

Permanent jobs: proportion of graduates with permanent jobs in relation to the total number of graduates who hold jobs.

Jobs related to field of study: proportion of graduates with jobs related to their respective fields of study in relation to the total number of graduates with jobs.

Full-time, permanent jobs, related to field of study: proportion of graduates with full-time, permanent jobs that are related to their fields of study, in relation to the total number of those holding jobs.

The Effect of Economic Cycles on Unemployment Rates

Trends in professional integration for holders of bachelor's or master's degrees over the past two decades have been marked by various economic cycles. Thus, if we take the unemployment rate as the indicator of professional integration, we can clearly discern two successive cycles of recession and recovery. The first cycle took place early in the 1980s: at the beginning of the cycle, the unemployment rate among holders of bachelor's degrees reached close to 12%, and by the end, in 1989, it fell back to 8%. A second cycle occurred during the 1990s: in 1994, the unemployment rate rose to 11.4% before falling as low as 6.4% in 1999. In fact, this was the lowest unemployment figure in the two last decades, and the most recent analogous situation dates from 25 years ago.

During the first economic cycle, in the 1980s, trends in unemployment among holders of master's degrees were identical to those among holders of bachelor's degrees. Thus, the rate of unemployment in both groups was at its highest point at the beginning and towards the middle of the decade: at 6.8% in 1982 and 6.3% in 1984, it then fell to 4.8% at the end of the decade, in 1989. However, the evolution of the unemployment rate over the following decade shows that holders of master's degrees were more affected by the economic slowdown than holders of bachelor's degrees: their unemployment rate registered the impact of the economic slowdown a little earlier and their unemployment rate reached its high point of the two decades in 1997, at slightly over 8%. At 7.4%, their unemployment rate in 1999 was not as low as their lowest rate in the previous decade, which was 4.8% in 1989. Moreover, 1999 marked the first time that the unemployment rate of holders of master's degrees was higher than that of holders of bachelor's degrees; in the past it had usually been at least 3 percentage points lower.

However, if we take into account the supply of people with bachelor's degrees (which grew from a little over 20 000 at the beginning of the '80s to close to 30 000 at the end of the '90s), their 6.4% unemployment rate in 1999 is indicative of the performance of North American economies in relation to other economies with regard to job creation. With respect to the greater difficulty the economy apparently had in absorbing holders of master's degrees, it should be stressed that the growth in the supply of master's-level job candidates was even higher than that of bachelor's-level candidates and that the number of new holders of master's degrees rose from 3,000 per year at the beginning of the 1980s to approximately 6,500 per year at the end of the 1990s.

Table 2
Unemployment rate of holders of bachelor's degrees by age category (%)

1982		1984		1987		1989	
20-24	25 and over	20-24	25 and over	20-24	25 and over	20-24	25 and over
12.6	11.7	10.7	12.1	8.0	8.4	7.9	8.1
1992		1994		1997		1999	
20-24	25 and over	20-24	25 and over	20-24	25 and over	20-24	25 and over
8.1	9.4	10.4	12	8.3	9.5	5.1	7.2

The gap in unemployment rates between bachelor's degree holders aged 20-24 and those aged 25 and over has changed during the past two decades. Whereas in 1982, the rate was 0.9 percentage points higher among younger graduates, by 1999, it was 2.1 percentage points higher among older graduates. The situation began to favour those under age 25 at the time of the recession in the 1980s, but rates were once again almost equal at the time of the economic recovery that followed. The gap in favour of the younger group reappeared during the recession of the '90s and tended to widen towards the end of the decade. In sum, the evolution of unemployment rates over the past two decades reflects changes in the nature of employment over the same period, which have seen an increase in the number of part-time and short-term jobs, the sort that young people are more likely to take.

Changes in Professional Integration Models

Although the pressure created by the growth in the number of holders of bachelor's or master's degrees was partly absorbed by the performance of the economy, it led recent graduates to adopt new professional integration strategies that modified existing models. Thus, the participation of holders of bachelor's degrees in the labour market dropped after they obtained their degrees, as more of them opted to continue their studies in order to increase their chances of getting jobs. Whereas 10% of people with bachelor's degrees pursued their studies beyond their undergraduate degree early in the 1980s, this proportion rose above 13% by the middle of the decade, reaching close to 17% at the beginning of the 1990s, before falling to a little over 16% in 1999. The proportion of holders of master's degrees who continued their studies after earning their degree, which was under 9% at the beginning of the 1980s, increased to approximately 15% by the middle of the following decade, and subsequently decreased to 12% in 1999. Holders of master's and bachelor's degrees alike apparently delayed their professional integration and continued their education in order to improve their chances of success.

Whereas some holders of bachelor's degrees continued their education in order to increase their chances of getting jobs, others decided to continue their schooling while working. Indeed, the proportion of holders of bachelor's degrees who combined integration into the labour market with further schooling was at least 20% throughout the period from 1980 to 2000. Early in the 1980s, it was approximately 23%, and it reached nearly 25% at the beginning of the next decade, before falling to a little over 20% at the end of the 1990s. The proportion of holders of master's degrees pursuing their studies while holding a job reached a maximum of 22% at the beginning of the 1980s. It subsequently fell to approximately 13% at the end of the decade, rising to close to 17% at the beginning of the 1990s and finally falling to close to 10% in 1999. Both this professional integration strategy, which consists in entering the labour market immediately, while pursuing one's schooling, and the other strategy, which gives priority to pursuing further studies, and defers integration into the labour market, may also be seen as a means of attenuating the negative effects on employment of the recessions and the greater proportion of job seekers holding bachelor's or master's degrees during this period. It is the influence of these factors on professional integration that leads us to speak of a transformation of professional integration models over the past few years, from integration immediately after the awarding of a degree to integration by progressive stages.

Changes in the Labour market

The influx of job seekers, combined with the recessions that took place in the 1980s and 1990s, provoked relatively major changes in the labour market among university graduates with bachelor's and master's degrees. The proportion of bachelor's degree holders who were working full time fell from 96.7% in 1982 to only 80% in 1997, although it increased to 85.4% in 1999, under the impetus of the economic recovery. The pace of the general decline varied with the economic cycles; the proportion working full time fell during recessions and grew in times of economic recovery, without, however, returning to the levels that prevailed before the decline began. A comparable decline of about 10 percentage points occurred among the holders of master's degrees, with the proportion of full-time workers falling from 97.3% in 1982 to 87.8% in 1999, reaching a minimum of 85.2% in 1997. Another consequence of the transformation of the labour market that was attributable to the influx of graduates and the effects on jobs of the two recessions was a substantial decrease in long-term employment, or, in other words, permanent jobs. The proportion of holders of bachelor's degrees with permanent jobs fell from 85.5% in 1982 to only 63.5% in 1999, despite an increase of one percentage point in 1999 (the larger of two increases in the past two decades; the other, between 1987 and 1989, was by only 0.6%). There

was a similar decrease in the proportion of holders of master's degrees with permanent jobs, which fell from 86.6% in 1982 to 66.5% in 1999, after a slight increase of 0.4% from 1997 to 1999 (which was identical to the increase between 1987 and 1989).

However, these changes hardly altered the relationship between jobs and graduates' fields of study, which remained relatively close throughout the two decades from 1980 to 2000. For example, the proportion of holders of bachelor's degrees who thought that their job was very closely or quite closely related to their field of study ranged from 75.5% to 81.0% during this period. Among the holders of master's degrees, this proportion ranged from 83.4% to 87.9%.

Lastly, three employment criteria (full-time, permanent, and related to fields of study) enable us to measure the extent of graduates' professional integration. It is logical to view professional integration as a progressive process and to consider it a success when all three conditions are met. For longer-term observation, it would doubtless be less appropriate to take into account the relationship between fields of study and jobs, but in the shorter term, it is reasonable to believe that people seek jobs for which their studies prepare them. Keeping these three criteria in mind, we may therefore conclude that the professional integration process among holders of bachelor's and master's degrees has changed greatly in the past two decades and that it required more time at the end of the period. For example, despite a notable increase of 5.5 percentage points in 1999, only 46.8% of holders of bachelor's degrees had jobs that were full-time, permanent and related to their field of study, compared with 66.6% in 1982. The proportion of holders of master's degrees whose jobs met these criteria fell from 75.7% in 1982 to 53.3% in 1999, despite a slight increase of 1.1% in 1999, approximately the same increase as in 1987-1989.

In addition to taking longer to integrate into the labour market, graduates did not necessarily integrate into the same sectors in 1999 as in 1982. The most obvious change in this regard took place in education and related fields. Whereas at the beginning of the 1980s this sector represented close to 30% of all jobs for holders of bachelor's degrees, it accounted for only about 15% at the end of the decade, although the proportion rose gradually to approximately 20% over the following decade. Among holders of master's degrees the change was even more substantial; teaching and other education-related activities fell from approximately 40% of their employment at the beginning of the 1980s to nearly 20% at the end of the 1990s.

Similarly, the proportion of private-sector jobs to jobs overall has changed over the past two decades. The proportion of private-sector jobs among holders of bachelor's degrees, which was a little more than 48% at the beginning of the 1980s, grew to slightly over 61% in 1997 before falling to nearly 56% in 1999. The proportion of private-sector jobs among holders of master's degrees increased even more substantially, growing from 36.5% in 1982 to 51% in 1999.

Table 3
Labour market sector
of bachelor's or
master's degree holders
approximately two years
after obtaining
their degrees (%)

	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Management and business administration	19.6	26.2	18.2	24.4	22.3	27.3	23.5	27.7
Science and engineering	15.2	17.1	12.9	14.6	18.2	17.7	18.6	17.6
Humanities and social sciences	11.7	14.6	9.4	16.3	10.7	20.7	11.2	19.4
Teaching	27.4	34.3	24.1	29.6	15.5	20.0	14.0	18.2
Health sciences	9.9	1.9	12.0	4.7	9.9	4.0	11.0	5.3
Arts and literature	2.9	2.8	3.3	2.9	4.3	3.0	3.9	3.8
Administrative and office work	5.4	0.7	8.2	1.8	4.2	0.7	4.8	0.6
Sales and representation	5.1	1.3	7.6	4.2	6.0	1.3	5.1	1.2
Other	2.8	1.1	4.3	1.5	8.9	5.3	7.9	6.2
Total	100	100	100	100	100	100	100	100

(Cont.)

Table 3 (Cont.)
Labour market sector
of bachelor's or
master's degree holders
approximately two years
after obtaining
their degrees (%)

	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Management and business administration	18.5	23.9	15.9	20.3	15.6	21.6	16.5	22.7
Science and engineering	17.7	20.0	14.4	21.2	16.1	22.4	16.8	21.9
Humanities and social sciences	10.9	20.4	10.7	22.0	9.0	18.5	9.8	20.9
Teaching	17.9	17.7	19.7	18.3	19.0	15.1	19.9	13.6
Health sciences	11.8	6.2	11.7	6.2	11.4	8.7	12.3	5.9
Arts and literature	3.1	3.7	3.2	3.2	3.1	3.2	3.8	4.2
Administrative and office work	6.3	1.2	8.9	1.3	8.0	1.7	6.1	1.8
Sales and representation	5.5	1.9	6.4	2.2	5.4	1.8	4.8	1.9
Other	8.3	5.0	9.1	5.3	12.4	7.0	10.0	7.1
Total	100	100	100	100	100	100	100	100

It is also possible to observe the effects of economic cycles on jobs held by graduates. Thus, the proportion of jobs in the field of management and business administration, public and private sectors combined, was greater at the high points of the recovery cycles. For example, among the holders of bachelor's degrees, jobs associated with these sectors fell from a peak of 23.5% in 1989 to a low of 15.6% in 1997, after which they rose to 16.5% in 1999. However, the recovery during the '90s was slower than that of the '80s, since it only began in 1997, and the peak it reached in 1999 was 7 percentage points lower than that reached in 1989, which indicates that there were fewer jobs in this sector than during the preceding cycle. The same pattern may be seen in professions in the humanities and social sciences, where the relative proportion of jobs reached a peak of 11.2% in 1989 and lows of 9.4% in 1984 and 9% in 1997; the peak reached in 1999 was 1.9 percentage points lower than that of 1982 and 1.4 percentage points lower than the peak in 1989. Similarly, employment in the sciences and engineering reached a peak of 18.6% in 1989 as well as lows of 12.9% in 1984 and 14.4% in 1994, and the peak reached in 1999 was still 1.8 percentage points lower than the peak in the previous decade. However, in the case of science and engineering, the recovery was evident by 1994 rather than in 1997, as was the case for the preceding sectors.

Employment cycles in the teaching profession ran counter to those observed in management and business administration, science and engineering or humanities and social sciences. In this field, the relative proportion of overall employment reached a low point of 14% in 1989, when the proportion in other professions was at its maximum. However, as with these other professions, the maximum level reached in teaching jobs in 1999 was still lower than that of the previous decade, which was 27.4% in 1982. Also contrary to the trend that prevailed in other fields, the relative proportion of jobs in sales and representation and in administrative and office jobs increased during periods of recession. Professions in the health sector escaped cyclical trends, and their relative proportion of overall employment ranged between approximately 10% and 12%. Lastly, we observe that the proportion of "other" occupations, namely professions in personal services and manual labour has shown an upward trend throughout the past two decades, growing from 2.8% in 1982 to 12.4% in 1997 before falling to 10% in 1999. The growth trends in these jobs may be symptomatic of growing difficulties in professional integration over the two past decades, difficulties that force graduates to seek other or further training and to hold on to these kinds of jobs until they can move on to better things.

While it is also possible to discern the effects of the recessions on the distribution of jobs among the holders of master's degrees, two other shifts partially obscure their impact on this group. Thus, although some decline is observable in management and business administration, as in engineering, in 1984, there was none in 1994 and 1997. This change was undoubtedly related to the fact that the people displaced by the strong decline in teaching jobs (from 34.3% in 1982 to only 13.6% in 1999) were obliged to take jobs in other sectors, which meant that holders of master's degrees competed with holders of bachelor's degrees, who were sometimes forced to give up their positions. Nevertheless, the decline in employment in teaching has driven unemployment up among holders of master's degrees; the unemployment figure for this group

is now higher than that for holders of bachelor's degrees. Lastly, there was an increase in "other" jobs (jobs that allow people to continue their studies until they can move on to better things) from 1.1% in 1982 to 7.1% in 1999.

To understand the transformations taking place in professional integration models, we analyzed patterns in the labour market experience of holders of bachelor's or master's degrees both before they enrolled in their programs of study and during their studies. This analysis enabled us to identify the main strategies used by this group to integrate into the labour market. The first strategy was to attend school full-time without working at the same time; the second was to integrate progressively into the labour market by taking jobs that had no connection with the degree earned while continuing their university education, and the third strategy was to integrate immediately into the labour market without continuing their education. The first of these strategies underlies the rise in the proportion of those pursuing their education and the concomitant decline in their labour force participation rates in the past two decades, while the second strategy explains the increasing proportion of graduates who are continuing their schooling.

Table 4
Situation in 1999 of holders of bachelor's or master's degrees two years after earning their degrees, according to their labour market experience before and during their studies^a

	Have a full-time job		Have a part-time job		Are seeking employment		Are in school		Not in labour market	
	B.	M.	B.	M.	B.	M.	B.	M.	B.	M.
1. Had a job that was both full-time and related to their field of study before enrolling in their program and a job that was full-time or related to their program or both, during their schooling.	85.5	83.8	8.2	7.2	2.2	3.1	1.2	4.4	2.9	1.4
2. Had a job that was both full-time and related to their field of study before enrolling in their program and a part-time job not related to their program or did not work during their schooling.	72.3	73.1	8.9	6.1	11.5	8.2	5.1	10.7	2.2	1.8
3. Had a full-time job not related to their program before enrolling in their program and a full-time job not related to their field of study during their schooling.	77.1	85.0	9.9	6.0	3.7	3.8	5.7	3.9	3.6	1.3
4. Had a full-time job not related to their field of study before enrolling in their program and a part-time job not related to their field of study or did not work during their schooling.	59.0	54.0	12.7	12.4	8.9	17.7	14.8	12.6	4.6	3.2
5. Had a full-time job not related to their field of study before enrolling in their program and a job (full-time or not) related to their field of study during their schooling.	73.2	78.1	12.2	11.2	2.6	4.2	9.9	6.1	2.1	0.4
6. Did not have a full-time job before enrolling in their program but had a part-time job related to their field of study during their schooling.	65.8	59.3	14.9	12.8	2.6	5.2	14.7	19.9	2.0	2.7
7. Did not have a full-time job before enrolling in their program but had a full-time job not related to their field of study during their schooling.	79.2	87.9	6.0	6.1	5.7	1.3	7.9	3.5	1.2	1.1
8. Did not have a full-time job before enrolling in their program or a job during their schooling.	59.1	60.5	8.8	8.5	6.6	9.3	21.9	18.6	3.5	3.1
9. Did not have a full-time job before enrolling in their program, but had a part-time job not related to their program during their schooling.	61.6	55.8	12.7	18.1	4.4	6.5	19.7	17.1	1.6	2.5

a. A full-time job held before enrolling in a university program is a job that lasted 6 months or more.

The table above, describing professional integration strategies among holders of bachelor's or master's degrees based on their labour market experiences, provides a clear illustration of the three main professional integration strategies mentioned in the previous paragraph. Thus, labour market experience models 1, 2 and 3 may be associated with a strategy of labour market integration immediately after earning the bachelor's degree. These models correspond to people who had already begun a career in their chosen profession before undertaking their schooling and who often maintained ties with the labour market during their studies, ties that were sometimes directly connected to their field of study (model 1). Two years after receiving their degrees, participation rates among these graduates were 90% and fewer than 6% went on to further schooling. Models 5 and 7 may be associated with the same professional integration strategy, since two years after earning a degree, these graduates had participation rates of at least 88% and no more than 10% of them went on to further schooling. Together, the 5 models we have discussed apply to approximately 19% of all holders of bachelor's degrees.

The professional integration strategy of holders of bachelor's degrees in labour market experience models 8 or 9 appears to focus more on the continuation of schooling. Approximately two years after receiving their degree, only 75% to 78% were still active in the labour market. These two models included a little over 62% of the holders of bachelor's degrees. Holders of bachelor's degrees who fit models 4 or 6—approximately 19% of holders of undergraduate degrees overall—were in an intermediate situation in relation to the two preceding groups with regard to their participation rates and may be associated with a professional integration strategy that involves going to school and holding a job at the same time. Thus, two years after receiving their degree, the participation rate in these categories ranged between slightly more than 80% and slightly more than 83%.

The same models apply with regard to the professional integration strategies of holders of master's degrees, with the exception of those corresponding to model 6, who were more inclined to continue their schooling than to hold a job while attending school. If we add those who fit this model to those who fit models 8 or 9, the proportion of master's degree holders who focused on continuing their schooling reaches almost 45%. Slightly over 48% of the holders of master's degrees had a professional integration strategy involving immediate integration into the labour market whereas just over 7% opted for a strategy that combined schooling with employment. Thus, the holders of master's degrees generally chose to join the labour market immediately or to continue their schooling, probably to earn a doctorate.

If we compare the data from 1999 with those from 1997, we see that economic recovery and job creation were conducive to the professional integration of holders of bachelor's degrees who opted to integrate immediately into the labour market (professional integration models 1, 2, 3, 5 and 7). Indeed, there were more active participants in the labour market in 1999 than in 1997, generally because a larger proportion of them worked full-time and fewer continued their schooling than in 1997. The same proportion of graduates combined schooling with jobs (professional integration models 4 and 6) in 1999 as in 1997. However, these persons held more full-time jobs, worked less in part-time jobs and were unemployed less often than in 1997. The same applied for holders of bachelor's degrees who focused on continuing their schooling. In 1999, the proportion that pursued their education was very close to that in 1997, and they could also count on more full-time work and more opportunities to find jobs.

Observations concerning the proportion of full-time jobs and unemployment rates among holders of master's degrees and bachelor's degrees also apply to holders of master's degrees, with some subtle but noteworthy differences. On the whole, growth in the number of full-time jobs was not quite as strong among holders of master's degrees, while decreases in part-time employment and, especially, in unemployment, were less pronounced among this group than among holders of bachelor's degrees. Contrary to expectations, there was a deterioration of hiring conditions for holders of master's degrees who cut off ties to the labour market to continue their schooling (professional integration model 4). The members of this group found fewer full-time jobs and their unemployment rate was higher in 1999.

Table 5 Labour market participation rate ^a by family of disciplines (%)	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	90.7	**	88.0	**	89.7	**	91.3	86.2
Mathematics, statistics and actuarial science	80.5	**	78.8	**	84.7	56.9*	87.2	**
Biology, microbiology and biochemistry	53.2	73.3	41.9	60.9	50.1	75.6	49.0	58.8
Physical sciences	62.8	78.7	50.7	57.2	58.1	58.1	58.0	60.6
Agriculture and forestry	83.6	**	78.3	**	77.1	68.9*	84.2	80.5*
Architecture, urban planning and design	89.5	**	87.3	84.2	88.6	91.9	91.3	89.7
Engineering	91.5	85.9	86.8	84.6	89.5	82.1	90.4	83.4
Computer science	97.2	91.2*	94.9	80.4*	95.5	85.3	95.6	72.4*
Humanities and social sciences	76.2	86.1	72.5	75.4	73.0	83.1	77.3	84.5
Law	92.4	**	88.3	**	91.4	**	93.4	89.1*
Education	94.4	93.4	91.3	88.8	91.2	91.6	92.3	94.2
Business administration	92.6	95.2	91.3	96.3	92.7	95.4	94.4	96.8
Fine and applied arts	77.5	76.4	75.6	78.5	78.5	90.8*	79.3	78.9
Literature and languages	79.6	88.4	76.0	76.7	75.7	73.2	75.1	75.5
	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	89.1	83.0	90.6	86.9	87.7	77.7	85.1	77.3
Mathematics, statistics and actuarial science	79.1	40.8*	77.0	64.0*	79.1	69.5*	73.7	66.8*
Biology, microbiology and biochemistry	44.3	60.7	46.2	65.9	43.1	71.0	47.0	75.6
Physical sciences	54.0	61.5	50.4	59.7	52.3	55.9	50.8	82.8
Agriculture and forestry	76.2	96.2*	77.0	72.5	78.3	80.0	75.9	86.1
Architecture, urban planning and design	76.0	93.3*	78.0	80.9	79.2	80.0	88.2	91.0*
Engineering	87.7	79.2	80.7	76.5	86.6	83.5	88.9	82.7
Computer science	94.5	75.2*	94.0	93.8*	94.5	91.7*	93.9	87.1*
Humanities and social sciences	67.9	83.4	67.3	81.6	69.2	81.9	66.8	84.0
Law	85.3	78.5*	84.5	71.9*	79.8	88.8	77.2	90.9
Education	89.3	92.3	91.7	88.6	93.6	92.4	95.6	89.1
Business administration	91.8	97.7	90.7	95.6	91.6	97.5	92.2	97.2
Fine and applied arts	73.6	72.7	74.6	82.9	73.3	79.5	78.0	83.6
Literature and languages	67.8	76.4	70.2	65.5	63.9	74.9	70.6	75.9

a Participation rate: proportion of graduates with full- or part-time jobs or who are looking for work.

** Two asterisks (**) in the table indicate that values were not reliable enough to be included here.

* One asterisk (*) in the table indicates that values must be carefully interpreted.

Holders of bachelor's degrees in seven groups of disciplines had what we would call a "professional" training model in that two years after earning their degree, their labour market participation rate was usually close to 90%, and in some areas exceeded 95%. These groups of disciplines are: health sciences, engineering, computer science, education, business administration, and architecture, urban planning and design, except during recessions. Other families of disciplines, such as biology, microbiology and biochemistry and also the physical sciences, used a training model that was associated with research: holders of bachelor's degrees in this group had participation rates between 40% and 60% two years after receiving their degrees. A third group was in a median situation, with participation rates of between 70% and 80%. This group included the following families of disciplines: mathematics, statistics and

actuarial science; agriculture and forestry; humanities and social sciences; fine and applied arts; and literature and languages.

If we examine labour market participation rates two years after a degree is awarded, we note that the models applicable to graduates in some families of disciplines have changed over the past two decades. The participation rate of holders of bachelor's degrees in law has followed a downward trend since 1989 and by 1999 it was closer to that in disciplines with models straddling professional and research training. Such is also the case for holders of bachelor's degrees in agriculture and forestry, whose participation rates have declined since 1989. Professional integration has also been more difficult since this time for graduates in this discipline and the two phenomena – lower participation rates and greater difficulties in labour market integration – were undoubtedly linked.

Participation rates among holders of bachelor's degrees in mathematics, statistics and actuarial science have also fallen since 1989, when these disciplines corresponded to the professional training model. Although this family of disciplines includes some with training models that are clearly professional, such as actuarial science and others that are much more research-oriented, such as mathematics, it may be that it is now harder to find work in sectors like computer sciences with a bachelor's degree in this family of disciplines, so that graduates tend to continue their schooling or to specialize.

Bachelor's degree holders in architecture, urban planning and design felt the full force of the recession in the early 1990s and their participation rates dropped dramatically at the time, but in 1999 this family of disciplines reached a level of labour market participation that placed it among the professional disciplines. Professional integration difficulties in periods of recession caused its graduates to oscillate between a professional model (graduates integrate into the labour market immediately) and a model mid-way between the professional and the research-oriented types (graduates are obliged to defer their integration into the labour market). The same observations hold true for graduates in engineering, although to a lesser degree than for those in architecture, urban planning and design.

Both the humanities and social sciences and literature and languages occupy an intermediate position between the professional and research models, but holders of bachelor's degrees in humanities and social sciences seemed to be more focused on research, whereas those in literature and languages tended to adopt a professional type of training model.

Among holders of master's degrees, the divisions among families of disciplines were much more fluid than among holders of bachelor's degrees. Indeed, with the exception of business administration graduates, whose training model was strictly professional (which was also the case, to a lesser extent, in education), people with master's degrees adopted professional approaches at some times and research and school-oriented approaches at others, in response to economic trends.

Table 6
Employment rate^a
by family of disciplines
(%)

	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	88.8	**	86.1	**	88.2	**	88.5	82.9
Mathematics, statistics and actuarial science	75.5	**	73.8	**	82.6	56.9*	80.7	**
Biology, microbiology and biochemistry	46.2	65.0	34.0	56.0	43.6	72.1	44.8	56.1
Physical sciences	57.9	74.4	44.7	54.8	49.3	55.6	51.2	54.6
Agriculture and forestry	75.2	**	69.4	**	73.6	64.1	80.1	77.5
Architecture, urban planning and design	75.9	**	74.5	84.2	82.1	79.8*	81.1	81.5
Engineering	85.8	79.3	80.0	81.2	85.4	82.1	87.6	79.4
Computer science	97.2	91.2*	92.6	80.4*	94.1	78.6*	92.7	72.4*
Humanities and social sciences	61.8	77.5	58.8	66.9	65.0	76.2	68.5	79.0
Law	82.1	**	77.8	**	84.0	**	87.6	89.1*
Education	82.9	88.6	79.4	83.3	80.1	90.7	80.4	91.8
Business administration	83.9	91.2	81.9	94.1	86.7	92.9	88.8	94.0
Fine and applied arts	59.9	69.2	62.1	67.3	61.3	74.8	64.7	73.4
Literature and languages	63.8	81.8	61.6	71.2	68.3	67.6	68.8	70.3
	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	87.9	81.5	88.5	83.9	85.3	73.5	84.0	71.0
Mathematics, statistics and actuarial science	76.3	37.4*	72.4	61.3	73.4	65.0*	70.8	60.3*
Biology, microbiology and biochemistry	38.8	54.7	39.4	60.0	32.9	59.9	38.9	63.2
Physical sciences	44.0	58.5	42.9	55.6	45.2	52.8	43.5	76.8
Agriculture and forestry	67.0	90.2*	61.0	68.5	64.2	70.6	69.5	78.8
Architecture, urban planning and design	60.0	83.2*	61.5	58.7	70.1	64.4	80.6	80.0*
Engineering	79.2	74.6	68.3	68.4	81.4	76.8	84.0	78.6
Computer science	92.2	75.2*	89.0	93.8*	92.7	91.7	91.4	87.1*
Humanities and social sciences	59.8	76.1	57.4	76.6	60.5	71.5	60.7	76.4
Law	72.6	72.6*	70.0	64.1*	66.1	84.3	66.3	90.9
Education	84.1	89.1	84.7	83.2	84.8	90.3	93.1	86.4
Business administration	83.5	93.1	80.3	90.7	85.3	93.1	86.8	91.3
Fine and applied arts	63.4	64.7	61.1	75.4	64.8	67.9	67.6	75.4
Literature and languages	59.5	68.5	60.7	60.1	54.1	66.7	62.1	65.2

a. Employment rate: proportion of graduates with full- or part-time work.

** Two asterisks (**) in the table indicate that values were not reliable enough to be included here.

* One asterisk (*) in the table indicates that values must be carefully interpreted.

These employment rates indicate that job losses caused by economic slowdowns resulted in either unemployment or non-participation in the labour market. The table also shows that holders of bachelor's degrees in some families of disciplines suffered more job losses after these economic slowdowns than others. These disciplines were those affected by the slackening of investment in the construction and manufacturing sectors. Thus, between the peak in 1987 and the trough in 1992, employment among holders of bachelor's degrees in the area of architecture, urban planning and design fell by approximately 22 percentage points, while in engineering, as well as agriculture and forestry, it fell by approximately 19 points between 1989 and 1994. Law graduates have seen their employment rates fall by a little over 21 percentage points since 1989, and, contrary to the other three families of disciplines mentioned above, there has been no recovery in their employment situation since that time. Employment loss among holders of bachelor's degrees in mathematics, statistics and actuarial science; biology, microbiology and biochemistry; the physical sciences; humanities and social sciences; and literature and languages ranged from 8 to 14 percentage points between the peaks of 1987 and 1989 and the

trough that followed. No job recovery took place in mathematics, statistics and actuarial science or in the physical sciences during the 1990s.

In sum, only in the health sciences, computer science and, to a lesser extent, business administration have job opportunities for holders of bachelor's degrees remained unaffected by periods of recession. Degree holders in fine and applied arts were also virtually untouched, but their employment rate has always remained much lower than those in the first three fields. Lastly, holders of bachelor's degrees in education have also avoided the cyclical job losses brought about by economic slowdowns and have even benefited from an increase in their employment rate of approximately 13 percentage points during the past decade, mainly between 1997 and 1999. Although data on holders of master's degrees are subject to variations since they often concern much smaller groups of people than data on holders of bachelor's degrees, we observe much larger differences within the same families of disciplines. Differences in employment rates were particularly large in the fields of mathematics, statistics and actuarial science; physical sciences; architecture, urban planning and design and law.

Table 7
Full-time job^a
by family of disciplines
(%)

	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	98.0	100.0	91.2	100.0	91.9	91.1	88.8	87.5
Mathematics, statistics and actuarial science	97.9	100.0	88.9	**	96.8	**	97.9	**
Biology, microbiology and biochemistry	94.9	94.5	87.7	97.7	86.1	86.0	90.8	96.3
Physical sciences	98.1	100.0	90.2	100.0	91.8	96.1	97.9	98.3
Agriculture and forestry	99.0	**	96.3	**	95.4	100.0	95.5	98.4
Architecture, urban planning and design	98.5	**	92.9	100.0	97.9	98.2	95.4	96.0
Engineering	99.7	100.0	99.1	98.9	98.8	97.9	98.8	99.6
Computer science	99.3	**	97.2	**	98.7	100.0	98.5	94.4*
Humanities and social sciences	95.1	96.3	83.4	82.5	86.9	80.8	83.9	84.4
Law	99.5	100.0	95.4	100.0	97.2	96.0	97.0	100.0
Education	95.3	97.0	75.3	88.0	73.4	87.4	77.3	88.5
Business administration	98.9	99.7	96.7	98.4	97.7	99.1	97.8	98.6

	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	88.5	91.1	84.3	88.0	77.7	86.2	83.7	89.7
Mathematics, statistics and actuarial science	89.2	**	89.2	93.8	76.2	97.2*	84.6	100.0
Biology, microbiology and biochemistry	88.4	94.1	78.5	91.2	79.1	88.5	87.8	82.3
Physical sciences	95.7	100.0	85.3	100.0	88.3	85.0*	89.0	97.9
Agriculture and forestry	93.5	100.0	88.7	93.1	97.7	98.6	90.2	93.1
Architecture, urban planning and design	93.6	93.2	87.4	82.9*	80.5	76.2*	90.7	100.0
Engineering	98.3	96.8	95.6	95.9	97.7	96.5	98.8	96.9
Computer science	99.1	96.0*	97.7	92.2*	98.9	95.9*	98.4	100.0
Humanities and social sciences	81.8	81.5	77.5	75.5	75.6	72.3	79.8	80.1
Law	95.7	**	87.0	87.8*	91.6	87.7*	91.6	85.6*
Education	71.8	85.4	62.8	86.0	58.1	82.2	70.6	83.9
Business administration	95.2	98.0	90.9	97.1	94.1	96.6	97.0	97.1
Fine and applied arts	64.2	53.1*	62.7	44.1	63.2	43.3	72.1	57.6
Literature and languages	79.4	74.1	74.8	74.9	73.5	75.1	79.0	67.4

a. Full-time job: proportion of persons who work and have full-time jobs.

** Two asterisks (**) in the table indicate that values were not reliable enough to be included here.

* One asterisk (*) in the table indicates that values must be carefully interpreted.

Economic slowdowns and the new job definitions that followed them reduced the proportion of full-time jobs and consequently increased the proportion of part-time jobs. Since the early 1980s, the decline in full-time employment among holders of bachelor's degrees has been particularly significant in education, reaching a little over 37 percentage points in 1997, the low point of the 1990s, before increasing by a little over 12 percentage points from 1997 to 1999. During the same period, full-time jobs among holders of bachelor's degrees in the fine and applied arts fell by a little over 25 percentage points before once again rising by approximately 10 percentage points around the end of the last decade, mainly between 1997 and 1999. In the health sciences; mathematics, statistics and actuarial science; biology, microbiology and biochemistry; architecture, urban planning and design; humanities and social sciences as well as literature and languages, full-time employment among bachelor's degree holders fell during this period. In the worst phase of the recession, employment rates fell by between just over 16 and about 22 percentage points (depending on the field). However, between 1997 and 1999, full-time employment rose by 4 to 10 percent, depending on the field, which exceeded the increases in these job categories at the end of the 1980s. In the physical sciences, agriculture and forestry as well as in law, the loss of full-time jobs among holders of bachelor's degrees was not as dramatic as in the previously mentioned fields, but nonetheless reached between 10 and 12 percentage points. In sum, the only graduates whose employment possibilities were unaffected during periods of economic recession were holders of bachelor's degrees in computer science and engineering, and, to a lesser extent, in business administration.

Holders of master's degrees in fine arts were particularly susceptible to the loss of full-time employment, which fell by nearly 42 points from 1982 to 1997 before regaining about 14 points from 1997 to 1999. Loss of employment was also considerable from 1982 to 1997 for holders of master's degrees in architecture, urban planning and design; social sciences and humanities; and literature and languages: it reached nearly 24 percentage points at times, although there was an unparalleled job recovery of close to 24 points in architecture, urban planning and design between 1997 and 1999. Among holders of master's degrees in biology, microbiology and biochemistry; the physical sciences; and law, full-time job losses reached a maximum of approximately 15 percentage points between 1982 and 1997, although there was a spectacular upturn of close to 13 points in the physical sciences from 1997 to 1999. Lastly, holders of master's and bachelor's degrees in business administration; engineering; and computer science and of master's degrees in agriculture and forestry; and mathematics, statistics and actuarial science were largely sheltered from the effects of periods of reduced full-time employment possibilities.

Table 8
Permanent employment^a
by family of disciplines
(%)

	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	85.0	93.6*	76.9	85.7*	77.9	77.0	74.9	76.9
Mathematics, statistics and actuarial science	83.2	**	80.7	**	82.9	**	90.2	**
Biology, microbiology and biochemistry	69.8	74.9	72.2	74.8	60.8	48.0	65.8	54.5
Physical sciences	82.7	65.1*	69.0	81.8*	69.2	68.1*	71.9	75.7
Agriculture and forestry	80.7	**	65.8	**	76.1	**	70.4	71.3
Architecture, urban planning and design	81.8	**	80.0	**	75.0	58.9*	78.1	66.8*
Engineering	95.8	94.7	89.4	92.6	88.5	80.1	89.6	88.5
Computer science	97.1	**	91.0	**	85.5	75.6*	81.3	84.0*
Humanities and social sciences	78.5	76.0	72.3	74.7	66.1	65.1	65.7	61.8
Law	81.1	90.3*	75.1	100.0	78.3	91.9*	78.3	82.7*
Education	84.4	92.6	70.8	87.0	52.6	72.7	55.1	78.5
Business administration	95.0	95.8	92.1	94.4	89.7	92.2	91.0	93.3
Fine and applied arts	71.4	52.9*	69.4	62.7*	60.1	55.9*	53.0	32.2*
Literature and languages	80.8	82.0	77.1	77.8	71.7	55.4	70.2	48.5

(Cont.)

Table 8 (Cont.)
Permanent employment^a
by family of disciplines
(%)

	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	70.3	70.8	68.0	62.0	56.9	58.2	59.0	57.9
Mathematics, statistics and actuarial science	74.9	**	62.8	**	55.1	**	69.1	**
Biology, microbiology and biochemistry	57.2	50.6	52.3	54.0	52.3	41.4	61.8	57.8
Physical sciences	65.6	62.9	63.7	55.1	57.2	62.5*	64.8	65.4
Agriculture and forestry	67.2	71.5*	71.1	62.2*	67.9	58.9*	55.1	58.4*
Architecture, urban planning and design	60.6	46.0*	66.6	42.7*	62.4	52.9*	65.5	61.4*
Engineering	83.3	81.6	80.4	75.7	86.2	79.4	88.5	85.2
Computer science	81.8	73.7*	77.8	76.0*	83.2	72.8*	86.7	91.2*
Humanities and social sciences	65.1	61.2	61.8	55.9	60.6	51.8	58.7	54.6
Law	65.0	84.3*	61.9	69.1*	52.6	89.1*	45.9	63.3
Education	42.1	74.0	35.6	64.8	29.4	65.5	30.7	66.5
Business administration	85.1	89.4	82.6	86.3	81.7	84.1	84.5	82.4
Fine and applied arts	50.2	38.1*	59.7	50.5	64.3	44.8	65.8	24.9
Literature and languages	64.0	57.5	63.4	44.8	69.5	45.1	61.2	48.8

a. Permanent employment: proportion of graduates with permanent employment; that is, jobs of indeterminate duration.

** Two asterisks (**) in the table indicate that values were not reliable enough to be included here.

* One asterisk (*) in the table indicates that values must be carefully interpreted.

One of the most obvious effects of the economic slowdowns on the definition of jobs was the rapid progression of short-term jobs (jobs of a predetermined duration) and, consequently, the decrease in permanent employment. Graduates in all fields of study were affected by this phenomenon. Although this decline may reflect in part the decision by holders of bachelor's or master's degrees to continue their schooling while holding down jobs, there is a close link between increases in the number of persons continuing their studies and the deterioration in the conditions of professional integration.

Thus, after 1982, permanent employment among holders of bachelor's degrees in education plummeted by 55 percentage points before its downward progression ended in 1997. Among holders of bachelor's degrees in mathematics, statistics and actuarial science as well as in law the situation was almost as bad, with losses of up to 35 percentage points at times. There was an upturn of 14 percentage points in permanent employment for holders of bachelor's degrees in mathematics, statistics and actuarial science at the end of the 1990s, but not in law, where the rate continued to fall, even from 1997 to 1999, when it declined by approximately 7 percentage points.

The same pattern applies to the health sciences; the physical sciences; and agriculture and forestry, where permanent employment declined by 25 to 28 percentage points at the bottom of the cycle, before an upturn of a little over 2 points in health sciences and over 7 percentage points in the physical sciences. Among holders of bachelor's degrees (except those in business administration and engineering, where permanent employment fell by only about 13 to 15 points), all fields lost around 20 points in the worst phase, although (with the exception of literature and languages and humanities and social sciences) there was a subsequent upturn from 1997 to 1999. The upturn took place mainly in biology, microbiology and biochemistry, where there was a gain of a little over 9 percentage points, whereas the increase was only 2 or 3 points in architecture, urban planning and design; engineering and computer science. Among holders of master's degrees, the fall in permanent employment was also considerable and in biology, microbiology and biochemistry; fine and applied arts and literature and languages, these losses were even greater for holders of master's degrees than for holders of bachelor's degrees. However, in other fields, such as agriculture and forestry or computer science, losses of permanent jobs were more limited.

Table 9
Job related to
field of study^a
by family of disciplines
(%)

	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	95.8	88.7*	94.8	**	96.7	90.6	94.8	91.5
Mathematics, statistics and actuarial science	82.1	87.7*	82.8	85.7*	84.2	**	75.4	**
Biology, microbiology and biochemistry	58.1	81.5	56.8	74.3*	62.6	74.4	61.0	88.6
Physical sciences	73.3	82.1	76.3	67.4*	71.8	83.9	80.1	80.1
Agriculture and forestry	79.3	**	80.2	**	89.9	**	88.3	76.9
Architecture, urban planning and design	81.0	**	76.0	69.6*	84.2	80.6*	86.1	81.1
Engineering	87.8	82.6	83.2	87.1	92.0	95.1	91.5	89.6
Computer science	94.2	100.0	90.4	100.0	98.8	94.7*	96.1	97.6
Humanities and social sciences	58.0	84.1	57.6	80.8	55.5	82.1	59.9	85.6
Law	92.0	90.3*	89.7	94.1*	93.9	80.6*	93.8	93.6*
Education	81.8	91.1	76.1	87.2	86.4	87.6	86.1	83.9
Business administration	84.2	91.7	81.0	88.5	83.3	88.2	83.6	88.5
Fine and applied arts	60.0	**	58.9	84.3*	63.9	93.7	66.4	71.6
Literature and languages	60.5	84.6	51.9	75.5	49.6	59.0	48.5	74.6
	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	98.6	94.6	98.5	92.5	93.7	91.3	95.4	88.0
Mathematics, statistics and actuarial science	75.8	**	73.2	96.7*	83.1	87.2*	77.3	88.7*
Biology, microbiology and biochemistry	67.5	82.7	66.0	83.1	59.0	77.2	61.7	70.2
Physical sciences	84.7	71.5	71.9	87.3	75.6	85.8	77.7	86.4
Agriculture and forestry	86.1	86.4*	87.4	91.0	84.8	88.2*	83.3	73.3*
Architecture, urban planning and design	78.5	95.9*	72.1	75.9*	68.6	52.1*	87.9	80.7*
Engineering	90.8	86.4	85.6	81.7	91.5	85.0	92.4	84.2
Computer science	97.7	100.0	96.9	97.7*	94.8	100.0	96.8	98.7
Humanities and social sciences	60.5	86.6	55.3	89.7	51.6	79.4	57.2	79.7
Law	93.3	**	86.9	**	83.6	82.0	79.3	83.2
Education	90.5	92.9	87.5	90.2	79.2	89.5	90.0	92.0
Business administration	81.0	86.6	74.1	87.1	79.3	84.9	86.5	86.7
Fine and applied arts	66.8	87.6	60.2	87.0	57.7	63.6	55.5	74.0
Literature and languages	53.0	78.0	49.6	68.7	43.1	80.2	48.3	72.4

a. Job related to field of study: proportion of persons with jobs they consider very closely or closely related to the main discipline in their university degree.

** Two asterisks (**) in the table indicate that values were not reliable enough to be included here.

* One asterisk (*) in the table indicates that values must be carefully interpreted.

In the past two decades, trends in employment related to the fields of study of bachelor's or master's degree holders have not been the same as those for full-time and permanent employment. Although trends varied, depending on the discipline, in general this employment category was less affected by economic slowdowns. Particularly at the end of the 1990s, jobs related to most fields of study were more numerous than at the beginning of the 1980s. Thus, from 1982 to 1999, the number of these types of jobs among holders of bachelor's degrees increased or was maintained in practically all fields of study. Law, as well as literature and languages were the exceptions to this rule, as each lost approximately 12 percentage points in this employment category, while mathematics, statistics and actuarial science and fine and applied arts lost approximately 5 points. However, the relative equality of the different fields of study in this regard (which is even clearer when 1989 and 1999, the two peaks in the economic cycles, are compared) does not preclude any variation: in half of these fields of study, the level

of employment related to field of study varied by approximately 11 to 15 percentage points and in fine and applied arts; architecture, urban planning and design; and literature and languages, it varied by 17 to 22 points. In fact, variations of 10 percentage points or less occurred only in health sciences; agriculture and forestry; engineering; computer science and social sciences and humanities.

Among holders of bachelor's degrees, there were two fields—health and computer science—in which the proportion of jobs related to fields of study generally oscillated between 90% and 99% depending on the period. Agriculture and forestry; engineering and law were also associated with the same type of professional training model: from 80% to 94%, of jobs were related to these fields of study depending on the period, with higher levels in law than in the other two fields. In education and business administration, the proportion of jobs related to studies ranged from about 75% to 90%, depending on the year, and the same pattern can be seen in architecture, urban planning and design, although the percentage sometimes dipped below 75% in this family of disciplines. The proportion of these kinds of jobs in mathematics, statistics and actuarial science and in the physical sciences was generally between 72% and 85%, depending on the period. In biology, microbiology and biochemistry, and also in the fine and applied arts, the proportion of jobs related to fields of study was generally between 55% and 67%, depending on the period. Lastly, in the social sciences and humanities and in literature and languages, the proportion of such jobs did not exceed 60%; it was even lower than 45% at times in literature and languages. With some isolated exceptions, the proportion of jobs related to the fields of study among master's degree holders was usually greater than among holders of bachelor's degrees. Such was the case in biology, microbiology and biochemistry; humanities and social sciences; fine and applied arts; and literature and languages, where the proportion of jobs related to studies increased by 20 to 30 percentage points at times.

Table 10
Full-time, permanent job
related to field of study

	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	80.0	82.3	64.5	**	70.8	67.4	64.4	66.3
Mathematics, statistics and actuarial science	66.4	60.0*	65.5	**	67.7	45.4*	66.7	**
Biology, microbiology and biochemistry	40.8	66.3	38.9	60.3	32.1	37.8	35.1	48.0
Physical sciences	63.3	51.1*	48.3	48.6*	48.0	53.7	54.5	62.2
Agriculture and forestry	63.1	56.9	52.5	**	66.3	51.5*	60.2	51.5*
Architecture, urban planning and design	67.0	**	60.5	**	63.4	44.7*	67.9	50.3*
Engineering	84.2	78.2	74.5	80.9	81.7	75.0	81.9	79.1
Computer science	90.6	86.2*	81.2	91.9*	84.2	73.0*	77.5	79.6*
Humanities and social sciences	42.9	61.8	34.8	52.0	30.4	46.5	33.3	45.8
Law	75.7	90.3*	65.7	94.1*	71.8	72.5*	72.4	76.3*
Education	67.1	83.1	48.1	70.3	38.9	62.6	42.9	59.8
Business administration	80.9	88.5	75.0	81.9	75.7	81.0	77.0	82.4
Fine and applied arts	32.5	41.0*	24.4	53.0*	25.3	36.5	25.6	16.7*
Literature and languages	45.1	68.9	33.1	46.6	31.7	29.6	28.7	39.7

(Cont.)

Table 10 (Cont.)
Full-time, permanent job
related to field of study

	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	61.9	62.3	56.3	53.3	41.8	48.0	47.5	47.1
Mathematics, statistics and actuarial science	53.6	**	42.4	**	42.9	**	53.2	43.2*
Biology, microbiology and biochemistry	32.4	39.1	25.8	44.5	24.4	30.2	37.5	36.0
Physical sciences	55.2	47.7	41.7	47.6	43.6	48.7	50.6	54.4
Agriculture and forestry	57.9	58.4*	59.9	56.6	56.8	49.1*	48.5	38.0*
Architecture, urban planning and design	42.7	43.9*	45.2	25.1*	37.8	24.0*	57.2	52.3*
Engineering	76.0	67.1	68.3	64.4	80.0	70.5	82.6	70.4
Computer science	79.1	73.7*	76.0	73.6	78.7	72.8*	84.1	89.9*
Humanities and social sciences	31.7	44.8	23.7	42.5	22.3	31.9	24.8	38.4
Law	58.8	52.9*	47.8	52.0*	39.8	65.2*	35.3	54.0
Education	31.1	65.2	20.8	56.4	13.3	56.9	22.2	58.3
Business administration	69.7	77.9	61.3	75.8	64.1	72.3	72.7	72.8
Fine and applied arts	20.3	18.4	21.9	21.3	21.6	8.0	28.6	4.7
Literature and languages	26.9	37.3	22.1	21.0	16.9	33.1	22.1	25.0

** Two asterisks (**) in the table indicate that values were not reliable enough to be included here.

* One asterisk (*) in the table indicates that values must be carefully interpreted.

The proportion of jobs that are full-time, permanent and relevant to graduates' fields of study indicates the proportion of holders of bachelor's or master's degrees who may be considered successful in their professional integration. If one of these three criteria is not met, the professional integration process has yet to be completed. Two years after graduating, holders of bachelor's degrees were not all at the same point in their professional integration. Moreover, the success rate tended to decline from the beginning of the 1980s until at least 1997. Although success rates in the professional integration process improved somewhat from 1997 to 1999, for holders of bachelor's degrees in law as well as agriculture and forestry, the slowdown continued until 1999.

The slowdown in the professional integration process that is indicated by the ever-declining proportion of holders of bachelor's degrees with full-time, permanent jobs that are related to their fields of study was particularly obvious in the fields of education, law and health sciences. Holders of bachelor's degrees in health sciences lost a little over 38 percentage points and those in education a little more than 53 points in this employment category between 1982 and 1997, while those in law had lost a little over 40 points by 1999. Losses in this category of employment reached close to 30 percentage points among holders of bachelor's degrees in literature and languages and in architecture, urban planning and design, 20 points in mathematics, statistics and actuarial science; humanities and social sciences; and business administration, and about 15 points in biology, microbiology and biochemistry as well as in agriculture and forestry. In short, the only fields in which job losses of this nature were relatively low between 1982 and 1997 were engineering, with losses of 5 percentage points and, to a lesser extent, computer science, with losses of a little over 10 points. In engineering, this employment category reached almost the same proportions in 1999 as it had in 1982. In 1999, employment levels in fields such as biology, microbiology and biochemistry and fine and applied arts were also similar to their 1982 levels, but in general, they were much lower (between 30% and 40%, and between 20% and 30% respectively), than those in computer science and engineering (over 80%) and business administration (over 70%).

Losses of this type of employment were widespread among holders of master's degrees between 1982 and either 1997 or 1999. They reached close to 45 percentage points in literature and languages, from 30 to 35 percentage points in the health sciences; biology, microbiology and biochemistry; the social sciences and humanities; and in law, and a little over 25 points in education. Only engineering, with losses of less than 10 percentage points, and computer science; mathematics, statistics and actuarial science and business administration, with losses of about 15 points, suffered few losses in this category of employment.

Table 11
Unemployment rate

	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	2.1	0.0	2.0	**	1.7	4.9	3.0	3.8
Mathematics, statistics and actuarial science	6.2	5.9*	6.3	**	2.4	**	7.4	**
Biology, microbiology and biochemistry	13.2	11.3	18.1	8.1	13.1	4.6	8.6	4.5
Physical sciences	7.8	5.5*	11.7	4.2*	15.0	4.4	11.7	10.0
Agriculture and forestry	10.1	**	10.9	**	4.5	**	4.9	3.7*
Architecture, urban planning and design	15.2	**	13.6	0.0	7.3	**	11.1	9.2*
Engineering	6.3	7.7	7.7	3.9	4.5	0.0	3.1	4.8
Computer science	0.0	0.0	2.3	0.0	1.5	7.9*	3.1	0.0
Humanities and social sciences	18.9	10.0	18.3	10.7	10.9	8.3	11.4	6.5
Law	11.2	**	11.8	5.6*	8.1	3.9*	6.2	0.0
Education	12.2	5.2	12.6	5.9	12.2	1.0	12.8	2.6
Business administration	9.5	4.2	9.9	2.2	6.5	2.6	6.0	2.9
Fine and applied arts	22.8	9.4*	17.4	13.5*	21.8	17.6	18.5	7.1*
Literature and languages	19.9	7.4	18.3	6.7	9.8	7.6	8.3	6.9
	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	1.4	1.9	2.3	3.5	2.8	5.4	1.3	8.1
Mathematics, statistics and actuarial science	3.6	**	6.0	4.2*	7.2	6.5*	4.0	9.7*
Biology, microbiology and biochemistry	12.5	9.9	14.7	8.9	23.7	15.7	17.1	16.4
Physical sciences	18.6	4.9	14.8	6.9	13.6	5.5	14.5	7.2
Agriculture and forestry	12.1	6.3*	20.8	5.5*	18.0	11.7*	8.4	8.4
Architecture, urban planning and design	21.0	10.8*	21.2	27.5*	11.4	19.6*	8.6	12.0*
Engineering	9.7	5.8	15.4	10.6	6.0	8.0	5.5	5.0
Computer science	2.4	0.0	5.4	0.0	1.9	0.0	2.6	0.0
Humanities and social sciences	11.8	8.8	14.7	6.2	12.7	12.7	9.1	9.1
Law	14.9	7.5*	17.2	10.9*	17.1	5.1*	14.1	0.0
Education	5.8	3.4	7.6	6.0	9.4	2.3	2.6	3.0
Business administration	9.0	4.6	11.4	5.1	7.0	4.5	5.9	6.1
Fine and applied arts	13.9	11.0	18.1	9.1	11.6	14.5	13.4	9.8
Literature and languages	12.3	10.4	13.6	8.2	15.3	10.9	12.0	14.1

** Two asterisks (**) in the table indicate that values were not reliable enough to be included here.

* One asterisk (*) in the table indicates that values must be carefully interpreted.

Unemployment rates among holders of bachelor's or master's degrees were generally sensitive to economic cycles. Thus, there were substantial variations between minimum and maximum rates in most fields. For example, among holders of bachelor's degrees in four families of disciplines (biology, microbiology and biochemistry; architecture, urban planning and design; agriculture and forestry; and fine and applied arts) the unemployment rate varied by 14 to 16 percentage points between the peak and the low point in an economic cycle, the peak usually coinciding with the second half of the 1980s and the low point with the first half of the 1990s. In most other fields the unemployment rate for holders of bachelor's degrees fluctuated by 10 to 12 percentage points. Exceptions in this regard included the health sciences, with variations of less than 2 percentage points, and mathematics, statistics and actuarial science; computer science and business administration with variations of approximately 5 points in each area. Among holders of master's degrees, the most substantial variations in the unemployment rate were found in architecture, urban planning and design, at a little over 18 percentage points.

The unemployment rate among holders of bachelor's degrees in humanities and social sciences; architecture, urban planning and design; fine and applied arts; literature and languages and education has followed a different path than in most other fields. It fell after 1982, but rose considerably during the second recession at the beginning of the 1990s. In fact, it increased by close to 14 percentage points in the area of architecture, urban planning and design. However, if the situation of this group improved relative to other fields between 1982 and 1999, with unemployment dropping by approximately 9 percentage points in fine and applied arts, 8 points in literature and languages, 7 points in architecture, urban planning and design and 10 points in humanities and social sciences as well as in education, this improvement was somewhat mitigated, (except in architecture, urban planning and design) by the fact that a larger proportion of the the jobs were short-term and unrelated to fields of study than was the case for people with bachelor's degrees in other fields.

Lastly, holders of bachelor's degrees in the physical sciences; biology, microbiology and biochemistry and in law also had atypical unemployment rate patterns, which declined by approximately 7, 4 and 3 percentage points respectively between 1982 and 1999. Among holders of master's degrees, unemployment rates in health sciences; mathematics, statistics and actuarial science; and biology, microbiology and biochemistry (unlike those in other fields) continued to increase despite the economic recovery at the end of the 1990s. This may reflect a deterioration in the conditions for labour market integration in these fields.

Table 12
Salary of full-time job (\$)

	1982		1984		1987		1989	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	632	**	679	**	776	766	862	935
Mathematics, statistics and actuarial science	473	**	509	**	557	**	614	**
Biology, microbiology and biochemistry	384	505	396	535	431	505	477	660
Physical sciences	490	551*	469	522	468	643*	578	708
Agriculture and forestry	421	**	428	**	459	619*	550	691*
Architecture, urban planning and design	396	**	342	454*	407	661*	529	679*
Engineering	534	670	515	670	586	715	662	816
Computer science	524	**	508	**	569	836*	662	850*
Humanities and social sciences	399	544	412	538	441	622	515	714
Law	354	**	367	**	484	**	568	1104*
Education	505	689	464	595	516	740	576	870
Business administration	448	751	429	748	516	876	579	1042
Fine and applied arts	310	**	351	**	421	**	429	516*
Literature and languages	376	567	370	510	426	596	494	654

(Cont.)

Table 12 (Cont.)
Salary of full-time job (\$)

	1992		1994		1997		1999	
	B.	M.	B.	M.	B.	M.	B.	M.
Health sciences	733	860	781	947	758	961	782	928
Mathematics, statistics and actuarial science	719	**	656	**	676	783*	725	804*
Biology, microbiology and biochemistry	511	695	516	770	525	668	550	722
Physical sciences	586	740	553	782	577	769*	656	863
Agriculture and forestry	565	687*	571	855*	593	718*	563	745*
Architecture, urban planning and design	498	686*	474	731*	443	633*	549	888*
Engineering	683	857	662	874	707	866	792	998
Computer science	692	866*	692	929*	768	936	862	1129*
Humanities and social sciences	540	767	535	750	506	707	553	724
Law	541	1220*	524	**	572	944*	600	958
Education	618	943	625	1001	555	965	602	974
Business administration	592	1067	578	1070	607	1120	691	1190
Fine and applied arts	466	622*	474	430*	518	603*	526	656
Literature and languages	512	743	496	761	497	741	587	734

** Two asterisks (**) in the table indicate that values were not reliable enough to be included here.

* One asterisk (*) in the table indicates that values must be carefully interpreted.

Salaries associated with full-time jobs grew more rapidly in some fields than in others. Thus, from 1982 to 1999, the average salaries of holders of bachelor's degrees in the field of computer science progressed more rapidly than salaries of all other holders of bachelor's degrees, with average increases of close to \$340 compared with approximately \$200 in all other fields. In the area of mathematics, statistics and actuarial science, as well as in the fields of engineering, business administration, and law, salaries also increased more than those of people with bachelor's degrees in other fields, with average increases of approximately \$250. Holders of bachelor's degrees in two other areas, namely literature and languages, and fine and applied arts, obtained average salary increases of a little more than \$200. In almost all other fields—health sciences; biology, microbiology and biochemistry; physical sciences; agriculture and forestry; architecture, urban planning and design; as well as humanities and social sciences—holders of bachelor's degrees obtained increases of about \$140 to \$170. Salary increases in education were below the average, at close to \$100. However, salaries among holders of master's degrees increased by more on average than among holders of bachelor's degrees, i.e. by \$300 on average, compared with \$200 among holders of bachelor's degrees.

If we compare increases in salaries from 1982 to 1999 with salaries in 1982, we see that the salary increases of holders of bachelor's or master's degrees varied according to their fields. Thus, the most substantial salary increases (raises of between approximately 65% and 70%), were in law; computer science; and fine and applied arts. Similarly, holders of bachelor's degrees in three other areas, mathematics, statistics and actuarial science; business administration and literature and languages, also received above-average salary increases of approximately 55%. Among holders of bachelor's degrees in the areas of biology, microbiology and biochemistry as well as in engineering, increases were closer to the average, ranging between 43% and 48%. Among holders of bachelor's degrees in the fields of physical science; agriculture and forestry; architecture, urban planning and design as well as humanities and social sciences, salary increases were below average, running between approximately 33% and 38%. Lastly, in health sciences and education, salary increases were well below average, with raises of close to 24% and a little over 19% respectively. Nevertheless, in 1999, salaries in the field of health sciences remained approximately \$110 above average, whereas those in the field of education were approximately \$70 below the average. Among holders of master's degrees, salaries increased by approximately 46% and were therefore comparable on average to those of holders of bachelor's degrees, whose increases averaged about 44%.

Conclusion

In response to the changes in the labour market that took place in the '80s and '90s, holders of bachelor's or master's degrees have modified their professional integration strategies. Increasingly, they have continued their schooling, often holding down a job at the same time. Despite this rush to earn degrees, conditions for integration into the labour market remain good for university graduates. Although the recessions have sometimes had negative effects on the possibilities of finding work, most degree holders have succeeded in doing so and their chances have been better than if they had not continued their schooling. However, the professional integration process has lengthened during the past two decades: university graduates take longer to integrate into the labour market than they did previously, especially in fields that are not directly applicable to production processes as computer science, engineering and business administration are, or in fields with highly limited enrollment, such as health. Nonetheless, a variety of skills are required to power the complex mechanisms involved in maintaining our society and so all holders of university degrees ultimately find their schooling to be worthwhile. Demand for university education will therefore probably increase in years to come.

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