

NCSES's SKILLED TECHNICAL WORKFORCE INITIATIVE

2020 WORKSHOPS





*NCSES Webinar Series: Workshop #3 of
The Skilled Technical Workforce Initiative Workshops*

Surveying the STW to Answer Policy- Relevant STEM-Workforce Questions: The 2021 National, Training, Education, and Workforce Survey (NTEWS)

Friday, August 28 | 1:00 pm – 2:30 pm (Eastern)

National Center for Science and Engineering Statistics

Social, Behavioral & Economic Sciences

National Science Foundation

A reminder about the STW

- NCSES invites you to discuss the Skilled Technical Workforce (STW)

Workers that use significant levels of science and engineering expertise and technical knowledge in their occupations and whose educational attainment is less than a bachelor's degree

- A focus on the STW expands not only the federal knowledge of the STEM Workforce but the total U.S. workforce



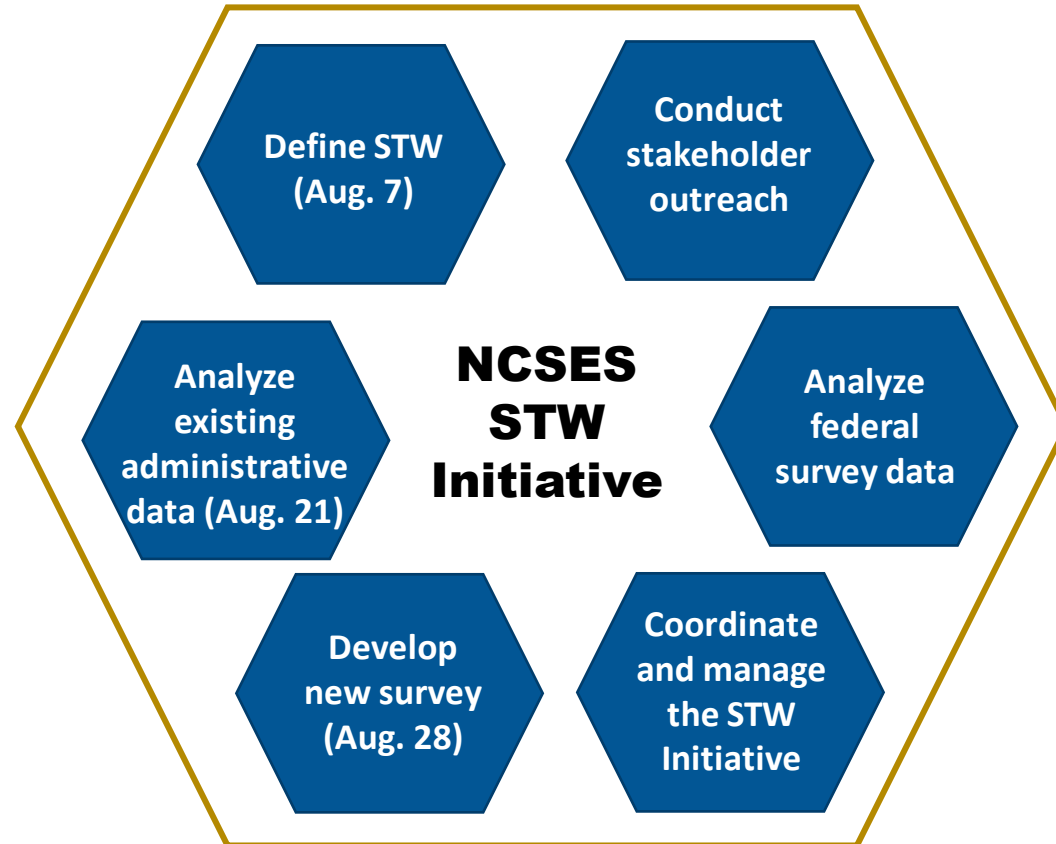
A reminder about why we are here

- Many are contributing to measuring and understanding the workforce
- Effort is larger than one agency or organization
- We need increased coordination
- We need forums for interaction and discussion

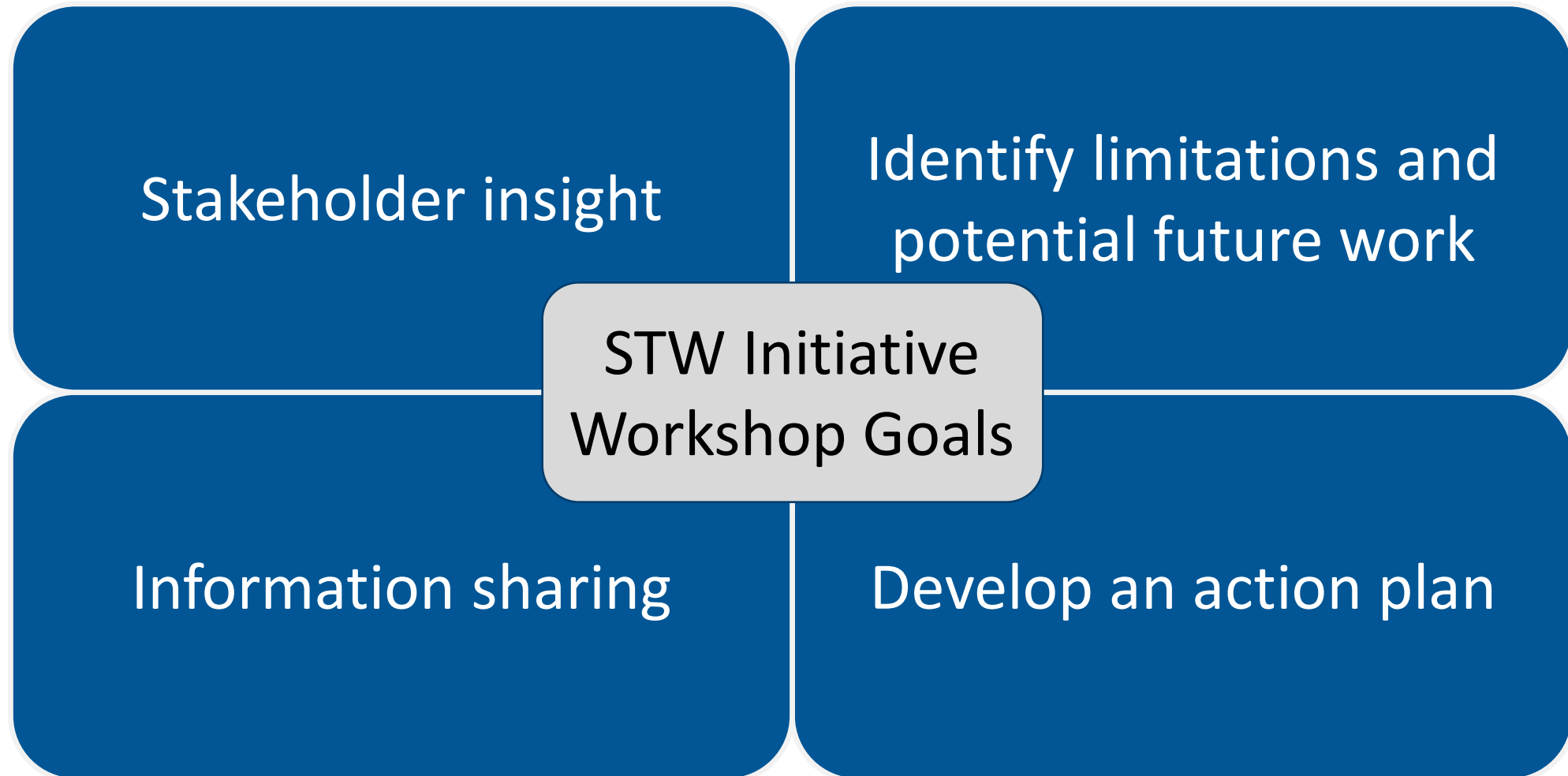
NCSES efforts to understanding the workforce



Community of STEM Workforce Efforts



STW Initiative workshop goals



Making Connections: Key takeaways

STW Workshop #1: Defining the STW

Take a more holistic view of the workforce

Current data sources tell a limited STW story

Increase partnerships allow to identify, assess, understand, and use existing data

STW Workshop #2: Administrative Data Sources

Overlap of administrative data research within our community

Opportunity to explore ways to reduce duplicative efforts while increasing research efficiency/effectiveness

Workshop #3: Surveying the STW and the NTEWS

- Keynote speaker – Dr. Nicole Smith

“The Need for Accurate, Targeted, and Policy-Relevant Data on Individuals Without a Bachelor’s Degree”

- NCSES presentation – Dr. Gigi Jones

“2021 NTEWS: Measuring the STW and Work-Related Credentials of U.S. Adults”

- Chat and Q&A moderator – Dr. Josh Trapani
- Wrap-up – John Finamore


Audience Involvement: Two ways to participate

CHAT FEATURE

- Feedback
- Ideas
- Comments
- Respond to “All panelists and attendees”

Q & A FEATURE

- Questions
- Realtime responses from NCSES

A photograph of a large, historic stone building with multiple spires and a prominent clock tower, likely a university building. The image is overlaid with a dark blue gradient on the right side where the text is located.

The Need for Accurate, Targeted, and Policy- Relevant Data on Individuals without a Bachelor's Degree

Nicole Smith
nicole.smith@georgetown.edu



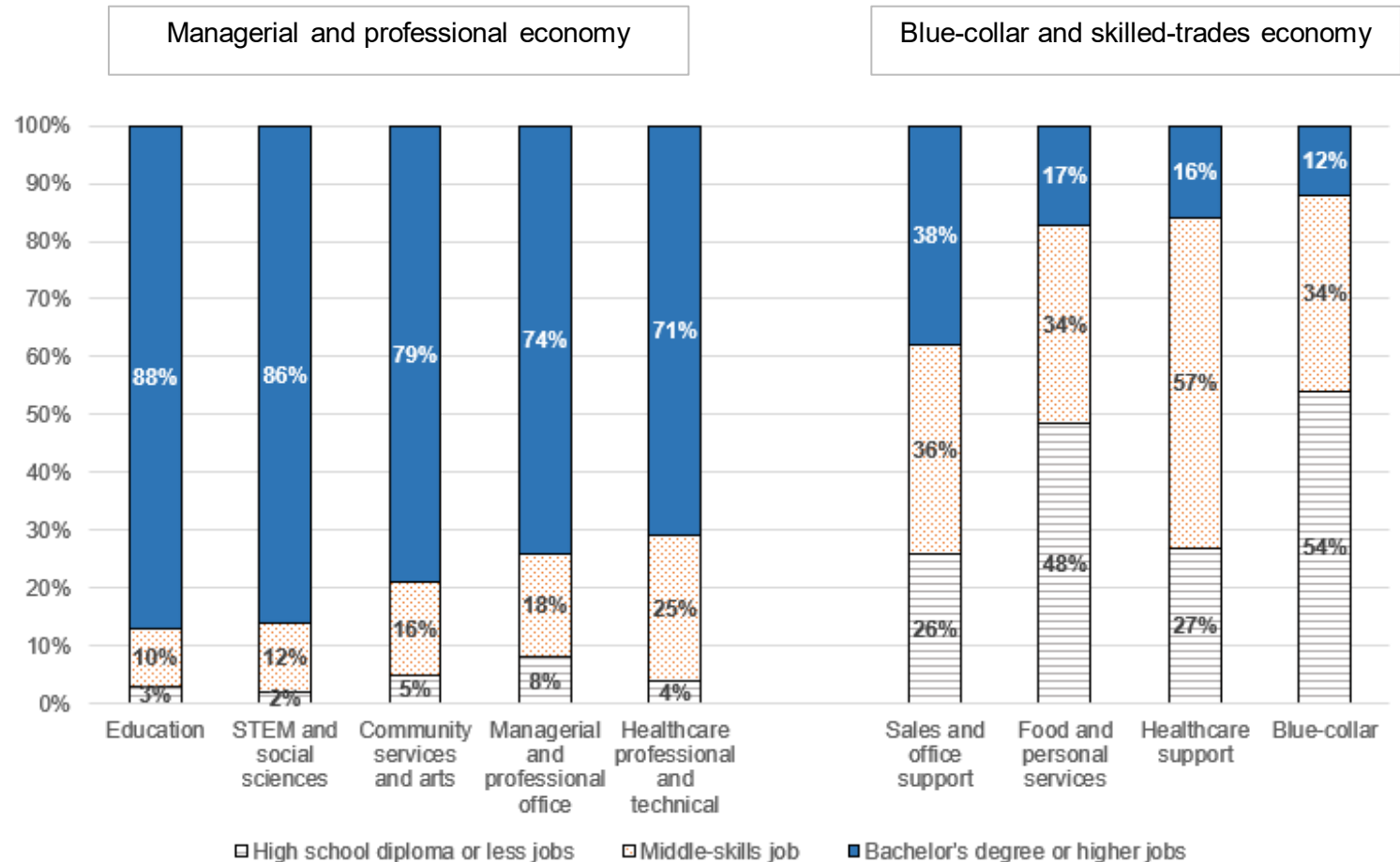
The economy, coronavirus and jobs

Which ones?
How do we teach it?
Where do we teach it?
Who has access?



Middle skills have been the stepchild of opportunity for technical jobs

The vertical bars are separated into two groups:
 Group 1: Managerial and professional economy and
 Group 2: Blue-collar and skilled-trades economy.
 Under group 1 are five occupation fields with percentages of required education: Education (3%, 10%, 88%), STEM and social sciences (2%, 12%, 86%), community services and arts (5%, 16%, 79%), managerial and professional office (8%, 18%, 74%), and healthcare professional and technical (4%, 25%, 71%). Under group 2 are four occupation fields with percentages of required education: Sales and office support (26%, 36%, 38%), food and personal services (48%, 34%, 17%), healthcare support (27%, 57%, 16%), and blue-collar (54%, 34%, 12%). The percentages display the proportion of jobs that require: a high school diploma or less jobs (shown in vertical bars); middle-skill jobs (shown in polka dot bars); and bachelor's degree or higher jobs for each occupation field (shown in solid color bar).



Source: Analysis of March CPS data, various years. Georgetown University Center on Education and the Workforce projections of jobs and education, through 2027.
 Note: The data in this table represent the "flow" of jobs. Job flow includes newly-created jobs and job openings caused by workers permanently leaving the workforce.

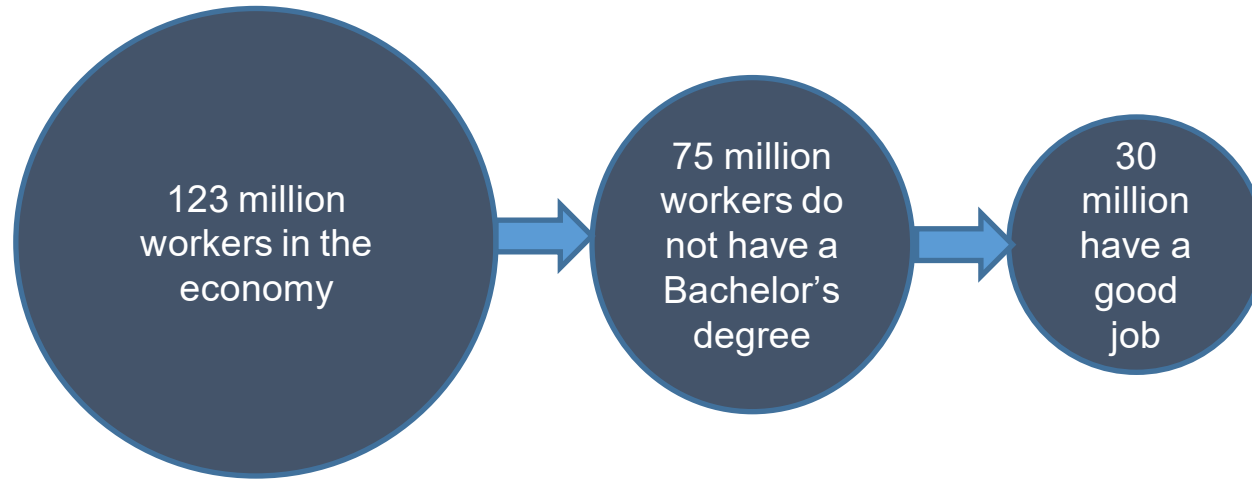


Middle skill jobs that pay-

Be wary of possible tracking



30 million workers have a good job that pays without a BA

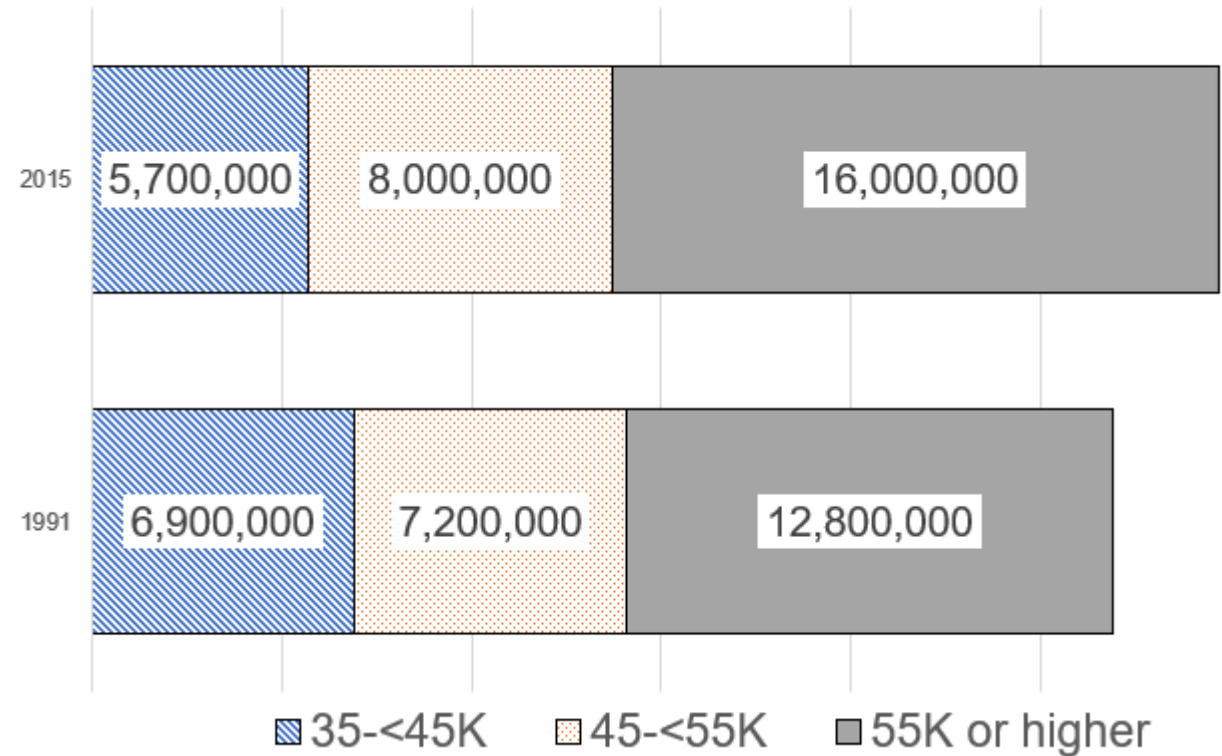


The number of good jobs for workers without a BA grew from 27 million in 1991 to 30 million 2015



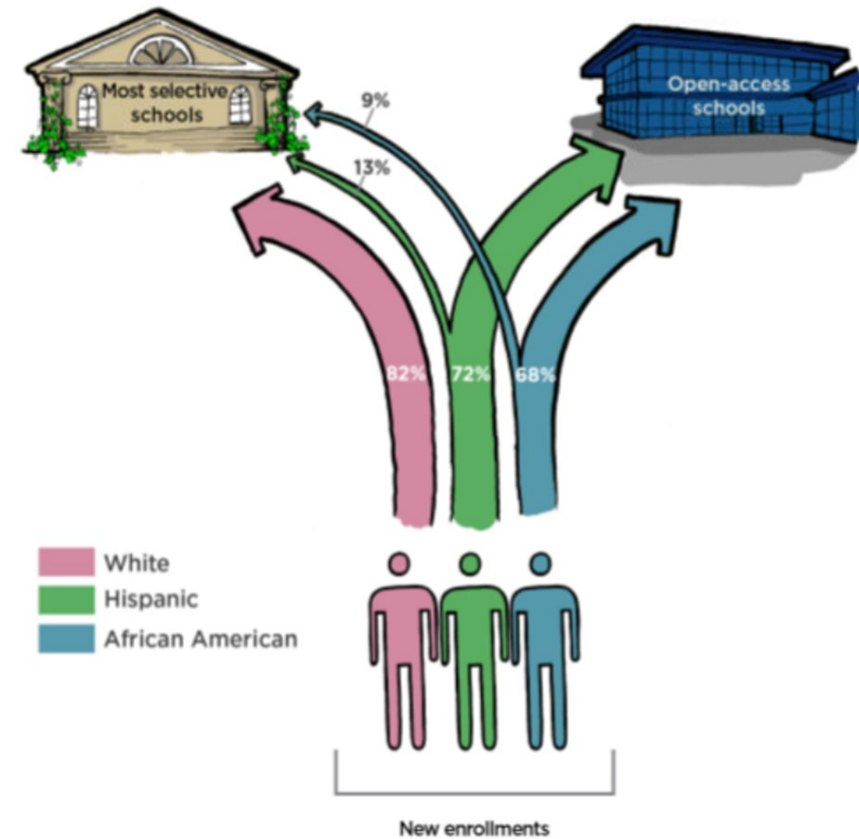
Of the 30 million workers with a good job that pays without a BA, 24 million earn more than \$45,000

A vertical bar chart comparing the number of workers' salary for the years 1991 and 2015. In 1991, 6.9 million workers had an income between \$35,000-\$44,999 (diagonal bar); 7.2 million income was between \$45,000-\$54,999 (polka dots bar); and 12.8 million had an income of \$55,000 or higher (solid bar). In 2015, 5.7 million workers had an income between \$35,000-\$44,999 (diagonal bar); 8.0 million income was between \$45,000-\$54,999 (polka dots bar); and 16.0 million had an income of \$55,000 or higher (solid bar).



The vast majority of white freshmen are going to the 468 most selective four-year colleges.

Figure 2: Between 1995 and 2009, 82 percent of new white freshman enrollments were at the 468 most selective four-year colleges; compared to 13 percent for Hispanics and 9 percent for African Americans; 68 percent of new African-American freshman enrollments and 72 percent of new Hispanic freshman enrollments were at open-access two- and four-year colleges, compared to no growth for whites.



SOURCE: Georgetown University Center on Education and the Workforce analysis of IPEDS data; various years.



MANY REMAINING QUESTIONS

The data on economic value suggest nine rules for students who want to maximize their return on investment.

Returns by: education level, field of study

- Understanding potential return on investment is complicated, but necessary.
- Education level matters, but field of study and major often matter more. Workers with associate's degrees in STEM have median earnings of \$60,000 a year, and certificates can also yield higher earnings than degrees.
- While field of study and institution are important, they do not control financial destiny. Personal factors, like aptitude and grit matter. Also, wage inequality stemming from various factors, including racial and gender discrimination, is also a persistent issue.



General versus specific education, competencies that pay

- In any field where there is a hierarchy of degrees, the richest mix of general and specific education is often what matters most. As technology evolves and workforce demands become more complex, both workers and the US economy benefit a mix of general and specific education designed to confer creativity, adaptability, and transferable skills over the long term.
- The true economic value of postsecondary programs is their ability to teach the specific mixes of competencies required in occupations and occupational clusters. Individual earnings depend on a combination of education level and occupational competencies. At the lowest levels of critical thinking, the difference in annual earnings between workers with a graduate degree and those with a high school diploma is \$6,000, but at the highest levels of critical thinking, this difference increases to \$40,000





2021 NTEWS: Measuring the STW and Work-Related Credentials of U.S. Adults

Gigi Jones

August 28, 2020

National Center for Science and Engineering Statistics

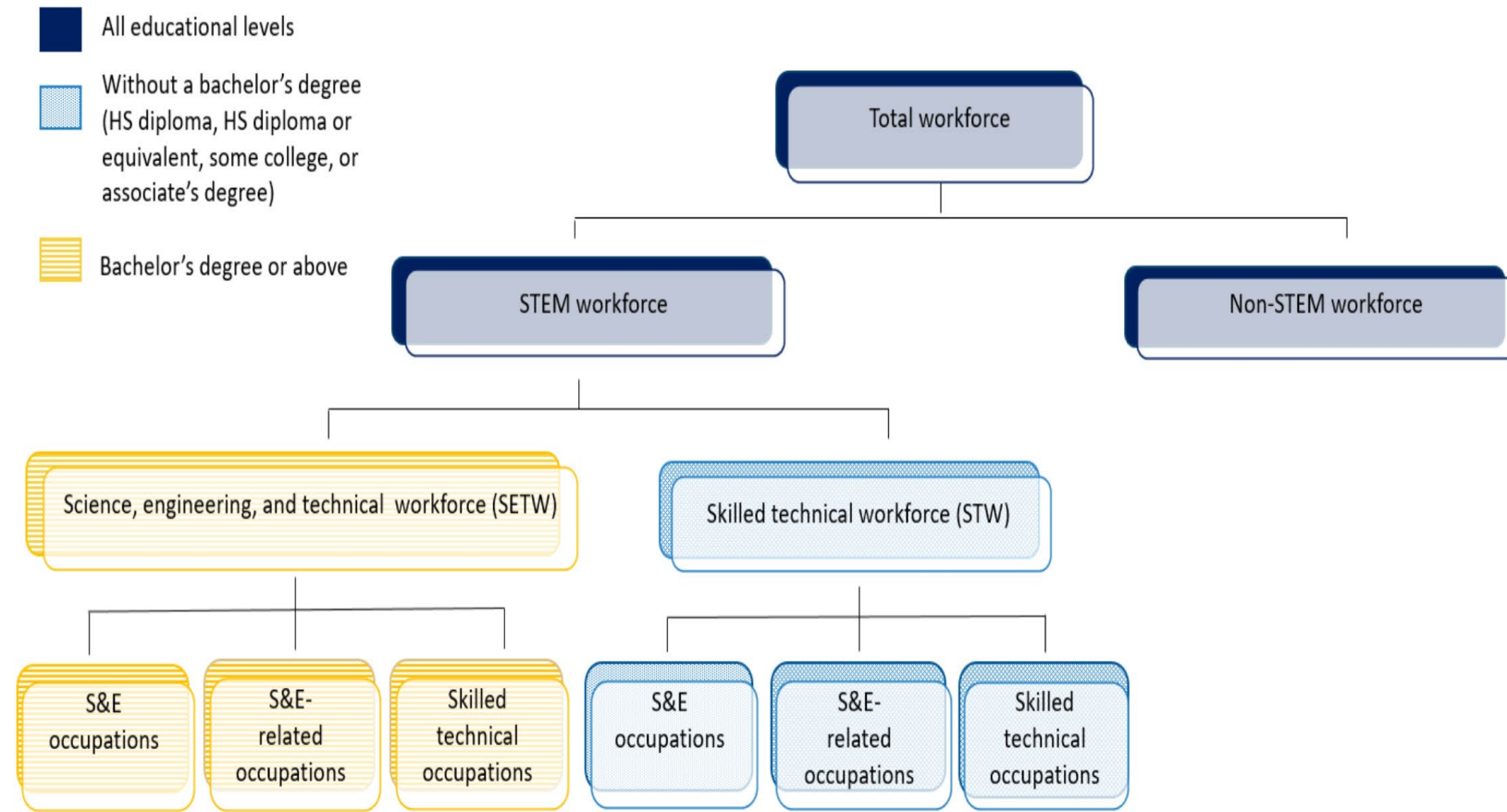
Social, Behavioral and Economic Sciences

National Science Foundation

Need for Survey Data

New STEM Workforce Model: Inclusive and Expanded (Workshop 1)

There are three color coded boxes representing the workforce's education level – dark blue box (solid color) includes everyone's educational levels, light blue (polka dot) is those without a bachelor's degree (high school diploma, high school diploma equivalent, some college, or associate's degree). The yellow (vertical stripes) shows those with a bachelor's degree or above. The "Total Workforce" dark blue box (solid color) is at the top. The next level (second level) is "STEM workforce" and "Non-STEM workforce" both are dark blue boxes (solid color). The next level (third level) is "Science, engineering, and technical workforce (SETW)" in yellow box (vertical stripes) and the "Skilled technical workforce (STW)" in a light blue box (polka dot). The final and fourth level has "S&E occupations," "S&E-related occupations," and "Skilled technical occupations" in yellow boxes (vertical stripes) and connect from the "Science, engineering, and technical workforce (SETW) from level three. Also on the fourth level has another set of "S&E occupations," "S&E-related occupations," and "Skilled technical occupations" in light blue boxes (polka dot) but connected from the "Skilled technical workforce (STW)" from level three.



Administrative Data: Looking Beyond Survey Data (Workshop 2)

Decline in response rates

Measurement challenges

Burden on establishments
and individuals for
increasing data demands

Promising **examples for STW data** but still have a **need for a new national data collection**

NTEWS: Federal Data Needs

National Center for Science and Engineering Statistics (NCSES)

The education, training, and career pathways of skilled technical workers

Clearinghouse for objective data on the Science and Engineering enterprise

National Center for Education Statistics (NCES)

The prevalence and interplay of education (postsecondary degrees and certificates), work credentials (certifications and licenses), and work experience programs among American workers

NTEWS Development: A Look at the Past and the Research Questions Driving it Today

2016 Adult Training and Education Survey ([ATES](#))

The ATES is...

An **inactive** NCES survey of adults ages 16 to 65

...that...

Focused on nondegree credentials and work experience programs

Nondegree credentials include...

Licenses

Certifications

Postsecondary Certificates

Work experience programs examples...

Internships

Apprenticeships

Externships

Residencies

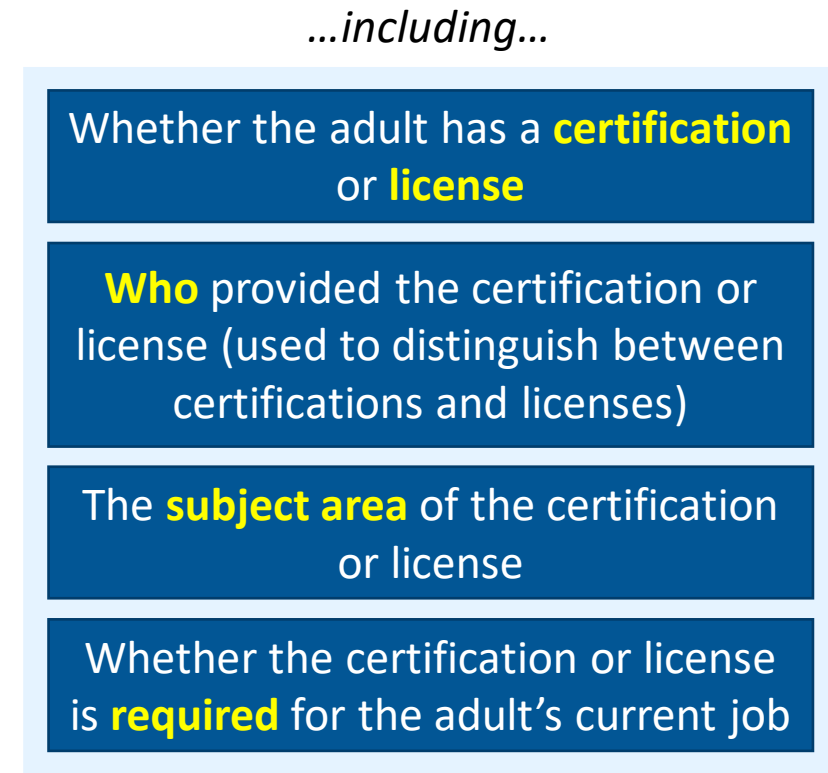
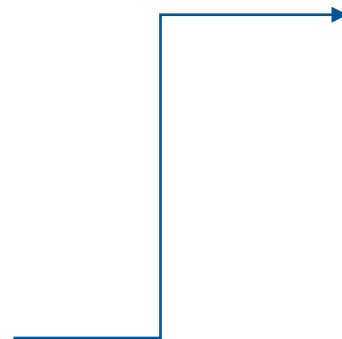
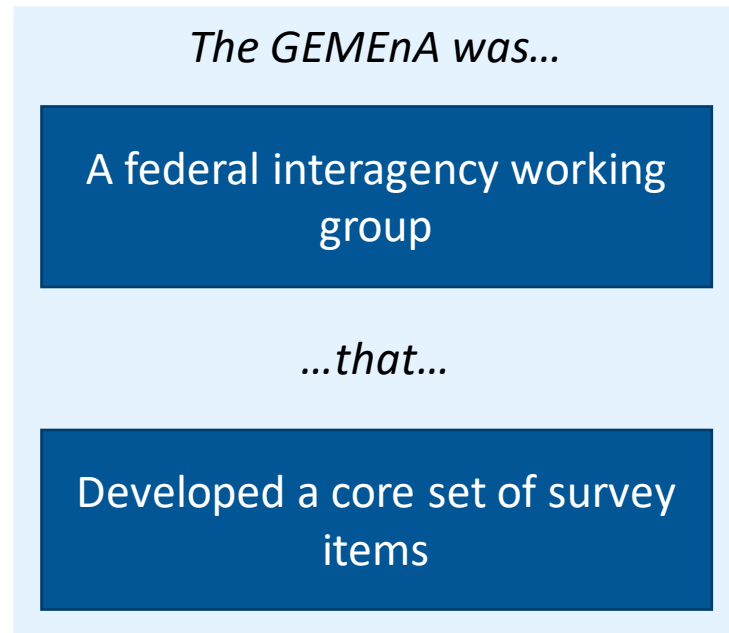
Practicums

Clinical Experiences

Clerkships

Co-ops

Group on Expanded Measures of Enrollment and Attainment ([GEMEnA](#)): 2009-2017



NTEWS Research Focus (Policy-Neutral but Relevant)

NCSES	NCES
<ul style="list-style-type: none"> • Prevalence of education and work-related credentials for workers 	<ul style="list-style-type: none"> • Number of adults with education and work credentials <ul style="list-style-type: none"> • Number and characteristics of first-time earners with either a license or certification
<ul style="list-style-type: none"> • Education and work-related credentials related to employment outcomes <ul style="list-style-type: none"> • Enter, maintain relevance, and seek advancement 	<ul style="list-style-type: none"> • The interplay between work and education credentials <ul style="list-style-type: none"> • Entry, advancement, and mobility in the labor market • Related to key employment outcomes • Working in the same fields as the credential
<ul style="list-style-type: none"> • Employment characteristics and outcomes of STW 	<ul style="list-style-type: none"> • Influence of educational institutions on education and work credentials <ul style="list-style-type: none"> • Work credentials supplement versus supplant higher education • Formal education system providing work-credential training

LET'S CHAT: Research and Policy Questions

What are some other critical or high-priority research and policy questions about the U.S. workforce that federal survey data should help inform?

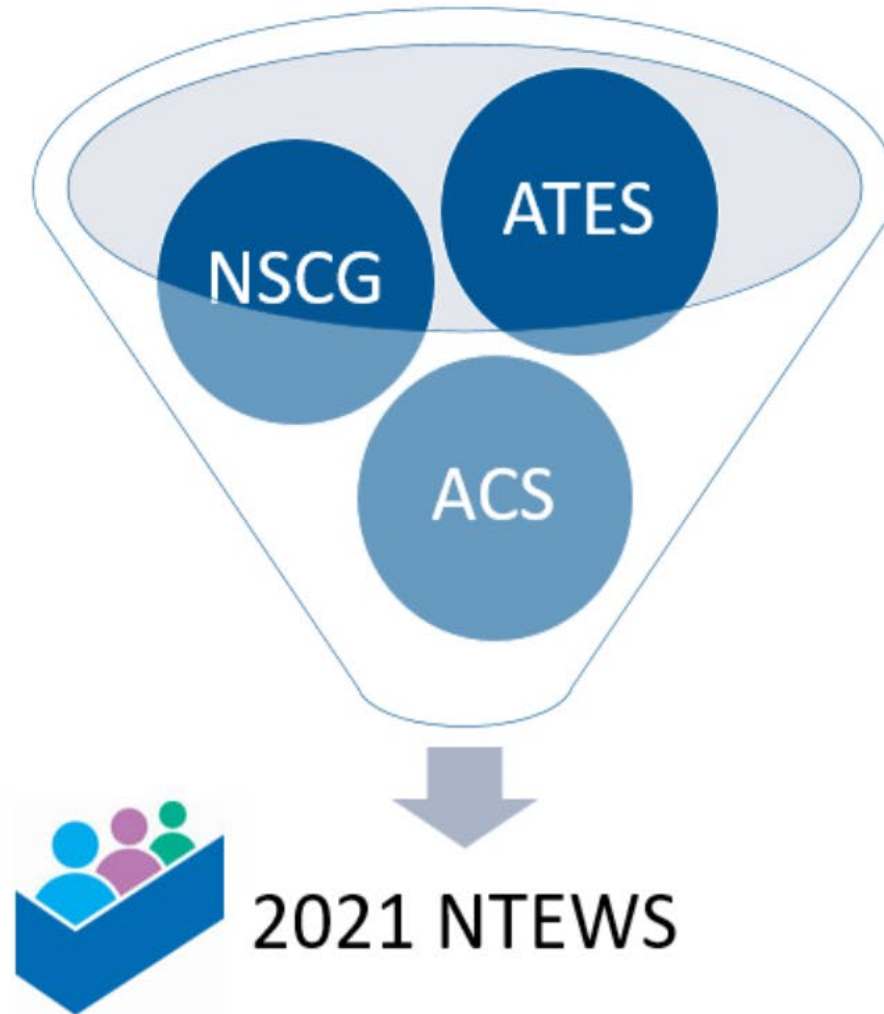
Provide your example in the chat.

NTEWS Sections, Constructs, and Measures

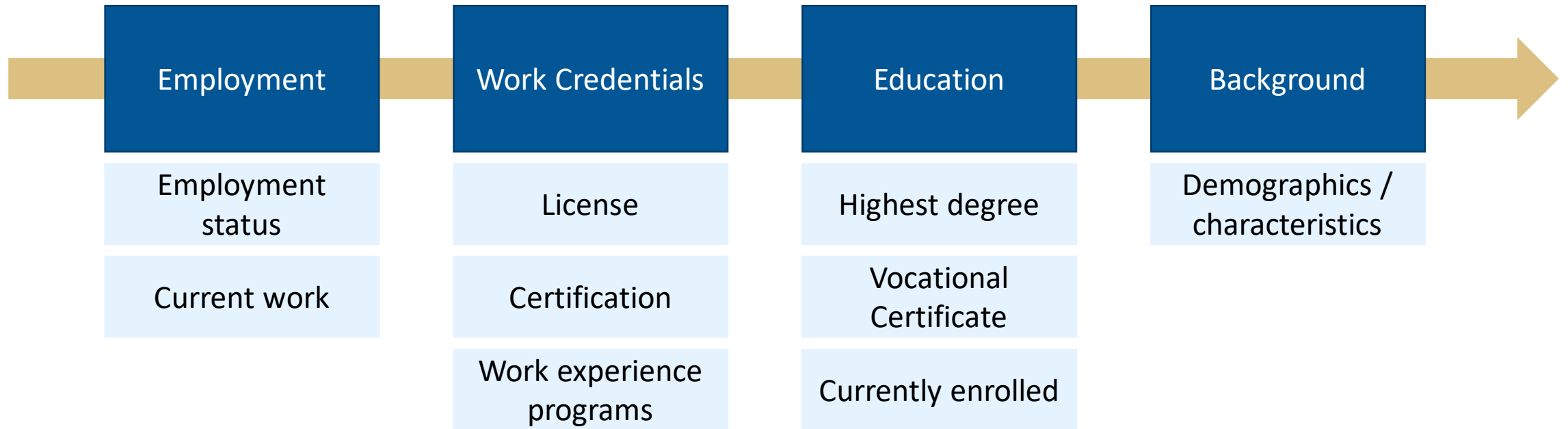
Quick Poll



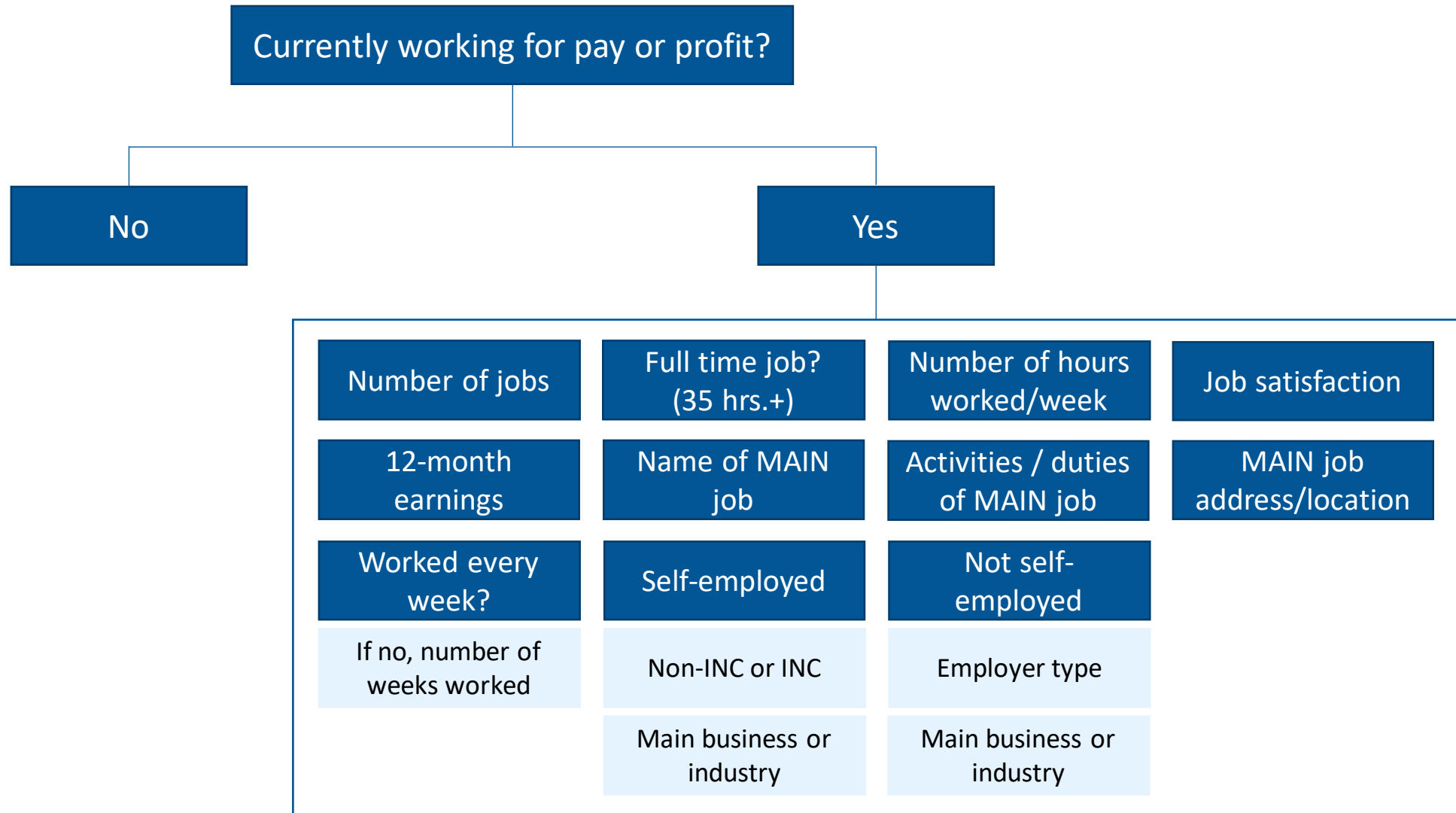
Survey Content: Question Items



2021 NTEWS: Survey Sections



Employment: Status



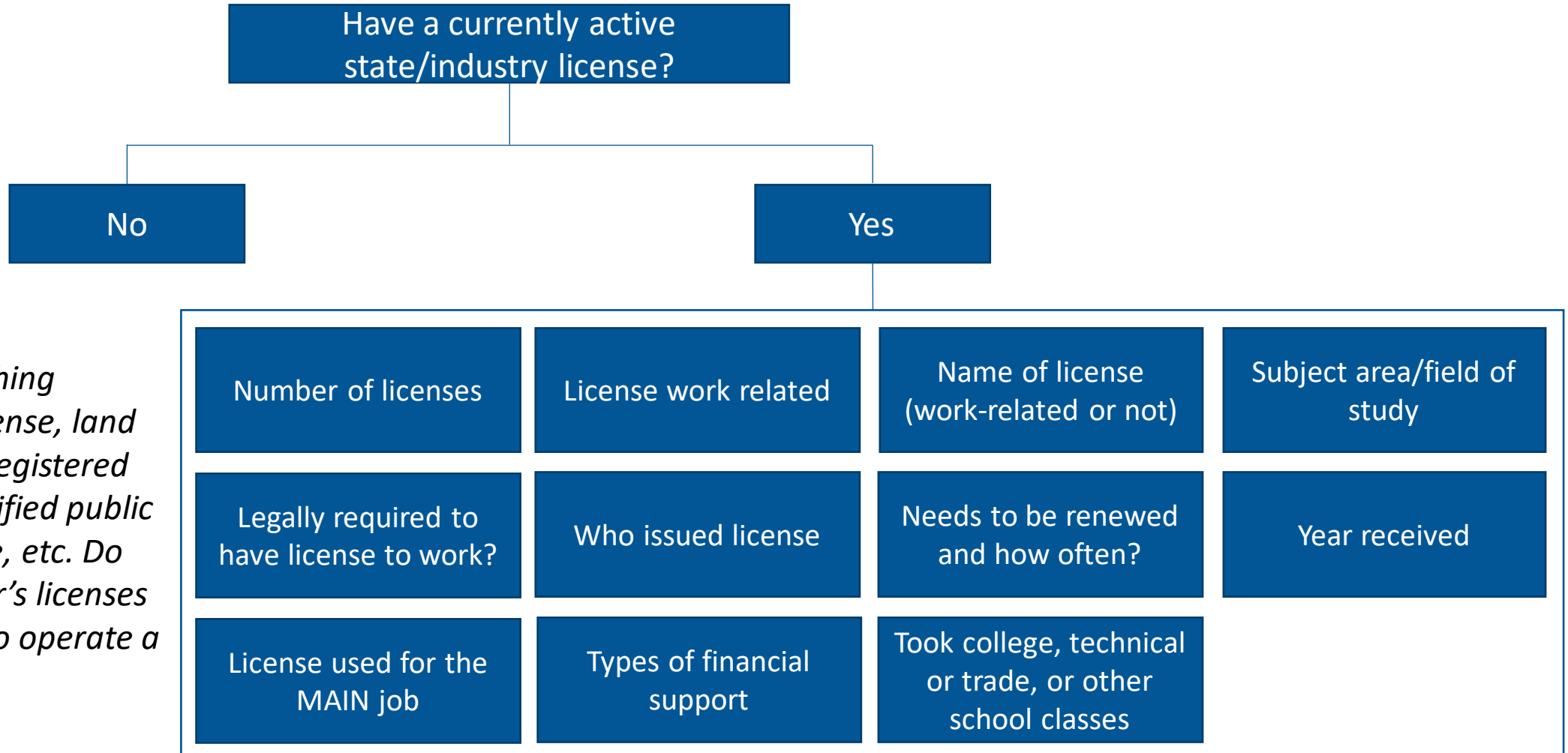
LET'S CHAT: Employment Status

List one (or two) other areas, topics, or constructs of **employment status** that should be considered for future cycles of NTEWS.

Number of jobs	Full time job? (35 hrs.+)	Number of hours worked/week	Job satisfaction
12-month earnings	Name of MAIN job	Activities / duties of MAIN job	MAIN job address/location
Worked every week?	Self-employed	Not self-employed	
If no, number of weeks worked	Non-INC or INC	Employer type	
	Main business or industry	Main business or industry	

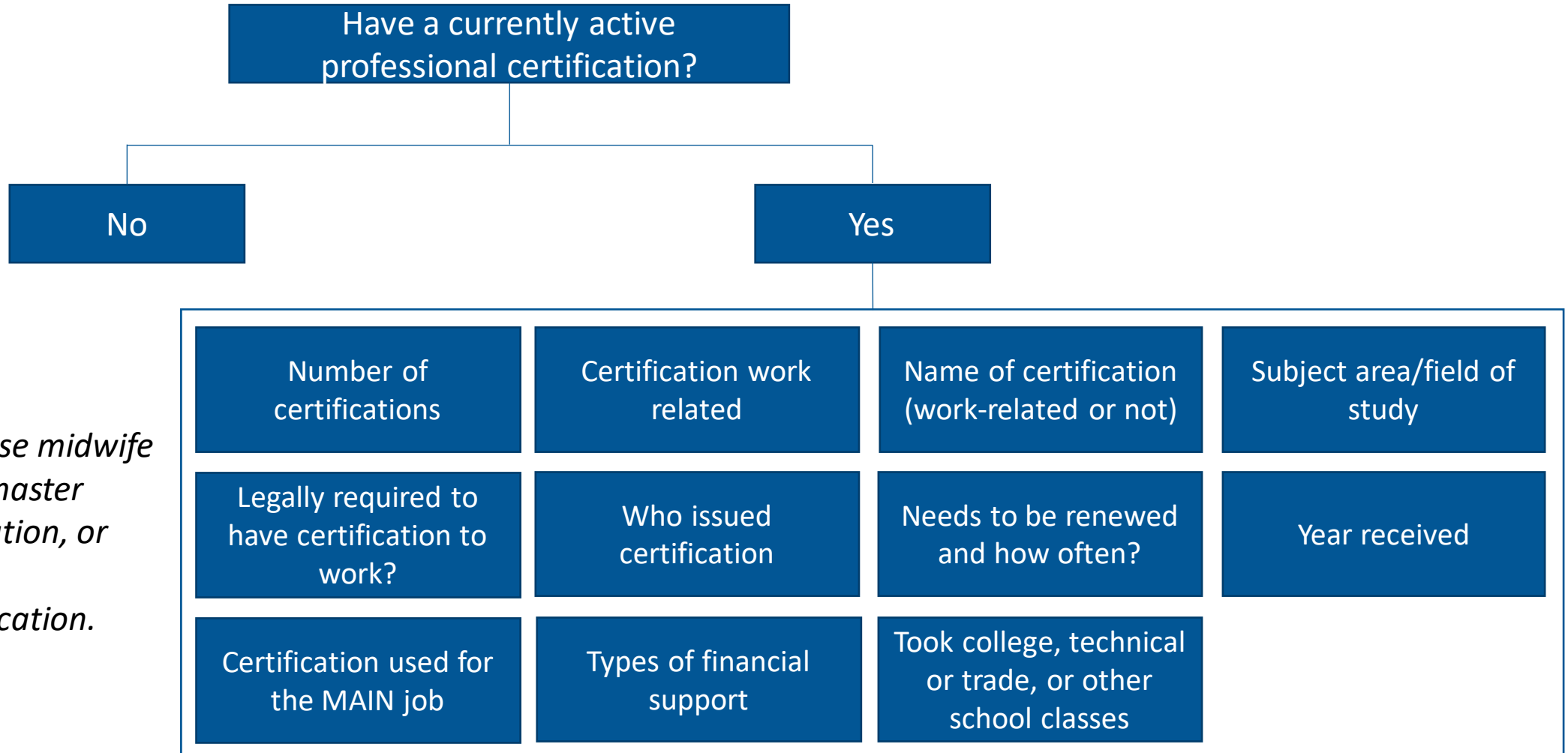
Provide your example in the chat.

Work Credentials: License



For example, teaching license, realtor license, land surveyor license, registered nurse license, certified public accountant license, etc. Do not include vendor's licenses or other licenses to operate a business.

Work Credentials: Certification



For example, a nurse midwife certification, ASE master technician certification, or Cisco Networking Professional certification.

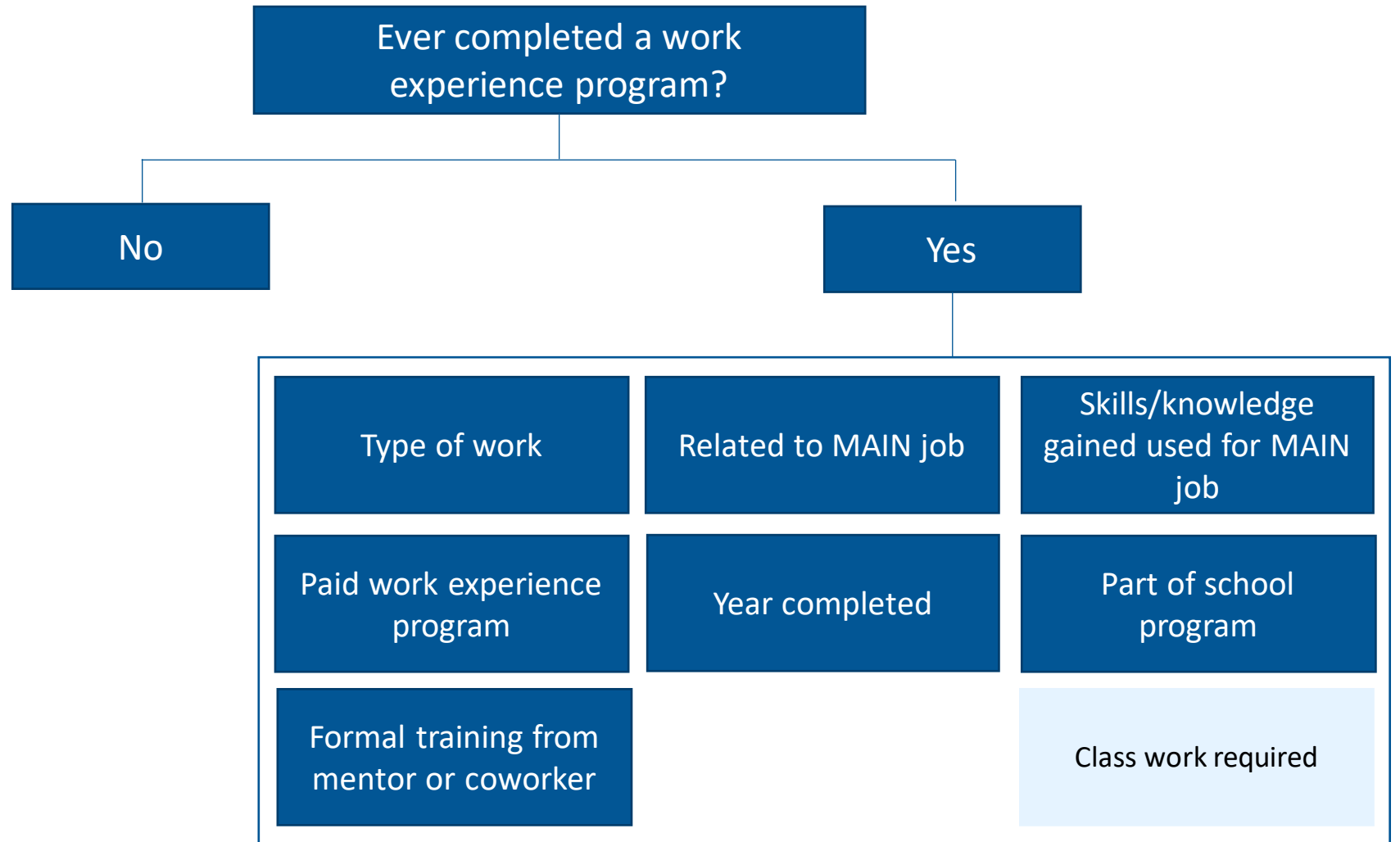
LET'S CHAT: Licenses or Certifications

List one (or two) other areas, topics, or constructs of **licenses or certifications** that should be considered for future cycles of NTEWS.

Number of license/certifications	License/Certification work related	Name of license/certification (work-related or not)	Subject area/field of study
Legally required to have license/certification to work?	Who issued license/certification	Needs to be renewed and how often?	Year received
License/certification used for the MAIN job	Types of financial support	Took college, technical or trade, or other school classes	

Provide your response in the chat.

Work Credentials: Work Experience Programs (WEP)



Work experience program defined as an internship, apprenticeship, clerkship, externship, residency, clinical experience, or similar program.

LET'S CHAT: Work Experience Programs

List one (or two) other areas, topics, or constructs of **work experience programs** that should be considered for future cycles of NTEWS.

Type of work	Related to MAIN job	Skills/knowledge gained used for MAIN job
Paid work experience program	Year completed	Part of school program
Formal training from mentor or coworker		Class work required

Provide your response in the chat.

Education

Educational Level

What is their highest degree or level of education?

For degree earners:

- Year awarded
- Field of study
- Used for current MAIN job

Vocational Certificates

Do they have one?

Where did you earn it?

How long did it take to earn it?

Year awarded

Field of study

Used for current MAIN job

Types of financial support

Enrollment

Are they currently enrolled in school (after high school)?

Attendance status

Enrolled in a degree program

Type of degree

Field of study

LET'S CHAT: Vocational Certificates

List one (or two) other areas, topics, or constructs of **vocational certificates** that should be considered for future cycles of NTEWS.

Provide your example in the chat.

Vocational Certificates

Do they have one?

Where did you earn it?

How long did it take to earn it?

Year awarded

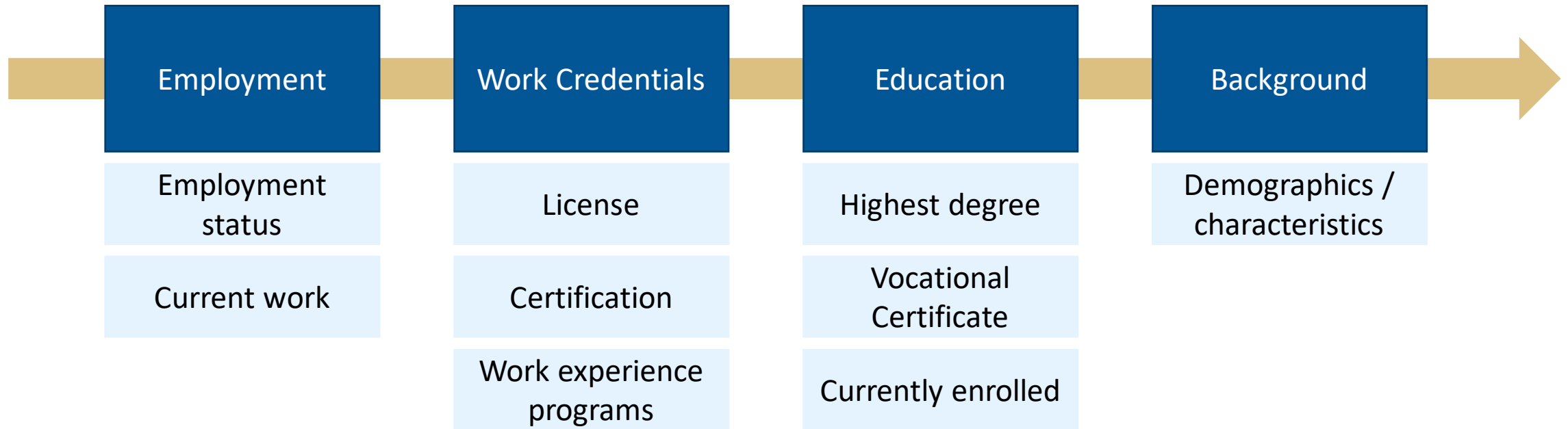
Field of study

Used for current MAIN job

Types of financial support

LET'S CHAT: The NTEWS Data

Now, thinking about the entire survey, what data are you most interested in using for your work and why?



Provide your response in the chat.

2021 NTEWS: Improving Data Quality

2021 NTEWS Design

Target Population

Adults ages 16-75 (inclusive)

Not in high school

Not institutionalized

Rotational Design

Biennial, longitudinal survey

2021 (baseline) \approx 42,000 cases

2023 (full-scale) \approx 120,000 cases

Sampling Frame

American Community Survey

Aims for representation

Educational Attainment

Sex

Underrepresented Minorities

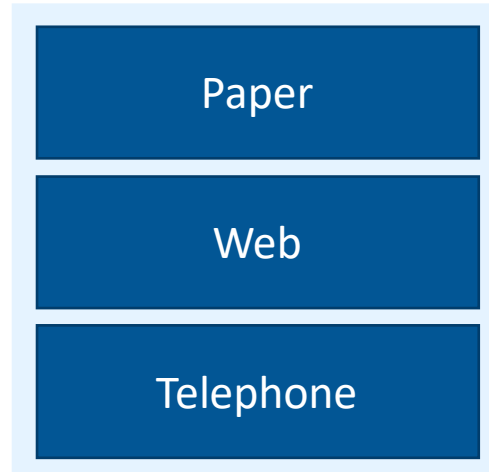
STEM Workforce

2021 NTEWS: Experiments and Approaches

Varying levels of incentives



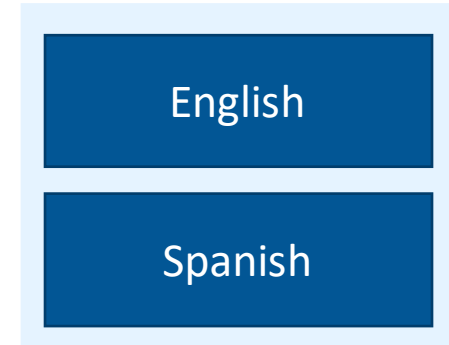
Multiple Modes



Certificate Seeded Sample



Languages



These experiments and approaches will inform data collection methodologies for future cycles

- *Increase response of hard-to-reach sub-groups*
- *Improve measurement of complex concepts*

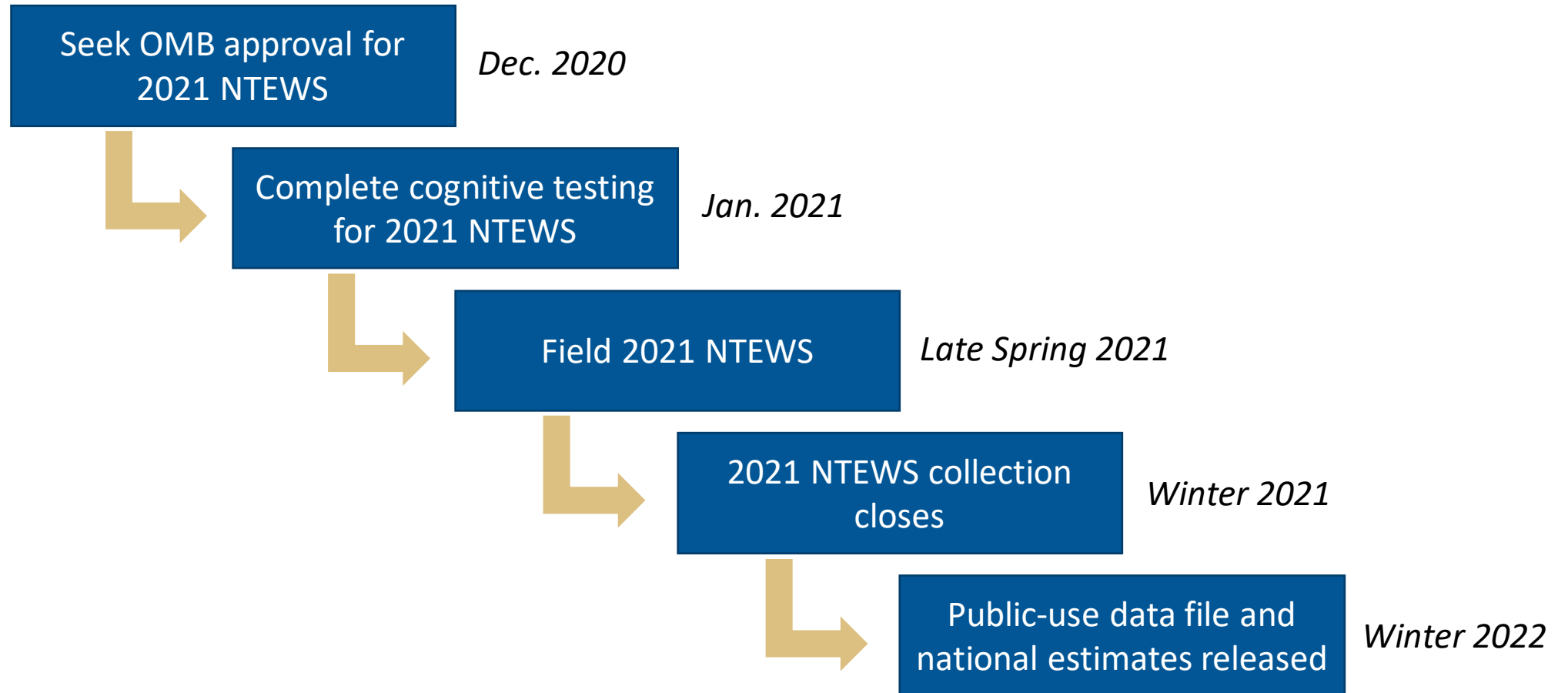
LET'S CHAT: Challenges

When working with survey data, what are other estimation, data collection, or data use challenges that you often encounter?

Provide your response in the chat.

NTEWS Timeline and the future

NTEWS Schedule



Workshop wrap-up and next steps

- STW Initiative workshop #3 quick takeaways
- Next steps
 - Slides and videos from all three workshops will be posted on [NCSES STW website](#)
 - Identification of an action plan
 - Development of future partnerships and collaboration opportunities

Reach out for additional questions or comments

Presenter	Title and Organization	Contact Information
Dr. Nicole Smith	Research Professor and Chief Economist, Georgetown University Center on Education and the Workforce	nicole.smith@georgetown.edu
Dr. Gigi Jones	STW Initiative Chair and NTEWS Project Officer, NSF NCSES	gijones@associates.nsf.gov
John Finamore	STW Initiative Champion and Human Resources Statistics Program Director, NSF NCSES	jfinamor@nsf.gov