

## Reconstructing the Evolution of the American Supply of Cognitive Skills: A Synthetic Cohort Analysis

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The markets model of skill that underpins the 1994 International Adult Literacy Survey (IALS), the 2003 Adult Literacy and Life Skills Survey (ALL) and the 2011 Program for the International Assessment of Adult Competencies (PIAAC) adult skill assessments includes elements of the occupational and social demand for skill, the supply of skill that individuals can muster to meet these demands and a series of markets, including the labor market, that match the skills of individuals to the extant demand. At any given point in time it is an open question as to whether the available supply of skill is adequate to satisfy the economic demand for skill. Even when skill supply and demand are roughly in balance inefficiencies in the market for skills result in significant numbers of workers with skills above or below the level demanded by their job. The labor market creates differential outcomes for individuals, social institutions and nations that themselves create different levels of incentives to acquire and maintain skills.

Policy makers have long focused most of their efforts on generating new skill supply and on creating credentials that are reliable signals of skill, implicitly assuming that markets would put whatever they created to productive economic use.

Our analysis used statistical matching to create synthetic individuals that look as if they participated in both the 2003 ALL and 2011 PIAAC studies. This linked file is used to approximate the distribution of literacy skill gain and loss in the U.S. and Canada and, through regression analysis, **to explore the factors that were associated with skill gain and loss over the period.**

- A cross-sectional comparison revealed that average skill levels did not rise as expected given the rapid increases in educational attainment levels achieved over the period.
- Analysis of the synthetic cohort data reveals that while adults of all backgrounds both gained and lost literacy skill over the period, enough adults lost skill to result in a decline in average scores.
- A regression analysis of the factors that are associated with skill gain and loss reveals that the cognitive demands of the job play an important role. Adults in jobs that require the application of cognitive skills in non-routine ways tended to gain skill whereas adults in jobs that only demanded the routine application of procedural knowledge lost skill.

These findings suggest that public policy may have to pay more attention to the demand side of the labor market. More pointedly, employers may not create the knowledge and skill intense jobs that are needed to compete in global markets without some inducement from government.