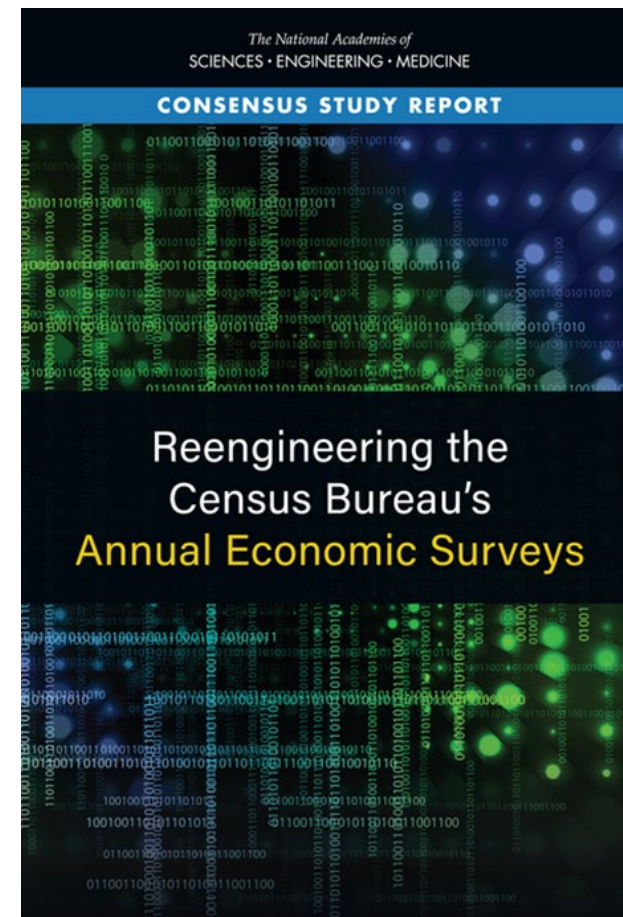


Annual Integrated Economic Survey (AIES)

Federal Economic Statistics Advisory Committee (FESAC)
December 2021

Project Background

- The Census Bureau requested the Committee on National Statistics to review our portfolio of annual economic surveys.
- Economic Directorate leadership assessed the recommendations and determined the scope.
- The end result of this large-scale effort will be a new program called the **Annual Integrated Economic Survey (AIES)**.



Drivers of this Effort



Meet data needs –
timely, granular,
standardized



Declining budgets



Improve efficiency – consistency
across programs (content,
processes, systems)



Declining response rates



Stay relevant

Annual Integrated Economic Survey (AIES)

Current State

- Industry focused
- Overlapping content
- National estimates
- Independent samples
- Different reporting units by program
- Inefficient processes and operations
- Varying classification systems

ACES

M3 UFO

ARTS

Business
Register

AWTS

ASM

SAS

Future State

- Single source of truth for a company
- Continuous two way updates from surveys

Integrated Frame

- Alignment to enterprise programs
- Respondent centric
- Rotating content
- Coordinated collection and instruments
- Harmonized reporting units
- Targeted, coordinated sample
- National and state estimates
- Fully leverage alternative data
- Consistent classification systems
- Blended data products

Annual Integrated
Economic Survey

ACES, ARTS, ASM, AWTS, M3UFO, SAS

2019



2020



2021



2022



2023



2024



Coordinate
collection across
SAS/ARTS/AWTS,
conduct early
sample research



Evaluate existing
content and
provide high level
recommendations



Harmonize Content,
Perform Cognitive
Testing, Create
Frame Prototype and
HL Sample Design

Finalize Content &
Modules, Conduct
Field & Usability
Testing

Develop
Instrument, Finalize
Frame, Draw
Sample

Mail New Annual
Integrated
Economic Survey
(AIES)

Key AIES Improvements

- Holistic Approach
- Coordinated Sample
- One Data Collection and Instrument
- Modular Design
- Sub-national level data for Retail, Wholesale and Services
- Expanded product data (available for Retail, Wholesale, and Services)
- Common Systems and Tools
- Common Release Schedule

Stakeholders

Leadership Support

Executive Sponsors
Econ Associate Director
Econ Assistant Director

Senior Leadership Team
Econ Associate Director
Econ Assistant Director
Econ Division Chiefs
CES Division Chief

Portfolio Management
Governing Board
(PMGB)

Stakeholder Divisions

Economic Applications
Division (EAD)

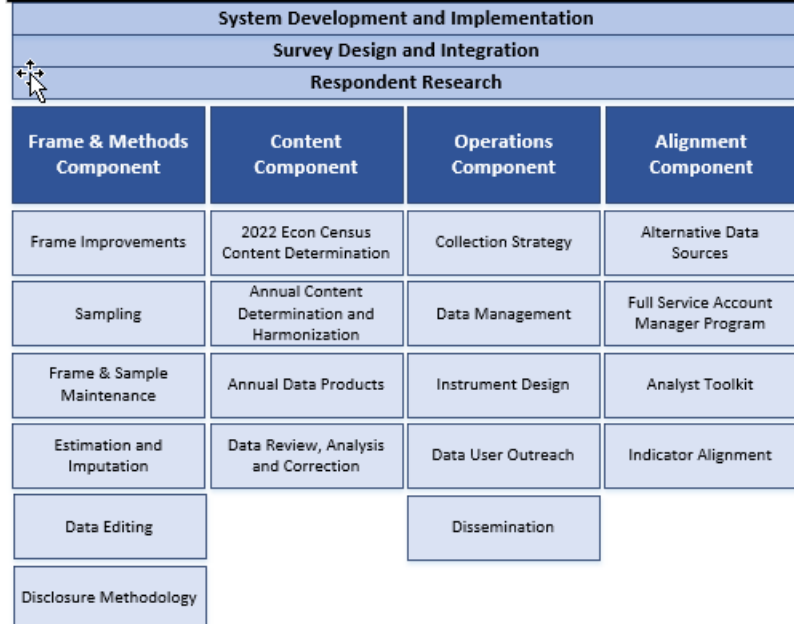
Economic Indicators
Division (EID)

Economic Management
Division (EMD)

Economic Statistical
Methods Division
(ESMD)

Economy-Wide
Statistics Division (EWD)

AIES Internal Stakeholders

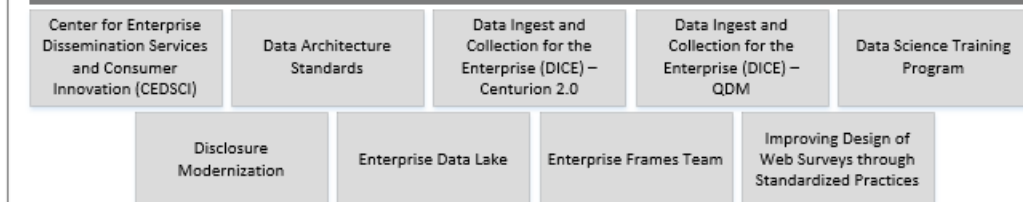


Budget Integration

Economic Directorate
Support Services (EDSS)

CFO Budget Division
(BUD)

Enterprise Collaborators



Forums

Federal Statistical
Research Data Centers
(FSRDC)

Census Scientific
Advisory Committee
(CSAC)

Federal Economic
Statistics Advisory
Committee (FESAC)

National Association of
Business, Economics
and Technology (NABE)

Federal Committee on
Statistical Methodology
(FCSM)

State Data Centers
(SDCs)

American Economic
Association (AEA)

AIES External Stakeholders

Main Agency Collaborators

Federal Reserve Board (FRB)	Bureau of Labor Statistics (BLS)	Bureau Economic Analysis (BEA)	Centers for Medicare & Medicaid Services (CMS)
Industrial Production and Capacity Utilization, Index of Capital Production	Annual productivity series, producer price indexes, annual supply use tables	GDP, input/output accounts, capital stock estimates, GNP weight deflators	National Health Accounts, Health Care Providers Structure of Costs Analysis
National Institute of Standards and Technology (NIST)	Department of Commerce	Office of Management and Budget (OMB)	Congress
Manufacturing extension partnership	Data products use	Chief Statistician of the Federal statistical system	Appropriations and Budget

Strategies

Federal Register Notices	Consultation with Key Federal Data Users	Account Managers Program	Customer Interaction Platform (eCorrespondence)
Consultation with Accounting Experts	External Customer Satisfaction Survey	Consultation, Cognitive Testing, and Other Testing with Selected Businesses	Consultation with Trade and Professional Associations
Promotion and Outreach			

Annual Program Requirements

- **Helped to shape the new integrated annual survey**
- **Evaluated existing requirements for the individual in-scope surveys**
 - Decided which requirements to keep
 - Standardized requirements across trades, where possible
 - Determined necessary modifications
- **Developed new, overarching requirements, as needed**
- **Updated as Sampling Team develops comprehensive sample design**

Annual Program Requirements include:

- **General requirements and working assumptions**
 - Overview of the survey
 - Frequency of collection
 - Coordinated sample
 - In-scope trades/data items/NAICS levels
 - Classification systems
- **Guidelines**
 - Administrative data
 - Government-operated establishments
 - Nonemployer coverage

Annual Program Requirements include (cont):

Industry coverage

- Align across the annual programs
 - Different NAICS levels for national and subnational estimates
- **Geography**
 - National
 - Divisional/Regional
 - State
- **Sampling requirements/reliability constraints (CV)**
 - Core Business Statistics
 - Products (secondary)

Product Release

For AIES we plan to release:

- **Core Business Statistics**, which will include data for common program items at detailed NAICS levels
- **Geographic Area Statistics**, which will include:
 - For Retail, Wholesale and Services, estimates for revenue, payroll and employment for selected states and balance of region at a consistent NAICS level
- **Product Statistics**, which will include:
 - NAPCS broad lines for select trades/industries
- **Miscellaneous Subjects**
 - Industry specific items at the national level at detailed NAICS levels

Current Work

- Continue to negotiate and work through program requirement obstacles
- Identify data items needed for bridge or reconciliation purposes
- Standardize variable names and align with the economic census where possible
- Continue to work with internal and external stakeholders

Future Goals & Milestones

- Determine AIES sample size
 - Balance accuracy and availability of subnational estimates with workload constraints
- Determine feasibility of producing nonemployer estimates for manufacturing and wholesale
- Eliminate the use of non-standard NAICS across all trades and data items
- Identify NAICS publication levels for “select” 5- and 6-digits
- Develop economy-wide data products planned for publication

Content Harmonization

- **Purpose of the content team:** Review existing survey content for the in-scope surveys and harmonize for collection in the integrated annual survey. In order to do this, started by:
 - **Making high-level recommendations on content**
 - Built content repository
 - Assigned topics and sub-topics to all existing content
 - Identified and documented stakeholder needs and uses of annual data
 - **Identifying content for each of the topic-based modules**
 - Standardized and harmonized content
 - Collaborated with framework team
 - Starting point for development and testing

Draft Modules and Topics

- **Module 1**

- Business Classification
- Business Characteristics
 - Operational Status
 - Organizational Change
- High-level Company Totals
- Collection Process

- **Module 2**

- Detailed Revenues
- Products
- Detailed Expenses

- **Module 3**

- Assets
- Liabilities
- Inventories
- Capital Expenditures

- **Module 4**

- All other topics not previously covered

Research To Date

- Conducted a record-keeping study to see how businesses maintain their books and get a better idea of data accessibility
- Carried out a coordinated collection pilot, consolidating contacts and communication within companies in multiple in-scope surveys

Next Steps for Content

- **Test our content**
 - Conduct cognitive testing and a Pilot Survey in 2022
- **Prepare to process the data**
 - Determine program requirements and systematic solutions, leveraging latest technology
- **Align content with other programs**
 - Use sound data management principles to standardize variable names to align across programs, including the Economic Census

Next Steps for Content Time Series Evaluation

We are evaluating on an item-by-item basis any changes to content between AIES and the current programs.

- Plan is to evaluate each item separately to determine impact
- AIES Product Team will compare proposed publication series to historical ones and determine any necessary mitigation strategies
- Once we have a full list of series changes and proposed mitigation strategies together, will begin discussion with internal and external stakeholders

Frame Background

- Build a list of employer business units from the Business Register (BR) for use for AIES sampling research that meet program requirements
- Include content from the BR and the Economic Census needed for the AIES sample and subsequent processing activities
- Review existing methods used to create inputs to the sampling frame:
 - Align where possible to common methodology
 - Understand and document unique constraints
 - Develop list for future research/action
- Establish a production process

Frame Accomplishments & Current Work

- **Completed:**
 - Developed Frame prototype using latest BR data
 - Currently being used for the sampling team for research
- **In Progress**
 - Refinement of frame based on input from sampling team
 - Delivery of updated production frame targeted for November 2022

Sampling Design Requirements (Totals)

National

- Revenue/receipts, Annual Payroll, Inventories, Capital Expenditures...
- Disaggregated industry (NAICS) levels
 - Differs by sector
 - 4-digit NAICS, 5-digit NAICS, 6-digit NAICS

Subnational (Geographic)

- Revenue/receipts, Annual Payroll, 1st Quarter Employment
- Aggregated NAICS levels (3-digit, 4-digit)
 - “Direct use” states (meet target reliability for Annual Payroll)
 - 26 states
 - Allocated within region
 - “Balance” of region category for non-direct use states

Sampling Unit = Company

Option 1: Sample multi-industry company in one industry

- Collect roster data
 - Company lists all industries
 - Company reports for all industries
- Sampling issues:
 - Bias in industry-sampling stratum (overrepresentation)
 - Bias in other industries (underrepresentation)

Option 2: Create more than one artificial sampling unit for each company, with each sampling unit representing expected proportion of activity in industry

- Collect industry-specific data
- Sampling issue:
 - Spurious allocation leads to bias!

Current Decision: Sidestep Both Options

- “Complexity” determines initial certainty status

Company operates in	Number of Sectors	Number of Industries*	Number of States	Status	Sampling Weight
	2 or more	2 or more	(Not considered)	Certainty	1
	1	3 or more	(Not considered)	Certainty	1
	1	2	2+	Certainty	1
	1	2	1	Noncertainty**	> 1
	1	1	2+	Noncertainty	> 1

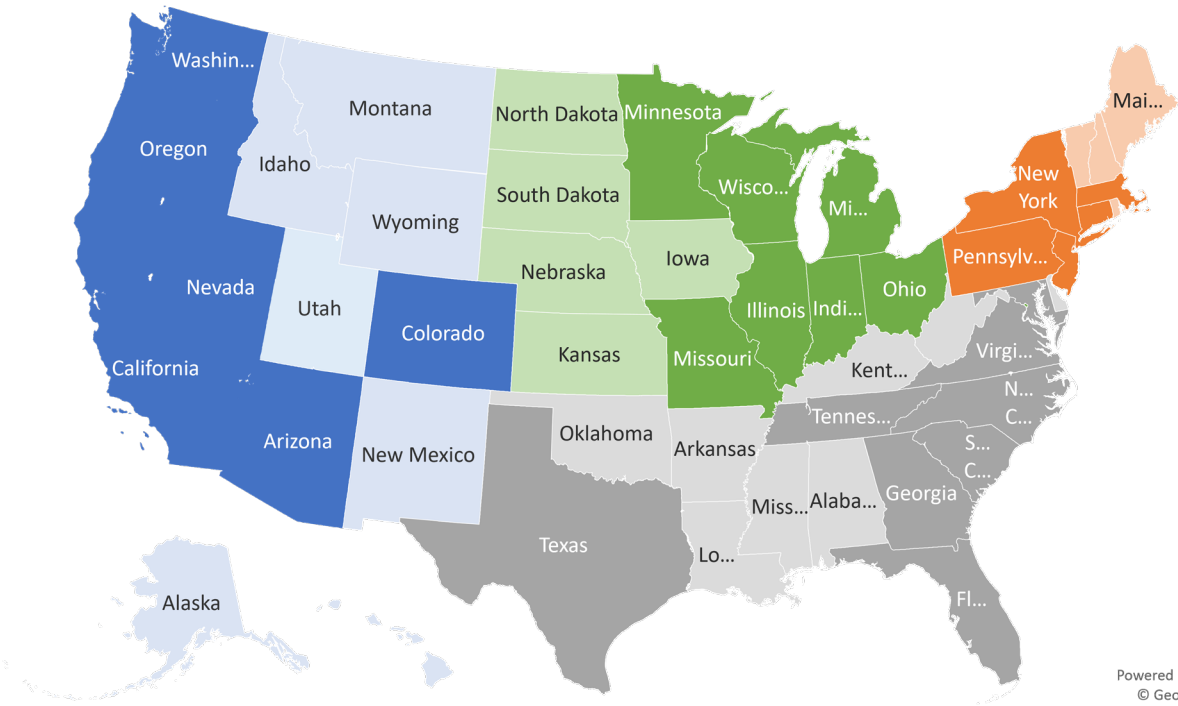
* 4-digit NAICS industry

**Sectors 44, 45, 62

- The designated certainty units are excluded from sampling

Targeted Direct Use States

	Region			
	Northeast	Midwest	South	West
State	Connecticut	Illinois	Florida	Arizona
	Massachusetts	Indiana	Georgia	California
	New York	Michigan	Maryland	Colorado
	New Jersey	Minnesota	North Carolina	Nevada
	Pennsylvania	Missouri	South Carolina	Oregon
		Ohio	Tennessee	Washington
		Wisconsin	Texas	
			Virginia	
Allocated	5	7	8	6
Total	9	12	16	13



Sampling Team Accomplishments

- Developed end-to-end high level skeleton survey design using drafted Annual Program requirements provided
 - Sampling unit is the company
 - Annual Payroll is the measure of size variable
 - Initial stratification criteria
 - Assessed establishment counts by NAICS and state to determine feasibility of producing *publishable* state-level estimates
 - Refinements may be needed depending on strata counts and strata allocations
 - Power allocations
 - Probability proportional to size (PPS) sampling
 - Inclusion probabilities designed for multi-purpose design
- Determined sample selection procedure
 - Stratified sequential sampling (Chromy method)

Sampling Team Current Work

- Winsorization procedure (under development)
 - Prevent overly-large weights
 - Designed to minimize sampling variance
- Develop end-to-end sampling code for research (under development)
 - Propose alternative AIES sample sizes
- Incorporate indicator sampling design
- Determine frequency of sample
- Assess response burden
 - May consider rotation options/time-in-sample constraints

Still to determine...

- Collection Instrument Requirements
- Data Processing and Analysis System/Tools
 - New edits required
 - Imputation methodology to be developed
 - Estimation/weighting (national and subnational estimates)
 - Variance estimation
- Data Disclosure Avoidance
- Detailed Dissemination Plan

Challenges

- Establishing the appropriate collection unit
- Determining which processing system to use since current in-scope surveys process data in different systems
- Conducting the pilot
- Availability of enterprise solutions
- Adequate resources and competing priorities
- Inability to recycle current methodology

Key Tasks/Deliverables

Key Task/Deliverable	Planned Timeframe
Conduct cognitive testing	Oct. 2021 – Mar. 2022
Complete the pilot survey	Jan. – Dec. 2022
Deliver production frame methodology and programs	Sept. 2022
Finalize instrument requirements	Oct. 2022
Obtain the sample	Jul. - Aug. 2023
Perform usability testing	Jul. - Aug. 2023
Receive production-ready instrument	Dec. 2023
Mail the Annual Integrated Economic Survey	Jan.-Mar. 2024
Release new products	2025



THANK YOU

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