

Changes in the Skill Content of American Jobs

Advances in science and technology and global competition are transforming the American workplace. Jobs requiring higher levels of analytical and social skills are on the rise, but jobs performed with more routine physical skills are on the wane. An associated change is job polarization, defined as the loss of middle-wage employment opportunities. These workplace trends have larger societal implications, such as the decline in the middle class, a rise in income inequality, and income gaps across racial and ethnic groups. Traditional notions of “men’s work” or “women’s work” are being upended with implications for gender equality in the workplace.

This paper will focus on the changing need for skills in the American workplace and how that has worked to the benefit (or detriment) of women and men and racial and ethnic groups. In a previous study, we found that from 1980 to 2015 employment grew most rapidly in occupations requiring higher levels of social or analytical skills but was at a near standstill in occupations requiring higher levels of physical skills (Figure 1). Meanwhile, wages are higher and increasing more rapidly in occupations calling for higher levels of social and analytical skills (Figure 2). These trends may have worked in favor of women. That is because even though women are in the minority in the workforce overall, they are the majority in occupations requiring higher levels of social or analytical skills (Figure 3). At the same time, workers with lower levels of education, such as blacks and Hispanics, may be at a disadvantage (Figure 4).

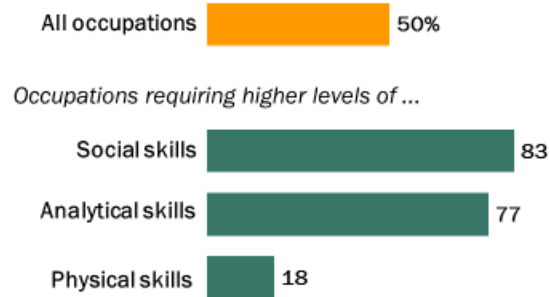
Building on our previous analysis, we will address the following major questions: How has the need for skills changed *within* occupations? What are the skill characteristics of occupations that have virtually disappeared in the past few decades compared with the occupations that have emerged more recently? As women have surged into the labor force since the 1960s, what are the skill characteristics of the jobs they have taken? Has this helped narrow the gender pay gap? Have white, black and Hispanic workers been affected differently?

The research will be completed using data from the Department of Labor’s Dictionary of Occupational Titles (DOT), which provide information on job skills from about 1980, and the Occupational Information Network (O*NET), the successor to the DOT. The earlier iterations of O*NET, circa 2000, are closely related to the later iterations of the DOT from the 1990s. Thus, the O*NET prototypes will be used to bridge the “gap” between the DOT and the latest iterations of O*NET. The occupations listed in these datasets will be matched to the occupations in the Current Population Survey to link information on job skill requirements with information on the characteristics of workers.

In our previous research, social skills encompass interpersonal skills, written and spoken communications skills, and management or leadership skills. Analytical skills refer to computer and mathematical skills and the importance of critical thinking. Physical skills pertain to the ability to work with machinery or equipment, manipulate tools, and do physical or manual labor. More specifically, O*NET ratings for 32 specific skills were used to represent the importance of social, analytical and physical skills in an occupation (from among scores of skills rated in O*NET). In addition to focusing on these sets of skills, we also intend to be agnostic with respect to the skills we analyze, allowing the data to “speak” for itself with respect to how skills cluster and which skills have risen most in importance within occupations.

Figure 1: Employment growth is more rapid in occupations requiring higher social or analytical skills

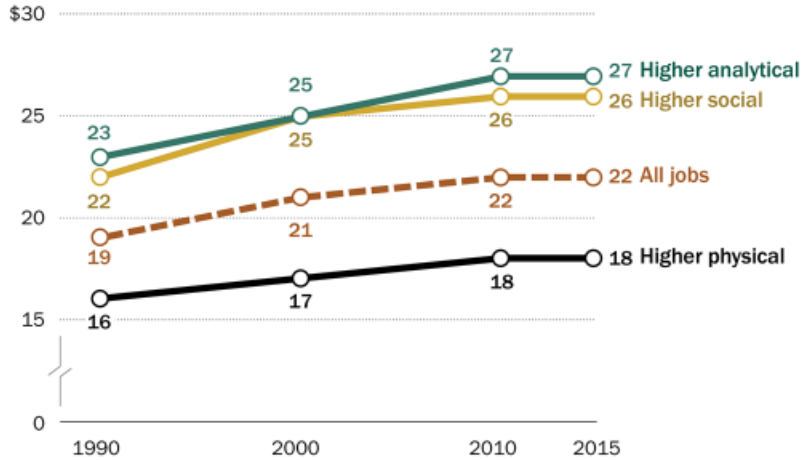
% change in employment, 1980-2015



Note: Based on employed civilians ages 16 and older. Occupations requiring a higher level of a skill set are those with average to above-average ratings in the importance of the skill set to job performance. Because an individual occupation may require higher levels of more than one skill, the three categories of occupations are not mutually exclusive.
 Source: Pew Research Center analysis of O*NET and monthly Current Population Survey data (IPUMS).

Figure 2: Wages are higher and increased more in occupations requiring higher levels of social or analytical skills

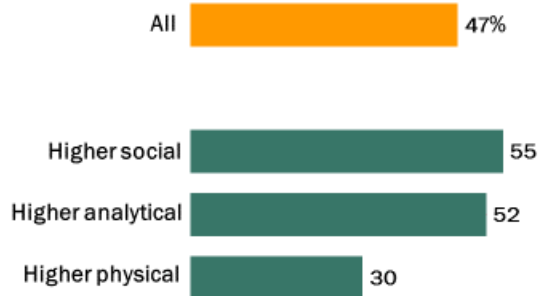
Average hourly wage, in 2015 dollars



Note: Based on civilian wage and salary workers ages 16 and older. Self-employed workers are not included.
 Source: Pew Research Center analysis of O*NET and Current Population Survey outgoing rotation files.

Figure 3: Women make up the majority of workers in occupations requiring higher social or analytical skills

% of workers who are women, 2015

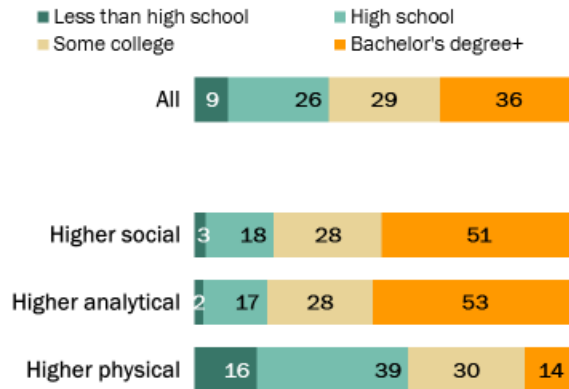


Note: Based on employed civilians ages 16 and older. Occupations requiring a higher level of a skill set are those with average to above-average ratings in the importance of the skill set to job performance. Because an individual occupation may require higher levels of more than one skill, the three categories of occupations are not mutually exclusive.

Source: Pew Research Center analysis of O*NET and monthly Current Population Survey data (IPUMS).

Figure 4: Most workers in occupations requiring higher social or analytical skills are college educated

% of workers, by education, 2015



Note: Occupations requiring a higher level of a skill set are those with average to above-average ratings in the importance of the skill set to job performance. Because an individual occupation may require higher levels of more than one skill, the three categories of occupations are not mutually exclusive. "Some college" includes those with a two-year associate degree.

Source: Pew Research Center analysis of O*NET and monthly Current Population Survey data (IPUMS).