Knowing NAPCS, the North American PRODUCT Classification System: Its Origin, Structure, Uses, and Limitations

Beyond the Numbers 2023, Federal Reserve at St. Louis, MO

Jennifer C. Boettcher, Georgetown University November 8, 2023



# Thanks to Bobray Bordelon and

Kenneth W. Fishbein for reviewing and Fay Dorsett and others in the Census Bureau for their insights and Lauinger Library for Research Leave



Computers in Libraries November 2023, page 35





## Jennifer C. Boettcher



**Georgetown University** 

Opinions are my own





## **AGENDA**

O1. Urigin
Starts in 20

Structure

Industry (NAICS)
Product (Trilateral NAPCS)
Economic Census (NAPCS-based)

osu | Use

Highlights from the 2017 Economic Census

**Limitations** 

What's its Line?







## In the Beginning

Standard Industry Classification (SIC)

NEW North American **Industry** Classification System

NEW North American
Product
Classification System



1997



**Economic Census** 

Revenue Lines, Receipt Lines, Merchandise Line Sales, Source of Revenue, Source of Receipts, Commodity Line Sales, and Product Lines

Pronounced náps
Products of different NAICS
Geography: U.S. and States

## Uses

- Identifying, defining, and classifying products (goods & services) produced at the industry, national, and international levels,
- Coordinating the products identified in national accounts programs (including I-O, personal consumption, business expenditures, and productivity measurement) with those used in price measurement programs,
- Monitoring the type and value of products exchanged in international trade,
- Negotiating trade agreements, and
- Facilitating research in the areas of market share, trends and shifts in consumer demand, strategic expansion, and structural change in the economy.



From: North American Product Classification System (NAPCS): What's Been Done; What's Being Done; What's Next, April 2002.



## Who decides



#### **Mission**

Canada
Mexico
United States
U.S. Economic Classification Policy Committee
(ECPC)
Revised with NAICS



#### **Vision**

What else is out there:
Harmonized Tariff- Goods
Central Product Classification (CPC)Industry-of-origin and not detailed
Best Practices of UNSD



#### Values

Regardless of its industry of origin Demand-based/product-oriented Their principal use and relationship to each other





## **How to Structure NAPCS?**





- Food
- Clothing
- Services
  - Food services
  - Clothing services
- Trade
  - Trade of food and food services
  - Trade of clothing and clothing services
  - Trade of transportation goods and services













#### Food

- Food goods
- Food services
- Trade of food and food services
- Clothing
  - Clothing goods
  - Clothing services
  - Trade of clothing and clothing services





	,		Trilater	ral NAPCS (HTML) 11 digits,
			Note: N	IAICS (searchable) 6 digits,
Wineries	312130	11101260107	2004275006	Manufacturing of all other wines, brandy, and brandy spirits, including vermouth, nonalcoholic wines, other specialty wines, and applejack
Wineries	312130	11101260107	2004275000	Manufacturing of all other wines, brandy, and brandy spirits
Wineries	312130	11101260107	2004250006	Manufacturing of wines, effervescent, including sparkling (naturally and artificially carbonated), wine coolers
Wineries	312130	11101260107	2004250003	Manufacturing of wines, dessert, excluding specialties

NAPCS-Based

2004225000

2004225003

2004225006

2004225009

2004250000

NAPCS define

alcohol content

NAPCS-Based (Excel) 10 digits

Manufacturing of wines, white, red, and rose grape, other fruit and berry, 14 percent or less

Manufacturing of wines, rose grape and other fruit and berry, 14 percent or less alcohol content

Manufacturing of wines, white grape, 14 percent or less alcohol content

Manufacturing of wines, red grape, 14 percent or less alcohol content

Manufacturing of wines, dessert, effervescent, and wine coolers

Grapes

2017 Industry

Wineries

Wineries

Wineries

Wineries

Wineries

Grape vineyards

NAICS

111332

312130

312130

312130

312130

312130

Trilateral NAPCS

11101130104

11101260107

11101260107

11101260107

11101260107

11101260107

#### North American Product Classification System





#### Introduction to NAPCS

The North-American Product Classifics - Gystem (NAPCS) is rightens industry-of-origin based but can be linked to - NACS indi - y structure, (b) classification of service products across internal - caffication systems,

"Distribution of NAPCS Objectives, Guidance, and common on Strategy and S sections A through C of that paper define purposes of National Act the spe-

Questions about NAPCS under the 1st.

#### Yeek more

2017 NAPCS Struct 10\_5X 257KB(

2022 NAPC Schire (KLSX 83K3)

202 2017 NAPCS Concordance (NLSX 79K8)

2017 to 2022 NAPCS Concordance (NLSX79KB)

2017 NAPCS Definitions [KLSX 725KB]

#### For definitions only

https://www.census.gov/naics/napcs/

https://www.census.gov/programs-surveys/economic-census/year/2022/guidance/understanding-napcs.html

https://www2.census.gov/programs-surveys/economic-census/technical-documentation/napcs/2 022 NAPCS Trilateral Product Code to NAPCS-Based Collection Code FINAL 050.xlsx



2017 Industry	NAICS	Trilateral NAPCS	NAPCS-Based	NAPCS define
Alcoholic beverage merchant wholesalers	4248	11102010110	4000400000	Wholesaling services for alcoholic beverages
Wine and Distilled Alcoholic Beverage Wholes	424820	11102010110	4000400003	Wholesale sales of wine
Wine Making supplies	453998	11103010112	5000300000	Retail sales of alcoholic beverages (part of misc. retail)
Services for retailing alcoholic beverages	445310	11103010112	5000300000	Retailing services for alcoholic beverages
Beer, Wine, and Liquor Retailers	445310	11103010112	5000300000	Retail sales of alcoholic beverages
Beer, Wine, and Liquor Retailers	445310	11103010112	5000300006	Retail sales of wine

**Note: Under NAPCS-Based Broad Line - ends in 0 Detailed Line- ends in 1-9 Trilaterals=Board Line or sum of multiple Board Lines Board Line or sum of Detailed Line** 

In 2022: 3,518 broad lines and 3,716 detail lines



2017 Industry	NAICS	Trilateral NAPCS	NAPC S-Based	NAPCS define
Drinking Places	722410	11201010102	7000050000	Alcoholic beverages prepared and served or dispensed for immediate consumption (in opened containers or glasses). Preparation includes opening, drawing, mixing, shaking, or pouring. Beverages may be served at a bar or a table.
Wine bar	722410	11201010102	7000050003	Wine and wine drinks, prepared and served or dispensed for immediate consumption
Mobile food services	722330	11201010102	7000050003	Wine and wine drinks, prepared and served or dispensed for immediate consumption
Full-service restaurants	722511	11201010102	7000050003	Wine and wine drinks, prepared and served or dispensed for immediate consumption
Limited-service restaurants	722513	11201010102	7000050003	Wine and wine drinks, prepared and served or dispensed for immediate consumption
Cafeterias, grill buffets, and buffets	722514	11201010102	7000050003	Wine and wine drinks, prepared and served or dispensed for immediate consumption
Food service contractors	722310	11201010103	7000055009	Alcoholic beverages prepared for immediate consumption under long-term contract
Catering event	722320	11201010104	7000060000	Meals, snacks, other food items, and beverages, including alcoholic beverages, are prepared and served or dispensed for immediate consumption at unique events, where one person or entity contracts with the catering establishment and directly pays for the food and beverages. May include transportation of the food and beverages to a site provided by the customer, or may include provision of a dining facility (such as a banquet room) by the catering establishment.
"Cash Bar"	722320	11201010104	7000060015	Alcoholic beverages prepared for catered events
	Note	e: Same NAP different N <i>I</i>	00 = 0.000	



Pause

Take a deep breath

Reflect

It will not be easy, let's hope Census improves

Questions

Where are you confused?
Answered at the end







# O3. USES

From **Data.Census.Gov** 

Uses

- Identifying, defining, and classifying products (goods & services) produced at the **industry**, **national**, and international levels,
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## **Products by Industry**

2017 NAPCS collection code (NAPCS2017)	Meaning of NAPCS collection code (NAPCS2017_LABEL)	2017 NAICS code (NAICS20 17)	Meaning of NAICS code (NAICS2017 _LABEL)		Total sales, value of shipments, or revenue of establishments with the NAPCS collection code (\$1,000) (TVALLN)	Sales, value of shipments, or revenue of NAPCS collection code (\$1,000) (NAPCSDOL)	Industry contribution to total NAPCS collection code sales, value of shipments, or revenue (%) (NAICSALL_P CT)	Range indicating percent of total NAPCS collection code sales, value of shipments, or revenue imputed (NAPCSDOL_IMP)	Relative standard error of NAPCS collection code sales, value of shipments, or revenue (%) (NAPCSDOL_ S)
2004225000	Manufacturing of wines, white, red, and rose grape,	312130	Wineries	3,402	19,509,582	17,351,307	99.9	40% to less than 50%	5.8
2004250000	Manufacturing of wines, dessert, effervescent, and	312130	Wineries	1,194	4,388,179	869,597 (s)	99.9	50% to less than 60%	52.6
7000050000	Alcoholic beverages, prepared and served or disper	312130	Wineries	902	2,749,414	281,083 (s)	0.3	60% to less than 70%	73.8
4000400000	Wholesale sales of wine and distilled liquor, including	312130	Wineries	741	5,632,447	621,397	0.6	Less than 10%	30.4
7006475000	Rental of space for weddings, banquets, parties, an	312130	Wineries	349	1,132,664	111,959 (s)	7.6	60% to less than 70%	76.1
4005500000	Wholesale sales of other goods, not elsewhere class	312130	Wineries	156	292,925	10,786 (s)	0	60% to less than 70%	62.8
5000075000	Retail sales of fresh fruit and vegetables	312130	Wineries	111	435,963	36,860 (s)	0	10% to less than 20%	61
2004300000	Manufacturing of bottled whiskey, gin, cordials, cock	312130	Wineries	52	183,240	4,434 (s)	0.1	40% to less than 50%	82.9
2004325000	Manufacturing of distilled whiskey, all other distilled	312130	Wineries	16	28,397	3,039 (s)	0.1	40% to less than 50%	42.7
2002250000	Manufacturing of fully refined fats and oils	312130	Wineries	11	76,520	890 (s)	0	20% to less than 30%	70.1
5000300000	Retail sales of alcoholic beverages	312130	Wineries	11	25,112	20,744	0	Less than 10%	0
2004000000	Manufacturing of canned and fresh fruit juices, nect	312130	Wineries	6	9,246	535	0	20% to less than 30%	16
2004175000	Manufacturing of beer and ale, barrels and kegs, all	312130	Wineries	3	2,598	271	0	10% to less than 20%	4.4
2051560000	Other food and beverage contract manufacturing se	312130	Wineries	S	S	A	D	S	S
2054100000	Other manufacturing revenue, not elsewhere classif	312130	Wineries	S	S	Α	S	S	S

## How to read the tables

**(s) in the sales column**: means the number is an estimate that does not meet publication standards, RSE is 40% or more and take the data with a grain of salt

**60% -70% had to be imputed**: means that approximately 30% of establishment return on forms with data on it. Hot Deck Imputation (HDI) is their main method of calculating imputation.

**"D" symbol in any column**: means the data is withheld to avoid disclosing data for individual companies and the data are included in higher-level totals.

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**"A" in the sales line:** means the relative standard error is 100% or more and Census doesn't even want to estimate the number.

## **Products by Industry**



#### **Broad Line Only**

No Detailed NAPCS



#### **Imputation**

Statistical methods to calculate a missing value



#### U.S. Only

No State level data. Can be shown by 2-6 digit NAICS.



#### **Great for product line analysis**

Where do these Industries get their revenue?



#### **Relative Standard Error (RSE)**

Related to survey methods. Smaller numbers indicate more accurate is data.





## **Industry by Product (data.census.gov)**

Geographic Area Name (NAME)		2017 NAICS code (NAICS2017)	(NAICS2017_L	2017 NAPCS collection code		Meaning of Type of operation code (TYPOP_LABE L)		Number of		shipped for the NAPCS	shipments, or revenue of NAPCS collection code (\$1,000)	NAPCS collection code sales, value of shipments, or revenue as % of industry sales, value of shipments, or revenue (%) (LINEALL_PCT)	percent of total NAPCS	Relative standard error of NAPCS collection code sales, value of shipments, or revenue (%) (NAPCSDOL_ S)
United States	2017	722410	Drinking places	7000050003	Wine and wine	All establishmen	ı X	34,253	X	X	2,793,262	11.7	60% to less than	3.6
United States	2017	722511	Full-service resta	7000050003	Wine and wine	All establishmen	ιX	148,153	X	X	16,189,835	5.4	40% to less than	0.8
United States	2017	722320	Caterers	7000050003	Wine and wine	d All establishmen	ı X	1,296	X	X	79,066	0.7	50% to less than	21.2
United States	2017	722513	Limited-service r	7000050003	Wine and wine	d All establishmen	ιX	16,043	X	X	532,464	0.2	50% to less than	5.3
United States	2017	722514	Cafeterias, grill b	7000050003	Wine and wine	All establishmen	ιX	383	X	X	15,791 (s)	0.2	20% to less than	48.2
United States	2017	722310	Food service cor	7000050003	Wine and wine	All establishmen	ıΧ	106	X	X	32,583	0.1	20% to less than	17
United States	2017	722515	Snack and nona	7000050003	Wine and wine	d All establishmen	ιX	1,402	X	X	18,809	0	60% to less than	26
United States	2017	722330	Mobile food serv	7000050003	Wine and wine	All establishmen	X	S	X	X	A	S	S	S





## **Industries by Product (presented)**

U.S. industries that prepared and served or dispensed wine and wine drinks for immediate consumption (NAPCS 7000050003), 2017

2017 NAICS	Meaning of NAICS code	Establishm ents	Revenue of Wine Service (\$1,000)	Wine revenue as % of NAICS sales revenue (%)	Relative standard error (%)	Revenue per est (\$1,000) (self calculated)
722310	Food service contractors	106	32,583	0.10	17	307.4
722511	Full-service restaurants	148,153	16,189,835	5.40	0.8	109.3
722410	Drinking places (alcoholic beverages)	34,253	2,793,262	11.70	3.6	81.5
722320	Caterers	1,296	79,066	0.70	21.2	61.0
722513	Limited-service restaurants	16,043	532,464	0.20	5.3	33.2
722515	Snack and nonalcoholic beverage bars	1,402	18,809	0.00	26	13.4
722514	Cafeterias, grill buffets, and buffets	383	15,791 (s)	0.20	48.2	0.0
722330	Mobile food services	S	Α	S	S	S

U.S. Census Bureau. (2017). EC1700NAPCSINDPRD, https://data.census.gov/table?n=N0600.00&napcs=7000050003. U.S. Department of Commerce. Retrieved August 12, 2023, from <a href="https://data.census.gov/">https://data.census.gov/</a>, with last column self-calculated.





#### Who uses Product

B2B, Sales, Distributors, Researchers



#### State-Level Data

For most B2C industries



#### **Detailed NAPCS**

Collected at 6 digit NAICS only



#### **Unique Columns**

Mining, extracting, few agricultural-related industries: Quantity produced and shipped





#### **Customize table**

Redundant info in title, added calculations, and sorted



#### Clean up the Redundancy

15 columns listed, used 6 columns, now in table title

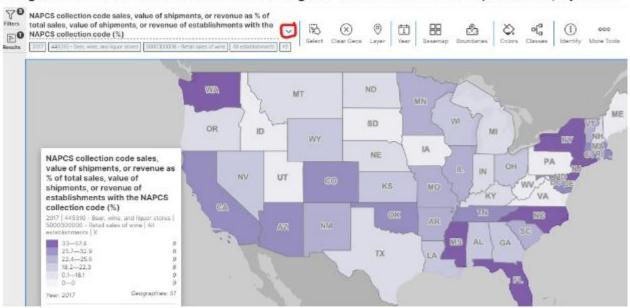


Sector	U.S.	State
Retail Trade (NAICS 44-45)	Х	X
Educational Services (61)	X	X
Health Care and Social Assistance (62)	X	X
Arts, Entertainment, and Recreation (71)	X	X
Accommodation and Food Services (72)	X	X
Other Services (81)	X	X
All other NAICS Sectors	Х	

## **LOCATIONS**

Find out how much liquor stores make by selling wine

#### Image 2: 2017 Continental U.S. Percentage of Wine Revenue in Liquor Store, by state



U.S. Census Bureau. (2017). EC1700NAPCSINDPRD (map), Search: NAPCS: 5000300006, NAICS: 44531, Geo: All States. U.S. Department of Commerce. Retrieved August 14, 2023, from <a href="https://data.census.gov/">https://data.census.gov/</a>



#### **More Wine Facts**

People in Michigan don't buy their wine in liquor stores, but 93% of the stores do sell some wine, in 2017.

*Industry by Product*: Maine and North Carolina sell most of their wine in supermarkets.

*Product By Industry*: there are 66 liquor stores in South Dakota and they sold more household paper and plastic products than wine in 2017.





Sorry no time to show you how to get the data



## **Timeline**

2017

NAPCS first used in Economic Census 2022



Data being collected for Economic Census

**March 2024** 

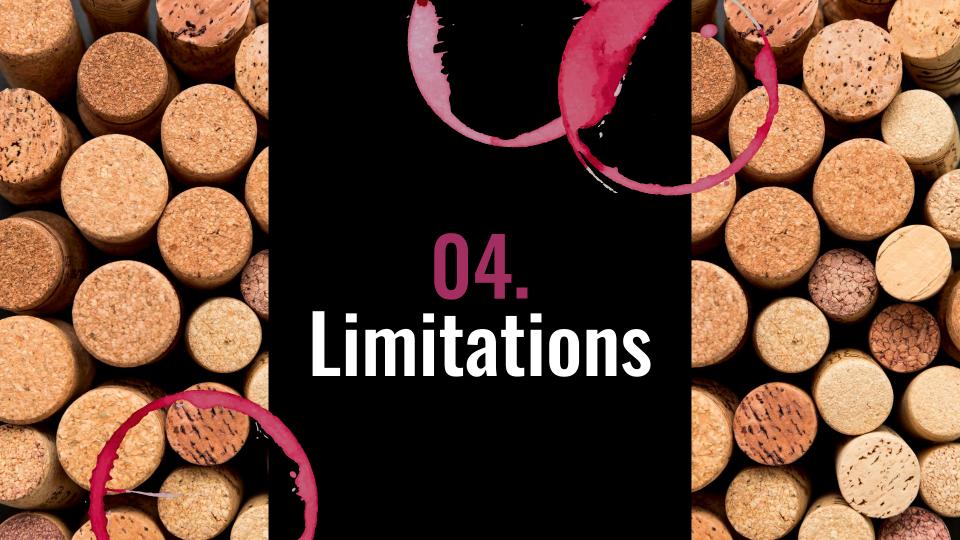


First release of any 2-3 digit NAICS data September 2025



Projected release of NAPCS data





#### Remember

Uses NAPCS-based Codes, NOT NAPCS-Trilateral Code.

NAPCS-based Broad Line map directly to NAPCS-Trilat.

If you see (s) in sales data don't bet your business.

You might be given a choice between Census & Survey.

Mapping only works with *Industry by Product* data.

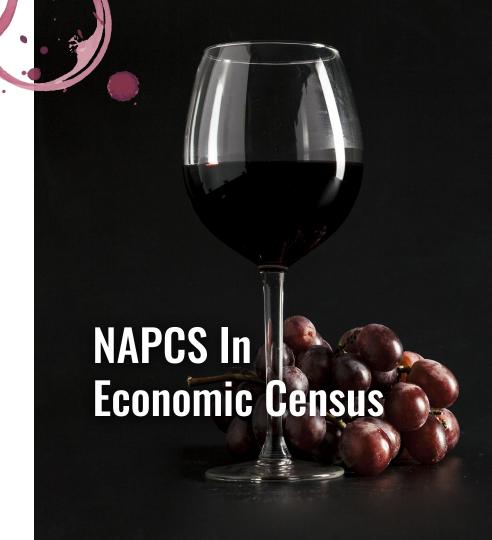
Product by Industry you can search 2-6 digit NAICS.

Let the data lead you to better questions.

#### Not

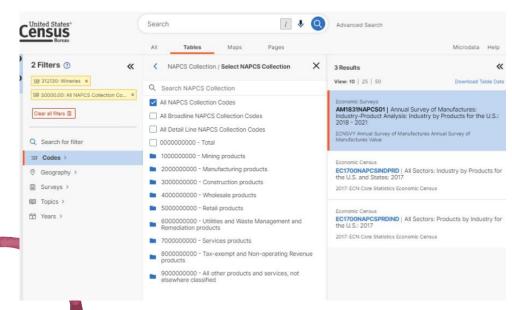
All establishments got a NAPCS Questionnaire. Every establishments answered the questions.





## Not included in data.census.gov

- Industries which are tax-exempt
  - Search "EC1700NAPCSINDPRDTAX"
  - Broad line only
- Basic field searching does not work
  - You have to open the full box to search





# Remember about Economic Census



Products and Services on military facilities; Most government run businesses; Non-employer businesses;

Agricultural products;

Households;

**Labor Unions and Similar Organization**;

Political Organizations;

Funds, Trusts, and Other Financial Vehicles;

Rail Transport; and

**Postal Service** 



#### **Everything in API**

Does not offer any new or additional data fields beyond what you can get in data.census.gov. However, if you want to play around with the dataset in a flat file ...



#### Microdata

Microdata is accessible only in the Federal Statistical Research Data Centers.



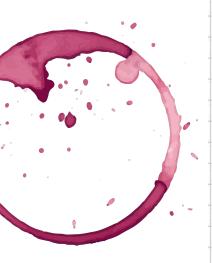
#### **NAPCS-based**

There are NO 2022 NAPCS-based descriptions, yet

Most recent is 2017

https://www.census.gov/data/developers/data-sets/economic-census.html

## Percent of total broad product revenue withheld from publication in Economic Census, 2017



Sector (6-digit NAICS level)	Percent of total broad product sales, value of shipments, or revenue withheld from publication
21	4.90%
22	9.60%
23	2.60%
31-33	26.40%
42	12.50%
44-45	1.30%
48-49	12.50%
51	2.40%
52	15.90%
53	2.80%
54	3.30%
55	2.20%
56	0.60%
61	1.50%
62	0.60%
71	0.50%
72	0.00%
81	0.40%





# Takeaways

Brainstorm the business you are interested in. Create a value chain of suppliers and buyers.

Identify the Industries (North American Industry Classification System -NAICS) codes and the Product (North American Product Classification System -NAPCS) codes.

Use data.census.gov to retrieve statistics for *Products by Industry* - ONE Industry (NAICS) to ALL Products (NAPCS) and for *Industry by Products* - ONE Product (NAPCS) to ALL Industries (NAICS).

Industries by Product data will provide state-level data for most consumer-based industries.

Read the data and start looking for stories that will put the data in context or provide more questions for your research.

# **THANKS**

Now can I take questions?

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## **Industry by Products**

2017 NAICS code	Meaning of NAICS code	2017 NAPCS collection code	Meaning of NAPCS collection code	Number of establishments	Revenue of NAPCS collection code (\$1,000)	NAPCS collection code sales, or revenue (%)	Range indicating percent of total NAPCS collection code revenue imputed	
521110	central bank	0000000000	Total	57	116,892,000	100.0	х	0.0
521110	Monetary authorities - central bank	7005542000	Cash handling and management services for business	38	588,238 (s)	0.5	40% to less than 50%	43.0
521110	Monetary authorities - central bank	7005545000	Support services for financial and commodity markets	7	28,854	0.0	Less than 10%	11.4
521110	Monetary authorities - central bank	7005546000	Automated clearing house (ACH) services	40	368,042 (s)	0.3	60% to less than 70%	61.5
521110	Monetary authorities - central bank	7005547000	Other products supporting financial services	37	240,219	0.2	20% to less than 30%	12.3
521110	Monetary authorities - central bank	7017475000	Regulation of credit markets	5	217 (s)	0.0	60% to less than 70%	79.2
521110	Monetary authorities - central bank	8000075000	Loans to financial businesses	41	83,120 (s)	0.1	40% to less than 50%	100.4
521110	Monetary authorities - central bank	8000150000	Trading securities and commodity contracts on own account	35	115,535,254	98.8	10% to less than 20%	0.3
521110	Monetary authorities - central bank	8000150003	Trading debt instruments on own account	35	93,261,074	79.8	Less than 10%	7.0
521110	Monetary authorities - central bank	8000150006	Trading equities on own account, including private equity	5	20,395,858 (s)	17.4	60% to less than 70%	79.4
521110	Monetary authorities - central bank	8000150012	Trading foreign currency (wholesale) on own account	35	1,868,262	1.6	10% to less than 20%	20.5
521110	Monetary authorities - central bank	8000150015	Trading other securities and commodity contracts on own account	13	16,569	0.0	10% to less than 20%	11.0
521110	Monetary authorities - central bank	9000000000	All other products and services, not elsewhere classified	33	48,056 (s)	0.0	Less than 10%	99.0



## **Products by Industry**

2017 NAPCS collection code	Meaning of NAPCS collection code	2017 NAICS code	Meaning of NAICS code	Number of establishments	Revenue of NAPCS collection code (\$1,000)	Industry contribution to total NAPCS collection code revenue (%)	Range indicating percent of total NAPCS collection code revenue imputed	Relative standard error of NAPCS collection code revenue (%)	
7005542000	Cash handling and management services for business	521110	Monetary authorities - central bank	38	588,238 (s)	3.7	40% to less than 50%	43.0	
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8000075000	Loans to financial businesses	521110	Monetary authorities - central bank	41	83,120 (s)	0.1	40% to less than 50%	100.4	
8000150000	Trading securities and commodity contracts on own account	521110	Monetary authorities - central bank	35	115,535,254	31.0	10% to less than 20%	0.3	
9000000000	All other products and services, not elsewhere classified	521110	Monetary authorities - central bank	33	48,056 (s)	0.0	Less than 10%	99.0	

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