

Supplemental Poverty Measure Thresholds: Laying the Foundation

Thesia I. Garner

Senior Research Economist

Division of Price and Index Number Research

Office of Prices and Living Conditions

Allied Social Science Association Annual Meetings, Denver, CO

January 8, 2011



www.bls.gov

Motivation

- *Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure*
- March 2010
- Late 2009, Office of Management and Budget's Chief Statistician formed ITWG with representatives from BLS, Census, CEA, Commerce, HHS, and OMB
- Charge: develop set of initial starting points to permit Census, in cooperation with BLS, to produce SPM



What this is and what this is not...

- Ongoing research on SPM poverty thresholds and related statistics conducted in the Division of Price and Index Number Research, Bureau of Labor Statistics (BLS)
- Views expressed in this presentation, including those related to statistical, methodological, technical, or operational issues are mine alone and do not reflect the official policy or policies of the BLS or other agencies
- None of what you will see represents production-level thresholds or production-level statistics; these *research SPM thresholds*
- Standard errors have not been produced for the means, distributions, or thresholds; thus, results are presented relative to other results rather than in statistical terms



This is RESEARCH

Outline

- Background regarding poverty measurement in U.S.
- Review Supplemental Poverty Measure (*SPM*) guidelines as listed in the Interagency Technical Working Group (ITWG) document, March 2010
 - ▶ Point out differences with NAS measure
- Outline how CE data can be used to produce *research SPM thresholds* for 2008, specific focus on
 - ▶ In-kind subsidies
 - ▶ Housing needs
- Describe challenges BLS faces regarding production of SPM thresholds



Measuring Poverty in the U.S.

■ Current Official Poverty Measure

- ▶ First adopted in 1969
- ▶ Now under OMB Statistical Policy Directive No. 14.
- ▶ Poverty thresholds updated each year by change in Consumer Price Index (CPI)
- ▶ Compares before-tax money income to thresholds
- ▶ Uses Current Population Survey (CPS Annual Social and Economic Survey)

■ Does not account for

- ▶ Provision of near-money benefits
- ▶ Necessary expenses (taxes, health care, work)
- ▶ Higher standards and levels of living since 1960's
- ▶ Geographic price differences among regions



Supplemental Poverty Measure (SPM)

- Based on NAS Panel on Measuring Poverty (Citro and Michael 1995) recommendations plus research since then
- Not intended to replace the official poverty measure
- Not intended to be used for resource allocation or program eligibility
- Census Bureau, in coordination with BLS, responsible for improving and updating the measure
 - ▶ Consumer Expenditure Survey (BLS)
 - ▶ Current Population Survey (Census Bureau)
- President's FY 2011 Budget provides funding to develop a new SPM



Consumer Expenditure Survey

- Purpose: weights for CPI and economic well-being of population
- Sample
 - ▶ Non-institutional population and some group quarters, not on military bases
- Consumer unit
 - ▶ Set of individuals sharing a substantial proportion of household expenditures
 - ▶ Could also be single person units
- Two instruments
 - ▶ Quarterly Interview (about 7500 interviews per quarter)
 - ▶ Weekly Diaries (about 7500 diaries per week)
- Interview
 - ▶ Reference period is last 3 months for most expenditures
 - ▶ Detailed and summary questions result in ~ 95% of all spending
 - ▶ Five consecutive interviews, 2-5 for estimation
 - ▶ Assume quarterly data independent for publication



ITWG Guidelines to Establish a Supplemental Poverty Measure (SPM) Threshold

- Recommendation of NAS Panel
 - ▶ The poverty threshold sets the annual expenditure amount below which one is considered poor.

- Production of the SPM is the same as NAS...
 - ▶ CE data with expenditures in threshold year dollars
 - ▶ Reference sample
 - ▶ Basic bundle – food, clothing, shelter, utilities (FCSU)
 - ▶ Point in *FCSU expenditure distribution* below the median
 - ▶ Multiplier for other needs
 - ▶ Updating to reflect real growth in consumption
 - ▶ Adjustments
 - Family size (equivalence scale)
 - Differences in cost of living across geographic areas
 - ▶ Updating over time
 - ▶ Produced by BLS



SPM Thresholds Based on FCSU

- Reference sample - all consumer units with 2 children (*vs. NAS: 2 adults and 2 children*)
- FCSU = spending + proxy for in-kind benefits
 - ▶ Spending for:
 - Food
 - Clothing
 - Shelter (including mortgage principal payments, not home equity loans)
 - Utilities (includes telephone)
 - ▶ Plus proxies for in-kind goods and services counted in resources (i.e., federal in-kind benefits)
- Account for spending needs by housing status
- Data: 5 years of CE data adjusted to threshold dollars
 - ▶ This study: 2004Q2-2009Q1 expenditures converted to 2008 threshold year dollars

Conceptual and Data Issues: Choices for SPM vs. NAS

■ Data Issues

▶ Subsidies

- Food stamps in CE spending
- Plus others in resources

▶ Mortgage Principal Payments in Shelter

- Excluded based on CE-publication definition
- Included based on outflows definition of spending needs

▶ Number of Years of CE Data

- 3 most recent
- 5 most recent

▶ Distribution of needs based on spending below the median but above those in extreme needs

- 78% to 83% of median
- Around 33rd percentile (30th-36th)

■ Conceptual Issues

▶ Reference Family

- Two adults with two children
- All units with two children

▶ Equivalence Scale

- Two-parameter
- Three-parameter

▶ Accounting for housing

- In average
- Separately based on spending needs
 - Owners with mortgages
 - Owners without mortgages
 - Renters

Equivalence Scales

- Needs of adults and children
- Economies of scale of FCSU within reference units

➤ *2-parameter scale* $= (A + 0.7 * C)^{0.7}$

➤ *3-parameter scale*

couples with no children $= (A)^{0.5} = 1.41$

single parent $= (A + 0.8 * (1_{first\ child}) + 0.5 * (C - 1))^{0.7}$

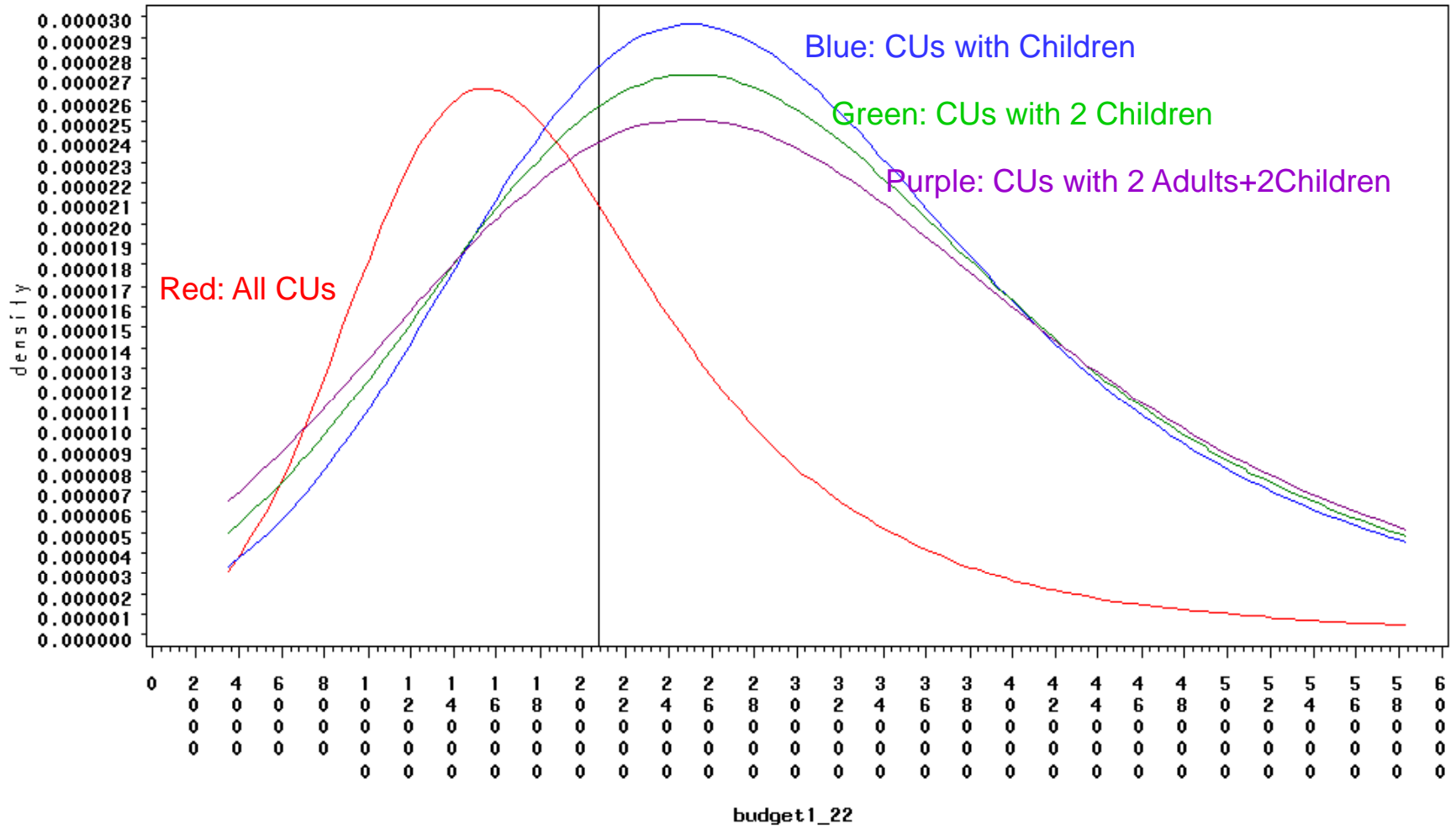
more than 1 adult $= (A + 0.5 * C)^{0.7}$

Calculation of Adult Equivalent FCSU for SPM Threshold

Adults	Children	Family size	3-parameter scale	FCSU	FCSU _{aeq 3-p}
1	0	1	1.00	\$30,000	\$30,000
2	0	2	1.41	\$30,000	\$21,277
2	1	3	1.90	\$30,000	\$15,797
2	2	4	2.16	\$30,000	\$13,904
3	0	3	2.16	\$30,000	\$13,904
3	1	4	2.40	\$30,000	\$12,482
3	2	5	2.64	\$30,000	\$11,368

Density of Annualized FCSU Distributions for Two Adults + Two Children CUs in 2008 Dollars

Based on Different Reference Samples and 3-Parameter Equivalence Scale
 CU Weighted, Data from 2004Q2-2009Q1
 Restricted Range from \$0 to \$60,000
 November 15, 2010



Basic Threshold Equations

- Rank $FCSU$ from lowest to highest
- SPM
 - ▶ 33rd percentile represented by mean of 30th to 36th percentile range of $FCSU_{aeq}$
 - ▶ Threshold for $2A + 2C$

$$= (FCSU_{aeq})_{30th\ to\ 36th} * 1.2 * 3^{0.7}$$

Conceptual and Data Issues Explored in this Study

■ Data Issues

▶ Subsidies

- Food stamps in CE spending
- Plus others in resources

■ Conceptual Issues

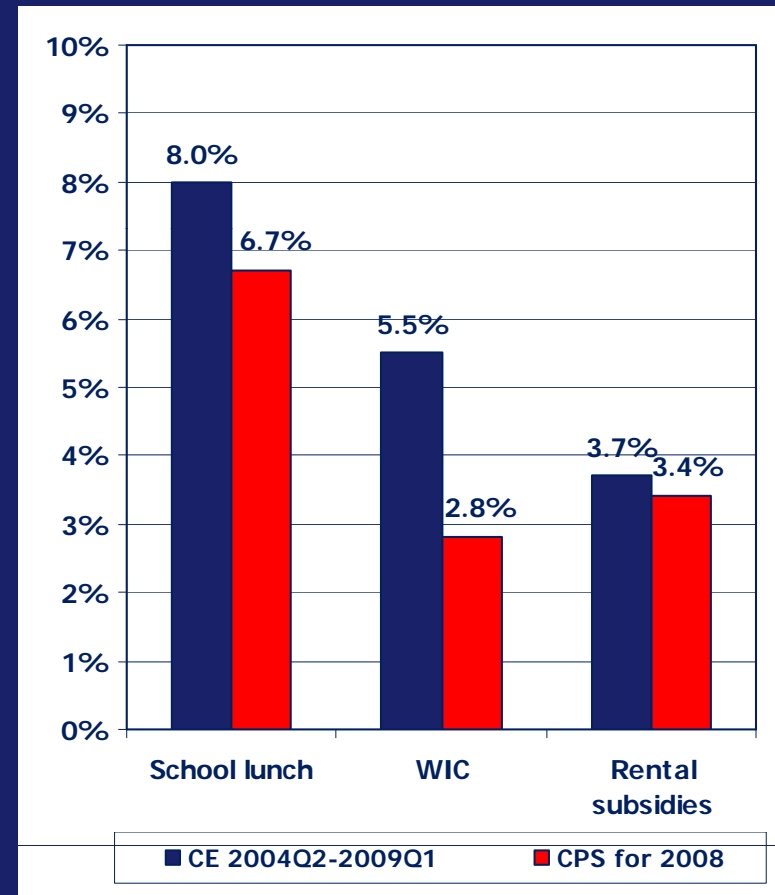
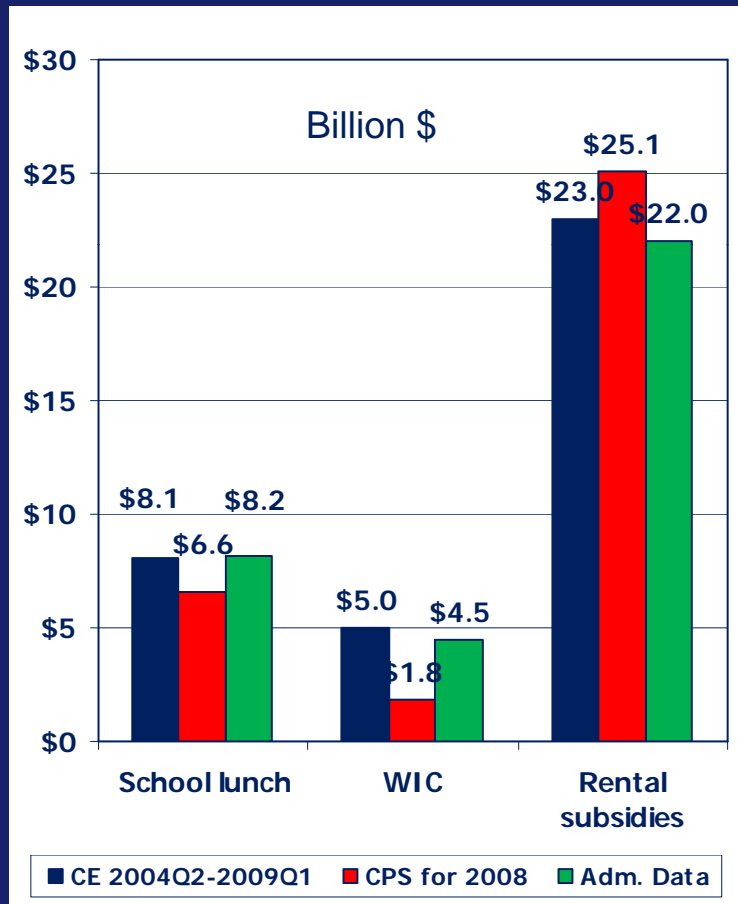
▶ Accounting for housing

- In average
- Separately based on spending needs
 - Owners with mortgages
 - Owners without mortgages
 - Renters

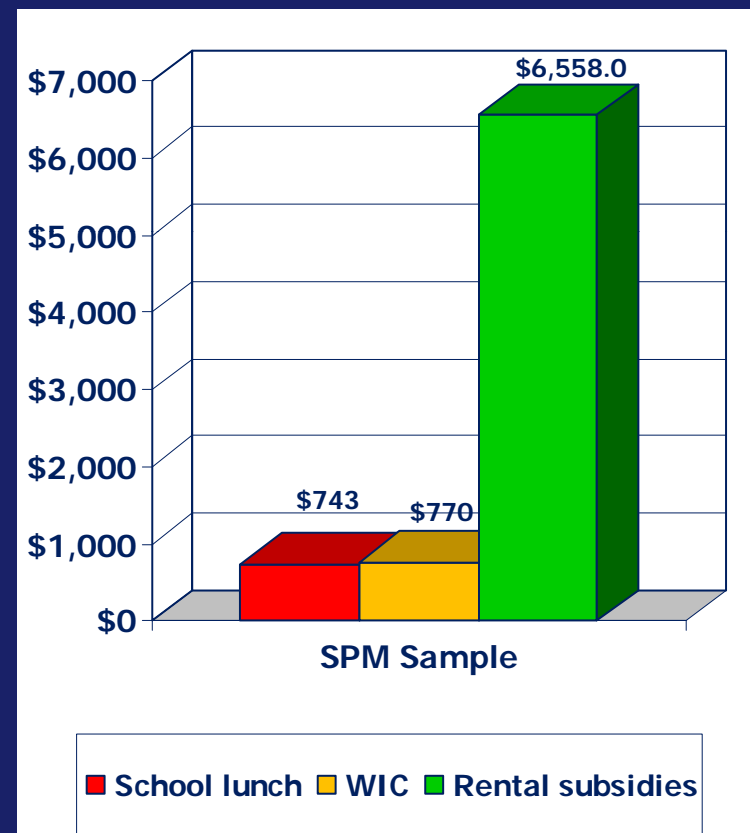
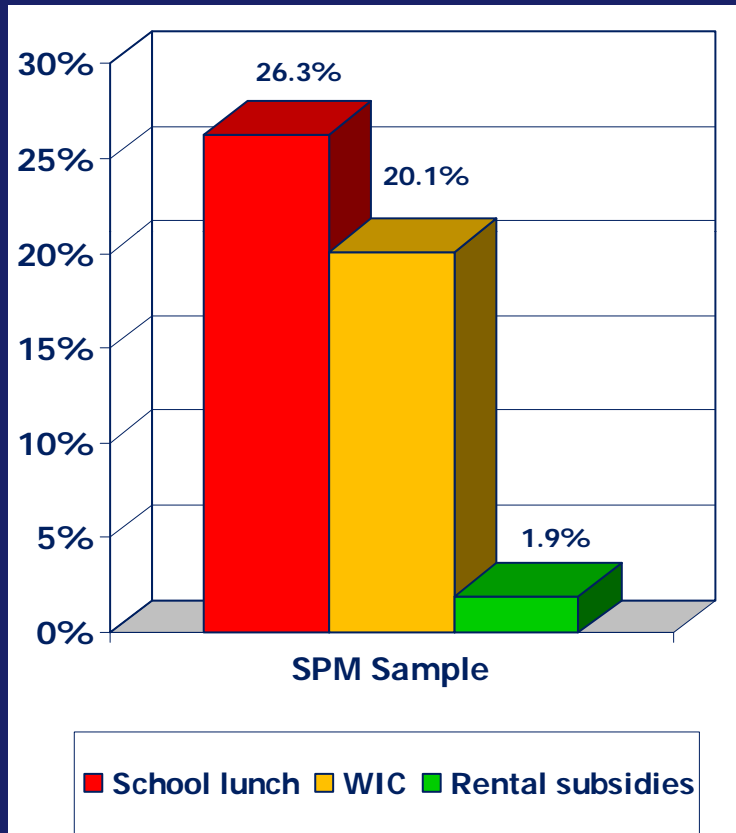
Subsidies for SPM Thresholds

- Data from CE Interview
 - ▶ SNAP (formerly food stamps) implicitly in food expenditures
- Data from CE + HUD
 - ▶ CE participation in rent subsidy program, rents paid
- *Imputations based on CU characteristics*
 - ▶ *School Lunch (free and reduced price)*
 - ▶ *Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)*
- Assumed to be time dependent (subsidies assigned to same as quarterly expenditures)
 - ▶ Data driven: food expenditures include SNAP
 - ▶ Needs based : inter-correlation of FCSU and benefits during times of plenty and times of want, and political environment
(quote)

Aggregate Subsidies and "Participation" Rates: "Average" CE Population (2004Q2-2009Q1) Compared to CPS and Administrative Data



Subsidy "Participation" Rates and Average Values: CE Weighted Estimation Sample

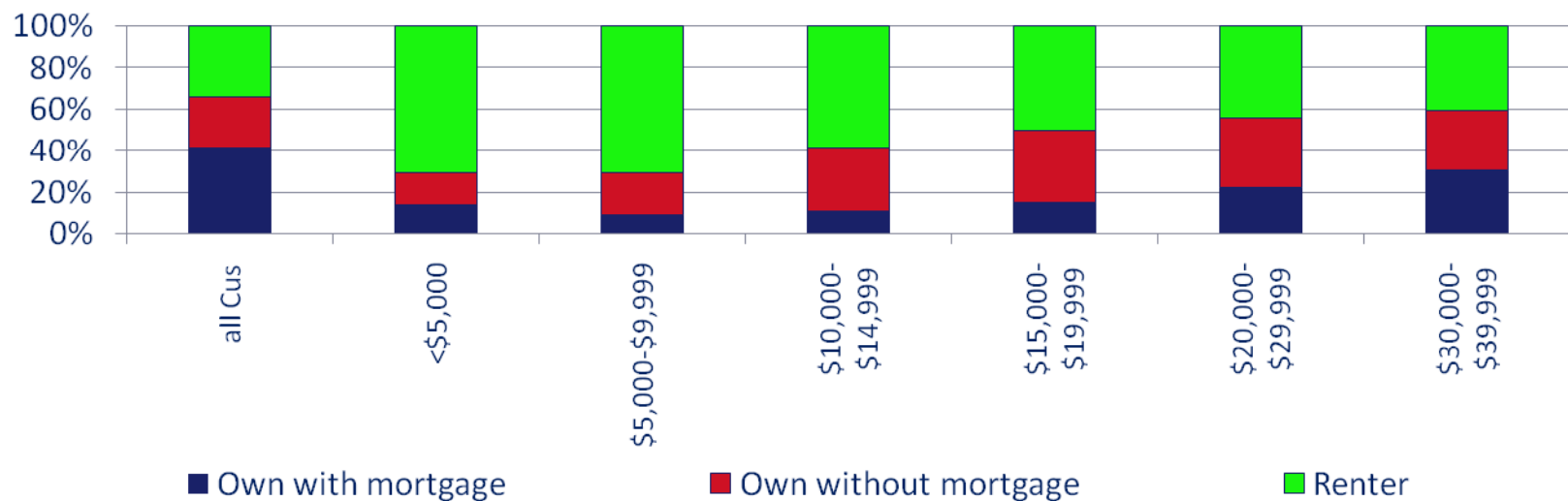


Adult eq values converted to 2A+2C



Housing Status Needs

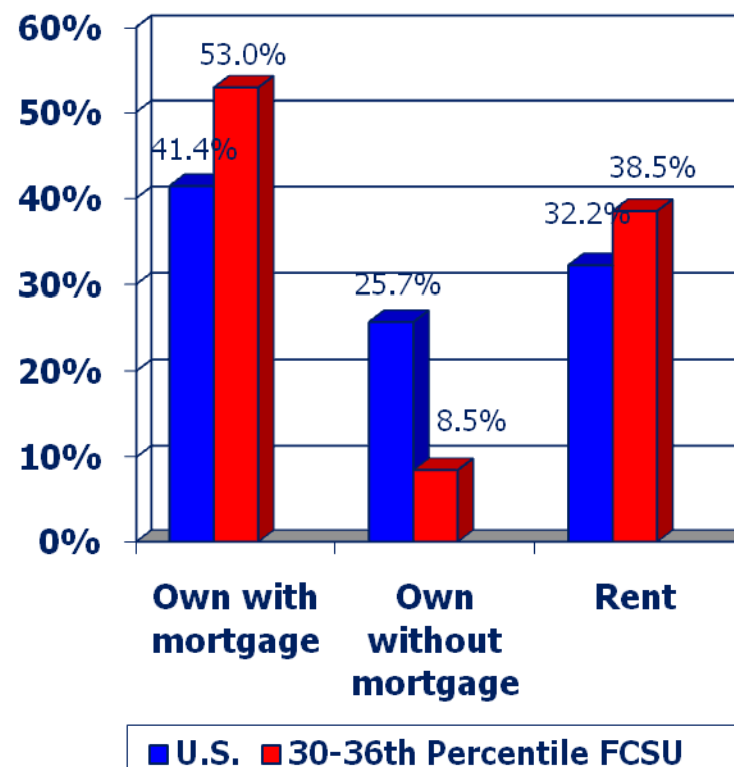
- Owners without mortgages have lower shelter expense needs; not to account for this may overstate their poverty
- NAS Panel appears to have assumed that few or any of these would be in the lower end of the income distribution
- Over time, research revealed that “significant number” of low-income families own their homes without a mortgage
- Results below from CE Interview data for 2008 using before-tax income



Accounting for Housing in SPM Thresholds

- NAS Panel acknowledged the differing spending but similar consumption needs of owners and renters
- “An alternative [to a consumption-based measure] would be to develop separate thresholds for owners with low or no housing costs and other owners and renters (Citro and Michael 1995, p. 345).
- ITWG guideline
- Results for CE and SPM estimation sample using FCSU distribution

**CE Weighted Sample:
2004Q2-2009Q1**



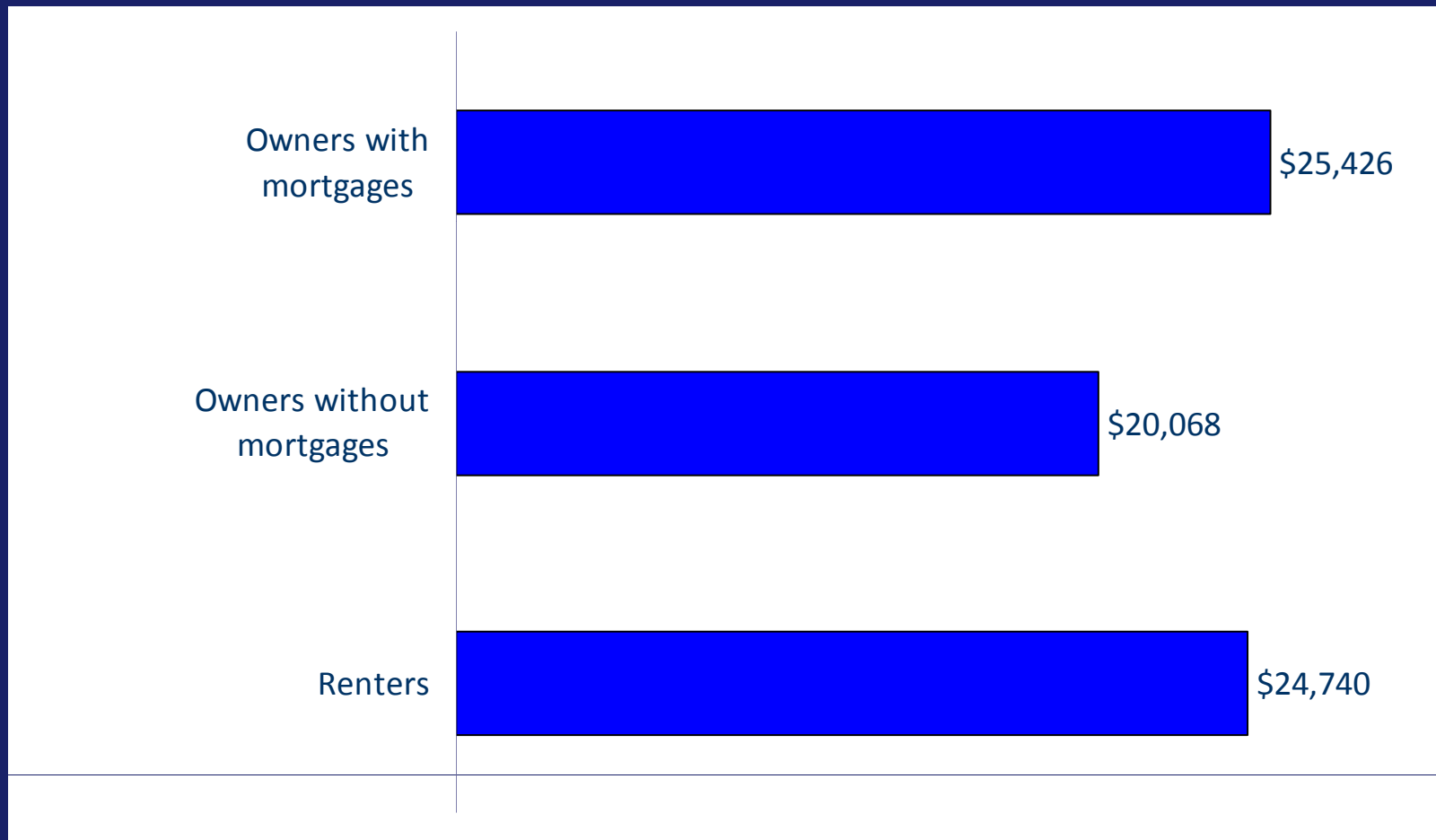
ITWG Accounting for Housing Needs in the SPM

- Within the 30th to 36th percentile of FCSU adult equivalent spending
- One approach, among several, to start
- Threshold equation:

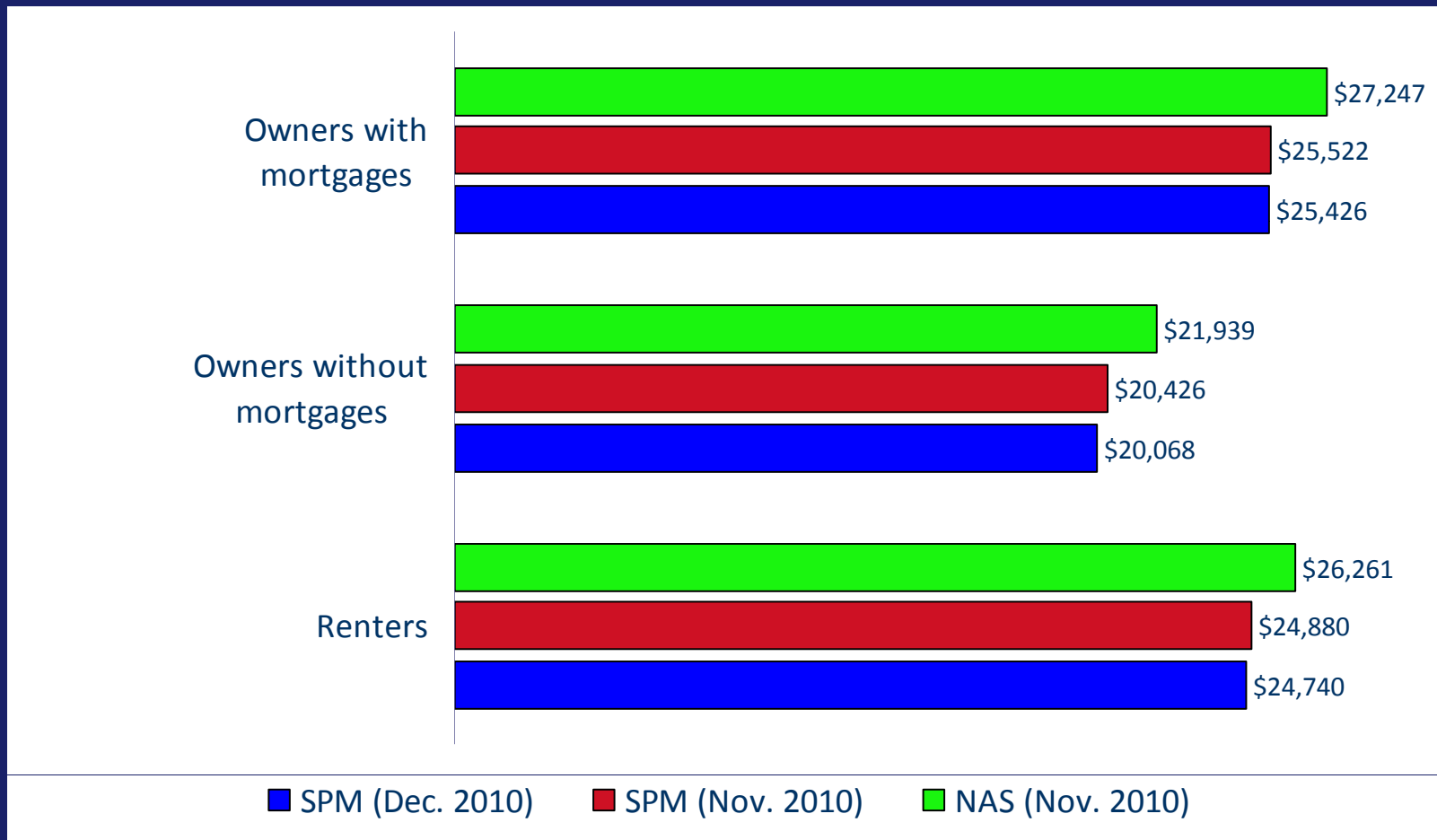
$$SPM_i = (FCSU_{aeq_{all}} - (S + U)_{aeq_{all}} + (S + U)_{aeq_i}) * 1.2 * 3^{0.7}$$

- *i* housing groups:
 - Owners with mortgages
 - Owners without mortgages
 - Renters
- *all* is the full reference sample

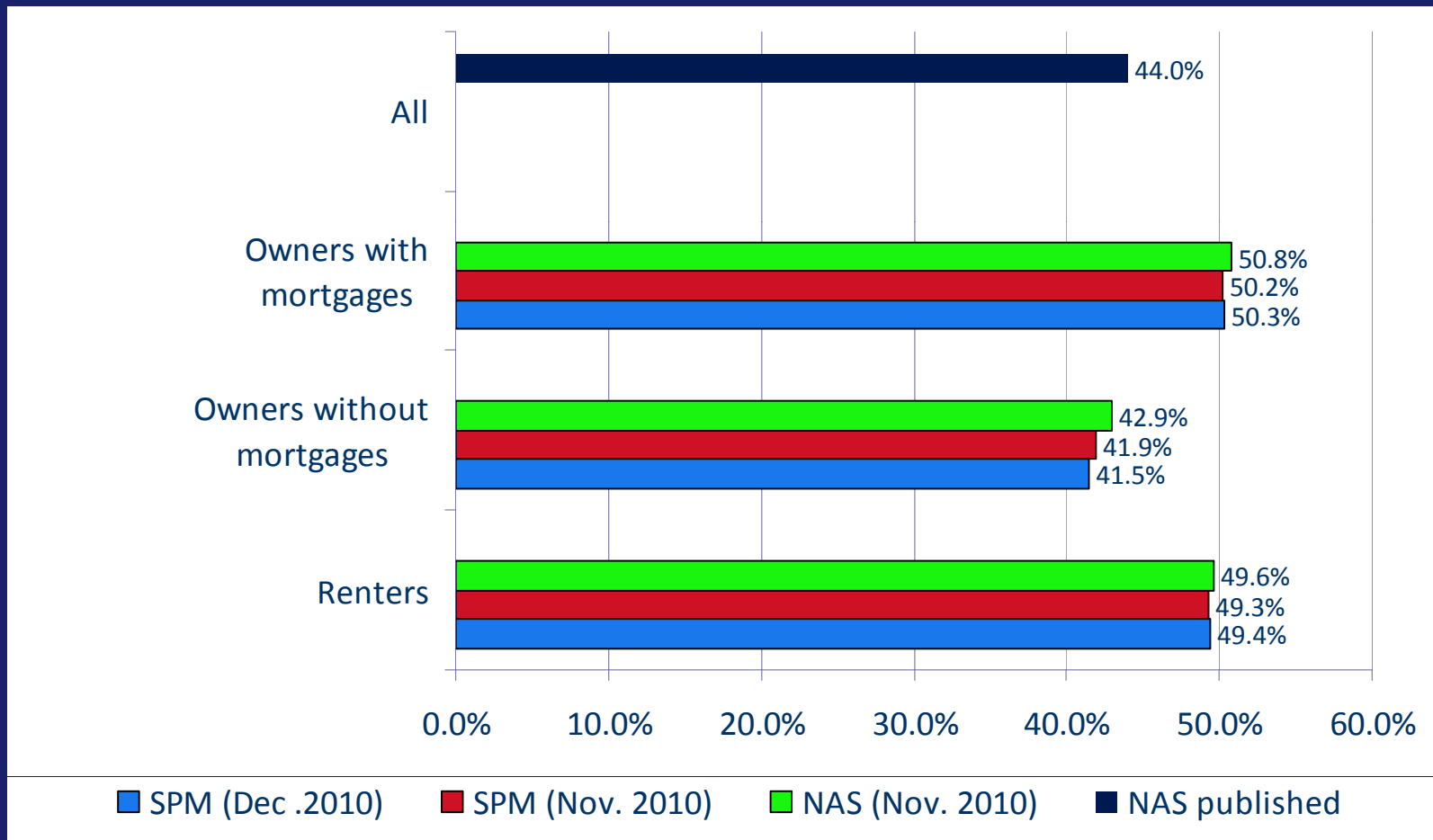
Housing (*Shelter+Utilities*): 2008 SPM Thresholds 2A+2C



Housing (*Shelter+Utilities*): 2008 Thresholds 2A+2C



Housing % of FCSU: 2008 Thresholds 2A+2C



Summary of Findings

■ Subsidies

- ▶ Aggregates: CE estimates for school lunches, WIC, and rental subsidies, based on eligibility guidelines, over-estimated compared to CPS, but similar or under-estimated compared to administrative data
- ▶ Participation rates: CE estimates for school lunches, WIC, and real subsidies over-estimated compared to CPS
- ▶ NOTE: participation for school lunches and WIC reflects eligibility, not take-up but CPS rates based on self-reports, not actual

■ Accounting for housing impacts threshold levels

- ▶ Renters about the same as when not accounting for shelter
- ▶ Owners without mortgages lower
- ▶ Owners with mortgages higher

■ 49% vs. 44% used by NAS Panel and previous researchers



Challenges in Producing SPM Thresholds: Research

- Threshold estimation
 - ▶ Price adjustments over data period
 - ▶ Multiplier
 - ▶ Equivalence scale
- Imputation of in-kind benefits
 - ▶ Proxies in time period of other FCSU
 - ▶ Some might argue –add to thresholds in threshold year only -- but distributional importance and inter-correlation of spending and needs
- Methods to account for housing spending needs across housing status
 - ▶ ITWG method
 - ▶ Betson method
 - ▶ Consumption values- rental equivalence and rents
- Calculation of standard errors
- Understanding and examining impact of choices

Challenges in Producing SPM Thresholds: Production

- Official production depends on passage of President's FY 2011 Budget
 - ▶ Production of thresholds in Division of Consumer Expenditure Surveys
 - ▶ Develop a production system to produce thresholds
 - ▶ Add questions to the 2012 Interview CAPI instrument
 - ▶ Continue on-going research to improve the thresholds
 - ▶ Release to Census Bureau

- No passage
 - ▶ Research thresholds produced in Division of Price and Index Number Research
 - ▶ Continue joint research with colleagues from Census Bureau and other agencies and academic institutions
 - ▶ <http://www.bls.gov/pir/spmhome.htm>

Contact Information

Thesia I. Garner

Division of Price and Index Number Research

Bureau of Labor Statistics

2 Massachusetts Ave NE, Washington, DC 20212

Phone: (202) 691-6576

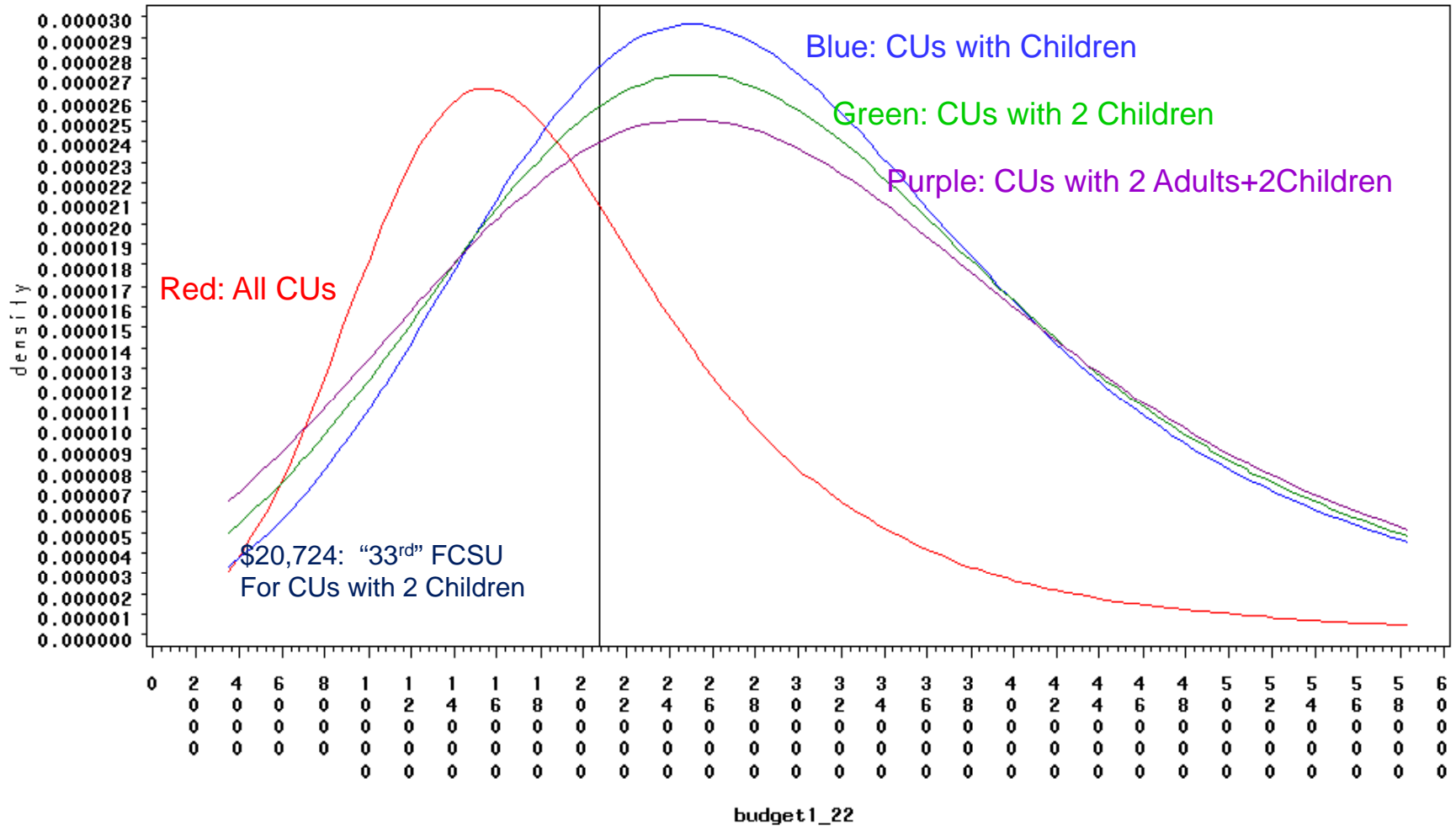
Email: Garner.thesia@BLS.gov



www.bls.gov

Density of Annualized FCSU Distributions for Two Adults + Two Children CUs in 2008 Dollars

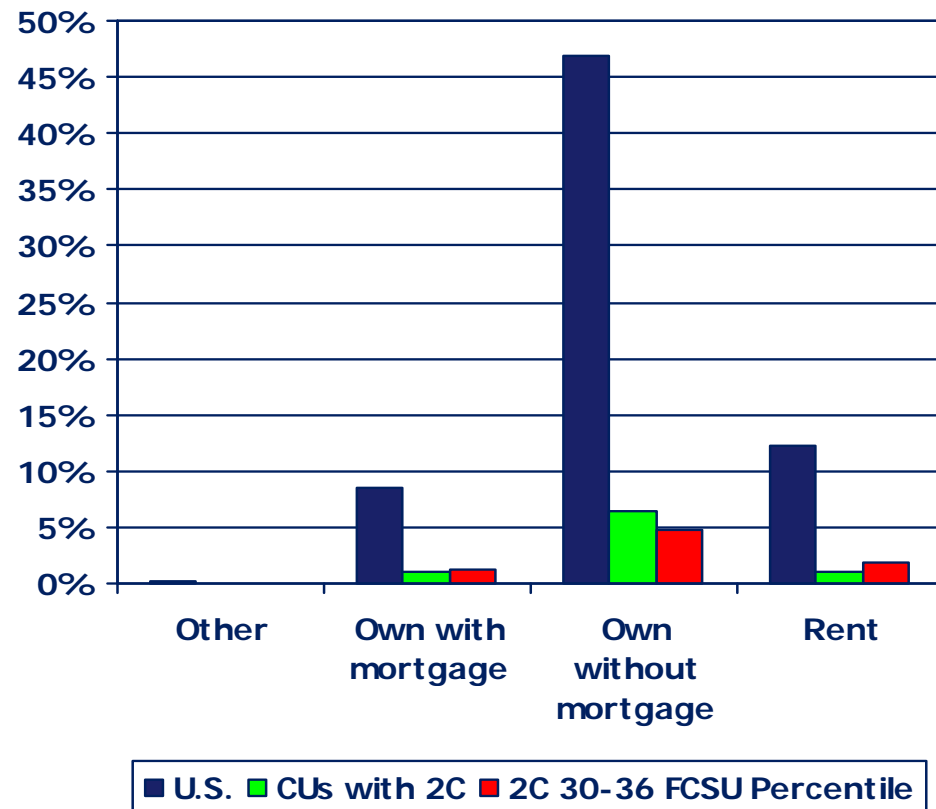
Based on Different Reference Samples and 3-Parameter Equivalence Scale
 CU Weighted, Data from 2004Q2-2009Q1
 Restricted Range from \$0 to \$60,000
 November 15, 2010



% of Elderly in FCSU Estimation Range Sample

- Concern that needs of elderly overly influencing owner without mortgage thresholds

% of CUs with Elderly Reference
Person: CE Weighted Sample
2004Q2-2009Q1



Subsidies: SNAP in CE

- **Food Stamps/SNAP**

- ▶ Use CE reported participation and values
- ▶ Collected in 2nd and 5th interviews and carried over

During the last 12 months, did you or any member of your household receive any-

Food stamps or food stamp money on an EBT card?

Yes

No

What was the value of all food stamps or food stamp money received on an EBT card? [enter value] _____

Do not know the exact amount

Could you tell me which range on CARD C best reflects the total value of all food stamps or food stamp money on an EBT card received in the last 12 months? *(categories of values are provided)*

School Lunches: Limited in CE

■ National School Lunch Program (free and reduced price)

- ▶ Receipt imputed using USDA program eligibility (SNAP , cash welfare), “net” income eligibility, Federal poverty guidelines, number of children in 4-18 age group
- ▶ For reduced only: used CE data on school meals purchased (NEW from earlier SPM work)
- ▶ USDA reported averages per meal including commodity program for 48 states (<60 % free or reduced) applied to 167 days (same as Short 2011)

Since the first of the reference month, not including the current month, have you or any members of your household purchased any meals at school for preschool through high school age children?

Yes

No

What are the names of all household members who purchased meals at school?

* Enter line numbers for all that apply. [enter value] _____

Since the first of the reference month, not including the current month, what has been the usual WEEKLY expense for the meals for the household members who purchased meals at school? [enter value] _____

How many weeks did the household member(s) purchase meals? [enter value]



WIC Subsidies: No Data

- Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
 - ▶ Receipt imputed using USDA program eligibility (SNAP , Medicaid), “net SNAP” income eligibility, Federal poverty guidelines, number of children in 0 up to 5 age group, and new mothers
 - ▶ USDA reported national monthly per person averages for 12 months

Rental Subsidies: Limited in CE

■ Rental Subsidies

- ▶ Use CE reported rental assistance or living in public housing
- ▶ Use CE reported rent paid
- ▶ Impute subsidy value as annualized (HUD Fair Market Rents by tract and number of bedrooms) minus (CE reported rent paid)

* Ask if not apparent.

Is this house in a public housing project, that is, is it owned by a local housing authority or other local public agency?

Yes

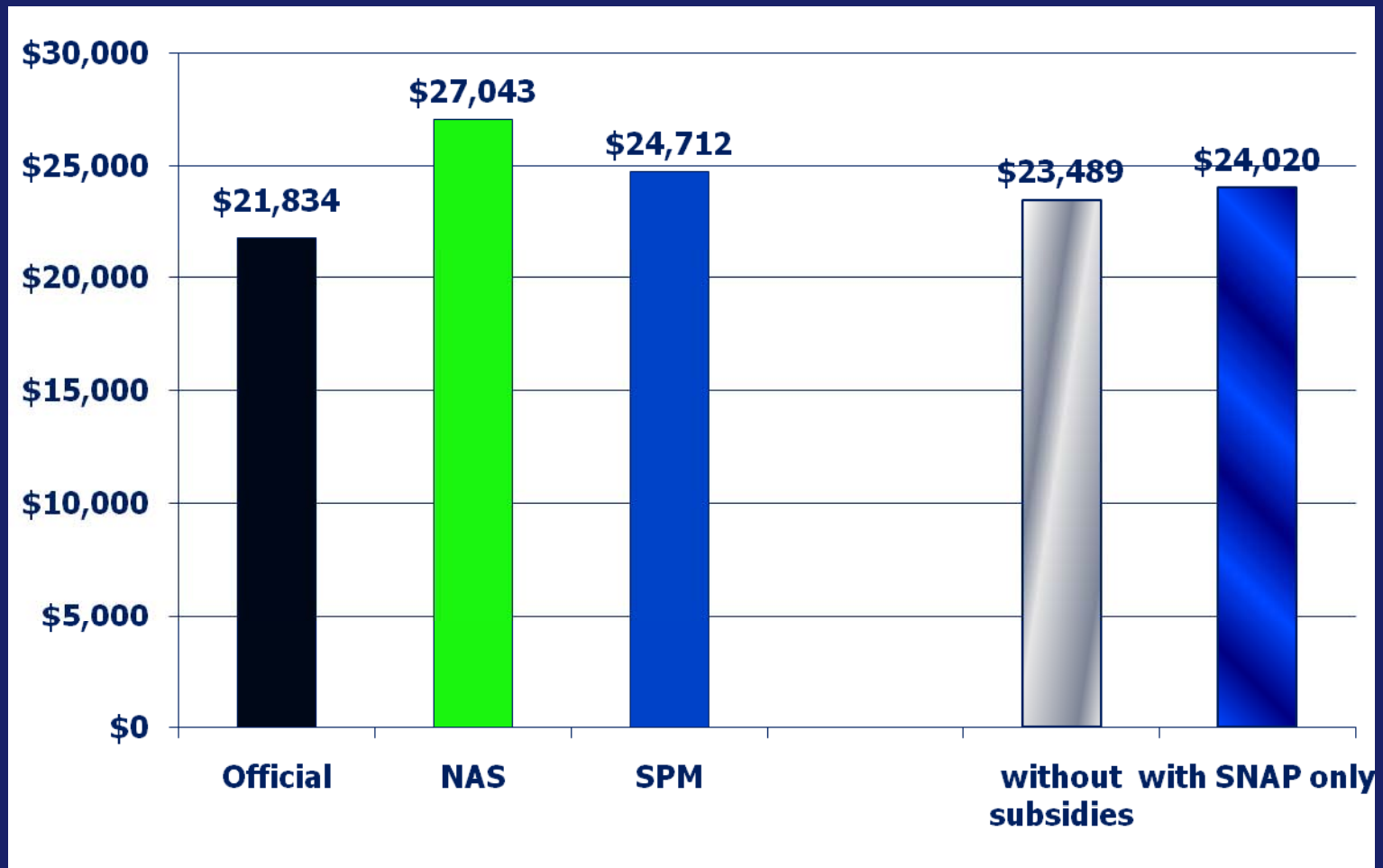
No

Are your housing costs lower because the Federal, State, or local government is paying part of the cost?

Yes

No

Impact of Subsidies: 2008 Thresholds 2A+2C Not Accounting for Housing Status



SPM: CUs with 2 children, 5 years of data, 30-36th percentile range of FCSU