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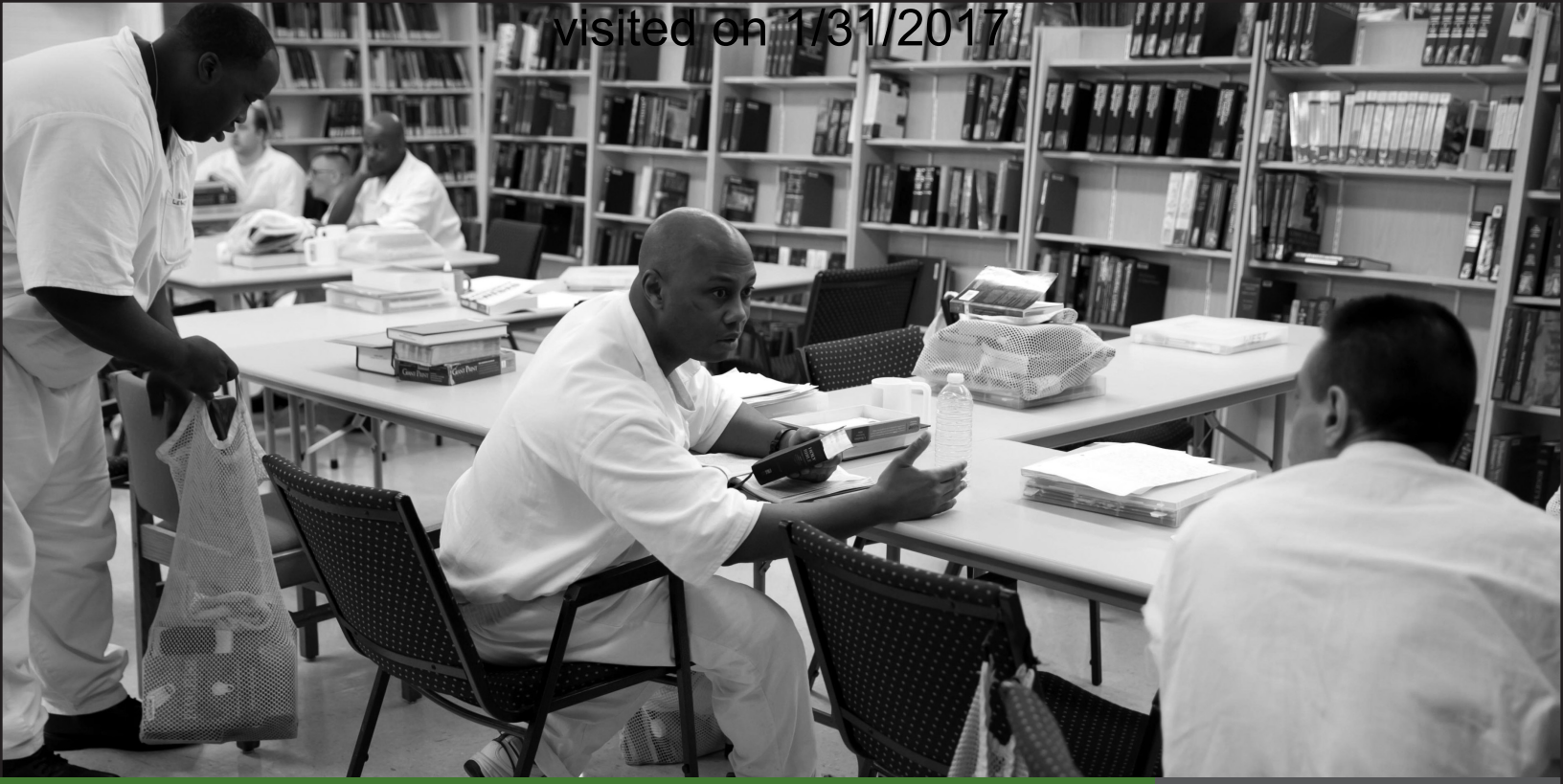

Highlights from the U.S. PIAAC Survey of Incarcerated Adults: Their Skills, Work Experience, Education, and Training

Program for the International Assessment of Adult Competencies: 2014

NCES 2016-040
U.S. DEPARTMENT OF EDUCATION

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November 2016

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1 INTRODUCTION

The U.S. PIAAC Survey of Incarcerated Adults was designed to provide information to policymakers, administrators, educators, and researchers who are developing education and training policies and programs for incarcerated adults. This report highlights data from the survey's extensive background questionnaire and direct assessments of cognitive skills. It examines the skills of incarcerated adults in relationship to their work experiences and to their education and training in prison.

What is PIAAC?

The **Program for the International Assessment of Adult Competencies (PIAAC)** is a cyclical, large-scale study of adult skills and life experiences that was developed and organized by the Organization for Economic Cooperation and Development (OECD), and conducted in the U.S. by the National Center for Education Statistics. PIAAC measures relationships between individuals' educational background, workplace experiences and skills, use of information and communication technology, and cognitive skills.

This introductory chapter provides a demographic profile along with a snapshot of the cognitive skills of adults in America's state, federal, and private prisons.[1] For interpretive context, it compares their profile and skills with those of non-incarcerated adults (the U.S. household population). The rest of the report focuses on incarcerated adults' employment prior to incarceration, experiences with prison jobs, skills certifications, educational attainment in prison, and participation in academic programs and training classes.

The U.S. PIAAC Survey of Incarcerated Adults follows two earlier studies, conducted by NCES in the 1990s and early 2000s, which assessed the skills of incarcerated adults in the United States. Results from the earlier studies are not directly comparable with the results from the PIAAC Survey of Incarcerated Adults at this time.[2] Nonetheless, the current survey is an extension of this earlier work and continues the ongoing analysis and conversation about the skills and experiences of the U.S. prison population.

How was the PIAAC Survey of Incarcerated Adults conducted?

The PIAAC Survey of Incarcerated Adults was conducted from February through June 2014, and targeted a nationally representative sample of incarcerated adults (age 16 to 74)[3] detained in state and federal prisons, and in private prisons housing state and federal

[1] Facilities run by private corporations whose services and beds are contracted by state governments or the Federal Bureau of Prisons.

[2] *Literacy Behind Prison Walls: Profiles of the Prison Population from the National Adult Literacy Survey* (Haigler 1994) and *Literacy Behind Bars: Results from the 2003 National Assessment of Adult Literacy Prison Survey* (Greenberg 2007). Results from the 1994 National Adult Literacy Survey (NALS) and the 2003 National Assessment of Adult Literacy (NAAL) have not yet been rescaled to place them on the same scale as PIAAC. Once they are rescaled, direct comparisons of the different prison populations measured by NALS, NAAL, and PIAAC will be possible.

[3] While the PIAAC target population was 16- to 74-year-olds, the prison sample does not include 16- or 17-year-olds.

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inmates. In total, there were 98 participating prisons (80 were male-only or coed and 18 were female-only). Female-only prisons were oversampled in order to arrive at 250 to 300 female inmates total. Of the 1,546 sampled inmates, 1,315 completed the prison background questionnaire (1,048 male and 267 female).

The prison survey was part of a second round of U.S. data collection, known as the 2014 U.S. PIAAC National Supplement. In addition to the prison population, the national supplement targeted a population of 3,600 adults from three key U.S. subgroups of interest: unemployed adults (age 16 to 65), young adults (age 16 to 34), and older adults (age 66 to 74). This augmented the 2012 PIAAC Main Study of 5,000 adults, bringing the combined U.S. household sample to 8,600 adults between the ages of 16 and 74. The combined U.S. results from the PIAAC Main Study and the U.S. National Supplement represent the household data that are used for comparison with the prison results presented at the end of this introduction.

Incarcerated adults were tested with the same assessments as those used for the national administration of PIAAC in households in 2012 and 2014. Inmates also responded to background questions that were similar to the household questionnaire given to the national sample of adults, but modified to more closely align with the experiences of the prison population.

What does PIAAC measure?

PIAAC is designed to assess adults over a broad range of abilities, from simple reading to complex problem-solving skills, and to collect information on individuals' skill use and background. PIAAC defines four core competency domains of adult cognitive skills that are seen as key to facilitating the social and economic participation of adults in advanced economies: literacy, reading components, numeracy, and problem solving in technology-rich environments.

Tasks developed for PIAAC's four domains are authentic, culturally appropriate, and drawn from real-life situations that are expected to be important or relevant in different contexts. Tasks are intended to reflect adults' daily lives across cultures, even if not every adult is necessarily familiar with every task. PIAAC is not designed to provide individual scores, but rather to measure how groups of adults perform on the domains. In order to be as efficient as possible with participants' time, each respondent receives only a portion of the assessment items (see the Data Collection section of Appendix A for more detail). For a more detailed description of the four domains, see Appendix B. For a list of the experts in correctional education and policy who provided valuable input on the background questionnaires and the PIAAC assessment in general, see Appendix C.

Literacy

The primary goal of PIAAC's literacy assessment is to measure everyday literacy, which is defined by the PIAAC framework as *"understanding, evaluating, using and engaging with written text to participate in society, to achieve one's goals and to develop one's knowledge and potential"* (OECD 2012).

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Reading components

The primary goal of the PIAAC reading components measure is to provide information about the literacy skills of adults at the lower end of the literacy spectrum—specifically, whether they have the foundational skills to develop the higher literacy and numeracy abilities necessary for functioning in society. The reading components assessment focuses on core elements of reading: reading vocabulary, sentence comprehension, and basic passage comprehension. Note that results for this domain are not shown in this report.

Numeracy

The primary goal of PIAAC's numeracy assessment is to evaluate basic mathematical and computational skills that are considered fundamental for functioning in everyday work and social life. Numeracy in the PIAAC framework is defined as *"the ability to access, use, interpret, and communicate mathematical information and ideas, to engage in and manage mathematical demands of a range of situations in adult life"* (OECD 2012).

Problem solving in technology-rich environments (PS-TRE)

PIAAC represents the first attempt to assess problem solving in technology-rich environments on a large scale and as a single dimension. PIAAC defines problem solving in technology-rich environments as *"using digital technology, communication tools, and networks to acquire and evaluate information, communicate with others, and perform practical tasks"* (OECD 2012).

Skill use and the background questionnaire

In addition to the skills assessment, PIAAC's background questionnaire surveys adults about their educational background; work history; their intrapersonal, interpersonal, and professional skills; and their use of those skills on the job and at home.

For a more detailed description of the domains, see Appendix B.

How are results reported?

PIAAC results are reported in two ways: (1) as scale scores (estimated on a 0–500 scale) in the three domains of literacy, numeracy, and problem solving in technology-rich environments,[4] and (2) as percentages of adults reaching the proficiency levels established for each of these domains.

PIAAC reports five proficiency levels for literacy and numeracy (Below level 1, Level 1, Level 2, Level 3, and Level 4/5) and four levels for problem solving in technology-rich environments (Below level 1, Level 1, Level 2, and Level 3). The OECD provides detailed descriptions of the types of skills that can be performed at each level. For example, adults at Level 1 in literacy can "read relatively short…texts to locate a single piece of information that is identical to or synonymous with the information given in the question or directive" and can "enter personal information onto a document" when "[l]ittle, if any, competing

[4] Results from the reading components portion of the assessment are not provided in this report, but can be accessed via the International Data Explorer at http://nces.ed.gov/surveys/piaac/ideuspiaac/.

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information is present." However, adults at Level 1 typically are not successful performing skills at the higher levels (e.g., "compare and contrast or reason about information requested" or "navigate within digital texts to access and identify information from various parts of a document," both of which are Level 2 literacy skills). Appendix B provides the OECD's detailed descriptions of these levels along with examples of assessment items at each level. While this report highlights average scores and the proportions of incarcerated adults who perform below Level 2, full proficiency-level results are available on the PIAAC Results Portal at http://nces.ed.gov/surveys/piaac/results/makeselections.aspx and the International Data Explorer (IDE) at http://nces.ed.gov/surveys/piaac/ideuspiaac/.

Readers are cautioned not to draw causal inferences. Many of the variables examined in this report may be related to one another, but the complex interactions and relationships among them have not been explored. The information discussed in this report comes from just a few of the variables that can be examined using these data. These variables were selected to highlight the range of information available from this study. The release of this report is intended to encourage in-depth analysis of the data using more sophisticated statistical methods.

All statistically significant differences described and/or marked with an * in this report are at the .05 level. No statistical adjustments to account for multiple comparisons were used. Differences that are statistically significant are discussed using comparative terms such as "higher" and "lower." Differences that are not statistically significant are either not discussed or referred to as "not measurably different" or "not statistically significant." In the latter case, failure to find a difference as statistically significant does not necessarily mean that there was no difference. It could be that a real difference cannot be detected by the significance test because of a small sample size or an imprecise measurement in the sample. If the statistical test is significant, this means that there is convincing evidence (though no guarantee) of a real difference in the population. However, it is important to remember that statistically significant results do not necessarily identify those findings that have policy significance or practical importance. In tables without asterisks, apparent differences between estimates may not be statistically significant. See Appendix A for more information about statistical testing.

Results for incarcerated adults on the literacy and numeracy domains are presented in this highlights report. Only adults who took the PIAAC survey on computer were assessed on problem solving in technology-rich environments (PS-TRE). Among the U.S. adult household population, 81 percent of adults took PIAAC on computer; however, among the U.S. prison population, only 61 percent of adults took PIAAC on computer (see table A-2 in Appendix A). Due to this difference, comparisons on PS-TRE between these populations should be made with caution.

This report provides findings for only a few select results, but more PIAAC results and resources are available from the PIAAC Results Portal at http://nces.ed.gov/surveys/piaac/results/makeselections.aspx and the International Data Explorer (IDE) http://nces.ed.gov/surveys/piaac/ideuspiaac/.

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How does the U.S. incarcerated population compare with the general or "household" population of U.S. adults?

The demographic characteristics of U.S. incarcerated adults are significantly different in many respects from those of the general population of adults in U.S. households. Table 1.1 profiles key demographic characteristics of the prison population and marks with an asterisk those percentages that are significantly different from the household population. For almost every characteristic, the incarcerated population differed significantly from the household population.

TABLE 1.1.

Percentage distribution of U.S. adults in selected population groups, by population group and selected characteristics: 2012 and 2014

Characteristic	Percentage	
	U.S. Prison	U.S. Household
Gender		
Male	93*	49
Female	7*	51
Race/ethnicity		
White	34*	66
Black	37*	12
Hispanic	22*	14
Other	7	7
Age intervals[1]		
16–24	13*	17
25–34	35*	18
35–44	24*	18
45–54	19	20
55–65	8*	18
66–74	1*	9
Born in the United States		
Yes	93*	86
No	7*	14
Highest level of educational attainment		
Graduate or professional degree	1*	11
Bachelor's degree	1*	17
Associate's degree	4*	9
High school credential	64*	50
Below high school	30*	14
Recidivism		
First time in prison	27	†
Previously incarcerated	73	†

† Not applicable.

* Significantly different ($p < .05$) from the comparison category, U.S. Household.

[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.

NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. Detail may not sum to totals because of rounding. U.S. Household data collection occurred in 2012 and 2014, and U.S. Prison data collection occurred in 2014. Apparent differences between in-prison racial estimates may not be statistically significant.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014, U.S. PIAAC 2012/2014.

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Table 1.2 presents the average literacy scores and the percentages of adults performing below Level 2 in literacy for both the prison and the household adult populations. Again, estimates for incarcerated adults that are significantly different from those for household adults are marked with an asterisk. While the two populations differ on nearly every characteristic shown in table 1.1, there are some characteristics for which there were no significant differences in the literacy skills between the prison and household populations. In particular, there were no measurable differences in literacy between prison and household populations for Black adults, Hispanic adults, and adults at the same level of educational attainment.

TABLE 1.2.

Average scores and percentages of adults below Level 2 on the PIAAC literacy scale, by selected characteristics: 2012 and 2014

Characteristic	Average literacy score		Percentage below Level 2 in literacy	
	U.S. Prison	U.S. Household	U.S. Prison	U.S. Household
Overall	**249***	**270**	**29***	**19**
Gender				
Male	249*	271	29*	19
Female	249*	269	28*	18
Race/ethnicity				
White	265*	282	18*	11
Black	240	245	36	33
Hispanic	239	235	35	41
Other	250*	268	29	20
Age intervals[1]				
16–24	248*	273	28*	14
25–34	254*	281	26*	13
35–44	252*	275	28*	16
45–54	240*	267	35*	21
55–65	244*	262	33	23
66–74	‡	252	‡	28
Born in the United States				
Yes	251*	275	27*	15
No	222*	239	51	41
Highest level of educational attainment				
Graduate or professional degree	‡	308	‡	3
Bachelor's degree	‡	300	‡	5
Associate's degree	272	283	15	8
High school credential	259	262	21	20
Below high school	224	226	48	48
Recidivism				
First time in prison	249	†	29	†
Previously incarcerated	249	†	29	†

† Not applicable.

‡ Reporting standards not met.

* Significantly different ($p < .05$) from the comparison category, U.S. Household.

[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.

NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. U.S. Household data collection occurred in 2012 and 2014, and U.S. Prison data collection occurred in 2014. Apparent differences between in-prison racial estimates may not be statistically significant.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014, U.S. PIAAC 2012/2014.

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Table 1.3 mirrors table 1.2 but presents numeracy results. In contrast to the results for literacy, the results for numeracy reveal significant differences between the prison and the household adult populations for nearly every characteristic.

TABLE 1.3.

Average scores and percentages of adults below Level 2 on the PIAAC numeracy scale, by selected characteristics: 2012 and 2014

Characteristic	Average numeracy score		Percentage below Level 2 in numeracy	
	U.S. Prison	U.S. Household	U.S. Prison	U.S. Household
Overall	**220***	**255**	**52***	**29**
Gender				
Male	221*	263	52*	25
Female	219*	248	54*	33
Race/ethnicity				
White	242*	270	36*	19
Black	206*	216	65*	57
Hispanic	210*	222	57	52
Other	221*	257	52*	28
Age intervals[1]				
16–24	218*	254	54*	29
25–34	227*	267	47*	22
35–44	224*	261	49*	26
45–54	209*	253	63*	30
55–65	214*	252	59*	30
66–74	‡	236	‡	43
Born in the United States				
Yes	223*	259	51*	26
No	188*	232	69*	46
Highest level of educational attainment				
Graduate or professional degree	‡	300	‡	6
Bachelor's degree	‡	289	‡	9
Associate's degree	255	267	25	16
High school credential	233*	246	43*	33
Below high school	187*	208	79*	62
Recidivism				
First time in prison	217	†	53	†
Previously incarcerated	222	†	52	†

† Not applicable.

‡ Reporting standards not met.

* Significantly different ($p < .05$) from the comparison category, U.S. Household.

[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.

NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. U.S. Household data collection occurred in 2012 and 2014, and U.S. Prison data collection occurred in 2014. Apparent differences between in-prison racial estimates may not be statistically significant.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014, U.S. PIAAC 2012/2014.

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2 WORK EXPERIENCE

Access PIAAC background questionnaires at https://nces.ed.gov/surveys/piaac/questionnaire.asp.

The U.S. PIAAC Survey of Incarcerated Adults asked prison inmates a series of questions related to their work experience prior to their current incarceration, their work experience during their current incarceration, the skills certifications that they had earned (in or outside prison), and the frequency and types of skills they use in their current prison jobs. Based on these questions, this chapter highlights some of the survey's findings related to the following topics:

- Employment status of incarcerated adults prior to their current incarceration
- Sources of income of incarcerated adults in the year before their current incarceration
- Employment status of incarcerated adults during their current incarceration
- Job-related skill certifications
- Computer use in prison jobs
- Use of literacy skills in prison jobs
- Use of numeracy skills in prison jobs

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PRIOR WORK EXPERIENCE

What was your employment status prior to your current incarceration?[5]

Around two-thirds (66 percent) of the survey's respondents reported that they were working prior to their incarceration: about half of them (49 percent) were employed full-time, with another 16 percent working part-time (table 2.1). The other 34 percent of incarcerated adults were not in the paid workforce: approximately 19 percent were unemployed, with the remaining 16 percent reporting they were either students, permanently disabled, looking after family members, in retirement, or in other unspecified situations.

TABLE 2.1.

Percentage distribution of incarcerated adults by employment status prior to current incarceration: 2014

Employment status	Percentage
Full-time employed	49
Part-time employed	16
Unemployed	19
Student	4
Apprentice, internship	#
In retirement	1
Permanently disabled	3
In compulsory military or community service	‡
Fulfilling domestic tasks	4
Other	4

Rounds to zero.
‡ Reporting standards not met.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

[5] Participants were instructed in the following way: "Please look at this card and tell me which ONE of the statements best describes your situation before your current incarceration. If more than one statement applies to you, please indicate the statement that best describes how you see yourself."

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Distributions across the employment categories are provided in table 2.2 for interpretive context. For example, the first row indicates that among incarcerated adults, 49 percent were employed full time, 16 percent were employed part time, and 19 percent were unemployed in the year prior to their incarceration.

TABLE 2.2.

Percentage of incarcerated adults by employment status prior to current incarceration and selected characteristics: 2014

Characteristic	Percentage		
	Full-time employed	Part-time employed	Unemployed
Overall	**49**	**16**	**19**
Gender			
Male	51	16	18
Female	28	21	27
Race/ethnicity			
White	54	16	16
Black	42	14	26
Hispanic	55	17	15
Other	46	27	8
Age intervals[1]			
16–24	30	18	29
25–34	45	22	19
35–44	55	14	20
45–54	56	13	16
55–65	65	5	6
66–74	‡	‡	‡
Born in the United States			
Yes	48	17	19
No	70	8	12
Highest level of educational attainment			
Graduate or professional degree	‡	‡	‡
Bachelor's degree	‡	‡	‡
Associate's degree	65	11	7
High school credential	50	18	18
Below high school	45	15	23
Recidivism			
First time in prison	59	12	12
Previously incarcerated	46	18	21
Have used a computer			
Yes	48	17	20
No	52	12	19

‡ Reporting standards not met.

[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.

NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. Details do not sum to 100 because not all employment categories are shown. Apparent differences between estimates may not be statistically significant. To explore statistical comparisons for this dataset, as well as for the categories not shown, see the NCES International Data Explorer (IDE) at http://nces.ed.gov/surveys/piaac/ideuspiaac/.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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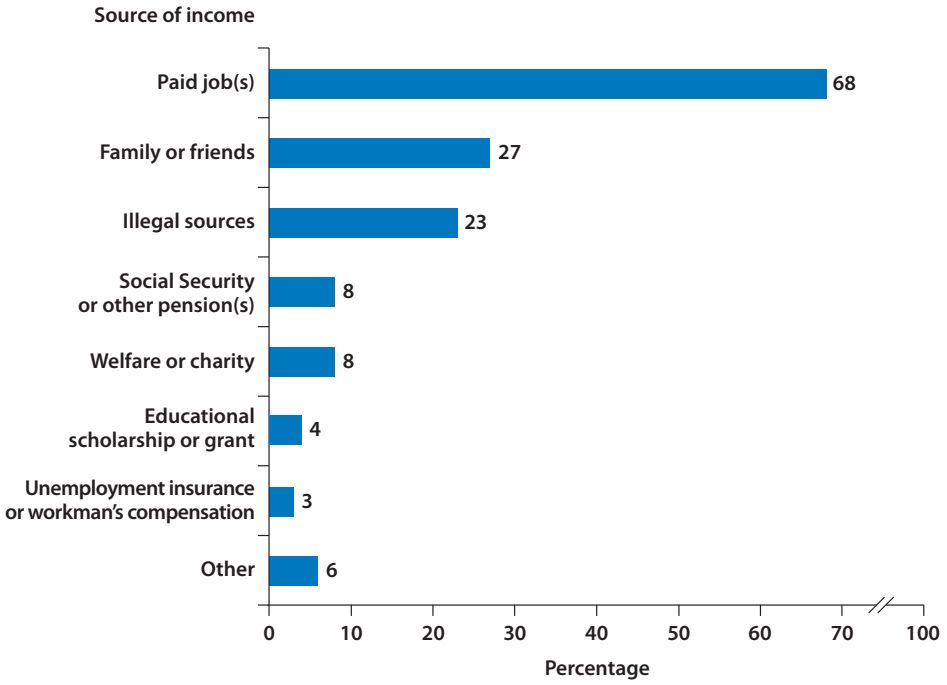
What were your sources of income in the year before your current incarceration?

Incarcerated adults were asked to indicate their income sources during the year before their current incarcerations. Respondents could select all the categories that applied to their situation. Sixty-eight percent reported that they received income from paid jobs in the year before their imprisonment. A little over a quarter (27 percent) received financial assistance from family or friends, and 23 percent reported they received income from illegal sources (figure 2.1).

FIGURE 2.1.

Percentage of incarcerated adults by reported sources of income in year prior to current incarceration: 2014



NOTE: Respondents could select all the categories that applied to their situation.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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Literacy and numeracy performance results based on employment status prior to current incarceration

In literacy, employed females and employed adults born in the U.S. scored higher than their unemployed peers (table 2.3). In numeracy, employed males, females, Blacks, adults born in the U.S., adults previously incarcerated, and those who had ever used a computer scored higher than their respective unemployed peers (table 2.4). All other comparisons in tables 2.3 and 2.4 between employed and unemployed subgroups were not measurably different.

TABLE 2.3.

Average scores and percentages of incarcerated adults below Level 2 on the PIAAC literacy scale, by employment status prior to current incarceration and selected characteristics: 2014

Characteristic	Average literacy score		Percentage below Level 2 in literacy	
	Employed	Unemployed	Employed	Unemployed
Overall	**251**	**245**	**28**	**32**
Gender				
Male	251	246	28	31
Female	257*	237	23*	40
Race/ethnicity				
White	264	268	18	15
Black	244	236	34	39
Hispanic	240	‡	34	‡
Other	253	‡	27	‡
Age intervals[1]				
16–24	250	‡	25	‡
25–34	254	249	25	29
35–44	254	247	27	33
45–54	244	‡	31	‡
55–65	245	‡	32	‡
66–74	‡	‡	‡	‡
Born in the United States				
Yes	254*	246	25	31
No	220	‡	52	‡
Highest level of educational attainment				
Graduate or professional degree	‡	‡	‡	‡
Bachelor's degree	‡	‡	‡	‡
Associate's degree	‡	‡	‡	‡
High school credential	259	256	21	24
Below high school	224	229	48	44
Recidivism				
First time in prison	250	‡	29	‡
Previously incarcerated	252	244	27	33
Have used a computer				
Yes	255	249	24	30
No	222	‡	50	‡

‡ Reporting standards not met.
* Significantly different ($p < .05$) from the comparison category, incarcerated adults who were unemployed prior to current incarceration.
[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.
NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.
SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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TABLE 2.4.

Average scores and percentages of incarcerated adults below Level 2 on the PIAAC numeracy scale, by employment status prior to current incarceration and selected characteristics: 2014

Characteristic	Average numeracy score		Percentage below Level 2 in numeracy	
	Employed	Unemployed	Employed	Unemployed
Overall	**225***	**214**	**49**	**56**
Gender				
Male	225*	215	49	55
Female	224*	209	51	64
Race/ethnicity				
White	243	248	37	28
Black	213*	198	60	68
Hispanic	211	‡	55	‡
Other	226	‡	47	‡
Age intervals[1]				
16–24	225	‡	49	‡
25–34	230	220	44	52
35–44	227	218	47	53
45–54	216	‡	58	‡
55–65	216	‡	60	‡
66–74	‡	‡	‡	‡
Born in the United States				
Yes	228*	215	47	55
No	186	‡	71	‡
Highest level of educational attainment				
Graduate or professional degree	‡	‡	‡	‡
Bachelor's degree	‡	‡	‡	‡
Associate's degree	‡	‡	‡	‡
High school credential	235	230	40	44
Below high school	191	190	78	76
Recidivism				
First time in prison	220	‡	51	‡
Previously incarcerated	227*	213	49	56
Have used a computer				
Yes	229*	217	47	54
No	187	‡	73	‡

‡ Reporting standards not met.

* Significantly different ($p < .05$) from the comparison category, incarcerated adults who were unemployed prior to current incarceration.

[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.

NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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CURRENT PRISON JOB

Do you currently have any prison job?

For almost all the demographic characteristics presented in table 2.5, higher percentages of incarcerated adults reported that they held prison jobs than reported that they did not. In the few exceptions to this pattern, there were no measurable differences in the percentages (table 2.5).

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TABLE 2.5.

Percentage distribution of incarcerated adults by whether they currently have a prison job and selected characteristics: 2014

Characteristic	Percentage	
	Currently has prison job	Does not have prison job
Overall	**61***	**39**
Gender		
Male	62*	38
Female	55*	45
Race/ethnicity		
White	63*	37
Black	60*	40
Hispanic	61*	39
Other	55	45
Age intervals[1]		
16–24	50	50
25–34	57*	43
35–44	65*	35
45–54	69*	31
55–65	70*	30
66–74	‡	‡
Born in the United States		
Yes	61*	39
No	57	43
Highest level of educational attainment		
Graduate or professional degree	‡	‡
Bachelor's degree	‡	‡
Associate's degree	73*	27
High school credential	67*	33
Below high school	48	52
Recidivism		
First time in prison	62*	38
Previously incarcerated	61*	39
Received skill certification for information technology (IT)		
Yes	66*	34
No	61*	39
Received job-related skill certification other than information technology (IT)		
Yes	71*	29
No	59*	41
Have used a computer		
Yes	63*	37
No	58*	42

‡ Reporting standards not met.

* Significantly different ($p < .05$) from the comparison category, incarcerated adults who do not currently have a prison job.

[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.

NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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Literacy and numeracy performance results based on currently holding a prison job

Incarcerated adults currently holding a prison job had higher average literacy scores than their peers who did not have a prison job, with no measurable difference in average numeracy scores between the two groups (tables 2.6 and 2.7). Incarcerated adults serving their first term in prison who held prison jobs scored higher in literacy than their peers not holding a prison job (255 versus 241).

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TABLE 2.6.

Average scores and percentages of incarcerated adults below Level 2 on the PIAAC literacy scale, by whether they currently have a prison job and selected characteristics: 2014

Characteristic	Average literacy score		Percentage below Level 2 in literacy	
	Currently has prison job	Does not have prison job	Currently has prison job	Does not have prison job
Overall	**252***	**245**	**27**	**32**
Gender				
Male	252	245	28	32
Female	253	245	25	32
Race/ethnicity				
White	269*	258	16	22
Black	241	239	35	36
Hispanic	241	238	34	37
Other	‡	‡	‡	‡
Age intervals[1]				
16–24	248	247	28	28
25–34	257	249	24	28
35–44	254	248	28	30
45–54	240	240	35	35
55–65	257	‡	23	‡
66–74	‡	‡	‡	‡
Born in the United States				
Yes	254*	247	26	30
No	‡	‡	‡	‡
Highest level of educational attainment				
Graduate or professional degree	‡	‡	‡	‡
Bachelor's degree	‡	‡	‡	‡
Associate's degree	‡	‡	‡	‡
High school credential	260	255	21	22
Below high school	222	227	51	45
Recidivism				
First time in prison	255*	241	25	37
Previously incarcerated	251	247	28	30
Received skill certification for information technology (IT)				
Yes	‡	‡	‡	‡
No	252	244	28	32
Received job-related skill certification other than information technology (IT)				
Yes	261	251	21	25
No	249	244	29	32
Have used a computer				
Yes	256*	248	24	29
No	222	‡	50	‡

‡ Reporting standards not met.
* Significantly different ($p < .05$) from the comparison category, incarcerated adults who do not currently have a prison job.
[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.
NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.
SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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TABLE 2.7.

Average scores and percentages of incarcerated adults below Level 2 on the PIAAC numeracy scale, by whether they currently have a prison job and selected characteristics: 2014

Characteristic	Average numeracy score		Percentage below Level 2 in numeracy	
	Currently has prison job	Does not have prison job	Currently has prison job	Does not have prison job
Overall	**223**	**216**	**50***	**57**
Gender				
Male	223	216	49	57
Female	220	217	52	57
Race/ethnicity				
White	245	237	34	40
Black	207	205	64	67
Hispanic	213	206	53	63
Other	‡	‡	‡	‡
Age intervals[1]				
16–24	221	215	50	59
25–34	231	222	43	51
35–44	225	221	48	52
45–54	208	210	61	67
55–65	224	‡	52	‡
66–74	‡	‡	‡	‡
Born in the United States				
Yes	226	218	48	56
No	‡	‡	‡	‡
Highest level of educational attainment				
Graduate or professional degree	‡	‡	‡	‡
Bachelor's degree	‡	‡	‡	‡
Associate's degree	‡	‡	‡	‡
High school credential	233	231	42	44
Below high school	183	191	80	79
Recidivism				
First time in prison	222	211	50	57
Previously incarcerated	224	219	49	57
Received skill certification for information technology (IT)				
Yes	‡	‡	‡	‡
No	222	215	50*	58
Received job-related skill certification other than information technology (IT)				
Yes	232	230	42	46
No	220	214	52	59
Have used a computer				
Yes	228*	219	47*	56
No	183	‡	73	‡

‡ Reporting standards not met.

* Significantly different ($p < .05$) from the comparison category, incarcerated adults who do not currently have a prison job.

[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.

NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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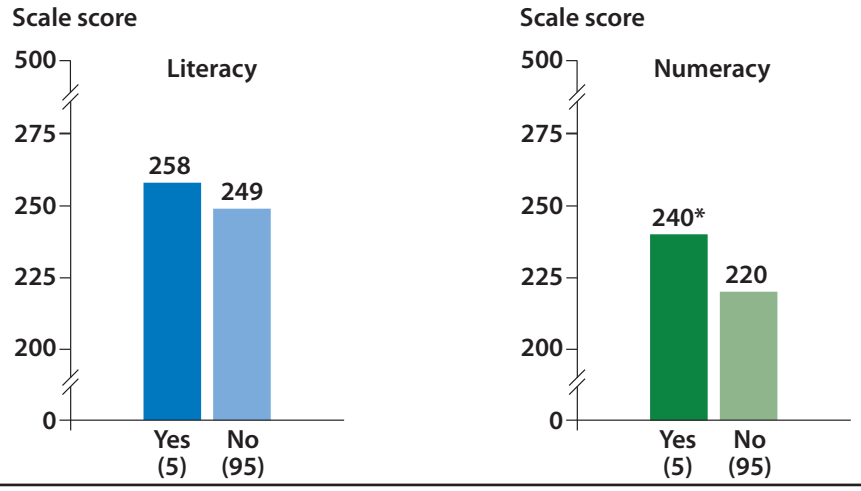
SKILL CERTIFICATIONS AND JOB-RELATED SKILLS

Have you received any type of IT certification, that is, certification for information technology skills?

Five percent of incarcerated adults reported earning an information technology (IT) certification. Incarcerated adults with IT certification scored higher in numeracy than their peers without IT credentials (figure 2.2). Certifications could have been earned in or outside prison.

FIGURE 2.2.

Average scores of incarcerated adults on the PIAAC literacy and numeracy scales, by whether they have any type of information technology (IT) certification: 2014



* Significantly different ($p < .05$) from the comparison category, incarcerated adults responding "No."

NOTE: In the figure, percentages of incarcerated adults in each response category are shown in parentheses beneath the applicable bar.

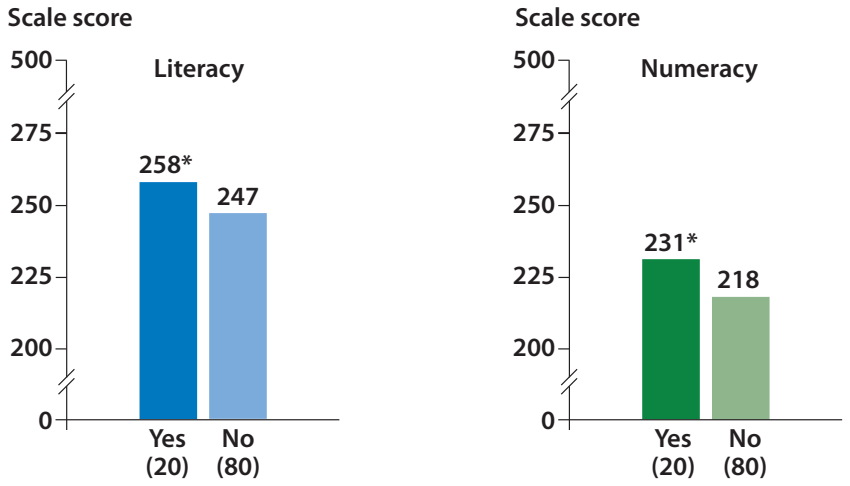
SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

Other than IT certification, have you ever received any type of job-related skill certification?

Twenty percent of incarcerated adults reported receiving a skill certification in a field other than information technology. Those with skills certifications scored higher in literacy and numeracy than their peers without such certifications (figure 2.3). Certifications could have been earned in or outside prison.

FIGURE 2.3.

Average scores of incarcerated adults on the PIAAC literacy and numeracy scales, by whether they have any type of job-related skill certification other than information technology (IT): 2014



* Significantly different ($p < .05$) from the comparison category, incarcerated adults responding "No."

NOTE: In the figure, percentages of incarcerated adults in each response category are shown in parentheses beneath the applicable bar.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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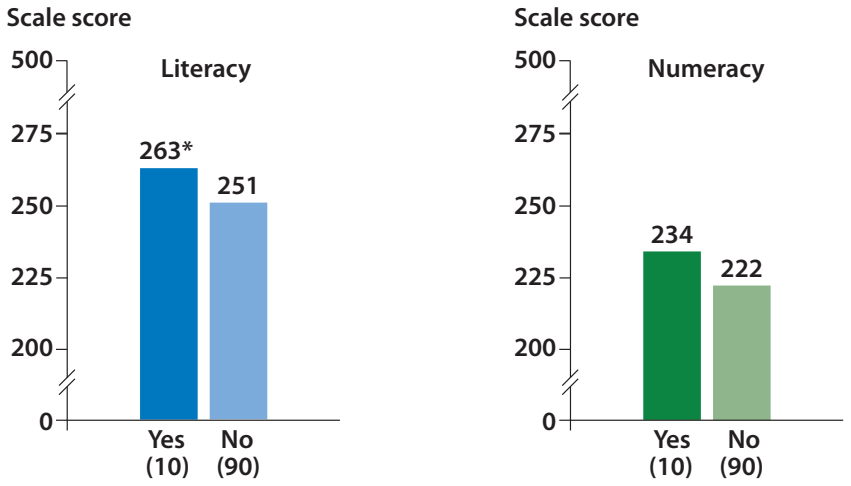
Do you use a computer in your current prison job?

While 37 percent of incarcerated adults reported using a computer in their jobs prior to their incarcerations (data not shown), only 10 percent reported using a computer in their prison job assignments. Incarcerated adults who used a computer in their current job scored higher in literacy than their peers who did not use a computer (figure 2.4).

FIGURE 2.4.

Average scores of incarcerated adults with prison jobs on the PIAAC literacy and numeracy scales, by whether they use a computer in their current prison job: 2014



* Significantly different ($p < .05$) from the comparison category, incarcerated adults with prison jobs responding "No."

NOTE: In the figure, percentages of incarcerated adults in each response category are shown in parentheses beneath the applicable bar.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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Use of literacy and numeracy skills among incarcerated adults with prison jobs

Incarcerated adults were asked a series of questions about the types of activities they undertook as part of their current prison jobs. Results for the questions about reading activities and activities using numerical information are shown below. Many inmates reported never having to use their literacy or numeracy skills in their current prison work assignments (table 2.8). For example, 47 percent of incarcerated adults reported never reading directions or instructions as part of their current prison job, and 82 percent reported never using or calculating fractions, decimals, or percentages. For context, in the household population surveyed as part of PIAAC, approximately 12 percent of adults reported never reading directions or instructions as part of their current job, and 34 percent reported never using or calculating fractions, decimals, or percentages.

TABLE 2.8.

Percentage distribution of incarcerated adults with prison jobs by the frequency with which various literacy and numeracy skills are used in their current prison job: 2014

Literacy skills	Percentage	
In your current prison job, how often do you usually read …	**Never**	**At least some of the time**
Directions or instructions	47	53
Letters or memos	50	50
Manuals or reference materials	65	35
Articles in newspapers, magazines, or newsletters	78	22
Books	81	19
Articles in professional journals or scholarly publications	83	17
Diagrams, maps, or schematics	83	17
Bills, invoices, bank statements, or other financial statements	91	9
Numeracy skills	Percentage	
In your current prison job, how often do you usually …	**Never**	**At least some of the time**
Use or calculate fractions, decimals, or percentages	82	18
Use a calculator – either hand-held or computer-based	84	16
Prepare charts, graphs, or tables	86	14
Use simple algebra or formulas	87	13
Calculate prices, costs, or budgets	88	12
Use more advanced math or statistics such as calculus, complex algebra, trigonometry, or use of regression techniques	96	4

NOTE: Detail may not sum to totals because of rounding. "At least some of the time" includes data from the response options "Less than once a month, Less than once a week but at least once a month, At least once a week but not every day, and Every day."

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

Results for other job skills, such as writing activities and the use of computers, are available in the NCES International Data Explorer (IDE) at http://nces.ed.gov/surveys/piaac/ideuspiaac/.

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Explore on your own

The interactive PIAAC Results Portal allows you to produce figures and tables for those variables that interest you most. After you select the variable(s) of your choice, you can display results in terms of average scores and proficiency levels on the three PIAAC scales: literacy, numeracy, and problem solving in technology-rich environments. You can also download the results in an Excel spreadsheet. Access the portal at http://nces.ed.gov/surveys/piaac/results/makeselections.aspx.

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3 EDUCATION AND TRAINING IN PRISON

Access PIAAC sample questions at https://nces.ed.gov/surveys/piaac/sample_lit.asp.

The U.S. PIAAC Survey of Incarcerated Adults asked prison inmates a series of questions related to academic and job training programs that they were participating in. Based on these questions, this chapter highlights some of the PIAAC survey's findings related to the following topics:

- Highest level of education completed by incarcerated adults during their current incarceration
- Enrollment in academic classes or programs of study
- Reasons for enrolling and not enrolling in academic classes or programs of study
- Participation in a job skills or job training program
- Reasons for participating and not participating in a job skills or job training program
- Rates of participation in academic and vocational programs by amount of time before expected release from prison
- Access to library services

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ACADEMIC PROGRAMS

During your current period of incarceration, what is the highest level of education you completed?

Almost three in five incarcerated adults (58 percent) completed no further formal education beyond the level they had on their entry to prison, and about one in five (21 percent) obtained a high school credential during their current period of incarceration (table 3.1).

TABLE 3.1.

Percentage of incarcerated adults by the highest level of education completed during their current incarceration: 2014

Highest level of education	Percentage
Grades 7–9	8
High school diploma or GED	21
Pre-associate education	4
Certificate from college or trade school	7
Associate's degree	2
Bachelor's degree	#
No further education level completed	58

Rounds to zero.

NOTE: Detail may not sum to totals because of rounding. Results for the categories Grades 1-6, Master's degree, Professional degree, and Doctorate degree are not shown because reporting standards were not met.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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Distributions across the educational categories are provided in table 3.2 for interpretive context. Care should be taken when making comparisons across these categories because incarcerated adults enter prison with widely differing amounts of prior educational experience. Those who did not complete further education during their incarceration include adults both who have completed less than a high school education as well as adults who have completed a Master's degree or higher.

TABLE 3.2.

Percentage of incarcerated adults by highest level of education completed during current incarceration and selected characteristics: 2014

Characteristic	Percentage			
	Grades 7–9	High school diploma or GED	Certificate from college or trade school	No further education completed
Overall	**8**	**21**	**7**	**58**
Gender				
Male	8	21	7	58
Female	5	12	9	68
Race/ethnicity				
White	7	20	8	57
Black	7	21	6	61
Hispanic	10	21	9	55
Other	5	23	5	62
Age intervals[1]				
16–24	10	20	5	63
25–34	7	22	7	58
35–44	8	22	9	56
45–54	7	14	6	62
55–65	6	25	12	48
66–74	‡	‡	‡	‡
Born in the United States				
Yes	8	21	8	58
No	8	20	3	66
Recidivism				
First time in prison	5	23	9	57
Previously incarcerated	8	20	7	59
Highest level of parental education				
At least one parent attained college degree	5	15	9	60
At least one parent attained high school degree	8	22	6	58
Neither parent attained high school degree	10	25	7	55
Diagnosed or identified as having a learning disability				
Yes	14	17	4	60
No	6	22	8	58
Have used a computer				
Yes	8	21	8	57
No	11	23	2	59

‡ Reporting standards not met.

[1] While the PIAAC target population was 16- to 74-year-olds, the prison sample did not include 16- or 17-year-olds.

NOTE: Percentage distributions for all the variables shown here can be found in Table 1.1, with the exception of "highest level of parental education," "diagnosed or identified as having a learning disability," and "have used a computer," which can be found on the portal. Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. Detail may not sum to totals because not all reporting categories are shown. Results for the categories Grades 1-6, Pre-associate education, Associate's degree, Bachelor's degree, Master's degree, Professional degree, and Doctorate degree are not shown. The item response rate for parental education is below 85 percent. Missing data have not been explicitly accounted for. Apparent differences between estimates may not be statistically significant. To explore statistical comparisons for this dataset, as well as for the categories not shown, see the NCES International Data Explorer (IDE) at http://nces.ed.gov/surveys/piaac/ideuspiaac/.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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For incarcerated adults, more education completed was associated with higher skills in both literacy and numeracy (tables 3.3 and 3.4). Average scores and percentages below Level 2 are shown for incarcerated adults overall but not for the demographic characteristics shown in table 3.2 because sample sizes and response percentages do not permit reporting cross-tabulated estimates for most categories. In addition, please note that results are not shown for "no further education completed" because the category includes adults of all levels of education (completed before the current incarceration).

TABLE 3.3.

Average scores and percentages of incarcerated adults below Level 2 on the PIAAC literacy scale, by highest level of education completed during current incarceration: 2014

Measure	Highest level of education completed during current incarceration		
	Grades 7–9	High school diploma or GED	Certificate from college or trade school
Average literacy score	226	251	271
Percentage below Level 2 in literacy	49	24	13

NOTE: Results for the categories Grades 1-6, Pre-associate education, Associate's degree, Bachelor's degree, Master's degree, Professional degree, Doctorate degree, and No further education completed are not shown. Apparent differences between estimates may not be statistically significant.
SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

TABLE 3.4.

Average scores and percentages of incarcerated adults below Level 2 on the PIAAC numeracy scale, by highest level of education completed during current incarceration: 2014

Measure	Highest level of education completed during current incarceration		
	Grades 7–9	High school diploma or GED	Certificate from college or trade school
Average numeracy score	192	223	251
Percentage below Level 2 in numeracy	77	49	25

NOTE: Results for the categories Grades 1-6, Pre-associate education, Associate's degree, Bachelor's degree, Master's degree, Professional degree, Doctorate degree, and No further education completed are not shown. Apparent differences between estimates may not be statistically significant.
SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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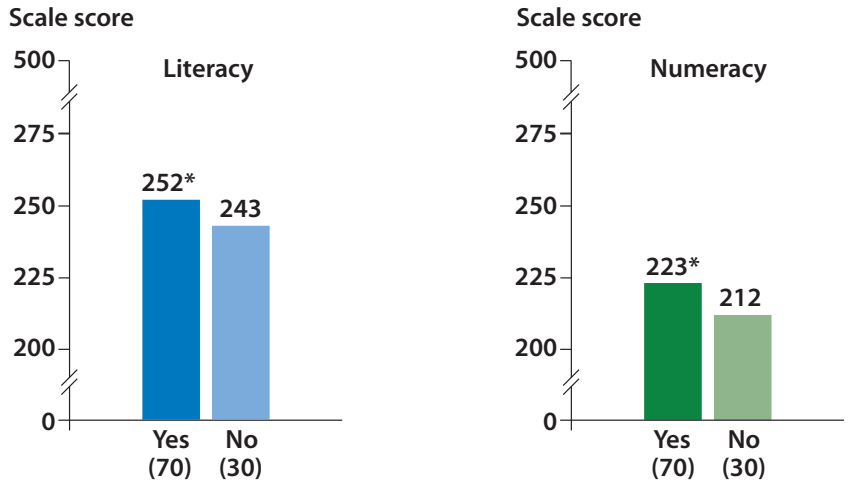
Do you want to enroll in an academic class or program of study?

While only 21 percent of prisoners were studying for a formal degree or certificate (data not shown), over two-thirds (70 percent) of incarcerated adults reported that they wanted to enroll in an academic class or program. Those desiring to enroll scored higher in literacy and numeracy than their peers who did not want to enroll (figure 3.1). Among those who wanted to enroll, 25 percent were on a waiting list for academic classes or programs of study in 2014 (data not shown).

FIGURE 3.1.

Average scores of incarcerated adults on the PIAAC literacy and numeracy scales, by whether they want to enroll in an academic class or program of study: 2014



* Significantly different ($p < .05$) from the comparison category, incarcerated adults responding "No."

NOTE: In the figure, percentages of incarcerated adults in each response category are shown in parentheses beneath the applicable bar.
SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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Which one of the following degree or certificate programs would you like to enroll in?

The most desirable educational programs for incarcerated adults who wanted to enroll in academic programs were those which offered a certificate from college or trade school, with 29 percent indicating they wanted to enroll in such programs. High school completion and associate's degree programs were the next most popular (table 3.5).

TABLE 3.5.

Percentage distribution of incarcerated adults who wanted to enroll in an academic class, by the degree or certificate program they would like to enroll in: 2014

Type of program	Percentage
High school diploma or GED	18
Pre-associate education	13
Certificate from college or trade school	29
Associate's degree	18
Bachelor's degree	14
Master's degree	5
Professional degree	1
Doctorate degree	2

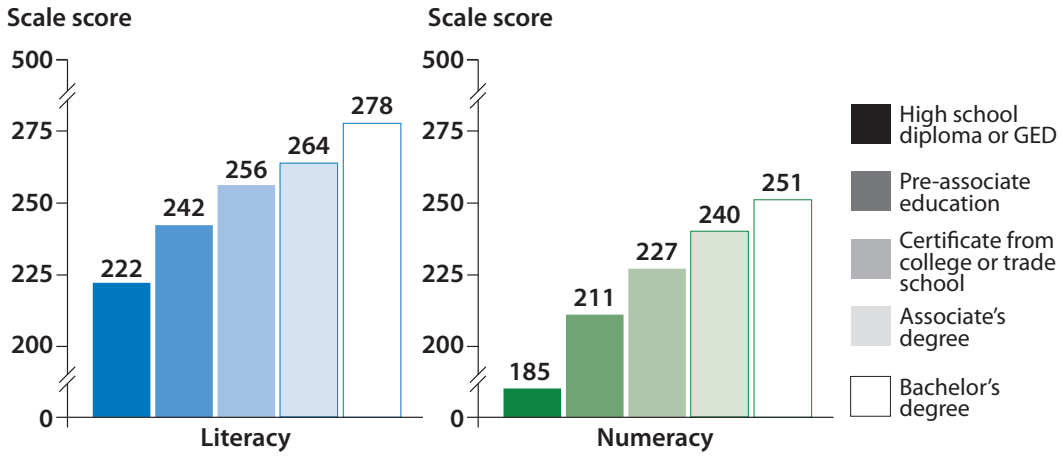
NOTE: Exact wording of background question: "Which one of the following degree or certificate programs would you like to enroll in? Please select from the following... " followed by a series of selections. Those selections with reportable data are shown in the table. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

Incarcerated adults who wanted to enroll in associate's or bachelor's degree programs scored higher in literacy and numeracy than their peers wanting to enroll in high school or pre-associate programs (figure 3.2).

FIGURE 3.2.

Average scores of incarcerated adults who wanted to enroll in academic programs on the PIAAC literacy and numeracy scales, by the degree or certificate program they would like to enroll in: 2014



NOTE: Average scores could not be calculated for those wanting to enroll in graduate degree programs.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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Which ONE of the following statements best describes the reason you would like to enroll in this program of study?

Forty-one percent of incarcerated adults who wanted to enroll in academic programs indicated that their main reason for wanting to enroll in a degree or certificate program was to increase their knowledge or skills in a subject that interests them (table 3.6). Another 47 percent had future job considerations as their main reason (39 percent to increase chances of getting a job on release and 8 percent to increase chances of getting a prison job assignment).

TABLE 3.6.

Percentage distribution of incarcerated adults who wanted to enroll in academic programs by the main reason they would like to enroll in a degree or certificate program: 2014

Main reason to enroll in program	Percentage
To increase knowledge or skills in a subject that interests them	41
To increase the possibilities of getting a job when released	39
To increase the possibilities of getting a prison job assignment	8
To obtain a certificate	6
Other	3
Family related reasons	3
Required to participate	1

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

What is the main reason you did not want to enroll in an academic class or program of study?

Twenty percent of incarcerated adults who did not want to enroll in academic programs indicated that the academic programs at their facilities were either not useful or were of poor quality (table 3.7). About half had reasons for not enrolling that were not indicated in the array of selections on the questionnaire. Their open-ended responses included wanting to devote their time to working on their legal appeals, their imminent release from prison, being already enrolled in some type of class or training, or "not interested."

TABLE 3.7.

Percentage distribution of incarcerated adults who did not want to enroll in academic programs by the main reason they did not want to enroll in an academic class or program of study: 2014

Main reason not to enroll in program	Percentage
The classes and programs offered are not useful	13
The quality of the program being offered is poor	7
Other	51
Do not have the qualifications necessary to enroll	10
Have a volunteer or work assignment they do not want to give up	9
Want to enroll in a higher level of classes than are available	8
The waiting list is too long	3

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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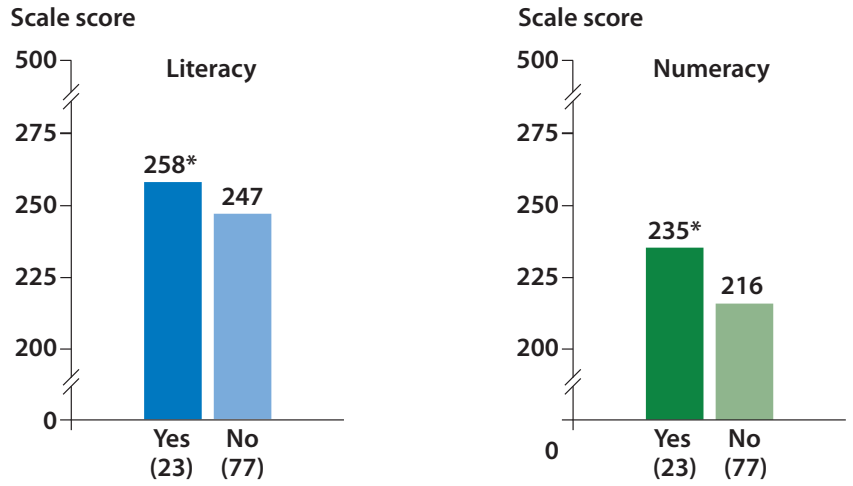
TRAINING

During your current period of incarceration, have you participated in a job skills or job training program, for example, a computer skills program that teaches Microsoft Word?

Twenty-three percent of incarcerated adults said that they had participated in a job skills or job training program during their current term in prison. Those who had participated scored higher in literacy and numeracy (figure 3.3). Fourteen percent of incarcerated adults were on a waiting list for entering a job training program (data not shown).

FIGURE 3.3.

Average scores of incarcerated adults on the PIAAC literacy and numeracy scales, by whether they have participated in a job skills or job training program during their current incarceration: 2014



* Significantly different ($p < .05$) from the comparison category, incarcerated adults responding "No."

NOTE: In the figure, percentages of incarcerated adults in each response category are shown in parentheses beneath the applicable bar.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

What were/are your main reason(s) for wanting to participate in this program?

Over 60 percent of incarcerated adults who participated in training programs indicated that their main reason for wanting to participate in job training was "self improvement," followed by 43 percent who wanted to increase their chances of getting a job on their release (table 3.8).

TABLE 3.8.

Percentage of incarcerated adults who participated in training programs by the main reasons they wanted to participate in a job skills or job training program: 2014

Main reason to participate in program	Percentage
Self improvement	63
To increase the possibilities of getting a job when released	43
To increase the possibilities of getting a prison job assignment	18
Family related reasons	6
Required to participate	5
Other	4

NOTE: Participants were instructed to select all the choices that applied to their situation. Percentages do not sum to 100 because participants selected all that applied.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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What is the main reason you did not attend a course or program to learn job skills or job training?

Thirty percent of incarcerated adults who did not participate in job training (and who were not on a waiting list) indicated that they were ineligible to attend job training courses, with another 11 percent indicating they did not have the necessary educational qualifications (table 3.9). In the open-ended responses recorded under the "other" category, the most prevalent response was that job skills or job training courses were unavailable at their facilities.

TABLE 3.9.

Percentage distribution of incarcerated adults who did not participate in job training by the main reason they did not attend a course or program to learn job skills or job training: 2014

Main reason not to attend program	Percentage
Do not have the educational qualifications to attend	11
Not eligible to attend	30
Currently on a waiting list to attend a course or program	3
Not interested in the programs offered	19
Other	37

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

When do you expect to be released from prison?

More than half of incarcerated adults had 2 years or less remaining on their sentences (54 percent), with about one in five (19 percent) having fewer than 6 months left to serve (table 3.10). There were no statistically significant differences in the percentages of incarcerated adults participating in various academic or vocational programs based on their expected time of release (table 3.11).

TABLE 3.10.

Percentage distribution of incarcerated adults by when they expect to be released from prison: 2014

Amount of time remaining before expected release from prison	Percentage
Less than 6 months	19
6 to 12 months	16
1 to 2 years	19
More than 2 years	41
Never	6

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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TABLE 3.11.

Percentage of incarcerated adults who participated in various academic and vocational programs during their current incarceration, by when they expect to be released from prison: 2014

Activity	Amount of time remaining before expected release from prison	
	2 years or less	More than 2 years
Currently studying for a formal degree or certificate	22	20
Participated in a job skills or job training program during their current incarceration	22	24
Used classes or a tutor to improve their basic reading, writing, and math skills during their current incarceration	30	29
Used classes or a tutor to prepare for the General Educational Development (GED) test during their current incarceration	33	33

NOTE: Apparent differences between estimates may not be statistically significant.

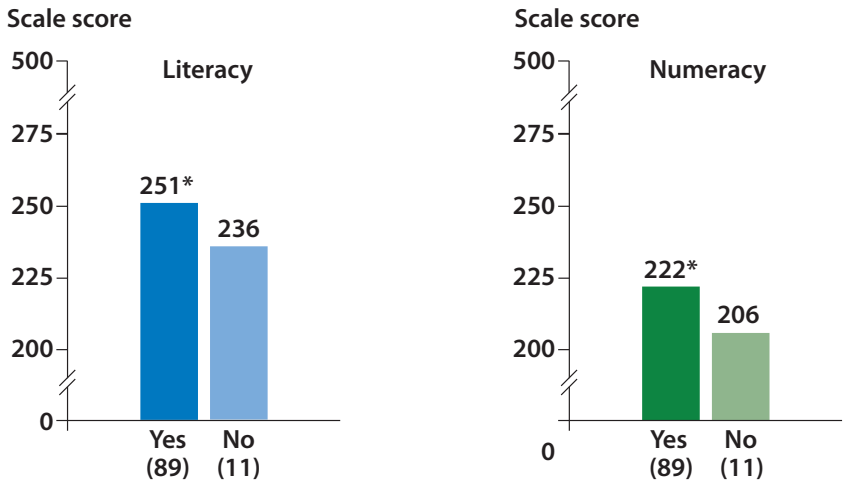
SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

Do you have access to library services, other than a legal library?

A large majority of incarcerated adults have access to prison libraries (89 percent). Compared to incarcerated adults who do not have library access, those who have access to library services scored higher in literacy and numeracy (figure 3.4).

FIGURE 3.4.

Average scores of incarcerated adults on the PIAAC literacy and numeracy scales, by whether they have access to library services: 2014



* Significantly different ($p < .05$) from the comparison category, incarcerated adults responding "No."

NOTE: In the figure, percentages of incarcerated adults in each response category are shown in parentheses beneath the applicable bar.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014.

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Explore on your own

The interactive PIAAC Results Portal allows you to produce figures and tables for those variables that interest you most. After you select the variable(s) of your choice, you can display results in terms of average scores and proficiency levels on the three PIAAC scales: literacy, numeracy, and problem solving in technology-rich environments. You can also download the results in an Excel spreadsheet. Access the portal at http://nces.ed.gov/surveys/piaac/results/makeselections.aspx to explore all the variables contained in this chapter as well as data about participation in non-academic programs such as community adjustment classes, drug or alcohol groups, and religious study groups.

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4 SUMMARY

This report explores the relationship between the background characteristics and cognitive skills of U.S. prisoners across a variety of dimensions. It also compares their demographic profile and skills with those of the U.S. household population. The purpose of this report is to introduce interested readers, policymakers, administrators, educators, and researchers to selected findings from the U.S. PIAAC Survey of Incarcerated Adults. While these selected findings do not represent a complete review of all observed differences in the data, they do provide a broad overview of the results and suggest potential avenues for future research using this rich dataset. The following are among the key selected findings in this report.

Comparison of U.S. incarcerated adults to the U.S. household population

- The U.S. incarcerated population had lower average literacy and numeracy scores than the U.S. household population (tables 1.2 and 1.3).
- Compared to their peers in the general U.S. household population, Black and Hispanic incarcerated adults scored lower on average in numeracy, but not measurably different in literacy (tables 1.2 and 1.3).
- Average literacy scores were not measurably different between incarcerated adults and their household peers with the same level of educational attainment (table 1.2).
- In numeracy, incarcerated adults whose highest level of educational attainment was a high school credential scored lower on average than adults living in households with the same level of educational attainment. The same was true when comparing the average numeracy scores of those with less than a high school credential (table 1.3).

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Prison jobs and skills use

- Around two-thirds (66 percent) of the survey's respondents reported that they were employed prior to their incarceration (table 2.1) and 61 percent reported currently having a prison job (table 2.5).
- Forty-eight percent of younger prisoners (18- to 24-year-olds) were employed prior to their incarceration and 50 percent reported currently having a prison job. Among 55- to 65-year-olds, 70 percent were employed prior to their incarceration and the same percentage reported currently having a prison job (tables 2.2 and 2.5).
- Incarcerated adults with higher levels of education were more likely to have a prison job: 48 percent of those having less than a high school credential had prison jobs, compared with 73 percent of those holding Associate's degrees (table 2.5).
- Incarcerated adults with a prison job scored higher on average in literacy than their peers without a prison job; however, average numeracy scores were not measurably different (tables 2.6 and 2.7).
- Many incarcerated adults reported never having to use their literacy or numeracy skills in their current prison job (table 2.8).

Participation in education and skills training in prison

- Forty-two percent of incarcerated adults completed some level of formal education during their current period of incarceration (table 3.1).
- Over two-thirds (70 percent) of incarcerated adults wanted to enroll in an academic class or program (figure 3.1).
- Among incarcerated adults who wanted to enroll in an academic class or program, 80 percent wanted to do so either to learn more or to improve their job prospects after they get released (table 3.6).
- Incarcerated adults who wanted to enroll in academic classes or programs of study scored higher on average in literacy and numeracy than their peers who did not want to enroll (figure 3.1).
- Twenty-three percent of incarcerated adults participated in job training programs during their current prison term (figure 3.3).
- Incarcerated adults who had participated in job training programs scored higher on average in literacy and numeracy than those who had not participated (figure 3.3).

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MORE INFORMATION ABOUT PIAAC

This report provides findings for only a few select results. For more PIAAC results and information about the assessment:

- Preview and print a selection of data on the performance of U.S. adults on the PIAAC assessment for various topics across all three domains at http://nces.ed.gov/surveys/piaac/index.asp.
- Explore U.S. PIAAC data in the NCES International Data Explorer (IDE) at http://nces.ed.gov/surveys/international/ide/.
- Access public-use data files that are available at http://nces.ed.gov/surveys/piaac/datafiles.asp.
- Access restricted-use data files that are available to NCES Restricted-use Data Licensees. More information on licenses can be found at http://nces.ed.gov/pubsearch/licenses.asp.

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A APPENDIX A: METHODOLOGY AND TECHNICAL NOTES

This appendix describes the assessment design, sampling, data collection, weighting, and variance estimation, scaling, and statistical testing procedures used to collect and analyze the data for this PIAAC report. The PIAAC sample is a combination of the following three data collections: (1) the first round of U.S. household data collection was conducted from August 25, 2011 through April 3, 2012; (2) the second round of U.S. household data collection occurred from August 26, 2013 through May 5, 2014; and (3) the prison population data collection occurred from February 10, 2014 through June 13, 2014.

Assessment Design

The PIAAC psychometric assessment design was complex because the assessment measured four domains—literacy, numeracy, reading components, and problem solving in technology-rich environments—across two modes of administration—paper-and-pencil and computer instruments. In summary, the PIAAC psychometric assessment design provided for the following information:

- Reading component skills among lower-performing adults in each participating country, as well as among those who reported not knowing how to use a computer
- Population distributions in literacy, which could be linked to the International Adult Literacy Survey (IALS) and Adult Literacy and Lifeskills Survey (ALL)
- Population distributions in numeracy, which could be linked to ALL
- Accurate estimates of population distributions and a baseline measure of problem solving in technology-rich environments for future estimation of trends over time
- Insights into strategies and processes that adults use when they responded to the tasks on problem solving in technology-rich environments
- Pairwise covariance estimates among the various measures, including the relationships between literacy and numeracy, literacy and reading components skills, literacy and problem solving in technology-rich environments, numeracy and reading components skills, and numeracy and problem solving in technology-rich environments

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- Information that could be used to analyze the relationship between the measured competencies and the PIAAC behavioral measures and social/economic measures (from the responses to the background questions and job requirements approach module)

PIAAC was designed as a computer-based assessment. Respondents who had little or no familiarity with computers or who refused to take the assessment on a computer, however, were directed to an equivalent paper-and-pencil version of the assessment that tested skills in the domains of literacy and numeracy only.[1] Approximately 15 percent of the respondents in the first round of U.S. data collection, 23 percent in the second round of U.S. data collection, and 36 percent in the prison study were directed to the paper-and-pencil path. Regardless of whether they took the assessment in the computer or paper-and-pencil format, all respondents first took a "Core" test to assess their capacity to undertake the full assessment. Those who were unsuccessful at the Core test were directed to the assessment of reading components. Those who succeeded at the Core test proceeded to the full assessment.

The PIAAC assessment included an adaptive element that allowed for automatic scoring. Based on their performance at different points in the assessment, respondents taking the computer-based version were directed to different "testlets" that contained items of different average difficulty in the domains of literacy and numeracy.

Sampling

The target population of the PIAAC Prison Study was inmates age 16 to 74 from state, federal, and private prisons in the United States. The target sample size was a minimum of 1,200 completed cases including at least 240 females and at least 960 males. In order to achieve this goal, a two-stage, stratified sample was selected. The sampling frame was created using the most recent (2005) Bureau of Justice Statistics Census of State and Federal Adult Correctional Facilities and the most recent (2012) Directory of Adult and Juvenile Correctional Departments, Institutions, Agencies, and Probation and Parole Authorities available from the American Correctional Association. The prison sampling frame was first stratified by whether or not the prisons house female inmates only. Next, 100 prisons were selected from the sampling frame, among which 80 were male-only or co-ed prisons and 20 were female-only prisons. The prisons were selected systematically and with probabilities proportional to the measure of size (annual daily population). The female-only prisons were selected with higher probabilities than the male-only or co-ed prisons. At the second stage of selection, inmate sampling frames were created by interviewers at the time they visited the prisons in most cases. The frames consisted of all inmates occupying a bed the night before inmate sampling was to be conducted. Prisons operated by the Bureau of Prisons provided the rosters of inmates a week before the visit. A sampling algorithm was implemented within the computer-assisted personal interviewing (CAPI) system to randomly select the inmates among those identified to be eligible. In total, 1,546 eligible inmates were selected within sampled prisons. Once selected, the prison background questionnaire (a variation of the household background questionnaire)

[1] See p. 80 of *The Survey of Adult Skills, Reader's Companion, Second Edition* (OECD 2016).

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was completed. Upon completion of the prison background questionnaire, the respondent was administered the assessment as described in the "Assessment Design" section above.

The sample was subject to unit nonresponse from the background questionnaire, assessment, and item nonresponse to background questionnaire items. Of the 100 sampled prisons, one sampled male prison and one sampled female prison were closed before the interviews started and became ineligible. Two male prisons refused to participate in the survey and each was replaced with a substitute prison with a similar geographic location, security level, type, and size. One sampled female prison was found to have converted to an all-male institution. As a result, there were 98 participating prisons among which 80 were male/co-ed and 18 were female. The prison response rate was 98.0 percent without substitute prisons and 100.0 percent with substitute prisons.

Of the roughly 1,546 sampled inmates, approximately 1,320 completed the prison background questionnaire. Of the roughly 230 inmates who did not complete the background questionnaire, 4 were unable to do so because of a literacy-related barrier: either the inability to communicate in English or Spanish (the two languages in which the background questionnaire was administered) or a learning or mental disability. The final response rate for the prison background questionnaire—which included respondents who completed it and respondents who were unable to complete it because of a literacy-related barrier—was 85.8 percent weighted.

Of the roughly 1,320 inmates who completed the prison background questionnaire, approximately 1,270 completed the literacy assessment. An additional 10 were unable to complete the assessment for literacy-related reasons, and 1 for a missing paper booklet. The final response rate for the overall assessment was 97.7 percent weighted.

The overall weighted response rate for the prison sample was 82.2 percent (treating substitute prisons as nonresponse).

The prison background questionnaire stage had unit response rates above 85 percent and thus an analysis of the potential for nonresponse bias was not required according to the National Center for Education Statistics (NCES) statistical standards.

TABLE A-1.

Weighted response rate for the Prison Study

Component	Response Rate
Prison eligibility rate	98.0
Prison response rate (without substitute prisons)	98.0
Prison response rate (with substitute prisons)	100.0
Background Questionnaire – Response Rate	85.8
Assessment – Response Rate	97.7
Overall – Response Rate (treating substitute prisons as nonresponse)	82.2

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Differences between the Household and Prison Questionnaires

PIAAC background questionnaires are used to identify (a) what skills participants regularly use in their jobs and in their home life, (b) how participants acquire those skills, and (c) how those skills are distributed throughout the population. In order to obtain this information, the background questionnaire asks participants about their education and training; present and past work experience; the skills they use at work; their use of specific literacy, numeracy, and ICT skills at work and at home; personal traits; and background information.

For the prison study, the background questionnaire was tailored to address the needs and experiences of incarcerated adults with the assistance of correctional researchers and practitioners. Specifically, the prison background questionnaire focused on collecting information about various educational and training activities in prison, such as participation in academic programs and ESL classes, experiences with prison jobs, and involvement in vocational training and nonacademic programs such as employment readiness classes. Questions that were added or edited to refer to experiences in prison have "P" at the beginning of the variable name (e.g., P_Q170). Several questions were adopted from the household background questionnaire and may use the same variable naming convention as the household items, even if they refer to experiences in prison. Both the household and prison questionnaires were adaptive.

For more information about the background questionnaires, see the NCES PIAAC website at http://nces.ed.gov/surveys/piaac/questionnaire.asp.

Data Collection

Whenever possible, interviewers administered the background questionnaire and assessment in a private setting (e.g., home or library for the household sample and private room or office for the prison sample). Using the computerized interview and assessment software provided by the PIAAC Consortium, the interviewer read the background questionnaire questions from a laptop and entered all responses directly into the laptop. Skip patterns and follow-up probes for contradictory or out-of-range responses were programmed into the interview software. At the completion of the background questionnaire, the participant was administered the computer-based Core or the paper-and-pencil based Core if the participant could not or would not use the computer. Upon the completion and scoring of the Core tasks, the respondent was routed to the computer-based assessment (CBA), the paper-based assessment (PBA) of literacy and numeracy, or the paper-based reading components. The background questionnaire and the assessment took approximately 2 hours to complete; however, the time varied by the respondent. The number of assessment items also varied based on the respondents' performance on the Core and the adaptive routing implemented in the automated portion of the assessment.

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The progress through the assessment was controlled by the computer based on the respondent's performance on various components of the assessment. The PIAAC assessment was composed of the following:

The Core consisted of three modules: the CBA Core Stage 1, the CBA Core Stage 2, and the PBA Core.

- The CBA Core Stage 1 included six tasks and was designed to determine whether the participant had the basic set of skills needed to complete the computer-based assessment. To pass the CBA Core Stage 1, the participant needed to correctly answer at least three of the first five tasks, plus the sixth task (highlighting text). CBA Core Stage 1 questions were automatically scored by the computer, and a participant who passed the CBA Core Stage 1 continued on to the CBA Core Stage 2. A participant who did not pass the CBA Core Stage 1 was routed to the PBA Core.
- The CBA Core Stage 2 included six tasks that measured basic literacy and numeracy skills necessary to undertake the assessment. CBA Core Stage 2 questions were automatically scored by the computer, and a participant who passed the CBA Core Stage 2 continued on to the computer-based assessment. A participant who did not pass the CBA Core Stage 2 was routed directly to the paper-based reading components section.
- The PBA Core consisted of eight tasks and measured basic literacy and numeracy skills necessary to undertake the assessment. PBA Core questions were interviewer-scored and entered into the computer to determine whether the participant passed the PBA Core. A participant who passed the PBA Core continued on to the paper-based assessment of literacy and numeracy and then to the paper-based reading components section. A participant who did not pass the PBA Core was routed directly to the reading components section.

The assessment was administered in CBA and PBA modes.

- The CBA consisted of three "testlets" of tasks at Stage 1 (9 items) and four "testlets" at Stage 2 (11 items). Each respondent completed two testlets that included items from two of the three domains.
- The PBA consisted of two paper-based assessment booklets: one contained literacy items and one contained numeracy items. Each booklet contained 20 items for the participant to complete and each participant completed only one booklet type.
- The reading components were completed by a participant after completing the literacy or numeracy booklet. Reading components were also completed by a respondent who failed the CBA Core Stage 2 or the PBA Core.

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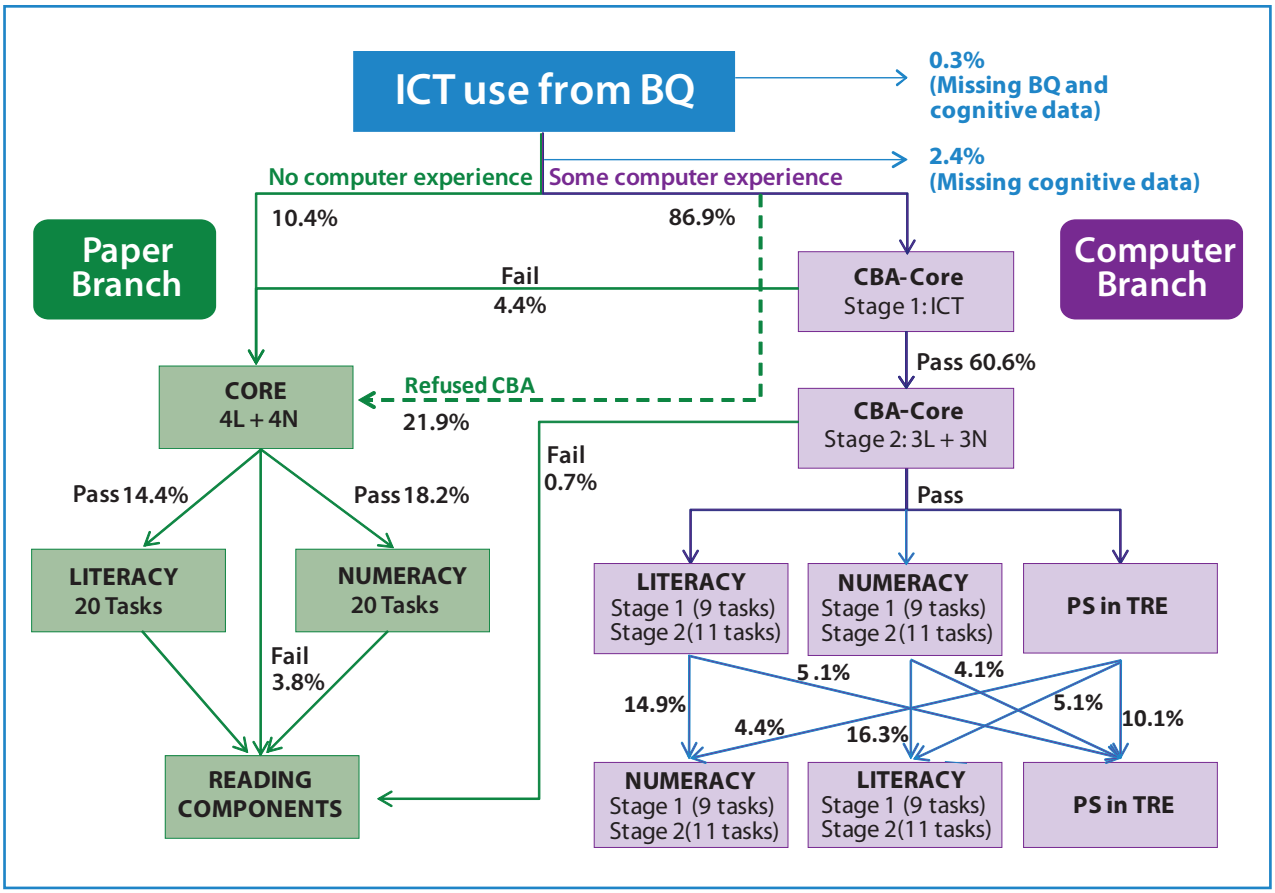
EXHIBIT A-1.

PIAAC Prison Study Yield



NOTE: ICT = information and communication technology, BQ = background questionnaire, CBA = computer-based assessment, and PS in TRE = problem solving in technology-rich environments.

Problem Solving in Technology-Rich Environments: U.S. Sample

The PIAAC assessment design was developed to route respondents to the most appropriate delivery mode to help assure the most reliable, valid, and comparable assessment of skills. The computer-based assessment (CBA) was chosen for those demonstrating information and communication technology (ICT) skills, while the remaining respondents received the paper-based assessment (PBA). The scores for respondents who had no computer experience, failed the ICT skills test, or refused the CBA did not contribute to the estimation of the item parameters for the problem solving in technology-rich environments domain. The design of the PIAAC assessment contained only literacy and numeracy in the PBA because the problem solving in technology-rich environments assessment, by definition, was suitable only for respondents familiar with ICT environments. Exhibit A-1 illustrates the stages of the assessment administration and the weighted percentages of U.S. prison inmate respondents at each stage of the assessment.

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CBA and PBA

The PIAAC assessment was administered as both a computer-based assessment (CBA) and a paper-based assessment (PBA). About one-fifth (22 percent) of incarcerated adults declined to take the CBA compared to 8 percent of adults living in households (table A-2). Sixty-one percent of incarcerated adults took the PIAAC assessments on a computer, while 81 percent of adults living in households did so. Compared to adults living in households, incarcerated adults scored lower across all PIAAC assessment modality characteristics where results are reportable, with the exception of numeracy scores for test-takers who had no computer experience.

TABLE A-2.

Percentages and average scores of U.S. adults in selected population groups on the PIAAC literacy and numeracy scales, by PIAAC assessment modalities: 2012 and 2014

Characteristic	Percentage		Average literacy score		Average numeracy score	
	U.S. Prison	U.S. Household	U.S. Prison	U.S. Household	U.S. Prison	U.S. Household
No computer experience	11*	6	221*	198	185	184
Failed ICT Core stage 1	5	4	‡	233	‡	214
Refused CBA	22*	8	255*	244	210*	230
Took CBA	61*	81	254*	280	235*	266

* Significantly different ($p < .05$) from the comparison category, U.S. Household.

‡ Reporting standards not met.

NOTE: The percentages shown in the table are based on the PIAAC literacy scale. Detail may not sum to totals because of rounding. U.S. Household data collection occurred in 2012 and 2014, and U.S. Prison data collection occurred in 2014. Results are not shown for the problem solving in technology-rich environments scale because reporting standards not met.

SOURCE: U.S. Department of Education, National Center for Education Statistics, U.S. Program for the International Assessment of Adult Competencies (PIAAC), U.S. National Supplement: Prison Study 2014, U.S. PIAAC 2012/2014.

Weighting and Variance Estimation

For the prison sample, the base weights were created to account for the selection probabilities at the prison level and at the inmate level. Next, the base weights were further adjusted for nonresponse to the background questionnaire (non-literacy-related and literacy-related, respectively), and weights for all respondents were calibrated to the control totals provided by the Bureau of Justice Statistics. The data are weighted such that the household sample and prison sample each represent their mutually exclusive target populations, and therefore can be combined together for analysis purposes. For the prison sample, the weights were adjusted to align with prison population proportions derived from 2013 estimated totals provided by the Bureau of Justice Statistics (BJS). The totals provided were estimated by BJS from multiple sources of administrative data and survey data. The total prison population provided by BJS was about 15 percent more than the sample total before calibration. Since the prison population provided by BJS may include inmates in facilities that are out of the scope of the PIAAC prison study, it was decided to use BJS estimated proportions (in lieu of totals) in the weight calibration process. More specifically, the control totals were computed by multiplying the sample total sum of weights before calibration, 1,226,009, by the estimated proportions by

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age, sex, and race from BJS. After calibration, the sample total remained the same, but the distributions by age, sex, and race matched the proportions provided by BJS. Beyond that, comparison checks with other BJS estimates were limited due to lack of recent data, different definitions of variables, and different target populations.

All population and subpopulation characteristics based on the PIAAC data used sampling weights in their estimation. The statistics presented in this report are estimates of group and subgroup performance based on a sample of respondents, rather than the values that could be calculated if every person in the nation answered every question on the instrument. Therefore, it is important to have measures of the degree of uncertainty of the estimates. Accordingly, in addition to providing estimates of percentages of respondents and their average scale scores, this report provides information about the uncertainty of each statistic in the form of standard errors on the U.S. PIAAC website at http://nces.ed.gov/surveys/piaac/results/summary.aspx.

Because the assessment used clustered sampling, conventional formulas for estimating sampling variability (e.g., standard errors) that assume simple random sampling and hence independence of observations would have been inappropriate for this report. For this reason, the PIAAC assessment used a paired jackknife replication approach (sometimes referred to as JK2) to estimate standard errors (Rust and Rao 1996).

Scaling

Information on scaling in the PIAAC assessment can be found on the OECD PIAAC website at http://www.oecd.org/site/piaac/.

Statistical Testing

The statistical comparisons in this report were based on the *t* statistic. Statistical significance was determined by calculating a *t* value for the difference between a pair of means or proportions, and comparing this value with published tables of values at a certain level of significance, called the alpha level. The alpha level is an *a priori* statement of the probability of inferring that a difference exists when, in fact, it does not. Findings from *t*-tests are reported based on a statistical significance (or alpha level) set at .05, without adjustments for multiple comparisons.

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B APPENDIX B: PIAAC SCALES AND PROFICIENCY-LEVEL DESCRIPTIONS

This appendix describes in more detail the PIAAC scales and the proficiency-level descriptions that accompany these scales. PIAAC proficiency results are also reported in terms of the percentages of adults performing at or "reaching" each of the proficiency levels.

Overview

PIAAC defines four core competency domains of adult cognitive skills that are seen as key to facilitating the social and economic participation of adults in advanced economies:

- Literacy
- Reading components
- Numeracy
- Problem solving in technology-rich environments

As described in Appendix A, PIAAC is administered in either paper-and-pencil mode or via computer interface. Literacy and numeracy are offered in both paper-and-pencil and computer modes. Reading components, which are designed to provide information about the literacy skills of adults at the lower end of the literacy spectrum, are offered only in paper-and-pencil mode. Problem solving in technology-rich environments is administered via computer only.

The OECD oversees the work of several teams of experts in the development of assessment frameworks in each of the domains. See Appendix C for the list of experts who assisted with the prison study. Assessment frameworks are available at http://www.oecd.org/site/piaac/publications.htm. Information about the item development and proficiency level setting process will be included in a forthcoming PIAAC technical report from OECD.

Literacy

The PIAAC literacy framework expands on the definition of literacy previously used in the International Adult Literacy Survey (IALS) and the Adult Literacy and Lifeskills Survey (ALL). PIAAC broadly defines literacy as *"understanding, evaluating, using and engaging with written text to participate in society, to achieve one's goals and to develop one's knowledge and potential"* (OECD 2012).

The purpose of this expanded definition is to highlight the ranges of cognitive processes involved in literacy, focus on a more active role of individuals in society, and include various text types, both in print and electronic formats, in the measurement of literacy.

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PIAAC items include continuous texts (e.g., text in sentences and paragraphs), non-continuous texts (e.g., schedules, graphs, and maps), and electronic texts (including hypertext or text in interactive environments, such as forms and blogs). Task activities are presented in home, work, and community contexts, addressing various purposes adults pursue in their everyday lives.

Based on the PIAAC framework, literacy tasks include items in paper-and-pencil and computer-based delivery modes that cover a range of difficulties—low, middle, and high—to present a comprehensive picture of the level of adult literacy skills in each country or region.

Reading components

The primary goal of the PIAAC reading components is to provide information about the literacy skills of adults at the lower end of the literacy spectrum—specifically, whether they have the foundational skills to develop the higher literacy and numeracy abilities necessary to function in society.

The reading components assessment focuses on elements of reading that are comparable across the range of languages in the participating countries and regions: reading vocabulary, sentence comprehension, and basic passage comprehension.

- The **reading vocabulary** section asks participants to identify the best word that should be used to label different graphic illustrations. This task measures whether participants can identify common, concrete print words used in everyday adult interactions in the community, home, and workplace. It is not meant to determine the vocabulary knowledge (breadth or depth) of the participants.
- The **sentence comprehension** section asks participants to identify whether sentences of varying grammatical/syntactic complexity make sense. This task measures whether participants can understand and correctly judge the accuracy of the content of sentences.
- The **basic passage comprehension** section asks participants to make a choice between a correct and an incorrect word to complete a sentence within a passage. This task measures whether respondents comprehend text in context and can appropriately use words in ways that characterize fluency.

The reading component portion of the assessment is optional for countries and regions participating in PIAAC. In countries and regions that adopt the reading components tasks, participants who decide not to take the computer-based assessment, and those who fail to pass the computer-administered information and communication technology (ICT) skills and literacy/numeracy "Core" items, are directed to the reading components tasks. (Additional information about the administration of the assessment and the "Core" items can be found in Appendix A.) Data from the reading components portion of the assessment are not reported separately in this report, but can be accessed from the International Data Explorer (IDE) at http://www.oecd.org/site/piaac/publicdataandanalysis.htm.

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EXHIBIT B-1.

Description of PIAAC proficiency levels on the literacy scale

Proficiency levels and cut scores for literacy	Literacy task descriptions
Level 5 (376 – 500)	At this level, tasks may require the respondent to search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; or evaluate evidence-based arguments. Application and evaluation of logical and conceptual models of ideas may be required to accomplish tasks. Evaluating reliability of evidentiary sources and selecting key information is frequently a requirement. Tasks often require respondents to be aware of subtle, rhetorical cues and to make high-level inferences or use specialized background knowledge.
Level 4 (326 – 375)	Tasks at this level often require respondents to perform multiple-step operations to integrate, interpret, or synthesize information from complex or lengthy continuous, non-continuous, mixed, or multiple type texts. Complex inferences and application of background knowledge may be needed to perform the task successfully. Many tasks require identifying and understanding one or more specific, non-central idea(s) in the text in order to interpret or evaluate subtle evidence-claim or persuasive discourse relationships. Conditional information is frequently present in tasks at this level and must be taken into consideration by the respondent. Competing information is present and sometimes seemingly as prominent as correct information.
Level 3 (276 – 325)	Texts at this level are often dense or lengthy, and include continuous, non-continuous, mixed, or multiple pages of text. Understanding text and rhetorical structures become more central to successfully completing tasks, especially navigating complex digital texts. Tasks require the respondent to identify, interpret, or evaluate one or more pieces of information, and often require varying levels of inference. Many tasks require the respondent to construct meaning across larger chunks of text or perform multi-step operations in order to identify and formulate responses. Often tasks also demand that the respondent disregard irrelevant or inappropriate content to answer accurately. Competing information is often present, but it is not more prominent than the correct information.
Level 2 (226 – 275)	At this level, the medium of texts may be digital or printed, and texts may comprise continuous, non-continuous, or mixed types. Tasks at this level require respondents to make matches between the text and information, and may require paraphrasing or low-level inferences. Some competing pieces of information may be present. Some tasks require the respondent to • cycle through or integrate two or more pieces of information based on criteria; • compare and contrast or reason about information requested in the question; or • navigate within digital texts to access and identify information from various parts of a document.
Level 1 (176 – 225)	Most of the tasks at this level require the respondent to read relatively short digital or print continuous, non-continuous, or mixed texts to locate a single piece of information that is identical to or synonymous with the information given in the question or directive. Some tasks, such as those involving non-continuous texts, may require the respondent to enter personal information onto a document. Little, if any, competing information is present. Some tasks may require simple cycling through more than one piece of information. Knowledge and skill in recognizing basic vocabulary, determining the meaning of sentences, and reading paragraphs of text is expected.
Below Level 1 (0 – 175)	The tasks at this level require the respondent to read brief texts on familiar topics to locate a single piece of specific information. There is seldom any competing information in the text and the requested information is identical in form to information in the question or directive. The respondent may be required to locate information in short continuous texts. However, in this case, the information can be located as if the text were non-continuous in format. Only basic vocabulary knowledge is required, and the reader is not required to understand the structure of sentences or paragraphs or make use of other text features. Tasks below Level 1 do not make use of any features specific to digital texts.

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EXHIBIT B-2.

Examples of literacy items

Items that exemplify the pertinent features of the proficiency levels in the domain of literacy are described below. In order to be consistent with the OECD international report, Levels 4 and 5 are combined in the figures in this report (Level 4/5).

Level 4: Library search (Item ID: C323P002)
Difficulty score: 348

The stimulus displays results from a bibliographic search from a simulated library website. The test-taker is asked to identify a book suggesting that the claims made both for and against genetically modified foods are unreliable. He or she needs to read the title and the description of each book in each of the entries reporting the results of the bibliographic search in order to identify the correct book. Many pieces of distracting information are present. The information that the relevant book suggests that the claims for and against genetically modified foods are unreliable must be inferred from the truncated Internet search result stating that the author "describes how both sides in this hotly contested debate have manufactured propaganda, tried to dupe the public and... [text ends with ellipsis as shown]."

Level 3: Library search (Item ID: C323P003)
Difficulty score: 289

This task uses the same stimulus as the previous example. The test-taker is asked to identify the name of the author of a book called *Ecomyth*. To complete the task, the test-taker has to scroll through a list of bibliographic entries and find the name of the author specified under the book title. In addition to scrolling, the test-taker must be able to access the second page where *Ecomyth* is located by either clicking the page number (2) or the word "next." There is considerable irrelevant information in each entry to this particular task, which adds to the complexity of the task.

Level 2: Lakeside fun run (Item ID: C322P002)
Difficulty score: 240

The stimulus is a simulated website containing information about the annual fun run/walk organized by the Lakeside community club. The test-taker is first directed to a page with several links, including "Contact Us" and "FAQs." He or she is then asked to identify the link providing the phone number of organizers of the event. In order to answer this item correctly, the test-taker needs to click on the link "Contact Us." This requires navigating through a digital text and some understanding of web conventions. While this task might be fairly simple for test-takers familiar with web-based texts, some respondents less familiar with web-based texts would need to make some inferences to identify the correct link.

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Level 1: Generic medicine (Item ID: C309A321)
Difficulty score: 219
The stimulus is a short newspaper article entitled "Generic medicines: Not for the Swiss." It has two paragraphs and a table in the middle displaying the market share of generic medicines in 14 European countries and the United States. The test-taker is asked to determine the number of countries in which the generic drug market accounts for 10 percent or more of total drug sales. The test-taker has to count the number of countries with a market share greater than 10 percent. The percentages are sorted in descending order to facilitate the search. The phrase "drug sales," however, does not appear in the text; therefore, the test-taker needs to understand that "market share" is a synonym for "drug sales" in order to answer the question.

Below Level 1: Election results (Item ID: C302BC02)
Difficulty score: 162
The stimulus consists of a short report of the results of a union election containing several brief paragraphs and a simple table identifying the three candidates in the election and the number of votes they received. The test-taker is asked to identify which candidate received the fewest votes. He or she needs to compare the number of votes that the three candidates received and identify the name of the candidate who received the fewest votes. The word "votes" appears in both the question and in the table and nowhere else in the text.

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Numeracy

The primary goal of PIAAC's numeracy assessment is to evaluate basic mathematical and computational skills that are considered fundamental for functioning in everyday work and social life. Numeracy in the PIAAC framework is defined as *"the ability to access, use, interpret, and communicate mathematical information and ideas, to engage in and manage mathematical demands of a range of situations in adult life"* (OECD 2012).

The PIAAC numeracy domain is built on previous large-scale assessments of this domain, school-oriented assessments, and a review of requirements of workplace skills, adult learning, and mathematics and statistics education. The tasks that measure this domain involve managing a situation or solving a problem in a practical context—in home, work, or community settings. These tasks ask respondents to work with numbers, proportions, measurements, and statistical concepts, and then call for participants to compute, interpret, and communicate the results and mathematical content. The situations and problems presented in these tasks involve objects or pictures, text, numbers, graphs, and technology-based displays. They also require basic mathematical skills in computation, proportions and percentages, an understanding of measurement concepts and procedures, and working with simple formulas. Respondents also encounter more complex items that require using models to predict future needs, and an understanding of basic statistical concepts and displays.

In addition, PIAAC numeracy assessment items

- are set in authentic and culturally appropriate contexts,
- measure different levels of ability, and
- use the standard measuring systems of the participating country or region.

Numeracy tasks include items in paper-and-pencil and computer-based delivery modes that cover a range of difficulties—low, middle, and high—to present a comprehensive picture of the level of adult numeracy skills in each country or region.

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EXHIBIT B-3.

Description of PIAAC proficiency levels on the numeracy scale

Proficiency levels and cut scores for numeracy	Numeracy task descriptions
Level 5 (376 – 500)	Tasks at this level require the respondent to understand complex representations and abstract and formal mathematical and statistical ideas, possibly embedded in complex texts. Respondents may have to integrate multiple types of mathematical information where considerable translation or interpretation is required; draw inferences; develop or work with mathematical arguments or models; and justify, evaluate and critically reflect upon solutions or choices.
Level 4 (326 – 375)	Tasks at this level require the respondent to understand a broad range of mathematical information that may be complex, abstract or embedded in unfamiliar contexts. These tasks involve undertaking multiple steps and choosing relevant problem-solving strategies and processes. Tasks tend to require analysis and more complex reasoning about quantities and data; statistics and chance; spatial relationships; and change, proportions and formulas. Tasks at this level may also require understanding arguments or communicating well-reasoned explanations for answers or choices.
Level 3 (276 – 325)	Tasks at this level require the respondent to understand mathematical information that may be less explicit, embedded in contexts that are not always familiar and represented in more complex ways. Tasks require several steps and may involve the choice of problem-solving strategies and relevant processes. Tasks tend to require the application of number sense and spatial sense; recognizing and working with mathematical relationships, patterns, and proportions expressed in verbal or numerical form; and interpretation and basic analysis of data and statistics in texts, tables and graphs.
Level 2 (226 – 275)	Tasks at this level require the respondent to identify and act on mathematical information and ideas embedded in a range of common contexts where the mathematical content is fairly explicit or visual with relatively few distractors. Tasks tend to require the application of two or more steps or processes involving calculation with whole numbers and common decimals, percents and fractions; simple measurement and spatial representation; estimation; and interpretation of relatively simple data and statistics in texts, tables and graphs.
Level 1 (176 – 225)	Tasks at this level require the respondent to carry out basic mathematical processes in common, concrete contexts where the mathematical content is explicit with little text and minimal distractors. Tasks usually require one-step or simple processes involving counting, sorting, performing basic arithmetic operations, understanding simple percents such as 50%, and locating and identifying elements of simple or common graphical or spatial representations.
Below Level 1 (0 – 175)	Tasks at this level require the respondents to carry out simple processes such as counting, sorting, performing basic arithmetic operations with whole numbers or money, or recognizing common spatial representations in concrete, familiar contexts where the mathematical content is explicit with little or no text or distractors.

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EXHIBIT B-4.

Examples of numeracy items

Items that exemplify the pertinent features of the proficiency levels in the domain of numeracy are described below. In order to be consistent with the OECD international report, Levels 4 and 5 are combined in the figures in this report (Level 4/5). No items mapped at Level 5 in numeracy.

Level 4: Education level (Item ID: C632P001)
Difficulty score: 354
The stimulus for this item consists of two stacked-column bar graphs presenting the distribution of the Mexican population by years of schooling for men and women separately. The y-axis of each of the graphs is labeled "percentage" with 6 grid lines labeled "0%," "20%," "40%," "60%," "80%," and "100%." The x-axis is labeled "year" and data are presented for 1960, 1970, 1990, 2000, and 2005. A legend identifies three categories of schooling: "more than 6 years of schooling," "up to 6 years of schooling," and "no schooling." The test-taker is asked to approximate what percentage of men in Mexico had more than 6 years of schooling in 1970, choosing from a pull-down menu that has 10 response categories: "0-10%," "10-20%," and so on.

Level 3: Package (Item ID: C657P001)
Difficulty score: 315
The stimulus for this item consists of an illustration of a box constructed from folded cardboard. The dimensions of the cardboard base are identified. The test-taker is asked to identify which plan best represents the assembled box out of four plans presented in the stimulus.

Level 2: Logbook (Item ID: C613A520)
Difficulty score: 250
The stimulus for this item consists of a page from a motor vehicle logbook with columns for the date of the trip (start and finish), the purpose of the trip, the odometer reading (start and finish), the distance travelled, the date of entry and the driver's name and signature. For the first date of travel (June 5), the column for the distance travelled is completed. The instructions inform the test-taker that "a salesman drives his own car and must keep a record of the miles he travels in a Motor Vehicle Log. When he travels, his employer pays him $0.35 per mile plus $40.00 per day for various costs such as meals." The test-taker is asked to calculate how much he will be paid for the trip on June 5.

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Level 1: Candles (Item ID: C615A602)
Difficulty score: 221
The stimulus for this item consists of a photo of a box containing tea light candles. The packaging identifies the product (tea light candles), the number of candles in the box (105 candles), and its weight. While the packaging partially covers the top layer of candles, it can be seen that the candles are packed in five rows of seven candles each. The instructions inform the test-taker that there are 105 candles in a box and asks him or her to calculate how many layers of tea light candles are packed in the box.

Below Level 1: Price tag (Item ID: C602A501)
Difficulty score: 168
The stimulus for this item consists of four supermarket price tags. These identify the product, the price per pound, the net weight, the date packed, and the total price. The test-taker is asked to indicate the item that was packed first by simply comparing the dates on the price tags.

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Problem solving in technology-rich environments

PIAAC represents the first attempt to assess problem solving in technology-rich environments on a large scale and as a single dimension in an international context. PIAAC defines problem solving in technology-rich environments as *"using digital technology, communication tools, and networks to acquire and evaluate information, communicate with others, and perform practical tasks"* (OECD 2012).

Digital technology has revolutionized access to information and communication capabilities over the past two decades. In particular, the Internet has increased instantaneous access to large amounts of information and has expanded instant voice, text, and graphics capabilities across the globe. In order to effectively operate in these environments, it is necessary to have

- knowledge of how various technological environments are structured (e.g., an understanding of the basics of the environment, including how to use command names, drop-down menus, naming protocols for files and folders, and links in a web page); and
- the ability to interact effectively with digital information; understand electronic texts, images, graphics, and numerical data; and locate, evaluate, and critically judge the validity, accuracy, and appropriateness of the accessed information.

These skills constitute the core aspects of the problem solving in technology-rich environments domain.

Items in this domain present tasks of varying difficulty in simulated software applications using commands and functions commonly found in e-mail, web pages, and spreadsheets. These tasks range from purchasing particular goods or services online and finding interactive health information to managing personal information and business finances.

PIAAC recognizes the diversity of digital technologies and the fact that they are evolving at a rapid pace, but due to implementation constraints, the first round of PIAAC was limited to using computers and simulated computer networks. The tasks assessing problem solving in technology-rich environments were only administered via computer and therefore only those taking the computerized assessment received a score in this domain.

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EXHIBIT B-5.

Description of PIAAC proficiency levels on the problem solving in technology-rich environments scale

Proficiency levels and cut scores for problem solving in technology-rich environments	Problem solving in technology-rich environments task descriptions
Level 3 (341 – 500)	At this level, tasks typically require the use of both generic and more specific technology applications. Some navigation across pages and applications is required to solve the problem. The use of tools (e.g., a sort function) is required to make progress towards the solution. The task may involve multiple steps and operators. The goal of the problem may have to be defined by the respondent, and the criteria to be met may or may not be explicit. There are typically high monitoring demands. Unexpected outcomes and impasses are likely to occur. The task may require evaluating the relevance and reliability of information in order to discard distractors. Integration and inferential reasoning may be needed to a large extent.
Level 2 (291 – 340)	At this level, tasks typically require the use of both generic and more specific technology applications. For instance, the respondent may have to make use of a novel online form. Some navigation across pages and applications is required to solve the problem. The use of tools (e.g., a sort function) can facilitate the resolution of the problem. The task may involve multiple steps and operators. The goal of the problem may have to be defined by the respondent, though the criteria to be met are explicit. There are higher monitoring demands. Some unexpected outcomes or impasses may appear. The task may require evaluating the relevance of a set of items to discard distractors. Some integration and inferential reasoning may be needed.
Level 1 (241 – 290)	At this level, tasks typically require the use of widely available and familiar technology applications, such as e-mail software or a web browser. There is little or no navigation required to access the information or commands required to solve the problem. The problem may be solved regardless of the respondent's awareness and use of specific tools and functions (e.g., a sort function). The tasks involve few steps and a minimal number of operators. At the cognitive level, the respondent can readily infer the goal from the task statement; problem resolution requires the respondent to apply explicit criteria; and there are few monitoring demands (e.g., the respondent does not have to check whether he or she has used the appropriate procedure or made progress towards the solution). Identifying content and operators can be done through simple match. Only simple forms of reasoning, such as assigning items to categories, are required; there is no need to contrast or integrate information.
Below Level 1 (0 – 240)	Tasks are based on well-defined problems involving the use of only one function within a generic interface to meet one explicit criterion without any categorical or inferential reasoning, or transforming of information. Few steps are required and no sub-goal has to be generated.

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EXHIBIT B-6.

Examples of problem solving in technology-rich environments items

Items that exemplify the pertinent features of the proficiency levels in the domain of problem solving in technology-rich environments are described below.

Level 3: Meeting rooms (Item ID: U02)
Difficulty score: 346
This task involves managing requests to reserve a meeting room on a particular date using a reservation system. Upon discovering that one of the reservation requests cannot be accommodated, the test-taker has to send an e-mail message declining the request. Successfully completing the task involves taking into account multiple constraints (e.g., the number of rooms available and existing reservations). Impasses exist, as the initial constraints generate a conflict (one of the demands for a room reservation cannot be satisfied). The impasse has to be resolved by initiating a new subgoal, i.e., issuing a standard message to decline one of the requests. Two applications are present in the environment: an e-mail interface with a number of e-mails stored in an inbox containing the room reservation requests, and a web-based reservation tool that allows the user to assign rooms to meetings at certain times. The item requires the test-taker to "Use information from a novel web application and several e-mail messages, establish and apply criteria to solve a scheduling problem where an impasse must be resolved, and communicate the outcome." The task involves multiple applications, a large number of steps, a built-in impasse, and the discovery and use of ad hoc commands in a novel environment. The test-taker has to establish a plan and monitor its implementation in order to minimize the number of conflicts. In addition, the test-taker has to transfer information from one application (e-mail) to another (the room-reservation tool).

Level 2: Club membership (Item ID: U19b)
Difficulty score: 296
This task involves responding to a request for information by locating information in a spreadsheet and e-mailing the requested information to the person who asked for it. The test-taker is presented with a word-processor page containing a request to identify members of a bike club who meet two conditions, and a spreadsheet containing 200 entries in which the relevant information can be found. The required information has to be extracted by using a sort function. The item requires the test-taker to "Organize large amounts of information in a multiple-column spreadsheet using multiple explicit criteria and locate and mark relevant entries." The task requires switching between two different applications and involves multiple steps and operators. It also requires some amount of monitoring. Making use of the available tools greatly facilitates identifying the relevant entries.

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Level 1: Party invitations (Item ID: U01A)
Difficulty score: 286

This task involves sorting e-mails into pre-existing folders. An e-mail interface is presented with five e-mails in an Inbox. These e-mails are responses to a party invitation. The test-taker is asked to place the response e-mails into a pre-existing folder to keep track of who can and cannot attend a party. The item requires the test-taker to "Categorize a small number of messages in an e-mail application in existing folders according to a single criterion." The task is performed in a single and familiar environment and the goal is explicitly stated in operational terms. Solving the problem requires a relatively small number of steps and the use of a restricted range of operators and does not demand a significant amount of monitoring across a large number of actions.

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C APPENDIX C: MEMBERS OF THE PIAAC PRISON EXPERT GROUP

Experts in correctional education and policy provided critical input on the relevance and appropriateness of the background questionnaire items and the overall PIAAC assessment.

Francina Carter is a Correctional Program Specialist in the Community Services Division of the National Institute of Corrections within the Department of Justice. She is the program manager of the Offender Workforce Development Specialist (OWDS) partnership training program. Her primary focus is on providing training and information to help offender employment specialists in both the public and private sectors with assisting offenders to find and retain employment.

Gary Dennis is a former Senior Policy Advisor for Corrections in the Bureau of Justice Assistance within the Department of Justice. Dr. Dennis has served various positions in state government, including Deputy Commissioner, Director of Correctional Industries, Director of Operations, Director of Corrections Training, and Warden. He has also served as Director of Management and Training Services at the National Institute of Corrections' National Academy of Corrections, and as Interim Facility Executive for the Vermont Department of Corrections. He is currently an Adjunct Professor at the University of Maryland and an Adjunct Associate Professor at American University where he teaches courses in criminal justice.

John Linton is the former Director of Correctional Education, Division of Adult Education and Literacy, Office of Career Technical and Adult Education, U.S. Department of Education. Prior to his federal service, he served the Maryland State Department of Education as director of the education and library programs in Maryland's state adult correctional institutions. John trained as a reading specialist and began his teaching career as an adult education teacher in prison schools.

Jerry McGlone is the retired superintendent for the Ohio adult correctional school district. After retirement, he spent several years as School Superintendent for the Ohio juvenile justice system. Previously, he worked as a prison school principal and a teacher in both an adult and juvenile facility. Dr. McGlone has been a correctional education/administration consultant and university professor for nearly 40 years. He is active in numerous state and national organizations in the criminal justice arena, most notably the Correctional Education Association (CEA). In CEA, he served as President and continues to maintain an active leadership/advisory role.

Stephen Steurer is currently the Reentry/Education Advocate for CURE National, a non-profit prison reform group. Previously he was the Executive Director of the Correctional Education Association and simultaneously served as the Correctional Education Academic Coordinator for the Maryland state prison education programs provided through the Maryland State Department of Education. Dr. Steurer has also worked in the Maryland Department of Juvenile Services facilities and taught middle and high school in Chicago and Washington, D.C. public schools.

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