

ADULT EDUCATION AND TRAINING PROGRAMS FOR OLDER ADULTS IN THE U.S.: COUNTRY COMPARISONS USING PIAAC DATA

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ABSTRACT: Historically, older and lower-skilled adults in the U.S. have participated in Adult Education and Training (AET) at lower rates than other groups, possibly because of perceived lack of return on investment due to the time required to recover training costs. Global, knowledge based economies have increased the importance of lifelong learning for all age groups. This paper reports results of a study that used data from the Program for the International Assessment of Adult Competencies (PIAAC) to examine the relationship in the U.S. between participation in AET programs and employment, labor force participation, and income, for adults aged 45 to 65. In addition, comparisons were made for outcomes of AET participation in the U.S. with those in Germany, Japan, Sweden, and the U.K. Consistent with U.S. outcomes, comparison countries had lower AET participation rates by the unemployed compared to the employed and there were wide variations in AET participation between the lowest income quintile and the highest income quintile. For all countries, there was a significant relationship between AET participation and income. There was also a significant relationship between AET participation and labor force participation.

Keywords: Adult education and training, older adults, PIAAC

Population aging is occurring in countries around the world, both more and less developed. Life expectancies have increased and fertility rates have declined, resulting in a larger proportion of the world's population in older age groups and a smaller portion in traditional working-age groups (Bloom, Boersch-Supan, McGee, & Seike, 2011). In an effort to ensure the adequacy of pensions and maintain continued economic growth, many member countries of the Organisation for Economic Cooperation and Development (OECD) have implemented policies to encourage people to remain in the labor force at older ages. Retirement reforms, such as higher retirement ages linked to increases in life expectancy, have been implemented in some countries, and early retirement plans are being eliminated. A retirement age of 67 is now quite common (OECD, 2013a). Research from economically developed countries suggests that increasing labor force participation at older ages and delaying retirement could facilitate economic growth by increasing productivity (Eberstadt & Hodin, 2014; Feyrer, 2007; Franklin, 2014; Goldin, 2016) while enhancing individual level economic security in retirement (Butrica, 2011).

The age structure of the U.S. labor force has changed dramatically in recent decades, largely due to the aging of the baby boomer cohort which includes about 77 million people born between 1946 and 1964 (Colby & Ortman, 2014). In 2024, the U.S. labor force is projected to include 163.7 million people and of those, 72.4 million (44.2%) will be aged 45 and above as compared to 30.5% in 1994. Over the past several decades, labor force participation rates have increased for both the 55 to 64 and 65 to 74 age groups. While labor force participation rates for men in the 55 to 64 age group have been

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relatively flat over the past two decades, participation rates have approximately doubled for both males and females ages 65 to 74. Increases in labor force participation rates have been especially dramatic for females, projected to increase from 48.9% in 1994 to 62.9% in 2024 for the 55 to 64 age group and from 13.6% to 26.2% for the 65 to 74 age group over the same time period (Toossi, 2015).

Shifts in the age structure of the U.S. labor force and increased labor force participation among older adults, combined with an increasingly global, technology and knowledge based economy add to the importance of gaining a better understanding of how adult education and training (AET) influences labor market outcomes for middle-aged and older workers. To accomplish this, we used data from the Program for the International Assessment of Adult Competencies (PIAAC) to examine the relationship in the U.S. between participation in AET programs and employment, labor force participation, and income. We also compared outcomes of AET participation in the U.S. with those in Germany, Japan, Sweden, and the United Kingdom (U.K.) and examined policies for lifelong learning in those countries. The focus of our study was adults ages 45 to 65.

Theoretical Framework

Baptiste (2001) defines human capital as the “knowledge, attitudes, and skills that are developed and valued primarily for their economically productive potential” (pp. 185). More broadly, human capital is the combination of innate talents and skills learned via education and training (Keeley, 2007). Lifelong learning, or AET, is a means for continual investment in human capital over the life course. It is a process of either formal (learning that takes place in education and training institutions and leads to recognized credentials and diplomas), informal (learning that takes place in everyday life and is not necessarily intentional and may not even be recognized by the individuals themselves as contributing to their knowledge and skills), or non-formal (learning that takes place in educational and training settings, but does not typically lead to a formalized credential) learning that is meant to provide workers with the necessary skills to perform in the modern globalized and knowledge-based economy and offers workers the opportunity to improve their economic security and maintain or improve their socioeconomic status (Commission on European Communities, 2000). Lifelong learning has become increasingly necessary so workers of all ages have skills employers require. Even though lifelong learning has the potential to benefit older workers, improve a nation’s economic outlook, and reduce inequality (OECD, 2011), older workers in the U.S. and in other countries, especially those with low skills, are less likely to participate in training programs than their younger counterparts (Canduela et al., 2014; Fouarge, Schils, & de Grip, 2010; Johnson, 2007). *This population may be reluctant to participate in AET because of a lack of understanding of the economic benefits, fear of returning to the classroom and taking exams, or a lack of availability of programs structured to meet their unique needs* (Fouarge, et. al., 2010; OECD, 2014b; Zwick, 2011).

Methodology

This study addressed three research questions: (a) Is there a relationship between participation in formal and non-formal AET and employment and labor force participation in the U.S.? (b) Is there a relationship between participation in formal and non-formal AET and higher levels of income in the U.S.? and, (c) Based on participation in AET, how do outcomes (i.e., labor force participation, employment, and income levels) in the U.S. compare to the U.K., Germany, Sweden, and Japan? To examine these questions we used a combination of binary logistic regression, ordinal logistic regression, and chi-square tests.

Data

We used data from PIAAC, a survey organized by the OECD and conducted by participating countries, to examine the relationship between AET participation and labor market outcomes. Twenty-three countries were included in Round 1 of the PIAAC survey, which was conducted between August of 2011 and March of 2012, and an additional nine countries participated in Round 2 between 2012 and 2016 (National Center for Educational Statistics, 2014). The survey consists of a background questionnaire and an assessment that scores participants in literacy, numeracy, and problem solving skills. For the current project, we used data from the background questionnaire, which includes data on participation in different types of AET along with a wide range of demographic information, including gender, age, language spoken, education, income, and work history (OECD, 2010).

The PIAAC survey was conducted among non-institutionalized adults ages 16 to 65. The background survey and assessment portions of PIAAC were administered in a private setting, such as a library or the participant's home. Survey participants were sampled using a one-stage, two-stage, three-stage, or four-stage stratified probability method, a complex sampling technique requiring an extensive system of weights and repetitions to accurately run tabulations and regressions (Kis & Field, 2013). Samples sizes by age group and country are shown in Table 1.

Table 1
Sample Sizes by Age Group and Country

	Ages 45 – 54	Ages 55 - 65	Total
United States	1,084	1,066	2,150
Germany	1,309	969	2,278
Japan	1,037	1,281	2,318
Sweden	926	1,032	1,958
United Kingdom	1,884	1,874	3,758

Source: OECD, 2014a.

Results

Research Question 1: Is there a relationship between participation in formal and non-formal AET and employment and labor force participation in the U.S.? The chi-square test was used to evaluate the relationship between participation in formal and non-formal AET (FNFAET) and employment status and labor force participation. There was a significant relationship between participation in formal and non-formal AET in the prior 12 months and employment status ($F_{R-S, Pearson} = 24.98, p < .001$) for the 45 to 54 age group. Only 29.9% of the unemployed group participated in AET as compared to 64.5% of the employed group. This is of concern because the unemployed may require additional training to become reemployed. For the 55 to 65 age group, there was no significant relationship between participation in AET and employment status. Because of a small sample size in the unemployed group, we were unable to analyze the 45 to 65 age group separately for the employment outcome using logistic regression techniques. Considering all age groups, participation in FNFAET resulted in a significant ($p < .001$) expected improvement in the log odds of employment.

There was also a significant relationship between participation in formal and non-formal AET and labor force participation for both the 45 to 54 age group ($F_{R-S, Pearson} = 104.42, p < .001$) and the 55 to 65 age group ($F_{R-S, Pearson} = 172.70, p < .001$). Participating in formal and non-formal AET in the last 12 months improved the expected log odds of participating in the labor force by 1.384 ($p < .001$). Older workers, however, are less likely to participate in the labor force—being over 45 reduced the log odds of labor force participation by -0.382 ($p < .001$) as compared to the 25 to 44 age group. Females were less likely to participate in the labor force with a -0.984 ($p < .001$) expected reduction in the log odds relative to their male counterparts.

Research Question 2: Is there a relationship between participation in formal and non-formal AET and higher levels of income? Based on the chi-square test, there was a significant relationship between participation in FNFAET and income quintile ($F_{R-S, Pearson} = 15.36, p < .001$) for the 45 to 54 age group and for the 55 to 65 age group ($F_{R-S, Pearson} = 4.20, p < .05$). Overall, 66.3% of the 45 to 54 age group participated in AET but there were substantial differences in participation by the lowest and highest income quintiles. For the 44 to 54 age group, 47.4% of the lowest income quintile participated in formal and non-formal AET as compared to 83.4% of the highest income quintile. Overall AET participation by the 55 to 65 age group was 65.8% and as with the 45 to 54 age group, there were substantial differences in AET participation rates by the top and bottom income quintiles. The AET participation rate for the lowest income quintile was 50.5% compared to 77.4% for highest income quintile. Results of chi-square tests for research questions 1 and 2 for the 45 to 54 and 55 to 65 age groups are shown in Tables 1 and 2.

Individuals who participated in FNFAET had an expected improvement in the log odds of moving up one income quintile of 0.441 ($p < .001$). Results for age and sex were also significant. Adults ages 45 to 65 had an expected improvement of 0.593 ($p < .001$) in the log odds of moving up one income quintile compared to the 18 to 44 age group whereas

females had an expected reduction in the log odds of moving up one income quintile of - 1.027 ($p < .001$) compared to males.

Table 1

Relationship in the U.S. between Participation in Formal and Non-Formal AET and Employment, Labor Force Participation, and Income for ages 45 to 54 in the U.S.

	Non-Participation Group <i>n</i> (% of population)	Participation Group <i>n</i> (% of population)	Significance		
			<i>Design-based F</i>	<i>df, rdf</i>	<i>p</i>
<i>Employment Status</i>					
Unemployed	41 (70.1)	21 (29.9)	24.98	1, 79	<.001
Employed	298 (35.5)	537 (64.5)			
<i>Labor Force Participation</i>					
Not in the labor force	131 (81.4)	31 (18.6)	104.42	1, 79	<.001
In the labor force	339 (37.8)	558 (62.2)			
<i>Income Quintile</i>					
Lowest	57 (52.6)	46 (47.4)	15.36	3.64, 287.83	<.001
Next Lowest	69 (48.0)	68 (52.0)			
Middle	55 (42.0)	87 (58.0)			
Next to highest	40 (23.2)	126 (76.8)			
Highest	32 (16.6)	174 (83.4)			
Total <i>n</i> (income)	253 (33.7)	501 (66.3)			

Table 2

Relationship in the U.S. between Participation in Formal and Non-Formal AET and Employment, Labor Force Participation, and Income for ages 55 to 65 in the U.S.

	Non-Participation Group <i>n</i> (% of population)	Participation Group <i>n</i> (% of population)	Significance		
			<i>Design-based F</i>	<i>df, rdf</i>	<i>p</i>
<i>Employment Status</i>					
Unemployed	22 (43.8)	27 (56.2)	1.04	1, 44	0.314
Employed	225 (36.0)	430 (64.0)			
<i>Labor Force Participation</i>					
Not in the labor force	264 (78.9)	75 (21.1)	172.70	1, 44	<.001
In the labor force	247 (35.1)	457 (64.9)			
<i>Income Quintiles</i>					
Lowest	41 (49.5)	49 (50.5)	4.20	3.67, 161.35	<.05
Next lowest	30 (36.6)	50 (63.4)			
Middle	45 (40.1)	74 (59.9)			
Next to highest	37 (30.0)	97 (70.0)			
Highest	33 (22.6)	111 (77.4)			
Total <i>n</i> (income)	186 (34.2)	381 (65.8)			

Research Question 3: Based on participation in formal and non-formal AET, how do outcomes in the U.S. compare to the U.K., Germany, Sweden, and Japan? The chi-square test was used to compare the relationship between participation in FNFAET and employment between the U.S. and the U.K, Germany, Sweden, and Japan. For the 45 to 54 age group, the relationship between FNFAET participation and employment was significant for all countries except Japan. For the 55 to 65 age group, the results were only significant in Sweden. For the 45 to 54 age group, Sweden had the highest AET participation rate for both the unemployed (52.1%) and the employed (72.0%). The U.S. had the lowest FNFAET participation rate for the unemployed (29.9%) and Japan had the lowest rate of participation for the employed (51.0%). The U.S. had the widest gap (34.6%) in FNFAET participation by the unemployed as compared to the employed and Germany had the lowest gap (13.3%) (see Figure 1). For the 55 to 65 age group, the U.S. had the highest FNFAET participation rate for the employed (64.0%) whereas the U.K. had the highest FNFAET participation rate for the unemployed (66.8%). Japan had the lowest FNFAET participation rate for the employed (38.5%). Sweden had the widest gap (20.3) in FNFAET participation by the unemployed as compared to the employed and the U.S. had the smallest gap (7.8%) (see Figure 2). For the logistic regression analyses, due to small sample sizes for the unemployment group, only the U.K. and the U.S. were compared for employment status.

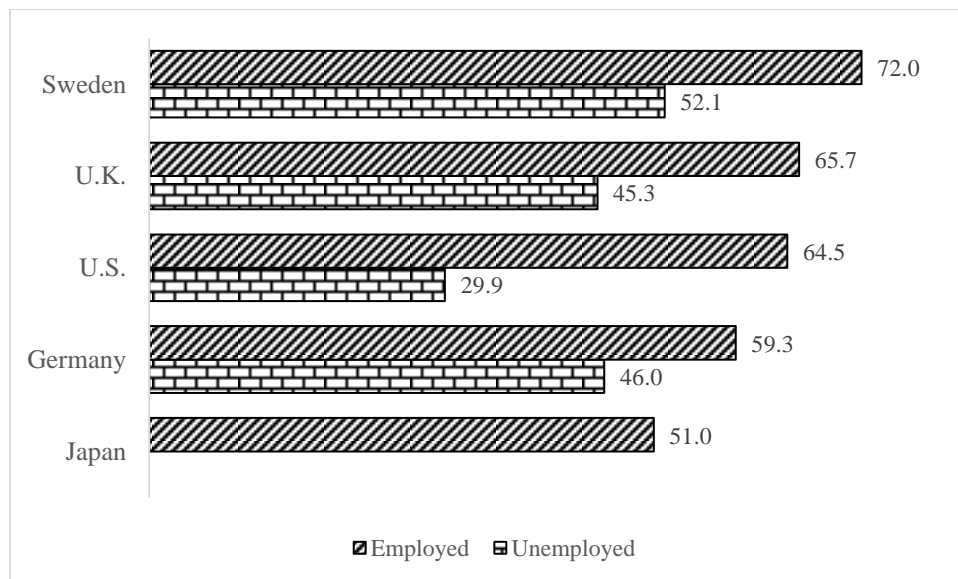


Figure 1. Participation in formal and non-formal AET by employment status, ages 45 – 54 (percent).

Source: OECD, 2014a.

Note: Sample sizes for the unemployed in Japan were too small to report.

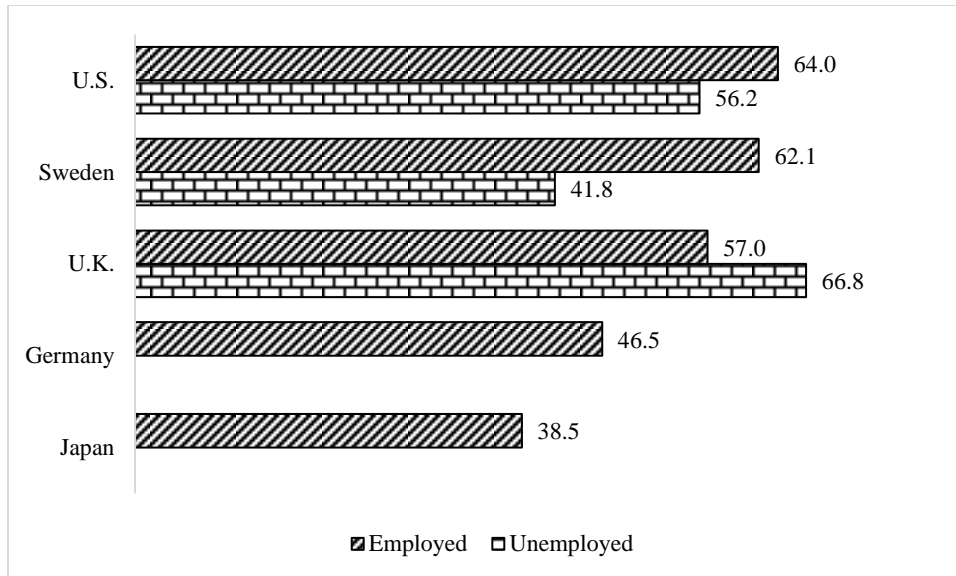


Figure 2. Participation in formal and non-formal AET by employment status, ages 55 – 65 (percent).

Source: OECD, 2014a.

Note: Sample sizes for the unemployed in Germany and Japan were too small to report.

Using FNFAET as the predictor, the expected improvement in the log odds of employment was statistically significant for both countries. The expected improvement in log odds of employment was 0.698 ($p < .001$) in the U.S. and 0.572 ($p < .001$) in the U.K.

The chi-square test was used to compare the relationship between participation in FNFAET and labor force participation, between the U.S. and the U.K, Germany, Sweden, and Japan. For both the 45 to 54 and 55 to 65 age groups, there was a significant relationship between FNFAET participation and labor force participation in all countries ($p < .001$). For the 45 to 54 age group, Sweden had the highest rate (71.2%) of AET participation by those in the labor force and Germany had the highest rate of FNFAET participation (31.0%) for those not in the labor force. Japan had the lowest rate of FNFAET participation for those not in the labor force (16.2%) and the lowest rate of FNFAET participation (50.7%) for those in the labor force. For the 55 to 65 age group, the U.S. had the highest rates of FNFAET participation for both those not in the labor force (21.1%) and in the labor force (64.9%). Germany had the lowest FNFAET participation rate (12.9%) for those not in the labor force while Japan had the lowest FNFAET participation rate (38.2%) for those in the labor force. (see Figures 3 and 4). Individuals who participated in FNFAET had a significant expected improvement in the log odds of labor force participation in all five countries. The expected improvement in the log odds of labor force participation was 1.360 ($p < .001$) in the U.S., 0.780 ($p < .001$) in Germany, 1.030 ($p < .001$) in Sweden, 1.616 ($p < .001$) in the U.K., and 1.247 ($p < .001$) in Japan. With the exception of Sweden, increasing age was a significant predictor in an expected reduction in the log odds of labor force participation. Females in all countries saw a significant expected reduction in the log odds ($p < .001$) of labor force participation as compared to males.

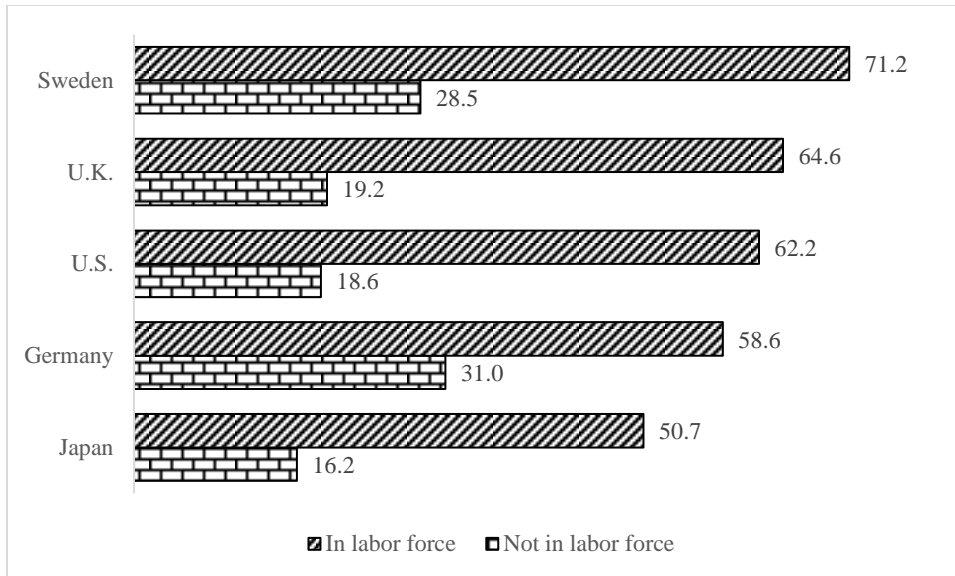


Figure 3. Participation in formal and non-formal AET by labor force status, ages 45 – 54 (percent).
Source: OECD, 2014a.

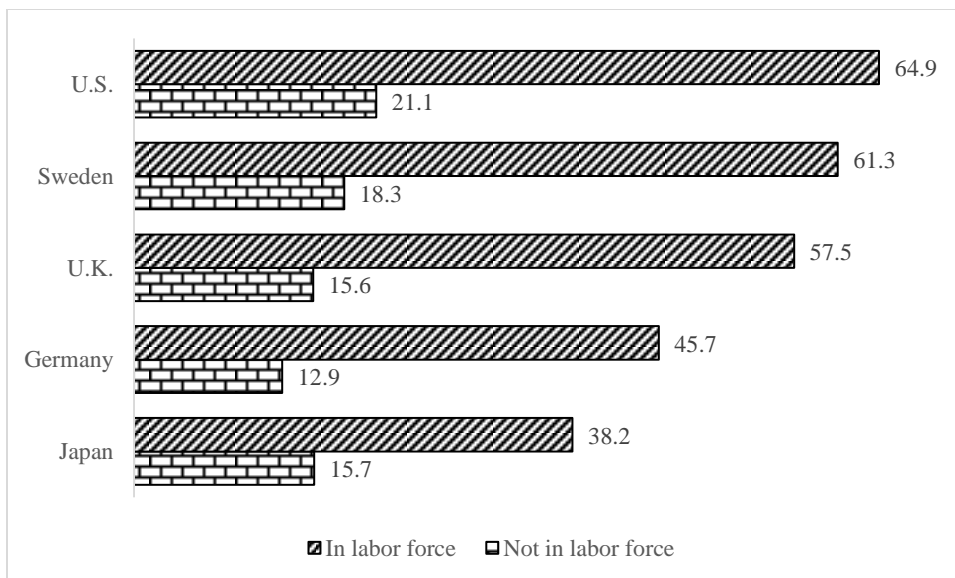


Figure 4. Participation in formal and non-formal AET by labor force status, ages 55 – 65 (percent).
Source: OECD, 2014a.

Results of the chi-square test indicate a significant relationship between FNFAET participation and income quintile for both age groups in all countries. No income data were available for Germany. For the 45 to 54 age group, Sweden had the highest overall FNFAET participation rate (72.7%) along with the highest rate of FNFAET participation for both the lowest income quintile (55.7%) and the highest income quintile (84.6%). The U.S. had the widest gap (36.0%) in FNFAET participation between the highest and

lowest income quintiles among the countries included in the analyses and Sweden had the lowest gap (28.9%). Japan had the lowest rates of FNFAET participation for all income quintiles for both age groups. For the 55 to 65 age group, the U.S. had the highest overall participation rate for FNFAET participation (65.8%) and the highest participation rate (50.5%) for the lowest income quintile while Sweden had the highest rate of participation (81.3%) for the highest income quintile. Sweden had the widest gap (34.7%) in FNFAET participation between the highest and lowest income quintiles whereas the U.S. had the narrowest gap (26.9%) (see Figures 5 and 6). Individuals who participated in FNFAET had an expected increase in the log odds of moving up one income quintile in all countries. The expected increase in log odds was 0.554 ($p < .001$) in the U.S., 0.699 ($p < .001$) in Sweden, 0.713 ($p < .001$) in the U.K., and 0.798 ($p < .001$) in Japan. Age was a significant predictor in expected increase in the log odds of moving up one income quintile in income.

Summary and Implications for Practice

This study examined the effect of participation in formal and non-formal adult education on employment, labor force participation, and income for adults aged 45 to 65. We analyzed employment for the 45 to 54 and 55 to 65 age groups in the U.S. using a chi-square test, which revealed smaller proportions of the unemployed in both the 45 to 54 and 55 to 65 age groups participated in AET as compared to the employed. This is of concern because the unemployed may require additional training to become reemployed.

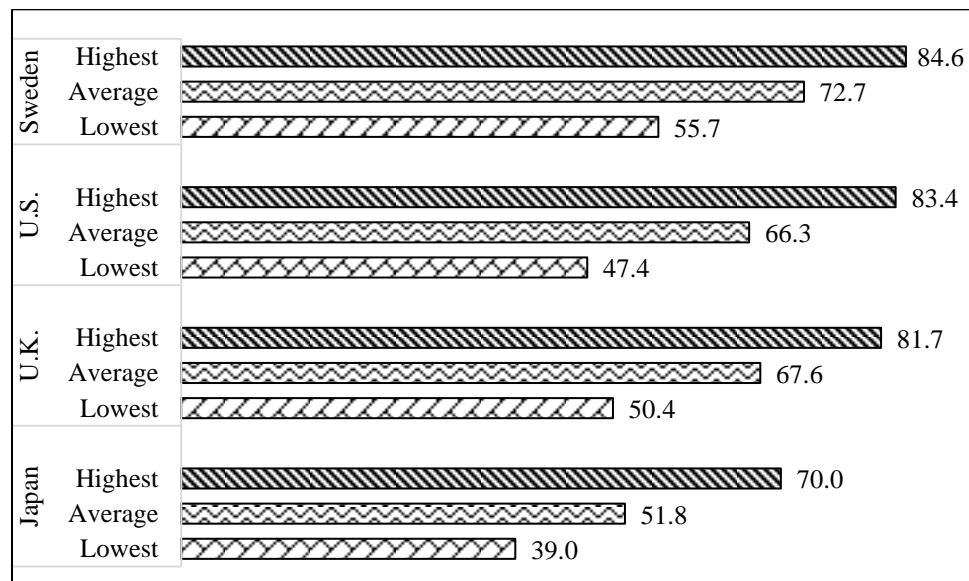


Figure 5. Participation in formal and non-formal AET for selected income quintiles, ages 45 to 54 (percent).

Source: OECD (2014a)

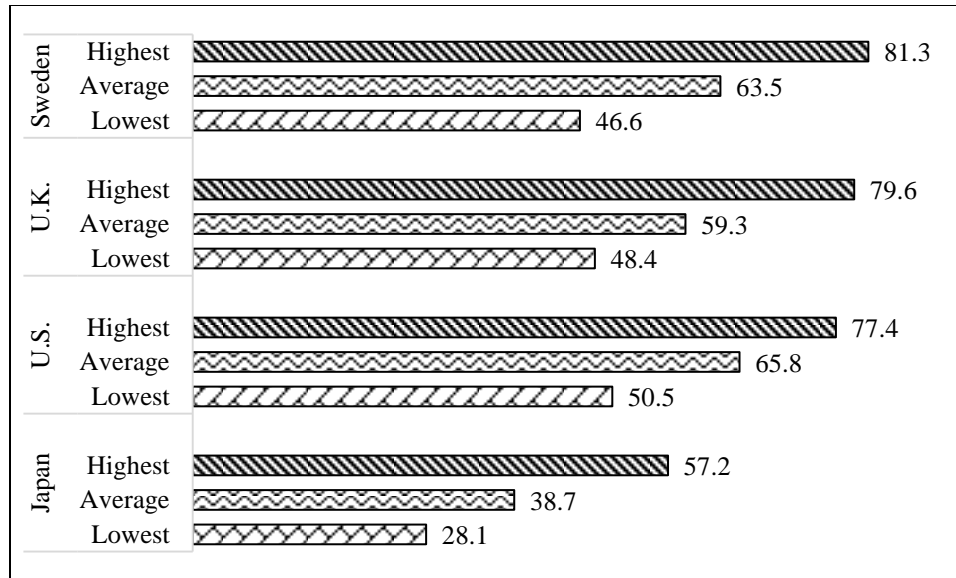


Figure 6. Participation in formal and non-formal AET for selected income quintiles, ages 55 to 65 (percent)

Source: OECD (2014a)

The unemployed often rely on publicly sponsored training programs but there may be a lack awareness of these programs. Lack of awareness of programs and the economic benefits of training, fear of returning to the classroom at older ages, and low funding levels for training programs are potential causes for low participation rates by the unemployed.

There was also a significant relationship between AET participation and labor force participation in the U.S., but the implications are not necessarily straightforward, especially in the context of low AET participation rates by the unemployed. For example, during the recent recession, some of the unemployed simply withdrew from the labor force and thus shifted from “unemployed” to “not in the labor force” (Krueger, Cramer, & Cho, 2014). Participation in an AET program during the period of unemployment might prevent some from early withdrawal from the labor force and participation in AET by individuals who are out of the labor force might result in their returning to the labor market.

The relationship between AET participation and income is important from two perspectives. First, participation in AET increases the likelihood of moving up a level in income quintile. Second, for both the 45 to 54 and 55 to 65 age groups, the lowest income quintile participates in AET at a substantially lower rate than the top income quintile for all of the countries included in this study. This finding is consistent with previous research (Angotti & Belmonte, 2012; Johnson, 2007; OECD, 2004) and reinforces the importance of making opportunities available for lower-income groups to participate in AET.

The combination of increased labor force participation at older ages and a shift in the age distribution of the U.S. labor force results in the need for programs and policies to encourage and facilitate work at older ages. Despite widespread recognition that older workers may require skill upgrades to remain in the labor force at older ages, policies and funding are lacking to facilitate training older workers (Cummins, 2013; Field & Canning, 2014). FNFAET programs are important for older workers so they have the skills necessary to remain in the labor force at older ages and to improve their economic outlook in retirement. This study demonstrates the benefits to older workers of FNFAET participation and shows that unemployed and lower-income workers are less likely to participate in FNFAET. Outreach programs that encourage FNFAET participation by middle aged and older workers, especially those who are unemployed or low-income, are necessary so there is a better understanding of the benefits of participation. While countries generally recognize the need to increase participation rates in adult learning programs by lower income groups, policies and program funding are lacking to achieve this goal (Cummins, Kunkel & Walker, 2014). Programs that target older and low-skilled workers and encourage them to overcome the fear of returning to the classroom at older ages might increase FNFAET participation. Policies that provide opportunities for older adults to participate in AET programs are necessary to ensure economic security in retirement, a competitive labor force, and economic growth. Implementation of policies that focus on lower income groups and the unemployed, who are likely the most in need of skill upgrades and most at risk for economic insecurity in retirement, are especially important.

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