

# Program for the International Assessment of Adult Competencies (PIAAC)

**Dr. Holly Xie**

*PIAAC National Program Manager*

National Center for Education Statistics (NCES)  
Institute of Education Sciences  
Department of Education

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**Emily Pawlowski**

*Researcher*

American Institutes for Research

# Presentation Outline

1. What is PIAAC?
2. What is new in PIAAC Cycle II?
3. Adult Skills Tool: PIAAC Skills Map
  - Skills Map Demo
  - How can the Skills Map be used to inform your work?
  - Resources
4. Discussion on collaboration

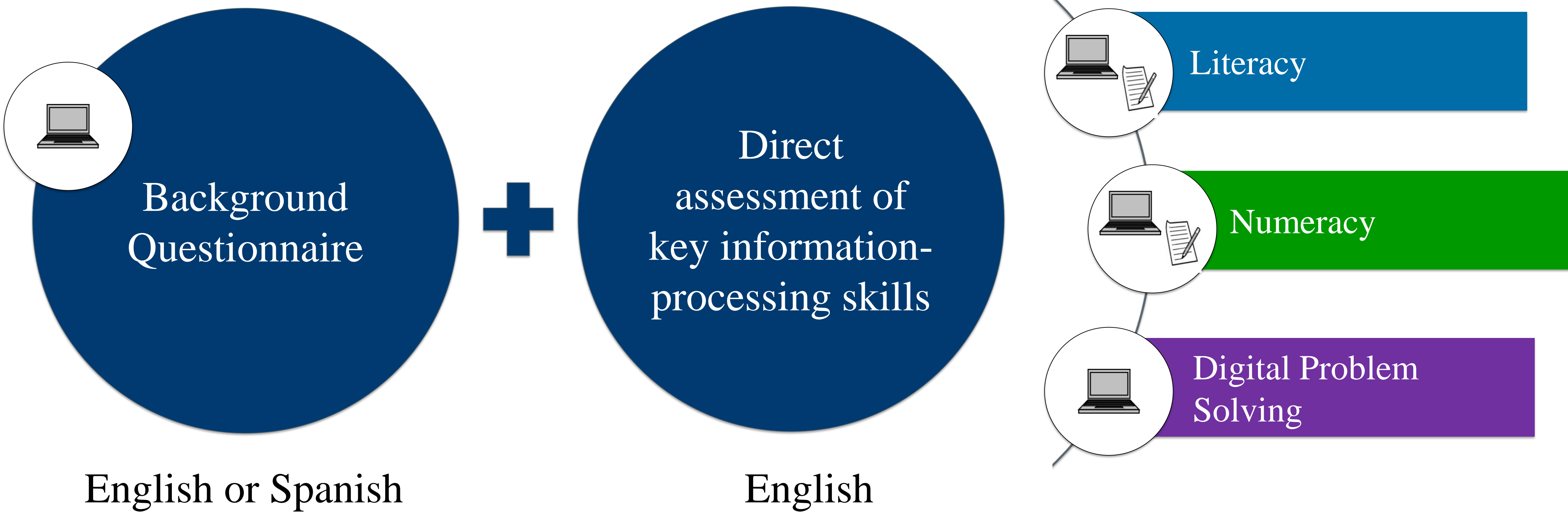
# What is PIAAC?

# Program for the International Assessment of Adult Competencies

- The Program for the International Assessment of Adult Competencies (PIAAC) is a large-scale assessment that measures the basic cognitive and workplace skills—such as literacy and numeracy—needed for successful participation in an advanced economy.
- Administered in households\* to a nationally representative sample of 16- to 65-year-olds\*, residing in each country, irrespective of nationality, citizenship, or language status.
- Cycle I administered in 2011-2017 (38 countries or regions, including the U.S.)
  - U.S. administered 3 rounds of data collection (2012, 2014, 2017)
  - 66-to-74-year-olds in 2014 and 2017 in U.S. only
  - Prison sample in 2014 in U.S. only
  - 12,000+ U.S. sample across 3 rounds of household data collection

*\* U.S. also administered the assessment to incarcerated adults in prisons and expanded the sample to 66-74-years-olds.*

# PIAAC Cycle I Main Components



# PIAAC Cycle I Direct Assessment: Domains and Definitions

- **Literacy** is *understanding, evaluating, using and engaging* with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential.
- **Numeracy** is the ability to *access, use, interpret, and communicate* mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life.
- **Digital Problem Solving** involves using digital technology, communication tools and networks to *acquire and evaluate* information, *communicate* with others and *perform practical tasks*.

# PIAAC Performance Measures

- **Average Scores:** reported on a scale of 0-500 for all domains.
- **Proficiency Levels:** reported as the percentages of adults scoring:
  - at six performance levels (from below level 1 to level 5) in **literacy** and **numeracy**
  - at four performance levels in **digital problem solving** (from below level 1 to level 3)



# Proficiency Levels: Literacy

Level	Description
<b>Level 1 or below</b> <i>(Below 226 points*)</i>	Adults at this level range from functionally illiterate to those who have difficulty using or comprehending basic written material.
<b>Level 2</b> <i>(226–275 points*)</i>	Adults at this level are nearing proficiency but may still struggle to perform tasks using text-based information.
<b>Level 3 or above</b> <i>(Above 275 points*)</i>	Adults at these levels can work proficiently with information and ideas in texts.

*\* On a 0 to 500-point scale*



# Proficiency Levels: Numeracy

Level	Description
<b>Level 1 or below</b> <i>(Below 226 points*)</i>	Adults at this level may range from functionally innumerate to those that have difficulty using and comprehending numeric information.
<b>Level 2</b> <i>(226–275 points*)</i>	Adults at this level are nearing proficiency but may struggle to work with some numeric information.
<b>Level 3 or above</b> <i>(Above 275 points*)</i>	Adults at this level can work proficiently with mathematical information and ideas.

*\* On a 0 to 500-point scale*

# PIAAC Cycle I Results and Products

# Compared to 2012/14, literacy and numeracy scores for U.S. adults ages 16–65 in 2017:

## Increased for:

- unemployed adults (literacy and numeracy)
- adults with fair or poor health (literacy and numeracy)
- non-native born adults (literacy)
- Hispanic adults (literacy)
- adults with less than a high school diploma (literacy)

## Decreased for:

- adults with a high school diploma (literacy and numeracy)
- males (numeracy)

## No measurable difference for:

- Adults overall (literacy and numeracy)
- Age (literacy and numeracy)
- sex (literacy)
- race/ethnicity (numeracy)
- nativity (numeracy)

# Compared to 2012/14, digital problem solving scores for U.S. adults ages 16–65 in 2017:

## Increased for:

- Adults ages 35-44, Hispanic adults, non-native born adults

## Decreased for:

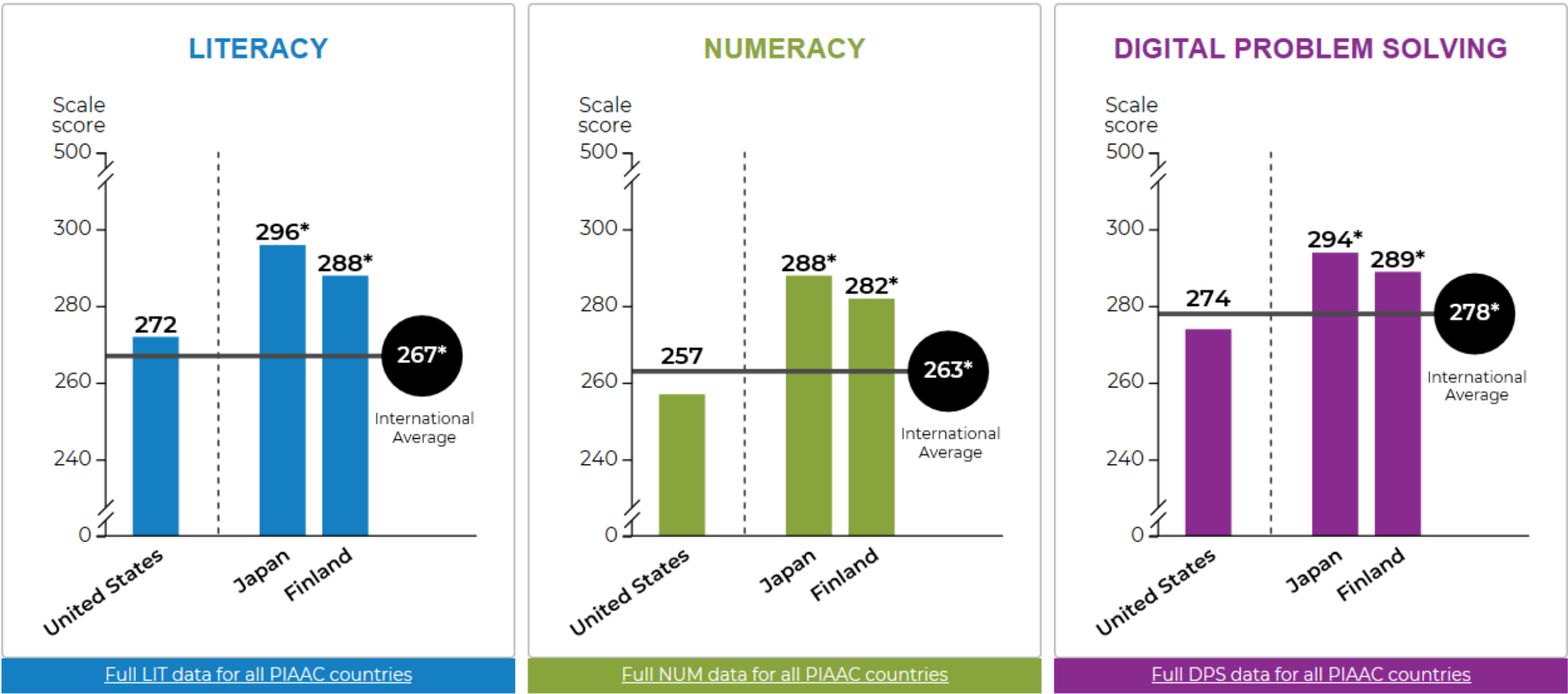
- Adults who are out of the labor force

## No measurable difference for:

- Adults overall, and by sex, education, and health

# U.S. adults scored higher in literacy than the PIAAC international average; however, they scored lower in both numeracy and digital problem solving

Figure 1-A. Average scores on PIAAC literacy, numeracy, and digital problem solving for adults age 16 to 65 for the United States and highest-performing countries: 2012–15



\* Significantly different ( $p < .05$ ) from the United States.

NOTE: LIT = Literacy. NUM = Numeracy. DPS = Digital problem solving. Average scores for the United States are compared to the PIAAC international average and highest-performing countries. Results for 23 of the countries were gathered in 2011–12, and an additional 9 participated in 2014–15. The two highest-performing countries are shown, in descending order from left to right within each domain. Results for the United States are shown on the far left within each domain to highlight that comparison.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Organization for Economic Cooperation and Development (OECD), Program for the International Assessment of Adult Competencies (PIAAC), 2012–15.

# What else did we learn about U.S. adults?

1. Literacy skills of U.S. adults
2. Numeracy skills of U.S. adults
3. State of skills of young adults in the U.S.
4. Significance of skills over education
5. Importance of numeracy
  - high correlations between numeracy and economic and social outcomes as well as furthering education
6. Skills of parents impact their children throughout of their children's lives
7. Skill gap between young and old in the US



# Number of adults with low skills in U.S.

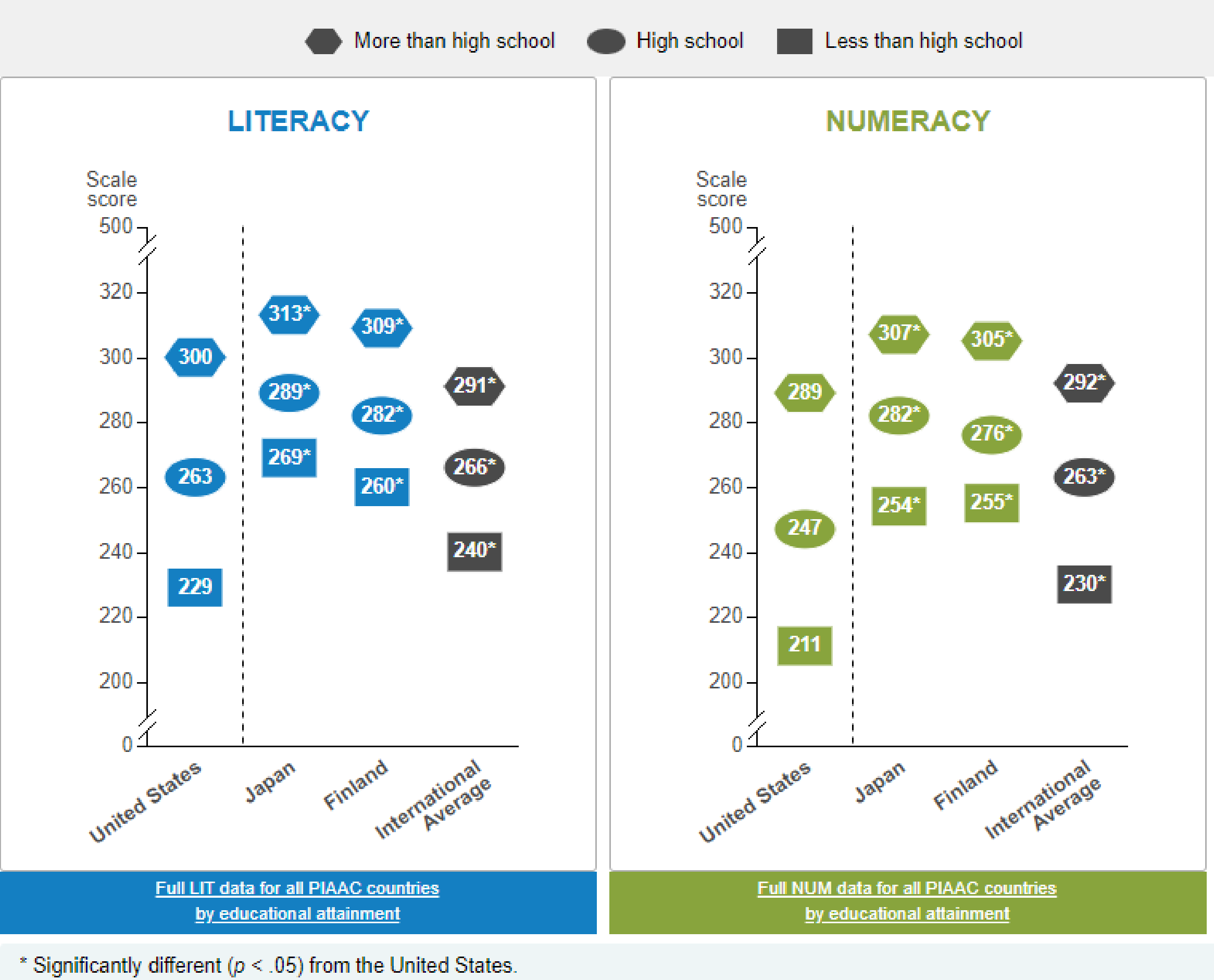
## Literacy

- **52 million** or when looking at ages 16-74, including literacy-related nonrespondents

## Numeracy

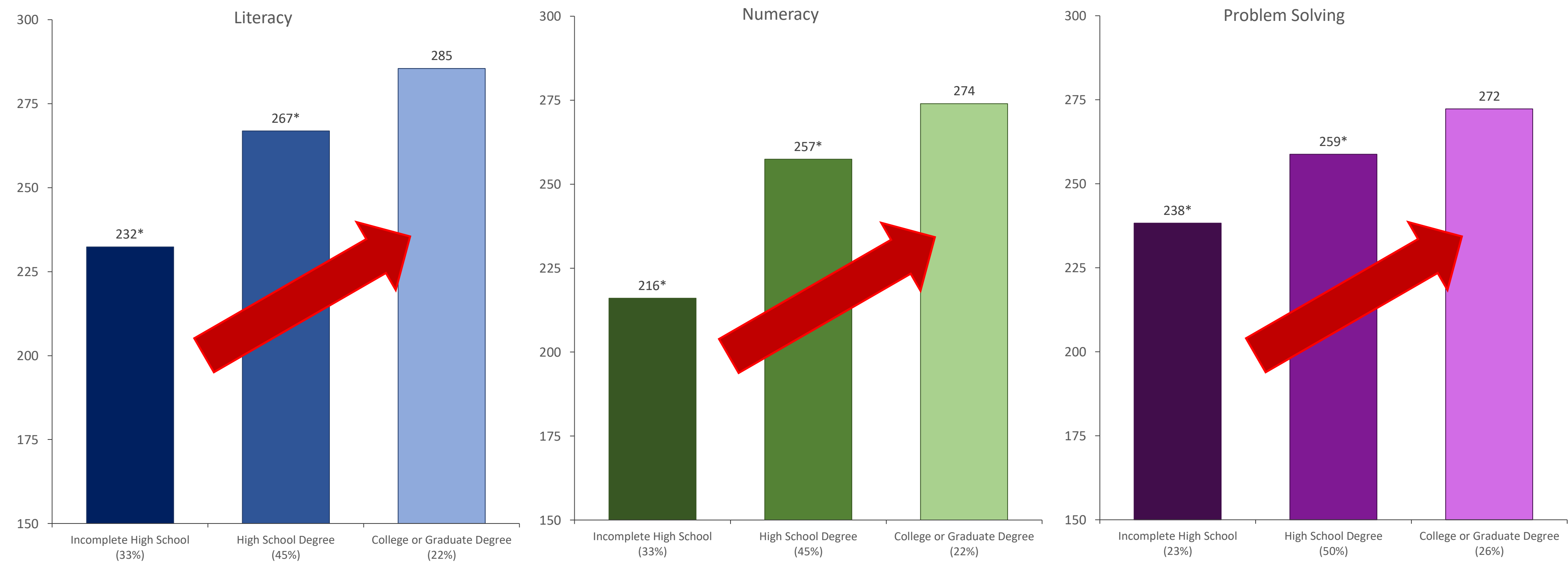
- **74 million** when looking at ages 16-74, including literacy-related nonrespondents

# In both literacy and numeracy, US adults with less than high school education performed lower than other countries



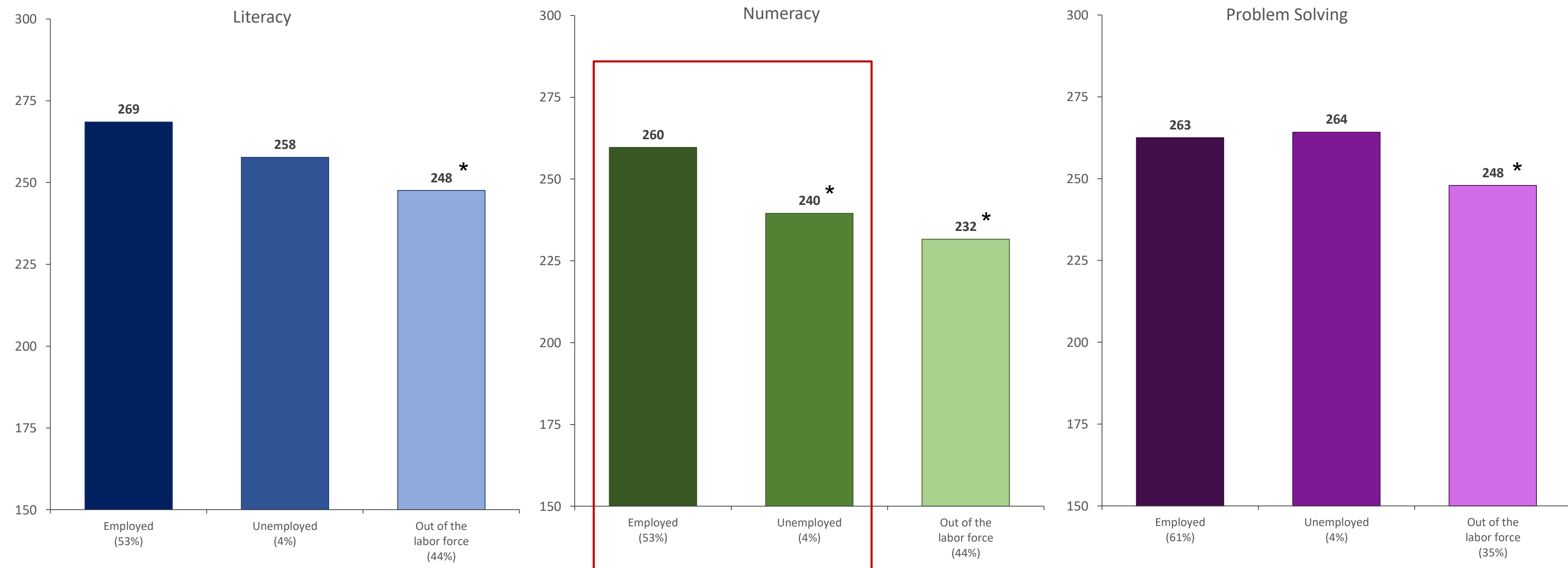
# Older adults (55-74) with parents that attained higher levels of education had higher levels of education had higher scores on all PIAAC scales

*Highest level of education attained by a parent or guardian*



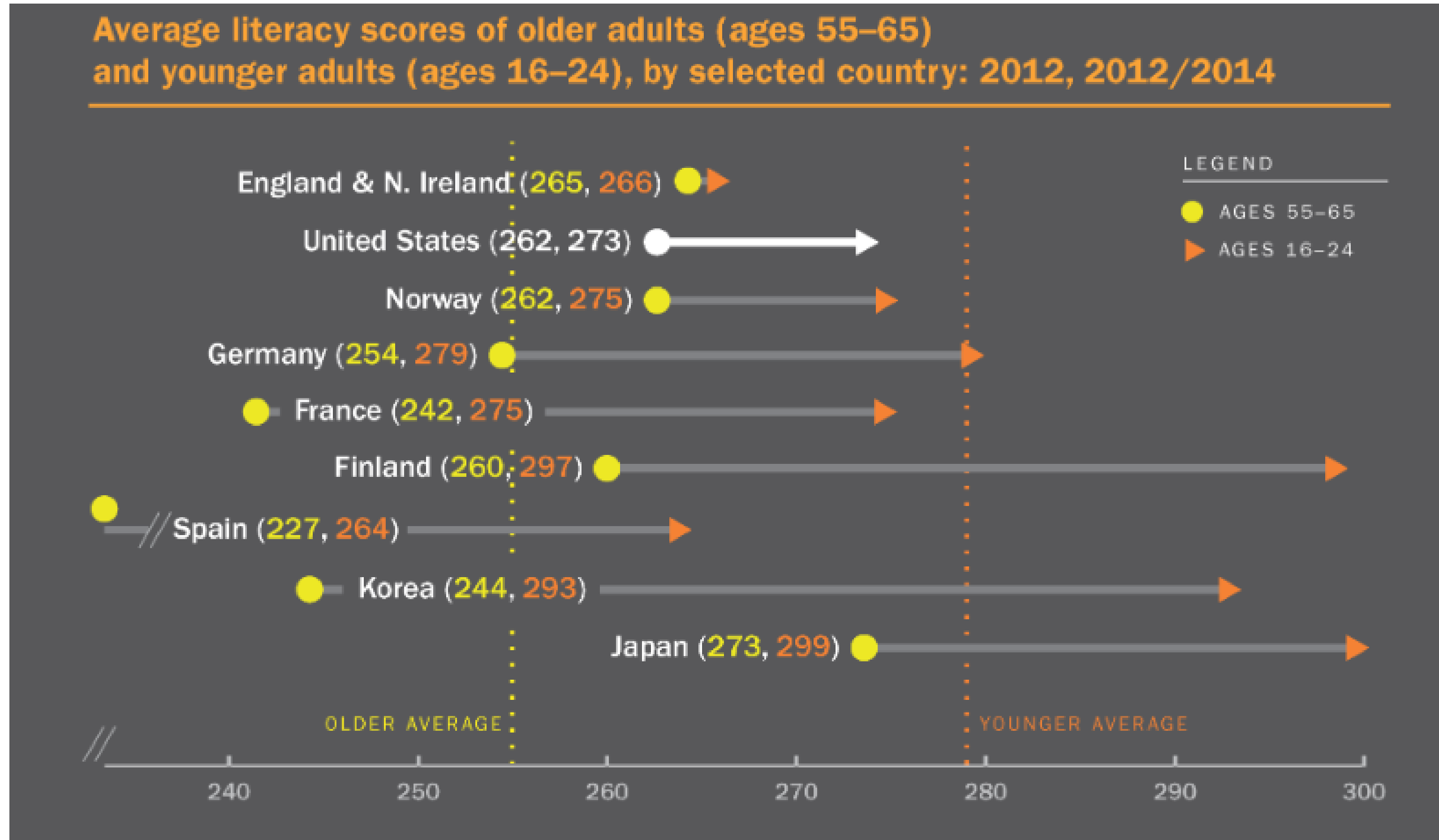
\*Significantly different ( $p < .05$ ) from the comparison category, College or Graduate Degree

# The employed had higher numeracy scores than the unemployed, but there were no score differences between employed and unemployed older adults (55-74) in literacy or problem solving



\*Significantly different ( $p < .05$ ) from the comparison category, employed

# Skills gap in U.S. between young adults and older adults is one of the smallest among participating countries



# PIAAC Cycle I Results and Products

## Products

1. US produced large numbers of research papers
2. Webinars and presentations
3. Publications
4. Training and tutorials
5. Research conferences/papers
6. Gateway resources, including
  - a) tool kits
  - b) Infographics
- a) Database of research papers and access to many full papers

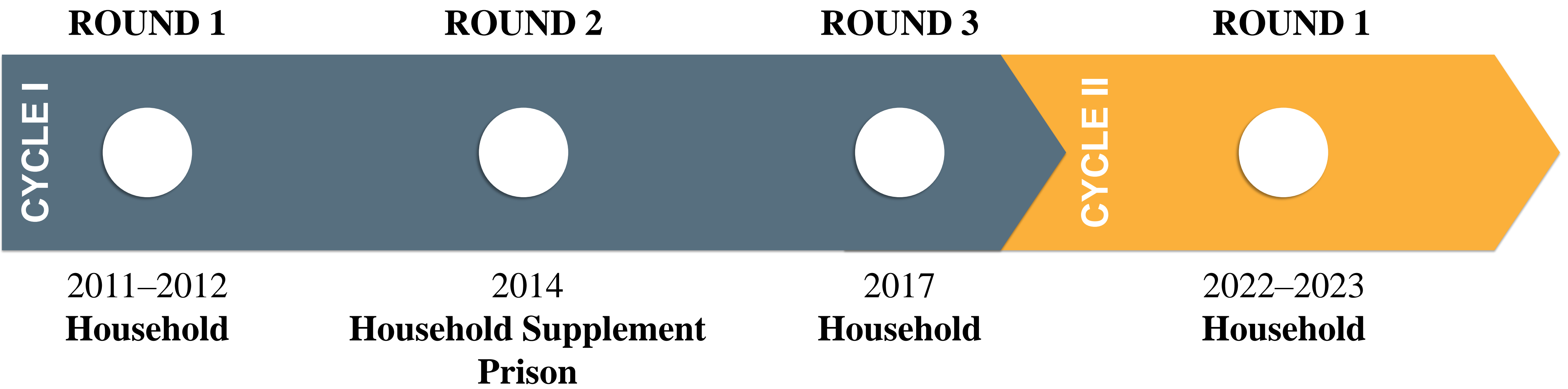


# Education and Skills Online (ESO)

- An assessment tool designed to provide individual level results linked to PIAAC
  - Shorter version of background questionnaire
    - Additional Career Interest and Intentionality module that uses the O\*NET
  - full assessment of literacy, numeracy, digital problem solving
- Test codes are purchased by administering organization and provided to test-takers
- Used in the U.S. by 13 research and post-secondary institutions. Projects include:
  - digital literacy and readiness study on a state level ([Hawaii](#)),
  - workforce research,
  - accreditation reporting,
  - literacy interventions.

# What is new in PIAAC Cycle II?

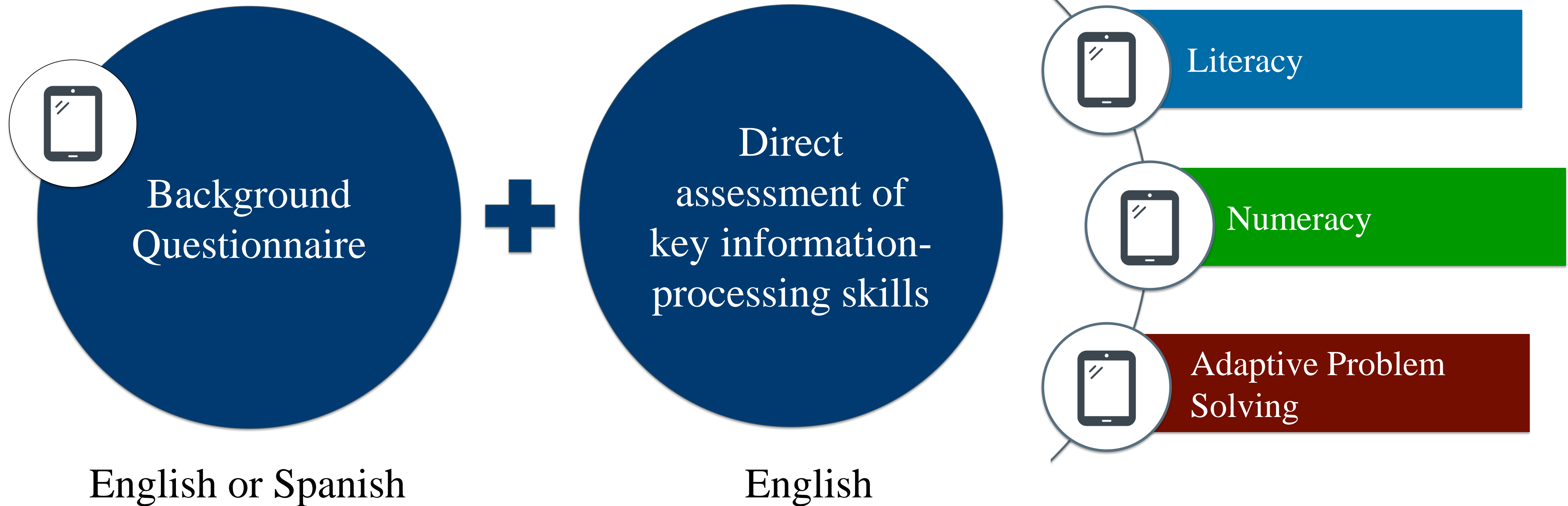
# PIAAC Data Collections



# Cycle II PIAAC Data Collection Plans and Results

- PIAAC Cycle II will be conducted in *31 countries*
- Data collection in the U.S. is being conducted between *September 2022 – April 2023*
- Cycle II PIAAC data and reports to be released in *December 2024*

# PIAAC Cycle II Main Components



# PIAAC Cycle II Background Questionnaire

NEW ITEMS FOR CYCLE II



## WORK

Changes in role with current employer, reasons for leaving job



## SKILL USE

Type of digital devices outside work

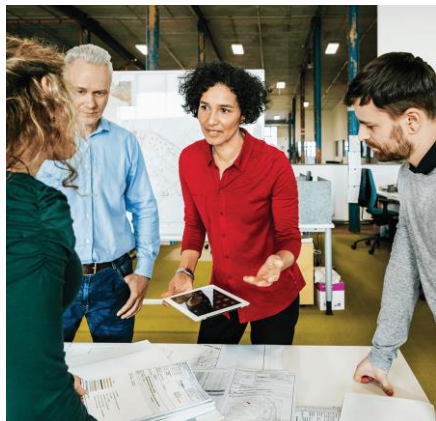


## EDUCATION AND TRAINING

Education pathways, training activities

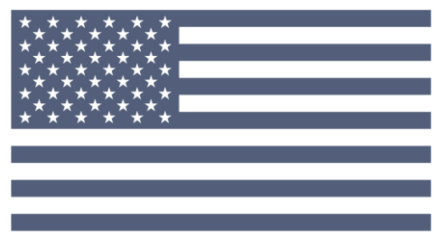
## INTERACTION AND SOCIAL SKILLS

Organization type, teamwork, social support and knowledge sharing, participation



## U.S. ADDITIONS

Financial literacy, health maintenance, race, language, household income





# PIAAC Cycle II Direct Assessment: Domains and Definitions

- **Literacy** is *accessing, understanding, evaluating and reflecting* on written texts in order to achieve one's goals, to develop one's knowledge and potential and to participate in society.
- **Numeracy** is *accessing, using, and reasoning critically* with mathematical content, information and ideas represented in multiple ways in order to engage in and manage the mathematical demands of a range of situations in adult life.
  - **Numeracy Components**
- **Adaptive Problem Solving** involves the capacity to achieve one's goals in a dynamic situation, in which a method for solution is not immediately available. It requires engaging in cognitive and metacognitive processes to *define the problem, search for information, and apply a solution* in a variety of information environments and contexts.

# Adult Skills Tool: PIAAC Skills Map

## State and County Indicators of Adult Literacy and Numeracy

# State and County Workforce Skill Data

- PIAAC Skills Map provides
  - the most comprehensive picture on the literacy and numeracy skills of adults ages 16–74 in all 50 states, the District of Columbia, and for all 3,141 counties \* for
    - overall population,
    - six age groups (16–24, 25–34, 35–44, 45–54, 55–64, and 65–74), and
    - four education groups (less than high school, high school diploma or GED, some college (no degree or attained associate’s degree), and bachelor’s degree or higher).
- The literacy and numeracy proficiency are reported as the percentage of adults with low, medium and high levels of proficiency and average score.

*\* Using the U.S. Census Bureau’s definition of “county” for statistical purposes.*

# Where Do the Data in the Skills Map Come From?

# Small Area Estimates

- The data in the tool were developed using a statistical technique called small area estimation
- To produce reliable estimates of adult literacy and numeracy skills in each state and county, NCES developed a statistical model relying on data from:
  - The PIAAC combined data from 2012, 2014, and 2017 data collections
  - The American Community Survey 5-year data (ACS 2013–17)

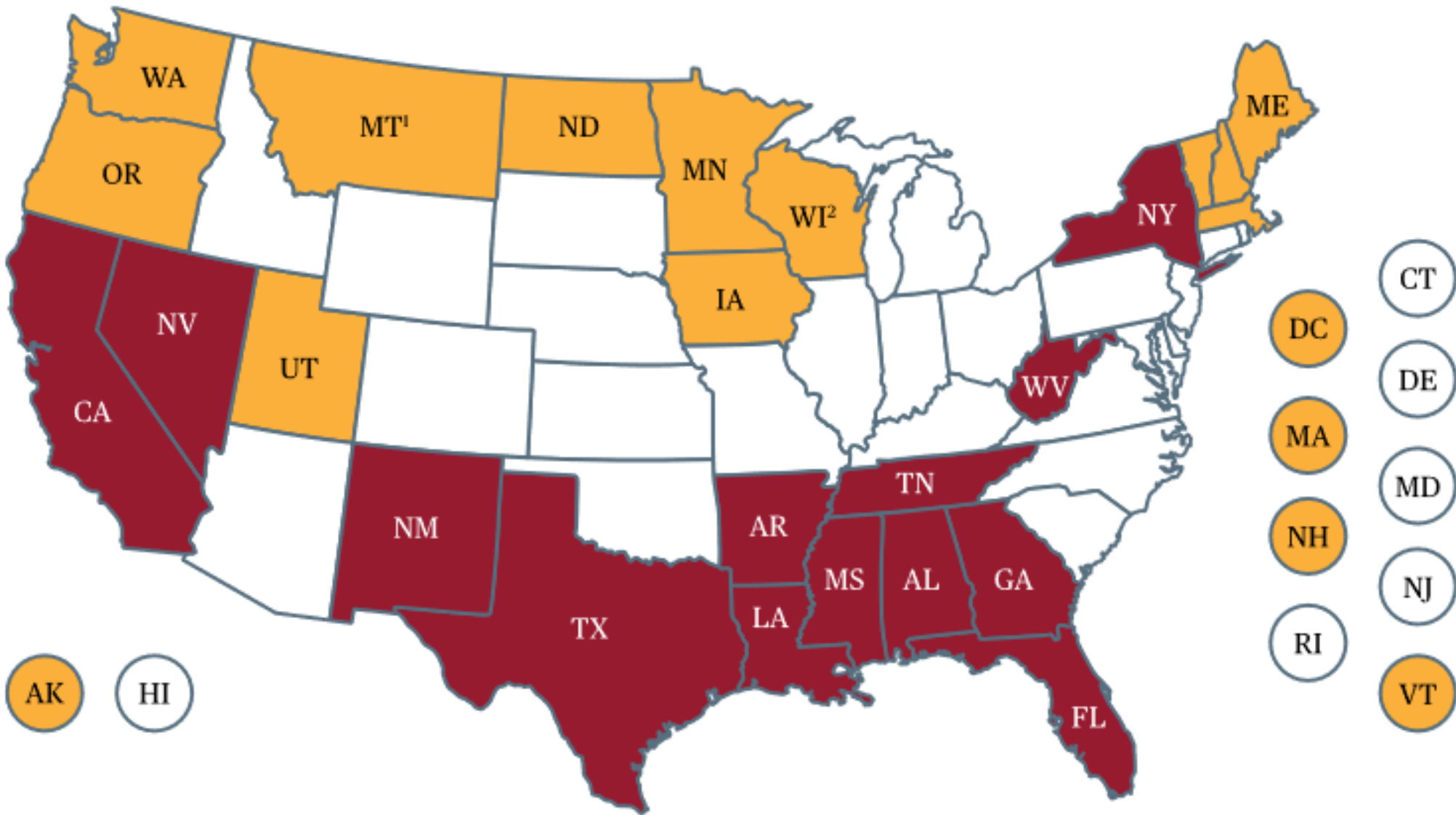
# Highest- and Lowest-Performing States

## Highest- and Lowest-Performing States

Top 25% (by average score for literacy and numeracy, combined)	
Alaska	New Hampshire
DC	North Dakota
Iowa	Oregon
Maine	Utah
Massachusetts	Vermont
Minnesota	Washington
Montana <sup>1</sup>	Wisconsin <sup>2</sup>

Bottom 25% (by average score for literacy and numeracy, combined)	
Alabama	Nevada
Arkansas	New Mexico
California	New York
Florida	Tennessee
Georgia	Texas
Louisiana	West Virginia
Mississippi	-

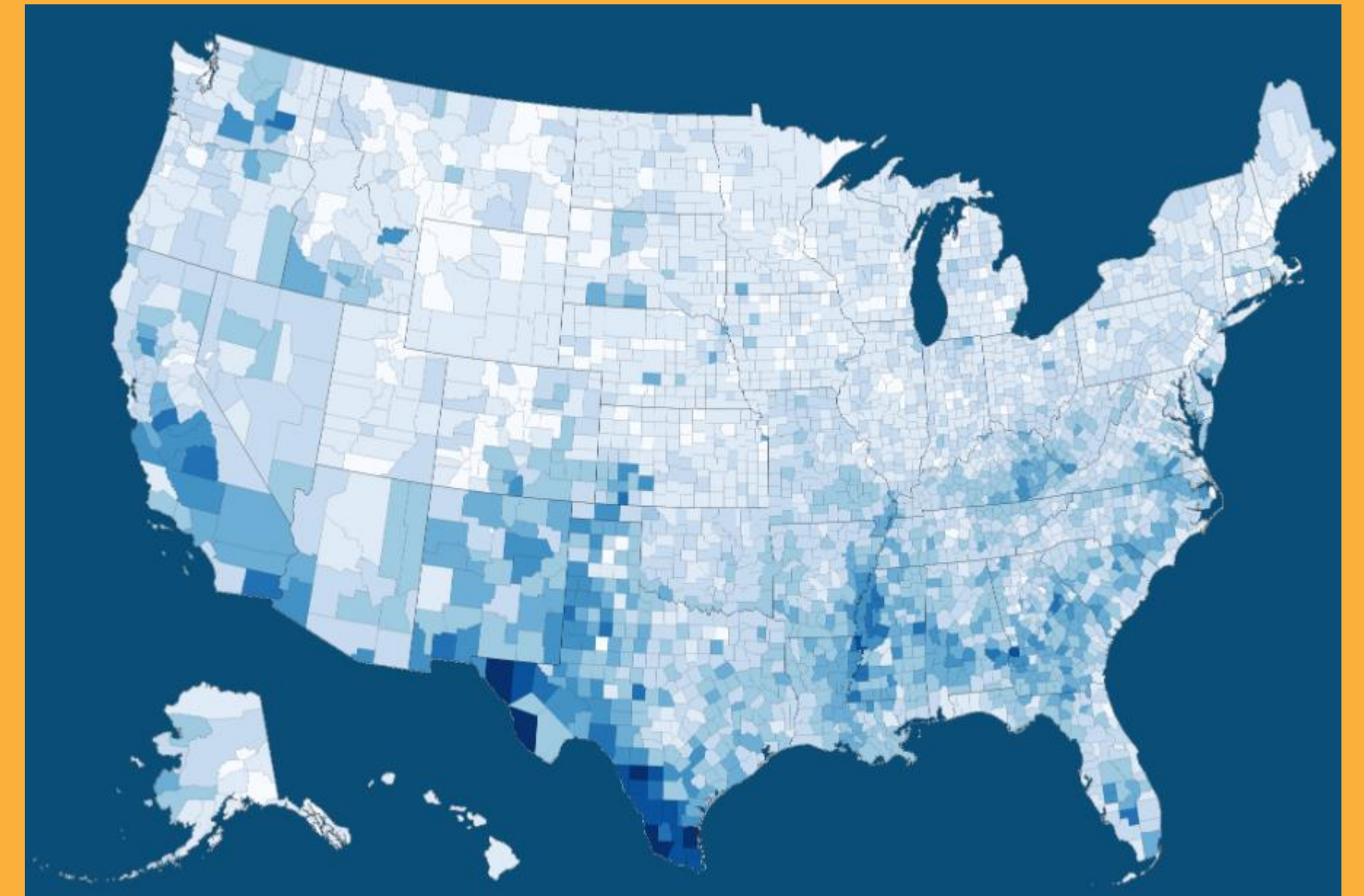
Note: States are listed in alphabetical order  
<sup>1</sup> Numeracy only  
<sup>2</sup> Literacy only





# U.S. PIAAC Skills Map

## Live Demo



# How Can the Skills Map Be Used to Inform Your Work?

# Supports for parents with low skills:

Which counties in Texas are likely to have more parents with low literacy skills who may struggle to support their children's remote learning?



MAP FILTER

County

State

Find counties

Literacy

Numeracy

Hover or tap on info icons (i) to learn more.

OUTCOME

Select 1 option to filter data on the map

% ≤ Level 1

% Level 2

% ≥ Level 3

Average

CONFIDENCE LEVELS

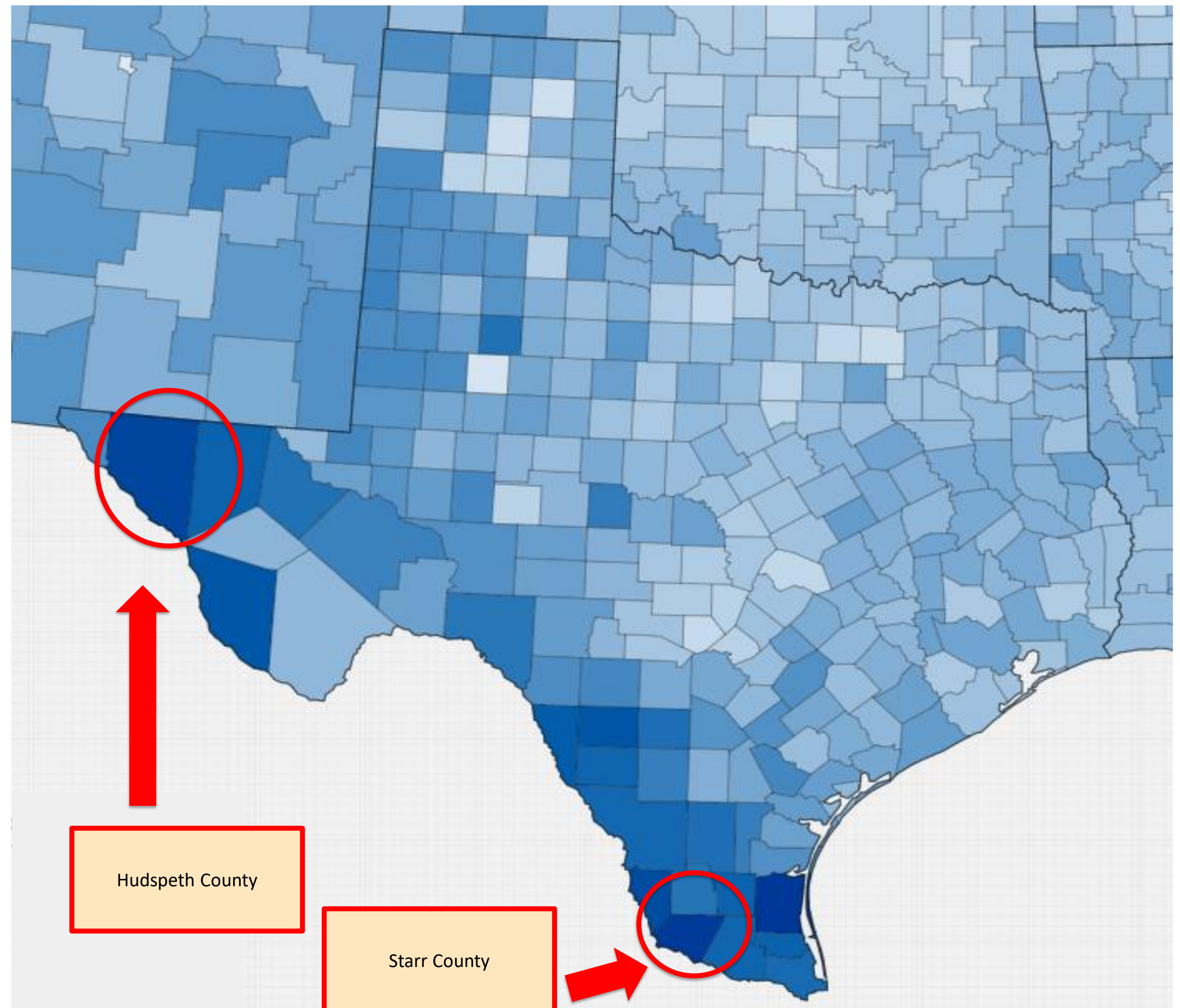
Static

Dynamic

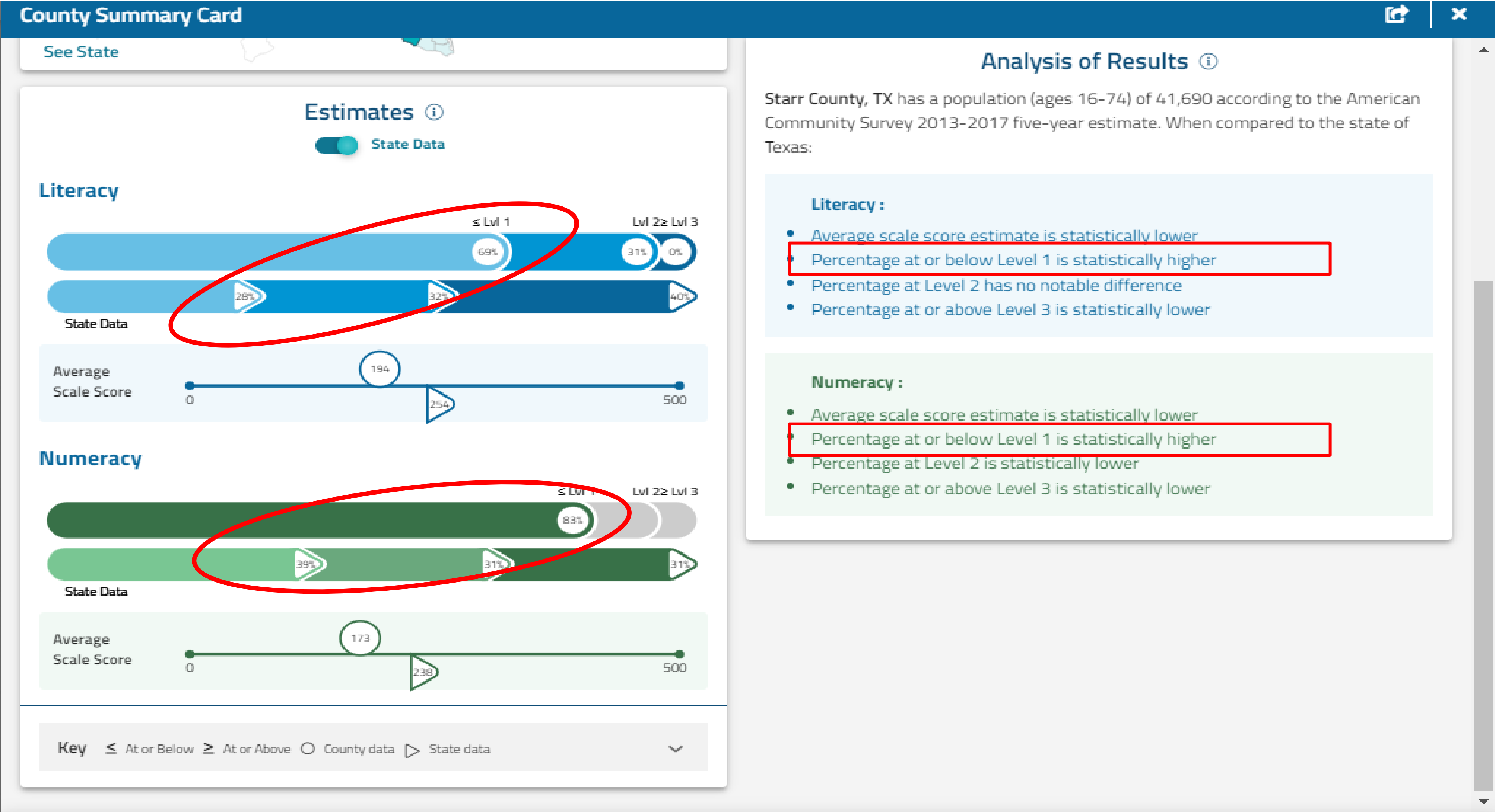
Compare Counties

Download Data

Data User Guide



# Starr County, TX



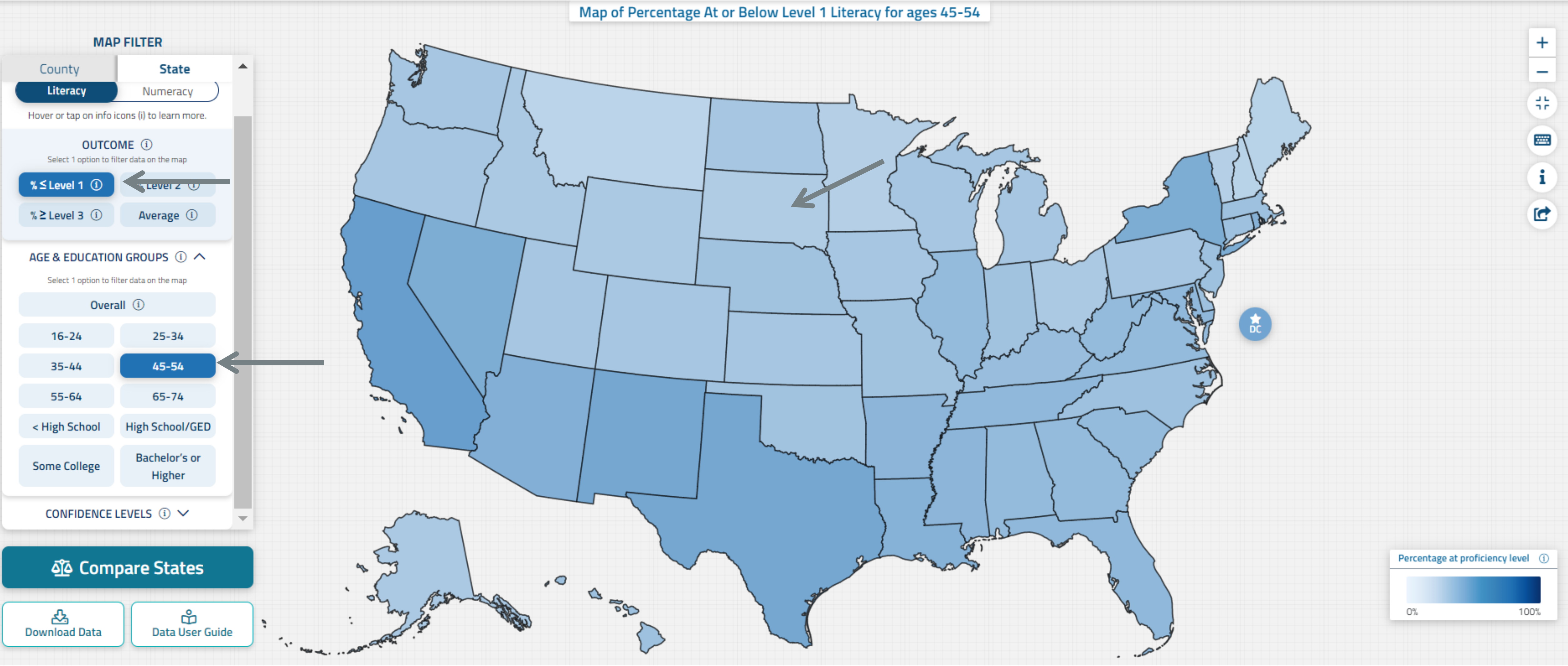
# Needs assessment for Adults Ages 45-54:

What is the need for basic adult education for adults ages 45-54 in South Dakota?





# U.S. Skills Map: State and County Indicators of Adult Literacy and Numeracy





## State Summary Card

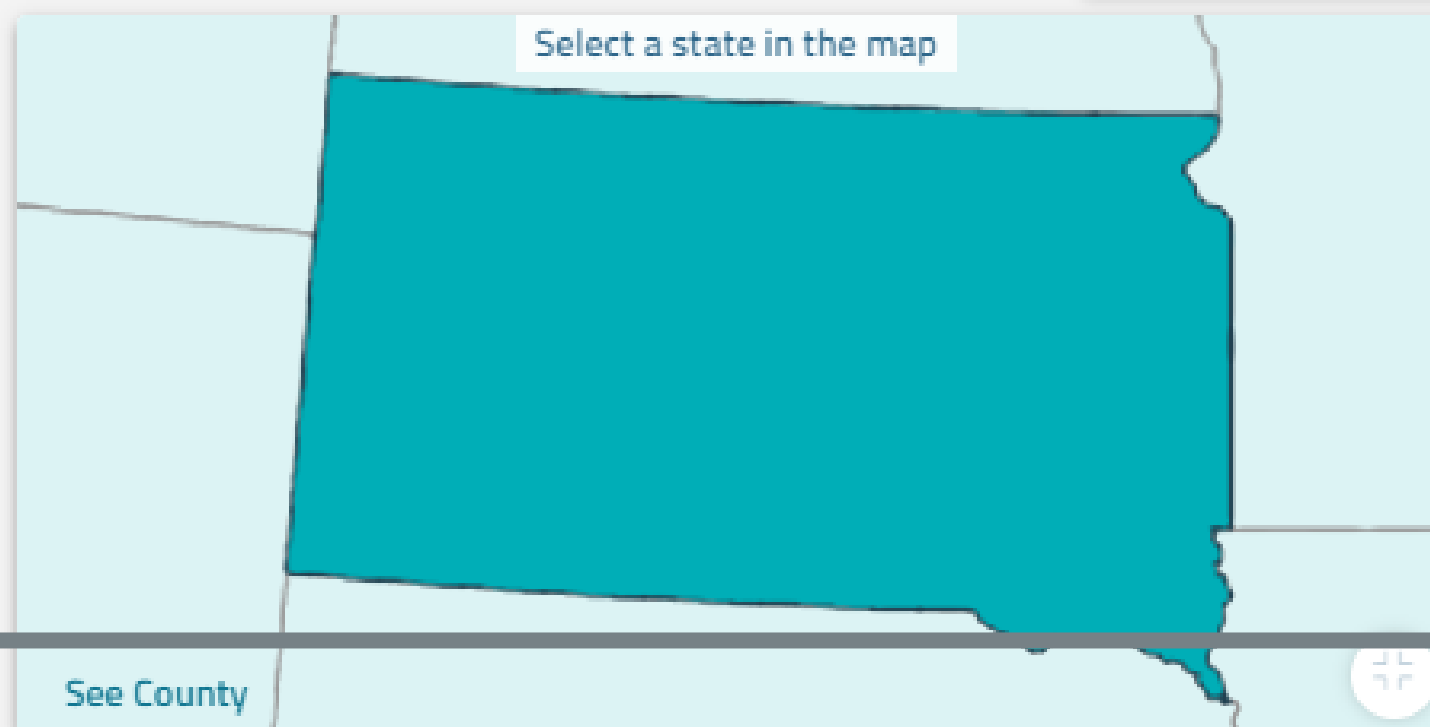


South Dakota (SD)

Age and Education Groups | 45-54 ⓘ ▾

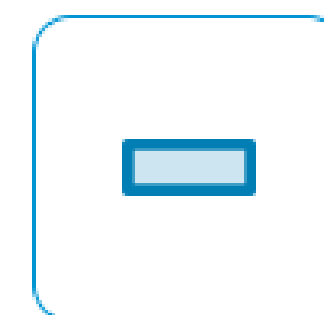
Hover or tap on info icons (i) to learn more.

Select a state in the map

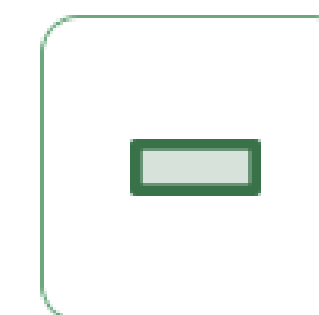


See County

### Comparison with Average Scale Score for Nation (ages 45-54) ⓘ



Literacy: **No notable difference**

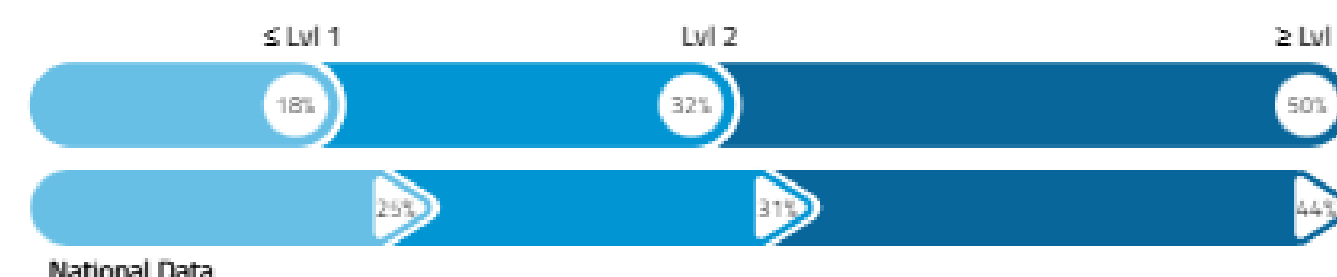


Numeracy: **No notable difference**

### Estimates (ages 45-54) ⓘ

☒ National Data

#### Literacy



National Data



#### Numeracy



National Data



### Analysis of Results (ages 45-54) ⓘ

South Dakota (SD) has a population (ages 45-54) of 104,535 (17% of 16-74 population) according to the American Community Survey 2013-2017 five-year estimate. When compared to the nation:

#### Literacy :

- Average scale score estimate has no notable difference
- Percentage at or below Level 1 has no notable difference
- Percentage at Level 2 has no notable difference
- Percentage at or above Level 3 has no notable difference

#### Numeracy :

- Average scale score estimate has no notable difference
- Percentage at or below Level 1 has no notable difference
- Percentage at Level 2 has no notable difference
- Percentage at or above Level 3 has no notable difference

+ Add Characteristics for State

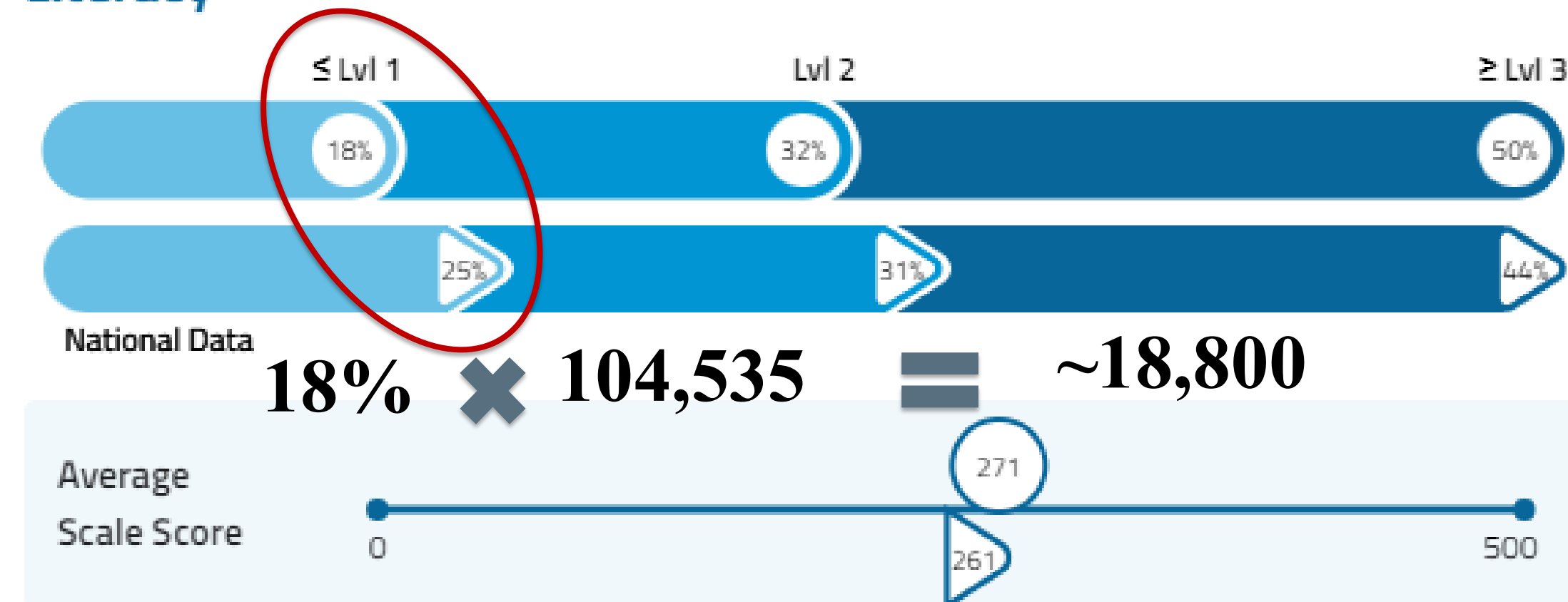
⚖️ Compare to another State

📄 View U.S. State Charts for Groups

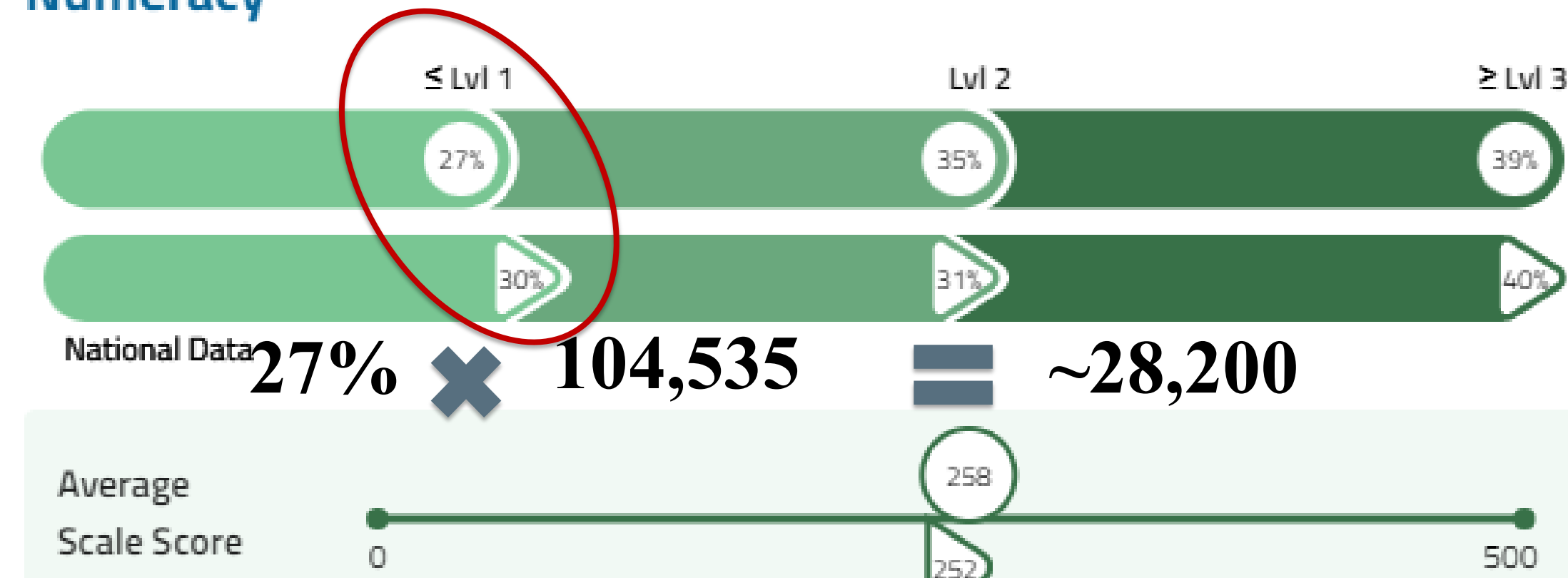
## Estimates (ages 45-54) ⓘ

☒ National Data

### Literacy



### Numeracy



Key ≤ At or Below ≥ At or Above ○ State data ▷ Nation data

## Analysis of Results (ages 45-54) ⓘ

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# Other Examples of Potential Use of PIAAC Skills Map

## ■ Research

- The PIAAC Skills Map data, downloadable through the online tool, allows analyses that combine the model-based skills estimates with data from other sources. This can be done by linking the PIAAC Skills Map data with external data using county or state Federal Information Processing Standards (FIPS) codes

## ■ Education and Training Planning

- Community-based workforce development and job centers in-charge of recruiting; screening and preparing individuals for the world of work can use PIAAC Skills Map to assess scope of local needs and use tools such as Education and Skills Online (ESO) for measuring individual's skills levels in order to provide recommendations for educational/vocational skills training

# How Skills Map Is Used – Shared Experiences

# Using Skills Map

- Identifying regional need and planning
  - Used to support the required annual planning for California's system of adult education 72 regional consortia
  - Used county-level PIAAC analysis in the workforce pipeline planning application. (Ex. Kentucky Career and Technical College System)
- Grant writing and resource development
  - Used as an accurate, current, comparable research to refer program administrators when they are applying for grants and reporting to local officials and partners on the need for their programs.
- Investment Purposes
  - Communicate about the skills data and investment needs among stakeholders of their programs (Ex. Literacy Coalition of the Permian Basin 2022 needs assessment in 22 counties in Texas and New Mexico)

# PIAAC Resources

# Skills Map and Other PIAAC resources

- International — [OECD Website](#)
- National — [NCES Website](#)
  - [PIAAC Skills Map](#)
  - [International Data Explorer](#)
- National and International — [PIAAC Gateway](#)





# Webinar on PIAAC Skills Map



**Improving the Utility of PIAAC Data through  
Development of a Skills Map and Policy Reports**

**October 19, 2022 (Wednesday)**

**11:00 A.M. - 12:00 P.M. ET**

**Recording available soon**

# Questions and Answers

# Discussion On Collaboration

# Discussion On Collaboration

- How can PIAAC data could be made more applicable for your work?
- How can PIAAC data be used by local programs and/or state agencies to support program improvement?
- How can PIAAC data be used to develop a strategic plan to guide and focus the work of the state office work and partnerships?
- How can PIAAC data be used to awareness about the low-literacy and numeracy of the population in my area
- What are points of collaboration in research or policy related to PIAAC?

# Thank you!

Holly Xie  
[Holly.Xie@ed.gov](mailto:Holly.Xie@ed.gov)

Emily Pawlowski  
[epawlowski@air.org](mailto:epawlowski@air.org)