Overlooked and Underconnected

Exploring Disparities in Digital Skill Levels by Race among Older Youth in the US

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Young people are often overlooked in discussions about digital skills gaps because they are considered "digital natives" who do not require digital skills training, but emerging evidence suggests that many younger Americans have no or low digital skills (Hecker and Loprest 2019). In this brief, we provide new evidence about digital skills gaps by race among older youth (ages 16 to 24) in the US and identify how skill levels vary by education and employment status.

The increasingly digital nature of work has changed the skills that jobs require. Digital skills—the ability to use digital tools to complete tasks in various settings—are of vital importance in making connections to and achieving success in education, training, and work (Hecker and Loprest 2019). Particularly in light of the COVID-19 pandemic's impact on youth and young adults, as well as the migration of many aspects of work, education, and daily life to the virtual world, developing strategies that address the digital divide is of paramount importance. Research demonstrates the following:

▪ As jobs across the skills and income spectrum have become more digital, digital skills have become increasingly critical for labor market success (Muro et al. 2017).

▪ Across age groups, digital skills gaps disproportionately affect people of color.[1]

▪ Unequal access to broadband internet and unequal access to education and high-quality training (disparities rooted in structural racism) negatively impact digital skills attainment and are more likely to affect youth of color, as has been the case during the pandemic.[2]

- The transition between youth and young adulthood that occurs between the ages of 16 and 24 is a critical time for attaining new education and employment skills and has long-lasting impacts on economic mobility (Lewis and Gluskin 2018; Ross et al. 2018).

We use national-level data from the Programme for the International Assessment of Adult Competencies (PIAAC) survey (2017) in this analysis to identify differences in digital skill levels by race among youth ages 16 to 24.[3] We find that a significant share of these youth have no or low digital skills, and that Black and Hispanic youth have lower digital skills than white youth. Furthermore, we find that disconnection (from employment and education) and unemployment status are both correlated with lower digital skill levels, and that disparities across race persist even among employed youth.

Helping policymakers, funders, and youth-serving organizations better understand these gaps is critical in order to dismantle disparities and develop targeted policy solutions to mitigate barriers to labor market success for youth of color.

Data Source and Analytic Plan

The PIAAC survey is an international survey that provides a national-level assessment of basic skills and competencies among survey respondents ages 16 to 74. It includes a measure of problem solving in technology-rich environments (PSTRE) through an online assessment, which we use in this analysis to estimate digital skill levels for older youth. Participants receive a numeric score that corresponds to a proficiency level determined by PIAAC (below level 1, level 1, level 2, and level 3). Some participants do not have a numeric score because they did not take the PSTRE assessment as a result of indicating that they had no computer experience, failing an initial computer screener, or refusing the computer test.

In table 1, we adapt the PIAAC proficiency levels into five digital skill levels, ranging from "no digital skills" to "advanced applied digital skills." We use these labels throughout the rest of this brief for simplicity.

TABLE 1

Digital Skill Levels and Definitions

Digital skill level	PIACC score given after PSTRE online assessment	Definition
No digital skills	No score	Respondents falling in this category were not given the computer-based assessment of digital skills because they either indicated they had no computer experience, failed the initial computer screener, or refused the computer test.
Limited independent digital skills	Below level 1 (0–240)	Can complete tasks based on well-defined prompts involving the use of only one function within a generic interface and without inferential reasoning.
Basic task-oriented digital skills	Level 1 (241–290)	Can complete tasks using generic web applications like email or web browsers.
Applied digital skills	Level 2 (291–340)	Can use tools to solve a problem where the criteria to be met are explicit. Can use both generic and novel applications; can overcome minor challenges such as adjusting for an unexpected outcome from use of the tool and use inferential reasoning.
Advanced applied digital skills	Level 3 (341–500)	Can use tools to solve a problem where the goal may be defined and the criteria to be met may or may not be explicit. Can use inference to evaluate the relevance and reliability of information and overcome challenges.

Notes: PIAAC = Programme for the International Assessment of Adult Competencies; PSTRE = problem solving in technology-rich environments. More information about the underlying PIAAC scores and how they are calculated can be found here: https://nces.ed.gov/surveys/piaac/pstreproficiencylevel.asp.

First, our analysis estimates digital skill levels using the numeric scores determined by the PSTRE section of the PIAAC survey (see the second column in table 1). It then compares digital skill levels of youth along different dimensions, such as race and connection to the labor market. A final weight is used in each computation, resulting in a representative sample of "youth" (ages 16 to 24) that can be generalized to the broader population of older youth in the US. This allows us to compare subgroups of youth by race and ethnicity along important dimensions of education and employment characteristics.[4] Our analyses by race are limited to Black, Hispanic, and white youth. Our category for "all youth" also includes a combined group of youth of other races.[5] Although ideally we would disaggregate this last group to investigate the skill levels of a more comprehensive set of communities (particularly given

documented educational and employment disparities in native and other populations), limited sample sizes prevent us from doing so. For that reason, our discussion of findings in the figures that follow focuses on differences in digital skill levels between Black, Hispanic, and white youth.

Findings

Black and Hispanic Youth Have Lower Digital Skill Levels Than White Youth

A significant share of all youth in the US (23 percent) have no or limited independent digital skills. Black youth (48 percent) are three times as likely as white youth (16 percent) to have no or limited independent digital skills, and Hispanic youth (31 percent) are nearly twice as likely as white youth to have no or limited independent digital skills (figure 1).

FIGURE 1

Digital Skill Levels among Youth Ages 16 to 24 by Race
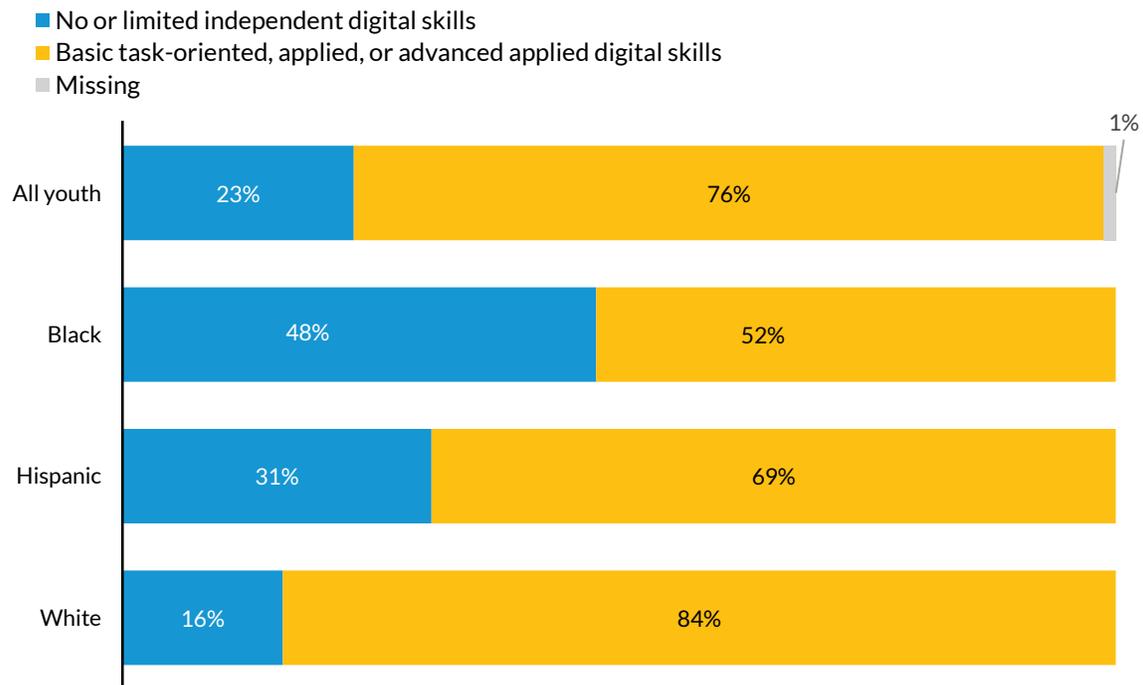
■ No or limited independent digital skills
■ Basic task-oriented, applied, or advanced applied digital skills
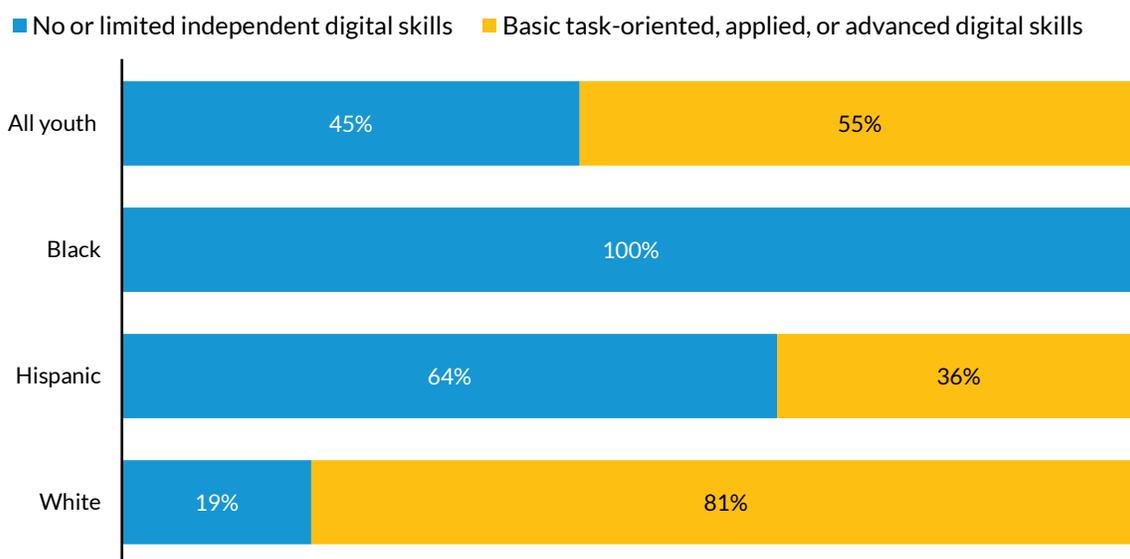■ Missing

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Source: Author calculations of 2017 United States data from the Programme for the International Assessment of Adult Competencies survey.

Digital Skill Levels Are Lower for All Youth Who Are Disconnected, and Disparities by Race in Digital Skill Levels Persist among Disconnected Youth

Disconnection from employment and education ("disconnected status") is negatively correlated with digital skill level for all youth and among all racial and ethnic groups. [6] Among disconnected youth, racial

discrepancies persist in our sample: 100 percent of disconnected Black youth and 64 percent of disconnected Hispanic youth had no or limited independent digital skills, compared with only 19 percent of disconnected white youth (figure 2). This may suggest that disconnected white youth had more digital access or exposure to technology outside of school and employment settings than other groups, or that white youth had access to better digital skills education and training before being disconnected—both structural factors that can perpetuate equity gaps.

Digital Skills Level among Disconnected Youth Ages 16 to 24 by Race

■ No or limited independent digital skills   ■ Basic task-oriented, applied, or advanced digital skills

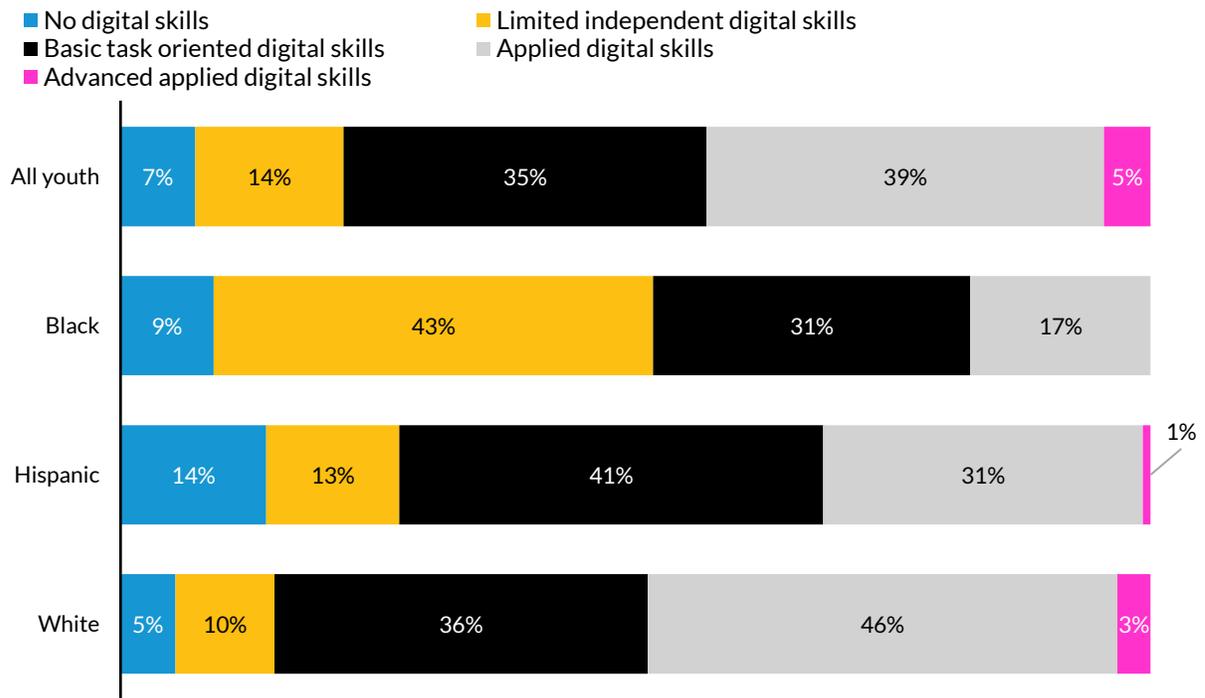|	No or limited independent digital skills	Basic task-oriented, applied, or advanced digital skills
All youth	45%	55%
Black	100%	
Hispanic	64%	36%
White	19%	81%

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Source: Author calculations of 2017 United States data from the Programme for the International Assessment of Adult Competencies survey.

Employed Youth Have Higher Digital Skill Levels Overall, but Disparities in Digital Skills by Race Persist among Employed Youth

Among employed youth, greater shares of Hispanic (14 percent) and Black (9 percent) youth have no digital skills than white youth (5 percent). A much greater share of Black youth have limited independent skills (43 percent) than white youth (10 percent) or Hispanic youth (13 percent; figure 3). Black youth who are employed are also less likely to have higher-level digital skills, such as applied digital skills (17 percent), than Hispanic (31 percent) and white employed youth (46 percent). White employed youth (3 percent) are the most likely group to have advanced applied digital skills.

FIGURE 3
Digital Skill Levels among Youth Ages 16 to 24 Who Are Employed by Race

- No digital skills
- Limited independent digital skills
- Basic task oriented digital skills
- Applied digital skills
- Advanced applied digital skills

	No digital skills	Limited independent	Basic task oriented	Applied	Advanced
All youth	7%	14%	35%	39%	5%
Black	9%	43%	31%	17%	
Hispanic	14%	13%	41%	31%	1%
White	5%	10%	36%	46%	3%

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Source: Author calculations of 2017 United States data from the Programme for the International Assessment of Adult Competencies survey.

Discussion

This brief documents disparities in digital skill levels among older youth by race, building on Urban's burgeoning body of work on the impact of technology on education and training outcomes. Further investigation into what drives disparities in digital skills is needed to inform public and philanthropic funding efforts at a time when addressing digital skills gaps and combating structural racism are both paramount. Questions ripe for further research and consideration by philanthropists, policymakers, and advocates leading youth-serving organizations include the following:

1. How can data on digital skills gaps be made actionable in local communities by adapting surveys like the PIACC survey for use among local government officials?

2. What institutions (e.g., K–12 schools, postsecondary institutions, and libraries) have an opportunity to improve digital skills for young people, and how can effective digital skills interventions be embedded within existing interventions and institutions?

3. What is the public sector's role in ensuring equity in access to digital skills training and technology by making broadband and high-speed internet a public utility, and by investing in digital skills training in communities that need it most?

Our finding that low digital skill levels and disparities by race and ethnicity persist even among employed youth is concerning because of the potential far-reaching implications for older youths' success in reconnecting to school and to the labor market in the future. The stark disparities highlight the need for action from the public and private sectors, given that the additional investment needed to close these gaps cannot only come from private philanthropy.

Notes

1   See https://www.nationalskillscoalition.org/resources/publications/file/Digital-Skills-Racial-Equity-Final.pdf. In our analyses, when discussing specific demographic groups or identities, we name them specifically, but for the purposes of this brief, we use the terms "people of color" and "youth of color" when referring to nonwhite people.

2   "Internet/Broadband Fact Sheet," Pew Research Center, June 12, 2019, https://www.pewresearch.org/internet/fact-sheet/internet-broadband/#who-has-home-broadband. The International Labor Organization (2020) also documents that young people have been disproportionately affected by the COVID-19 crisis, having experienced multiple shocks including disruptions to education and training, employment and income losses, and greater difficulties finding jobs.

3   The PIAAC assigns a set of 10 plausible score values for each respondent to account for the measurement error associated with the assessment instrument. Individual respondents' scores are calculated by taking the mean of each set of 10 plausible values. That average score is then mapped to a proficiency level as organized by PIAAC. More information about the use of plausible values can be found in PIAAC's technical report (https://www.oecd.org/skills/piaac/PIAAC%20Tech%20Report_Section%205_update%201SEP14.pdf), and information about the mapping of estimated scores to proficiency levels can be found at https://nces.ed.gov/surveys/piaac/pstreproficiencylevel.asp.

4   Although the PIACC survey does provide state-level data, sample sizes for youth subgroups are not large enough to explore variation between states.

5   The "other race" category includes Asian/Pacific Islander, American Indian/Alaska Native, and an "other" designation. The inability to conduct further specific subgroup analyses within this category is an important limitation of this dataset.

6   The disconnected status variable in this analysis uses the "neet" variable, a derived variable that captures "adults not employed at time of survey and not in education or training in 12 months preceding the survey." More information can be found in the international codebook and derived variables codebook here: https://www.oecd.org/skills/piaac/data/.

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