
Project 6: Find population estimates using weights

Project 6

So far – we've only looked at sample estimates. Instead, we want to look at population estimates. We'll calculate the health care means of the self employed for the US population

In this project you will:

- ▶ Learn about weighting in the CE
- ▶ Calculate collection year population estimates

Weight – FINLWT21

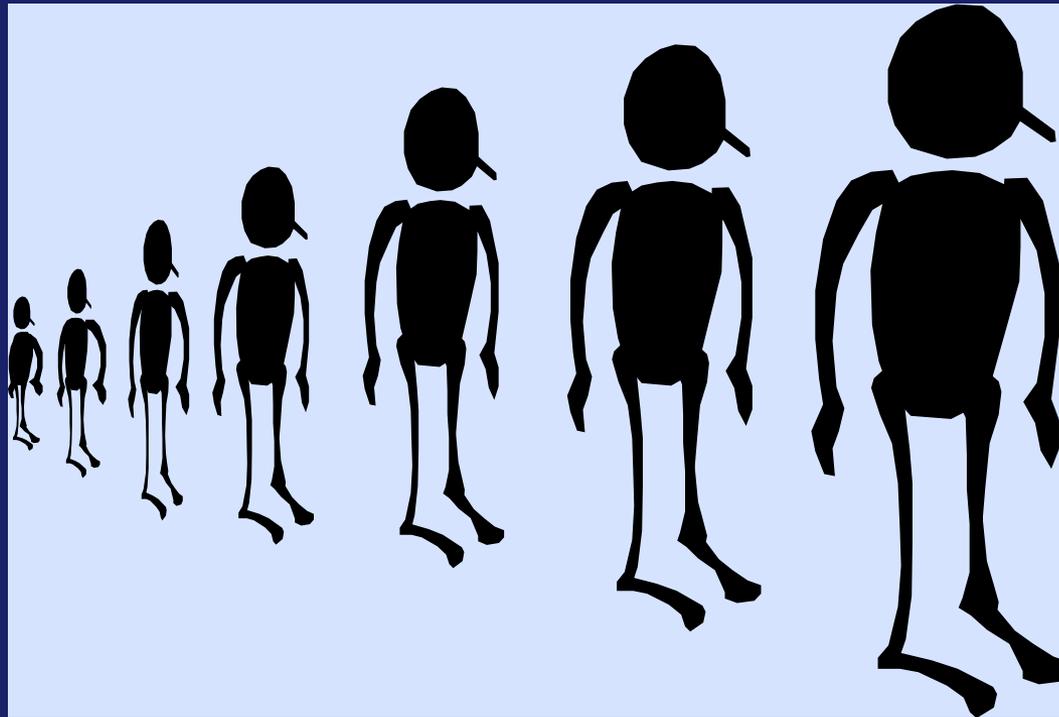
- The sum of FINLWT21 each quarter equals the U.S. Population (in CUs).
- The sum of FINLWT21 for four quarters equals 4 times the U.S. Population.
- FINLWT21 is the starting point for calculating expenditure weights and population weights

Expenditure Weights

- Basic definition: The expenditure weight is the number of similar CUs that a CU represents in any given quarter. It is the weight used when aggregating to expenditure totals.

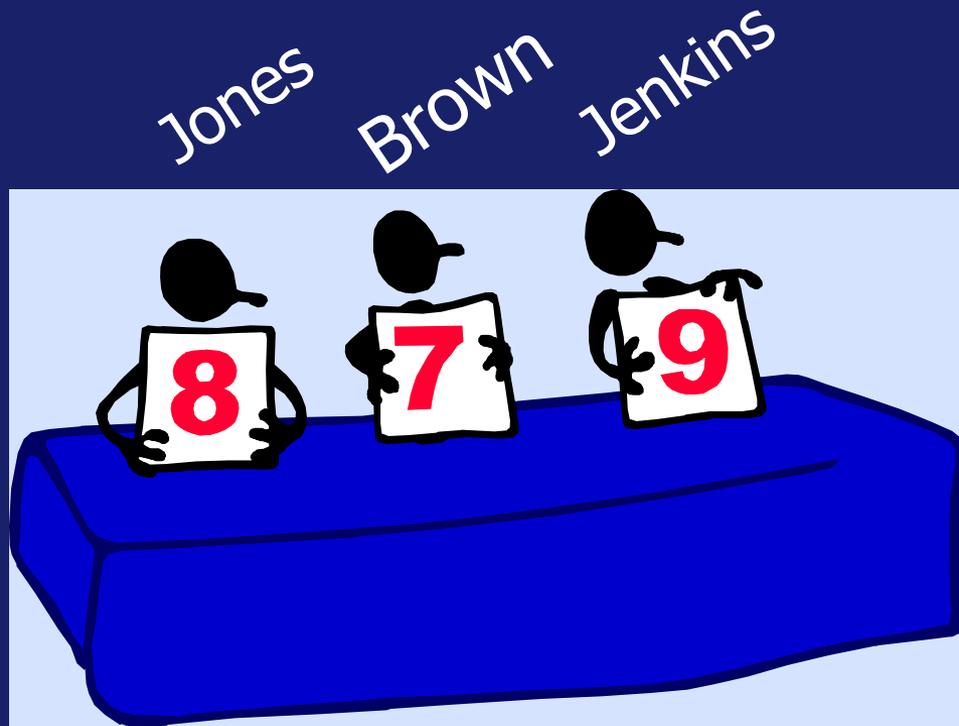
FIRST LOOK: QUARTERLY WEIGHTS AND ESTIMATES

Population



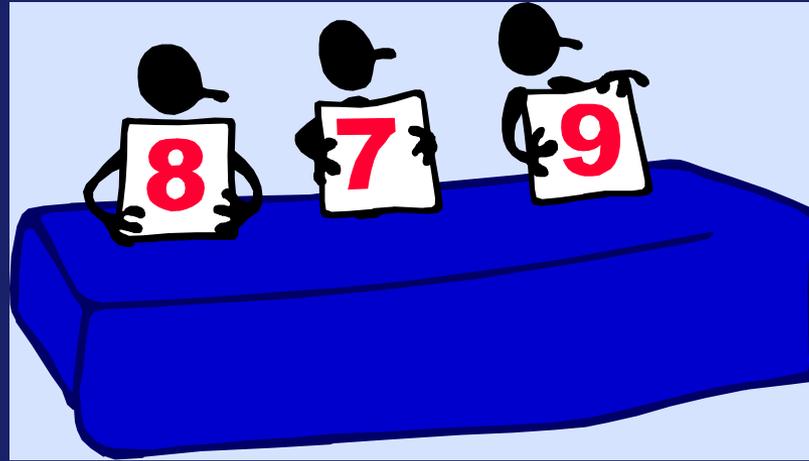
Quarter 1 Population: 24 CUs

Sample



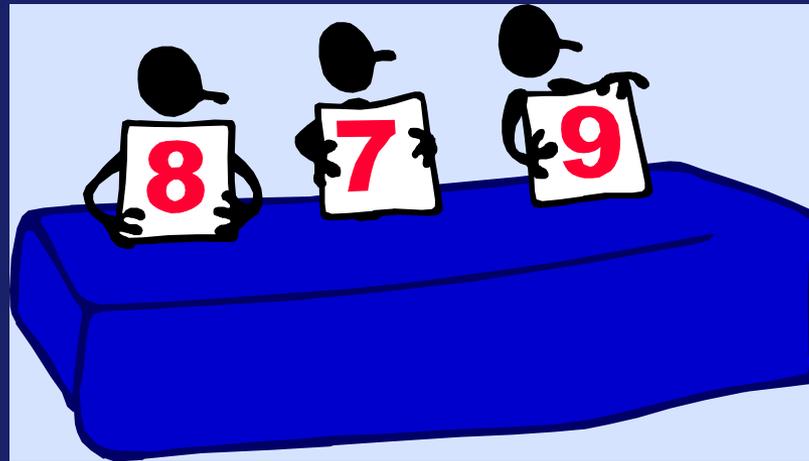
Quarter 1 Sample: 3 CUs

Quarterly Estimates



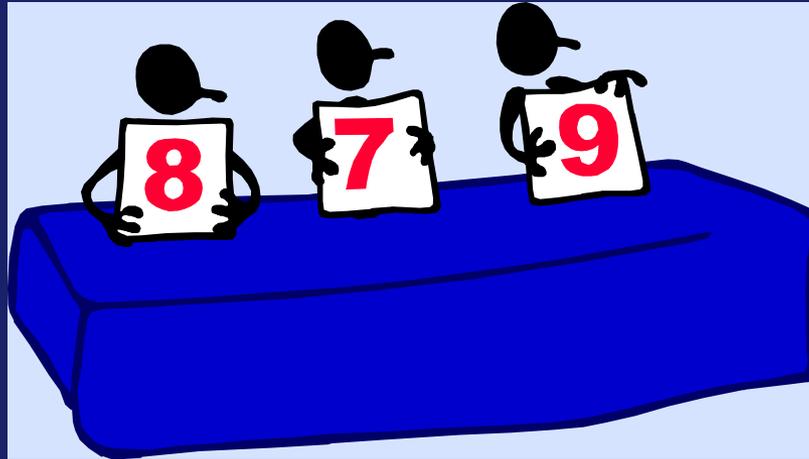
CU	Quarterly Expenditure (TOTEX4)	Weight (FINLWT21)	Weighted Quarterly Expenditures
Joness	\$3,500	8	\$28,000
Browns	\$2,000	7	\$14,000
Jenkins	\$8,000	9	\$72,000
POPULATION		24	\$114,000

Quarterly Estimates



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Quarterly Estimates

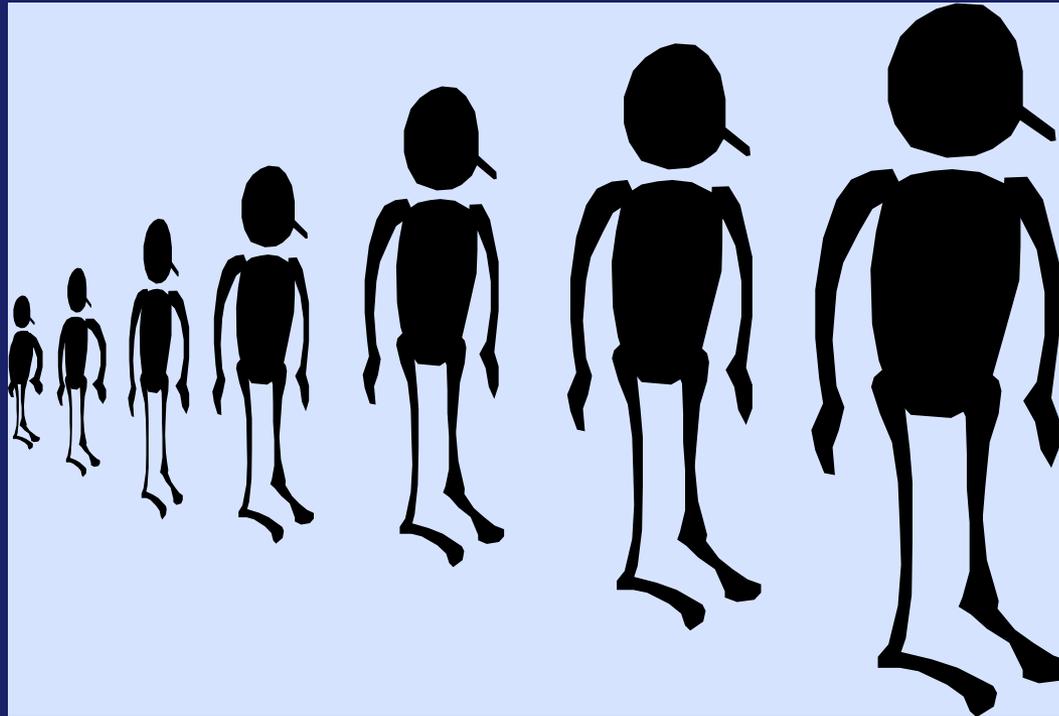


POPULATION		24	\$114,000
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Weighted quarterly average:
 $\$114,000 / 24 = \$4,750$

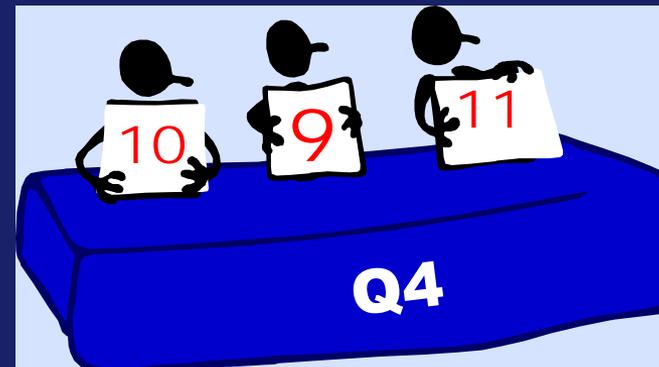
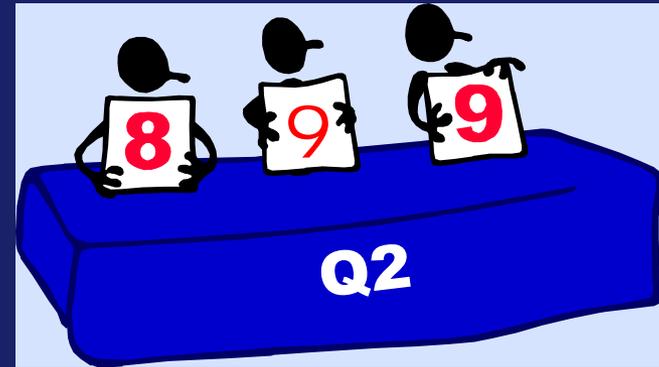
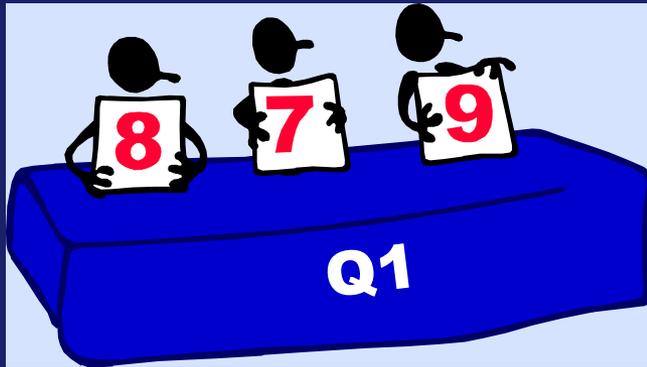
SECOND LOOK: ANNUAL WEIGHTS AND ESTIMATES

Population

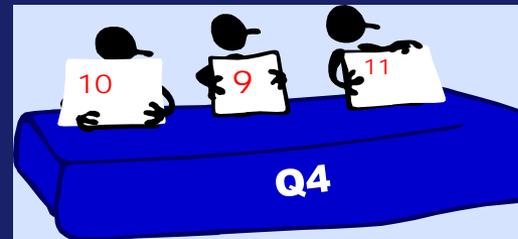
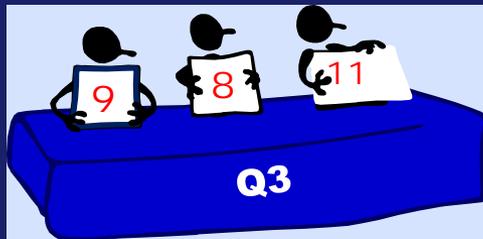
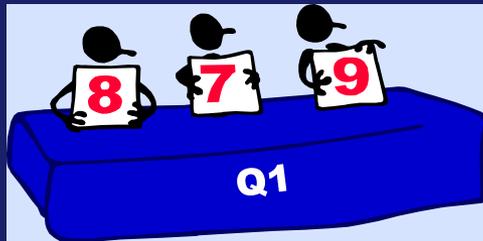


Annual Population: 27 CUs

Sample



Annual Estimates



Quarter 1	Population	Quarterly weighted aggregate
Quarter 1	24	\$114,000
Quarter 2	26	\$110,400
Quarter 3	28	\$116,200
Quarter 4	30	\$125,000

Annual Estimates

Quarter 1	Population	Quarterly weighted aggregate
Quarter 1	24	\$114,000
Quarter 2	26	\$110,400
Quarter 3	28	\$116,200
Quarter 4	30	\$125,000

Annual aggregate:
 $114,000 + 110,400 + 116,200 + 125,000$
 $= \$465,600$

Annual Estimates

Quarter 1	Population	Quarterly weighted aggregate
Quarter 1	24	\$114,000
Quarter 2	26	\$110,400
Quarter 3	28	\$116,200
Quarter 4	30	\$125,000

Annual mean:
Annual Aggregate / population
= \$465,400 / ???

Population Weights

- Need to adjust FINLWT21
 - ▶ Sum of FINLWT21 for each quarter = US pop
 - Need to adjust for number of quarters
 - Simple – divide FINLWT21 by the number of quarters you are analyzing. So when using one year of data divide by 4.

Quarterly Estimates

Quarter 1	Population	Quarterly weighted aggregate
Quarter 1	24	\$114,000
Quarter 2	26	\$110,400
Quarter 3	28	\$116,200
Quarter 4	30	\$125,000
		\$465,400

Annual mean:

Annual Aggregate / average population

$$= \$465,400 \div ((24 + 26 + 28 + 30) / 4)$$

$$= \$465,400 \div 27$$

$$= \$17,237$$

NOTE: Another way to do this is to create a separate population weight for each household:

$$\text{popweight} = \text{finlwt21} / 4$$

Project 6 Steps

1. Multiply quarterly health expenditures by FINLWT21 to obtain weighted aggregates (*NOT the annualized health expenditures!*)
2. Create population weights by dividing FINLWT21 by the number of quarters in our sample (4)
3. Aggregates: Sum the weighted estimates by each group
4. Populations: Sum the population weights by each group
5. Means: Calculate annual means for each of the group by dividing the aggregates by the populations

Weighting in Diary

- Same concept as the interview but *WEEKLY* expenditures
- Following the same steps as quarterly interview estimates:
 - ▶ Aggregate $\text{FINLWT21} * \text{EXPENDITURE}$
 - ▶ Divide the aggregate by the sum of FINLWT21
 - Average WEEKLY expenditure for the quarter.
- To move to annual average weekly estimates:
 - ▶ Aggregate $\text{FINLWT21} * \text{EXPENDITURE} / 4$ (to account for 4 quarters of weekly estimates)
 - ▶ As in Interview → to get the population, sum FINLWT21 and divide by number of quarters (4) .

NOTE: THE DIVISION BY 4 WILL CANCEL WHEN CALCULATING THE AVERAGE!!

Project 6 Results

Means

	HHSELFEMP	HEALTH_MEAN_WT	HLTHINS_MEAN_WT
1	NOT SELF-EMP	3174.034	1950.056
2	SELF-EMP HH	4816.204	2881.243
3	SEMI SELF-EMP HH	5056.371	2933.894