

Associations Between Adults' Numeracy Skills and Employment Status: An Analysis of PIAAC's U.S. Dataset

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Context

- Many U.S. adult education programs and policies (including Workforce Innovation and Opportunity Act) focus on low literacy skill as a barrier to employment.
- This study recognizes the role of increasing numeracy skill as critical in reducing the probability of unemployment.

Research Questions

- What is the relationship between U.S. adults' employment status and their information processing skills?
- Does the relationship between numeracy skill proficiency and employment status for U.S. adults vary by self-reported use/practice of numeracy information-processing skills in everyday life?

Data Source

- 2012/14 Program for the International Assessment of Adult Competencies (PIAAC) US Assessment of Adult Skills
- PIAAC Background Questionnaire
- Sample size ranged from 8,347 to 6,813 depending upon the question
- Ages 16 to 65 years

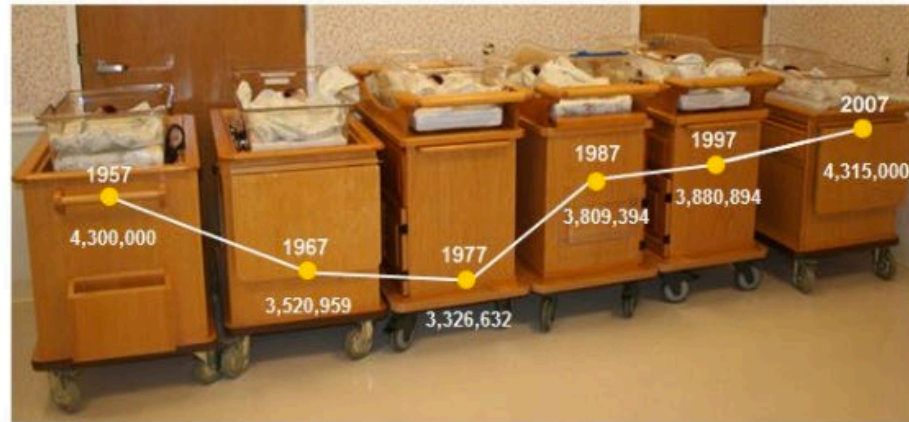
Numeracy Item

Look at the graph about the number of births. Click to answer the question below.

During which period(s) was there a decline in the number of births? Click all that apply.

- 1957 - 1967
- 1967 - 1977
- 1977 - 1987
- 1987 - 1997
- 1997 - 2007

The following graph shows the number of births in the United States from 1957 to 2007. Data are presented every 10 years.



Methods & Variables

This study used a series of regression analyses to examine the relationship between numeracy skills and practices and employment status across four categories:

- Currently employed
- No experience with paid work
- Short-term unemployment
- Long-term unemployment

Variables investigated: participants' scale scores on literacy, numeracy, and PS-TRE assessments, everyday life numeracy practices, and selected demographic characteristics.

Key Findings

- After all variables were added to the model, only increases in numeracy skills were protective of the (un)employment categories “no experience with paid work” and “long-term unemployment.”
- No significant relationship was found between any of the information processing skills and short-term unemployment.

Key Findings

- The study's results point to the centrality of advanced numeracy skills as protective of continued employment for marginalized groups in the U.S. like women, older adults, and some people of color.
- Some numeracy related everyday life skills, like calculator use, were related to employment status.

Implications for Policy

- Nearly a third of U.S. adults have weak numeracy skills (U. S. Department of Education, 2013).
- Several studies have established a strong correlation between numeracy and employability.
- This study's findings on the importance of numeracy as protective of employment are relevant to programming related to adult education and workforce development.

Implications for Policy

This study demonstrates the need for:

- Expanding offerings in numeracy programming and curricula for adult education and workforce development programs.
- Including “low levels of numeracy” as one of the pre-identified “employment barriers” by WIOA similar to “low levels of literacy.”

Barriers to Employment

BY EMPLOYMENT BARRIER ⁴ PY 2016 Statewide Performance Report continued for MARYLAND												
	Total Participants Served (Cohort Period: 07/01/2016 - 06/30/2017)	Total Participants Exited (Cohort Period: 07/01/2016 - 03/31/2017)		Employment Rate (Q2) ² (Cohort Period: N/A)		Employment Rate (Q4) ² (Cohort Period: N/A)		Median Earnings (Cohort Period: N/A)	Credential Rate ³ (Cohort Period: N/A)		Measurable Skill Gains ³ (Cohort Period: 07/01/2016 - 06/30/2017)	
				Num	Rate	Num	Rate	Earnings	Num	Rate	Num	Rate
Total Statewide	28,797	24,400	Target								9,616	36.00%
			Actual								10,887	37.81%
Displaced Homemakers	68	53									20	29.41%
English Language Learners, Low Levels of Literacy, Cultural Barriers	6,162	5,049									2,694	43.72%
Exhausting TANF within 2 years (Part A Title IV of the Social Security Act)	~	~									~	~
Ex-offenders	147	121									34	23.13%
Homeless Individuals / runaway youth	189	158									48	25.40%
Long-term Unemployed (27 or more consecutive weeks)	138	103									45	32.61%
Low-Income Individuals	339	266									105	30.97%
Migrant and Seasonal Farmworkers	33	27									8	24.24%
Individuals with Disabilities (incl. youth)	376	290									84	22.34%
Single Parents (Incl. single pregnant women)	1,440	1,276									397	27.57%
Youth in foster care or aged out of system	~	~									~	~



Implications for Practice

This study demonstrates the need for:

- Expanding professional development/training on instructional practices for teaching numeracy skills for adult education and workforce development professionals.
- Connecting adult education and workforce development programs with regional workforce agencies to understand the required numeracies of specific local industries.

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