

## VI

# *The Importance of Education and Training in a Knowledge Economy*

Everyone today recognizes that knowledge plays an increasingly important role in our socio-economic system. The OECD maintains that investing in human capital is becoming an essential component in ensuring sustained economic growth and reducing social inequalities.<sup>90</sup> Along the same lines, Tom Courchene, a Canadian economist, recently wrote that globalization and the knowledge revolution will favour human capital just as the industrial revolution favoured physical capital, and that to survive in this new world order, Canada and Canadians will have to make the transition from an economy and society based on resources and physical capital to one that is more based on human capital. For such a transition to be successful, Canadians will have to favour human capital and give it a prominent place in the public policy forum.<sup>91</sup>

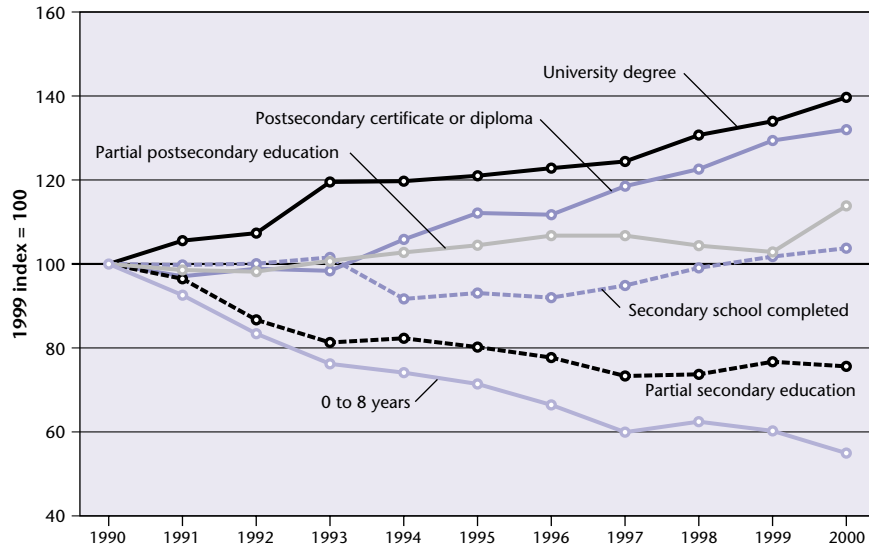
However, it remains difficult to measure the efficiency and performance of investments in human capital throughout the course of a lifetime.<sup>92</sup> This stems from the methodological and logistical complexities encountered when trying to quantify or evaluate the benefits of education and training. It is nevertheless known that the initial training level is positively correlated with the performance of individuals in the labour market. This is clearly shown in figure 19 for the Atlantic Canada labour market. From 1990 to 2000, over fourteen thousand jobs were created for people with a university degree or a postsecondary diploma, an increase of more than 34 percent. By contrast, the number of jobs for people with an uncompleted secondary education or less dropped by more than 30 percent, i.e., a net decrease of about eighty-four thousand jobs.

90. OECD, *Human Capital Investment: An International Comparison* (Paris: Centre for Educational Research and Innovation, 1998).

91. Tom Courchene, *A State of Minds: Toward a Human Capital Future for Canadians* (Montreal: Institute for Research on Public Policy, 2001), 5–6.

92. OECD, *Human Capital Investment*.

**Figure 19**  
**Evolution of Employment in Atlantic Canada**  
**Based on Education Level, 1999–2000**



Source: Statistics Canada, *Labour Force Survey*.

One look at the turnover rate in the Atlantic provinces shows that the probability of keeping one's job or of finding another one depends more than ever on education level. Moreover, the rate of staff turnover in the Atlantic provinces is higher than elsewhere in the country. In 1999 Newfoundland had the highest hiring rate (46 percent), while Prince Edward Island had the highest termination rate (45 percent). The atypical nature of work in the Atlantic provinces partly explains why hiring and termination rates are higher. As employment tends to be more temporary in these provinces, workers are more often forced to change jobs.

The highest hiring rates were in some service sectors and in the primary and construction sectors. The hiring rate in lodging and food services reached 42 percent in 1999. Hiring in this industry tends to increase in summer, when restaurants, hotels, and motels have to meet the growing demand from vacationers. Hiring rates in construction (38 percent) and retail trade (30 percent) were also above the rates for industries as a whole.

Among the characteristic features of the turnover rate, education level undoubtedly remains extremely important. The more educated

workers are less subject to layoffs than workers with a secondary education or less. For example, the average annual layoff rate in 1998 and 1999 was 12 percent for people with a secondary education or less compared with 6 percent for those with a master's or doctorate degree.

Going back to the analytical framework developed in the previous section, there are also significant differences in the education level of workers among the various occupational categories. The NOC and its coding system enable us to analyse labour market trends by occupations and types of skills requested (e.g., knowledge, management, etc.) and, as will be shown later, to identify changes with regard to skills in the five hundred or so occupations inventoried. According to the definition of Human Resources Development Canada (HRDC), the skills required by the various occupations are divided into four levels as follows:

- ▶ Professional workers (skill level A): occupations for which a university degree (bachelor's, master's, or postgraduate level) is required
- ▶ Specialized technical workers (skill level B): occupations requiring two to three years of postsecondary education at a community college or technology institute; two to four years of apprenticeship training; or three to four years of secondary school and more than two years of on-the-job training, specialized training courses, or specific work experience
- ▶ Intermediate workers (skill level C): jobs requiring one to four years of secondary school education or up to two years of on-the-job training, specialized training courses, or specific work experience
- ▶ Unskilled workers (skill level D): up to two years of secondary school and short work demonstration or on-the-job training<sup>93</sup>

According to the NOC, all occupations are assigned a skill level that takes into account the level and type of education and training required to access them and perform the related tasks. It should be noted, however, that this classification system does not assign a skill level to the majority of management positions. This is because factors

93. Human Resources Development Canada, *National Occupational Classification Guide*. For more information, consult the following Web site: [www.worklogic.com:81/noc/glossary/skilllevel\\_e.html](http://www.worklogic.com:81/noc/glossary/skilllevel_e.html)

other than education and training must be considered as determinants for employment in this category.

Thus for 1996, 14 percent of workers in all occupational categories in Atlantic Canada had a university education, 29 percent were specialized technical workers, 34 percent intermediate workers, and 14 percent unskilled workers (the remaining 8 percent included management workers, who unfortunately cannot be classified). With respect to the national average, the distribution of workers according to their education level differed very little in the Atlantic provinces. Indeed, the proportion of workers with a university degree in Canada (15 percent) was only slightly above that in Atlantic Canada, while the proportion of unskilled workers at the national level (13 percent) was only slightly below that in the Atlantic provinces.

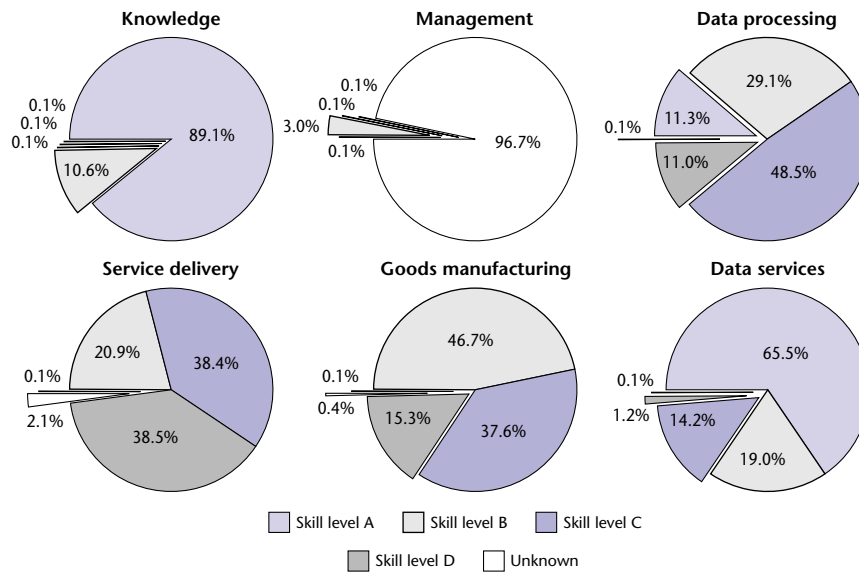
It is by examining the skills distribution in the different occupational categories that the most significant differences appear in workers' education levels (see figure 20). Not surprisingly, almost all knowledge workers had a university degree (89.3 percent), while the other 10.6 percent of workers had a postsecondary diploma from a community college or a technology institute. By contrast, in the service-delivery category, three out of four workers had a secondary education or less. As well, over half of the goods-manufacturing workers had completed their high school or less.

These figures show that the labour market in Atlantic Canada, as elsewhere, increasingly favours professional or highly skilled workers. However, the question is, how do we ensure that the gap between unskilled and skilled workers does not continue to widen? This issue was addressed by the OECD Council of Ministers in 1997, when it emphasized the importance and urgency of implementing efficient lifelong training strategies for everyone, and of strengthening the capacity of individuals to adapt and acquire new qualifications and skills.<sup>94</sup> Unfortunately, as previously mentioned in this study, there is no simple or single solution to this problem given the many forms that human capital can take and its impact on the lives of individuals at different times and places. But it is clear that a consensus is developing about the need to assign a strategic role to human-capital investment.

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94. OECD, *Human Capital Investment*, 8.

**Figure 20**  
**Distribution of Workers in Atlantic Canada**  
**in Each Occupational Category**  
**According to Skill Level, 1996**



Source: Statistics Canada, 1996 census; compiled by the authors.

It is also crucial that any training and education initiative be accessible to all, if only to counter the labour market polarization in the new economy. In their report on training in the new economy, Betcherman et al. argue that a particular segment of Canada’s labour force — largely composed of people who already have substantial human capital — is well served by the current state of affairs.<sup>95</sup> More specifically, they stress that “this group finds itself in a *virtuous circle* of a strong skills base, challenging job requirements, and additional human capital investments. However, too many Canadians, including many young people, are in a more *vicious circle* of skills deficits, underinvestment, and declining employability. If Canada is to avoid creating an underclass of poorly educated people, it will have to give more serious attention to the distribution of training.”<sup>96</sup> This notion of a vicious circle with regard to skills and human-capital investment was picked up again by Lester Thurow in 1999, when he wrote that skills and education in the two lower thirds of the labour force are just

95. Betcherman, McMullen, and Davidman, *Training for the New Economy*, 5.

96. *Ibid.*

as important as the skills and education in the upper third. No one can reach his or her potential without the other's help.<sup>97</sup>

But before going any further and examining certain corrective policies involving skills and human-capital investment, it is important to review the efforts that are currently being made to ensure continuous learning in Atlantic Canada. To this end, we will use the data and analyses of the Adult Education and Training Survey (AETS).

### ■ Training and Education in the Atlantic Provinces

Undertaken jointly by Statistics Canada and Human Resources Development Canada, the AETS includes a series of indicators that enabled us to identify some recent trends in the supply and demand for adult training and education programs. Statistics from the last survey (1998) have just been published in a report that encompasses statistics from the 1992, 1994, and 1998 surveys, thus creating the chronological series from which these trends were analysed.<sup>98</sup> Here, then, is an outline of features that characterize the changes in adult education and training in Atlantic Canada.

A glance at the participation rate for adult education and training programs in Canada shows considerable differences among provinces. In the Atlantic provinces, except Nova Scotia, the participation rate is rather low compared to the rate for other Canadian provinces, particularly in the West. In 1997, for example, Newfoundland had the lowest participation rate in the country at 18.6 percent; it was followed by Prince Edward Island (22.2 percent) and New Brunswick (23.4 percent). Only Nova Scotia was higher than the national average (27.7 percent), with a participation rate of 28.8 percent.<sup>99</sup>

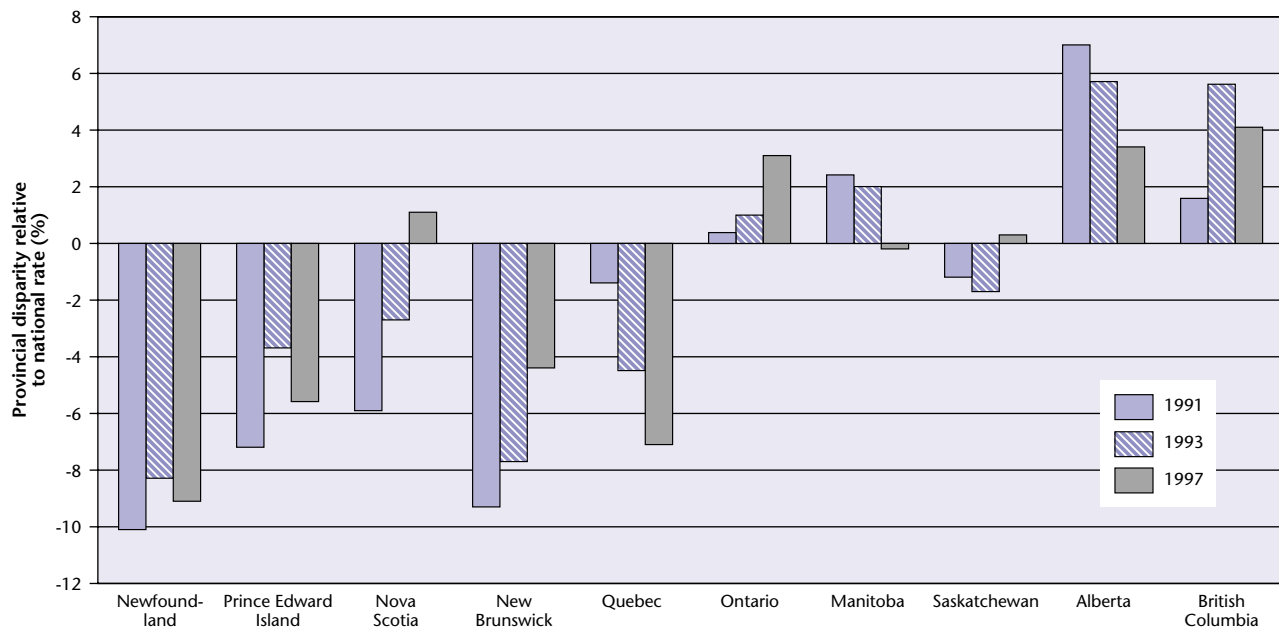
However, the participation rates for adult education and training in the Atlantic provinces have been increasing, with the result that they are now much closer to the national average (see figure 21). In

97. Lester Thurow, *Building Wealth: The New Rules for Individuals, Companies and Nations in a Knowledge-Based Economy* (New York: HarperBusiness, 1999), 144.

98. Statistics Canada and HRDC, *A Report on Adult Education and Training in Canada: Learning a Living* (Ottawa: Statistics Canada and HRDC, 2001).

99. It should be emphasized, however, that although the participation rate is low in the Atlantic provinces, the training intensity (average study duration) can sometimes be high. For example, in Newfoundland, where the participation rate is the lowest in the country, the average number of hours spent training is particularly high, i.e., 307 hours per participant, the national average being 209 hours. Such a difference can be explained by "the fact that a substantial number of participants enrolled in labour market training programs that in comparison to most courses are of longer duration." See *ibid.*, 16.

**Figure 21**  
**Provincial Disparities in Participation Rates for Adult Education and Training Programs Relative to the National Average, 1991, 1993, and 1997**



Source: Statistics Canada, *Adult Education and Training Surveys, 1992, 1994, and 1997*

Nova Scotia and New Brunswick in particular, the disparity has been constantly decreasing. In Nova Scotia it dropped from -5.9 percent in 1991 to -2.7 percent in 1993, and then exceeded the national average by 1.1 percent in 1997. In New Brunswick the disparity dropped from -9.3 percent in 1991 to -4.4 in 1997. Unfortunately, the same did not happen in the other two provinces. After reaching new peaks in 1993, Newfoundland's and Prince Edward Island's participation rates began dropping and continued their decline through to 1997, eventually falling to levels well below the national average. In 1997 the disparity in the participation rate relative to the national average was -9.1 percent in Newfoundland and -5.6 percent in Prince Edward Island.

This raises the question, why do such disparities persist between the Atlantic region and Canada? To answer it, we must take a closer look at the determining factors that affect the supply and demand of adult training and education programs. First, let us examine the characteristics common among adults participating in training activities, that is, those features related to training demand.

The initial education level, for example, plays a decisive role in the willingness of adults to pursue learning activities. Typically, it is people with a higher initial education level (e.g., a university degree) who are more likely to participate in further training programs. In fact, it is observed that in the Atlantic provinces, over 53 percent of participants in such programs already have a university degree, which after British Columbia is the highest participation rate among university graduates in Canada.<sup>100</sup>

On the other hand, what is even more striking, and especially troubling, is the difference between the participation rate of university graduates and that of less-educated workers in the Atlantic provinces. In 1997 the participation rate among people with an education level below secondary school was 8.4 percent. Thus, university graduates are six times more likely to participate in further training programs than people who have not completed high school. This is the highest disparity in the country with respect to participation.

Given such a low participation rate in a group of people representing almost 30 percent of Atlantic Canada's population between ages twenty-five and fifty-four (see table 16), it is not surprising that the overall participation rate in the region is not higher. The provinces of Newfoundland (34.4 percent), Prince Edward Island (30.8 percent),

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100. *Ibid.*, 98.



and New Brunswick (28.8 percent) have the largest relative proportion of people between ages twenty-five and fifty-four with an education level lower than secondary school. They also have the lowest proportion of university graduates in the country.

**Table 16**  
**Distribution of the Population between 25 and 54 Years of Age**  
**According to the Highest Education Level Reached,**  
**Canada and the Provinces, 1996**

	Less Than Secondary School (%)	Secondary School (%)	Nonuniversity Post- secondary (%)	University Post- secondary (%)
<b>Atlantic Canada</b>	<b>29.5</b>	<b>20.7</b>	<b>33.5</b>	<b>16.3</b>
Newfoundland	34.4	16.7	35.6	13.2
Prince Edward Island	30.8	20.1	32.9	16.1
Nova Scotia	26.8	19.3	35.0	18.9
New Brunswick	28.8	25.4	30.3	15.5
Quebec	24.5	27.2	28.1	20.3
Ontario	20.8	26.1	30.7	22.4
Manitoba	28.3	23.7	29.2	18.7
Saskatchewan	28.2	23.1	30.8	17.8
Alberta	21.9	24.5	33.9	19.8
British Columbia	19.8	26.2	33.0	21.0
<b>Canada</b>	<b>22.9</b>	<b>25.6</b>	<b>30.8</b>	<b>20.7</b>

Source: Statistics Canada, 1996 census; compiled by the authors.

It is therefore clear, as Betcherman et al. noted in their study on training in Canada, that adult training for the less-educated is a vicious circle.<sup>101</sup> In a more regional context, however, it is also clear that the limited access to training programs and the risks of marginalizing the less-educated workers result in a more acute polarization of the labour market in Atlantic Canada. We will come back to this phenomenon when reviewing some of the strategic actions and policies that could help decrease the disparities that exist between the higher-educated and the less-educated, thereby making the regional labour force as a whole more productive.

101. Betcherman, McMullen, and Davidman, *Training for the New Economy*, 36.

Among other characteristics of adult participation in training and education programs, age is also an important factor in deciding whether or not to get involved in such activities. In general, younger cohorts tend to participate more frequently than older ones. If this applies to the regional demographic structure, which, as was seen in chapter 3, is characterized by a more pronounced aging of the population than elsewhere in the country, it could explain in part the lower participation rate in Atlantic Canada.

On the other hand, certain sectors of the economy are more inclined to support training programs for their employees. For example, public service, public administration, and financial sector employers support worker training more than employers in the primary, manufacturing, and construction sectors.<sup>102</sup> Thus, the lower participation rate in the Atlantic provinces undoubtedly reflects the fact that their economic structure is based more on the primary and secondary sectors than is the case elsewhere in the country.

The size of firms is another factor which can influence the participation rate in adult training programs. In other words, it can be more profitable to work for medium- to large-sized firms, where training is likely to be organized along formal lines. In the case of small firms, the high fixed costs of formal training may be a significant deterrent to investing in it. But such reasoning does not explain why the participation rate is lower in Atlantic Canada than elsewhere in the country. In fact, it appears to contradict the empirical evidence collected in the region. Contrary to conventional wisdom, a review of labour force distribution according to firm size in Atlantic Canada reveals that almost 62 percent of jobs in 1995 were in medium- to large-sized firms, compared with only 59 percent in Canada.<sup>103</sup> One can only wonder, therefore, if medium- to large-sized firms in the Atlantic region are contributing less to the financing of training programs for their employees than their counterparts in the rest of the country.

That being said, a look at the factors affecting the supply of training programs indicates that financial support plays a determining role in the level of enrolment and participation in adult training activities. And in Atlantic Canada, as in most other regions of the country (except Quebec), employers are the main source of financing for adult

102. Statistics Canada and HRDC, *A Report on Adult Education*, 22.

103. Atlantic Canada Opportunities Agency (ACOA), *The State of Small Business and Entrepreneurship in Atlantic Canada* (Moncton: ACOA, 1998), 24–25.

education: in each of the Atlantic provinces in 1995, close to 60 per cent of the financial support came from employers. Self-financing (by the participant or his family) accounted for about 35 per cent of the financial support; the rest came from other sources such as government and labour organizations.

The AETS also identified numerous barriers to participating in training activities. Among others is the fact that training costs are often too high or that the ordinary demands of everyday life leave little time for learning. But “the largest factor seems to be a lack of demand by many Canadians who do not see the benefits of participating in structured learning activities.”<sup>104</sup> Given the Atlantic provinces’ lower participation rate, this is rather disturbing. In light of this, serious attention must be paid to the attitudes of the region’s workers to continual learning and to the importance they attach to it. Unfortunately, the AETS does not address this issue directly, but we suspect that it is a real problem in the region.

Apart from these determining factors and barriers to training and to participation in education programs, the Atlantic region is also faced with another equally important challenge: the migration of the more qualified workers.

### ■ The Brain Drain: A Continuing Problem

It was seen at the beginning of chapter 3 that the Atlantic region has been losing out in interprovincial migration for a long time. This is due to several factors. For example, we know that interprovincial mobility is positively related to the (provincial) unemployment rate, that the collection of employment insurance benefits has a positive effect on out-migration, and that generally speaking migration is positively related to the absence of employment income.<sup>105</sup> Age is another determining factor for migration flows and for the most part is negatively related to mobility. In other words, young people are more likely to migrate than older people.

What is particularly disturbing in the Atlantic provinces is that interprovincial migrants tend to be better-educated than the general population.<sup>106</sup> To shed some light on this issue, in 1999 Statistics

104. Statistics Canada and HRDC, *A Report on Adult Education*, 32.

105. Ross Finnie, *Who Moves? A Panel Logit Model Analysis of Inter-Provincial Migration in Canada* (Ottawa: Statistics Canada, Business and Labour Market Analytical Division, 2000), v.

106. Royal Bank, “Interprovincial Mobility of Highly Skilled Workers” (October 1999); current analytical paper.

Canada surveyed about 43,000 graduates from the class of 1995 (from a total of 300,000 graduates) to gather information on their labour market experiences since graduating (a first survey had been done in 1998 using the 1986 graduates).<sup>107</sup>

Throughout the 1990s, the brain drain to the United States raised a lot of concern in Canada. The economic boom and strong industrial growth south of the border increased the demand for specialized and skilled workers, that is, the highly educated. In Atlantic Canada, however, the problem retaining new graduates is not just the lure of the United States. It must also compete with other Canadian regions where the demand for skilled labour has significantly increased: the various information and communication technology clusters in Ontario, the biotechnology clusters in Quebec and western Canada, and the National Capital Region benefiting from the renewal of the federal public service are but a few examples of the regions where the demand for knowledge workers has grown and where the economy has prospered.

As table 17 shows, this is not a recent phenomenon. From among the class of 1986, Atlantic Canada suffered significant net losses owing to students and graduates leaving the region. And apart from the graduates of trade-vocational programs in Prince Edward Island, these losses occurred at all education levels. Out-migration of college and university graduates has been especially high. For example, the overall migration rate in Atlantic Canada was -12.5 percent for university graduates in 1986 and -10.5 percent for college graduates.

In 1995 the Atlantic provinces were still experiencing overall losses as a result of the out-migration of students and graduates. New Brunswick and Newfoundland in particular lost a lot of new graduates at all education levels. While Prince Edward Island had net gains in vocational and college students, it suffered heavy losses from among its university graduates, registering an overall migration rate in 1995 of -35.2 percent. The only province that had a net gain in university graduates was Nova Scotia, with an overall migration rate of 4.3 percent. This, however, was not sufficient to offset the losses incurred by the other provinces. In Atlantic Canada as a whole, the overall migration rate for university graduates remained high at -7.8 percent.

107. HRDC in cooperation with Statistics Canada, *South of the Border: Graduates from the Class of '95 Who Moved to the United States* (Ottawa: Public Works and Government Services Canada, 1999).

**Table 17**  
**Migratory Characteristics of 1986 and 1995 Graduates in Atlantic Canada during the Pre-Enrolment Period and Two Years After Graduating, by Education Level and Province**

Education Level — Province and Territory	Number of Graduates						Overall Migration Rate (%) <sup>a</sup>	
	Place of Residence One Year before Enrolment		Place of Residence on Graduating		Place of Residence Two Years after Graduating		1986	1995
	1986	1995	1986	1995	1986	1995		
<b>Trade-vocational training<sup>b</sup></b>								
<b>Atlantic Canada</b>	<b>7,656</b>	<b>7,328</b>	<b>7,736</b>	<b>7,572</b>	<b>7,103</b>	<b>6,915</b>	<b>-7.2</b>	<b>-5.6</b>
Newfoundland	2,517	2,233	2,542	2,268	2,273	1,953	-9.7	-12.5
Nova Scotia	3,093	2,964	3,092	2,940	2,858	2,873	-7.6	-3.1
New Brunswick	1,846	1,716	1,867	1,867	1,758	1,645	-4.8	-4.1
Prince Edward Island	200	415	235	497	214	444	7.0	-7.0
<b>College</b>								
<b>Atlantic Canada</b>	<b>3,063</b>	<b>4,426</b>	<b>2,976</b>	<b>4,066</b>	<b>2,742</b>	<b>3,957</b>	<b>-10.5</b>	<b>-10.6</b>
Newfoundland	792	832	737	720	669	634	-15.5	-23.8
Nova Scotia	971	1,799	882	1,617	895	1,652	-7.8	-8.2
New Brunswick	1,010	1,446	922	1,289	910	1,252	-9.9	-13.4
Prince Edward Island	290	349	435	440	268	419	-7.6	20.1
<b>University</b>								
<b>Atlantic Canada</b>	<b>9,934</b>	<b>12,919</b>	<b>10,027</b>	<b>13,036</b>	<b>8,692</b>	<b>11,915</b>	<b>-12.5</b>	<b>-7.8</b>
Newfoundland	2,097	2,784	1,915	2,274	1,999	2,274	-4.7	-18.3
Nova Scotia	4,385	5,377	5,108	6,496	3,961	5,609	-9.7	4.3
New Brunswick	2,942	3,959	2,686	3,752	2,261	3,514	-23.1	-11.2
Prince Edward Island	510	799	318	514	471	518	-7.6	-35.2

Source: Statistics Canada, *National Graduate Surveys*, 1988 and 1997.

<sup>a</sup> The overall migration rate is defined as the difference between the number of graduates residing in the province two years after graduating and the number of graduates residing in the province before their enrolment, as a percentage of graduates residing in the province before their enrolment.

<sup>b</sup> Graduates from trade-vocational programs do not include those from apprenticeship programs.

A variety of factors have been suggested to explain the out-migration of young graduates from the Atlantic region. Among the most important are better work or career opportunities elsewhere in the country (especially in Ontario and western Canada) or outside the national borders. Indeed internationally, adjustments resulting from the greater liberalization of markets and exchanges (e.g., the North American Free Trade Agreement) have led to an increase in worker mobility.

There is no doubt that the departure of young graduates is still having negative repercussions on the pool of skilled workers available in Atlantic Canada. The importance of human capital in a knowledge economy cannot be minimized. A recent report on the state of education in Canada states: "With the shift to a knowledge-based economy, the human capital invested in populations has become an increasingly valuable resource. In this environment, the mobility of highly educated segments of the population — recent postsecondary graduates in particular — has become increasingly important. A well-educated and highly skilled work force has become crucial to competitiveness in this new environment."<sup>108</sup> We will see in the General Conclusion what the Atlantic region can do to try and reduce the out-migration of new graduates and so increase its pool of skilled workers.

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108. Canadian Education Statistics Council, *Education Indicators in Canada: Report of the Pan-Canadian Education Indicators Program, 1999* (Ottawa: Statistics Canada, 2000), 126.