

# Breaking Down Complex Concepts Into Simpler Questions: Experience with Two Economic Survey Topics

Kristin Stettler



## Background

Many proposed survey questions represent complex concepts, not just conceptually but also in their use of complicated sentence structure. This is not simply a matter of replacing or simplifying jargon with the use of “plain language.” Survey questions about complex concepts are often formulated using complicated question structures, as researchers attempt to specify or clarify attributes of the concepts with multiple clauses, parenthetical phrases, and/or instructions.

Complex questions are more cognitively challenging for respondents to process and can result in suboptimal data.

The U.S. Census Bureau has survey data quality standards, the goal of which is to ensure the questions are being understood and interpreted as intended. This poster describes two different economic survey topics – Factoryless Goods Producers and E-Commerce – where their associated, current survey questions were not performing well due to the complexity of their underlying concepts.

This poster summarizes the research goals and methodologies, along with relevant cognitive pretesting findings. The focus is on efforts and experience with parsing out these complex concepts into their base attributes, and challenges and obstacles for developing multiple, simpler questions to measure these attributes.

## Example 1: E-Commerce Project (Services Annual Survey)

-Purpose: Investigate the suitability of proposed new questions about e-commerce.

-**A comparative analysis** of data collected from U.S. Services Annual Survey (SAS), the U.S. Annual Survey of Manufactures, the Canadian Survey of Digital Technology and Internet Use, and the UK Survey of E-commerce and ICT Activity **indicates that Services sector e-commerce may be under-reported in the U.S.**

-The revised questions tested in this study share characteristics with those used in these other data collections.

-Objectives included:

Is e-commerce under-reported in Services sector?

Do the revised questions prompt Services companies to report more sales as e-commerce?

**Research conducted:**

-**Cognitive testing** of draft questions, 2 rounds, **41** interviews, 2017

**Previous E-Commerce Questions on Services Annual Survey (SAS):**

**6 E-COMMERCE**  
E-commerce is the sale of goods and services where the buyer places an order, or the price and terms of the sale are negotiated, over an Internet, mobile device (M-Commerce), extranet, EDI network, electronic mail, or other comparable online system. Payment may or may not be made online.

**A. Did this firm have any e-commerce revenue in 2016 or 2015?**

Yes  
 No - Go to 6

2016				2015			
\$ Bil.	Mil.	Thou.	Dol.	\$ Bil.	Mil.	Thou.	Dol.

**B. What was the total e-commerce revenue in 2016 and 2015?**

**Revised E-Commerce Questions on Services Annual Survey (SAS):**

1. Did this firm have any revenues from customers entering orders directly on the firm's websites or mobile applications in 2017? Yes/No
2. Did this firm have any revenues from customers entering orders directly on third-party websites or mobile applications in 2017? Yes/No
3. Did this firm have any revenues from customers entering orders via any other electronic systems (such as private networks, dedicated lines, kiosks, etc.) in 2017? Yes/No
4. Of the total 2017 revenues reported in Section 6 (\$xx,xxx,xxx), what was the dollar amount (or percentage) that was from the revenues identified in A-C above? Please provide an estimate if exact figures are not available.

\$ \_\_\_\_\_ OR \_\_\_\_\_ %

## Example 2: Factoryless Goods Producers (FGPs) Project

-Purpose: Attempt to identify Factoryless Goods Producers (FGPs) – establishments that control the design, production and sale of products but contract with unaffiliated establishments to perform transformation activities

-Why? To inform a decision re: future industry classification

-Complex concept, with multiple criteria

-Rare event, with potential significant impact on economic measurement

**Research conducted:**

-**Respondent debriefings** on 2012 Economic Census contract manufacturing questions, **97** interviews, 2014, establishments

-**Cognitive testing** for 2016 Company Organization Survey – Enterprise Statistics Program (COS-ESP), 2 rounds, **37** interviews, 2015, enterprises

-**Early stage scoping** interviews, 2 rounds, **21** interviews, 2015, establishments and enterprises

-**Cognitive testing** on 2017 Economic Census draft questions, 4 rounds, **62** interviews, 2016, establishments

**Previous Contract Manufacturing Questions on 2012 Economic Census:**

**29 SPECIAL INQUIRIES - Continued**

**C. PURCHASE OF CONTRACT MANUFACTURING**

**1. Did this establishment purchase contract manufacturing services from other companies or foreign plants of your company in 2012?**

**Include:**

- Products for which the manufacturing (i.e., transforming or otherwise processing materials or components based on specifications provided by your company) was outsourced to other companies.
- Products for which the manufacturing was performed by your company's foreign plants.

**Exclude:**

- Services for packaging and assembling.
- Purchases of merchandise for resale (sale of products bought and sold without further processing or transformation).

1011  Yes - Go to line 2  
1012  No - Go to 50

	2012		
	\$ Bil.	Mil.	Thou.
2. Report the costs incurred by this establishment for contract manufacturing purchased in 2012 . . . . .			
3. Report the value of sales, shipments, receipts or revenue generated in 2012 from products whose purchases were reported as contract manufacturing costs in line 2 . . . . .			

**Revised FGP Questions on 2017 Economic Census (for multi-unit companies):**

1. In 2017, did this establishment manufacture any products or produce any goods at this location? Yes/No
2. In 2017, did this establishment have any manufacturing done on its behalf by any other locations of your company inside the U.S.? Yes/No
3. In 2017, did this establishment have any manufacturing done on its behalf by any affiliated companies inside the U.S.? Yes/No
4. In 2017, did this establishment have any manufacturing done on its behalf by any unaffiliated companies inside the U.S.? Yes/No
5. In 2017, did this establishment have any manufacturing done on its behalf outside the U.S. by either affiliated or unaffiliated companies? Yes/No
6. In 2017, did this establishment determine the design or specifications for any of the products that were manufactured on its behalf? Yes/No  
*Design or specifications refers to the function of the product, not just the appearance or its packaging.*
7. What percentage of this establishment's total revenue in 2017 was from the sale of products that were manufactured on its behalf, per this establishment's design or specifications?  
*Estimates are acceptable.*
  - 0%
  - 1-25%
  - 26-50%
  - 51-75%
  - 76-99%
  - 100%
8. In 2017, was your U.S. company as a whole responsible for the design of any products that were manufactured outside the U.S. or by any affiliated companies? Yes/No

## Findings: Breaking Down Complex Concepts into Simpler Questions

-Previous questions, although fewer in number, included long instructions and were difficult for respondents to understand and answer.

-**Revised questions, though greater in number, were each simpler concepts, which, in testing, were easier for respondents to understand and answer.**

-In general, the four revised E-Commerce questions were well received by respondents in cognitive testing.

-FGP cognitive interview respondents generally found the eight revised questions easy to understand and quick to answer. (There were some indications of potential misreporting, however, especially for multi-unit companies. Therefore, the revised questions were added to the 2017 Economic Census only for **research purposes**. We plan to use the resulting data to further study and improve our ability to identify FGPs.)

-**Breaking the concepts into smaller chunks allowed respondents to focus on one attribute at a time, rather than having to keep all attributes in mind when answered one more concept question.**

## Challenges and Obstacles

-Some decision makers were still wary about the greater number of questions, thinking it looks more burdensome (perceived burden).

-Took multiple rounds of testing to parse out these concepts into their base attributes.

-We were unable to do larger scale field pretests of revised questions to see how they performed before implementation.

## Future Directions

-Both sets of questions (E-Commerce and FGP) are currently in the field.

-Respondent debriefings and data analysis are planned to evaluate how the revised questions performed in production.

## References

- Beatty, P., F.J. Fowler, and G. Fitzgerald. (1999). "Construction Strategies for Complex Survey Questions." Proceedings of the American Statistical Association, Section on Survey Research Methods, pp. 973-978. Alexandria, VA: American Statistical Association.
- Childs, J. H. (2008). 2010 NRFU Questionnaire Development: From the 2004 Census Test to the 2008 Dress Rehearsal. SRD Study Series Report #2008-5.
- Holder, K.A. and Raglin, D. (2007). Evaluation Report Covering Employment Status. 2006 American Community Survey Content Test Report.

Presented at the 73<sup>rd</sup> Annual Conference for the American Association for Public Opinion Research  
Denver, CO  
May 16 - May 19, 2018

Disclaimer: Any views expressed are those of the authors and not necessarily those of the U.S. Census Bureau.