

# Changes in Low-Income Households' Spending Patterns in Response to the 2013 SNAP Benefit Cut

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# Acknowledgements

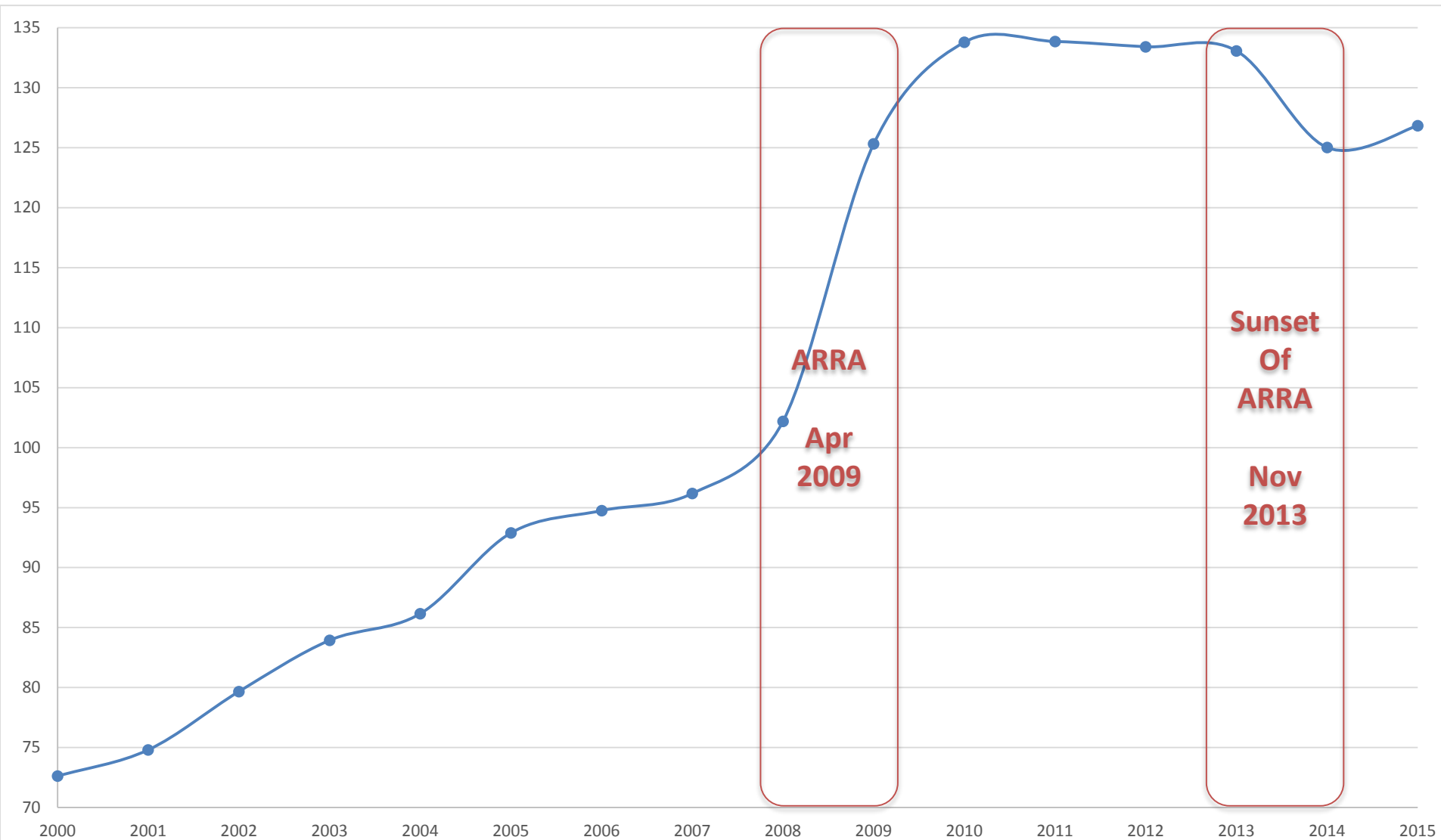
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# Introduction

# Average Monthly SNAP Benefits per Person



Source: Food and Nutrition Service, U.S. Department of Agriculture 2016

# Motivation

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- On April 1, 2009, the American Recovery and Reinvestment Act (ARRA) temporarily increased SNAP benefits by 16%
- On November 1, 2013, this temporary boost by ARRA expired and SNAP benefits reverted to pre-ARRA levels, resulting in a cut in SNAP allotment for the first time in the program's history.
  - A participating family of 4 lost \$36 per month in benefits
- SNAP accounts for 50 percent of food-at-home spending of low income households and 10-15 percent of total U.S. food-at-home expenditures (Beatty and Tuttle, 2015)
- Reduction to SNAP benefits in 2013 is predicted to affect food expenditures as well as non-food expenditures

# Preview of Findings

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- We find that reduced SNAP benefits...
  - 1) decrease spending on food of SNAP participants
    - the decrease is strongly driven by food-at-home expenditures
  - 2) increase spending on transportation of SNAP participants
    - the increase is strongly driven by expenditures on public transportation
  
- Our findings are strengthened by the analysis of American Time Use Survey (ATUS): we find that time spent on food preparation significantly decreased whereas travel time for work and childcare increased after November 2013

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# Data and Primary Outcomes

# Data

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- **Consumer Expenditure Survey 2012 to 2014**
  - 2012Q1 – 2014Q5
  - Data files used: FMLY, MEMB, EXPN
  - Each consumer unit is interviewed every three months, providing a short panel of up to five consecutive quarters.
- **Analysis Sample**
  - Households whose quarterly interviews were implemented across November 2013
  - Households with annual incomes below 130%
  - Households with annual incomes below 150%
  - Households with annual incomes below 185%
  - Households with annual incomes below 250%





# Primary Outcomes

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## 0. Log (Total Expenditures)

## 1. Log (Food)

- Food at home, food away from home, alcoholic beverages

## 2. Log (Housing)

- Shelter, utility, house operation, house equipment

## 3. Log (Transportation)

- New/used cars, gas, vehicle finance charges, insurance, rental, licenses, public transportation

## 4. Log (Health)

- Health insurance, medical service, prescription drugs, medical supplies

## 5. Log (Others)

- Entertainment, apparel, education, personal care, tobacco

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# Methodology

# Empirical Strategy

- Diff-in-Diff and **HH fixed effect** approach using **CE**

$$Y_{ht} = \beta_0 + \beta_1 After_t + \beta_2 SNAP_{ht} * After_t + \rho_h + \epsilon_{ht}$$

- The change for SNAP recipients (T group) is compared with that of non-recipients (C group)
  - We use **Coarsened Exact Matching (CEM)** to improve the balance of observables between SNAP recipients and non-recipients
- Considering under-reporting of the SNAP receipt, we use demographic characteristics (**low educated single mothers**) to **proxy for SNAP receipt**
- We use mean of CU replicate weight (finlwt21)

# Identifying Assumption

- Are there any other policy changes around the time of SNAP benefit cut?
  - Medicaid Eligibility expanded in 26 states on Jan 1, 2014
  - From 106% to 138% FPL
  - Consequences:
    - Research suggests that expansion states have seen larger reductions in out-of-pocket medical spending than non-expansion states.
  - Indeed, in all of the results, we see a decrease in health expenditures, although not statistically significant
- No other major changes in TANF, Medicare, EITC, Social Security during this period.

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# **Findings:**

# **Descriptive Statistics**

## Table 1: Descriptive Statistics for SNAP and non-SNAP Participants by Year

VARIABLES	(1)	(2)	(3)	(4)
	<u>SNAP &amp; Income&lt;FPL185%</u>		<u>non-SNAP &amp; Income&lt;FPL185%</u>	
	Before	After	Before	After
<b>Outcome Variables</b>				
Total Expenditure (\$)	5732.71 (4148.94)	5577.43 (3721.10)	5049.90 (2085.64)	5229.82 (2131.55)
Food (\$)	1349.50 (916.29)	1325.60 (880.59)	1123.88 (657.80)	1161.51 (674.18)
Food (share, %)	26.65 (13.30)	27.01 (13.23)	23.16 (11.38)	23.19 (11.67)
House (\$)	2188.10 (1405.00)	2199.65 (1421.87)	2067.25 (1141.22)	2167.53 (1187.22)
House (share, %)	40.68 (16.09)	41.63 (16.12)	41.55 (16.10)	41.67 (15.83)
Transportation (\$)	960.73 (2305.04)	870.76 (2079.40)	615.28 (592.52)	595.05 (575.19)
Transportation (share, %)	12.42 (12.67)	11.42 (11.92)	11.60 (9.52)	10.87 (9.37)
Health (\$)	281.86 (539.04)	314.29 (608.27)	441.91 (615.10)	496.73 (654.56)
Health (share, %)	4.91 (7.79)	5.41 (9.18)	8.73 (10.95)	9.66 (11.24)
Others (\$)	952.53 (1467.15)	867.13 (901.83)	801.58 (740.67)	809.01 (759.67)
Others (share, %)	15.33 (10.26)	14.54 (9.45)	14.97 (10.99)	14.61 (10.92)

**Table 1: Descriptive Statistics for SNAP and non-SNAP Participants by Year**

VARIABLES	(1)	(2)	(3)	(4)
	SNAP & Income<FPL185% Before	After	non-SNAP & Income<FPL185% Before	After
<b>Household Head Characteristics</b>				
Employed (%)	35.36 (47.86)	38.10 (48.61)	42.12 (49.39)	43.97 (49.65)
Hours Worked per week	34.27 (13.26)	33.00 (11.82)	34.95 (11.85)	35.45 (12.77)
Yearly Before-Tax Salary (\$)	17293.52 (12457.86)	16771.77 (12712.13)	15667.07 (9789.05)	15914.75 (10065.47)
SNAP Annual Amount (\$)	2148.09 (1875.17)	2240.81 (1921.69)	0.00 (0.00)	0.00 (0.00)
<b>No. of Households</b>	444	462	1,408	1,360

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**Findings:**  
**Diff-in-Diff with HH fixed effect**



# SNAP vs FPL<130%

VARIABLES	(1) log(total)	(2) log(food)	(3) log(housing)	(4) log(trans)	(5) log(health)	(6) log(others)
After	0.0335* [0.017]	0.0828 [0.052]	0.0358 [0.046]	-0.0949 [0.076]	0.3643*** [0.109]	0.0804 [0.064]
After * SNAP	-0.0352 [0.032]	-0.1000* [0.058]	-0.0051 [0.065]	0.2447* [0.132]	-0.0478 [0.184]	-0.1238 [0.109]
Constant	8.3461*** [0.007]	6.7507*** [0.018]	7.3513*** [0.017]	5.1142*** [0.031]	3.3055*** [0.044]	5.8984*** [0.025]
Observations	2,436	2,436	2,436	2,436	2,436	2,436
R-squared	0.003	0.003	0.001	0.003	0.014	0.001
Number of HH	917	917	917	917	917	917

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# SNAP vs FPL<150%

VARIABLES	(1) log(total)	(2) log(food)	(3) log(housing)	(4) log(trans)	(5) log(health)	(6) log(others)
After	0.0266* [0.014]	0.0555 [0.042]	0.0468 [0.039]	-0.1406** [0.065]	0.3353*** [0.094]	0.0638 [0.053]
After * SNAP	-0.0338 [0.029]	-0.0782 [0.049]	-0.0172 [0.057]	0.2294* [0.122]	-0.0641 [0.175]	-0.1117 [0.095]
Constant	8.3796*** [0.006]	6.7649*** [0.015]	7.3781*** [0.015]	5.2444*** [0.027]	3.5322*** [0.039]	5.9710*** [0.022]
Observations	2,926	2,926	2,926	2,926	2,926	2,926
R-squared	0.002	0.002	0.002	0.003	0.012	0.001
Number of HH	1,053	1,053	1,053	1,053	1,053	1,053

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# SNAP vs FPL<185%

VARIABLES	(1) log(total)	(2) log(food)	(3) log(housing)	(4) log(trans)	(5) log(health)	(6) log(others)
After	0.0302** [0.012]	0.0636* [0.033]	0.0528* [0.030]	-0.1158** [0.054]	0.3166*** [0.080]	0.0296 [0.045]
After * SNAP	-0.0292 [0.027]	-0.0678* [0.041]	-0.0154 [0.049]	0.1829* [0.109]	-0.0357 [0.161]	-0.0710 [0.084]
Constant	8.4352*** [0.005]	6.8003*** [0.013]	7.4214*** [0.012]	5.4047*** [0.023]	3.7659*** [0.034]	6.1111*** [0.019]
Observations	3,674	3,674	3,674	3,674	3,674	3,674
R-squared	0.003	0.003	0.003	0.003	0.011	0.000
Number of HH	1,282	1,282	1,282	1,282	1,282	1,282

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Low-educated Single vs FPL<130%

VARIABLES	(1) log(total)	(2) log(food)	(3) log(housing)	(4) log(trans)	(5) log(health)	(6) log(others)
After	0.0247 [0.019]	0.0844 [0.053]	0.0521 [0.053]	-0.0758 [0.077]	0.4145*** [0.120]	0.0743 [0.060]
After * SNAP	-0.0260 [0.028]	-0.1317* [0.069]	-0.0518 [0.060]	0.1244 [0.125]	-0.1931 [0.166]	-0.1201 [0.106]
Constant	8.3568*** [0.007]	6.7633*** [0.018]	7.3626*** [0.017]	5.1340*** [0.030]	3.2887*** [0.042]	5.8994*** [0.025]
Observations	2,609	2,609	2,609	2,609	2,609	2,609
R-squared	0.001	0.003	0.002	0.001	0.013	0.001
Number of HH	993	993	993	993	993	993

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Low-educated Single vs FPL<150%

VARIABLES	(1) log(total)	(2) log(food)	(3) log(housing)	(4) log(trans)	(5) log(health)	(6) log(others)
After	0.0111 [0.016]	0.0606 [0.044]	0.0450 [0.043]	-0.1496** [0.069]	0.3617*** [0.107]	0.0445 [0.051]
After * SNAP	-0.0041 [0.025]	-0.1241** [0.062]	-0.0188 [0.055]	0.1991* [0.111]	-0.1455 [0.152]	-0.0691 [0.092]
Constant	8.3882*** [0.006]	6.7802*** [0.016]	7.3866*** [0.014]	5.2505*** [0.027]	3.5124*** [0.038]	5.9762*** [0.022]
Observations	3,129	3,129	3,129	3,129	3,129	3,129
R-squared	0.000	0.003	0.002	0.003	0.011	0.000
Number of HH	1,140	1,140	1,140	1,140	1,140	1,140

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Low-educated Single vs FPL<185%

VARIABLES	(1) log(total)	(2) log(food)	(3) log(housing)	(4) log(trans)	(5) log(health)	(6) log(others)
After	0.0153 [0.014]	0.0758** [0.035]	0.0528 [0.034]	-0.1449** [0.059]	0.3460*** [0.093]	0.0230 [0.043]
After * SNAP	0.0036 [0.022]	-0.1260** [0.051]	-0.0135 [0.045]	0.2188** [0.096]	-0.1045 [0.133]	-0.0776 [0.080]
Constant	8.4418*** [0.005]	6.8127*** [0.013]	7.4267*** [0.012]	5.4062*** [0.023]	3.7498*** [0.033]	6.1131*** [0.019]
Observations	3,938	3,938	3,938	3,938	3,938	3,938
R-squared	0.001	0.004	0.003	0.003	0.011	0.000
Number of HH	1,389	1,389	1,389	1,389	1,389	1,389

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Low-educated Single vs FPL<250%

VARIABLES	(1) log(total)	(2) log(food)	(3) log(housing)	(4) log(trans)	(5) log(health)	(6) log(others)
After	0.0151 [0.011]	0.0572** [0.026]	0.0389 [0.026]	-0.1055** [0.044]	0.2623*** [0.076]	0.0509 [0.033]
After * SNAP	0.0071 [0.018]	-0.1274*** [0.044]	0.0198 [0.037]	0.1421* [0.079]	-0.0320 [0.112]	-0.0983 [0.068]
Constant	8.5117*** [0.004]	6.8689*** [0.011]	7.4719*** [0.010]	5.6044*** [0.018]	4.0469*** [0.028]	6.3021*** [0.015]
Observations	5,141	5,141	5,141	5,141	5,141	5,141
R-squared	0.002	0.003	0.003	0.002	0.008	0.001
Number of HH	1,696	1,696	1,696	1,696	1,696	1,696

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Food sub-category

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Log (food at home)			Log (food away)		
FPL cutoff	<150%	<185%	<250%	<150%	<185%	<250%
After	0.0568 [0.053]	0.0813* [0.045]	0.0645* [0.034]	0.2118** [0.106]	0.2589*** [0.095]	0.1480* [0.082]
After * SNAP	-0.1297* [0.072]	-0.1307** [0.063]	-0.1367*** [0.053]	-0.2183 [0.162]	-0.2665* [0.144]	-0.1486 [0.133]
Constant	6.5104*** [0.018]	6.5341*** [0.016]	6.5856*** [0.013]	3.3748*** [0.040]	3.4817*** [0.035]	3.6884*** [0.032]
Observations	3,129	3,938	5,141	3,129	3,938	5,141
R-squared	0.002	0.003	0.003	0.002	0.003	0.001
Number of HH	1,140	1,389	1,696	1,140	1,389	1,696

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



# Transportation sub-category

VARIABLES	(1) log(rental, leases, licenses)	(2)	(3)	(4) log(public transportation)	(5)	(6)
FPL cutoff	<150%	<185%	<250%	<150%	<185%	<250%
After	-0.1549** [0.076]	-0.0984 [0.066]	-0.1119* [0.058]	-0.1837** [0.077]	-0.1434** [0.069]	-0.0975* [0.054]
After * SNAP	0.1850* [0.098]	0.1454 [0.090]	0.1151 [0.080]	0.2586** [0.112]	0.2770*** [0.106]	0.1957** [0.089]
Constant	0.7312*** [0.026]	0.7343*** [0.023]	0.8447*** [0.021]	0.7083*** [0.028]	0.6738*** [0.026]	0.6629*** [0.021]
Observations	3,129	3,938	5,141	3,129	3,938	5,141
R-squared	0.003	0.001	0.002	0.005	0.004	0.002
Number of HH	1,140	1,389	1,696	1,140	1,389	1,696

Robust standard errors in brackets. Standard errors clustered by Households

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Placebo Tests

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- To check the robustness, we ran the same specification, but using households whose sequence of quarterly interviews were before the SNAP cut (2012-2013) or after the SNAP cut (2014-2015)
  - SNAP vs no SNAP: no interaction terms are significant
  - Low educ single vs others: total expenditures appear to have gone up 2014-2015, but no sub-category is significant

# Why Increase in Transportation?

- **Meyer and Sullivan (AER, 2008)**
  - Investigates well-being changes for single mother headed families targeted by tax and welfare reforms 1993 to 2003
  - Increases in housing and transportation spending mostly account for the rise in consumption in the bottom quintiles
  
- **Kaushal, Gao, and Waldfogel (SSR, 2007)**
  - Welfare reform was associated with an increase in spending on transportation, FAFH, adult clothing and footwear
  - Increased employment among low-educated single mothers is likely to have increased expenditure on work-related expenses, of which transportation is a big component

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# Conclusion

## Summary of Findings

- We study the effect of 2013 SNAP benefit cut on SNAP participants' food and non-food spending
- Using household fixed effect, we consistently find that the spending on food has decreased, whereas the spending on transportation has increased after the cut in SNAP benefit
- Increase in Food-at-home spending and public transportation spending seems to be the main drivers
- Time Use Survey analysis strengthens our findings on expenditure changes.

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# CEX Data Question/Suggestion

## Problems Encountered

- We were not able to find income after tax variable in 2015 CE, comparable to “fincatxm” in 2012 to 2014. It is listed in the 2015 codebook, but not available in the data set. Therefore, we had to drop the 2015 data set from the analysis.
- Variable name for “SNAP amount past 12 months” change from year to year, making it hard for users to find consistency and construct variable accordingly.

```
gen fsp=0
replace fsp=foodsmpm if yr==2012
replace fsp=jfs_amtm if yr==2014
replace fsp=foodsmpm if yr==2013 & jfs_amtm==.
replace fsp=jfs_amtm if yr==2013 & foodsmpm==.
```

## **Questions for the data/workshop producers**

- Is the panel structure of CE OK to be used to track the changes in expenditures of the same households? We would like to know whether it is a recommended usage of CE data from the perspective of data producers





## Suggestions to improve the microdata

- Income, employment status, Program participation: only collected in 2nd and 5th interviews : Benefit of asking these questions in all quarters would outweigh the cost of doing so.
- More detailed program participation variable (in addition to the value of benefit receipt) would enable researchers to examine welfare effects on consumption of low-income households.
- suppressed state codes for 12 states – 17% of observations had missing state information
  - Not able to run state FE
  - Not able to attach state-specific policy/demographic variable

# Thank you!

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