linear regression models, using document literacy skills and employment status as dependent variables. We pay particular attention to differences between native-born persons (who constitute the reference group in the regression analysis), migrants and non-native English-speaking migrants.[5]

[5] The numbers presented in table 4 are estimated parameters, that is, the effects of different determinants on the respective dependent variable. The numbers in parentheses are the t-values that correspond to the model parameters (that is, parameter estimate/standard error). In general, variables are interpreted to have a significant effect on the dependent variable of a regression equation where the absolute value of their t-value exceeds 1.96. The parameters on such variables are said to be statistically different from zero at the 95% level.

Table 4 Nativity gap in document literacy and employment, 1994–96 and 2003–06

	Regression results by country							
	Document literacy				Employment			
	Aus.	*NZ*	*US*	*Can.*	*Aus.*	*NZ*	*US*	*Can.*
1994–96								
Foreign-born	4.6	13.8	-4.3	16.0	0.03	0.04	0.003	-0.06
	(2.14)	(4.02)	(-0.46)	(1.63)	(2.19)	(1.49)	(0.06)	(-0.37)
Non-English-speaking	-45.6	-67.9	-78.2	-79.4	-0.20	-0.30	-0.08	-0.15
	(-14.86)	(-10.67)	(-8.28)	(-3.68)	(-8.26)	(-6.34)	(-1.22)	(-1.27)
Constant	283.0	273.7	280.4	291.6	0.80	0.79	0.81	0.81
	(359.46)	(185.59)	(152.62)	(223.18)	(130.46)	(59.88)	(69.58)	(34.86)
R-squared	0.068	0.067	0.135	0.110	0.019	0.023	0.031	0.027
Number of observations	7 876	3 141	2 742	2 999	7 876	3 141	2 742	2 999
2003–06								
Foreign-born	4.461	13.87	4.644	-15.52	0.04	0.01	0.03	-0.003
	(2.04)	(5.19)	(0.63)	(-3.17)	(2.20)	(0.71)	(1.09)	(-0.18)
Non-English-speaking	-41.09	-48.27	-54.99	-29.46	-0.18	-0.111	-0.05	-0.07
	(-11.30)	(-13.11)	(-6.47)	(-5.85)	(-6.22)	(-4.89)	(-2.02)	(-3.15)
Constant	283.6	284.0	277.0	293.5	0.73	0.93	0.90	0.91
	(260.01)	(320.18)	(185.95)	(311.64)	(94.93)	(265.66)	(113.39)	(171.31)
Number of observations	6 673	6 434	3 106	14 269	6 673	6 434	3 106	14 269

Notes: Weighted numbers. t-values in parentheses.

Source: ABS, Survey of Aspects of Literacy, Australia, Basic Confidentialised Unit Record File, 1996, 4228.0; ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, 4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

The numbers in the left panel of table 4 reveal that migrants have significantly higher literacy skills than Australian-born if they are native English-speakers. However, non-native English-speaking migrants have significantly lower skills than native English-speaking migrants and Australian-born individuals.[6] A very similar pattern may be observed for New Zealand. Differences between English-speaking migrants and US-born persons are not significant, while large (and significant) differences between non-native English-speaking migrants and US-born persons may be observed. The estimated parameters of the second cross-section suggest that native English-speaking migrants are significantly less skilled than Canadian-born persons, while the skills of non-native English-speaking migrants in Canada are even lower.

The right panel of table 4 includes the regression results using employment status as the dependent variable. The numbers suggest that native English-speaking migrants are significantly more likely to be employed than Australian-born, while non-native English-speaking migrants are significantly less likely to be employed. Differences in the employment probabilities between native-born persons and native English-speaking migrants in New Zealand, the US and Canada are not significant. However, the estimates of the second cross-section indicate that non-native English-speaking migrants are significantly less likely to be employed in all countries. Overall, these numbers point to substantial heterogeneity with regard to relevant labour market outcomes of native- and foreign-born populations in the four countries.

[6] A quantitative interpretation of the parameters in the second cross-section would be that the average literacy skills of native English-speaking migrants are 4.461 points higher than those of Australian-born persons. Given that skills are measured on a 0—500 scale, this difference is rather small but statistically significant. The difference between migrants who report English as their native language and those who do not is 41.09 points, while the difference between Australian-born persons and non-native English-speaking migrants is 41.09-4.461 = 36.629.

Summary

This chapter investigated differences in education and skill measures between native- and foreign-born workers in Australia, New Zealand, the US and Canada. The main findings may be summarised as follows:

- Foreign-born workers in all countries other than the US are better educated than the relevant native-born workers.
- The employment rates of non-native English-speaking foreign-born persons are lower than those of native-born persons in all countries.
- The skill differences between native- and foreign-born persons are relatively large in the US but much smaller in the countries that allow immigration under a points system.
- Migrants have significantly higher literacy skills than the Australian-born if they are native English-speakers.

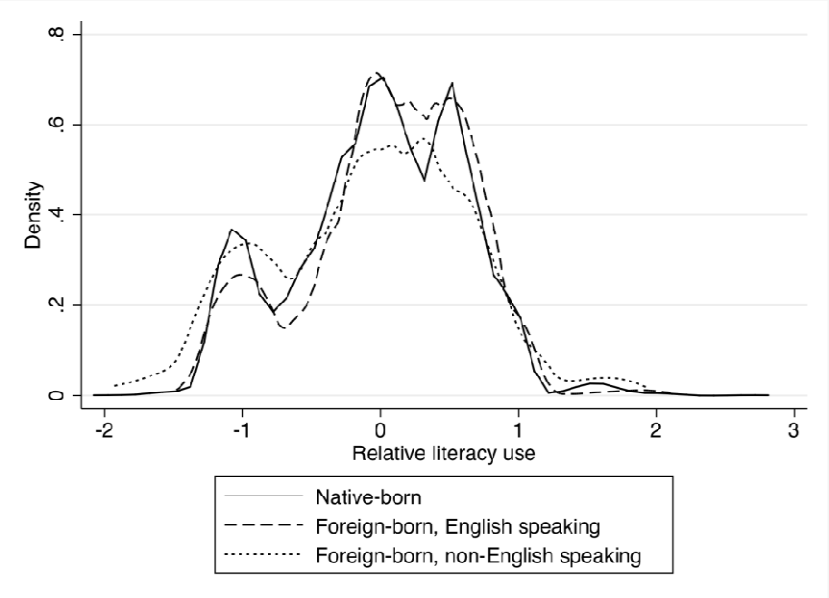
Skills and skill requirements

This chapter investigates the determinants of skills and skill requirements of native- and foreign-born workers in Australia, New Zealand, the United States and Canada. It focuses on:

- the relative skill use of native- and foreign-born workers in the four countries
- the relationship between relative skill use and demographic characteristics (such as gender and age)
- the relationship between relative skill use and educational attainment
- the relative skill use differential between native- and foreign-born workers.

Particular attention is paid to the differences between native English-speakers and non-native English-speakers within the group of foreign-born workers. As described earlier, we are interested in a relative normalised skill use measure, which is the ratio between literacy use and literacy skills, centred around zero by subtracting average skill use conditioned on the observed individual skill level and divided by individual skills. This measure picks up the individual relative skill use of each worker and allows inferences about possible skill (mis-)matches which may help to identify the groups that require further education and training.

Figure 1 Relative literacy use of native- and foreign-born workers in Australia, 2006



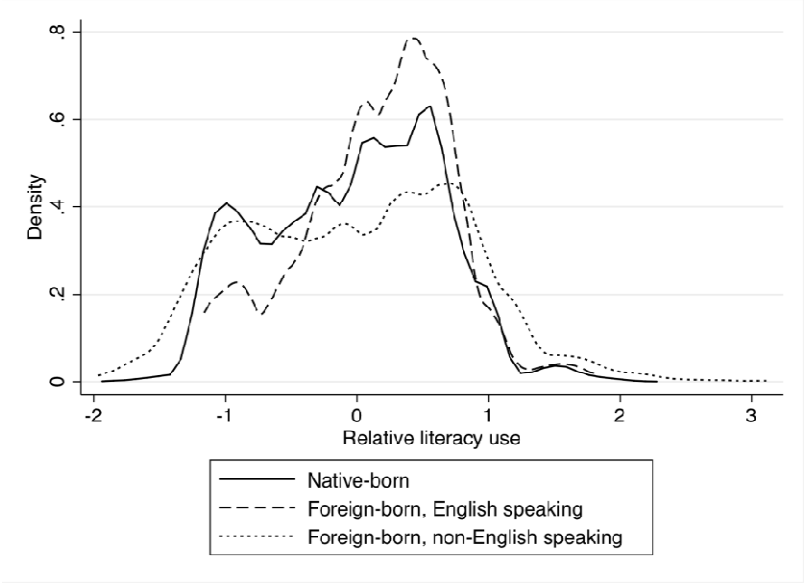
Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0.

Figure 1 depicts the relative document literacy use measure of native- and foreign-born workers in Australia in 2006. The relative skill use distributions reveal that differences between Australian- and foreign-born workers are rather small, indicating that migrant workers in Australia use their skills at work, relative to the skills they possess, in the same way as Australian-born workers. Many non-native English-speaking migrant workers use their skills at work less often than native English-speaking workers, suggesting that their literacy skills may not require upgrading through channels such as further education and training.

The relative skill use distributions of native- and foreign-born workers in New Zealand are presented in figure 2. The distributions indicate that many migrant workers in New Zealand report greater use of

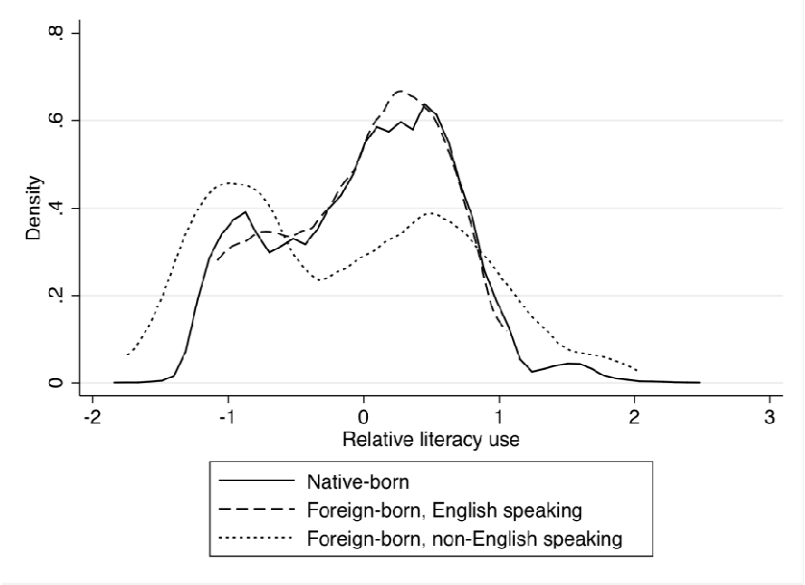
their skills at work than similarly skilled New Zealand-born workers, suggesting that these workers are more likely to require further education and training to satisfy the requirements of their jobs than New Zealand-born workers.

Figure 2 Relative literacy use of native- and foreign-born workers in New Zealand, 2006



Source: Adult Literacy and Life Skills Survey, New Zealand.

Figure 3 Relative literacy use of native- and foreign-born workers in the United States, 2003



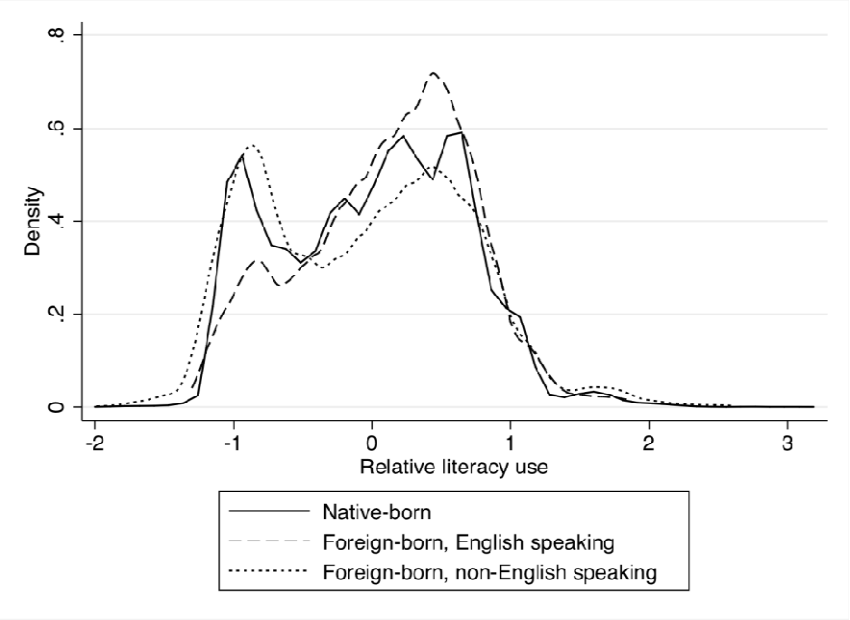
Source: International Adult Literacy Survey.

Figure 3 presents the relative skill use distributions of native- and foreign-born workers in the United States in 2003. While the distributions of US-born workers and native English-speaking migrant workers are quite similar, a large proportion of the probability mass of non-native English-speaking migrant workers is negative, indicating that a large part of this group of migrant workers are employed in low-skilled jobs that make little use of the skills they possess.

The distributions in figure 4 show the relative skill use measures of native- and foreign-born workers in Canada in 2003. While the distributions of native-born workers and non-native English-speaking migrant workers have a similar form, a larger proportion of the probability mass of native English-

speaking migrant workers is positive, suggesting that these workers use their skills at work more often than other workers do. Members of this group of workers may be more likely to require further education and training to meet the requirements of their jobs than members of other groups.

Figure 4 Relative literacy use of native- and foreign-born workers in Canada, 2003



Source: International Adult Literacy Survey.

Overall, figures 1—4 reveal substantial heterogeneity with regard to the relative skill use distributions of native- and foreign-born workers in the different countries. While many foreign-born workers in New Zealand and Canada exhibit higher levels of relative skill use, the differences between native- and foreign-born workers in Australia are rather small. In contrast, many migrant workers in the US make little use of their skills if they come from language backgrounds other than English.

While these findings are indicative that foreign-born workers in New Zealand and Canada may be more likely to require further education and training than native-born workers to overcome their skill deficiencies, this does not seem to be the case in Australia. At the same time, the distributions reveal that a considerable number of both native- and foreign-born workers in each country exhibit positive and relatively large levels of relative skill use, highlighting that a need for further education and training does not depend on nativity alone. Consequently, additional relevant factors have to be taken into account.

Relative skill use and demographic characteristics

Demographic characteristics may have a strong impact on educational attainment, individual literacy skills and the skills that are required at work. Table 5 includes the sample averages of our relative literacy use measure by nativity and gender for the second survey period. While the sample averages of native-born male and female workers in the four countries are mostly negative (with the exception of male workers in the US), many sample averages of foreign-born workers are positive. Specifically, the average relative literacy use measures of both male and female native English-speaking migrant workers in Australia are positive. However, the differences between these workers and Australian-born workers are relatively small, which is consistent with figure 1. Most sample averages of migrant workers in New Zealand are also positive (with the exception of female non-native English-speaking

migrant workers) and relatively large, suggesting a higher need for further education and training among members of this group. Male foreign-born workers exhibit much lower levels of relative literacy use than male US-born workers, while female native English-speaking migrant workers seem to make more use of their skills than other female workers. Native English-speaking migrants are also the group with the highest levels of relative literacy use in Canada. Similar to New Zealand, native English-speaking foreign-born workers in Canada appear to be more likely to need further education and training than Canadian-born workers.

Table 5 Relative literacy use by nativity and gender, 2003–06

	Male	Female
Native-born		
Australia	-0.019	-0.040
	(0.630)	(0.612)
New Zealand	-0.040	-0.037
	(0.652)	(0.633)
US	0.013	-0.007
	(0.654)	(0.648)
Canada	-0.035	-0.017
	(0.634)	(0.596)
Foreign-born, English-speaking		
Australia	0.053	0.043
	(0.601)	(0.565)
New Zealand	0.140	0.090
	(0.556)	(0.614)
US	-0.127	0.053
	(0.593)	(0.565)
Canada	0.195	0.033
	(0.573)	(0.684)
Foreign-born, non-English-speaking		
Australia	-0.133	-0.048
	(0.711)	(0.703)
New Zealand	0.058	-0.058
	(0.850)	(0.840)
US	-0.166	-0.132
	(0.869)	(0.844)
Canada	-0.024	-0.106
	(0.752)	(0.709)

Notes: Weighted numbers. Standard deviations in parentheses.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Table 6 contains skills use averages of native- and foreign-born workers in the four countries, by age group, for the second survey period. The numbers reveal that younger workers make much less use of their skills than older workers. In particular, workers aged 15—24 years are considerably less likely to use their skills at work than workers aged 25 years or above. We further observe that the relative skill use levels of native-born workers increase with age, suggesting that older workers typically have jobs that require higher skills, and that they do not always adjust their skills to increasing skill requirements. Relative skill use levels seem to decline in old age, that is, workers aged 55—64 years use their skills less frequently than workers aged 45—54 years. Native English-speaking migrant workers in Australia, New Zealand and Canada over the age of 25 years exhibit high levels of relative literacy. While the skills usage for this group of workers is declining with age in Australia, many older workers in New Zealand and Canada have higher relative skill use levels than workers aged 25—34

years. Finally, non-native English-speaking migrant workers are more likely to have negative average relative skill use levels, suggesting that they are less likely to make use of their skills at work in the same way as other workers.

Overall, the numbers suggest that some foreign-born workers within certain age groups (such as 25 to 34-year-old native English-speaking migrants) may be more likely to require further education and training than workers of other groups. Moreover, although older native-born workers seem to be less likely to adjust their skills to increasing skill requirements at work, the increases in relative skill use levels in Australia are rather moderate. This observation is in line with Ryan and Sinning (2011b), who conclude that older workers appear to be relatively well matched to their jobs, since their skills are slightly below average and they tend to work in jobs with relatively low skill requirements.

Table 6 Relative literacy use by nativity and age, 2003–06

	Sample means by age group				
	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years
Native-born					
Australia	-0.319	0.035	0.041	0.085	0.052
	(0.630)	(0.574)	(0.590)	(0.610)	(0.623)
New Zealand	-0.396	-0.023	0.051	0.091	0.060
	(0.624)	(0.624)	(0.597)	(0.628)	(0.619)
US	-0.332	0.016	0.077	0.144	0.099
	(0.636)	(0.611)	(0.626)	(0.643)	(0.623)
Canada	-0.427	0.011	0.088	0.128	0.081
	(0.540)	(0.542)	(0.586)	(0.622)	(0.630)
Foreign-born, English-speaking					
Australia	-0.273	0.092	0.086	0.083	0.047
	(0.587)	(0.537)	(0.547)	(0.575)	(0.648)
New Zealand	-0.301	0.146	0.112	0.248	0.227
	(0.614)	(0.606)	(0.503)	(0.525)	(0.603)
US	-0.244	-0.131	-0.036	0.216	0.153
	(0.617)	(0.612)	(0.579)	(0.397)	(0.698)
Canada	-0.229	0.114	0.227	0.243	0.036
	(0.608)	(0.611)	(0.591)	(0.585)	(0.695)
Foreign-born, non-English-speaking					
Australia	-0.314	-0.045	-0.095	-0.046	-0.075
	(0.612)	(0.648)	(0.732)	(0.813)	(0.656)
New Zealand	-0.433	0.200	0.090	0.011	0.191
	(0.672)	(0.862)	(0.814)	(0.799)	(1.053)
US	-0.251	-0.339	0.018	-0.165	0.091
	(0.873)	(0.805)	(0.906)	(0.819)	(0.821)
Canada	-0.372	0.086	-0.029	-0.051	-0.145
	(0.597)	(0.676)	(0.746)	(0.731)	(0.806)

Notes: Weighted numbers. Standard deviations in parentheses.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, 4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Relative skill use and educational attainment

In addition to demographic characteristics, individual skills and skill requirements may vary across different levels of education. The numbers in table 7 provide evidence of a positive relationship between educational attainment and relative skill use. In particular, the relative skill use levels of native- and foreign-born workers with fewer than 12 years of education are, on average, negative,

indicating that less-educated workers require fewer skills at work than they actually have because they work in low-skilled jobs. In contrast, highly educated native- and foreign-born workers have jobs that require more skills than they actually seem to possess. These workers are more likely to require further education and training than other workers because they have to upgrade their skills more often. The numbers in table 7 are consistent with Ryan and Sinning (2011a), who provide a detailed discussion of the relationship between educational attainment and relative skill use.

Table 7 Relative literacy use by nativity and education, 2003–06

	Sample means by education			
	11 years or below	12–13 years	14–16 years	17 years or above
Native-born				
Australia	-0.191	-0.026	0.073	0.190
	(0.708)	(0.604)	(0.531)	(0.439)
New Zealand	-0.171	-0.083	0.050	0.159
	(0.735)	(0.658)	(0.554)	(0.462)
US	-0.247	-0.089	0.133	0.218
	(0.760)	(0.683)	(0.577)	(0.429)
Canada	-0.270	-0.057	0.029	0.213
	(0.703)	(0.633)	(0.571)	(0.409)
Foreign-born, English-speaking				
Australia	-0.138	0.002	0.128	0.250
	(0.676)	(0.637)	(0.504)	(0.379)
New Zealand	-0.034	0.084	0.122	0.253
	(0.652)	(0.635)	(0.601)	(0.410)
US	-0.131	-0.212	0.044	0.154
	(0.666)	(0.639)	(0.564)	(0.418)
Canada	-0.277	0.051	0.203	0.315
	(0.733)	(0.661)	(0.581)	(0.480)
Foreign-born, non-English-speaking				
Australia	-0.303	-0.347	0.001	0.136
	(0.777)	(0.691)	(0.662)	(0.609)
New Zealand	-0.266	-0.194	0.165	0.077
	(1.014)	(0.949)	(0.774)	(0.706)
US	-0.735	-0.189	0.216	0.385
	(0.683)	(0.847)	(0.825)	(0.481)
Canada	-0.458	-0.143	0.061	0.200
	(0.766)	(0.783)	(0.674)	(0.567)

Notes: Weighted numbers. Standard deviations in parentheses.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, 4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Regression analysis

To gain a better understanding of the factors responsible for high levels of relative literacy use, we estimate a linear regression model for each country and both cross-sections, using our relative skill measure as the dependent variable. We are particularly interested in the extent to which the relative skill use levels differ between native- and foreign-born workers in different countries and whether these differences are statistically significant, after the relevant characteristics of these workers are taken into account. We also examine the differences between native English-speaking and non-native

English-speaking workers within the group of migrants. Specifically, we estimate a regression model of the following form via ordinary least squares (OLS; all explanatory variables have an associated model parameter):

	intercept
	+ foreign-born indicator
	+ non-English-speaking foreign-born indicator
Relative skill use =	+ female indicator + age group indicators
	+ highest level of education indicators
	+ employer size indicators
	+ residuals

Table 8 contains the estimates of the determinants of relative skill use by country for the first cross-section. The estimated parameters of the variables identifying foreign-born workers and non-native English-speaking foreign-born workers are insignificant for all countries, which suggests that the differences in relative skill use between these groups and the group of native-born workers are not statistically significant if relevant demographic and socioeconomic characteristics are considered. Migration background variables play a relatively minor role, by comparison with the age and level of education indicators. These indicator variables are largely significant and positive, highlighting that age and education are major determinants of skills and skill requirements at work. We also include employer size indicators in our model, which seem to explain some of the variation in relative literacy use. The estimated parameters of these indicator variables are largely positive, revealing that jobs in relatively small firms (with fewer than 20 employees) make less use of workers' skills than jobs in larger firms.

Table 9 contains the regression results for the second cross-section, which indicate that foreign-born workers in New Zealand are significantly more likely to use their skills at work relative to the skills they possess than native-born workers, even after controlling for characteristics such as age and education. The differences between native English- and non-native English-speaking migrant workers in New Zealand are insignificant. The results further reveal that non-native English-speaking migrants in Australia and Canada work in jobs that require significantly lower skills relative to the skills they have. Although foreign-born, non-native English-speaking workers tend to be employed in low-skilled jobs, with many of them in low-skilled jobs that do not involve use of the skills they actually have. The differences in the relative skill use measures between native- and foreign-born workers in the US were insignificant. The estimated parameters of the other control variables (age, education and employer size) are similar to those of table 8.

Table 8 Determinants of relative literacy use by country, 1994–96

	Regression results by country			
	Australia	New Zealand	US	Canada
Intercept	-0.435	-0.466	-0.699	-0.518
	(-14.76)	(-7.78)	(-10.03)	(-6.70)
Foreign-born	0.012	0.018	0.066	-0.064
	(0.52)	(0.40)	(0.54)	(-0.41)
Foreign-born x non-English-speaking	-0.073	0.039	-0.155	-0.278
	(-1.71)	(0.37)	(-1.16)	(-1.23)
Female	-0.065	-0.046	-0.038	0.002
	(-3.74)	(-1.20)	(-1.14)	(0.03)
Age				
Age 15–24 (Reference)				
Age 25–34	0.255	0.324	0.351	0.243
	(9.13)	(6.38)	(6.79)	(3.22)
Age 35–44	0.288	0.397	0.347	0.280
	(10.61)	(7.12)	(7.61)	(4.73)
Age 45–54	0.328	0.472	0.384	0.440
	(10.90)	(8.31)	(6.89)	(4.16)
Age 55–64	0.296	0.307	0.424	0.108
	(8.04)	(3.41)	(5.75)	(1.47)
Education				
11 years or below (Reference)				
12–13 years	0.130	0.050	0.245	0.177
	(5.54)	(0.92)	(4.24)	(1.18)
14–16 years	0.207	0.096	0.523	0.409
	(9.32)	(1.51)	(7.78)	(3.83)
17 years or above	0.303	0.263	0.539	0.503
	(12.60)	(3.76)	(9.03)	(6.36)
Employer size				
Fewer than 20 (Reference)				
20–99	0.128	0.103	0.002	0.073
	(4.53)	(1.35)	(0.04)	(0.79)
100–499	0.185	0.203	0.009	-0.037
	(6.37)	(3.29)	(0.15)	(-0.28)
500 and more	0.224	0.175	0.148	0.184
	(11.15)	(3.37)	(4.46)	(1.44)
R-squared	0.110	0.081	0.153	0.183
Observations	6056	2414	2121	2199

Notes: Weighted numbers; t-values in parentheses.

Source: ABS, Survey of Aspects of Literacy, Australia, Basic Confidentialised Unit Record File, 1996, cat.no4228.0; International Adult Literacy Survey.

Table 9 Determinants of relative literacy use by country, 2003–06

	Regression results by country			
	Australia	New Zealand	US	Canada
Intercept	-0.557	-0.562	-0.526	-0.642
	(-14.37)	(-17.66)	(-13.29)	(-17.29)
Foreign-born	-0.009	0.084	-0.053	0.063
	(-0.36)	(2.96)	(-0.72)	(1.45)
Foreign-born x non-English-speaking	-0.126	-0.082	-0.073	-0.165
	(-2.82)	(-1.45)	(-0.75)	(-3.70)
Female	-0.010	-0.022	-0.007	-0.026
	(-0.46)	(-0.96)	(-0.30)	(-1.08)
Age				
Age 15–24 (Reference)				
Age 25–34	0.269	0.376	0.196	0.339
	(7.83)	(9.36)	(6.59)	(10.21)
Age 35–44	0.311	0.437	0.295	0.425
	(8.28)	(16.44)	(10.32)	(14.07)
Age 45–54	0.363	0.480	0.327	0.470
	(10.19)	(13.77)	(7.51)	(14.59)
Age 55–64	0.360	0.490	0.322	0.453
	(8.26)	(12.56)	(8.54)	(10.91)
Education				
11 years or below (Reference)				
12–13 years	0.170	0.122	0.167	0.232
	(5.51)	(3.42)	(3.97)	(6.13)
14–16 years	0.237	0.246	0.383	0.330
	(8.14)	(8.62)	(9.45)	(7.88)
17 years or above	0.321	0.254	0.456	0.442
	(9.75)	(7.48)	(12.59)	(12.33)
Employer size				
Fewer than 20 (Reference)				
20–99	0.112	0.062	0.041	0.085
	(3.16)	(2.05)	(1.35)	(2.98)
100–499	0.194	0.103	0.086	0.046
	(5.15)	(4.23)	(2.00)	(1.29)
500 and more	0.231	0.184	0.203	0.156
	(8.60)	(4.33)	(3.17)	(4.58)
R-squared	0.120	0.109	0.125	0.146
Observations	4 724	5 832	2 771	12 352

Notes: Weighted numbers. t-values in parentheses.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, 4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Summary

This chapter examined the determinants of relative skill use of native- and foreign-born workers. The results may be summarised as follows:

- Younger workers are employed in jobs that make much less use of their skills than those where older workers are employed.
- Highly educated native- and foreign-born workers work in jobs that make high use of their skills.
- Non-native English-speaking migrants in Australia tend to be employed in low-skilled jobs that do not involve the use of the relatively low-level English literacy skills that such workers actually have.

Training requirements

This chapter examines the determinants of participation in training of native- and foreign-born workers in Australia, New Zealand, the United States and Canada. It focuses on

- the relationship between participation in training and demographic characteristics (gender, age)
- the relationship between participation in training and educational attainment
- the relationship between participation in training and relative skill use
- the differential in training participation propensities between native- and foreign-born workers.

Similar to the last chapter, we pay particular attention to differences between native English-speakers and non-native English-speakers within the group of foreign-born workers. We are mainly interested in the characteristics of workers that determine their participation in further education and training. Previous Australian and international studies that have examined the characteristics of individuals which determine their participation in training (Blandy et al. 2000; Roussel 2002; Ryan & Watson 2003) have typically found that participation:

- broadly increases with prior educational attainment
- either falls with age or follows an inverted U-shape
- is lower for females with dependent children in their household
- increases with firm size.

We begin by analysing the relationship between each of these characteristics and the training participation of native- and foreign-born workers before examining the relationship between training participation and the relative literacy use measure studied in the previous chapter. We then estimate a multivariate regression model to assess the extent to which these determinants influence training participation probabilities.

Training participation and demographic characteristics

Table 10 presents the proportions of native- and foreign-born workers who participated in training in the year prior to the survey, by gender, for the second cross-section. We find that the training participation rates of Australian-born workers are between 65 and 67%; 62.7% of the male and 68.6% of the female native English-speaking migrant workers participated in further training, while the training participation rates of non-native English-speaking migrant workers were only 52.4% among males and 61.7% among females. These numbers not only reveal considerable differences between Australian- and foreign-born workers but also between male and female workers within the group of foreign-born workers.

With the exception of native English-speaking migrants in the US, foreign-born male workers were considerably less likely to participate in training than foreign-born female workers. The gender gap in the training participation of native-born workers is relatively small, varying between 1.5 percentage points in Australia and 7.0 percentage points in New Zealand. The training participation gap between male and female native English-speaking migrant workers varies between -4.3 percentage points in the US and 6.2 percentage points in New Zealand. The corresponding gap between male and female

non-native English-speaking migrant workers varies between 4.5 percentage points in the US and 9.3 percentage points in Australia.

Although training participation rates vary considerably across countries and nativity, we can conclude that male and female non-native English-speaking migrant workers in all countries are much less likely to participate in further training than native- and other foreign-born workers.

Table 10 Training participation by nativity and gender, 2003–06

	Male	Female
Native-born		
Australia	0.651	0.666
	(0.477)	(0.472)
New Zealand	0.608	0.678
	(0.488)	(0.467)
US	0.663	0.699
	(0.473)	(0.459)
Canada	0.618	0.666
	(0.486)	(0.472)
Foreign-born, English-speaking		
Australia	0.627	0.686
	(0.484)	(0.465)
New Zealand	0.684	0.746
	(0.466)	(0.436)
US	0.630	0.587
	(0.490)	(0.499)
Canada	0.611	0.644
	(0.488)	(0.480)
Foreign-born, non-English-speaking		
Australia	0.524	0.617
	(0.500)	(0.487)
New Zealand	0.596	0.650
	(0.491)	(0.477)
US	0.407	0.452
	(0.493)	(0.500)
Canada	0.430	0.511
	(0.495)	(0.500)

Notes: Weighted numbers. Standard deviations in parentheses.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Table 11 contains the training participation rates of native- and foreign-born workers by age group for the second cross-section. The numbers suggest that the training participation rates of native- and foreign-born workers decline with age (although with a few exceptions), reflecting that older workers have less incentive to upgrade their skills than younger workers. While the differences between Australian-born and native English-speaking migrant workers are relatively small, training participation rates are considerably lower among non-native English-speaking migrant workers aged 35—44 years and 45—54 years, respectively. The training participation rates of foreign-born workers aged 15—24 years are higher than those of Australian-born workers, while Australian-born workers aged 25—34 years are about as likely as foreign-born workers to participate in further training.

Table 11 Training participation by nativity and age, 2003–06

	Sample means by age group				
	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years
Native-born					
Australia	0.759	0.653	0.635	0.625	0.574
	(0.428)	(0.476)	(0.482)	(0.485)	(0.495)
New Zealand	0.700	0.637	0.675	0.634	0.539
	(0.459)	(0.481)	(0.469)	(0.482)	(0.499)
US	0.786	0.689	0.644	0.673	0.597
	(0.411)	(0.463)	(0.479)	(0.470)	(0.491)
Canada	0.774	0.656	0.616	0.623	0.440
	(0.418)	(0.475)	(0.486)	(0.485)	(0.497)
Foreign-born, English-speaking					
Australia	0.961	0.668	0.696	0.599	0.543
	(0.197)	(0.473)	(0.461)	(0.491)	(0.500)
New Zealand	0.828	0.697	0.698	0.781	0.556
	(0.380)	(0.462)	(0.460)	(0.415)	(0.499)
US	0.742	0.595	0.598	0.447	0.773
	(0.454)	(0.504)	(0.501)	(0.518)	(0.452)
Canada	0.787	0.664	0.680	0.569	0.525
	(0.413)	(0.475)	(0.468)	(0.497)	(0.501)
Foreign-born, non-English-speaking					
Australia	0.831	0.630	0.487	0.423	0.529
	(0.379)	(0.485)	(0.502)	(0.496)	(0.503)
New Zealand	0.810	0.622	0.557	0.519	0.568
	(0.394)	(0.486)	(0.498)	(0.502)	(0.501)
US	0.649	0.356	0.414	0.433	0.364
	(0.484)	(0.482)	(0.496)	(0.502)	(0.491)
Canada	0.688	0.574	0.430	0.403	0.360
	(0.465)	(0.495)	(0.496)	(0.491)	(0.481)

Notes: Weighted numbers. Standard deviations in parentheses.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Training participation and educational attainment

The analysis of the relationship between our relative literacy use measure and different levels of education suggested that many highly educated workers are likely to have jobs that make extensive use of the skills they possess, while the low-skilled jobs of less-educated workers usually make little use of the skills they possess. Since the relationship between relative skill use and educational attainment is positive, it seems likely that highly educated workers invest in further training more often than less-educated workers because they have to upgrade their skills more frequently. The numbers in table 12 are consistent with this hypothesis. For example, we observe a training participation rate of 54.0% for Australian-born workers with fewer than 12 years of education, while 84.4% of the highly educated Australian-born workers (with at least 17 years of education) have undertaken further training during the last year.

Highly educated foreign-born workers in Australia are considerably less likely to undertake training than highly educated Australian-born workers. In particular, non-native English-speaking migrant workers in Australia exhibit very low training participation rates, even at higher levels of education. The training participation rates of foreign-born workers are generally lower than those of native-born

workers in the remaining countries and particularly low among non-native English-speaking migrant workers, especially at the top of the educational distribution.

Table 12 Training participation by nativity and education, 2003–06

	Sample means by education			
	11 years or below	12–13 years	14–16 years	17 years or above
Native-born				
Australia	0.540	0.628	0.752	0.844
	(0.499)	(0.484)	(0.432)	(0.363)
New Zealand	0.536	0.606	0.713	0.802
	(0.499)	(0.489)	(0.452)	(0.399)
US	0.577	0.577	0.762	0.885
	(0.495)	(0.494)	(0.426)	(0.320)
Canada	0.482	0.599	0.727	0.760
	(0.500)	(0.490)	(0.446)	(0.427)
Foreign-born, English-speaking				
Australia	0.459	0.645	0.767	0.753
	(0.500)	(0.480)	(0.424)	(0.433)
New Zealand	0.622	0.670	0.750	0.778
	(0.487)	(0.472)	(0.434)	(0.417)
US	0.433	0.439	0.721	0.810
	(0.520)	(0.509)	(0.458)	(0.402)
Canada	0.462	0.490	0.746	0.739
	(0.501)	(0.501)	(0.437)	(0.440)
Foreign-born, non-English-speaking				
Australia	0.337	0.463	0.657	0.715
	(0.474)	(0.502)	(0.476)	(0.453)
New Zealand	0.501	0.475	0.640	0.751
	(0.502)	(0.501)	(0.481)	(0.433)
US	0.194	0.394	0.604	0.612
	(0.398)	(0.493)	(0.493)	(0.492)
Canada	0.278	0.421	0.522	0.595
	(0.449)	(0.494)	(0.500)	(0.491)

Notes: Weighted numbers. Standard deviations in parentheses.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Training participation and relative skill use

So far, we have considered the determinants of relative literacy use and training participation separately, without providing evidence on the relationship between these two outcome measures. Table 13 contains the sample averages of our relative literacy use measure by training participation. The numbers in table 13 reveal a strong positive association between relative skill use levels and participation in training. Specifically, we find that the average relative literacy use measure of native- and foreign-born training participants is almost always positive, while the average relative literacy use levels of native- and foreign-born non-participants are almost always negative.

The relationship between our relative literacy use measure and the training participation choices of workers described in table 13 establishes the link between the demand and supply for further training among native- and foreign-born workers. In particular, we would expect that an increase in skill requirements induces a higher demand for further training. Consequently, we will consider our

relative skill use measure as a determinant of training participation in the following regression analysis and also examine differences between native- and foreign-born workers in the effects of this measure on training participation.

Table 13 Relative literacy use by training participation and year

	Sample means by training participation			
	1994–96		2003–06	
	Participant	*Non-Participant*	*Participant*	*Non-Participant*
Native-born				
Australia	0.033	-0.099	0.051	-0.182
	(0.574)	(0.574)	(0.584)	(0.662)
New Zealand	0.033	-0.172	0.049	-0.196
	(0.640)	(0.732)	(0.617)	(0.657)
US	0.147	-0.130	0.085	-0.173
	(0.589)	(0.717)	(0.599)	(0.718)
Canada	0.130	-0.113	0.041	-0.147
	(0.580)	(0.664)	(0.574)	(0.669)
Foreign-born, English-speaking				
Australia	0.163	-0.025	0.129	-0.102
	(0.571)	(0.568)	(0.540)	(0.636)
New Zealand	0.117	-0.021	0.149	0.036
	(0.598)	(0.675)	(0.587)	(0.573)
US	0.235	0.020	0.121	-0.285
	(0.525)	(0.770)	(0.507)	(0.615)
Canada	0.352	0.051	0.214	-0.054
	(0.422)	(0.612)	(0.582)	(0.687)
Foreign-born, non-English-speaking				
Australia	0.046	-0.080	0.040	-0.275
	(0.663)	(0.771)	(0.619)	(0.775)
New Zealand	0.248	-0.056	0.073	-0.107
	(0.970)	(0.894)	(0.797)	(0.913)
US	0.163	-0.308	0.251	-0.451
	(0.961)	(0.909)	(0.701)	(0.841)
Canada	-0.092	-0.440	0.102	-0.202
	(0.700)	(0.899)	(0.670)	(0.759)

Notes: Weighted numbers. Standard deviations in parentheses.

Source: ABS, Survey of Aspects of Literacy, Australia, Basic Confidentialised Unit Record File, 1996, cat.no.4228.0; ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, 4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

Regression analysis

To investigate the importance of the determinants of training participation, we estimate a linear probability model for each country and both cross-sections, using the indicator for training participation as the dependent variable. We examine differences between native- and foreign-born workers in different countries and differences between native English-speaking and non-native English-speaking workers within the group of migrants. We further examine the extent to which differences in relative skill use between these groups affect training participation. Specifically, our regression model includes the following variables: a foreign-born indicator; a non-native English-speaking foreign-born indicator; the relative skill use measure; an interaction term between the relative skill use measure and the foreign-born indicator; an interaction term between the relative skill use measure and the non-native English-speaking foreign-born indicator; a female indicator; a set of age and education group indicators; and employer size indicators.

The regression results in table 14 show that, during the first survey period, foreign-born workers in Australia were less likely to participate in further training than (comparable) Australian-born workers. Specifically, the average training participation probability of foreign-born workers in Australia was 5.4 percentage points lower than that of Australian-born workers with similar characteristics (age, education, employer size etc.).

Table 14 Determinants of training participation by country, 1994–96

	Regression results by country			
	Australia	New Zealand	US	Canada
Intercept	0.509	0.585	0.442	0.568
	(21.15)	(15.71)	(6.25)	(3.04)
Foreign-born	-0.054	-0.047	-0.072	-0.137
	(-2.78)	(-1.21)	(-0.74)	(-0.53)
Foreign-born x non-English-speaking	-0.036	-0.040	-0.042	0.065
	(-1.28)	(-0.61)	(-0.39)	(0.24)
Relative literacy use	0.086	0.113	0.110	0.143
	(5.98)	(3.75)	(4.63)	(1.97)
Relative literacy use x foreign-born	0.014	-0.043	-0.037	0.100
	(0.43)	(-0.58)	(-0.28)	(0.35)
Relative literacy use x foreign-born x non-English-speaking	-0.091	0.009	0.008	-0.202
	(-2.00)	(0.11)	(0.06)	(-0.66)
Female	0.031	0.039	0.049	0.046
	(2.28)	(1.78)	(1.82)	(0.61)
Age				
Age 15–24 (Reference)				
Age 25–34	-0.230	-0.196	-0.186	-0.249
	(-10.25)	(-5.35)	(-3.38)	(-3.52)
Age 35–44	-0.251	-0.237	-0.175	-0.257
	(-11.12)	(-7.14)	(-3.24)	(-3.30)
Age 45–54	-0.302	-0.249	-0.166	-0.310
	(-12.42)	(-5.70)	(-2.69)	(-4.50)
Age 55–64	-0.339	-0.360	-0.299	-0.302
	(-11.60)	(-6.67)	(-4.54)	(-2.86)
Education				
11 years or below (Reference)				
12–13 years	0.091	0.099	-0.001	0.049
	(4.86)	(3.81)	(-0.05)	(1.34)
14–16 years	0.169	0.187	0.229	0.154
	(8.88)	(5.26)	(5.92)	(1.88)
17 years or above	0.306	0.230	0.325	0.203
	(13.08)	(6.19)	(6.45)	(2.48)
Employer size				
Fewer than 20 (Reference)				
20–99	0.063	0.144	0.018	0.078
	(2.86)	(4.28)	(0.50)	(0.54)
100–499	0.121	0.153	0.079	-0.075
	(4.95)	(4.56)	(2.30)	(-0.61)
500 and more	0.194	0.224	0.183	0.107
	(11.74)	(7.61)	(7.45)	(1.02)
R-squared	0.150	0.157	0.175	0.140
Observations	6056	2414	2121	2199

Notes: Weighted numbers. t-values in parentheses.

Source: ABS, Survey of Aspects of Literacy, Australia, Basic Confidentialised Unit Record File, 1996, cat.no.4228.0; International Adult Literacy Survey.

Within the group of migrants in Australia, differences between native English-speaking and non-native English-speaking workers are not significant. There were no differences in training participation probabilities between native- and foreign-born workers in the other three countries. Overall, these estimates suggest that the nativity gap in training participation is either insignificant or relatively small, if we compare migrants with comparable natives by controlling for the characteristics included here.

Table 15 Determinants of training participation by country, 2003–06

	Regression results by country			
	Australia	New Zealand	US	Canada
Intercept	0.644	0.630	0.711	0.668
	(25.19)	(20.80)	(18.29)	(22.40)
Foreign-born	-0.004	0.032	-0.086	-0.020
	(-0.20)	(1.61)	(-1.04)	(-0.78)
Foreign-born x non-English-speaking	-0.102	-0.118	-0.124	-0.133
	(-2.93)	(-4.40)	(-1.53)	(-4.40)
Relative literacy use	0.117	0.137	0.127	0.136
	(6.56)	(10.01)	(7.99)	(6.40)
Relative literacy use x foreign-born	-0.006	-0.067	0.119	-0.001
	(-0.16)	(-2.14)	(0.95)	(-0.03)
Relative literacy use x foreign-born x non-English-speaking	-0.002	-0.002	-0.082	-0.031
	(-0.04)	(-0.07)	(-0.62)	(-0.49)
Female	0.021	0.068	0.035	0.053
	(1.59)	(4.09)	(2.00)	(3.21)
Age				
Age 15–24 (Reference)				
Age 25–34	-0.240	-0.175	-0.218	-0.246
	(-8.85)	(-8.10)	(-7.86)	(-8.03)
Age 35–44	-0.234	-0.142	-0.264	-0.282
	(-8.39)	(-7.51)	(-9.46)	(-10.54)
Age 45–54	-0.260	-0.167	-0.258	-0.280
	(-10.43)	(-5.99)	(-10.05)	(-9.26)
Age 55–64	-0.270	-0.250	-0.315	-0.374
	(-8.30)	(-7.25)	(-8.30)	(-11.18)
Education				
11 years or below (Reference)				
12–13 years	0.041	0.029	0.033	0.073
	(1.62)	(1.56)	(1.03)	(3.47)
14–16 years	0.186	0.133	0.196	0.195
	(7.48)	(4.46)	(5.88)	(7.03)
17 years or above	0.261	0.218	0.315	0.236
	(10.31)	(7.96)	(10.66)	(8.06)
Employer size				
Fewer than 20 (Reference)				
20–99	0.089	0.112	0.037	0.079
	(3.60)	(5.98)	(1.62)	(3.95)
100–499	0.132	0.135	0.062	0.099
	(5.91)	(8.41)	(2.48)	(4.72)
500 and more	0.189	0.092	0.138	0.131
	(12.48)	(2.37)	(4.26)	(3.39)
R-squared	0.148	0.104	0.174	0.138
Observations	4 724	5 832	2 771	12 352

Notes: Weighted numbers. t-values in parentheses.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; International Adult Literacy Survey.

The estimates in table 14 provide evidence for a strong positive relationship between our relative literacy use measure and training participation in all countries. Interestingly, differences in the extent to which relative literacy use affects the training participation of native- and foreign-born workers are largely insignificant (with the exception of non-native English-speaking migrants in Australia). The estimates further confirm many of the findings of previous Australian and international studies (Blandy et al. 2000; Roussel 2002; Ryan & Watson 2003). In particular, training participation declines with age, although the decline is not always linear. It increases with education and firm size. Female workers in Australia appear to be more likely to participate in further training, while the coefficient of the female indicator is insignificant in the other countries.

Table 15 reports the regression results of the second survey period. The estimates reveal that differences in training participation between native English-speaking migrant workers and native-born workers are insignificant in all four countries, while non-native English-speaking migrant workers are significantly less likely to undertake further training than native-born workers in Australia, New Zealand and Canada. The differences in training participation between native- and foreign-born groups deviate from those observed ten years earlier. The regression results presented in the previous chapter (table 9) reveal that this group of migrant workers also exhibits relatively low levels of relative skill use, that is, they usually work in jobs that involve low skill usage relative to the skills they have. These results suggest that, since many non-native English-speaking migrant workers in countries with a points system work in jobs that require little further training, their training participation rates are low. They are more than ten percentage points less likely to undertake further training than native-born workers.[7]

Similar to table 14, the results presented in table 15 show a significantly positive relationship between relative literacy use and training participation in all countries. Again, the differences in the coefficients of relative literacy use between native- and foreign-born workers are mostly insignificant (with the exception of foreign-born workers in New Zealand). The gender differences in training participation observed ten years earlier for Australia are insignificant in the second survey period. Instead, in table 15 we observe significant differences in training participation probabilities between male and comparable female workers for all other countries. The estimated coefficients of the remaining indicator variables have the expected signs and are largely significant.

Summary

This chapter studies the determinants of training participation of native- and foreign-born workers in Australia, New Zealand, the United States and Canada. The results may be summarised as follows:

- Both male and female non-native English-speaking migrant workers in all countries are on average less likely to participate in further training than native- and other foreign-born workers.
- The training participation rates of native- and foreign-born workers decline with age, consistent with older workers having lower incentives to upgrade their skills than younger workers.
- Non-native English-speaking migrant workers in Australia exhibit very low training participation rates, even those with higher levels of education.
- There is a strong positive association between relative skill use levels and the participation in further training.
- Many non-native English-speaking migrant workers in countries with a points system work in jobs that require little further training, so their training participation rates are low.

[7] Even countries that operate points systems also have family reunification and refugee elements of their migration programs. Hence, this finding does not necessarily indicate any 'failure' of the points system approach.

Summary and implications

This study has examined the relationship between skill levels, training requirements and participation, and the migration background of workers in four (predominantly) English-speaking countries (Australia, New Zealand, the United States and Canada). In part, this analysis was motivated by previous research findings that migrants were less likely to participate in training than otherwise similar native-born Australians. Did this reflect their own choices or the types of jobs they found themselves working in? While the focus of Australian immigration policy over recent decades has been on accepting high-skilled migrants, and this has resulted in the successful integration of foreign-born workers into the Australian labour market in some dimensions (Chiswick & Miller 2011), it was possible that the assimilation was not so successful in relation to participation in training. Hence, the aim of the paper has been to assess the extent to which the training requirements of foreign-born workers differ from those of native-born workers and the degree to which these requirements are being met in each of these countries.

The major findings from this analysis are as follows:

- *Skills of foreign-born workers:* foreign-born workers in Australia are much better educated than Australian-born workers. The levels of education of foreign-born workers in New Zealand are slightly higher than those of New Zealand-born workers, while foreign-born workers in Canada have much higher levels of education than Canadian-born workers. Foreign-born workers in the US exhibit much lower levels of education than US-born workers. Consequently, skill differences between native- and foreign-born persons are relatively large in the US but much smaller in the countries that allow immigration under a points system. Moreover, migrants have significantly higher literacy skills than the Australian-born if they are native English speakers. Non-native English-speaking migrants in Australia have significantly lower skills than native English-speaking migrants and the Australian-born. Native English-speaking migrants are significantly more likely to be employed than the Australian-born, while non-native English-speaking migrants are significantly less likely to be employed.
- *Skills and skill requirements*: younger workers make much less use of their skills than older workers. Highly educated native- and foreign-born workers work in jobs that make high use of their skills. By contrast, non-native English-speaking migrants in Australia tend to be employed in low-skilled jobs that do not involve the use of the relatively low-level English literacy skills that such workers actually have.
- *Training participation*: both male and female non-native English-speaking migrant workers in all countries are, on average, less likely to participate in further training than native- and other foreign-born workers. The training participation rates of native- and foreign-born workers decline with age, reflecting that older workers have fewer incentives to upgrade their skills than younger workers. The training participation rates of non-native English-speaking migrant workers aged 35—54 years are considerably lower than those of Australian-born workers. Moreover, highly educated workers invest in further training more often than less-educated workers because they have to upgrade their skills more frequently. Furthermore, non-native English-speaking migrant workers in Australia exhibit very low training participation rates, even at higher levels of education. We find a strong positive association between relative skill use levels and participation in further training for all groups. Lastly, many non-native English-speaking migrant workers in countries with a points system work in jobs that require little further training, so their training participation rates are low.

Our results suggest that foreign-born workers in Australia usually seem to receive the training they need, given the literacy requirements of their jobs, indicating that the integration of foreign-born workers into the Australian education and training system has been successful. While training requirements are being met in a similar way in the US and Canada, we observe that foreign-born

workers in New Zealand are significantly more likely to require further training but do not receive significantly more training than comparable native-born workers.

That training is not undertaken by individuals in below-average relative literacy use (presumably low-skilled) jobs suggests that training in general is not used as a means of mobility out of such jobs by workers. While it is not possible from these data to disentangle the effects of individual decisions to undertake training from employers' preparedness to provide it, this suggests that the latter factor may be very important in determining observed participation in training.

Of course, our results relate only to the role of literacy skills, literacy skill use or literacy requirements in jobs and their impact on training participation. There are many other dimensions of workers' skills and the skill requirements of jobs. It is possible that these other requirements that are unrelated to literacy may be extremely important determinants in the application and selection process of those chosen for training opportunities in workplaces. Hence, it may be that other necessary skills of migrant workers are not being developed via training in the way that they should be, if low-level literacy skills are themselves a barrier to the training application process. Nevertheless, the low participation of non-native English-speaking migrants in training appears to be largely independent of the actual skills of individuals — they are seemingly more about the human capital investments of this group than the characteristics of the jobs in which they are employed. Changing their participation in training would seem to require language-relevant forms of encouragement and training delivery for it to be successful.

References

Antecol, H, Cobb-Clark, DA & Trejo, S 2003, 'Immigration policy and the skills of immigrants to Australia, Canada, and the United States', *Journal of Human Resources*, vol.38, pp.192—218.

—— 2004, 'Selective immigration policy in Australia, Canada and the United States', *Brussels Economic Review — Cahiers Economiques de Bruxelles*, vol.47, pp.45—56.

Barrett, GF 2009, 'The return to cognitive skills in the Australian labour market', unpublished manuscript, University of New South Wales.

Bauer, T, Lofstrom, M & Zimmerman, C 2000, 'Immigration policy, assimilation of immigrants, and natives' sentiments towards immigrants: evidence from 12 OECD countries', *Swedish Economic Policy Review*, vol.7, pp.11—53.

Birrell, R 1990, *The chains that bind: family reunion migration to Australia in the 1980s*, AGPS, Canberra.

Blandy, R, Dockery M, Hawke, A & Webster, E 2000, *Does training pay? Evidence from Australian enterprises*, NCVER, Adelaide.

Borjas, G 1987, 'Self-selection and the earnings of immigrants', *American Economic Review*, vol.77, pp.531—53.

Briggs, VM 1984, *Immigration policy and the American labor force*, John Hopkins University Press, Baltimore.

Chiquiar, D & Hanson, GH 2005, 'International migration, self-selection, and the distribution of wages: evidence from Mexico and the United States', *Journal of Political Economy*, vol.113, pp.239—81.

Chiswick, BR 1978, 'The effect of Americanization on the earnings of foreign-born men', *Journal of Political Economy*, vol.86, pp.897—921.

Chiswick, BR & Miller, PW 2011, 'The "negative" assimilation of immigrants: a special case', *Industrial and Labor Relations Review*.

Department of Labour (New Zealand) 2005, *Migration trends 2004/2005*, DoL, Wellington.

Ferrer, A, Green, DA & Riddell, WC 2006, 'The effect of literacy on immigrant earnings', *Journal of Human Resources*, vol.41, pp.380—410.

Friedberg, RM 2001, 'The impact of mass migration on the Israeli labor market', *Quarterly Journal of Economics*, vol.66, pp.1373—408.

Kaestner, R & Malamud, O 2010, *Self-selection and international migration: new evidence from Mexico*, NBER working paper 15765, National Bureau of Economic Research, Washington, DC.

Moraga, JFH 2011, 'New evidence on emigrant selection', *Review of Economics and Statistics*, vol..93, pp.72—96.

OECD (Organisation for Economic Co-operation and Development) & Statistics Canada 1995, Literacy economy and society: results of the first International Adult Literacy Survey, Ottawa.

Roussel, S 2002, 'Factors influencing participation in post-secondary education and training in Australia: 1989—1997', *Australian Journal of Labour Economics*, vol..5, pp.77—100.

Ryan, C & Sinning, M 2009, *Skill matches to job requirements*, NCVER, Adelaide.

—— 2010, *Who works beyond the 'standard' retirement age and why?*, NCVER, Adelaide.

—— 2011a, *Differing skill requirements across countries and over time*, NCVER, Adelaide.

—— 2011b, *Skill (mis)matches and over-education of younger workers*, NCVER, Adelaide.

Ryan, C & Watson, L 2003, *Skills at work: lifelong learning and changes in the labour market*, EIP report no.03/14, Department of Education, Science and Training, Canberra.

Statistics Canada 1996, 'International Adult Literacy Survey — microdata user's guide', mimeo.

Statistics Canada & OECD 2005, *Learning a living: first results of the adult literacy and life skills survey*, OECD Publishing, Paris.

Appendix

Table A1 Description of variables

Variable	
Person ID	Person ID
Year	Year indicator
Weight	Person weight
Age	Ten-year age ranges
Sex	Male or female
Native-born	1 if person was born in country of interview, 0 otherwise
Foreign-born	1 if person was not born in country of interview, 0 otherwise
Foreign-born, English-speaking	1 if person was not born in country of interview and native language is English, 0 otherwise
Foreign-born, non-English-speaking	1 if person was not born in country of interview and native language is not English, 0 otherwise
Employed	1 if number of hours worked > 0, 0 otherwise
Educational attainment	Number of years of education: [1] less than 11 years, [2] 12–13 years, [3] 14–16 years, [4] 17 years or more
Training participation	1 if person undertook training during the last year, 0 otherwise
Document literacy	Document literacy, level 1–5
Document literacy (0–500)	Document literacy, continuous measure (0–500)
Literacy use at work (0–500)	Literacy use at work, generated scale (0–500)
Employer size	Employer size; number of persons employed at the location of the individuals' workplace: [1] less than 20, [2] 20–99, [3] 100–499, [4] 500 and over

Table A2 Descriptive statistics, sample of workers, 1994–96

	Australia		New Zealand		US		Canada	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age								
Age 15–24 years	0.219	0.414	0.203	0.402	0.152	0.359	0.152	0.359
Age 25–34 years	0.253	0.435	0.246	0.431	0.237	0.425	0.237	0.425
Age 35–44 years	0.246	0.431	0.258	0.438	0.261	0.439	0.261	0.439
Age 45–54 years	0.200	0.400	0.191	0.393	0.219	0.414	0.219	0.414
Age 55–64 years	0.081	0.273	0.102	0.303	0.131	0.337	0.131	0.337
Sex								
Male	0.560	0.496	0.532	0.499	0.510	0.500	0.510	0.500
Female	0.440	0.496	0.468	0.499	0.490	0.500	0.490	0.500
Nativity								
Native-born	0.760	0.427	0.820	0.385	0.886	0.317	0.886	0.317
Foreign-born	0.240	0.427	0.180	0.385	0.114	0.317	0.114	0.317
Foreign-born, English-speaking	0.126	0.332	0.119	0.324	0.022	0.146	0.022	0.146
Foreign-born, non-English-speaking	0.113	0.317	0.062	0.241	0.092	0.289	0.092	0.289
Educational attainment								
Less than 11 years	0.467	0.499	0.505	0.500	0.137	0.343	0.137	0.343
12–13 years	0.235	0.424	0.265	0.442	0.395	0.489	0.395	0.489
14–16 years	0.197	0.397	0.136	0.343	0.318	0.466	0.318	0.466
17 years or more	0.101	0.302	0.093	0.290	0.151	0.358	0.151	0.358
Training participation	0.475	0.499	0.583	0.493	0.510	0.500	0.510	0.500
Document literacy	286.4	51.0	281.6	55.0	280.6	63.1	280.6	63.1
Literacy use at work	256.2	170.1	274.7	184.3	298.2	186.6	298.2	186.6
Employer size								
Fewer than 20	0.385	0.487	0.392	0.488	0.255	0.436	0.255	0.436
20–99	0.149	0.356	0.161	0.368	0.135	0.342	0.135	0.342
100–499	0.104	0.305	0.131	0.338	0.144	0.351	0.144	0.351
500+	0.362	0.481	0.315	0.465	0.465	0.499	0.465	0.499
Number of observations	6056		2414		2121		2199	

Note: This table includes descriptive statistics (weighted numbers) of the samples that were used in the empirical analysis of the report.

Source: ABS, Survey of Aspects of Literacy, Australia, Basic Confidentialised Unit Record File, 1996, cat.no.4228.0; OECD & Statistics Canada (1995).

Table A3 Descriptive statistics, sample of workers, 2003–06

	Australia		New Zealand		US		Canada	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age								
Age 15–24 years	0.190	0.393	0.185	0.389	0.188	0.391	0.188	0.391
Age 25–34 years	0.232	0.422	0.204	0.403	0.218	0.413	0.218	0.413
Age 35–44 years	0.239	0.426	0.245	0.430	0.249	0.432	0.249	0.432
Age 45–54 years	0.221	0.415	0.221	0.415	0.218	0.413	0.218	0.413
Age 55–64 years	0.117	0.322	0.145	0.352	0.127	0.333	0.127	0.333
Sex								
Male	0.548	0.498	0.517	0.500	0.515	0.500	0.515	0.500
Female	0.452	0.498	0.483	0.500	0.485	0.500	0.485	0.500
Nativity								
Native-born	0.751	0.432	0.743	0.437	0.854	0.353	0.854	0.353
Foreign-born	0.249	0.432	0.257	0.437	0.146	0.353	0.146	0.353
Foreign-born, English-speaking	0.123	0.329	0.125	0.331	0.033	0.179	0.033	0.179
Foreign-born, non-English-speaking	0.126	0.331	0.132	0.339	0.113	0.316	0.113	0.316
Educational attainment								
Fewer than 11 years	0.325	0.468	0.263	0.440	0.169	0.375	0.169	0.375
12–13 years	0.251	0.434	0.282	0.450	0.365	0.481	0.365	0.481
14–16 years	0.261	0.439	0.266	0.442	0.316	0.465	0.316	0.465
17 years or more	0.163	0.369	0.189	0.391	0.151	0.358	0.151	0.358
Training participation	0.645	0.478	0.648	0.478	0.650	0.477	0.650	0.477
Document literacy	288.9	52.0	283.5	50.5	275.8	51.6	275.8	51.6
Literacy use at work	292.8	174.4	288.5	178.7	281.9	180.9	281.9	180.9
Employer size								
Less than 20	0.311	0.463	0.553	0.497	0.387	0.487	0.387	0.487
20–99	0.162	0.368	0.238	0.426	0.286	0.452	0.286	0.452
100–499	0.118	0.322	0.170	0.376	0.237	0.426	0.237	0.426
500+	0.409	0.492	0.040	0.195	0.089	0.285	0.089	0.285
Number of observations	4 724		5 832		2 771		12 352	

Note: This table includes descriptive statistics (weighted numbers) of the samples that were used in the empirical analysis of the report.

Source: ABS, Adult Literacy and Life Skills Survey, Australia, Basic Confidentialised Unit Record File, 2006, cat.no.4228.0; Adult Literacy and Life Skills Survey, New Zealand, 2006; OECD & Statistics Canada (1995).

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