

Chapter 11

Skills and Health

Summary

This chapter examines the relationship between skills measured in *ALL* and various aspects of individual health. Two latent class analyses are performed to identify groups of individuals sharing response tendencies to a set of 13 health-related background questions. The first analysis identifies four classes of individuals based upon questions related to general health status, as follows: excellent health, good health, fair health and poor health. The second analysis identifies four classes of individuals based upon questions related to their health status at work, as follows: no work-related limitations, physically limited at work, emotionally limited at work and physically and emotionally limited at work. These analyses are then used to explore the relationship between skills measured in *ALL* and health status.

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Skills and Health

11.1 Overview and highlights

This chapter examines the relationship between skills measured in ALL and various aspects of individual health. Two latent class analyses are performed to identify groups of individuals sharing response tendencies to a set of 13 health-related background questions. The first analysis identifies four classes of individuals based upon questions related to general health status, as follows: excellent health, good health, fair health and poor health. The second analysis identifies four classes of individuals based upon questions related to their health status at work, as follows: no work-related limitations, physically limited at work, emotionally limited at work and physically and emotionally limited at work. These analyses are then used to explore the relationship between skills measured in ALL and health status.

The results of these analyses are as follows:

- The findings indicate interesting similarities. First, the relative proportions of the four classes on both the general and work-related health status classifications are rather comparable across countries. Second, the pattern of average literacy and numeracy scores by health classes in surveyed countries is also similar.
- The respondents who answered health related questions in a way that led to their being classified as healthy not only represent the largest percentage of adults but are also the ones with noticeably higher average literacy and numeracy scores compared to the least healthy group of adults — those most likely to report experiencing emotional and physical adversities limiting their activities and capping their accomplishments.
- The analysis of general health status indicates that two identified classes of adults – comprising 20 and 52 per cent respectively – are very satisfied with their lives. Members of these groups tend to state that health does not impede their physical or social activities. The difference between the two groups lies in their assessment of their overall health. The smaller group of 20 per cent tends to evaluate

both their health and emotional status using the extreme positive categories, whereas the larger group reports their physical and mental well being in more moderate terms.

- Both the general and work-related health status analyses identified relatively small groups of adults who report that they are adversely affected by both physical and emotional problems. These groups have significantly lower average scores than the other groups on the literacy and numeracy scales.

While this chapter provides only a first look at the data from ALL relating to health status and literacy, it does support the growing recognition that skills and health status are related. It is not too surprising that as technology continues to evolve and becomes more integrated into all aspects of our lives, modern health care systems are increasingly being characterized by their complexity and sophistication (Bernhardt, Brownfield and Parker, 2005). This increase in complexity and sophistication comes at a time when some believe that individuals are expected to assume more responsibility for the management of their health and well being, thereby placing an even greater emphasis on the importance of literacy and numeracy skills. If true, how will this emerging trend impact current disparities in health outcomes noted in recent research?

11.2 Skills and general health status

While health professionals have long known about the association between years of schooling and health outcomes, education itself was not the major consideration, but was instead viewed as a marker of socioeconomic status. Large-scale national and international surveys such as the National Adult Literacy Survey (NALS) and the International Adult Literacy Survey (IALS)¹ offered researchers and policy makers critical insight into literacy as a possible pathway linking education and health outcomes (Rudd, Kirsch and Yamamoto, 2004). A number of studies conducted over the past decade have focused on the relationships between literacy and health-related outcomes. In summarizing some of these studies, Weiss (2005) noted that having lower health knowledge is associated with lower health status, higher utilization of health services and not too surprisingly increased costs for health care. These and other data suggest that literacy may be a contributing factor to the wide disparities in health care that many adults in the United States and elsewhere receive.

A growing recognition of the importance of literacy as a potential pathway linking years of schooling and health outcomes has led to two recent publications; one titled *Understanding Health Literacy: Implications for Medicine and Public Health*, published in 2005 by the American Medical Association and the other *Health Literacy: A Prescription to End Confusion* published in 2004 by the Institute of Medicine of the National Academies. It also led the developers of the ALL survey to include a set of background questions focusing on general and work-related health issues. This section presents results of a Latent Class Analysis (LCA) that is used to classify individuals into groups or “latent classes” based on their patterns of responses to a set of background questions associated with general health and emotional well being (see Box 11A). Eight questions from the ALL questionnaire were used to create a general health status variable (see Annex 11B for questions). Figure 11.1 reports the probability that the individuals in each class responded in a particular way to each question. A high probability indicates

a strong likelihood that the characteristic is present in that class while a low probability indicates a strong likelihood that the characteristic is absent. Box 11B summarizes the response tendencies associated with each class and points out key differences between them.

Box 11A

How does latent class analysis work?

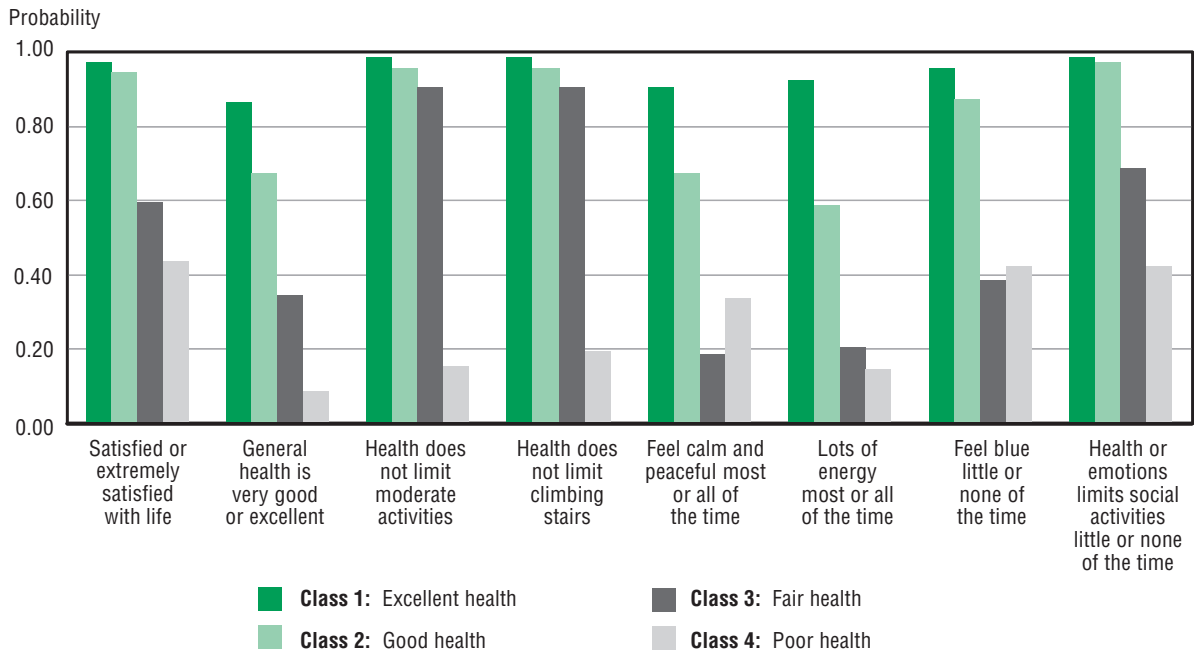
In this chapter, literacy and numeracy scores are analyzed in relationship to several derived variables that distinguish among groups of participants based on their self-reported health status. Individuals are organized into groups or “classes” based on their patterns of responses to a set of background questions associated with either work or general health and emotional well being. More specifically, the health related questions from the ALL background questionnaire are analyzed using Latent Class Analysis (LCA) methods (Lazarsfeld and Henry, 1968; Patterson, Dayton and Graubard, 2002). LCA is a statistical tool for clustering subjects based on categorical variables. This analysis yields a probabilistic classification for each survey participant, where the classes are represented by different tendencies to respond in a certain way (more formally, each class is characterized by its conditional response probabilities) to a set of questions. The population profiles and group sizes reported in this chapter are expressed in percentages. The different classes are identified by predominant response profiles. The necessary number of latent classes to describe the different response tendencies found in the data is determined using statistical measures based on the likelihood of the data given models with different numbers of classes. For parsimony, the model with the smallest number of latent classes that can adequately describe the data is chosen.

Most of the questions relating to general health status offer a range of ordered response options. With regard to their satisfaction with life, adults were asked to respond on a 5-point ordinal scale that ranged from extremely unsatisfied to extremely satisfied. Similarly, they could respond that their overall health ranged from poor to excellent. With regard to their activities, they had a 3-point scale that ranged from no limitations, to a little, to a lot. Adults could respond on a 6-point ordinal scale with respect to three additional questions focusing on: how calm and peaceful they felt, whether they had a lot of energy and whether they felt blue or downhearted. Finally, they had a 5-point scale on which they could indicate the extent to which their health or emotional well being interfered with their social activities. This scale ranged from none to all of the time.

FIGURE 11.1

Classification of general health status

Response profiles of the four latent classes based on general health status, populations aged 16 to 65, 2003



Source: Adult Literacy and Life Skills Survey, 2003.

Box 11B

Classifying adults' general health status

Eight questions from the ALL questionnaire (see Annex 11B) were combined into a general health status variable using the Latent Class Analysis method. The resulting four latent classes relating to general health status are interpreted as follows:

- Class 1 is labelled as a group with “excellent health”. It represents about 20 per cent of the pooled sample. Adults in this group overwhelmingly report that they are satisfied with their life and that their general health is good or excellent. They are not limited in any of their activities by either physical or emotional issues. In addition, these adults report having a lot of energy and feeling calm and peaceful most or all of the time. As a result, they are also likely to report that they feel blue little or none of the time.
- Class 2 is labelled as a group with “good health”. They represent 52 per cent of the pooled sample. Adults in this group are also very satisfied with their life and are not limited in their activities by either physical or emotional problems. What distinguishes them from Class 1 is that they are somewhat less likely to say that their overall health is very good or excellent and less likely to have lots of energy most or all the time.

- Class 3 is labelled as a group with “fair health”. They comprise 20 per cent of the pooled sample. Unlike Class 1 or 2, this group is less likely to report being satisfied or extremely satisfied with their life and much less likely to say their health is very good or excellent. However, they are similar to adults in Classes 1 and 2 in that they are highly likely to report not being limited in their physical activities. Unlike adults in Classes 1 and 2, they have a much lower likelihood of reporting having a lot of energy or feeling calm and peaceful most or all of the time, and less likely to report their health does not limit their physical or social activities. They are also much less likely to report that they feel blue little or none of the time.
- Class 4 is labelled as a group with “poor health”. It represents eight per cent of the pooled sample. These are the least healthy adults based on their responses to the eight general health questions. This group is much less likely to report being satisfied with life or that their health is good or excellent. They are also much more likely to report being limited in their physical or social activities by poor health. They seem to feel less energetic, less peaceful and more blue than adults in Classes 1 and 2 but they are more so than adults in Class 3.

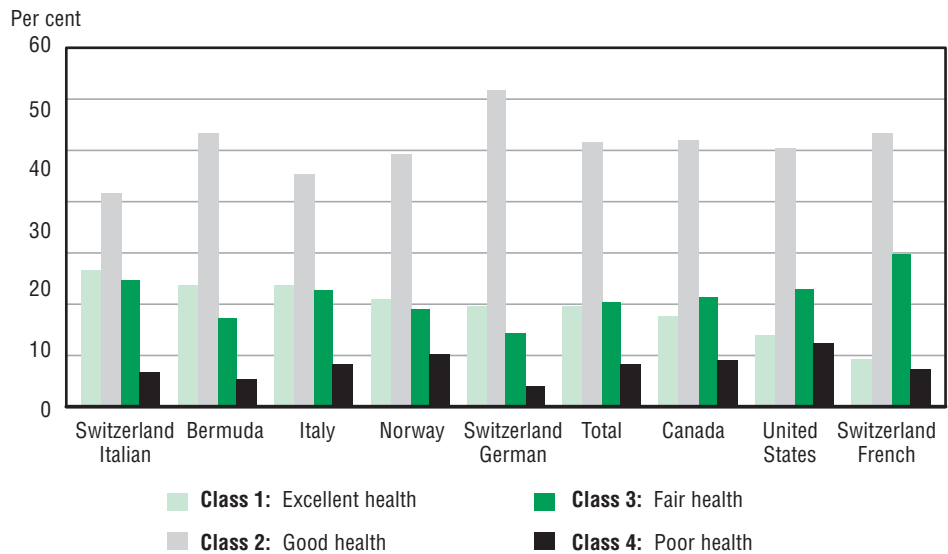
How much does the distribution of general health status vary by country? Figure 11.2 shows the percentages by class for each participating ALL country or language group and for the total population, ranked with reference to the healthiest group. While the overall pattern is rather similar there are some interesting between-country variations. For example, while 20 per cent of all participating adults are in Class 1, the healthiest group, this percentage varies from a low of 10 per cent among French speaking Swiss adults to a high of 27 per cent among Italian speaking Swiss. Different language groups living in Switzerland account for both the highest and lowest percentages of adults classified as having the highest general health status. Note that the deviation in class sizes from the total sample is particularly large among the Swiss language-based samples, which are at the same time the smallest samples. Therefore, this variation within the Swiss population may be due in part to increased error variance associated with relatively small samples.

Countries also vary in terms of the proportion of adults who are in Class 2. The percentages range from a low of 42 per cent among Italian speaking Swiss to 62 per cent among German speaking Swiss. Corresponding figures for the other countries range from 45 to 54 per cent. Adults in Class 2 are similar to those in Class 1 in that they are likely to be very satisfied with their life and not limited in any of their activities by physical or emotional issues. Where they differ from adults in Class 1 is that they are somewhat less likely to report their health as *excellent* and they are also less likely to report that they have a lot of energy *all the time* or feel calm and peaceful *all the time*. Adults in Class 3 range from a low of 14 per cent among German speaking Swiss to a high of 30 per cent among French speaking Swiss. Among the least healthy adults (Class 4), the range was from four per cent among German speaking Swiss to 13 per cent among adults in the United States.

FIGURE 11.2

General health status by country

Per cent of adults in each of four general health status groups by country, populations aged 16 to 65, 2003



Countries are ranked by the per cent of adults in Class 1: Excellent health.

Source: Adult Literacy and Life Skills Survey, 2003.

Figure 11.3 shows the average literacy and numeracy scores for all respondents by their general health status and selected background characteristics. While there is variation in average literacy and numeracy scores among adults with various background characteristics, the pattern that emerges is quite similar in each of the countries. Adults who are classified as being among the most healthy have higher average literacy and numeracy scores while those who are classified as the least healthy (Class 4) have the lowest average proficiencies.

Interestingly, adults in Class 2 have somewhat higher average proficiencies than those in Class 1. As we noted, both groups are quite healthy and satisfied with their lives. The primary difference between these two classes lies in their assessment of their overall health; Class 1 tends to use the extreme values on the reporting scale in terms of their overall health whereas adults in Class 2 tend to use more modest values. It cannot be determined from these data whether these differences are real or reflect more subtle subjectivity in response styles. It is interesting to note, however, that adults in Class 1 (the smaller of the two groups) tend to be a bit over represented at the lower educational levels and tend to have more males. Nevertheless, this pattern of results holds across each of the selected background characteristics shown in Figure 11.3.

An interesting pattern emerges among age cohorts. As expected, average proficiencies begin to decrease in the group 36 to 45 years of age and continue to decline thereafter. The average decrease, however, is somewhat smaller between the two healthiest classes of adults (Class 1 and Class 2) when compared with the least healthy adults. For example, the average difference between the youngest and oldest cohort in Class 2 is 26 points on the prose scale, 31 points on the

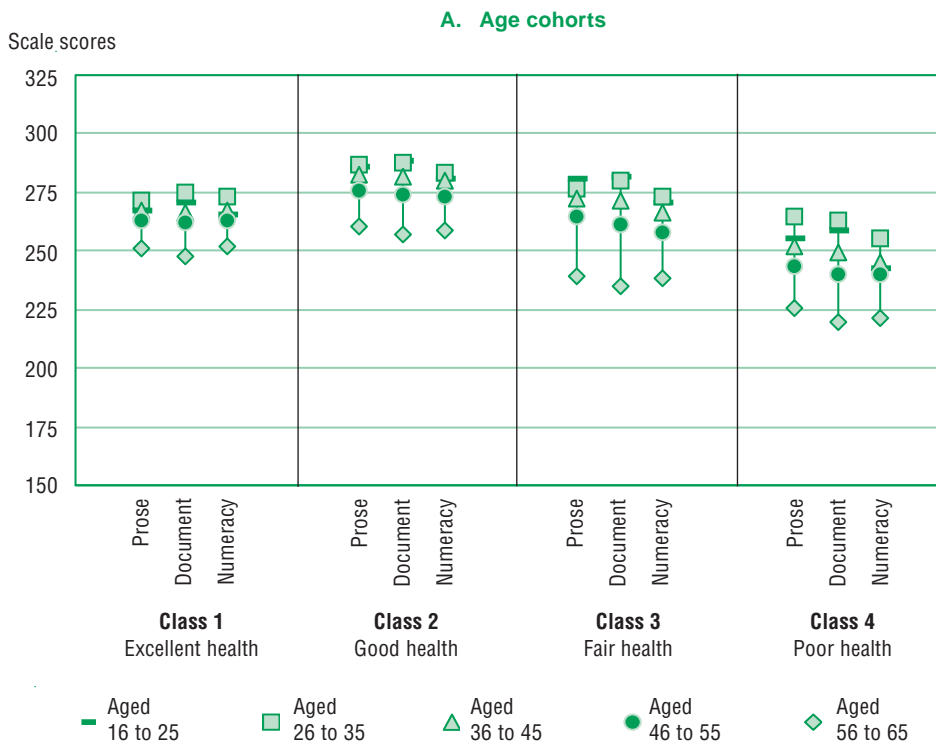
document scale and 22 points on the numeracy scale. Among adults in Class 4, the average difference between these two age cohorts is 30, 39 and 22 points, respectively. In addition, the average difference between the young adults in Class 2 and Class 4 is again somewhat smaller than between the oldest adults in Class 2 and Class 4. Among youth aged 16 to 25, the average difference across the three scales is 30, 30 and 38 points. Among adults 56 to 65, the average difference is 35, 38 and 37 points. These are significant differences in the sense that, on average, a 50 point gain is associated with an additional year of schooling in the IALS sample of 24 countries (Willms, 2003).

The distribution of health status by educational attainment is somewhat different from the pattern associated with age. The association is stronger for educational attainment. While average differences between adults in Class 2 and Class 4 range from 22 to 31 points depending on level of education and proficiency scale, the average difference between those with a primary or less education and those with more than upper secondary education is around 100 points, regardless of health status.

FIGURE 11.3

Skills and general health status by key demographic variables

Mean scores on the prose, document and numeracy scales ranging from 0 to 500 points by key demographic variables, populations aged 16 to 65, 2003

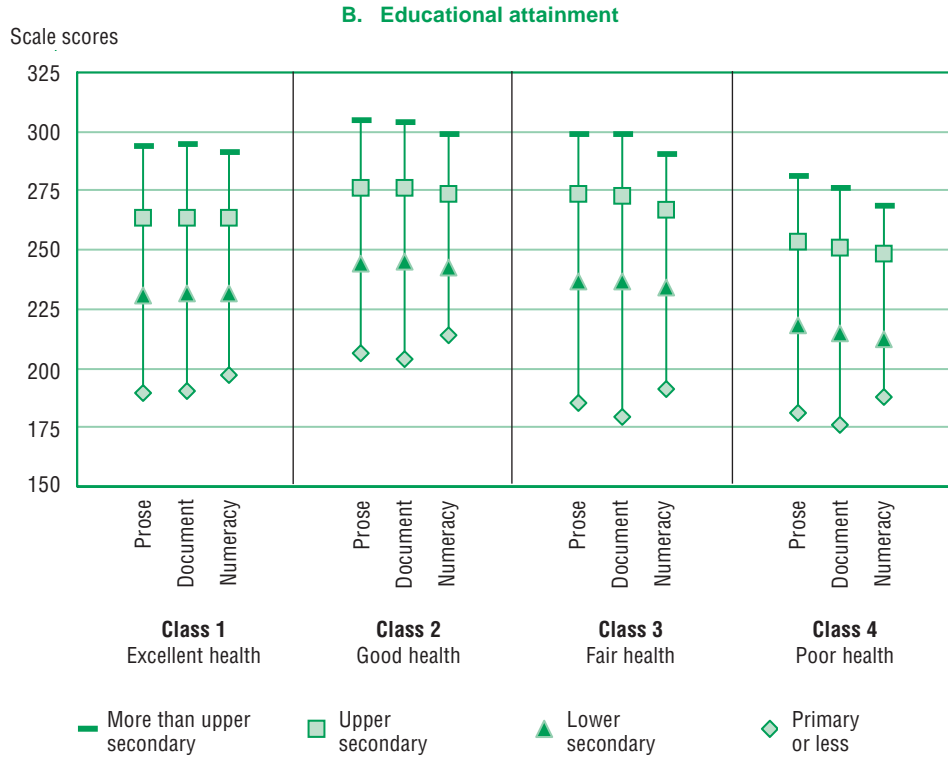


Source: Adult Literacy and Life Skills Survey, 2003.

FIGURE 11.3 (concluded)

Skills and general health status by key demographic variables

Mean scores on the prose, document and numeracy scales ranging from 0 to 500 points by key demographic variables, populations aged 16 to 65, 2003



Source: Adult Literacy and Life Skills Survey, 2003.

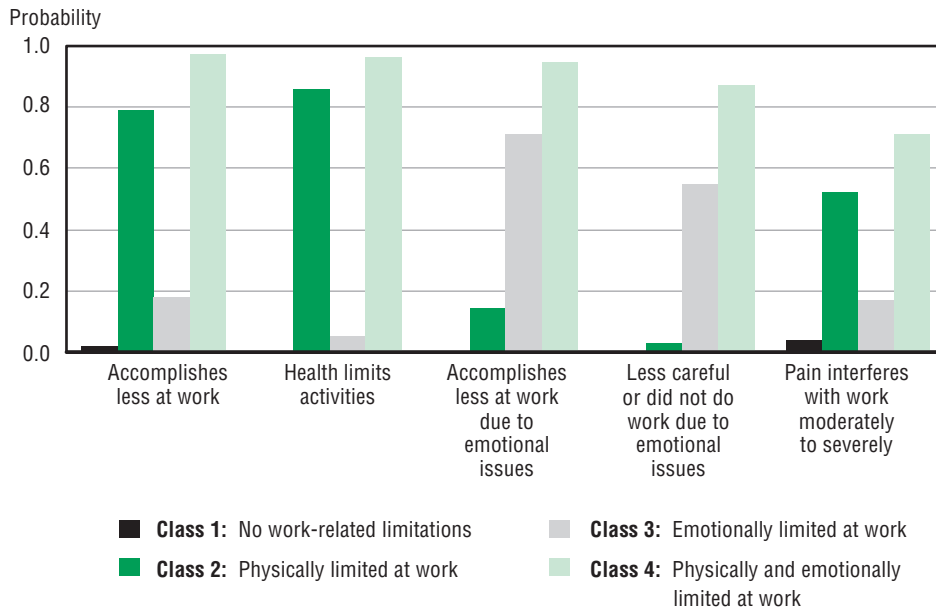
11.3 Skills and work-related health status

A work-related health status variable was also created using latent class analysis. Five questions from the ALL questionnaire were used in this analysis (see Annex 11B for questions). Figure 11.4 reports the probability that the individuals in each class responded in a particular way to each question. Note that response profiles are an output of the latent class analysis, not an input. Accordingly, classes are identified by predominant response profiles found in the survey sample. This means, for example, that Class 4 was identified as being different from Classes 3 and 2 through the persistent tendency to respond with “yes” to all questions related to limitations at work due to *both* emotional and physical issues. Box 11C summarizes the response tendencies associated with each class and points out key differences between them.

FIGURE 11.4

Classification of work-related health status

Response profiles of the four latent classes based on work-related health status, populations aged 16 to 65, 2003



Source: Adult Literacy and Life Skills Survey, 2003.

Box 11C

Classifying adults' work related health status

Five questions from the ALL questionnaire (see Annex 11B) were combined to create a work-related health status variable using the Latent Class Analyses method. The resulting four latent classes relating to health status at work can be interpreted as follows:

- Class 1 is labelled as a group with “no work-related limitations”. It represents the healthiest group of adults, accounting for 76 per cent of the pooled sample. Adults in this group overwhelmingly report that they are not limited in their activities or accomplishments at work by any physical or emotional issues. In addition, there is a low likelihood that individuals in this group report they suffer from any pain that interferes with their work.
- Class 2 is labelled as a group that reports being “physically limited at work”. It represents about 12 per cent of the pooled sample. This group has a high likelihood of reporting that their health limits the work they are able to accomplish. However, they have a low likelihood of reporting any emotional issues that may detract from their work.

- Class 3 is labelled as a group that reports being “emotionally limited at work”. It represents about nine per cent of the pooled sample. Unlike Class 2, this group is not characterized by limitations in either their activities or work-related accomplishments. However, they are reasonably likely to report limitations in activities due to emotional issues. Unlike adults in Class 2, they have a much lower likelihood of reporting moderate to severe pain related limitations with respect to work.
- Class 4 is labelled as a group that reports being “physically and emotionally limited at work”. It represents about four per cent of the pooled sample. These are the least healthy adults participating in the ALL study in terms of their responses to the work-related questions. Adults in this latent class are highly likely to report that they are limited in their activities and accomplishments at work by both health and emotional issues. Unlike adults in Class 1 who are highly likely to report little or no pain, adults in this class are likely to report pain interferes with their work.

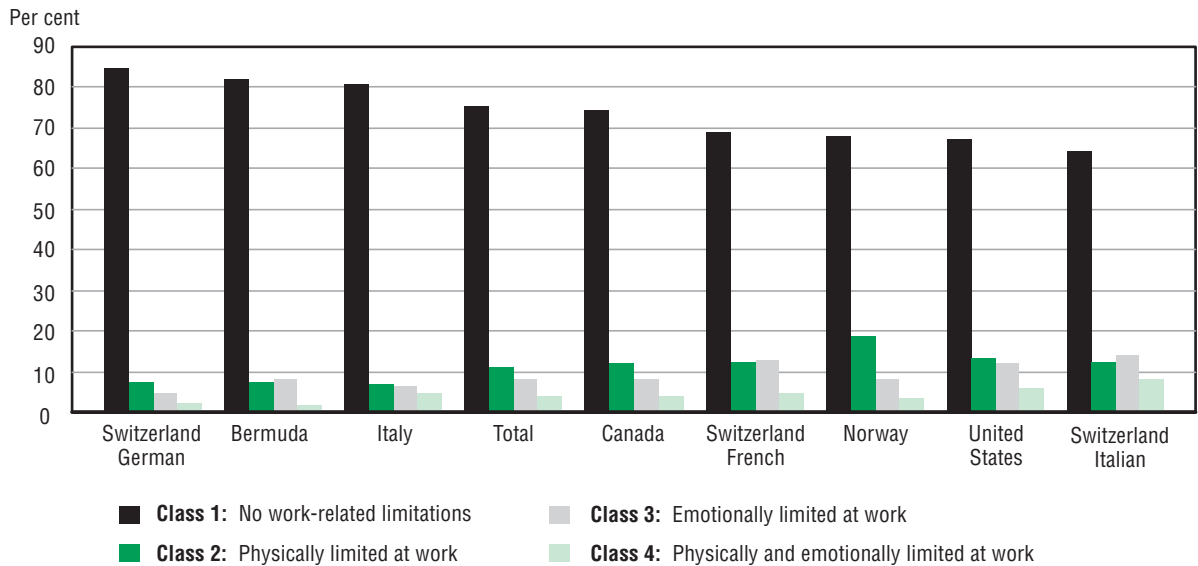
How much does the distribution of work-related health status vary by country? Figure 11.5 shows the percentages of adults by work-related health class for each participating country. Although the overall pattern is consistent across countries, there is some notable variation. For example, while 76 per cent of all participating adults are in Class 1, which predominantly report that they are not limited in their activities or accomplishments by any health or emotional issues, this varies from a low of 64 per cent among Italian speaking Swiss to a high of 85 per cent among German speaking Swiss.²

There is also variation among countries in terms of the percentages of adults who are likely to report their health limits their activities and accomplishments (Class 2). Here the percentages range from a low of seven per cent among Italian adults to 19 per cent in Norway. United States had about 14 per cent of their adults in this group. Adults in Canada had about 13 per cent of their adults in this group, as were Italian and French speaking Swiss adults. In comparison, only eight per cent of German speaking Swiss were likely to report that their health limits their activities (Class 2). Among adults who report that emotional issues impact their work and accomplishments (Class 3), the percentages range from a low of five per cent among German speaking Swiss to 15 per cent among Italian speaking Swiss. French speaking Swiss adults and those in the United States had 13 and 12 per cent respectively in Class 3. Among the least healthy adults in the sense that they were most likely to report health and emotional issues limited their activities and accomplishments at work (Class 4), the range was from two per cent in Bermuda to nine per cent among Italian speaking Swiss.

FIGURE 11.5

Work-related health status by country

Per cent of adults in each of four work-related health status groups by country, populations aged 16 to 65, 2003



Countries are ranked by the per cent of adults in Class 1: No worked-related limitations

Source: Adult Literacy and Life Skills Survey, 2003.

Figure 11.6 shows the average literacy and numeracy scores for the total sample of adults participating in ALL by their work-related health status and selected background characteristics. The findings show substantial variation in literacy and numeracy scores among adults with various background characteristics. Adults who are classified as being the healthiest (Class 1) have the highest average literacy and numeracy scores while those who are classified as the least healthy (Class 4) have the lowest average proficiencies.

Among age cohorts the pattern is slightly different. As expected, average literacy and numeracy proficiencies begin to decrease as adults pass through the forties and into the fifties, sixties and beyond. The average difference between young and old age cohorts tends to be somewhat larger than the average difference between the most healthy (Class 1) and least healthy (Class 4) within each age cohort. With respect to their health status, the largest differences are among those adults who are classified as the least healthy (Class 4) and those in the other groups. There is little variation in skills among adults in Classes 1, 2 or 3.

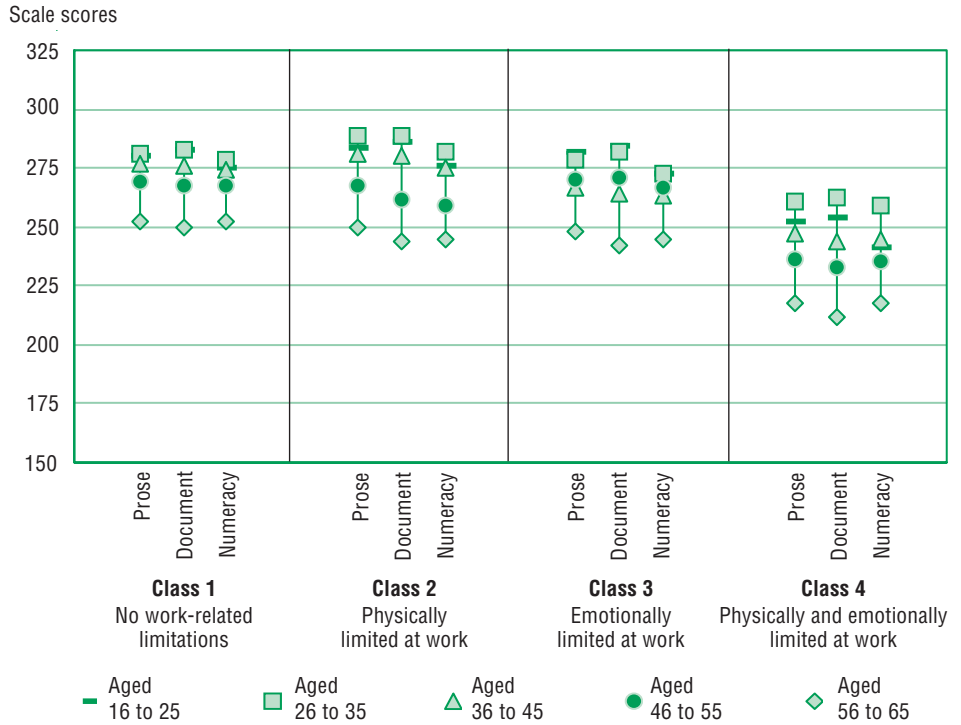
The pattern found for age is similar to that observed for educational attainment. The average difference between adults with a primary or less education and those with more than upper secondary education is around 100 points. In addition, while there is little difference between adults in Classes 1, 2 or 3, there is a difference between these adults and those in Class 4, the least healthy, for every educational group.

FIGURE 11.6

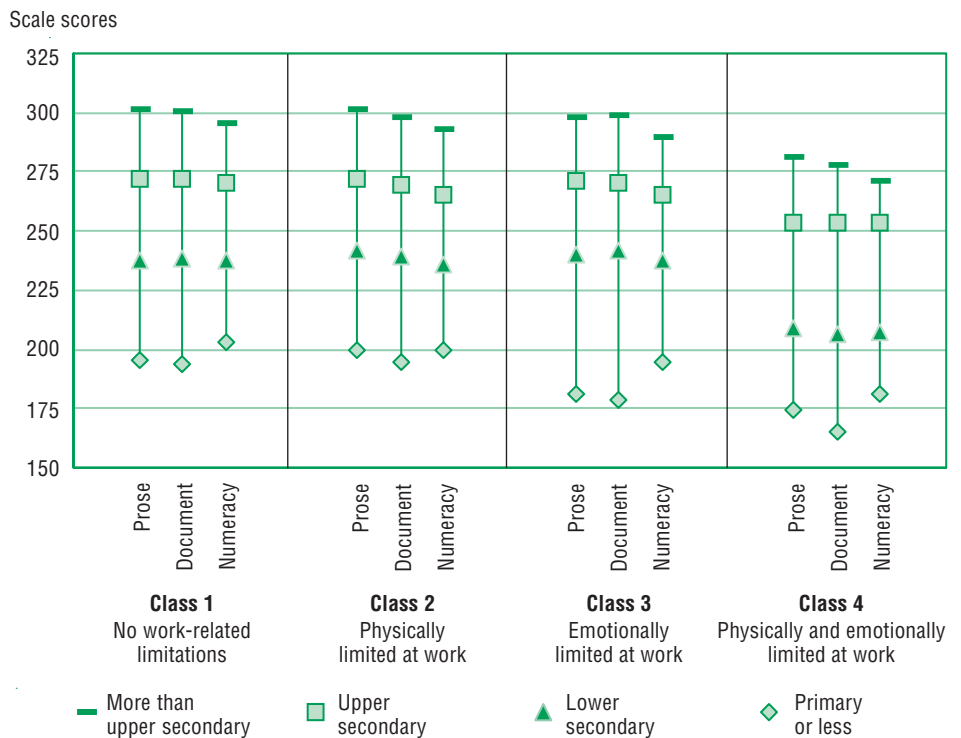
Skills and work-related health status by key demographic variables

Mean scores on the prose, document and numeracy scales ranging from 0 to 500 points by key demographic variables, populations aged 16 to 65, 2003

A. Age cohorts



B. Educational attainment



Source: Adult Literacy and Life Skills Survey, 2003.

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Endnotes

1. For more information on NALS see Kirsch *et al.* (1993) and for more information on the IALS, see OECD and Statistics Canada (2000).
2. The amount of variation seen within a country like Switzerland may be due in part to error variance that results from estimating their latent classes based on relatively small samples.

Annex 11A

Data Values for the Figures

TABLE 11.1

Response profiles in the four latent classes based on general health status, populations aged 16 to 65, 2003

	Size of class	Satisfied or extremely satisfied with life	General health is very good or excellent	Health does not limit moderate activities	Health does not limit climbing stairs	Feel calm and peaceful most or all of the time	Lots of energy most or all of the time	Feel blue little or none of the time	Health or emotions limits social activities little or none of the time
	Probability								
Class 1									
Excellent health	19.6	0.97	0.86	0.98	0.98	0.90	0.92	0.95	0.98
Class 2									
Good health	51.6	0.94	0.67	0.95	0.95	0.67	0.58	0.87	0.97
Class 3									
Fair health	20.3	0.59	0.34	0.90	0.90	0.18	0.20	0.38	0.68
Class 4									
Poor health	8.4	0.43	0.08	0.15	0.19	0.33	0.14	0.42	0.42

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 11.2

Per cent of adults in each of four general health status groups by country, populations aged 16 to 65, 2003

Countries	Class 1		Class 2		Class 3		Class 4	
	Excellent health		Good health		Fair health		Poor health	
Bermuda	23.8	(1.0)	53.5	(1.0)	17.3	(0.8)	5.5	(0.6)
Canada	17.8	(0.6)	52.1	(0.8)	21.3	(0.6)	8.9	(0.4)
Italy	23.7	(1.0)	45.2	(1.4)	22.8	(1.0)	8.3	(0.4)
Norway	20.9	(0.7)	49.5	(0.9)	19.0	(0.5)	10.5	(0.5)
Switzerland (French)	9.5	(1.0)	53.3	(1.9)	29.7	(1.6)	7.4	(0.8)
Switzerland (German)	19.8	(1.3)	61.8	(1.6)	14.4	(0.8)	3.9	(0.9)
Switzerland (Italian)	26.7	(1.5)	41.8	(1.9)	24.6	(1.2)	6.8	(0.7)
United States	14.0	(0.6)	50.3	(1.1)	23.1	(0.8)	12.5	(0.7)
Total	19.6	(0.4)	51.6	(0.5)	20.3	(0.3)	8.4	(0.2)

Source: Adult Literacy and Life Skills Survey, 2003.

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TABLE 11.3

Mean scores on the prose, document and numeracy scales ranging from 0 to 500 points by key demographic variables, populations aged 16 to 65, 2003

	Class 1: Excellent health						Class 2: Good health					
	Prose		Document		Numeracy		Prose		Document		Numeracy	
Total	264.7	(1.1)	265.2	(1.2)	264.7	(1.0)	279.8	(0.7)	279.6	(0.7)	276.6	(0.7)
Gender												
Male	262.1	(1.5)	266.4	(1.6)	269.3	(1.4)	277.6	(0.9)	282.4	(0.9)	283.8	(0.9)
Female	268.3	(1.4)	263.6	(1.6)	258.5	(1.6)	282.0	(0.8)	276.7	(0.9)	269.4	(0.9)
Age												
16 to 25	267.6	(2.2)	270.4	(2.3)	265.4	(2.3)	286.0	(1.4)	288.6	(1.5)	280.8	(1.9)
26 to 35	271.8	(2.4)	275.2	(2.1)	273.2	(1.7)	287.1	(1.6)	287.9	(1.3)	283.4	(1.6)
36 to 45	267.6	(2.5)	266.8	(2.4)	267.1	(2.4)	282.5	(1.1)	281.7	(1.1)	280.0	(1.1)
46 to 55	262.6	(2.3)	262.5	(2.4)	262.6	(2.4)	275.6	(1.6)	273.9	(1.9)	273.0	(1.9)
56 to 65	250.8	(2.1)	247.7	(2.5)	252.3	(1.6)	260.3	(1.5)	257.4	(1.8)	258.5	(1.7)
Education level												
More than upper secondary	293.5	(1.7)	294.5	(1.7)	291.7	(1.5)	305.1	(1.0)	304.3	(1.0)	298.7	(1.0)
Upper secondary	263.6	(1.8)	263.6	(2.1)	263.9	(1.8)	276.0	(1.0)	276.0	(1.0)	274.0	(1.1)
Lower secondary	230.6	(2.4)	231.3	(2.3)	231.6	(2.6)	244.1	(1.7)	245.3	(1.8)	242.9	(1.6)
Primary or less	189.6	(4.6)	190.2	(5.6)	196.8	(4.8)	206.2	(3.3)	204.2	(3.4)	214.0	(2.9)
Nativity												
Native	266.2	(1.2)	266.3	(1.4)	266.1	(1.0)	281.9	(0.6)	281.6	(0.7)	278.1	(0.7)
Non-native	257.5	(3.1)	260.1	(2.8)	258.3	(2.8)	278.1	(2.0)	277.9	(2.1)	274.6	(1.9)
	Class 3: Fair health						Class 4: Poor health					
	Prose		Document		Numeracy		Prose		Document		Numeracy	
Total	270.0	(1.2)	269.3	(1.2)	264.2	(1.3)	243.0	(1.8)	239.8	(1.7)	237.4	(1.6)
Gender												
Male	268.3	(1.7)	272.6	(1.6)	272.4	(1.6)	237.5	(2.6)	239.3	(3.0)	240.7	(2.8)
Female	271.3	(1.5)	266.8	(1.6)	257.7	(1.6)	246.5	(2.3)	240.1	(2.2)	235.3	(2.1)
Age												
16 to 25	280.6	(2.3)	281.9	(2.9)	271.1	(3.1)	255.6	(7.7)	258.9	(8.1)	242.8	(6.5)
26 to 35	276.9	(1.7)	279.7	(2.1)	273.1	(1.7)	264.8	(4.6)	263.0	(4.5)	255.6	(4.1)
36 to 45	272.7	(2.8)	271.2	(2.6)	266.8	(2.6)	251.8	(3.4)	249.7	(3.7)	245.5	(2.6)
46 to 55	265.1	(2.4)	261.5	(2.2)	258.0	(2.1)	243.5	(3.3)	240.0	(3.4)	240.1	(2.8)
56 to 65	239.4	(2.3)	235.2	(2.5)	238.5	(2.8)	225.3	(2.8)	219.4	(2.7)	221.2	(2.4)
Education level												
More than upper secondary	298.9	(1.5)	299.2	(1.6)	290.7	(1.9)	281.3	(2.9)	276.5	(2.9)	268.6	(2.8)
Upper secondary	273.8	(1.6)	272.5	(1.9)	266.6	(1.6)	253.9	(2.6)	251.3	(3.1)	248.5	(2.8)
Lower secondary	236.5	(2.4)	236.9	(2.1)	234.5	(2.6)	218.0	(3.4)	214.7	(3.7)	212.4	(3.4)
Primary or less	185.3	(3.2)	179.8	(3.4)	191.0	(3.7)	180.8	(4.6)	175.8	(5.2)	187.9	(4.3)
Nativity												
Native	270.8	(1.3)	269.4	(1.4)	264.3	(1.4)	245.3	(1.8)	241.7	(1.8)	238.6	(1.7)
Non-native	265.3	(3.3)	268.9	(2.9)	263.3	(2.8)	230.6	(5.5)	229.4	(4.8)	231.1	(4.0)

Note: See Box 11B in text for a description of Class 1 to Class 4 of health status.

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 11.4

Response profiles in the four latent classes based on work-related health status, populations aged 16 to 65, 2003

	Size of class	Accomplishes less at work	Health limits activities	Accomplishes less at work due to emotional issues	Less careful or didn't do work due to emotional issues	Pain interferes with work moderately to severely
	Per cent	Probability				
Class 1						
No work-related limitations	75.7	0.02	0.00	0.00	0.00	0.04
Class 2						
Physically limited at work	11.5	0.79	0.86	0.14	0.03	0.52
Class 3						
Emotionally limited at work	8.7	0.18	0.05	0.71	0.55	0.17
Class 4						
Physically and emotionally limited at work	4.1	0.97	0.96	0.95	0.87	0.71

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 11.5

Per cent of adults in each of four work-related health status groups by country, populations aged 16 to 65, 2003

Countries	Class 1		Class 2		Class 3		Class 4	
	No work-related limitations		Physically limited at work		Emotionally limited at work		Physically and emotionally limited at work	
Bermuda	82.2	(1.0)	7.5	(0.6)	8.4	(0.7)	2.0	(0.3)
Canada	74.8	(0.5)	12.5	(0.3)	8.4	(0.4)	4.3	(0.3)
Italy	81.2	(1.0)	7.2	(0.5)	6.7	(0.6)	4.9	(0.5)
Norway	68.4	(0.8)	19.0	(0.6)	8.6	(0.5)	3.9	(0.3)
Switzerland (French)	69.2	(2.2)	12.8	(1.3)	13.0	(1.3)	5.0	(0.8)
Switzerland (German)	84.8	(1.1)	7.6	(0.7)	5.2	(0.7)	2.4	(0.6)
Switzerland (Italian)	64.4	(1.2)	12.6	(1.1)	14.5	(1.0)	8.5	(1.1)
United States	67.6	(1.3)	13.7	(0.7)	12.4	(0.7)	6.4	(0.5)
Total	75.7	(0.5)	11.5	(0.2)	8.7	(0.2)	4.1	(0.2)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 11.6

Mean scores on the prose, document and numeracy scales ranging from 0 to 500 points by key demographic variables, populations aged 16 to 65, 2003

	Class 1: No work-related limitations						Class 2: Physically limited at work					
	Prose		Document		Numeracy		Prose		Document		Numeracy	
Total	273.4	(0.7)	273.4	(0.6)	270.9	(0.6)	272.9	(1.3)	270.1	(1.3)	265.9	(1.6)
Gender												
Male	271.4	(0.9)	276.0	(0.9)	277.5	(0.8)	268.9	(2.1)	272.0	(2.2)	272.2	(2.3)
Female	275.6	(0.8)	270.6	(0.7)	263.7	(0.8)	276.0	(1.7)	268.7	(1.8)	260.8	(2.0)
Age												
16 to 25	280.1	(1.2)	282.4	(1.3)	275.1	(1.7)	283.6	(3.5)	286.4	(3.7)	276.1	(4.2)
26 to 35	280.9	(1.2)	282.6	(1.0)	278.9	(0.9)	289.0	(2.5)	288.8	(2.3)	282.0	(2.6)
36 to 45	276.9	(1.1)	276.2	(1.1)	274.2	(1.0)	281.4	(2.5)	279.9	(2.8)	274.8	(2.2)
46 to 55	269.2	(1.3)	267.8	(1.3)	267.1	(1.3)	267.8	(2.4)	261.8	(2.9)	259.1	(2.9)
56 to 65	252.3	(1.4)	249.6	(1.5)	251.9	(1.1)	249.8	(2.9)	243.8	(3.1)	244.6	(2.9)
Education level												
More than upper secondary	301.2	(0.8)	301.0	(0.9)	295.7	(0.8)	301.2	(1.9)	298.1	(1.9)	292.7	(2.0)
Upper secondary	272.2	(0.9)	272.0	(0.8)	270.2	(0.9)	272.3	(2.2)	269.7	(2.4)	265.2	(2.5)
Lower secondary	237.7	(1.4)	238.7	(1.5)	237.1	(1.4)	241.8	(2.7)	238.8	(3.3)	236.1	(3.4)
Primary or less	195.7	(2.0)	193.9	(2.3)	203.4	(2.6)	199.3	(5.9)	194.3	(5.8)	199.4	(5.5)
Nativity												
Native	275.1	(0.7)	274.8	(0.6)	272.0	(0.6)	274.3	(1.4)	271.2	(1.6)	266.7	(1.6)
Non-native	270.0	(1.6)	271.3	(1.7)	268.0	(1.4)	262.6	(3.6)	262.3	(4.0)	259.7	(3.5)
	Class 3: Emotionally limited at work						Class 4: Physically and emotionally limited at work					
	Prose		Document		Numeracy		Prose		Document		Numeracy	
Total	271.8	(1.7)	272.1	(1.3)	266.3	(1.5)	238.4	(2.7)	235.7	(3.0)	236.2	(2.5)
Gender												
Male	268.9	(2.6)	273.4	(2.3)	273.2	(2.3)	232.9	(3.8)	235.9	(4.8)	241.8	(3.5)
Female	274.1	(2.2)	271.2	(1.9)	260.9	(2.4)	241.5	(3.5)	235.7	(3.6)	233.1	(3.1)
Age												
16 to 25	281.9	(3.1)	284.1	(3.2)	272.3	(3.4)	252.5	(11.9)	254.1	(10.1)	241.5	(9.0)
26 to 35	278.9	(2.9)	281.9	(3.6)	272.6	(3.5)	260.8	(5.9)	262.8	(7.1)	259.3	(5.8)
36 to 45	266.3	(3.5)	264.0	(2.7)	262.9	(2.9)	246.8	(4.4)	244.2	(5.1)	244.5	(5.1)
46 to 55	269.9	(5.8)	271.2	(5.9)	266.5	(4.1)	236.3	(4.4)	232.9	(4.6)	235.4	(4.1)
56 to 65	248.0	(5.6)	242.2	(4.6)	245.0	(4.9)	217.7	(3.5)	212.1	(4.0)	217.4	(4.0)
Education level												
More than upper secondary	298.3	(3.0)	299.1	(3.1)	289.8	(2.6)	281.1	(4.2)	277.8	(3.5)	271.5	(3.8)
Upper secondary	271.1	(2.2)	270.4	(2.4)	265.1	(2.2)	253.6	(2.2)	253.2	(3.0)	253.2	(3.0)
Lower secondary	239.9	(4.1)	242.1	(4.1)	237.5	(3.0)	209.2	(3.5)	206.5	(3.8)	206.8	(3.5)
Primary or less	181.0	(13.5)	178.8	(14.9)	194.2	(7.3)	174.1	(6.1)	165.5	(6.6)	181.1	(6.4)
Nativity												
Native	273.8	(1.6)	274.0	(1.6)	267.6	(1.7)	239.4	(2.7)	235.8	(2.9)	236.3	(2.6)
Non-native	261.8	(5.5)	262.8	(4.8)	259.4	(3.9)	233.1	(6.3)	235.5	(8.0)	235.8	(6.7)

Note: See Box 11C in text for a description of Class 1 to Class 4 of work-related health status.

Source: Adult Literacy and Life Skills Survey, 2003.

Annex 11B

Work-Related and General Health Questions from ALL

- G13A Because of your health, do you accomplish less at work...
- G13B Health limits kind of work or activities ...
- G14A Accomplish less because of emotional problems
- G14B Didn't do work or other activities as careful because of emotional...

Value Label

- 1 Yes
- 2 No
- 8 Refused
- 9 Not stated

- G15 How much did pain interfere with work?

Value Label

- 1 Not at all
- 2 A little bit
- 3 Moderately
- 4 Quite a bit
- 5 Extremely
- 8 Refused
- 9 Not stated

- G10 General feeling about your life?

Value Label

- 1 Extremely satisfied
- 2 Satisfied
- 3 Neither satisfied nor dissatisfied
- 4 Unsatisfied
- 5 Extremely unsatisfied

11

Value Label

- 6 No opinion
- 8 Refused
- 9 Not stated

G11 In general, how is your health?

Value Label

- 1 Excellent
- 2 Very good
- 3 Good
- 4 Fair
- 5 Poor
- 8 Refused
- 9 Not stated

G12A Does your health limit moderate activities

G12B Does your health limit climbing stairs?

Value Label

- 1 Yes, limited a lot
- 2 Yes, limited a little
- 3 No, not at all limited
- 8 Refused
- 9 Not stated

G16A Feeling calm and peaceful?

G16B Did you have a lot of energy?

G16C Have felt downhearted and blue?

Value Label

- 1 All of the time
- 2 Most of the time
- 3 A good bit of the time
- 4 Some of the time
- 5 A little of the time
- 6 None of the time
- 8 Refused
- 9 Not stated

G17 Physical and emotional problems interfered with social activities?

Value Label

- 1 All of the time
- 2 Most of the time
- 3 Some of the time
- 4 A little of the time
- 5 None of the time
- 8 Refused
- 9 Not stated

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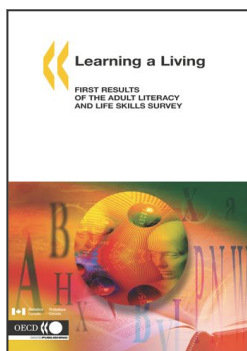
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From:
Learning a Living
First Results of the Adult Literacy and Life Skills Survey

Access the complete publication at:
<https://doi.org/10.1787/9789264010390-en>

Please cite this chapter as:

OECD/Statistics Canada (2005), "Skills and Health", in *Learning a Living: First Results of the Adult Literacy and Life Skills Survey*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264010390-13-en>

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