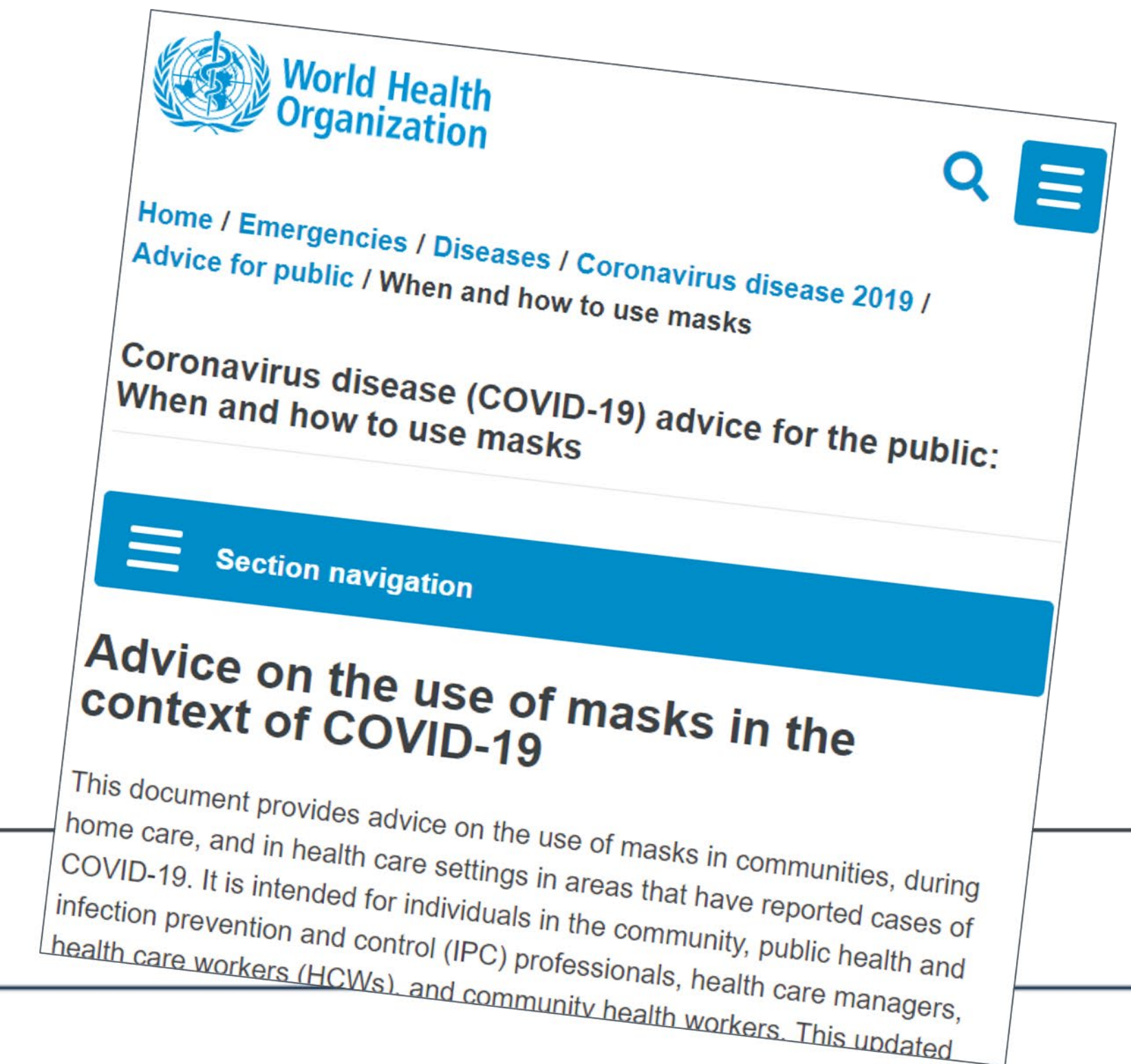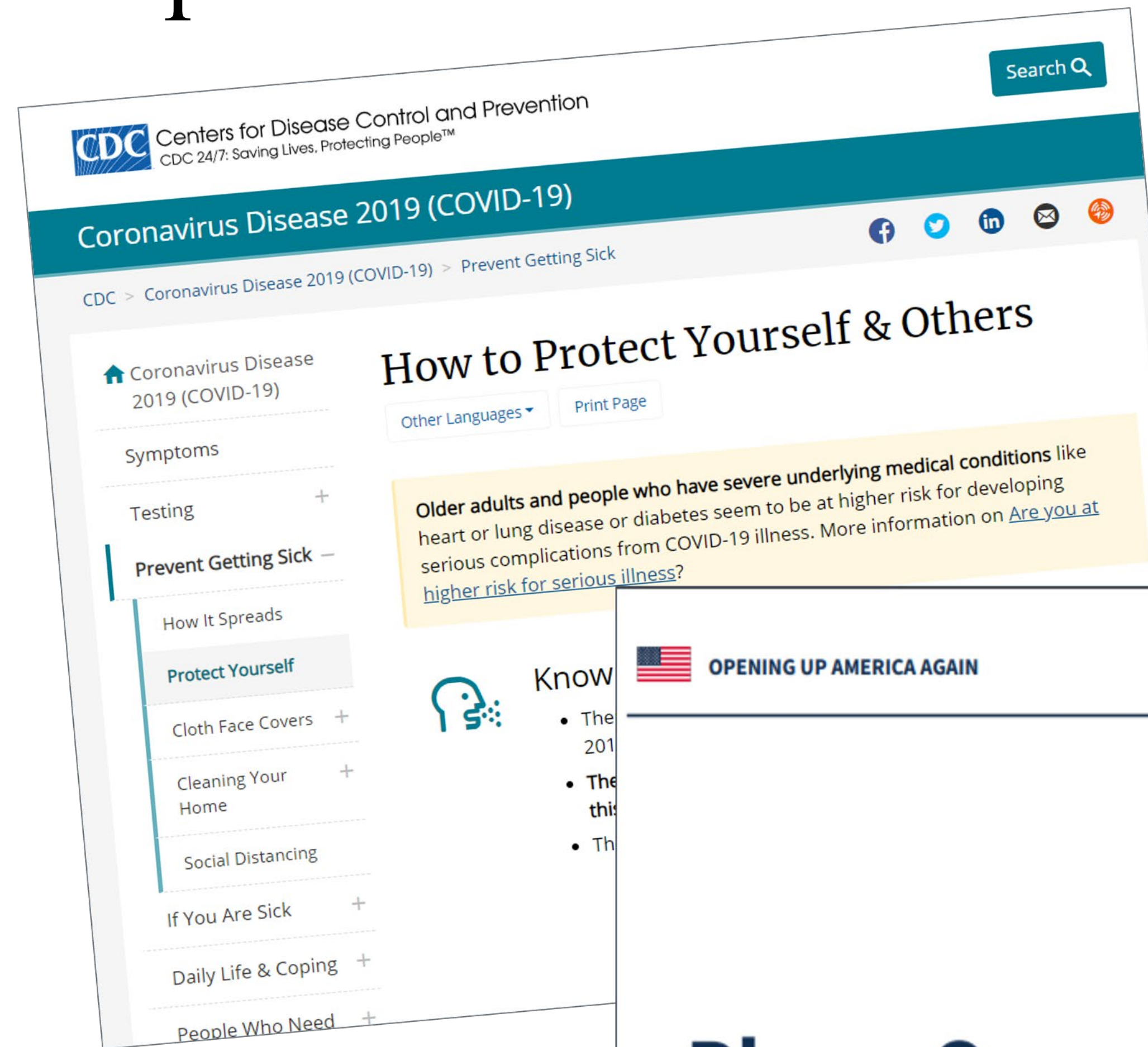# The Average American Reader Needs You to Write (Even More) Clearly

**Meredith Larson, PhD**

Research Analyst
Postsecondary and Adult Education
National Center for Education Research

IES Institute of Education Sciences

# Your work is important!
# And difficult

# The Average American Needs Us to Do More



We are probably not meeting the needs of the public because we are not fully aware of their struggles.

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# The Skills of U.S. Adults: Survey says….

# The PIAAC – An International Assessment of Adults

**The Program for the International Assessment of Adult Competencies (PIAAC)** is an international large–scale survey with

- A **direct assessment** of Literacy, Numeracy, and Digital Problem Solving

- A **background questionnaire** on education, work experience and training, skill-use at work and at home, demographics, income, health, and civic participation

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# How the PIAAC Defines These Skills

The PIAAC literacy, numeracy, and digital problem solving in terms of "real-world" uses and the ability to engage in society, rather than for more academic uses.
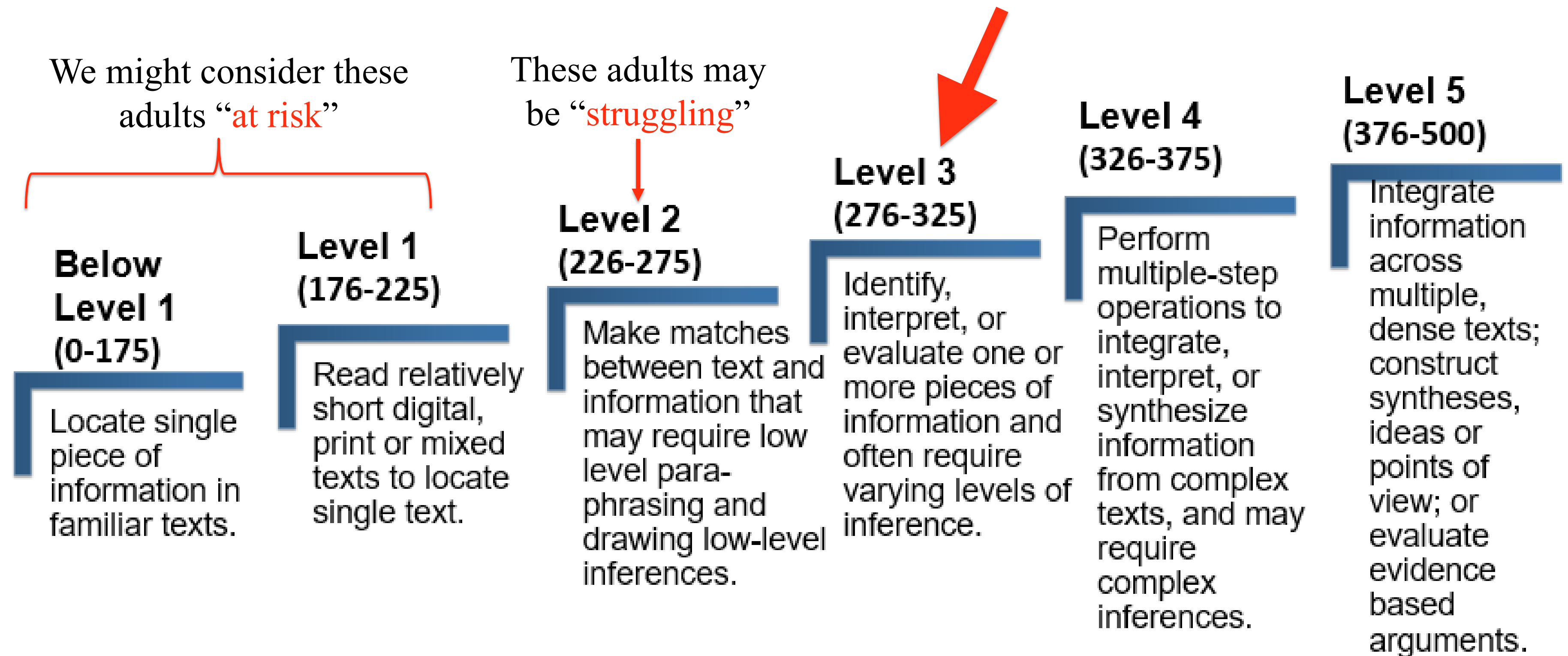
**Literacy Definition:**
"understanding, evaluating, using and engaging with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential"
(OECD, 2012b)

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# The Skill Scales: Literacy and Numeracy

- Literacy and Numeracy had 5-point scales

For Literacy and Numeracy, Level 3 should be sufficient for full participation in modern economies

## PIAAC 5-Point Literacy Scale

We might consider these adults "at risk"

These adults may be "struggling"

**Below Level 1 (0-175)**
Locate single piece of information in familiar texts.

**Level 1 (176-225)**
Read relatively short digital, print or mixed texts to locate single text.

**Level 2 (226-275)**
Make matches between text and information that may require low level para-phrasing and drawing low-level inferences.

**Level 3 (276-325)**
Identify, interpret, or evaluate one or more pieces of information and often require varying levels of inference.

**Level 4 (326-375)**
Perform multiple-step operations to integrate, interpret, or synthesize information from complex texts, and may require complex inferences.

**Level 5 (376-500)**
Integrate information across multiple, dense texts; construct syntheses, ideas or points of view; or evaluate evidence based arguments.

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# The Skill Scales: Digital Problem Solving

- Digital Problem Solving had a 3-point scale
- This domain was new and not all nations used it
- Not all adults could complete this domain

Level 0: One-step or simple problem ("Click on Help tab")
Level 1: Sorting emails into existing folders
Level 2: Using website to return item
Level 3: Navigating multiple pages to find a form, etc.

This should be sufficient for employment/participation

# Disclaimer

Data here were compiled strictly for the purposes of this presentation and reflect the data collected in the first two rounds of U.S. data collection (in 2012 and 2014)

Refer to the NCES website for official documents, data files, and tables:
**https://nces.ed.gov/surveys/piaac/**

# Example Items

# Preschool Rules

**Question:**
What is the latest time that children should arrive at preschool?

Welcome to our Preschool! We are looking forward to a great year of fun, learning and getting to know each other. Please take a moment to review our preschool rules.

- Please have your child here by 9:00 am.
- Bring a small blanket or pillow and/or a small soft toy for naptime.
- Dress your child comfortably and bring a change of clothing.
- Please bring your child fully dressed, no pajamas.
- Please sign in with your full signature. This is a licensing regulation. Thank you.
- Breakfast will be served until 7:30 am.
- If you have any questions, please talk to your classroom teacher or to Ms. Marlene or Ms. Tree.

**Percent of US Adults Who May Struggle with This Question:**

# Preschool Rules

**Question:**
What is the latest time that children should arrive at preschool?

Welcome to our Preschool! We are looking forward to a great year of fun, learning and getting to know each other. Please take a moment to review our preschool rules.
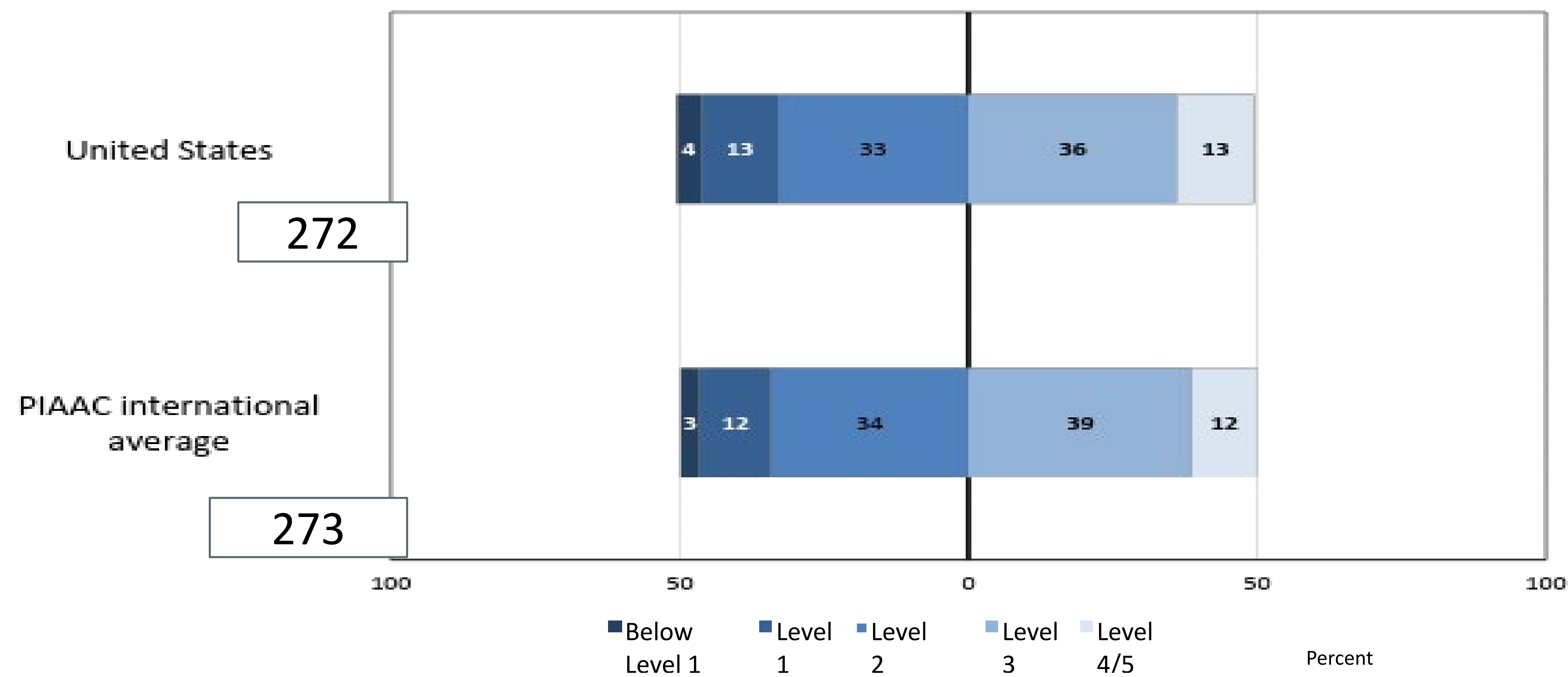
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**Percent of US Adults Who May Struggle with This Question:**

**52%**

# The U.S. Was "Average" But Had a Higher Portion at the Lower Levels

Percentage of adults age 16 to 65 at each level of proficiency on the PIAAC literacy scale: 2012/2014



**United States**

| 4 | 13 | 33 | 36 | 13 |

272

**PIAAC international average**

| 3 | 12 | 34 | 39 | 12 |

273

100     50     0     50     100

■ Below Level 1    ■ Level 1    ■ Level 2    ■ Level 3    ■ Level 4/5       Percent

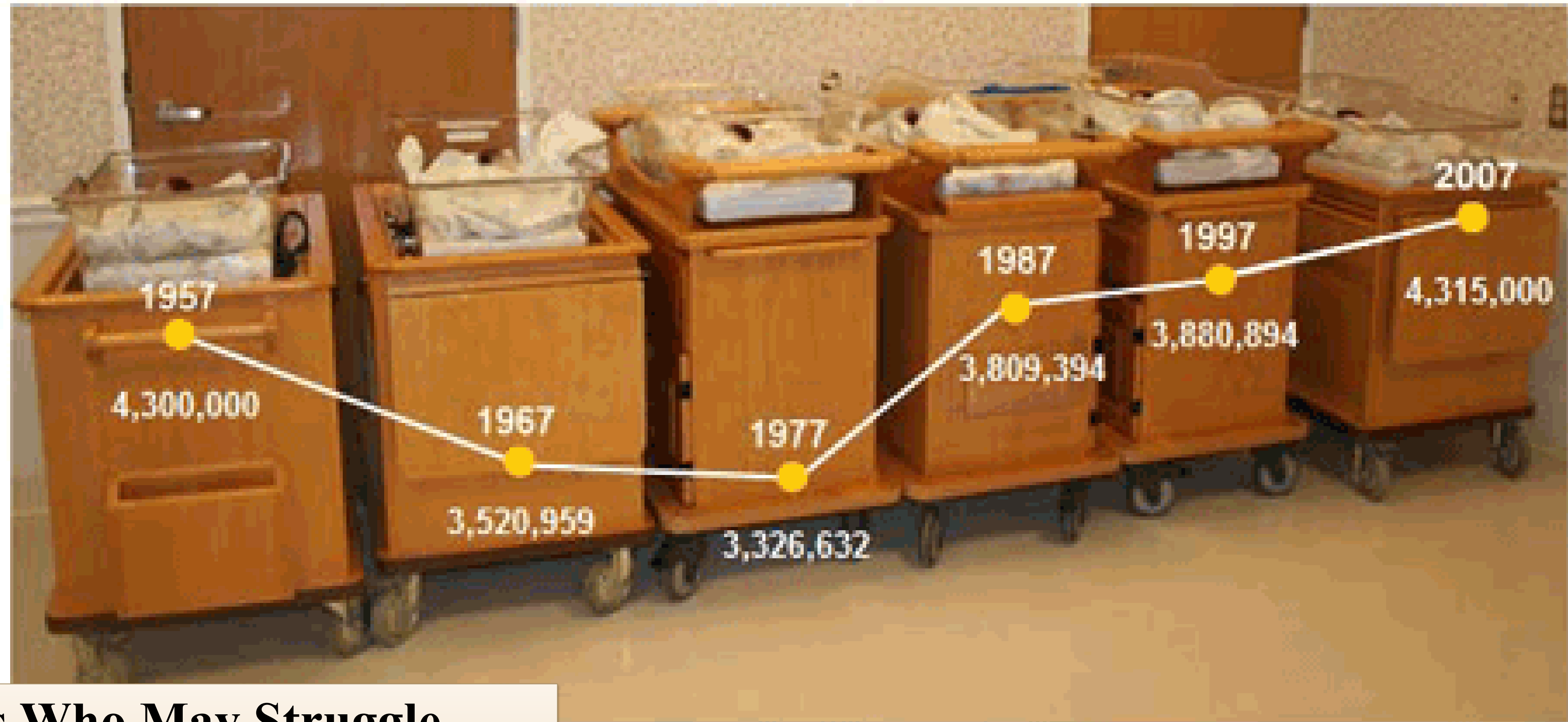13

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The following graph shows the number of births in the United States from 1957 to 2007. The data are presented every 10 years.

**Question:**
During which period(s) was there a decline in the number of births?
Click all that apply.
☐ 1957 – 1967
☐ 1967 – 1977
☐ 1977 – 1987
☐ 1987 – 1997
☐ 1997 – 2007



1957
4,300,000
1967
3,520,959
1977
3,326,632
1987
3,809,394
1997
3,880,894
2007
4,315,000

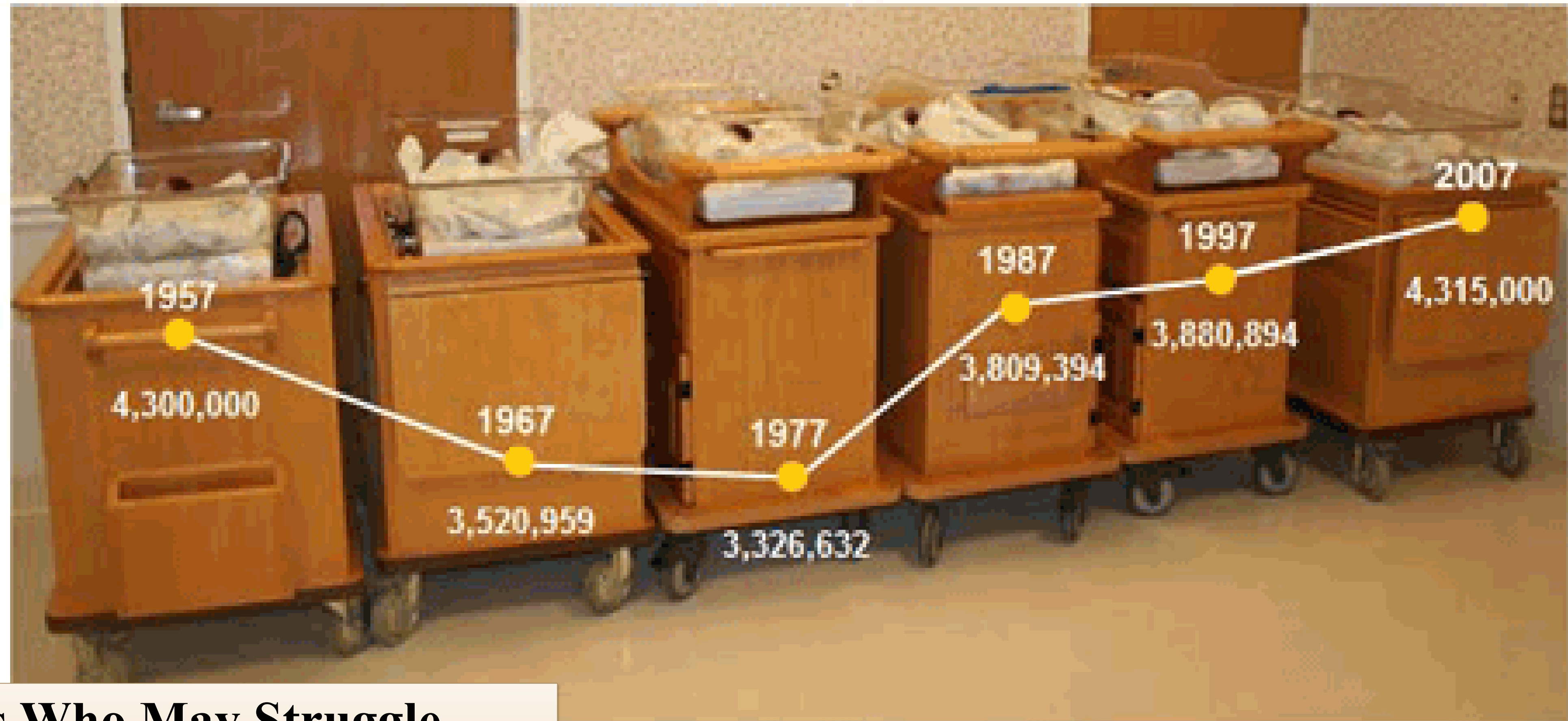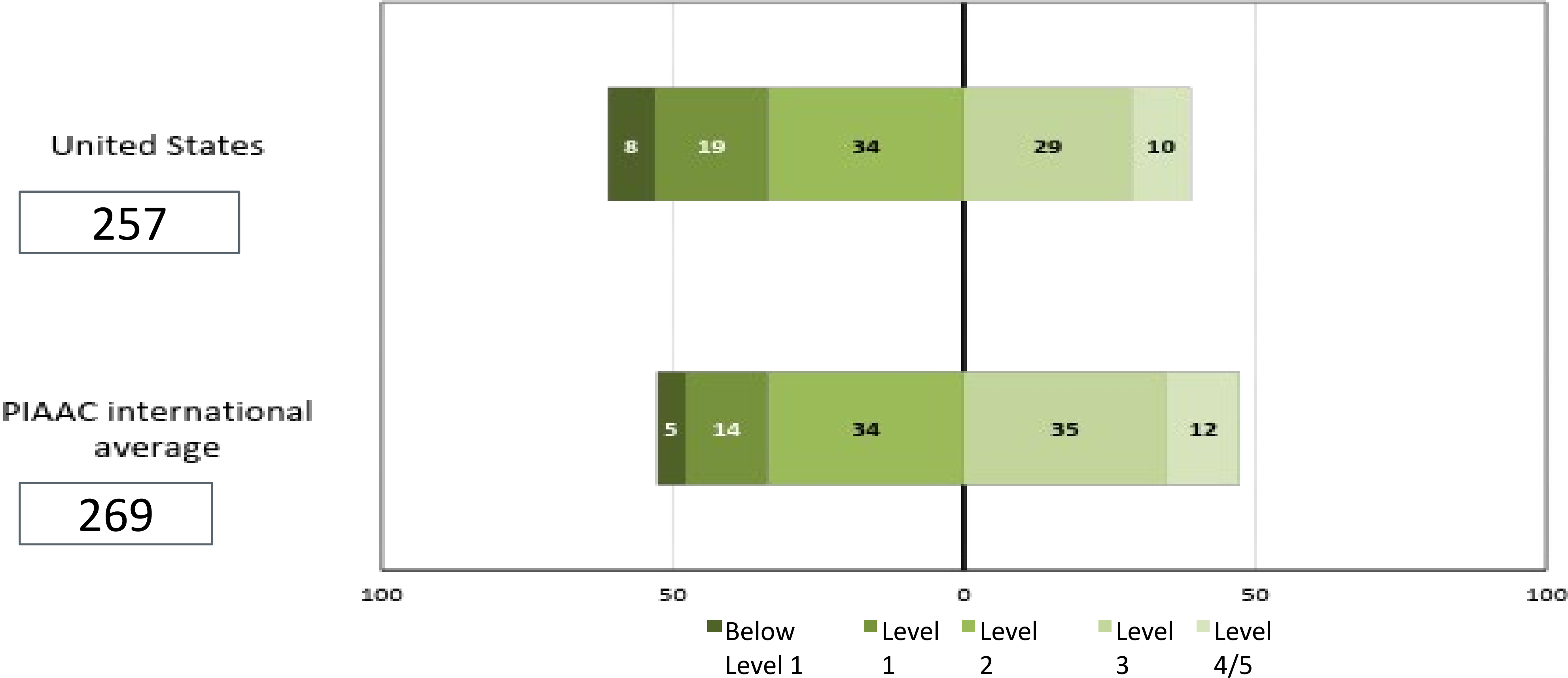**Percent of US Adults Who May Struggle with This Question:**

The following graph shows the number of births in the United States from 1957 to 2007. The data are presented every 10 years.

**Question:**
During which period(s) was there a decline in the number of births? Click all that apply.
❑ 1957 – 1967
❑ 1967 – 1977
❑ 1977 – 1987
❑ 1987 – 1997
❑ 1997 – 2007



1957 — 4,300,000
1967 — 3,520,959
1977 — 3,326,632
1987 — 3,809,394
1997 — 3,880,894
2007 — 4,315,000

**Percent of US Adults Who May Struggle with This Question:**

**62%**

# The U.S. Again Had a Higher Portion at the Lower Levels

Percentage of adults age 16 to 65 at each level of proficiency on the PIAAC numeracy scale: 2012/2014



**United States**

257

**PIAAC international average**

269

Below Level 1 | Level 1 | Level 2 | Level 3 | Level 4/5

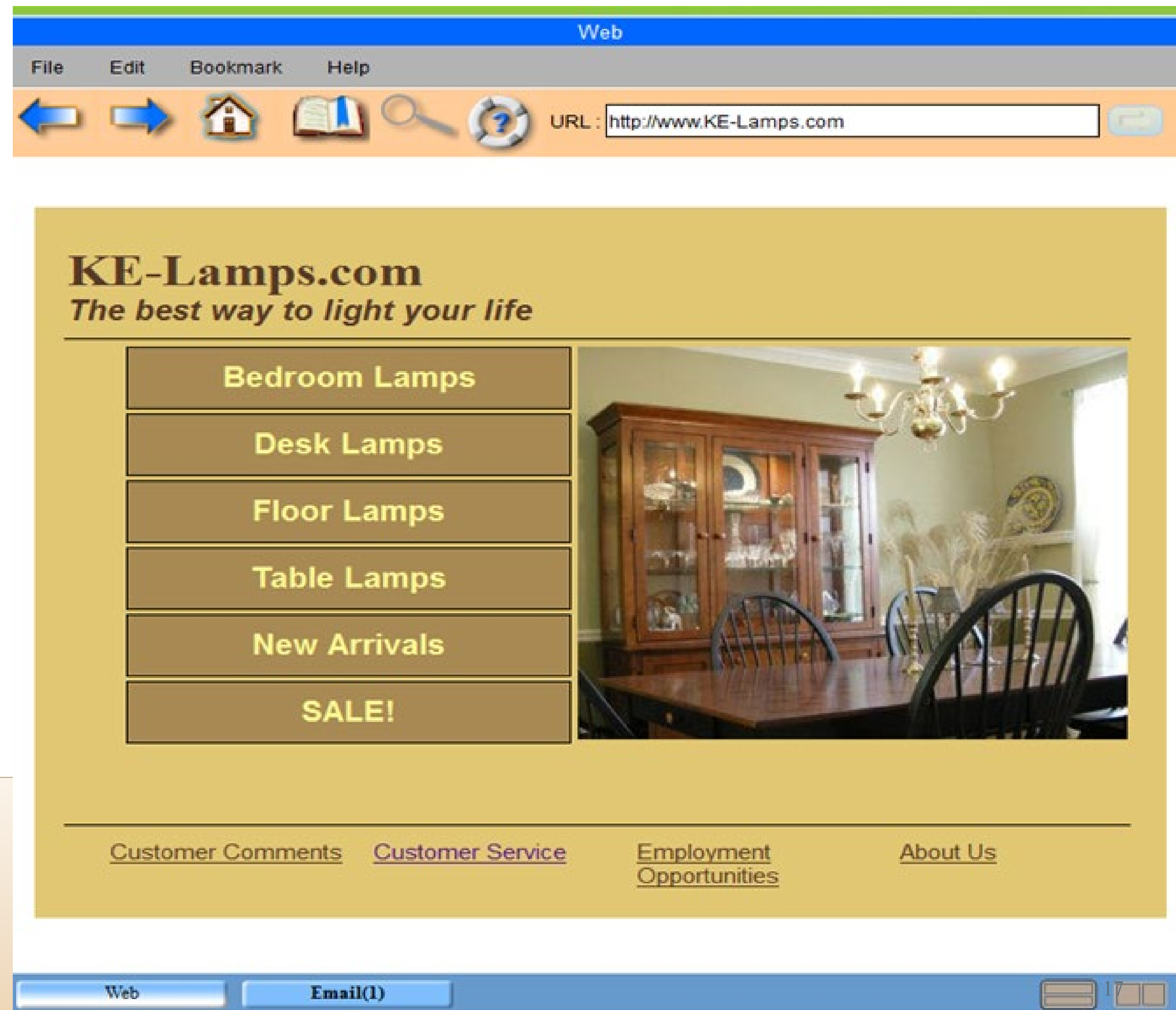**IES** Institute of Education Sciences

**Problem to Solve:**

You ordered a desk lamp from KE-Lamps.com.

The desk lamp arrived, but it was not the color you ordered.

Using the company's website, arrange to exchange the lamp you received for the one you ordered.

Once you have finished, click Next to go on.

**Percent of US Adults Who May Struggle with This Question:**



Web

File    Edit    Bookmark    Help

URL : http://www.KE-Lamps.com

# KE-Lamps.com
## The best way to light your life

- Bedroom Lamps
- Desk Lamps
- Floor Lamps
- Table Lamps
- New Arrivals
- SALE!

Customer Comments    Customer Service    Employment Opportunities    About Us
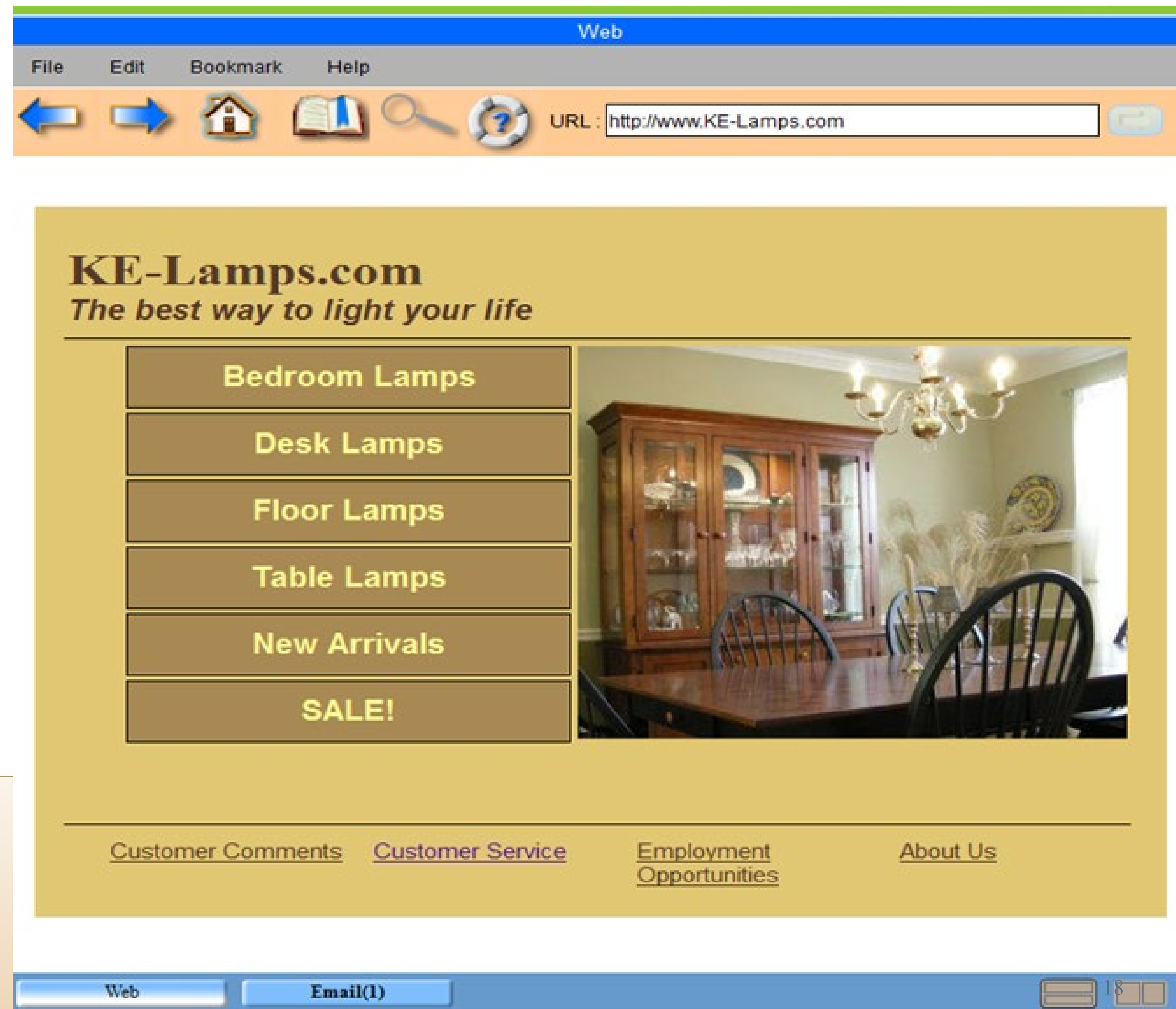
Web        Email(1)

**Problem to Solve:**
You ordered a desk lamp from KE-Lamps.com.

The desk lamp arrived, but it was not the color you ordered.

Using the company's website, arrange to exchange the lamp you received for the one you ordered.

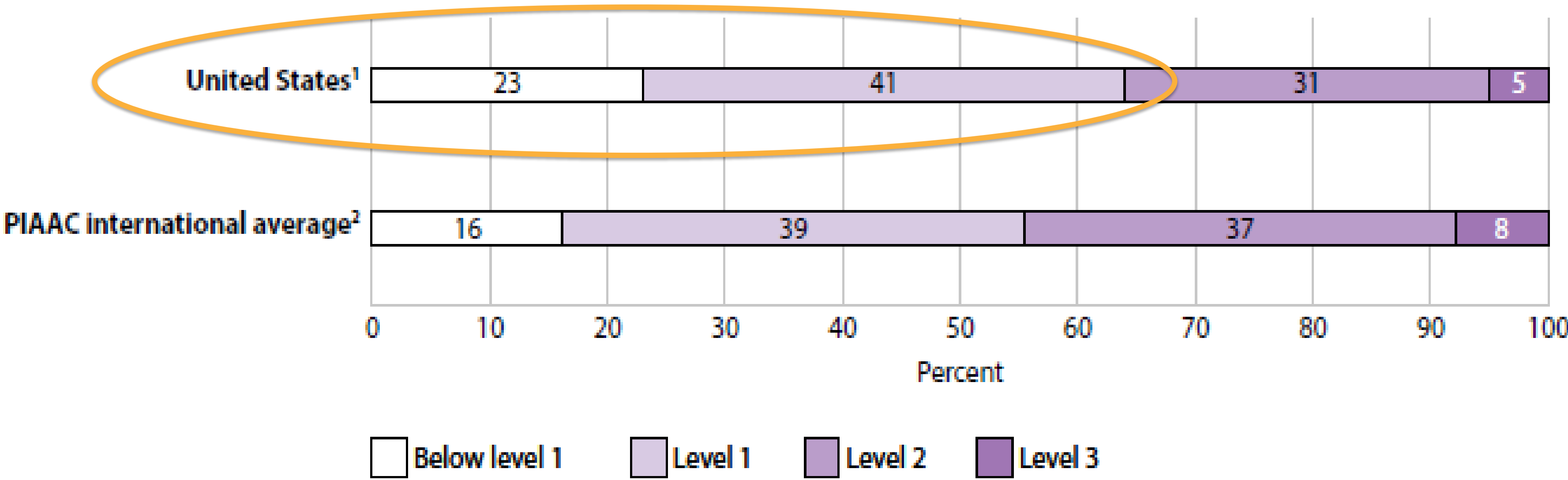Once you have finished, click Next to go on.

**Percent of US Adults Who May Struggle with This Question:**

**62%**

File     Edit     Bookmark     Help

URL : http://www.KE-Lamps.com

# KE-Lamps.com
## *The best way to light your life*

Bedroom Lamps

Desk Lamps

Floor Lamps

Table Lamps

New Arrivals

SALE!

Customer Comments     Customer Service     Employment Opportunities     About Us

# More U.S. Adults Scored at the Lowest Levels

Figure 2-C. Percentage of adults age 16 to 65 at each level of proficiency on the PIAAC problem solving in technology-rich environments scale: 2012 and 2014

| | Below level 1 | Level 1 | Level 2 | Level 3 |
|---|---|---|---|---|
| United States[1] | 23 | 41 | 31 | 5 |
| PIAAC international average[2] | 16 | 39 | 37 | 8 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, Program for the International Assessment of Adult Competencies (PIAAC), U.S. PIAAC 2012/2014; Organization for Economic Cooperation and Development, PIAAC 2012.
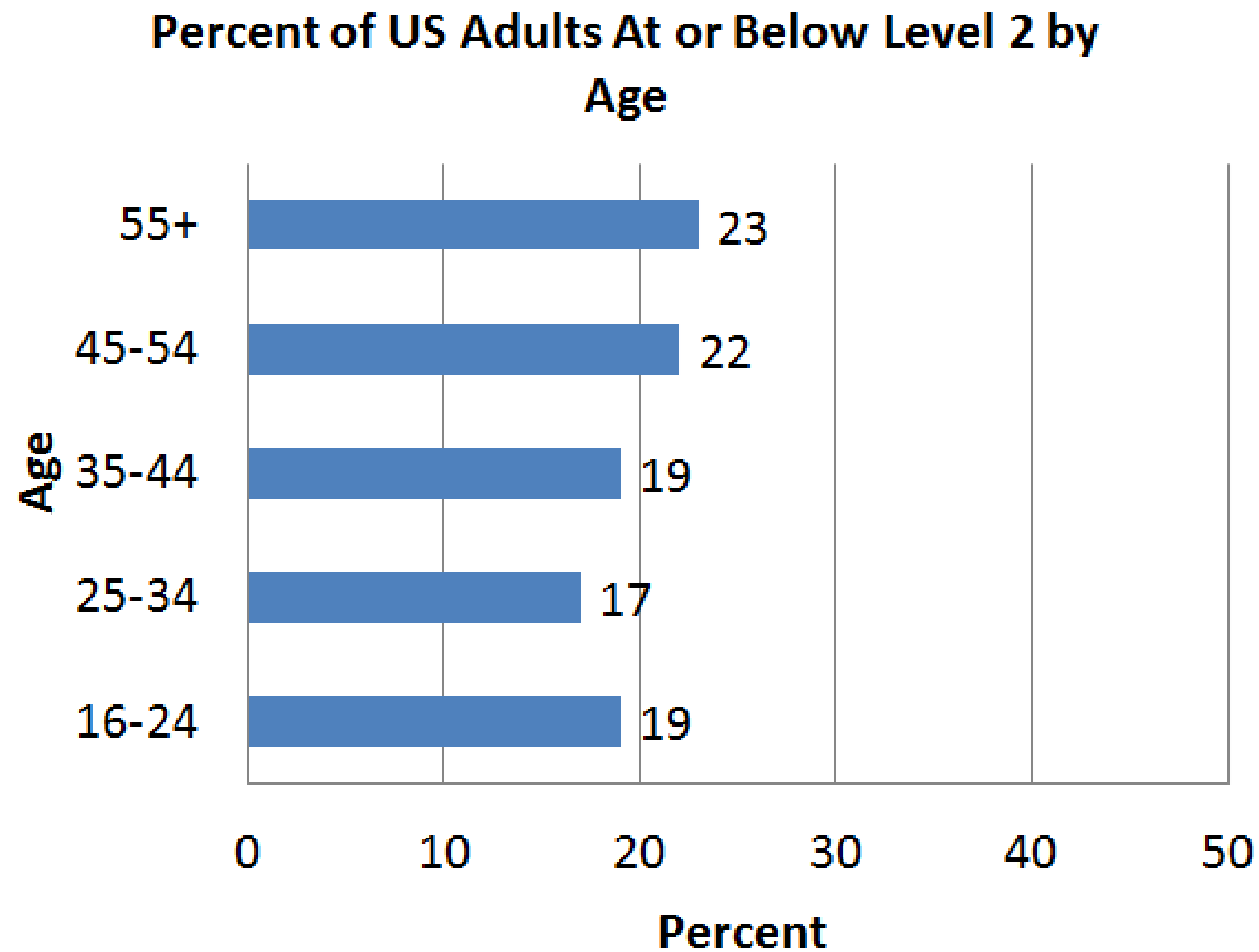
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# In fact…



**Figure 1-C.** Average scores on the PIAAC problem solving in technology-rich environments scale for adults age 16 to 65, by participating country and region: 2012 and 2014[1]
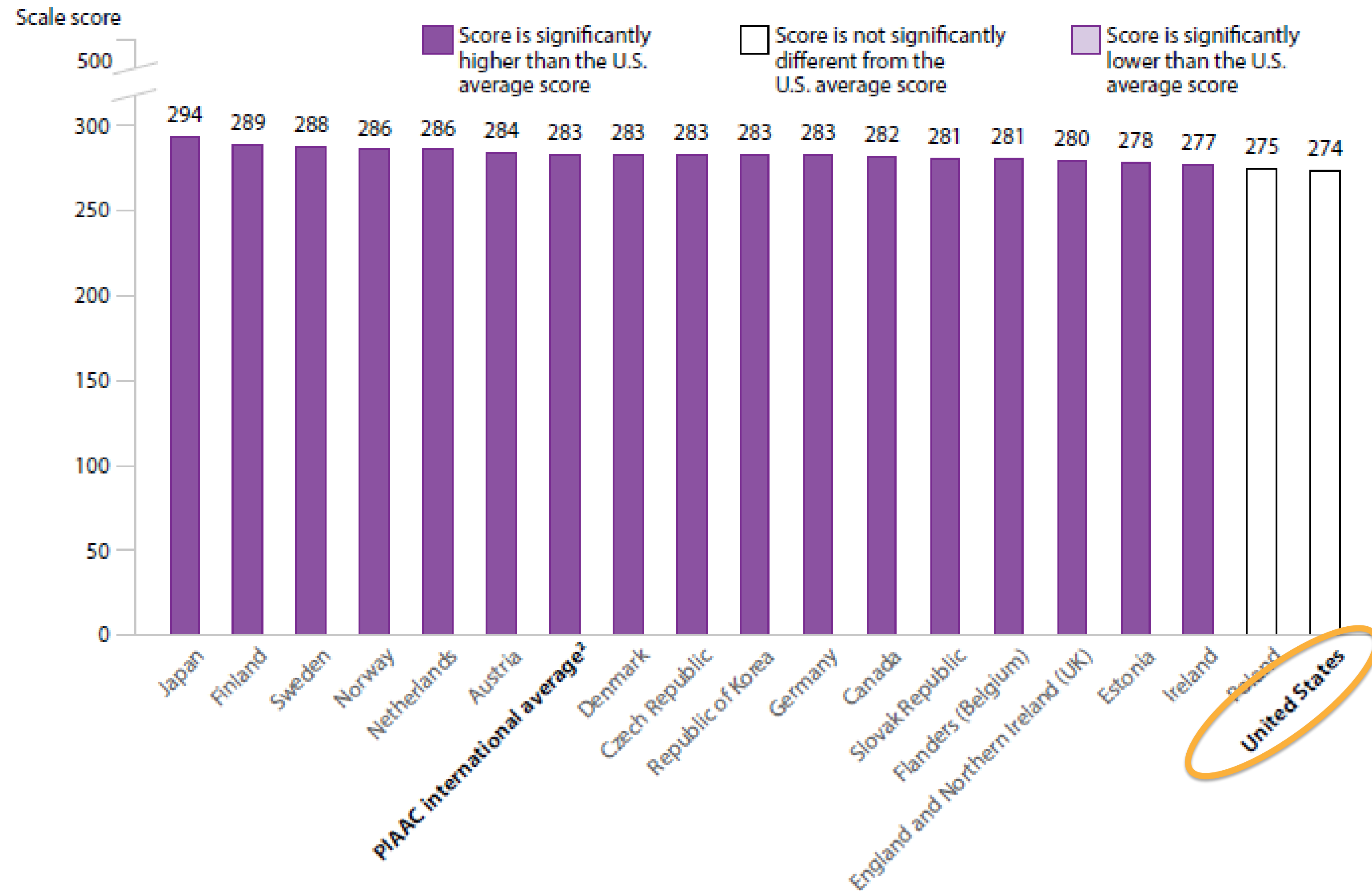
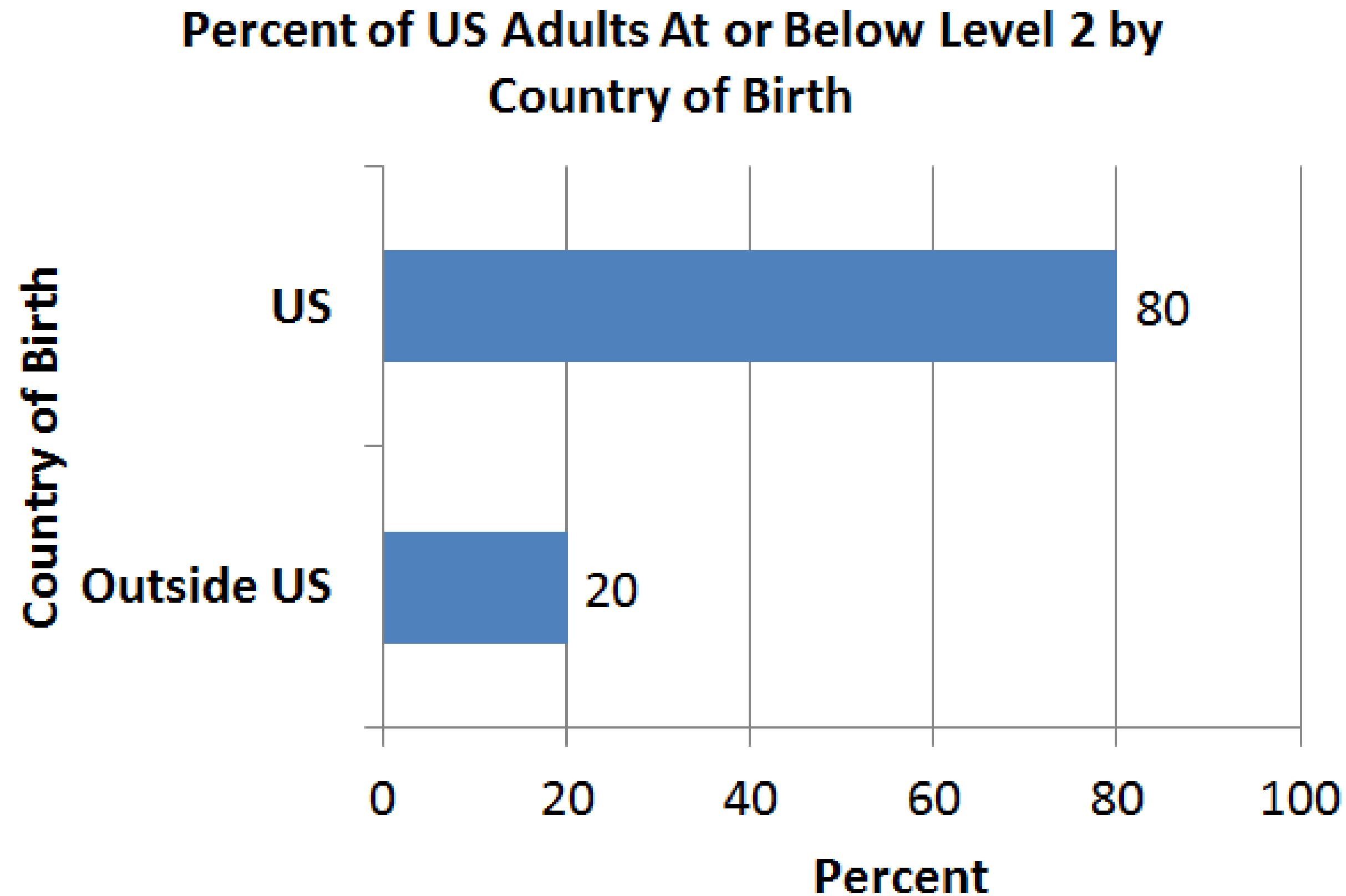# Breaking Down the Results by Demographics: A Deeper Drive into Literacy Results

# Does Age Matter?

**Percent of US Adults At or Below Level 2 by Age**

| Age | Percent |
|-----|---------|
| 55+ | 23 |
| 45-54 | 22 |
| 35-44 | 19 |
| 25-34 | 17 |
| 16-24 | 19 |

No. Low skills are fairly evenly distributed.

Standard errors not shown. Numbers subject to rounding. Data compiled from https://nces.ed.gov/surveys/international/ide/

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# Are they perhaps mostly non-native speakers?

**Percent of US Adults At or Below Level 2 by Country of Birth**

US — 80

Outside US — 20

(x-axis: Percent, 0 to 100; y-axis: Country of Birth)

No. We cannot assume it is just a language issue.

Standard errors not shown. Numbers subject to rounding. Data compiled from https://nces.ed.gov/surveys/international/ide/

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# Are they unemployed?

**Percent of US Adults At or Below Level 2 by Employment Status**

| Employment Status | Percent |
|---|---|
| Employed | 62 |
| Unemployed | 8 |
| Out of Labor Force | 30 |
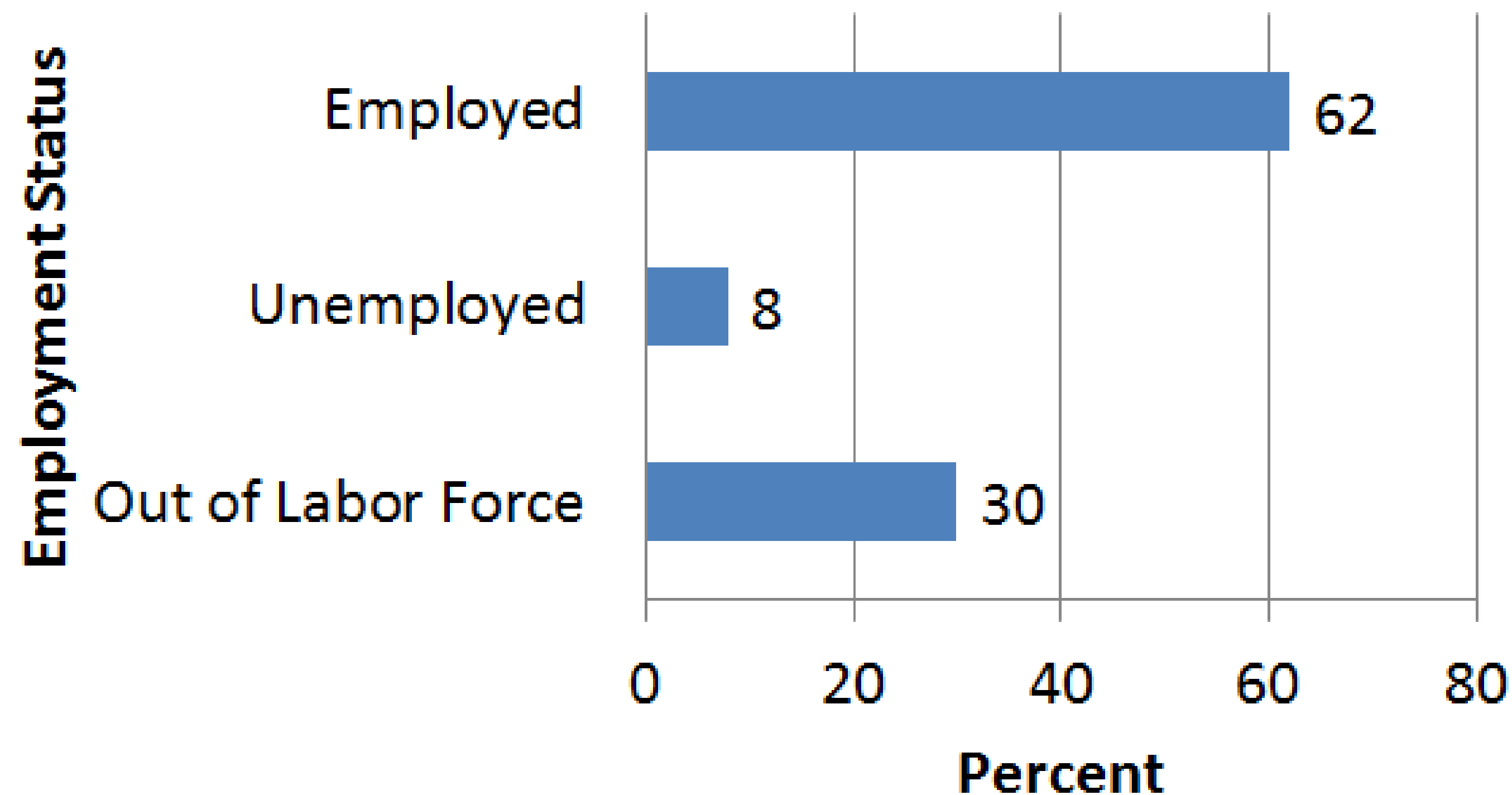
No. Most (62%) are employed.

Standard errors not shown. Numbers subject to rounding. Data compiled from https://nces.ed.gov/surveys/international/ide/

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24

# Does Education Matter?

| | At or Below Level 2 | Level 3 | Level 4/5 |
|---|---|---|---|
| < High School | 83 | 15 | 2 |
| High School/GED | 62 | 31 | 7 |
| Some College (e.g., certificate) | 58 | 35 | 7 |
| Associate's Degree | 39 | 48 | 13 |
| Bachelor's Degree | 25 | 48 | 26 |
| > BA/BS | 19 | 47 | 34 |

Yes and no. Even those with college educations can have low literacy.

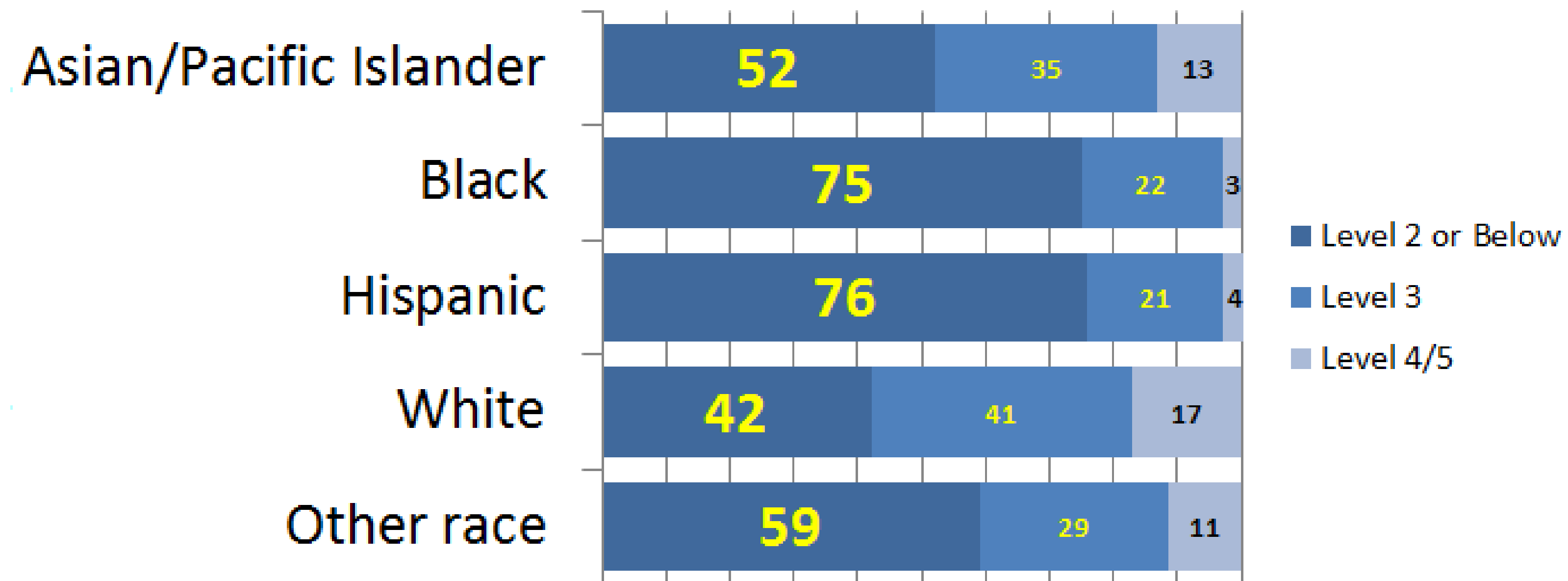Standard errors not shown. Numbers subject to rounding. Data compiled from https://nces.ed.gov/surveys/international/ide/

# Does Gender Predict?



| | Level 2 or Below | Level 3 | Level 4/5 |
|---|---|---|---|
| Men | 52 | 34 | 14 |
| Women | 52 | 36 | 12 |
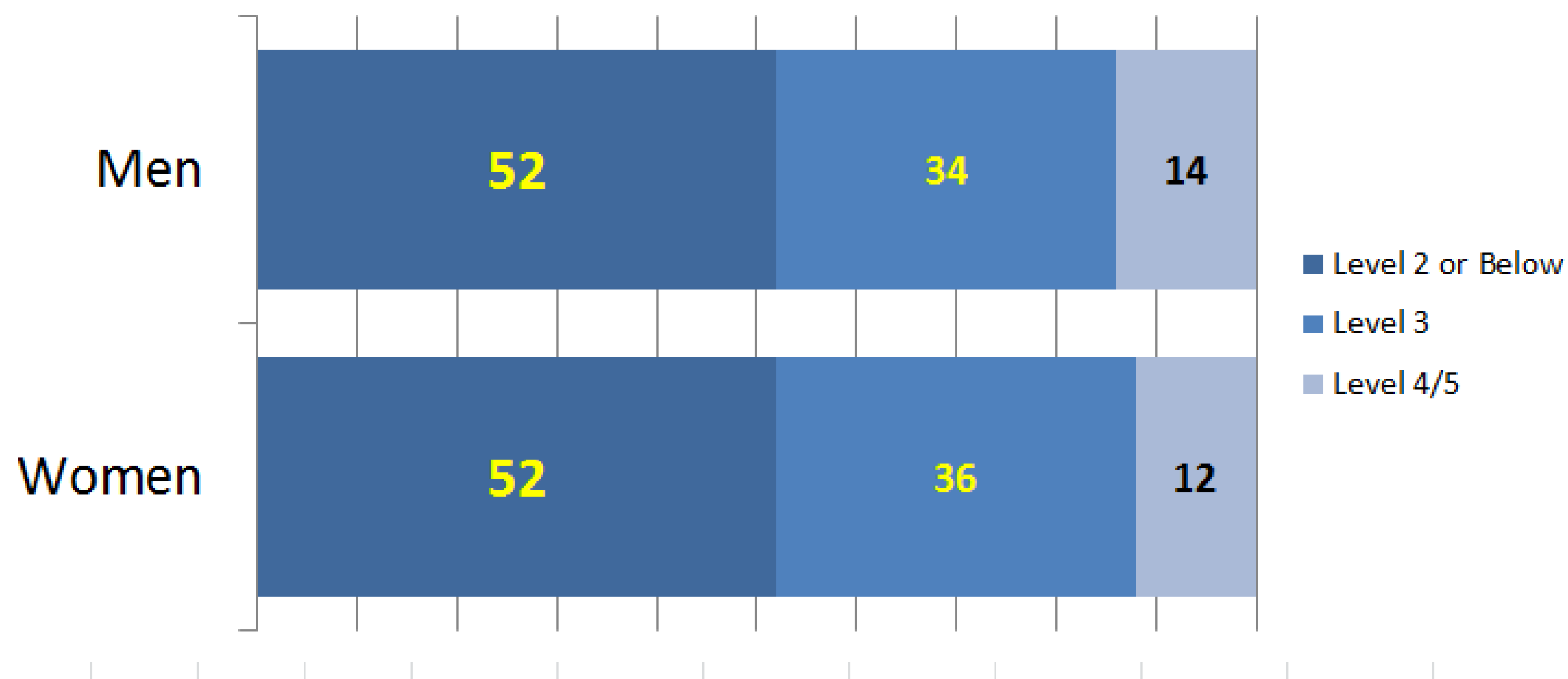
No. Women and men perform similarly.

Standard errors not shown. Numbers subject to rounding. Data compiled from https://nces.ed.gov/surveys/international/ide/

# Does Race/Ethnicity Predict?

**Percent of US Adults by Skill Level and Race/Ethnicity**

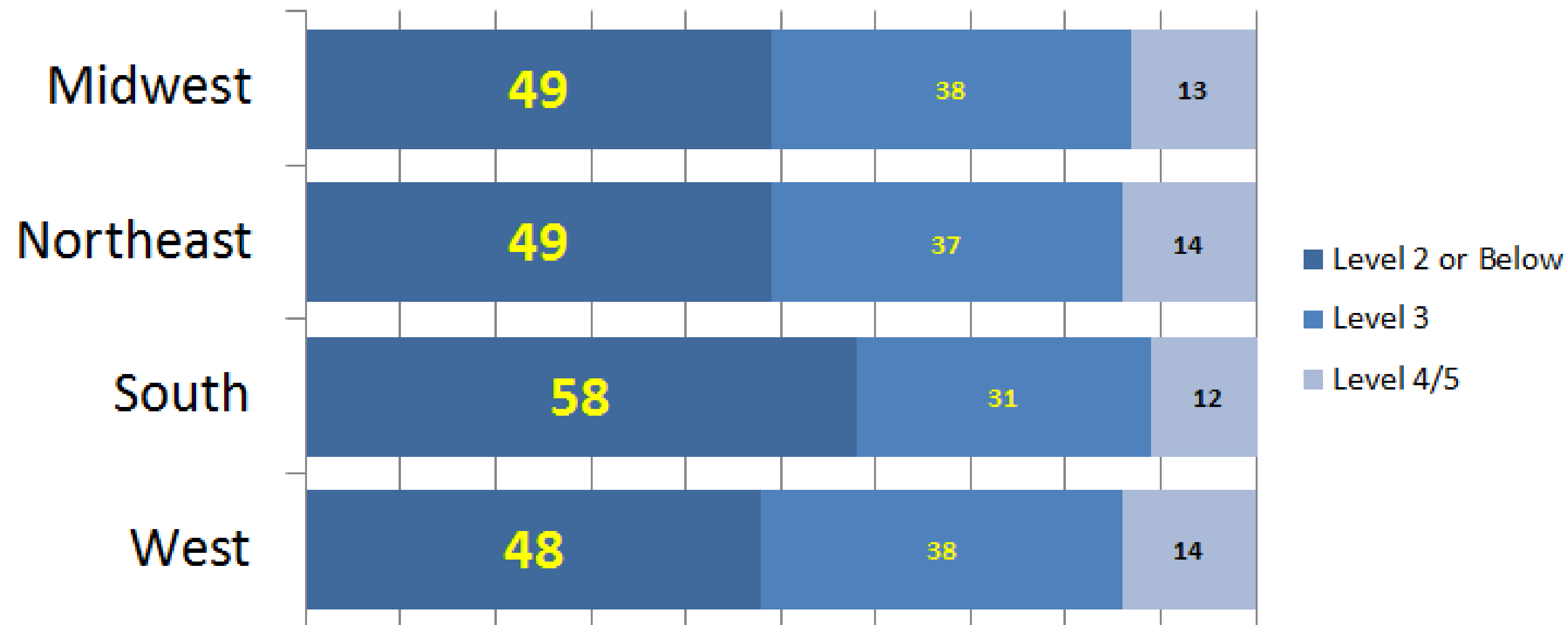| Race/Ethnicity | Level 2 or Below | Level 3 | Level 4/5 |
|---|---|---|---|
| Asian/Pacific Islander | 52 | 35 | 13 |
| Black | 75 | 22 | 3 |
| Hispanic | 76 | 21 | 4 |
| White | 42 | 41 | 17 |
| Other race | 59 | 29 | 11 |

Yes. Some race/ethnicities are more likely to have lower rates of literacy.

Standard errors not shown. Numbers subject to rounding. Data compiled from https://nces.ed.gov/surveys/international/ide/

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# Does Region Predict?

**Percent of US Adults by Skill Level and Region**



| Region | Level 2 or Below | Level 3 | Level 4/5 |
|--------|-----------------|---------|-----------|
| Midwest | 49 | 38 | 13 |
| Northeast | 49 | 37 | 14 |
| South | 58 | 31 | 12 |
| West | 48 | 38 | 14 |

Yes. The south has a higher rate of low literacy.

Standard errors not shown. Numbers subject to rounding. Data compiled from https://nces.ed.gov/surveys/international/ide/

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# But Wait…There's More

# Do Skills Predict Information-Seeking Behavior?

Yes.

Those who have lower skills or are older or have less education are less likely to find or benefit from online information.

What might this mean for what we do?

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# What Else Does Having Low Skills Correlate With?

- Poorer self-reported health
- Less likely to volunteer
- Less likely to believe their participation matters (politically)
- Less likely to trust others

*I wonder if this might affect readers…*
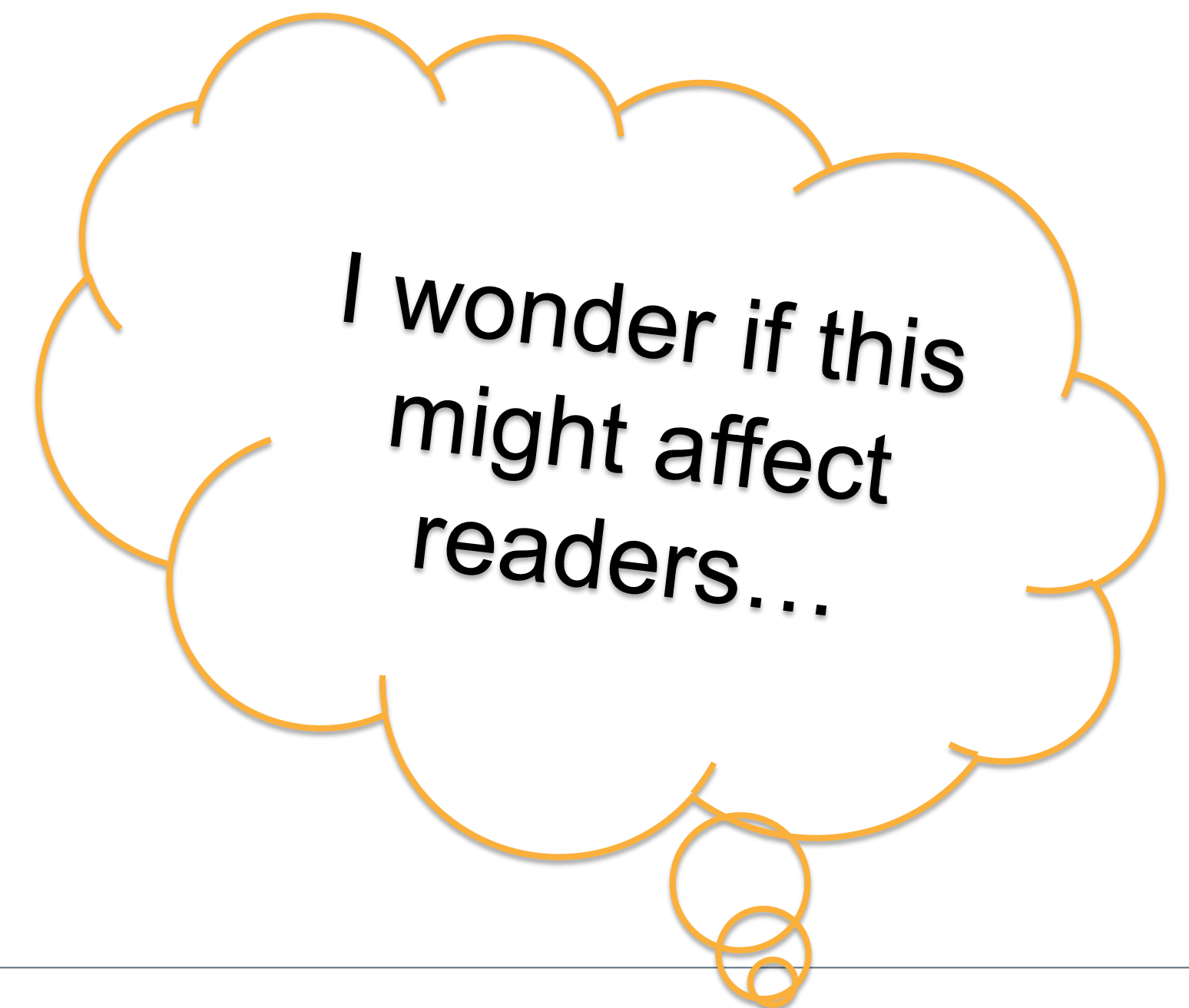
# So How Many Americans Are We Talking About?

Approximately **112.6 million adults** are at or below Level 2 in literacy.

Of these, **40.2 million** at or below Level 1.[1]

https://nces.ed.gov/surveys/piaac/2017/awc/table1_1.asp

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# Summary Thus Far

The majority of US adults may struggle with
- Reading and comprehending written instructions
- Using numeric information, graphs, or charts to answer questions
- Performing task with digital tools, such as websites, software applications, etc.

# Your Audience: Assume at Least Half Need Help

**Adults with Low Skills**

**Adults with Proficient Skills**

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# Can Research Point Towards Better Practices?

# What Adults with Low Literacy May Experience

More likely to rely on world knowledge relative to children learning to read

May struggle with new words (e.g., sounding out), though non-native speakers appear better at this

Are not "fluent" readers

Don't take pauses in the same places
   as skilled readers

Punctuation may not help

# What Adults with Low Literacy May Experience (2)

## Will notice oddities and inconsistencies in a text but…
Won't know what's wrong
Won't use repair strategies

## Struggle with pronominal reference
If you use different noun phrases
If pronouns are ambiguous

# What Adults with Low Literacy May Experience (3)

## May experience cognitive overload

Sheer amount of text may be overwhelming

Having to navigate around a document may be overwhelming

## Likely to lack metacomprehension or accurate estimate of ability

Likely to be overconfident

(Actually true for all readers)

# What Does Reading Look Like?

Eye-tracking research helps us understand how people process texts and layouts.

Here's an example of how a proficient reader may use a web page.

The reader appears to be skimming and covering the full content of the page.

Eye Tracking in User Experience Design, edited by Andrew Schall, and Bergstrom, Jennifer Romano, Elsevier Science & Technology, 2014. ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/goucher-ebooks/detail.action?docID=1651794.

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# What Does Reading Look Like? (2)

Here we see a struggling reader, who appears to be reading, re-reading, skipping around a lot, and otherwise struggling with the text.

Eye Tracking in User Experience Design, edited by Andrew Schall, and Bergstrom, Jennifer Romano, Elsevier Science & Technology, 2014. ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/goucher-ebooks/detail.action?docID=1651794.
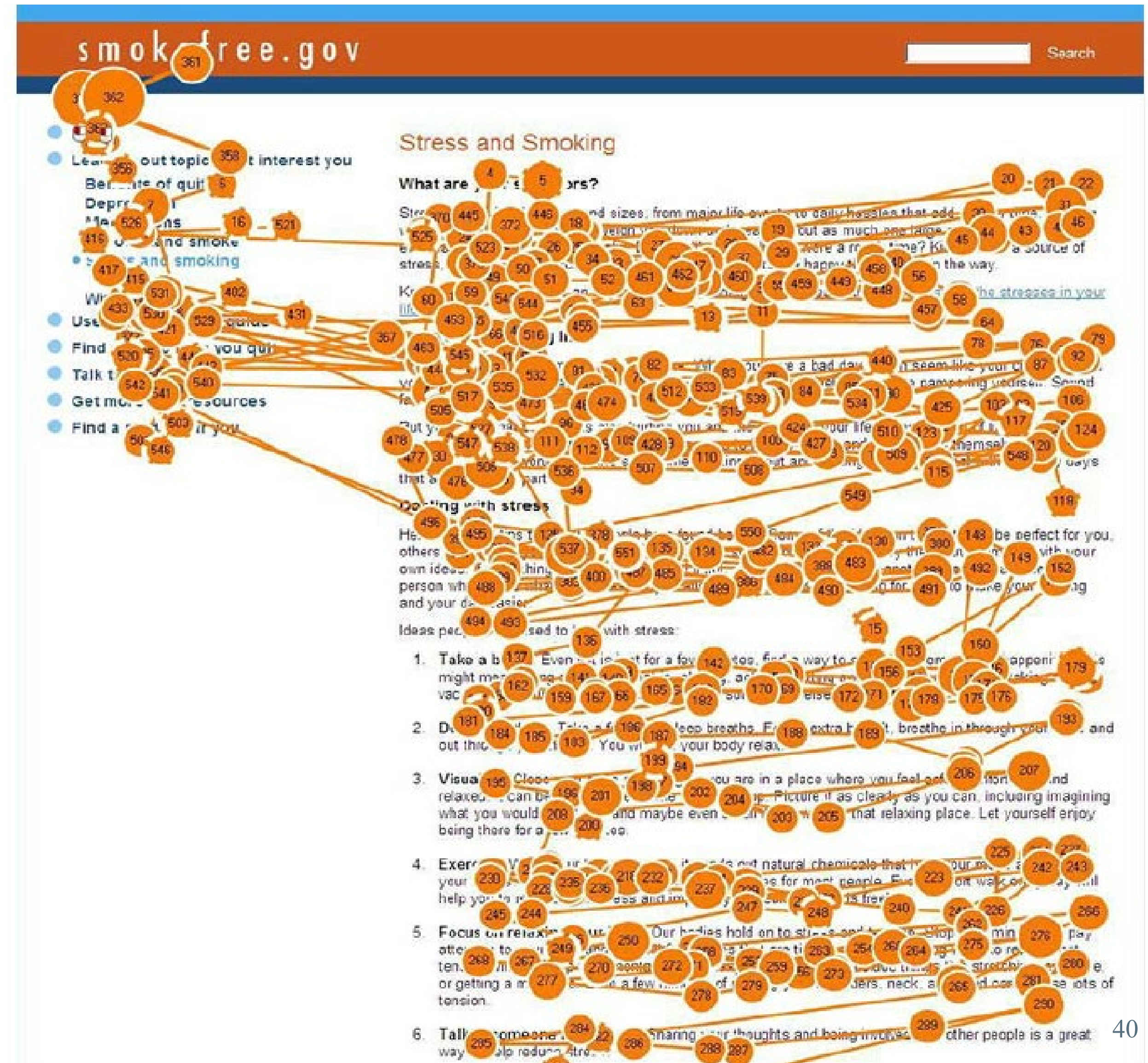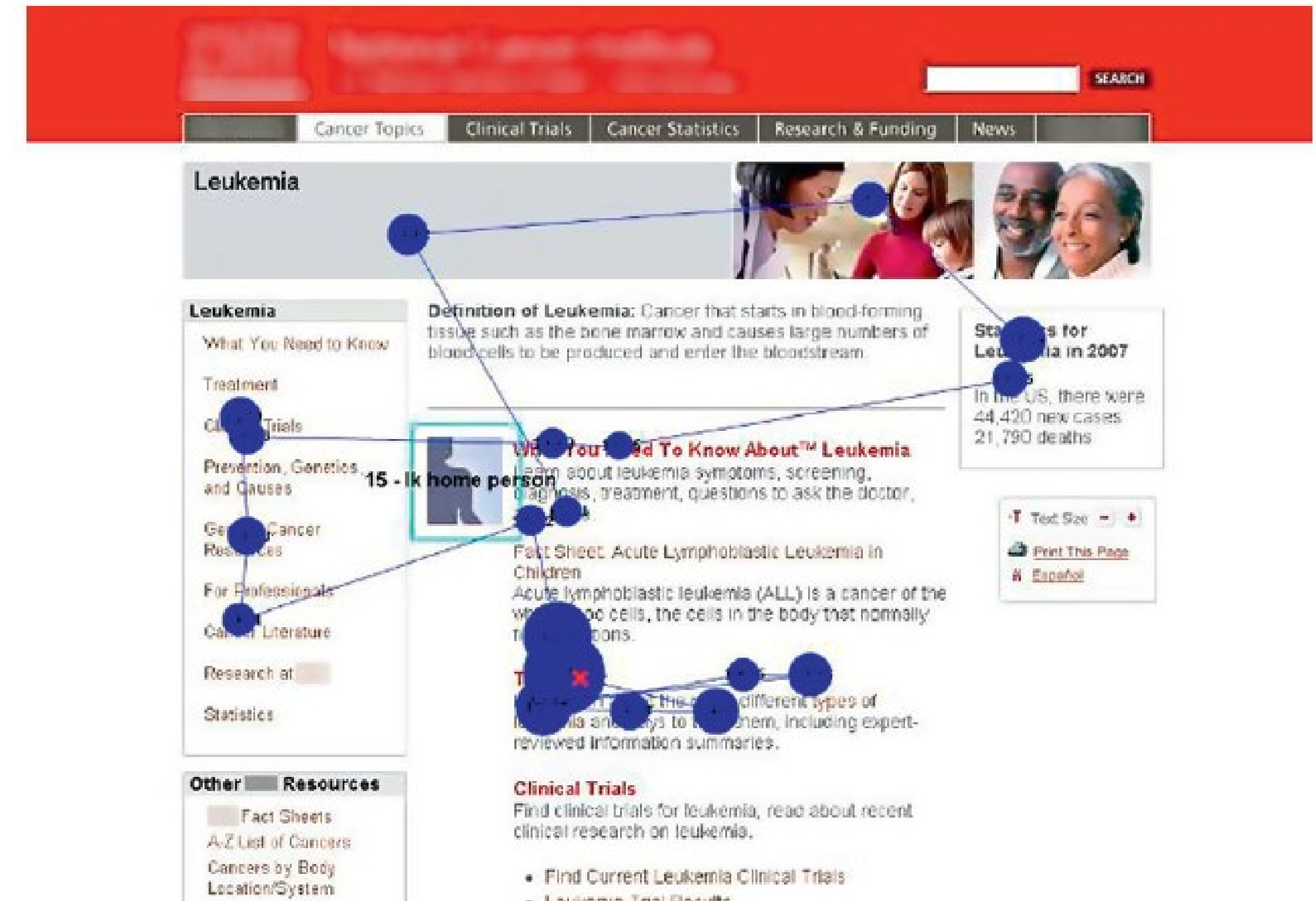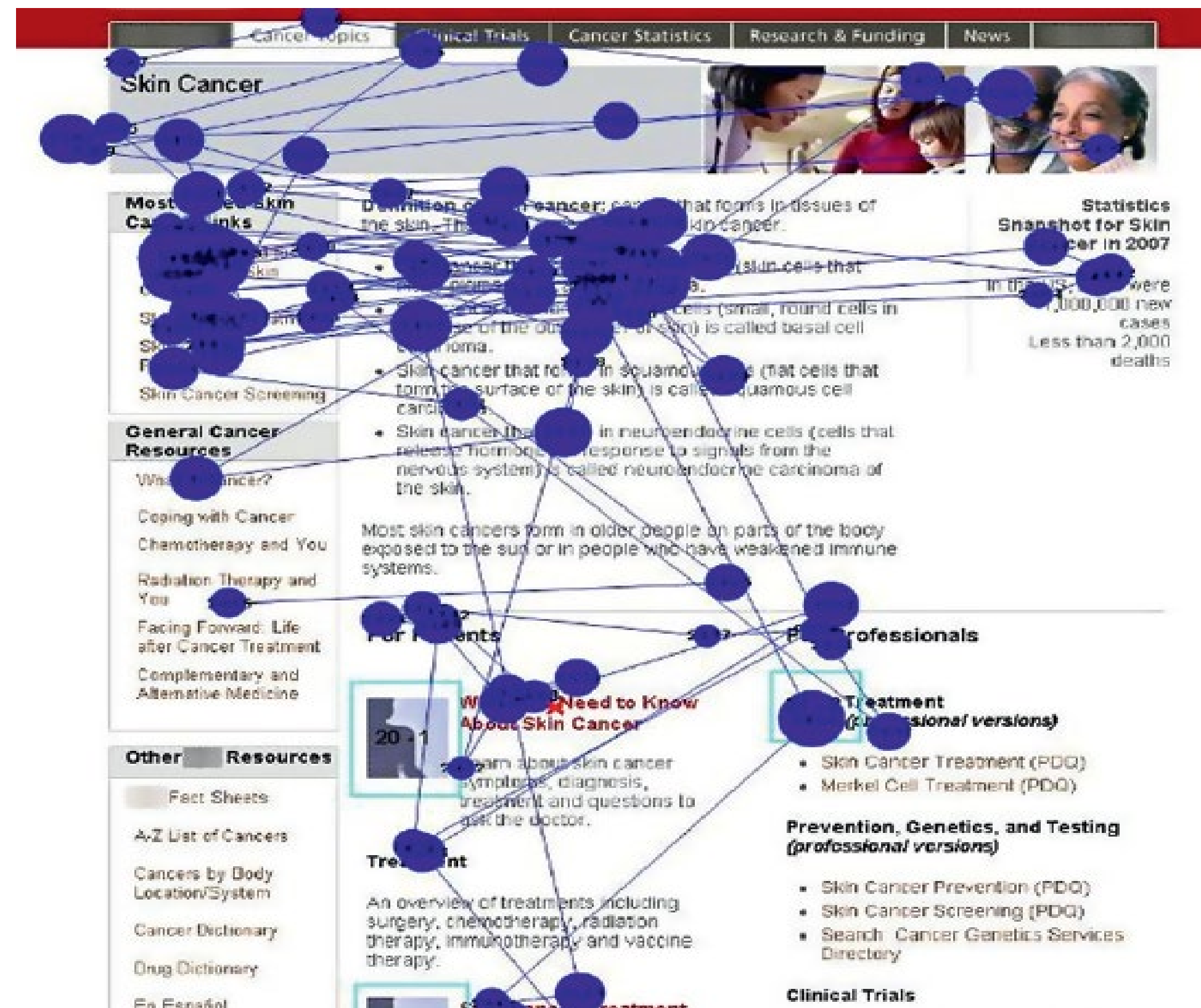
# What Does Reading Look Like? (3)

There is, however, a danger with making things look easy.

Adults with low literacy may be attracted to the "easy looking" text and end up missing the most important elements if they are not prominent.

Eye Tracking in User Experience Design, edited by Andrew Schall, and Bergstrom, Jennifer Romano, Elsevier Science & Technology, 2014. ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/goucher-ebooks/detail.action?docID=1651794.
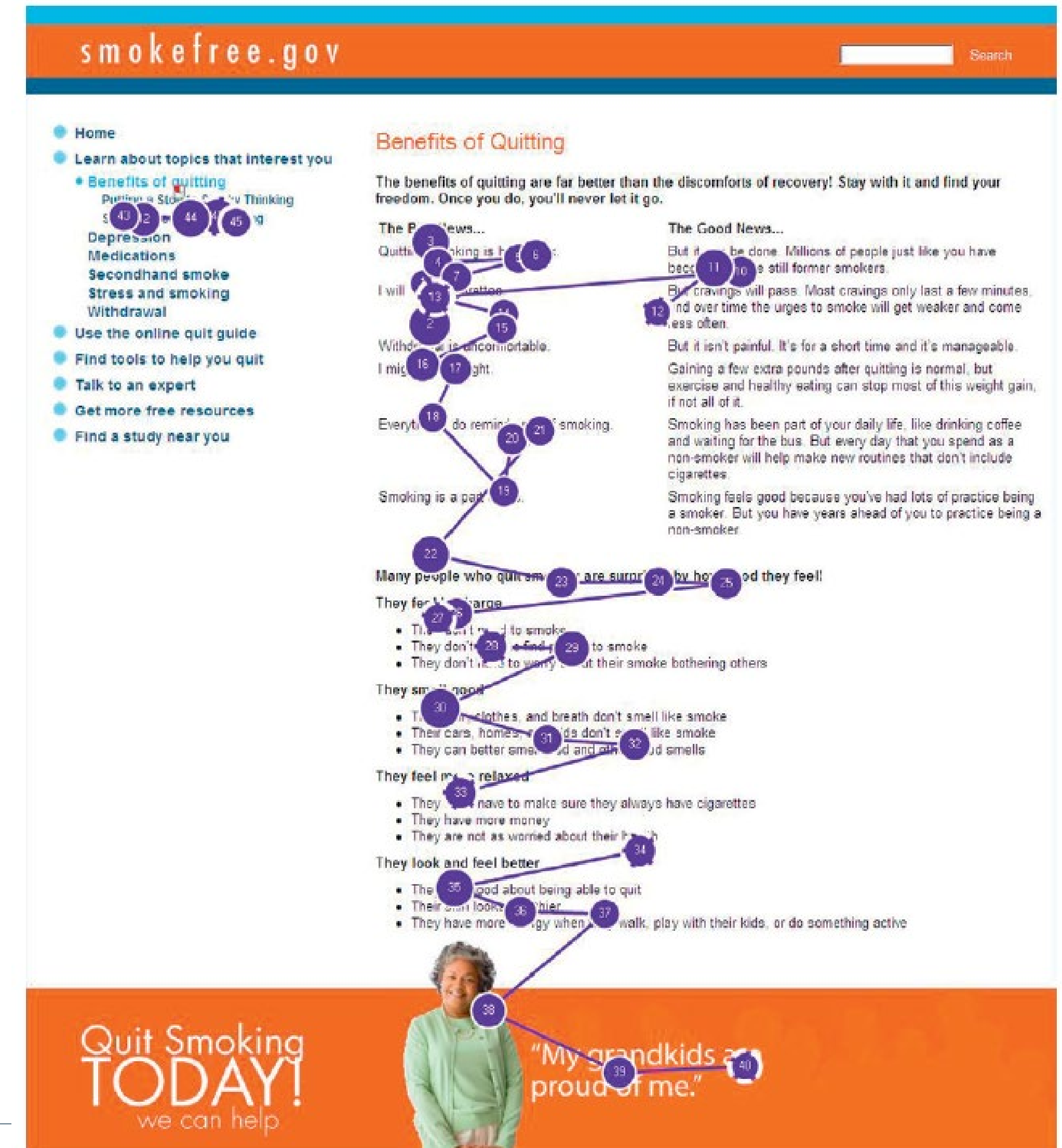


FIGURE 13.5 Gaze path of a participant with low literacy skills who reads only the text that looks easy to read, thus missing most of the valuable information on the page.

# What Does Reading Look Like? (4)

Consider the difficulty readers may experience with the multicolumn design (left) VS a simplified layout (right)



Eye Tracking in User Experience Design, edited by Andrew Schall, and Bergstrom, Jennifer Romano, Elsevier Science & Technology, 2014. ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/goucher-ebooks/detail.action?docID=1651794.

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# So What Can You Try?

# Try This, Not That

**Keep it simple and convenient.**

- Short, common sentence structures
- Common words and rhetorical markers
- In-text supports (e.g., hyperlinked definitions)
- Provide sound files (mind your prosody)

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# Try This, Not That (2)

**Layout matters.**

- Inverted pyramid – most important things first
- Bullets may  help but periods and commas may not
- Avoid multiple pages and redirects
- Be deliberate in the ordering and presentation of text

# Try This, Not That (3)

**Activate background knowledge but clearly identify conflicts between common assumptions and new information.**

- Titles and headers
- Pictures
- Rhetorical markers

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# Consider Getting Reader Feedback

- Survey general population, not others in your organization
- Use open-ended questions
- Focus on knowledge checking *

* Health literacy research suggests that practitioners are more likely to use close-ended questions with adults with low health literacy and rarely use knowledge-checking questions.

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# Where Can You Find Example Texts?

Researchers at Georgia State University are revising materials for adults with low literacy and non-native English speakers. You can explore their repository here:

- https://education.gsu.edu/research-outreach/alrc/adult-literacy-coronavirus-resource-links/

# Curious to Know About Your Target Area?

IES has an interactive state/county-level estimator. You can see what the estimated literacy or numeracy level is for different areas in the U.S. https://nces.ed.gov/surveys/piaac/skillsmap/
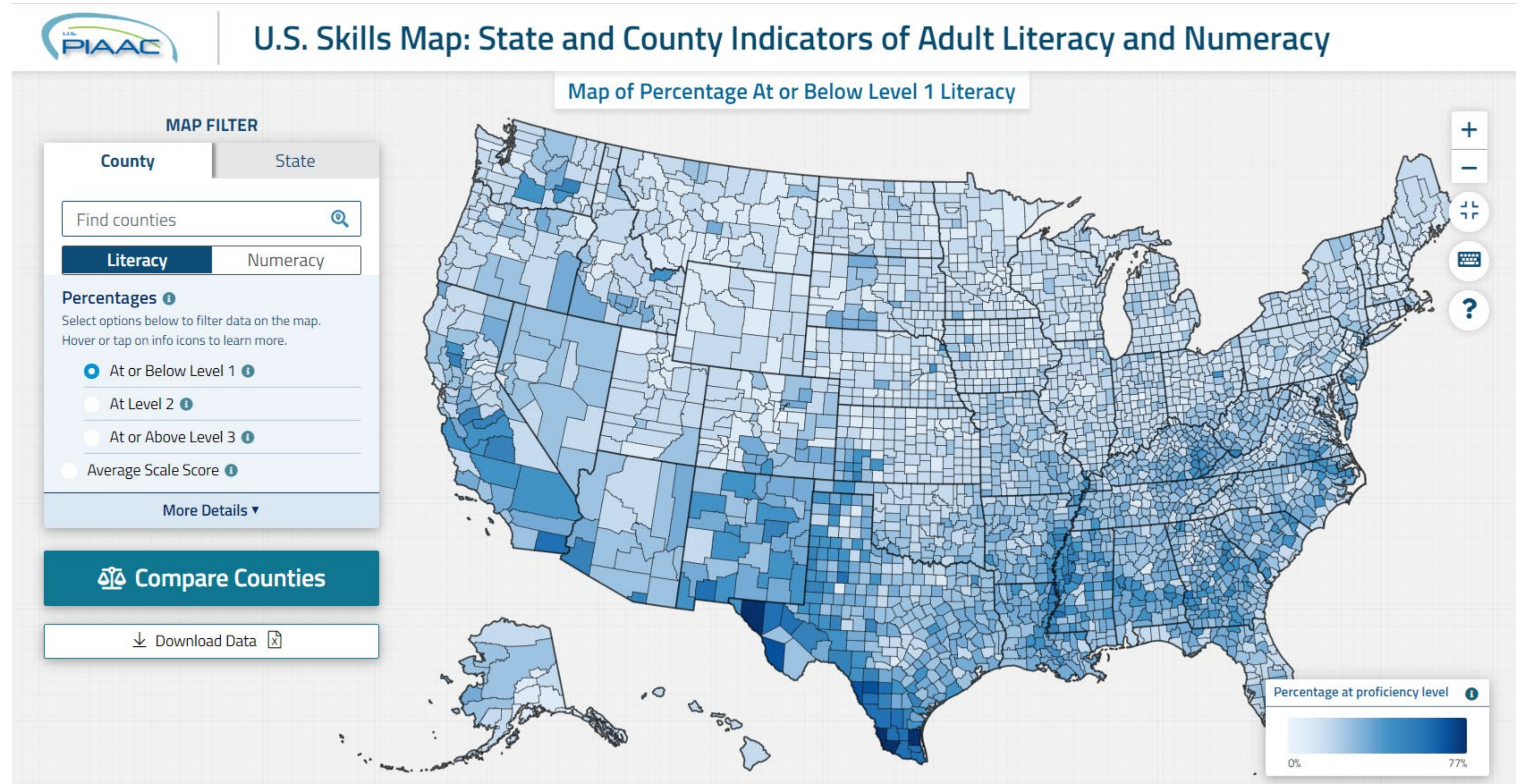
# Questions?

# Further Information

**Contact:** Meredith.Larson@ed.gov or on LinkedIn

**PIAAC:** http://piaacgateway.com/ | https://nces.ed.gov/surveys/piaac/ | http://www.oecd.org/skills/piaac/

**Sample of Sources:**

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