2021 Annual Integrated Economic Survey Pilot Phase I Results

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Hi, everyone! I am so excited to be updating you on the findings for the 2021 AIES Pilot to date. There's a lot to cover so let's jump right in.

AIES Pilot Overview

Phased Approach:

> **Phase I: Intensive pretesting**
>> • Goal: Understand response processes and further instrument refining

> **Phase II: New Respondents and non-respondents**
>> • Goal: Induce independent response

> **Phase III: Data handling and final testing**
>> • Goal: Troubleshooting and infrastructure building

Research Modalities:

• Online survey

• Response Analysis Survey (RAS)

• Debriefing interviews

• Contact from the field

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Before I get into our findings, let me take a moment to remind everyone about the goals of the AIES Pilot. Remember that in the summer and fall of 2021, we had identified that while we had engaged in some robust formative research around integrating the in-scope annual surveys into one holistic survey of the company, all of this research had been theoretical to date. What we needed was a mechanism for making the theoretical concrete – a test that induced independent response from the field. We decided that a pilot survey was the best way to start to see how respondents could actually provide responses to the combined survey.

Remember, too, that we split up the pilot survey into three distinct phases. In brief, the three phases represented a slow roll-out of the integrated instrument.

Today, we are talking about the results of Phase I. I know your next question so let me get it out of the way: will there be a phase II and phase III? The answer is that while yes, we will move forward with additional testing, but no, I do not have details on what that will look like just yet, and yes, I will come back to this group before moving forward with a next step.

On the right of the screen are the research modalities that we used for Phase I. This

included not only the online survey with the integrated content, but also a Response Analysis Survey – a short survey of responders focused on perceived and actual burden, the survey structure, and the response processes. Last, but not least, we conducted debriefing interviews. These interviews focused on response processes, challenges, and benefits to the integrated survey instrument. Not in the original plan, but has been an invaluable source of information about the integrated instrument, we also catalogued any and all contact from the field – phone calls and emails – to provide additional information about the response process and how respondents were approaching the integrated instrument. You'll see results from these efforts all through this presentation, so just note that we are looking at a mountain of data.

Pilot Recruitment Overview

Pilot Recruited Companies' Units by Manufacturing Status and Overall

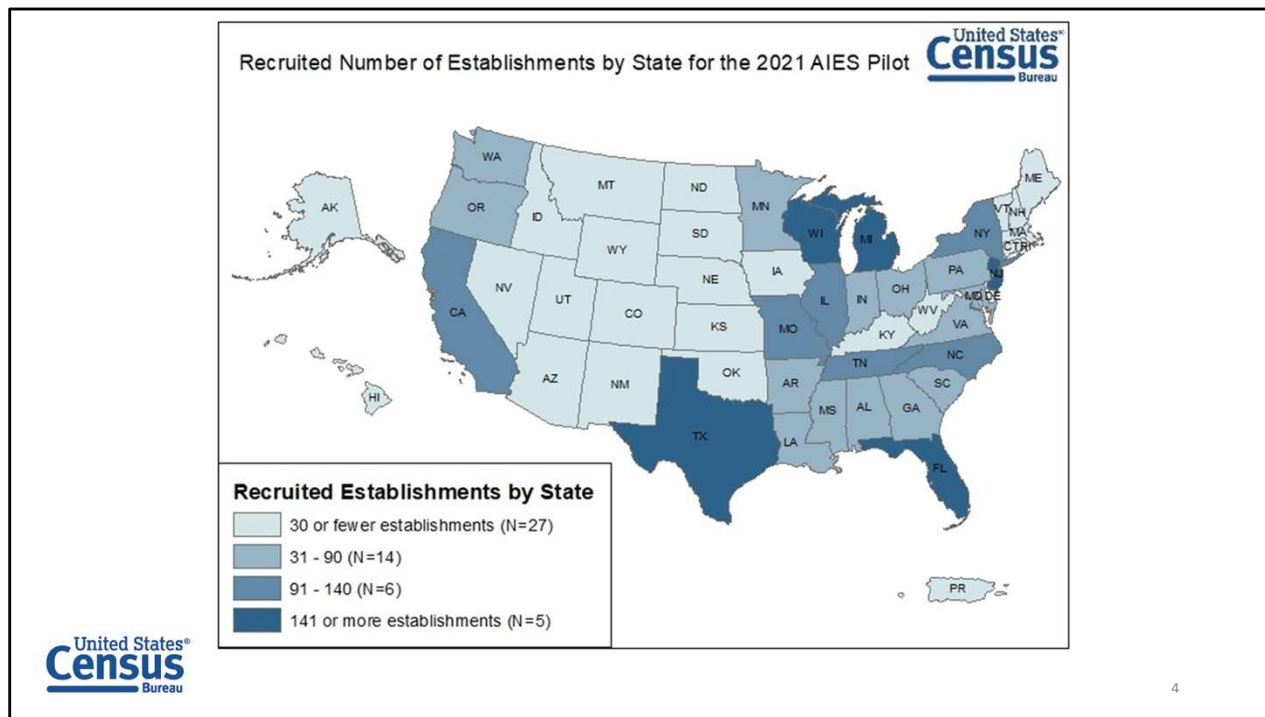|	Manufacturing	Non-Manufacturing	Total
Company	22	56	78
Industry	42	151	193
Establishment	117	2,746	2,863

Pilot Recruited Companies' Units Measures of Central Tendency by Manufacturing Status and Overall

	Manufacturing	Non-Manufacturing	Overall
Establishments			
Mean	5	35	37
Minimum	1	1	2
Maximum	13	374	374
Industries			
Mean	2	4	5
Minimum	1	1	1
Maximum	5	20	17

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First, let's talk about who participated in the pilot. We decided in the design phase of the pilot to focus on "M"- medium – companies. Medium-sized companies fall in between the comparatively simplistic record keeping practices of smaller businesses and the complicated and highly structured record keeping practices of larger businesses, and have historically lower response rates to the Economic Census than their larger and smaller counterparts. We recruited only from companies that were in multiple in-scope annual surveys, and reported prior to June in survey year 2020. We excluded from recruitment M companies in "take all" industries, those with mailing addresses outside of the United States, those tied to indicator surveys, and those missing email addresses. We set a minimum of 2 establishments and a maximum of 300 establishments, though two recruited companies had more than 300 establishments. Our colleagues in EWD carefully selected 300 companies meeting these requirements, and from there, we recruited 78 to participate in Phase I of the pilot.

This included 22 companies with at least one establishment classified as a six digit NAICS found in the manufacturing sector. We will call these companies "manufacturing companies" for this presentation. At the same time, 56 companies had establishments with six digit NAICS exclusively outside of the manufacturing sector. Note that all

manufacturing companies also had at least one establishment with a six digit NAICS outside of the manufacturing sector. These 78 companies represented a total of 193 unique industries - six digit NAICS – and 2,863 establishments. On average, recruited companies had 37 establishments and 5 industries.

Recruited Number of Establishments by State for the 2021 AIES Pilot

Recruited Establishments by State

- 30 or fewer establishments (N=27)
- 31 - 90 (N=14)
- 91 - 140 (N=6)
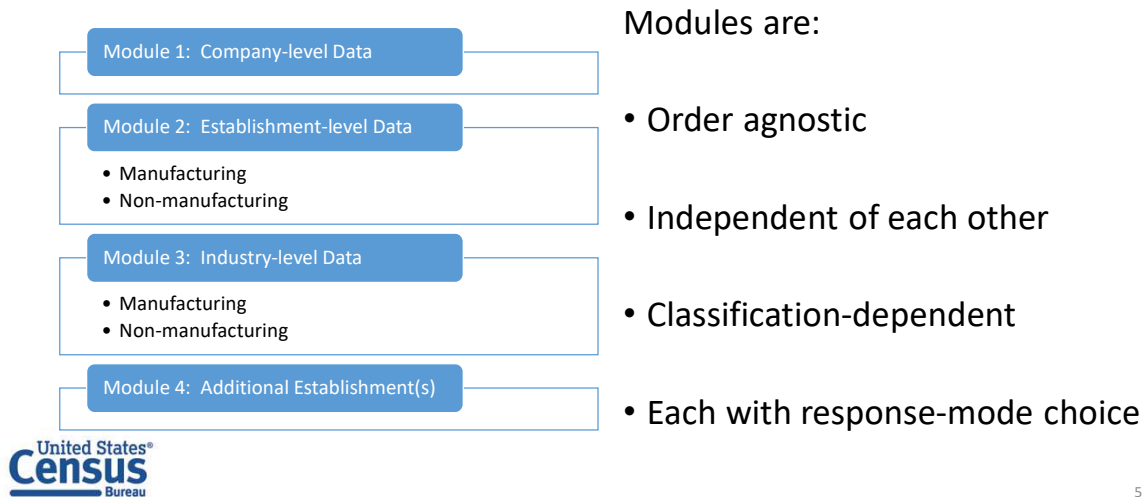- 141 or more establishments (N=5)

This is a representation of the distribution of establishments from recruited companies for the pilot – we reached pretty far and wide!

I want to pause here and talk about piloting. You will find yourself throughout this presentation thinking to yourself: but, Melissa, there are so few cases. How does talking to this number of companies give us insight into anything useful. I want to remind you that the point of this kind of research is offer representation, not to be representative. Let me be the first to clearly state: the diversity in size, complexity, and sophistication of the cases in this pilot give strong representation to the "M" companies that we encounter in our typical survey interactions. We have not included small businesses; we have not included the very large businesses. We made design decisions at the start of this pilot with the intention of understanding the nuances of survey response through as many lenses as possible – representation, not representative. That any of these data are being consider in lieu of their current annual survey response is a testimony to the incredible resourcefulness of our data collection and processing teams, and not a reflection of the intention of this research.

With that important methodological caveat in place, let's keep going…

AIES Pilot Survey Structure

Module 1: Company-level Data

Module 2: Establishment-level Data
- Manufacturing
- Non-manufacturing

Module 3: Industry-level Data
- Manufacturing
- Non-manufacturing

Module 4: Additional Establishment(s)

Modules are:

- Order agnostic

- Independent of each other

- Classification-dependent

- Each with response-mode choice

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Before I can talk about responding companies, let me first lay out for you the survey structure.

Module 1 asks for data at the company level. This includes many of the company-level questions on the Report of Organization.

Module 2 asks for data at the establishment (or location) level. For those establishments that are classified within a six digit NAICS within the manufacturing sector, there were many more questions at the establishment level than those establishments not classified as manufacturing. This is because we produce more comprehensive geographic data for manufacturing establishments than we plan to produce for the other trades. Because of this, module 2 is split into two subsections – manufacturing and non-manufacturing.

Module 3 asks for data at the industry or kind of activity level, which corresponds to the six digit NAICS codes that establishments have been classified. In this case, those companies that have establishments classified as non-manufacturing have more questions at the industry level than those classified as manufacturing. As such, module 3 is also split into manufacturing and non-manufacturing. Manufacturing companies

were asked about their capital expenditures at the industry level, but no other data were collected at this level for manufacturing industries; collecting capex at the industry level for manufacturing companies was an experiment, and we will not be reviewing the results of that specific experiment during our time together today.

Finally, Module 4 allowed respondents to add any establishments not already pre-listed for their company. Additional information about the added establishments – including payroll, revenue, and others – was collected in Module 4 at the establishment level.

A few caveats to keep in mind about this structure:
The order of module completion is agnostic – that is to say, respondents could choose to answer modules out of order. They are also independent of each other – data entered in Module 1 are not available in Module 2 or 3, and vice-versa. At the same time, the instrument was programmed so that respondents were only presented with modules that applied to their company based on the classification of their establishments. That is, those companies that have establishments classified as manufacturing would be given access to Modules 2 and 3 for manufacturing response; those without manufacturing establishments are not even shown the option of responding to the manufacturing sections of Modules 2 and 3.

Finally, respondents were given the choice of responding by spreadsheet or responding by page-by-page view at the start of each Module.

Survey Modules:

The table below outlines the four modules within this survey. Use the links to access the different parts of the survey. You can consider your response complete once you submit data for every section.

	PDF Preview of Questions	Access the Survey (Begin/Resume)	Share the Survey Module
Module 1: Company Overview	Module 1 Company Overview Preview	Report Now	Share Module 1
Module 2: Establishment-based Questions	Module 2 Manufacturing Establishments Preview	Report Now for Manufacturing Establishments	Share Module 2 - Manufacturing
	Module 2 Non-Manufacturing Establishments Preview	Report Now for Non-Manufacturing Establishments	Share Module 2 - Non-Manufacturing
Module 3: Industry-based Questions	Module 3 Manufacturing Preview	Report Now for Manufacturing Industries	Share Module 3 - Manufacturing
	Module 3 Non-Manufacturing Preview	Report Now for Non-Manufacturing Industries	Share Module 3 - Non-Manufacturing
Module 4: Additional Establishments	List of Establishments / Module 4 Preview	Add Missing Establishment(s)	Share Module 4 - Additional Establishments

Annual Integrated Economic Survey
2021 Pilot
Module 1: Company Overview

Reporting Method Options

- **Spreadsheet Reporting:** This method is recommended for companies with five or more locations. To begin this method, access the Spreadsheet Template below. For more information on reporting by spreadsheet, click here.

  📊 Spreadsheet Template

- **Online Survey Reporting:** This method is recommended for companies with four or fewer locations.

Preview Survey Questions
📄 Module 1 Questions
*Data within this module will be collected at the company level.

How will you be completing Module 1 of the 2021 Annual Integrated Economic Survey?

○ Spreadsheet Reporting

○ Online Survey Reporting

→

Note: Screenshots represent fictional company.

On screen now are screenshots from the pilot instrument. On the left of the screen is the survey dashboard. The fictional company represented here had establishments classified within a six-digit manufacturing NAICS code, and so, both the manufacturing and non-manufacturing sections of Modules 2 and 3 are available on screen. You can see from this dashboard that respondents can access a survey preview for that module, respond to the module, and to share the module with someone else in their company if they choose.

On the right side of the screen is the first screen of Module 1 for this same fictional company. In this case, the respondent clicked on "Report Now" for Module 1, and this is the first screen that populates. Here, the respondent is instructed to select to respond by online survey – page-by-page – or by spreadsheet. This page was at the start of each module.

Remember that we conducted the pilot using Qualtrics, not the typical online survey platform we use for production instruments. While we worked closely with Qualtrics engineers to replicate what we could of the production environment, ultimately there are important instrument programming limitations that I want to highlight before getting into results. Many of these issues become moot in production but they influence the results of the pilot in important ways.

First, all respondents were given access to Module 4 to list out and answer questions about establishments that were not already pre-listed. We had no way of knowing beforehand what establishments might be missing, if any, and so, we have no way of knowing if we have captured all additional establishments for the pilot. We did, however, have a few companies submit Module 4 blank as a way of indicating that they had no new establishments.

Next, because each part of the pilot was independent of the others, respondents had no overarching way of indicating full submission. In fact, we heard from respondents throughout the field period, inquiring if they had met submission requirements or letting us know that they believed that they had completed the survey.

We also saw a particular issue with duplicate responses. This was particularly prevalent for the establishment-level collection – the best way that we could program the establishment-level questions was to have all establishments for a company listed in a drop-down box that respondents could select from. However, once a respondent submitted data for that establishment, it was not removed from the dropdown box. There was no indication on the respondent side that they had met the reporting obligation for that establishment, and so we ended up with some duplicate response.

This all ties into a larger limitation – edit checks. In our typical surveys, we embed checks throughout the survey where items must sum, where response is required, and others. The Qualtrics instrument had no such edit checks within the modules or between the modules. At the same time, we also often place limitations on the length and character type of response – again, the Qualtrics instrument had very limited content checks built in, as well. This lack of within instrument quality control did impact how clean the resultant data are; this is an important consideration when considering the quality of the pilot data – we simply did not have the same kinds of guardrails we usually have in place for our online instruments.

Pilot Response Completion Variables

Module 1: Company-level Data	Module 2: Establishment-level Data	Module 3: Industry-level Data*
• Total employees • Annual payroll • Q1 payroll • Total revenue	• Total employees • Annual payroll • Q1 payroll • Total revenue	• Annual payroll • Total revenue • Total operating expenses

*Non-manufacturing industries only

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So far, I've laid out characteristics of recruited companies and the pilot survey structure. One key indicator of pilot performance is response rate, but calculating a response rate for this pilot is more complicated than most. Because each module was completed independently, companies could submit partial data at the company, establishment, and/or industry level, for both manufacturing and non-manufacturing establishments and industries. This creates a conundrum: how complete do data need to be in order to count as a completed survey?

To understand response patterns, we moved away from a dichotomous understand of complete – that is, complete or not complete – toward a proportion complete – that is, how much data did the respondent submit? We looked across the modules and matched content wherever possible to measure completeness. So, for example, annual payroll and total revenue are asked across all three modules.

If we think of the proportion complete, then, we can take the number of response completion variables times the number of units for the module to come up with the denominator for that company. Then, the total number of non-zero responses for those key variables becomes the numerator.

	Total employees	Annual payroll	Q1 payroll	Total revenue
Manufacturing Plant 1001: Cat food	✔	✔	✔	✔
Manufacturing Plant 1002: Cat food	✔	✔	✔	✔
Manufacturing Plant 1003: Cat litter	✔	✔	✔	✔
Wholesale Facility 1004: Cat food wholesaler	✔	✔	✘	✔
Wholesale Facility 1005: Pet supply wholesaler	✔	✔	✘	✔
Retail Store 1006: Pet supply store	✔	✔	✘	✔
Retail Store 1007: Pet supply store	✔	✔	✘	✔
Retail Store 1008: Pet supply store	✔	✔	✘	✔
Retail Store 1009: Pet supply store	✔	✔	✘	✔
Retail Store 1010: Pet supply store	✔	✔	✘	✔
Service Location 1011: Pet grooming services	✘	✘	✘	✘
Service Location 1012: Animal shelter services	✔	✔	✘	✘

CCC Module 2 Proportion Complete Rate

- Manufacturing: 12/12, 100%

- Non-manufacturing: 23/36, 64%

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Census Cat Company

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You know we couldn't go too far without bringing in my favorite fictional company, the Census Cat Company. Let's use this company as an example of pilot completion consideration.

On screen now, you can see the 12 establishments for the CCC. Note that the first three are manufacturing and the remaining 9 are non-manufacturing. To calculate the proportion complete for module 2, we take the number of key variables – 4, listed across the columns – and multiply by the number of units to get the denominator. Then, we count the number of non-zero responses for the numerator, and divide.

In this case, the CCC provided non-zero responses to 12 of the 12 key items for module 2 manufacturing establishments. That is 100 percent complete.

For module 2 non-manufacturing, though, the CC provided 23 of the total 36 key items. Note that there is unit non-response – no data are provided for service location 1011, the pet grooming location – and item non-response – no data are provided for Q1 payroll across the non-manufacturing locations.

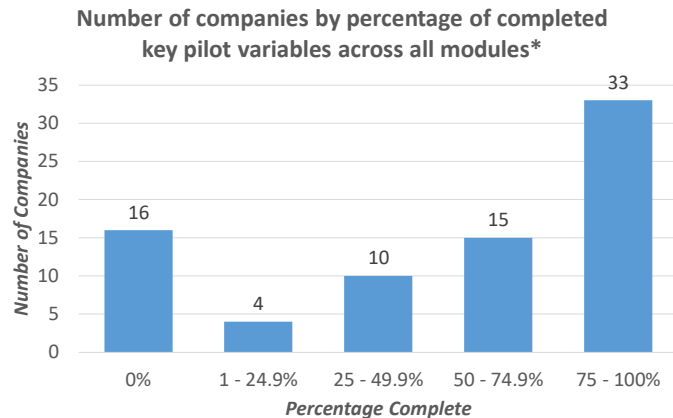## Percentage of Completed Key Pilot Variables by Module
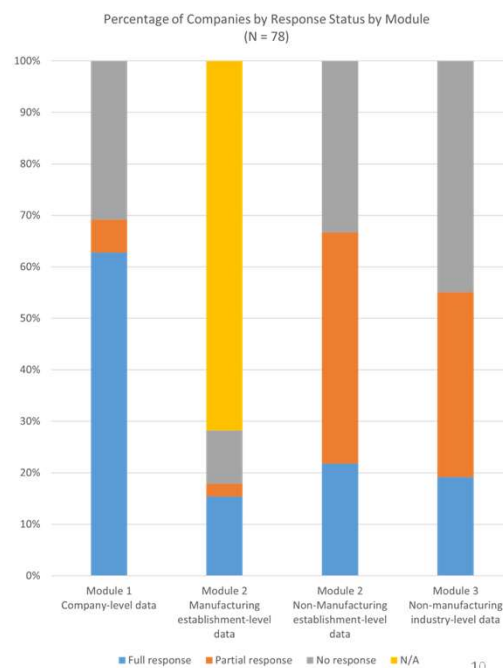
Considering this approach of percentage complete, we start to see a picture of response status for pilot companies. Fully 49 of the 78 companies in the pilot answered all of the key items in Module 1. This represents 62.8 percent of recruited companies. Looking across the modules, 12 of 22 companies provided all key items for Module 2 manufacturing – 15 percent of all companies, but 54.5 percent of manufacturing companies. And 17 of 78 provided all key items for Module 2 non-manufacturing – 21.8 percent. Finally 15 of 78 companies provided 100 percent of key items for Module 3 non-manufacturing – 19.2 percent.

Note that during the field period, six companies revoked consent or otherwise refused participation in the pilot. These companies are included in the figures on screen so that we can track response patterns for the totality of recruited companies.

Percentage of Completed Key Pilot Variables Across All Modules

Percentage of Completed Key Pilot Variables Across all Modules*		
Percentage complete	Number of Companies	Percentage of Companies
0	16	20.5%
1 – 24.9	4	5.1
25 – 49.9	10	12.8
50 – 74.9	15	19.2
75 – 99.9	28	35.9
100	5	6.4
Total	78	100

*Note: Includes refusals

Number of companies by percentage of completed key pilot variables across all modules*

I understand that looking at response rates by module can be…unsatisfying for some. We are used to a single response rate as a measure of "how well we did." If we went by our typical metrics, we would say that 5 of 78 companies – 6.4 percent – responded to the survey in full.

If, however, we shift our view to a proportion complete – we see that 33 of 78 companies – 42.3% of all recruited companies – provided data across at least 75 percent of our key items. In fact, we end up with a bimodal distribution – 16 companies gave us nothing, 33 companies gave us at least three-quarters of what we asked.

Pilot Research Questions

- How are respondents completing the survey?
- Can respondents provide answers to the questions on the integrated survey?
- Does the order and structure of the integrated survey make sense?
- Is the survey burdensome?
- Is the integrated survey using appropriate units of analysis?
- What do the resultant data look like?

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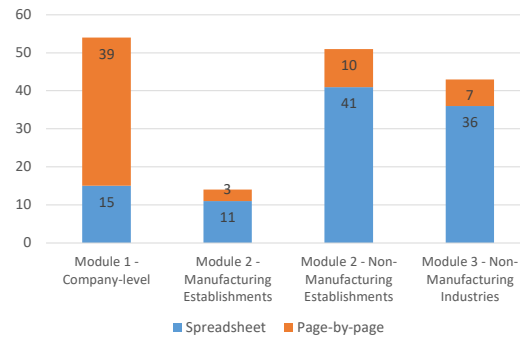Ok – we know what we did and we know what response looked like. Let's get into what the 'findings' are!

On screen now are the research questions we outlined at the very start of the pilot. Some deal with understanding response-processes to the integrated instrument. Some pertain more to what the data might look like. Let's take each one in turn and see where we stand!

How are respondents completing the survey?

- Using survey preview materials

- 11 of 15 RAS companies indicated requiring assistance to complete pilot survey

- Order:
  - Started with Module 1
  - Modules 2 and 3 not linear

Number of companies reporting any data by survey module by mode of completion

Module	Spreadsheet	Page-by-page
Module 1 - Company-level	15	39
Module 2 - Manufacturing Establishments	11	3
Module 2 - Non-Manufacturing Establishments	41	10
Module 3 - Non-Manufacturing Industries	36	7

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How are respondents completing the survey?

Based on our debriefing interviews, respondents are using a response process that is similar to the current annual surveys. For example, many respondents mentioned "clicking through" or "checking out" what the survey is asking before beginning to gather the information or entering anything into the online survey or the spreadsheet. This is typical response behavior.

Some talked about parsing out the survey to others on staff to help complete it, either because they didn't have access to the necessary data or because they didn't have time to complete the survey by themselves. At the same time, asked on the Response Analysis Survey, 11 out of 15 respondents indicated that they required assistance from other people or departments to collect relevant information or complete answers to questions in any of the AIES questionnaire modules, and of those, 8 of 11 said that it took three or more people to complete the pilot survey.

When asked about the order in which the modules were completed, respondents noted that they often started with module 1, and could complete it in a single-sitting. But, Modules 2 and 3 took more than one person to pull all of the data, or there were

calculations and data manipulations that needed to happen in order to respond to the survey. Because of this, those two modules were not answered in a linear fashion – beginning at question 1 and moving through to the last question – but more were completed on a flow basis as the data were available or prepared. This bears out in the pilot response data, too. Note that 69.2 percent of recruited companies provided at least some data in Module 1, the highest of any of the modules.

Remember earlier when I showed you how respondents were given the explicit choice of uploading a spreadsheet to respond to the survey or using page-by-page? What we see in the response data is that respondents chose their mode based on the unit of analysis. Note that a larger proportion of companies chose to respond using a page-by-page online survey for Module 1, where the unit of analysis is the company. However, that flips when we change the unit to establishment and industry, where most chose to respond by spreadsheet. Others talked about depending on their own tools to respond to our surveys, including their own spreadsheets, custom reports, and even printing out previews and writing out notes.

So, let's answer the question: how are respondents completing the AIES pilot?
Number one: they are reporting similar response processes as the current annual surveys and other surveys we currently run.
Number two: Company level data were reported by more companies in general and were reported more completely than at the establishment and industry levels.
Number three: Respondents used the page-by-page method at the company level most often, and the uploadable spreadsheet method at the establishment and industry levels, most often.

Can respondents provide answers to the questions on the integrated survey?

Which of the following, if any, were challenges to completing the AIES questionnaire modules? Number selecting each*	
Had to add, allocate, or otherwise manipulate data to fit questions	15
Had to collect information from more than one database or other source	10
Had to wait to rely on others within my company for the requested data	7
Too many questions	4
Unclear or inadequately defined terms or the online survey was too difficult to use	4
Some other challenge	3
Questions were too complicated	0
I had no challenges completing the AIES questionnaire	0
*Totals more than 15 because respondents could select all that applied.	

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Let's turn our attention to the next research question: can respondents provide answers to questions on the integrated survey?

We can start to shed light on this question by looking at the Response Analysis Survey again. We asked respondents what challenges they faced when completing the AIES pilot. It seems that the most mentioned of the challenges to response are related to the content – manipulating company data to fit our questions and collecting the data from across internal systems and from others within the company.

Can respondents provide answers to the questions on the integrated survey?

- Ambiguous Wording

- Duplication of content

- Duplication of pre-listed information

- Classification

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In debriefing interviews and feedback from the field, respondents 'bubbled up' issues with some of the content on the survey. Some mentioned ambiguous question wording or unclear instructions. I'm not going to dwell on this because I know that there is currently cognitive testing occurring on some of the items on the harmonized instrument, and that's outside the scope of the pilot.

One issue that respondents mentioned time and again was the duplication of content within the survey. They noticed that some questions were asked the company, establishment, and industry level, and because of the way that the pilot was structured, these responses did not relate to each other. They voiced frustration for having to provide the same information in more than one place. We knew that there would be duplication, but we did not consider the frustration and burden that this duplication added to completing the survey.

Beyond the content, though, there are two important structural elements to consider as hindering or helping response. The first is the establishment listings – several respondents mentioned that establishments were duplicated, outdated, or otherwise not reflecting the current state of the company. This suggests that respondents may need additional flexibilities in updating or de-duplicating their establishment listings. At

the same time, we also got feedback from the field about how establishments are classified. For many pilot participants, this is the first time that we have asked for data from all aspects of their company at one time. Some were simply unaware of the misclassification because we never asked – for example, one company had been consistently in sample for ASM, but had not been in sample for AWTS.   Seeing the wholesale companies and corresponding questions listed on the screen, the respondent requested to change the wholesale locations to manufacturing – where they believe they should have been all along but about which she had never been asked.

The other side of the coin exists too! One respondent who has only seen his company represented by industry in SAS wrote in to say that three locations were assigned to industries that he thought were not a good fit, and that "this has probably happened a bunch of times but I've never seen it laid out like this so I did not notice." Seeing the whole picture of the company – with all establishments and corresponding industry classifications – may lead some respondents to want to change how their establishments are classified. I'm not necessarily advocating self-classification, but I am bringing to attention that these requests for changes may be particularly salient because respondents are for the first time being presented with a holistic view of the company representing all of the classifications that we have assigned in one place.

Can respondents provide answers to the questions on the integrated survey?

4. Content retention based on industry criteria, and adding NAPCS, will continue to be an issue.

5. Survey structure and capabilities need to be flexible to meet respondent needs.

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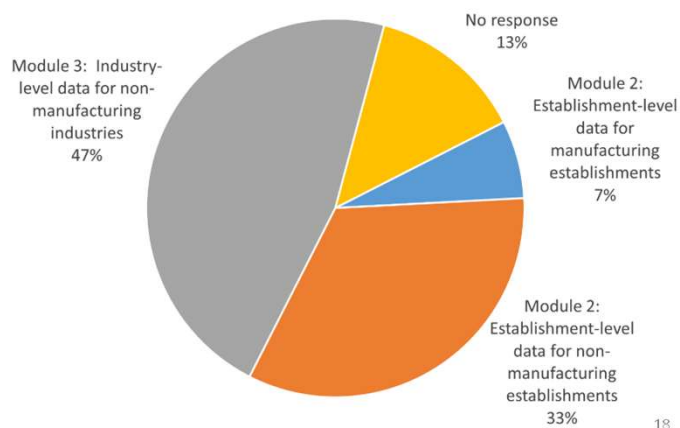Ok, so can respondents provide answers to the integrated questions on the survey?

Well, the pilot demonstrated that respondents are struggling with answering our questions – in some ways that we already know about, like scope and detail, data being dispersed throughout the company, and others – and in other ways unique to AIES – like duplication of content over the multiple collection units. We will need to continue to revisit and refine content as we move closer to production.

The pilot also demonstrated that establishment listing and classification matters more than ever in this integrated survey paradigm, and that we have to continue to push for increased flexibility in structure and capabilities of our online surveys.

Does the order and structure of the integrated survey make sense?

Overall, which of the following AIES questionnaire modules was *most* challenging to complete?

How easy or difficult was completing the AIES questionnaire modules?		
	N	**Percentage**
Very easy or easy	9	69.2
Difficult	4	30.8

Module 3: Industry-level data for non-manufacturing industries 47%

No response 13%

Module 2: Establishment-level data for manufacturing establishments 7%

Module 2: Establishment-level data for non-manufacturing establishments 33%

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Our next research question: Does the order and structure of the integrated survey make sense?

On the Response Analysis Survey, we asked how easy or difficult it was to complete the questionnaire modules. Most respondents said it was "easy" or "very easy" – but this needs to be taken with a grain of salt. All of the RAS respondents completed the pilot either partially or completely.

What may be more telling, then, is responses to the question of overall, which AIES module was the most challenging to complete. Note that none of the respondents said that Module 1 – the company-level – was the most challenging, suggesting again that these data are the most accessible available. Half of RAS respondents said that Module 3 – Industry-level data for non-manufacturing industries - was the most difficult.

We then followed up with an open-ended question, "what made this the most challenging module to complete?" For Module 2, respondents mentioned gaining access to specific data (for example, "getting the payroll info") and generally collecting data for a large number of establishments. For Module 3, however, the challenge lies in the requested data. Responded one, module 3 is challenging because it entails "adding

up multiple accounts [and] object codes to fit the questions." This was echoed by another respondent, noting that module 3 is challenging because there are "so many specific questions and so many things from the general ledger [that] needed [to be] added together to answer the questions, so it took a ton of time."

Does the order and structure of the integrated survey make sense?

- Topic-based approach

- More directed submission process

- Spreadsheets:

"Once I figured out it was there, I loved having the spreadsheet. A challenge is that manufacturing is broken out from the other stuff. [If it was all together] I could consolidate back to my consolidated financials and then that way I know you have all of the pieces. To be frank: I think you got all the pieces now, but I don't know if you got all the pieces right now. I did my best to try to make sure all of it was there. I was pulling from so many sources of data, that it is very, very difficult."
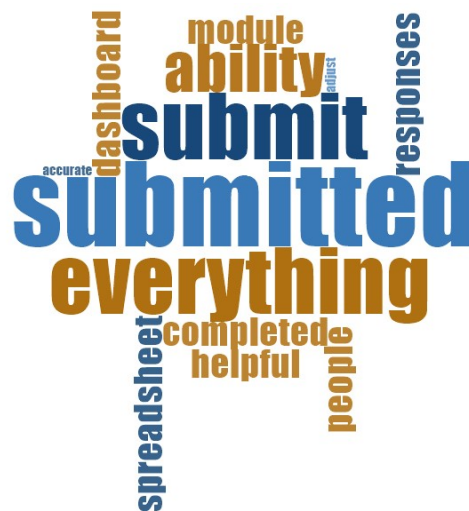
We learned a wealth of information about the order and structure of the integrated survey from debriefing interviews, too. While we ultimately favored a unit-based collection approach – modules are driven by the unit of response – we asked respondents what role does topic play in helping them to complete the survey? Respondents mentioned wanting more organization around a topical approach, either integrated into the survey – as in, ask me all of my payroll questions at one time, I'm getting the data from the same place – or in supplemental materials –as in, provide me a listing of the questions by topic and at what level you'll be asking them, and just let me know that this may not be the order that I see them in on the survey.

We also heard from respondents that they wanted a more direct means of letting us know where they were in the response process, and specifically around submitting their data. On your screen is a word cloud generated from the interviews and respondent contact that mentioned submission of data. Respondents most mentioned wanting to know if they had completed everything and if they could edit submitted data. Some of this is an artifact of the way that the survey was programmed – there were no clear indications that a respondent was "done" – but it's also reflective of the size and scope of the integrated survey.

Finally, we heard some specific feedback on the spreadsheets. Many of those who responded-by-spreadsheet mentioned how convenient it was to organize their data. However, one consistent finding with the spreadsheets is that by splitting them into manufacturing and non-manufacturing components, we have added a layer of complexity to the response process. On screen is a quote from a respondent who mentioned: "Once I figured out it was there, I loved having the spreadsheet. A challenge is that manufacturing is broken out from the other stuff. [If it was all together] I could consolidate back to my consolidated financials and then that way I know that you have all of the pieces." Said another, who only had non-manufacturing establishments, "Having all the pieces within that one Excel spreadsheet may have shaved off two to four hours - because everything is one place."

Does the order and structure of the integrated survey make sense?

6. Company-level data are most accessible and easiest to report. Industry-level data are most challenging to report.

7. Respondents want content organized by topic, and a direct and clear submission process.

8. Respondents like respond-by-spreadsheet, but it must take a holistic approach to the company.

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So, does the order and structure of the integrated survey make sense?

Well – we know that company-level data are most accessible and easiest to report, and industry-level data are the most challenging to report. We also know that topic must play a part in either instrument design or supplemental materials or both, and that respondents want to be able to clearly identify where they are in the response process.

Finally, we know that while some respondents liked respond-by-spreadsheet, we have to design the spreadsheet to be more reflective of the company as a whole.

Is the integrated survey burdensome?

Approximately how long did it take to complete the AIES questionnaire modules for this company, including time spent reviewing instructions and gathering the necessary data? N = 15	
Mean	970.4 minutes (≈16 hours)
Low	180 minutes (3 hours)
High	2,385 minutes (≈40 hours)

Number of Companies by Cumulative Total Number of Minutes to Complete Module 1, Overall and by Mode of Completion
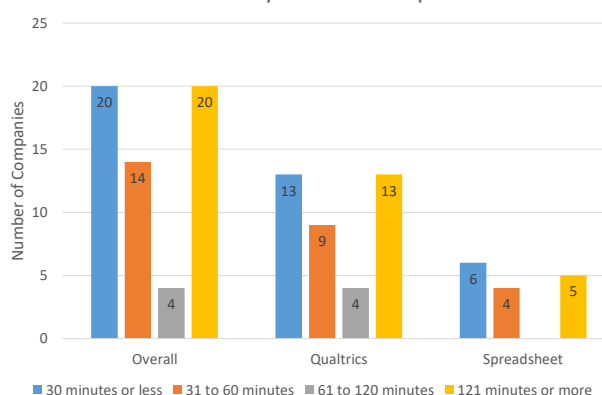
Alright, on to the perennial question of burden. Is the integrated survey overly burdensome?
Remember that we can break burden into two phenomenon: real and perceived burden. Generally, real burden is the amount of time and resources that a company must commit to completing a survey, and perceived burden is a respondents perception of how cumbersome or challenging a survey is. There's a bunch of literature to suggest that both are important – that which is perceived as real is real in its consequence, and burden is no exception.

In terms of actual burden, I will be the first to admit that our measures are crude. On the left side of your screen are measures of central tendency for respondent-reported actual burden on the RAS. On average, respondents reported that the survey took about 16 hours to complete. That ranges from a reported low of 3 hours to a reported high of 40 hours. We have no way of verifying if these reports are true, and we do have literature that suggest that respondents are poor reporters of actual burden.

On the right side of the screen is captured paradata from Module 1 of the survey – the company level data. I'm only looking at Module 1 because it is the most straightforward – linear – of the modules. Qualtrics captures "the total duration (in

seconds) of the survey response. This includes time with the survey open, and time spent away from the survey if the user closes out of the survey and returns." Still, I'm not as confident in the timing capture as reflective of burden – we can't assume that respondents are working on their surveys the entire time they have them open. Take this with a grain of salt – 20 companies took half an hour or less to complete, and another 20 companies took 2 or more hours to complete.

Is the integrated survey burdensome?

Compared to annual surveys you have answered in previous years, how easy or difficult did you find completing the AIES questionnaire modules?		
	N	**Percentage**
Extremely difficult or somewhat difficult	6	46.2
Neither easy nor difficult	4	30.8
Somewhat easy	3	23.1
Extremely easy	0	0
Compared to annual surveys you have answered in previous years, how much time did it take to complete the AIES questionnaire modules?		
Less time	3	23.1
About the same amount of time	3	23.1
More time	7	53.9

- 6 revoked consent

- Mixed on time savings

- Estimate vs. true values

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We did specifically ask about perceived burden in the RAS. No one called the survey "extremely easy" compared to the current annual surveys. Some respondents noted no difference from current annuals, while others said it was "somewhat" or "extremely" difficult comparatively. This is echoed in asking about relative time to complete – 3 said it was less time than usual, and another 3 said it was about the same, but 7 said it was more time to complete the pilot than to complete the current annual surveys.

Now, the thing about the RAS is that they are all respondents. But, we also have heard from non-respondents, especially those that dropped out of the pilot. Six companies dropped out and the main reason was the burden. Said one, "it is too much to enter information for all of these [250] establishments." Said another, "each question for each location is way too time consuming." It seems that respondents are not used to being asked for this level of data for each establishment. We may need to consider scaling back content or socializing respondents to our request.

We asked about burden in debriefing interviews and respondents also made mention of burden when they contacted us. Some respondents admitted that they didn't really spend any more or less time on the pilot than they would have usually spent. These respondents were also most likely to notice that the content hadn't really changed all

that much, just been put into one survey. A few mentioned that it was taking more time than usual, and a few mentioned that they liked having everything presented in one survey at one time so that they could compile the data all at once.

We also specifically asked about estimates vs. real values, and most respondents said that whenever possible, they use the true values reflected in their accounting software. Those that did estimate talked about allocating responses based on establishment size or other variables specific to that industry, for example, proportion of customers in the region in which the establishment is located.

Is the integrated survey burdensome?

9. There is wide dispersion in the amount of time to complete the pilot overall and Module 1 in particular.

10. Reports on the amount of time to complete relative to the current annual surveys are mixed.
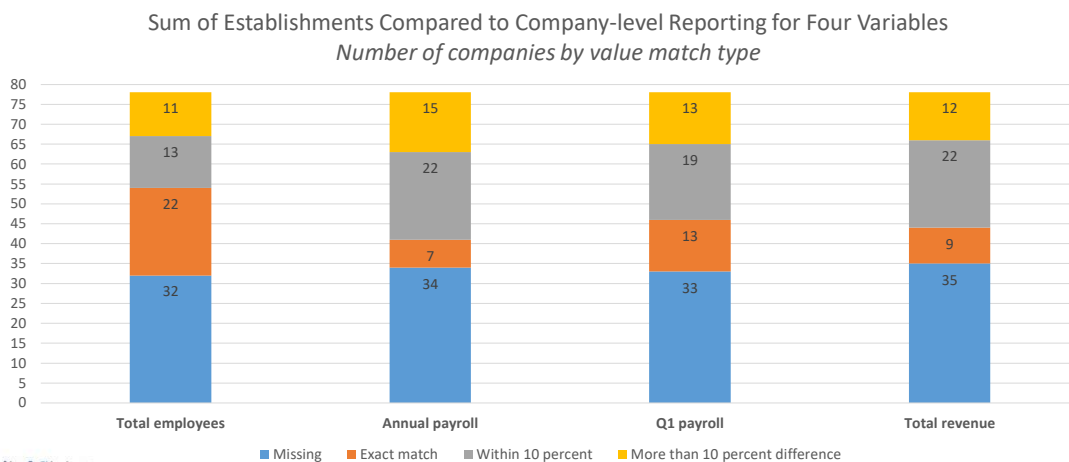
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So, is the integrated survey overly burdensome?

It's hard to say. We know that there is wide dispersion on the perceived and actual burden of the survey – some say it's taking less time or about the same amount of time as the current annual surveys, some say it is taking more or much more time than the current annual surveys. This is a point where we may need to do some additional research as we move forward.

Is the integrated survey using appropriate units of analysis?

Sum of Establishments Compared to Company-level Reporting for Four Variables
Number of companies by value match type

Legend: Missing ■ Exact match ■ Within 10 percent ■ More than 10 percent difference

	Total employees	Annual payroll	Q1 payroll	Total revenue
More than 10 percent difference	11	15	13	12
Within 10 percent	13	22	19	22
Exact match	22	7	13	9
Missing	32	34	33	35

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Let's take a look at the question of the response units on the pilot survey. This is the first time we have asked companies to provide responses for key variables across several units of analysis. On screen now is the results of how those units may or may not be related on the survey. I looked at the values from Module 2 – the establishment level – for manufacturing and nonmanufacturing establishments, and compared it to the response from Module 1 – the company level – to see if the parts equaled the whole.

This analysis is quick and dirty on data that have not gone through our typical edit checks. Note that for each of the four variables, about half of companies – between 32 and 35 – were missing one or more components to run this comparison. This is the bringing together of unit and item nonresponse: some did not provide the response to Module 1, so, nothing to compare to. Some completed Modules 2 for only some establishments, so some establishments are missing. And some missed individual questions within a given establishment, so item nonresponse.

But, I also want to draw your attention to the number of cases where we CAN do the comparison – the other approximately half. Of those, total employees had the highest perfect match rate – the sum of the establishments was equal to the total company-

wide data for 22 of 78 companies. It also had the highest approximate match – the sum of the establishments and the company total are within ten percent of each other. Note that we did have cases where the sums were not within the ten percent tolerance. Some of this is due to measurement error – respondents not understanding that these things should be summative. But some of this mismatch is also due to rounding error, where respondents may have entered value rounded to the nearest thousand at the company level but then entered an exact value at the establishment level. Some may be due to entry errors, where a respondent "fat fingered" a wrong digit along the way. I suspect, however, that one of the shortcomings of the pilot programming is coming into play here. Remember earlier when I mentioned that respondents tended to answer Module 1 – the company level – in one sitting, but then completed module 2 over multiple periods. The issue is that once the respondent submitted their answers to Module 1, they could no longer reference those answers: literally, many respondents gave us their company totals but then could not see those totals as they went to answer at the establishment level. I think this flaw proved fatal: respondents weren't sure WHAT they were summing up to in the first place. A suggestion might be, then, that the next iteration of the instrument explicitly build this relationship – such that respondents can check the sum of their establishments against their reported company totals.

We do see some conversation around the units in our debriefing interviews, too. None of this is necessarily "new" – you may be familiar with the reoccurring measurement issues in economic surveys generally from other surveys you work on. But, the larger issue with the AIES is that it brings everything together into one collection effort, so issues that were not as 'noticeable' on other surveys may bear additional consideration for this survey.

The first issue I want to bring up is the inclusion of multiple EINs for a single company. We had a couple of companies in the pilot who told us that they had more than one EIN. For some, this is the first time we've asked for reporting on all EINs within the company – so for example, one respondent said that they are four separate companies with the same parent company – with their own tax id and financial statements. Said another – "I've never reported on behalf of the second company before. I guess I thought that since we had different EIN numbers, we reported completely separate *and I assumed they were doing the same thing too.*"   This quote highlights that the respondent has never reported for the "other" EIN, but also that they have never been ASKED to report for the other EIN.

Next up, we need to talk about headquarters. There are two issues with company

headquarters that we need to be aware of. The first is one that we know about from other surveys: some companies treat data from the HQ as separate from the other units within their business. The quote on screen sums it up: for some companies, income for a headquarters is an expense at the plant level, and this intercompany billing can make reporting out the data challenging. While this may not be new information for us, again, the challenge is that this integrated survey asks for data at the headquarters sometimes for the first time. We will need to handle these establishments and the corresponding industries with careful consideration.

At the same time, the headquarters presented another issue: we did have one – but only one – case in the pilot that thought that by "company-wide" data in Module 1, we meant data representing only the headquarters or the 'administrative duties'. This case talked about the headquarters as a "mothership" (his word!) containing the liquid investments, real asset investments, and others, and it "owns" the "main core operations" entities that then own other entities. As a result, he only reported data for this 'mothership' in Module 1, and so his responses would not sum.
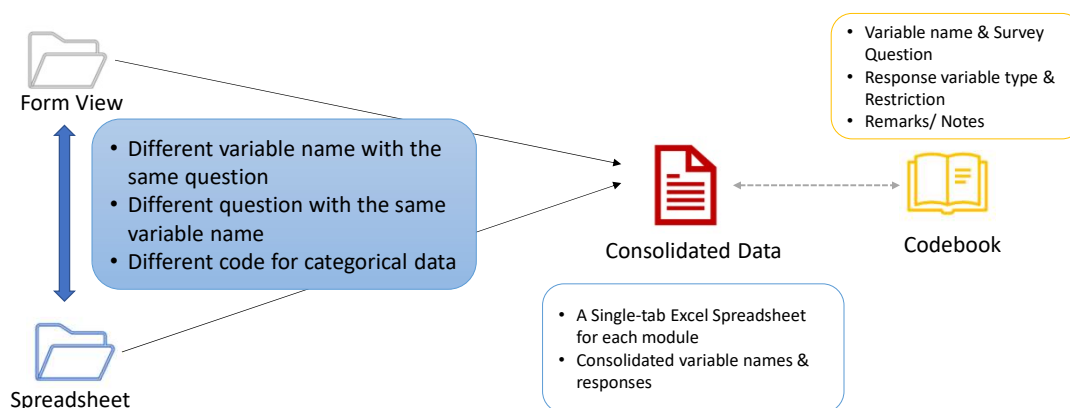
Finally, and I'm not going to linger here because this is a known issue: some companies keep their records by establishment, and industry is challenging; some companies keep their records by industry, and establishment is challenging. Some companies keep some records at the establishment and others at the industry. This mismatch will continue to be a source of error in responses.

Is the integrated survey using appropriate units of analysis?

11. Summing to the total works for some – but not all – companies, and that sum needs to be included as a check when asking for sub-company data.

12. We will continue to have unit errors in the integrated survey, but we can mitigate with flexibility and clear communication.

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Are we using appropriate units of analysis?

What do the resultant data look like?

- Variable name & Survey Question
- Response variable type & Restriction
- Remarks/ Notes

Form View

- Different variable name with the same question
- Different question with the same variable name
- Different code for categorical data

Consolidated Data

Codebook

Spreadsheet

- A Single-tab Excel Spreadsheet for each module
- Consolidated variable names & responses

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And finally, we wondered what the data from the pilot might look like. Recognizing that that the production instrument will be structured differently and use different collection methods than the pilot, we can still learn from the stream of data we received from the pilot.

On screen now is a diagram that our summer Civic Digital Fellows put together. You can see that because we offered two modes of completion – spreadsheet and page-by-page, or form view – we had to start analyzing the data by knitting together responses from these two sources. This included different or overlapping variable names and response values, as well as some duplicate response. Once the CDFs created a consolidated datafile with a corresponding codebook, I combed through each of the responses to identify duplicate entries, and made retention rules for which data to retain. In total, we had about 60 duplicate establishments and 7 duplicate industries, but note that this phenomenon is due in part to programming limitations.

It does, however, raise the issues of signaling completion status to the respondent, allowing respondents to move about freely within the instrument, and bringing together multiple sources of information into one logical data file.

Research Question	Findings
How are respondents completing the survey?	1. The response process for the AIES Pilot is similar to that of the current annual surveys. 2. More companies reported data at the company-level, and data were most complete at the company-level, compared to the establishment and industry levels. 3. Most companies responded by page-by-page method at the company-level, and most companies responded by uploadable spreadsheet at the establishment and industry levels.
Can respondents provide answers to the questions on the integrated survey?	4. Content retention based on industry criteria, and adding NAPCS, will continue to be an issue. 5. Survey structure and capabilities need to be flexible to meet respondent needs.
Does the order and structure of the integrated survey make sense?	6. Company-level data are most accessible and easiest to report. Industry-level data are most challenging to report. 7. Respondents want content organized by topic, and a direct and clear submission process. 8. Respondents like respond-by-spreadsheet, but it must take a holistic approach to the company.
Is the integrated survey burdensome?	9. There is wide dispersion in the amount of time to complete the pilot overall and Module 1 in particular. 10. Reports on the amount of time to complete relative to the current annual surveys are mixed.
Is the integrated survey using appropriate units of analysis?	11. Summing to the total works for some – but not all – companies, and that sum needs to be included as a check when asking for sub-company data. 12. We will continue to have unit errors in the integrated survey, but we can mitigate with flexibility and clear communication.
What do the resultant data look like?	13. Pilot data came from several streams of data that had to be combined to analyze. 14. Programming limitations may have led to duplicate responses.

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Ok, whew. We've covered a ton of ground today. On screen now are those research questions with the corresponding findings.

What we see is that this method of piloting has provided us with a ton of information that we otherwise would not have about this integrated survey. Circling back to the beginning, these findings are representative of the issues we will face as we move toward production of the AIES. They also set a possible agenda for a next phase of pilot research. This includes expanding our research on response-by-spreadsheet, pushing our data collection platforms to be flexible to respondent needs, better understanding the perceived and actual burden of the integrated survey, and beginning to identify what communication needs respondents may be bringing to the table.

There's still much work to be done, but this pilot has provided our first glimpses into concrete response to the AIES instrument. We have proven that we as an organization can be responsive in new and innovative ways, and I look forward to building on this momentum and preparing for additional rounds of research.

Thanks!