

Consumption Pattern of the Middle  
Class Household  
: using Consumer Expenditure Survey

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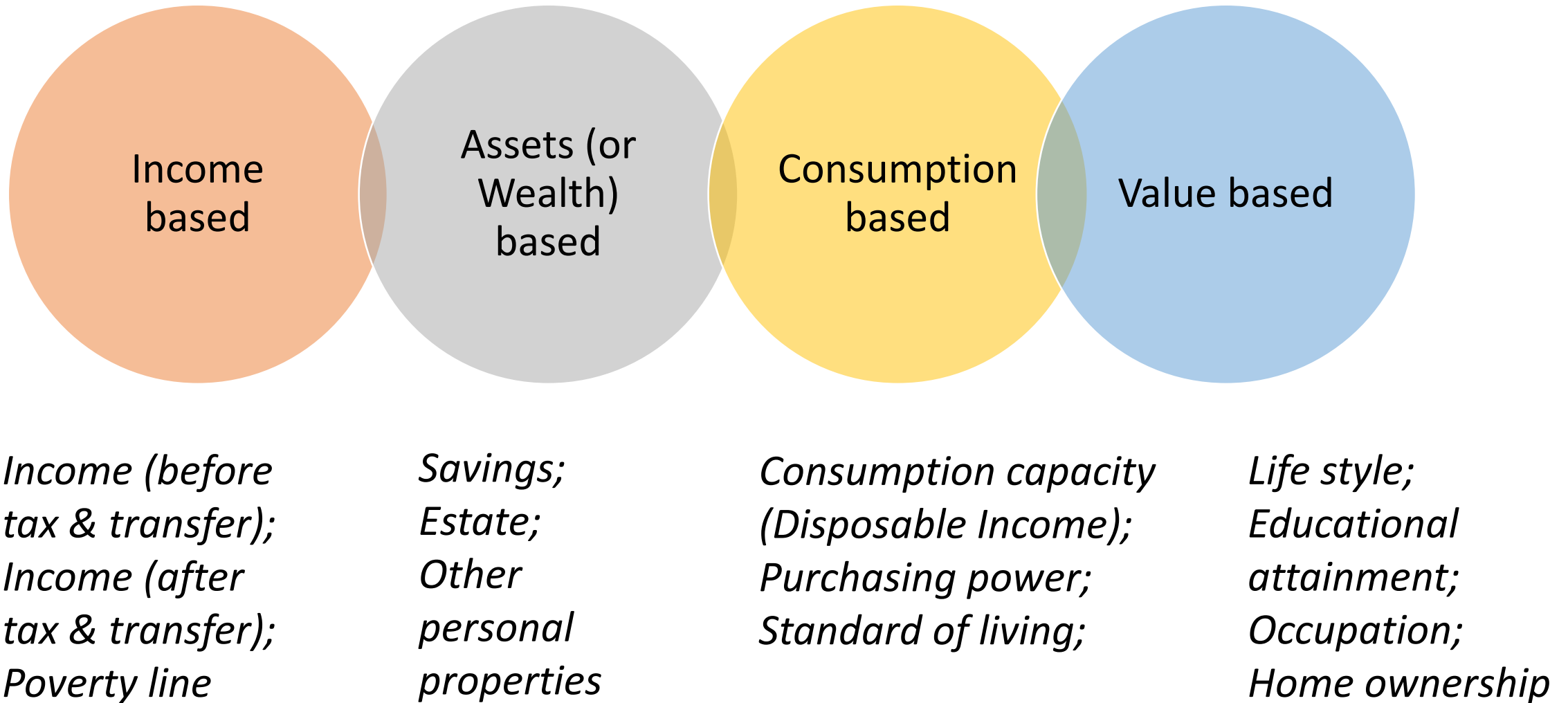
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Microdata User's Workshop at Bureau of  
Labor Statistics

# A first-time user

- Read “Getting Started with Consumer Expenditure Survey (CE) Public-Use Microdata (PUMD)” document
- Select which survey data will be useful for your research topic  
: Interview Survey or Diary Survey
- Select which year data you would like to explore  
: Download year-specific Data Dictionary & Documentation

# Definition of the middle class



# Goals: What am I aiming for using CE?

- Consumption patterns of American Middle Class  
: using Income-based definition (3 income categories: below-middle class, middle class, and above-middle class)

- Unit of Analysis: Household



Consumer Unit (CU)  
in CE

- Geography of interest: Metropolitan Statistical Areas (MSAs)



Primary Sampling Unit (PSU)  
In CE

# How I used CE Interview Survey

- Step 1: Data cleaning

## Appending

- 2015 Interview Quarterly Data
- Including 2016 the first quarter

## Dropping

- Deleting unnecessary CU (non-metro area)

## Naming

- Matching PSU code with the standard MSA name

# How I used CE

- Step 2: Dividing CU sample into 5 income **class definition**

(Household's income fall into 5 income median household income classes)

- Step 3: Aggregating expenditure into 8 **sample mean** by each class
  - Creating broad categories:
    - : Using 8 CPI consumption categories
    - : Plus 2 other categories

Table 1101. Quintiles of income before taxes: Annual expenditure means, shares, standard errors, and coefficients of variation, Consumer Expenditure Survey, 2016

Item	All consumer units	Lowest 20 percent	Second 20 percent	Third 20 percent	Fourth 20 percent	Highest 20 percent
Number of consumer units (in thousands) .....	129,549	25,884	26,019	25,905	25,900	25,842
Lower limit .....	n.a.	n.a.	\$19,868	\$38,163	\$64,418	\$108,040
Consumer unit characteristics:						
Income before taxes						
Mean .....	\$74,664	\$11,389	\$28,976	\$50,563	\$84,173	\$198,674
SE .....	1,447.86	154.83	166.71	252.84	369.55	6,385.26
CV(%) .....	1.94	1.36	.58	.50	.44	3.21
Income after taxes						
Mean .....	64,175	11,832	29,423	47,681	75,065	157,215
SE .....	963.10	169.42	180.91	260.46	340.25	4,050.34
CV(%) .....	1.50	1.43	.61	.55	.45	2.58
Age of reference person .....	50.9	54.3	54.2	49.7	47.8	48.7
Average number in consumer unit:						
People .....	2.5	1.6	2.2	2.5	2.9	3.1
Children under 18 .....	.6	.3	.5	.6	.7	.8
Adults 65 and older .....	.4	.4	.6	.4	.3	.2
Earners .....	1.3	.5	.8	1.4	1.8	2.0
Vehicles .....	1.9	.9	1.5	1.9	2.4	2.7
Percent distribution:						
Reference person:						
Men .....	47	39	43	47	51	56
Women .....	53	61	57	53	49	44
Housing tenure:						
Homeowner .....	62	40	54	60	73	85
With mortgage .....	36	11	19	33	51	65
Without mortgage .....	27	28	36	27	22	20
Renter .....	38	60	46	40	27	15
Race of reference person:						
Black or African-American .....	13	20	16	13	10	7
White, Asian, and all other races .....	87	80	84	87	90	93
Hispanic or Latino origin of reference person:						
Hispanic or Latino .....	13	13	16	17	12	8
Not Hispanic or Latino .....	87	87	84	83	88	92
Education of reference person:						
Elementary (1-8) .....	3	6	4	3	1	( <sup>1</sup> )
High school (9-12) .....	32	45	41	35	25	12
College .....	65	48	54	62	73	88
Never attended and other .....	( <sup>1</sup> )	1	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )

# How I used CES Interview Survey

Categories	Variable Name
Food & Beverages	Foodpq; alcbevppq; foodcq; alcbevqcq
Housing	Houspq; houscq
Apparel	Apparpq; apparcq
Transportation	Transpq; transcq
Medical Care	Healthpq; healthcq
Recreation	Entertpq; entertcq
Education and Communication	Educapq; educacq
Personal Insurance, Pension, Saving	Perinspq; perinscq
Cash contribution	Cashcopq; cashcocq
Other Goods And Services	Reading , personal care, tobacco Miscellaneous

# Challenges: Questions at hand

- Different terms & acronyms (e.g., PSU code is different from Statistical Areas)

< 2010 CE Interview Survey >

< 2015 CE Interview Survey >

PSU

Primary Sampling Unit  
CODED

S11A Boston-Cambridge-Newton, MA-NH  
S12A New York-Newark-Jersey City, NY-NJ-PA  
S12B Philadelphia-Camden-Wilmington, PA-NJ-DE-MD  
S23A Chicago-Naperville-Elgin, IL-IN-WI  
S23B Detroit-Warren-Dearborn, MI  
S24A Minneapolis-St. Paul-Bloomington, MN-WI  
S24B St. Louis, MO-IL  
S35A Washington-Arlington-Alexandria, DC-VA-MD-WV  
S35B Miami-Fort Lauderdale-West Palm Beach, FL  
S35C Atlanta-Sandy Springs-Roswell, GA  
S35D Tampa-St. Petersburg-Clearwater, FL  
S35E Baltimore-Columbia-Towson, MD  
S37A Dallas-Fort Worth-Arlington, TX  
S37B Houston-The Woodlands-Sugar Land, TX  
S48A Phoenix-Mesa-Scottsdale, AZ  
S48B Denver-Aurora-Lakewood, CO  
S49A Los Angeles-Long Beach-Anaheim, CA  
S49B San Francisco-Oakland-Hayward, CA  
S49C Riverside-San Bernardino-Ontario, CA  
S49D Seattle-Tacoma-Bellevue, WA  
S49E San Diego-Carlsbad, CA  
S49F Honolulu, HI  
S49G Anchorage, AK

Note: Only "S" size PSUs are identified on the public use microdata



# Consumer Units living in Metropolitan Areas

Consumer Units classified as	Number	Percent
Below- middle class	4,805	38.0
Middle class	5,863	46.4
Above- middle class	1,979	15.6
Total	12,647	100

*How well does the income-based definition capture the standard of living Of the middle class?*

# Identifying probably-miscategorized Consumer Units (CU)

- At least three different cases are possible.
- **Case 1:** CU whose annual cash contribution is higher than their annual income
- **Case 2:** CU classified as a lower class, but with non-zero cash contribution
- **Case 3:** CU classified as a upper class, but their number of earners is more than three (implying their standard of living might not be similar to other upper class CU)

\*\* Special thanks to Taylor Wilson at BLS for his advice!

# Case 1: CU whose annual cash contribution is higher than their annual income

Consumer Units classified as (2015)	Number	Case 1 count
Below- middle class	4,805	1,639
Middle class	5,863	2,799
Above- middle class	1,979	1,222
Total	12,647	5,660

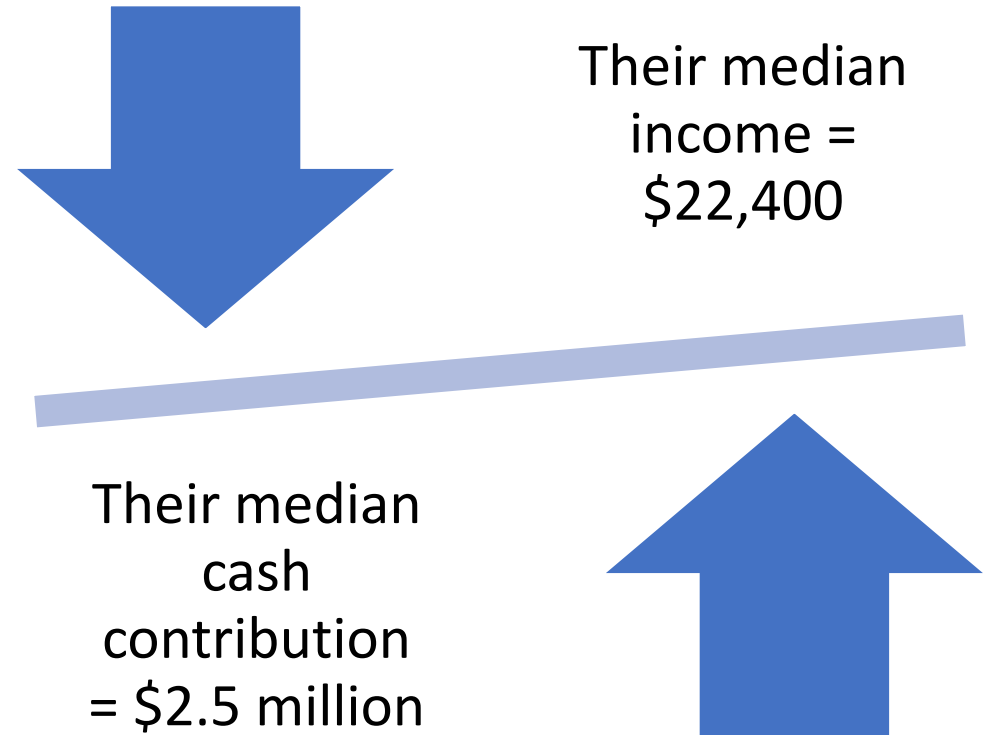
- The mean age of 'Case 1' sample was about 53
- Their average income: \$98,679
- Their median income: \$74,638

# Case 2: CU classified as a lower class, but with non-zero cash contribution

- Total of 1,639 CUs in 2015 Interview Survey data
- The mean age of 'Case 2' was about 59.

About 25% of the below-middle class CUs

- Total of 1,179 CUs has contributed more than a million dollar, but they were classified as below-middle class due to their low income.



## **Case 3: CU classified as a upper class, but with multiple earners (more than three)**

<b>Consumer Units classified as (2015)</b>	<b>Number</b>	<b>Case 3 count</b>
Below- middle class	4,805	Didn't Count
Middle class	5,863	187
Above- middle class	1,979	143
Total	12,647	

# Consumption Pattern by Class

Categories	Proportion of the total expenditure		
	Below-middle	Middle class	Above-middle
Food & Beverages	19.0%	15.9%	12.7%
Housing	41.2%	34.5%	31.9%
Apparel	2.0%	1.9%	2.4%
Transportation	13.9%	17.0%	14.2%
Medical Care	7.7%	7.5%	5.8%
Recreation	3.9%	4.4%	5.1%
Education and Communication	1.8%	1.7%	3.8%
Personal Insurance, Pension, Saving	5.0%	12.4%	18.0%
Cash contribution	2.9%	2.6%	4.3%
Other Goods And Services	2.7%	2.1%	1.8%

# Consumption Pattern by Metro Areas (Among 23 selected metros)

- Average proportion of **housing expenditure** by different class type (after Cost-of-living Index adjustment)

Metropolitan Statistical Area	Adjusted Lower Class	Adjusted Middle Class	Adjusted Upper Class
Miami-Fort Lauderdale-West Palm Beach., FL	40.8%	33.9%	22.0%
Minneapolis-St.Paul-Bloomington, MN-WI	42.4%	29.8%	29.9%
New York-Newark-Jersey City, NY-NJ-PA	45.5%	38.1%	34.4%
Riverside- San Bernardino-Ontario, CA	46.1%	32.9%	30.5%
San Francisco-Oakland-Hayward, CA	44.8%	36.8%	39.7%
Tampa-St. Petersburg-Clearwater, FL	30.2%	34.1%	27.5%

Minimum Maximum

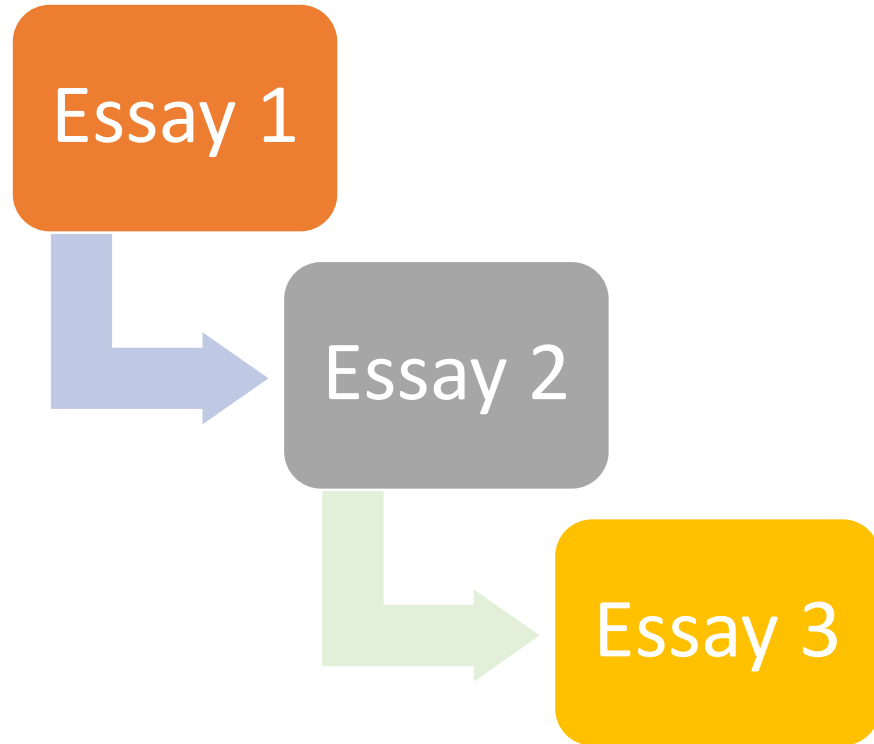
# Takeaway & Suggestion for future CE

- The consumption data reveals the limitation of income-based class definition.
- The Consumer Expenditure Survey provides a detailed picture how different income category household consume goods & services differently across U.S. metropolitan statistical areas.
- Educating future CE users beyond this workshop using more popular channel, such as recorded video lecture, would benefit lots of people.





# Background on my research



- How to define U.S. “middle class”?
- To what extent do different definitions matter?
- What are the correlates of the degree of “middle-classness” of metropolitan areas?
- To what extent does the “middle-classness” of metropolitan areas affect its economic outcome?

Age distribution for CU classified as below-middle class, but with non-zero cash contribution

