Consumer Expenditure Surveys Public Use Microdata Practical Training

Logistics

- Ten Project Exercises
  - **Tuesday 10:45-12:00 p.m.**
  - **Tuesday 2:15-4:30 p.m.**
  - **Wednesday 10:45-1:00 p.m.**
  - **Wednesday 3:15-5:00 p.m.**
  - **Thursday 10:45-12:00 p.m.**

CE Microdata Users' Workshop

- Data

https://www.bls.gov/cex/pumd_data.htm

- Getting Started Guide

https://www.bls.gov/cex/pumd-getting-started-guide.htm

- Dictionary

https://www.bls.gov/cex/pumd/ce_pumd_interview_diary_dictionary.xlsx

CE Microdata Users' Workshop

You're embarking on a research project to learn about education expenses in today's economy.

- What's the public spending and who's spending more?
- How does the composition of a household affect education expenditures?

Project 1: Generating Annualized Sample Means by Family Type Using the Interview Survey FMLI Files

Project 1

Let's look at the sample and what's available in the FMLI files related to education expenditures.

In this project you will:

- Learn about summary variables.
- Learn about some of the many demographic variables available in the PUMD.
- Calculate sample means, percent reporting, and standard errors.
- Understand some limitations of the Interview survey.

Summary Level Expenditures

- Each summary expenditure category has two variables: PQ and CQ.
- Why two variables?
  - PQ for the previous calendar quarter expenditures (compared to interview date)
  - CQ for the current quarter expenditures
  - For total reference period expenditures PQ + CQ

Composition of the Household

- Several demographic variables exist that provide details on the makeup of a CU

- FAM_TYPE is defined based on the relationship of members within the CU to the reference person. Children are defined as blood-related sons and daughters, step children and adopted children.

Demographic Groups

FAM_TYPE:

1 Married Couple only

2 Married Couple, own children only, oldest child under 6 years old

3 Married Couple, own children only oldest child 6 to 17 years old

4 Married Couple, own children only, oldest child over 17 years old

5 All other Married Couple CUs

6 One parent, male, own children at least one child under 18 years old

7 One parent, female, own children, at least one child under 18 years old

8 Single consumers

9 Other CUs

Project 1 Steps

1. Concatenate (“Set”, “Append”) 4 quarterly FMLI files to obtain collection year of data.
2. Calculate quarterly education expenditures for each household:
   - EDUCA_EXP = EDUCAPQ + EDUCACQ
3. Create demographic groups to estimate by FAM_TYPE.
4. Means: Calculate average annual expenditure by FAM_TYPE
   - Multiply quarterly aggregates by 4 (EDUCA_EXP *4) to get annual aggregate, divide by sample
5. Percent reporting: Create an indicator for CUs that had expenditures (EDUCA_EXP) > 0, find the mean of the indicator to determine the percent that reported.
6. Standard Error: Calculate standard error by FAM_TYPE.

***Note for STATA users:** Convert the 2021 data variables to lowercase if they aren’t already

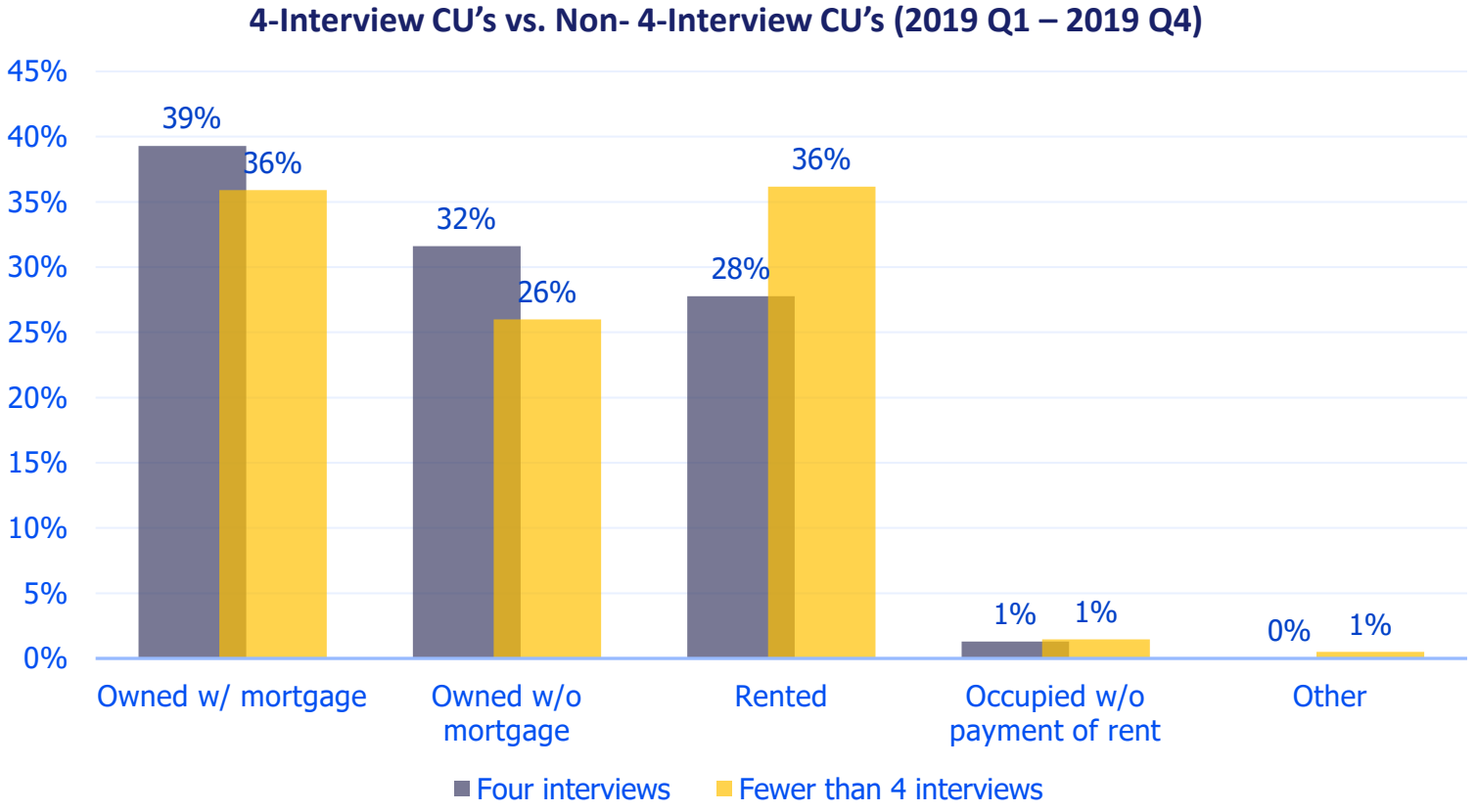
Project 1 Results

Count	Family Type (FAM_TYPE)	Mean Family Size	Education Expenditure Mean	Education Expenditure Standard Error	Education Expenditure Percent Reporting
4,559	Married couple only	2	$845.58	$110.86	4.65%
744	Married Couple, own children only, oldest child under 6 years old	4	$577.63	$116.26	7.66%
2,137	Married Couple, own children only, oldest child 6 to 17 years old	4	$2,228.48	$264.76	19.2%
1,451	Married Couple, own children only, oldest child over 17 years old	4	$3,552.88	$356.68	21.4%
765	All other Married Couple CUs	5	$1,042.15	$234.52	11.5%
209	One parent, male, own children at least one child under 18 years old	3	$603.44	$259.66	10.0%
727	One parent, female, own children, at least one child under 18 years old	3	$582.55	$132.05	12.0%
6,491	Single consumers	1	$524.30	$69.57	4.27%
3,251	Other consumer units	3	$773.86	$96.58	8.31%

Project 1 Notes

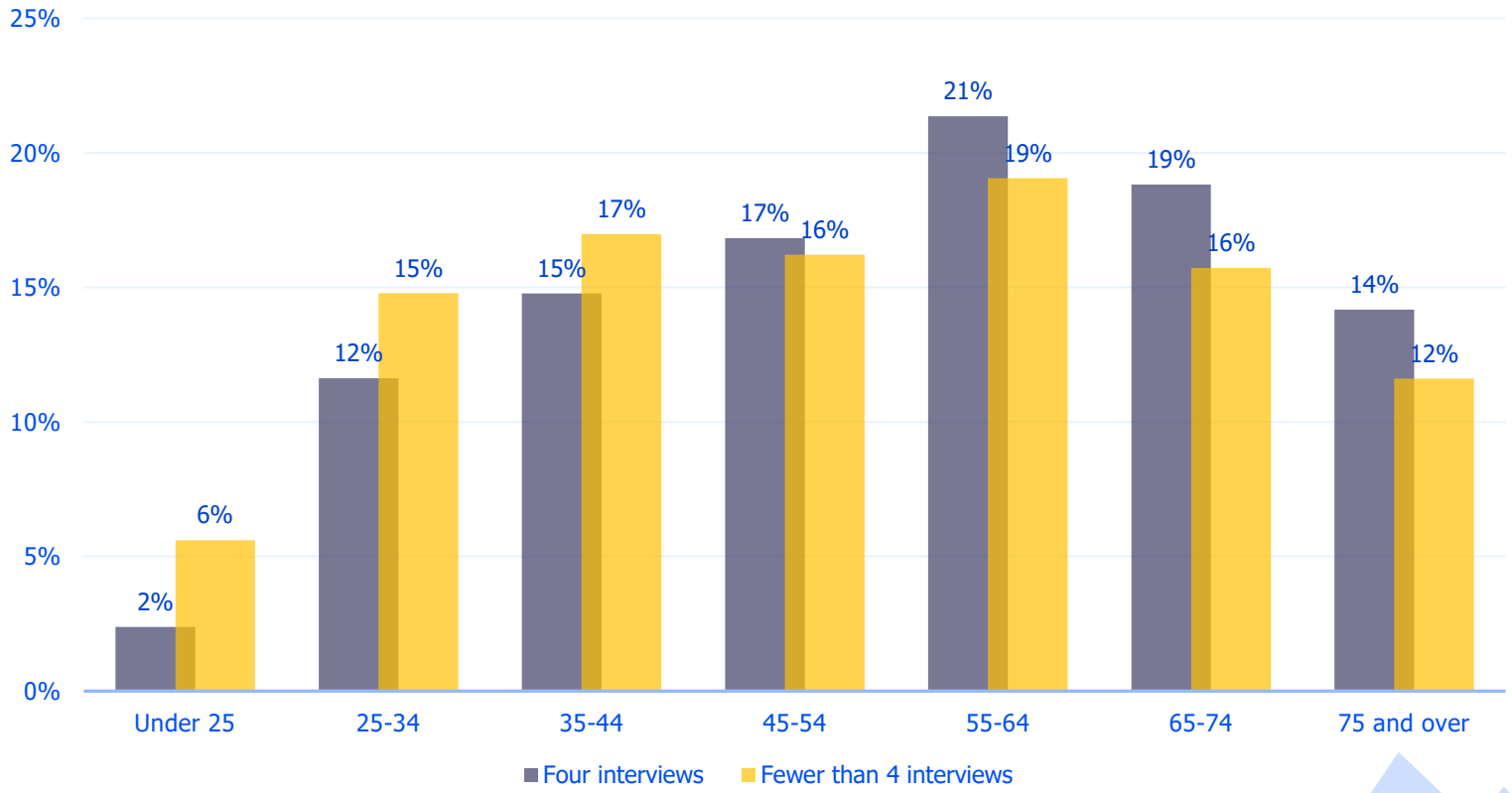
- Interview not designed to capture smaller, frequently purchased items.
  - EX: Some education expenses are included in total expenditures for the CE tables, but are not collected in the Interview.
  - Supplement Diary data to include (we'll do this in Project 4).

Percentage Distribution of CU's by Housing Tenure



Percentage Distribution of CU's by Age of Reference Person

4-Interview CU's vs. Non- 4-Interview CU's (2019 Q1 – 2019 Q4)



Project 2: Generating annualized sample means by number of children in the CU using the Interview FMLI and MEMI files

Project 2

What if you want to know how the number of children within the household affects expenditures on education? We can use the MEMI file to add information to our dataset.

In this project you will:

- Learn how to navigate the MEMI file.
- How CE files fit together.

Project 2 Steps

1. Concatenate 4 quarterly MEMI (MEMI211X – MEMI214) files to obtain collection year of data.
2. Create summary identifier at the household level to determine groupings for the number of children(see next page) using CU_CODE =3.
3. Merge (“Join”) FMLI file with MEMI file using NEWID to link.
4. Means: Calculate means using new summary identifiers.
5. Standard Error: Calculate standard error for each of the groups.
6. Percent reporting: Create an indicator for CUs that had expenditures > 0, calculate mean of the indicator to determine the percent that reported for each group.

Project 2 details

Groupings by number of children using MEMI variable AGE:

0 – 0 children in the CU

1 – 1 child in the CU

2 – 2 children in the CU

3 – 3 children in the CU

4 – 4 or more children in the CU

Project 2 Results

Count	Number of Children	Education Expenditure Mean	Education Expenditure Standard Error	Education Expenditure Percent Reporting
13,081	0 children	$675.61	$55.25	5.00%
3,210	1 child	$1,523.55	$175.11	11.7%
2,527	2 children	$2,068.70	$208.92	17.3%
1,028	3 children	$1,637.44	$243.42	16.4%
486	4 or more children	$1,705.90	$336.90	20.6%

Project 3: Adding More Detail About Expenditures

Project 3

What if you want to know about specific types of education expenses? We can use the monthly expenditure file (**MTBI**) to add information to our dataset

In this project you will:

- Learn more about the MTBI file.
- Create detailed summarized estimates from the MTBI file.

Project 3 Steps

1. Concatenate 4 quarterly MTBI files to obtain collection year of data.
2. Calculate totals by number of children for each NEWID using the following education expense groupings.

Tuition:	670110, 670210, 670410, 670901
Test preparation and tutoring services:	670903
School books, supplies, and equipment:	660110, 660210, 660410, 660901, 660902
Other school expenses including rentals:	670902

3. Merge new expenditure groups with the FMLI information.
4. Calculate means, standard errors, and percent reporting.

Project 3 Results
Tuition

Count	Number of Children	Tuition Expenditure Mean	Tuition Expenditure Standard Error	Tuition Expenditure Percent Reporting
13,081	0 children	$648.28	$54.65	3.6%
3,210	1 child	$1,441.54	$172.06	8.0%
2,527	2 children	$1,930.77	$206.77	11.2%
1,028	3 children	$1,520.30	$239.22	10.8%
486	4 or more children	$1,546.53	$334.19	12.3%

Project 3 Results

Test preparation and tutoring services

Count	Number of Children	Test Prep Expenditure Mean	Test Prep Expenditure Standard Error	Test Prep Expenditure Percent Reporting
13,081	0 children	$5.76	$1.35	0.3%
3,210	1 child	$26.11	$5.94	1.2%
2,527	2 children	$69.02	$12.97	2.0%
1,028	3 children	$39.37	$15.08	1.5%
486	4 or more children	$46.21	$28.10	1.2%

Project 3 Results
School books, supplies, and equipment*

Count	Number of Children	Supplies Expenditure Mean	Supplies Expenditure Standard Error	Supplies Expenditure Percent Reporting
13,081	0 children	$7.49	$1.11	0.8%
3,210	1 child	$12.94	$3.21	1.5%
2,527	2 children	$16.17	$3.05	2.1%
1,028	3 children	$25.02	$6.19	2.7%
486	4 or more children	$35.23	$18.73	2.5%

*Due to UCC changes in 2021Q2, this is only showing data for 2021Q1 (See the CE source selection file)

Project 3 Results

Other school expenses including rentals

Count	Number of Children	Other School Expenditure Mean	Other School Expenditure Standard Error	Other School Expenditure Percent Reporting
13,081	0 children	$14.08	$2.75	1.0%
3,210	1 child	$42.96	$9.28	2.8%
2,527	2 children	$52.73	$7.99	4.5%
1,028	3 children	$52.77	$11.26	4.5%
486	4 or more children	$77.92	$24.14	5.6%