2012–2016
Program for International Student Assessment
Young Adult Follow-up Study (PISA YAFS)

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International PIAAC Research Conference 2022 | March 24 – 25, 2022, virtual
Outline

1. Overview of PISA YAFS
2. Results
3. Relating performance at age 19 to performance at age 15
4. Relating education and employment outcomes at age 19 to performance at age 15
5. Final take-aways
Overview of PISA YAFS
Program for International Student Assessment
Young Adult Follow-up Study (PISA YAFS)

• Why PISA, Program for International Student Assessment?
  – Starting sample was 15-year-olds who participated in U.S. PISA main study in 2012 (N = 4978)

• Why YAFS, Young Adult Follow-up study?
  – The U.S. students were contacted to participate in a survey four years later, when they were young adults, when they were about 19 years old (N= 2318)
Assessment Design

• At Age 15 in PISA: paper-based assessment
  – Reading
  – Mathematics
  – Extensive Background questionnaire

• At Age 19 in PISA YAFS: computer-based adaptive assessment
  – Literacy
  – Numeracy
  – Background questionnaire

Education and Skills Online (ESO) developed by the OECD as an online self-administered Program for International Assessment of Adult Competencies (PIAAC) tool
Assessment Design: ESO to PIAAC link

• Developed
  – to provide individual-level results that were linked to PIAAC,
  – obtained at any time, not limited to PIAAC’s decennial administration.

• The content and skills that ESO measures
  – are based on the PIAAC assessment framework
  – selected to meet the OECD Education Directorate’s overarching goal to
    » “identify and develop the knowledge and skills that drive better jobs and better
     lives, generate prosperity and promote social inclusion” (OECD n.d.).

Note. PIAAC - Program for International Assessment of Adult Competencies.
### Reporting Results: Average Scale Scores

<table>
<thead>
<tr>
<th>Domains</th>
<th>PISA 2012</th>
<th>ESO (based on PIAAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>Reading, Mathematics</td>
<td>Literacy, Numeracy</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0-1,000 points</td>
<td>0-500 points</td>
</tr>
<tr>
<td></td>
<td>100 points</td>
<td>50 points</td>
</tr>
</tbody>
</table>

- **Proficiency levels** divide the scales by score-point ranges that are associated with the specific sets of knowledge and skills required to complete the assessment tasks within the levels.

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**PISA 2012**: 0-1,000 points

**ESO (based on PIAAC)**: 0-500 points
## Reporting Results: Proficiency Levels

- Proficiency Levels for both assessments have been combined into 3 general levels.
- This grouping of proficiency-level categories was previously used in international reports to designate lower performance, middle performance, and higher performance (see, e.g., OECD 2016a).

<table>
<thead>
<tr>
<th>PISA 2012</th>
<th>ESO (based on PIAAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (Below level 2)</td>
<td>Low (Below level 2)</td>
</tr>
<tr>
<td>Middle (Levels 2–4)</td>
<td>Middle (Levels 2–3)</td>
</tr>
<tr>
<td>High (Level 5 or above)</td>
<td>High (Level 4 or above)</td>
</tr>
</tbody>
</table>
Results
Reasons for focusing on Numeracy

• Numeracy is an important skill
• U.S. lags behind in this skill
Most 19-year-olds performed at the middle level of proficiency in ESO; about one-fifth to one-quarter of 19-year-olds performed at the low level.
Relating performance at age 19 to performance at age 15
15-year-olds to 19-year-olds: Middle Performance

Figure 2. Percentage distribution of U.S. 19-year-olds in PISA 2012 mathematics proficiency levels at age 15 and in ESO numeracy proficiency levels at age 19: 2012 and 2016

SOURCE: U.S. Department of Education, National Center for Education Statistics, Program for International Student Assessment (PISA), 2012; and Program for International Student Assessment Young Adult Follow-up Study (PISA YAFS), 2016
15-year-olds to 19-year-olds: High Performance

Figure 2. Percentage distribution of U.S. 19-year-olds in PISA 2012 mathematics proficiency levels at age 15 and in ESO numeracy proficiency levels at age 19: 2012 and 2016

SOURCE: U.S. Department of Education, National Center for Education Statistics, Program for International Student Assessment (PISA), 2012; and Program for International Student Assessment Young Adult Follow-up Study (PISA YAFS), 2016.
15-year-olds to 19-year-olds: Low Performance

Figure 2. Percentage distribution of U.S. 19-year-olds in PISA 2012 mathematics proficiency levels at age 15 and in ESO numeracy proficiency levels at age 19: 2012 and 2016.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Program for International Student Assessment (PISA), 2012; and Program for International Student Assessment Young Adult Follow-up Study (PISA YAFS), 2016.
Relating education and employment outcomes at age 19 to performance at age 15
Degree currently pursued

Percentage distribution of U.S. 19-year-olds, by mathematics proficiency levels at age 15 and degrees currently pursued: 2016

Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.

‡ Reporting standards not met. The coefficient of variation (CV) for this estimate is 50 percent or greater.

* Percentage of respondents pursuing the given degree is significantly different for this proficiency level than it is for the overall population (p < .05).
Percentage of U.S. 19-year-olds, by mathematics proficiency levels at age 15 and areas of study currently pursued: 2016

<table>
<thead>
<tr>
<th>Area</th>
<th>U.S. 19-year-olds (All levels)</th>
<th>High (Level 5 and above)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social sciences</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Health</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Sciences</td>
<td>12</td>
<td>29*</td>
</tr>
<tr>
<td>Engineering</td>
<td>7</td>
<td>21*</td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>General programs</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Teacher training</td>
<td>5</td>
<td>4†</td>
</tr>
<tr>
<td>Services</td>
<td>2</td>
<td>2†</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1†</td>
<td>1†</td>
</tr>
<tr>
<td>Currently pursuing</td>
<td>9†</td>
<td>41*</td>
</tr>
<tr>
<td>a high school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>diploma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not currently</td>
<td></td>
<td></td>
</tr>
<tr>
<td>studying</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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* Percentage of respondents pursuing the given area of study is significantly different for this proficiency level than it is for the overall population (p < .05)
Area of study currently pursued – Low performers

Percentage of U.S. 19-year-olds, by mathematics proficiency levels at age 15 and areas of study currently pursued: 2016

! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.
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* Percentage of respondents pursuing the given area of study is significantly different for this proficiency level than it is for the overall population (p < .05)
Combined education and employment status

Percentage distribution of U.S. 19-year-olds, by mathematics proficiency levels at age 15 and combined employment and education status: 2016

- **U.S. 19-year-olds (All levels)**
  - Low (Below level 2)
    - 28% in employment only
    - 31% in formal education only
    - 24% both in employment and formal education
    - 11% neither employed nor in formal education
    - 61% employment status unknown
  - Middle (Levels 2–4)
    - 15% in employment only
    - 33% in formal education only
    - 43% both in employment and formal education
    - 8% neither employed nor in formal education
    - 11% employment status unknown
  - High (Level 5 and above)
    - 54% in employment only
    - 42% in formal education only

- **Percent**
  - In employment only
  - In formal education only
  - Both in employment and formal education
  - Neither employed nor in formal education
  - Employment status unknown

! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.
‡ Reporting standards not met. The coefficient of variation (CV) for this estimate is 50 percent or greater.
* Percentage of respondents pursuing the given degree is significantly different for this proficiency level than it is for the overall population (p < .05).
Vocational interests

• Reflect the types of work the person would enjoy based on the personality characteristics (Kankaraš 2017)

• Research has found these to influence cognitive competencies and, when well matched, with individuals’ educational and occupational choices, their well-being and satisfaction (Kankaraš 2017)

• In our study, 19-year-olds were asked to respond, on a 5-point scale, to 60 related questions about the degree to which they would like or dislike various activities.
Vocational interests

Average scores of U.S. 19-year-olds on index of vocational interest, by PISA 2012 mathematics proficiency levels and vocational interests: 2016

- Realistic
- Investigative
- Artistic
- Social
- Enterprising
- Conventional

U.S. 19-year-olds (All levels)
Low (Below level 2)
Middle (Levels 2–4)
High (Level 5 and above)
Final take-away
Final take-away

Low mathematics (and reading) proficiency at age 15 was associated with

• lower education trajectories (e.g., still being in high school at age 19),
• lower rates of potentially advantageous outcomes (e.g., pursuing a bachelor's degree or above), and
• higher rates of less advantageous outcomes (e.g., just working at age 19).
References


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