

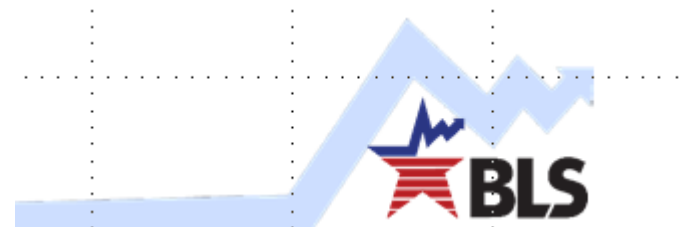
Changing the Housing Share of Poverty Thresholds for the Supplemental Poverty Measure: Does Consumer Unit Size Matter?

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Disclaimer

- This presentation reports the results of research and analysis undertaken by researchers within the Bureau of the Census (Census) and Bureau of Labor Statistics (BLS).
- Any views expressed are those of the authors and not necessarily those of the Census or BLS.
- Results are preliminary and not to be quoted without authors' permission.



Motivation

- The Supplemental Poverty Measure (SPM) assumes that all SPM resource units within each housing type (renter, owner with a mortgage, owner without a mortgage) devote the same share of their threshold to housing costs. This is important because ...
 - Geographical adjustments applied to only the housing share of threshold
 - Value of housing assistance benefits capped at no greater than housing share of the threshold.
- Concerns about underestimation of the value of housing benefits led to an investigation of this assumption.
 - Should the housing share vary by household size?

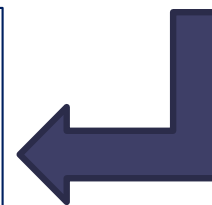
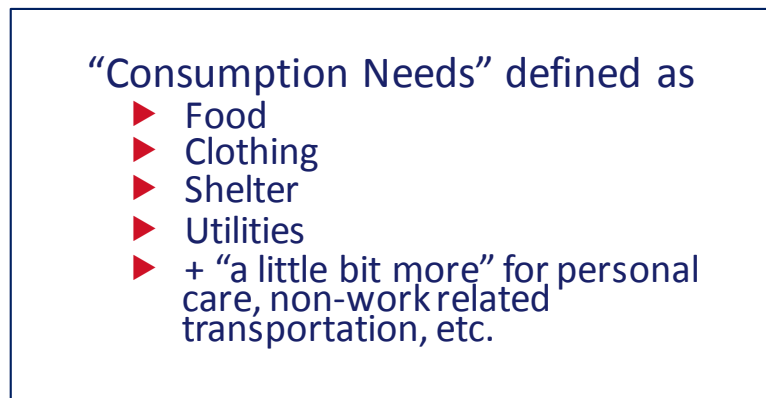
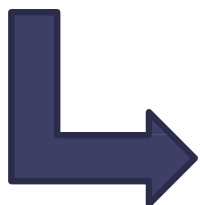
Outline

- Background on SPM thresholds, equivalence scales, and housing shares
- Alternative equivalence scales
- Alternative estimates of housing shares
 - ACS data
 - CE data
- Impact on poverty rates

Poverty Concept: Economic Deprivation

■ Thresholds represent “needs”

■ Resources meet “needs”



- **Poverty Concept:** deprivation based on comparison of resources and consumption “needs”
- **Consumption “needs” proxied by spending (or expenditures)**
 - ▶ NAS Panel assumption: “CE expenditures include housing assistance subsidies (rent and utilities)” ... and “benefits from food stamps and other meals provided free” (paraphrase of NAS Report, 1995, pp. 393-394)
 - ▶ **BUT: CE expenditures only account for food stamps or SNAP**

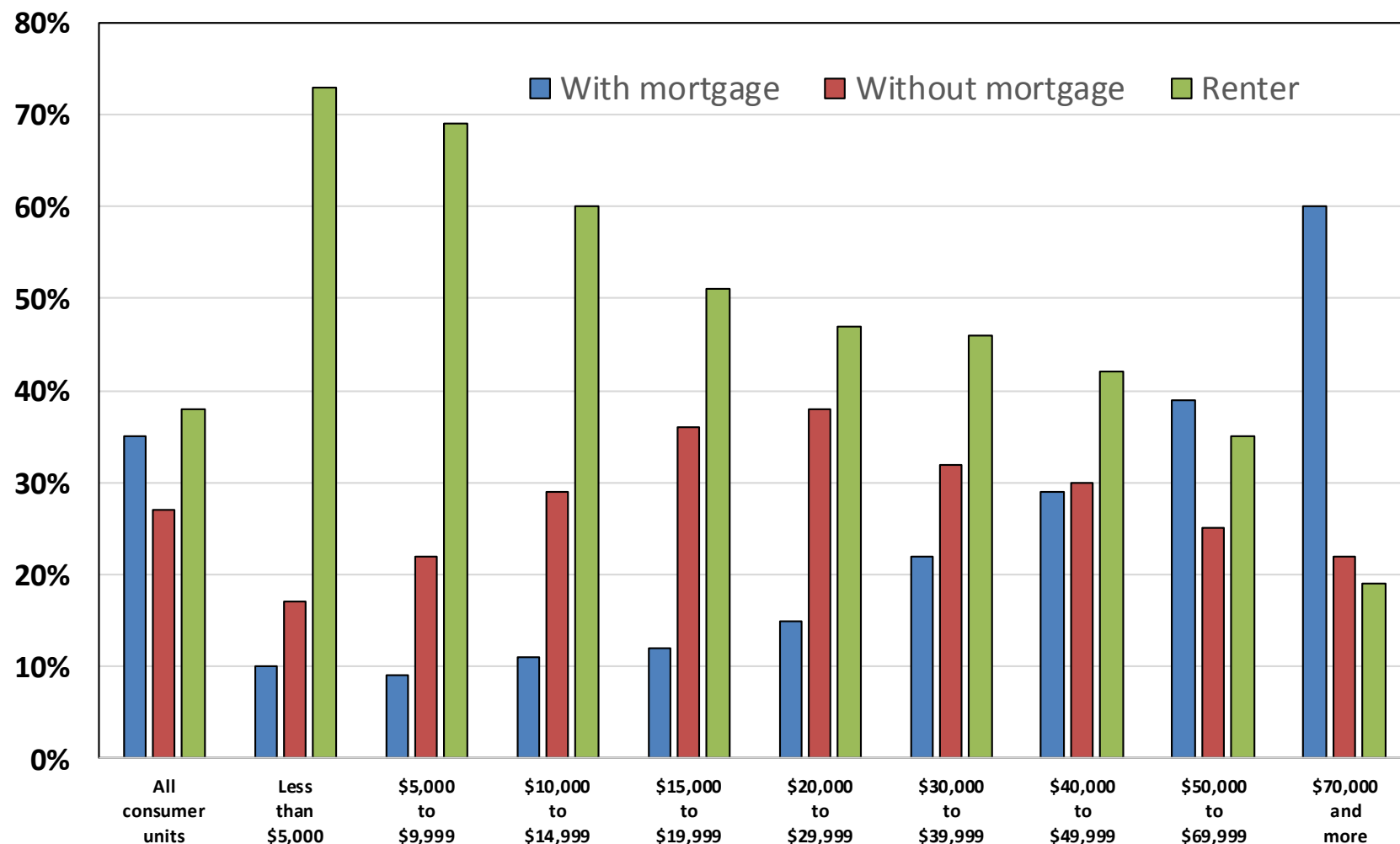
Threshold Estimation... *thus far...*

- Food, clothing, shelter, and utilities (*FCSU*) expenditures
- Consumer Expenditure Interview Survey data: 5 years of data
- *FCSU* “expenditures” in constant year dollars
- Estimation sample: Consumer Units (CUs) with 2 children
- Reference sample: 2 adults with 2 children (3-parameter equivalence scale applied to +2 children *FCSU* expenditures)
- Rank CUs by their *FCSU* “expenditures”
 - ▶ Identify 33rd percentile represented by 30th to 36th percentile range
 - ▶ Produce means of *FCSU* and *SU* by housing status
 - ▶ Estimate thresholds by housing tenure
- ❖ Send to Census Bureau to derive other CU thresholds and make geographic adjustment

Housing Tenure Adjustment

- Since NAS Panel report was issued in 1995, it has become clear that a significant number of low-income families own a home without a mortgage and therefore have quite low shelter expense requirements (see ITWG document, March 2010)
- Not taking this into account may overstate their poverty rates
- Suggests the need to adjust SPM thresholds for housing status, distinguishing renters, owners with a mortgage, and owners without a mortgage.
- There would be THREE thresholds, NOT a single threshold for all.

Consumer Units by Housing Type and Income: 2015



Source: Bureau of Labor Statistics, Prepublication Table 1202. *Income before taxes: Annual means, standard errors, coefficients of variation, and quarterly percents reporting*, Consumer Expenditure Interview Survey, 2015.



Housing Status Thresholds

■ Housing Status Groups, j

- ▶ Owners with mortgages
- ▶ Owners without mortgages
- ▶ Renters

■ *SPM Threshold $_j$*

$$= (1.2 * FCSU_A) - SU_A + SU_j$$

$FCSU_A$, SU_A , SU_j are means within 30th to 36th percentile range of $FCSU_A$ for reference CUs

SPM Reference Unit

Estimation sample: consumer units (CUs) with **2 children**

Reference unit: CUs with **2 adults and 2 children**



Equivalence Scale Adjustment to Derive 2-Adults with 2-Children SPM Thresholds

- Why make adjustment?
 - Needs of adults and children
 - Economies of scale of FCSU within reference units
- 3-Parameter Equivalence Scale
 - One adult scale = 1
 - Two adult scale = 1.41 ($= adults^{0.5}$)
 - Single parents scale
 $= (adults + 0.8 * first\ child + 0.5 * other\ children)^{0.7}$
 - All other CUs scale
 $= (adults + 0.5 * children)^{0.7}$

Regression-Based Equivalence Scales

- Basic model:

$$\ln Exp = \beta_0 + \beta_1 \ln Y - \beta_2 \ln N + \dots + \varepsilon$$

- Rearranging predicted values yields an expression for log income share devoted to, for example, housing.

$$\ln SHARE = \beta_0 + (\beta_1 - 1) \ln Y - \beta_2 \ln N + \dots$$

- All else constant, a consumer unit with Y_N will be equally well-off as a single person with Y_1 if:

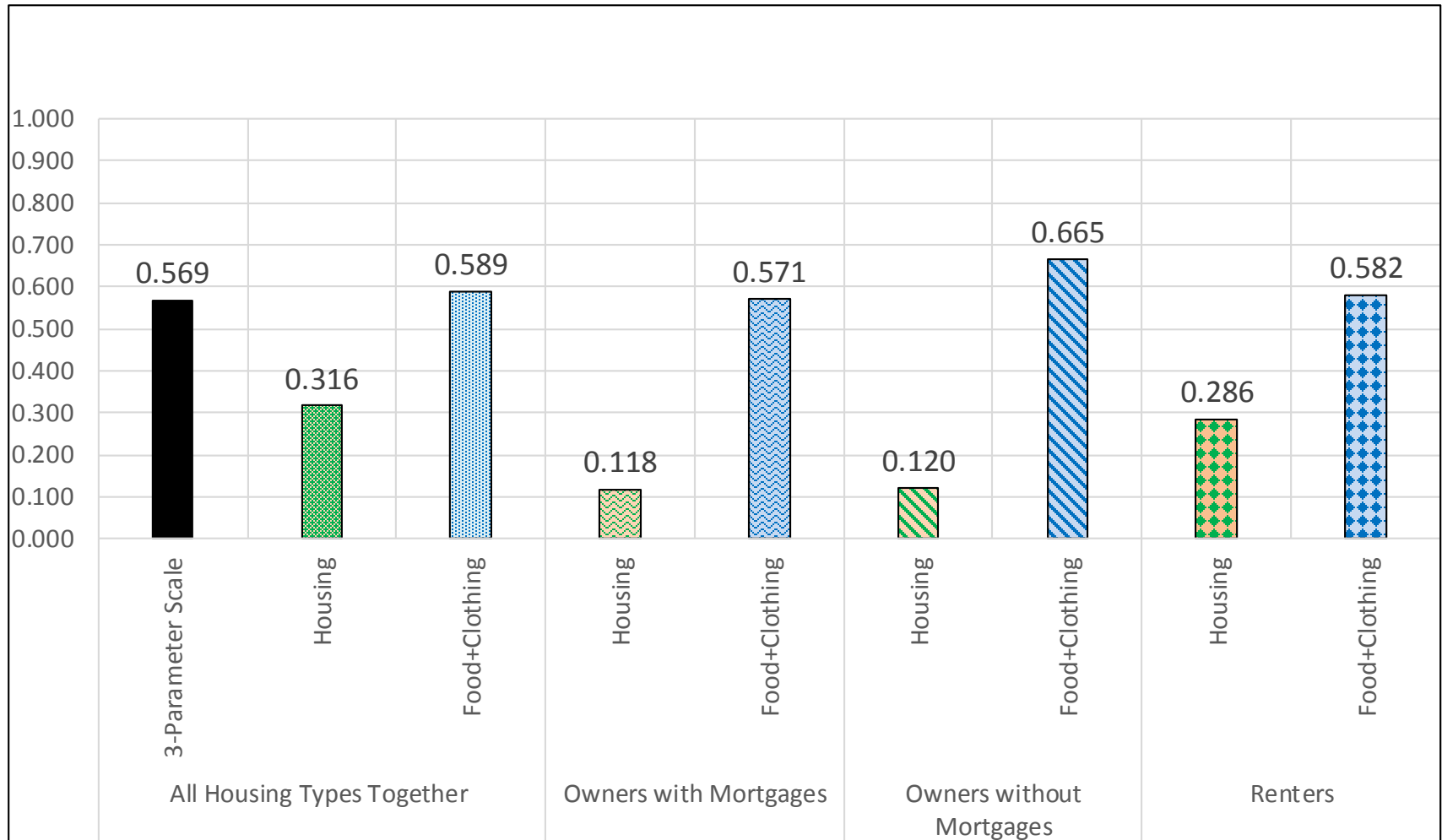
$$\beta_0 + (\beta_1 - 1) \ln Y_1 + \dots = \beta_0 + (\beta_1 - 1) \ln Y_N - \beta_2 \ln N + \dots$$

- Cancelling and rearranging terms yields the single-parameter approximation:

$$\frac{Y_N}{Y_1} = N^{\frac{\beta_2}{\beta_1 - 1}}$$

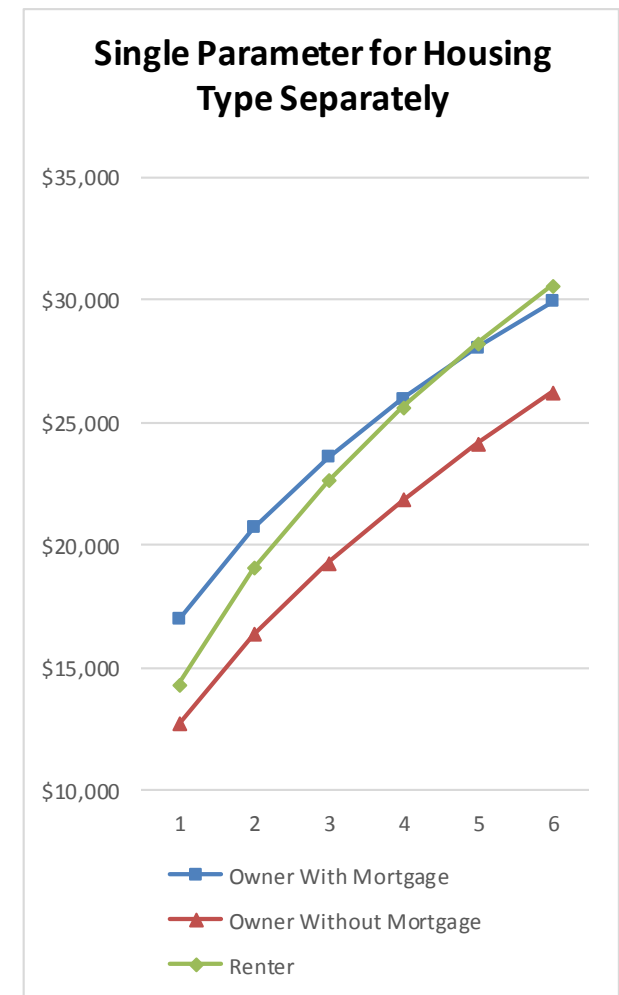
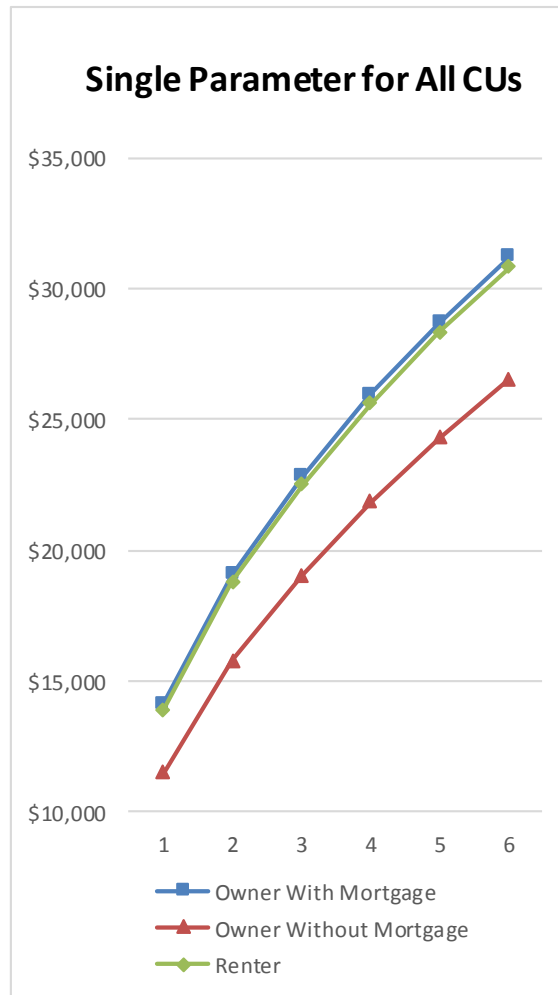
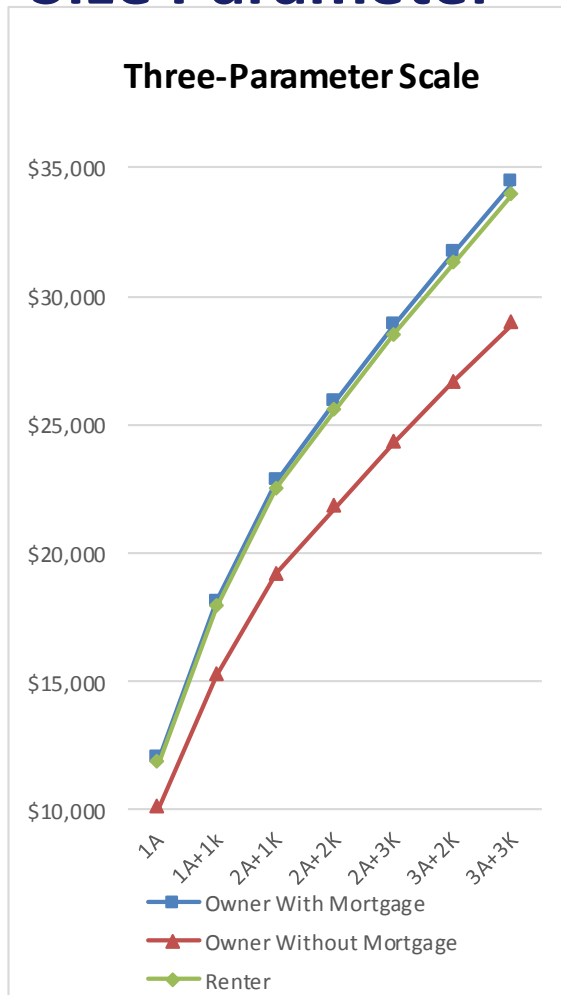


Consumer Unit Size Equivalence Scale Parameters



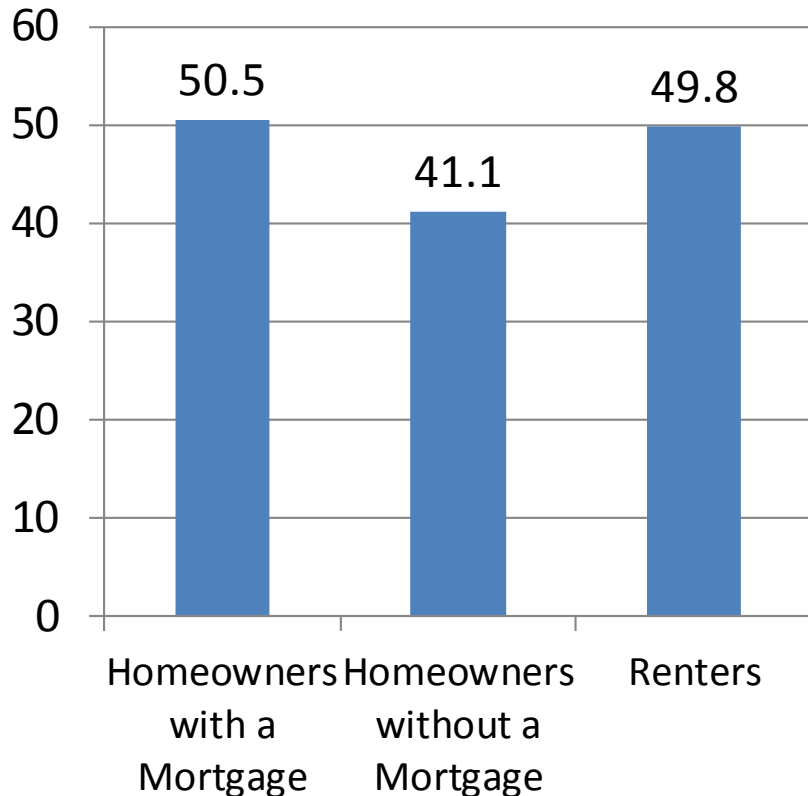
Source: Bureau of Labor Statistics, Garner's analysis of internal CE Interview data from 2008Q2 through 2013Q1, four quarters of data for each consumer unit. Three parameter scale based on 1 person=1 adult, 2 people=1 adult+1 child, 3 people=2 adults+1 child, 4 people=2 adults+2 children, 5 people=2 adults+3 children, and 6 people=3 adults+3 children.

2015 SPM Thresholds Based on Different Equivalence Scales: Three-Parameter versus Single Consumer Unit Size Parameter



Source: Bureau of Labor Statistics, Garner's analysis of internal CE Interview data from 2008Q2 through 2013Q1, four quarters of data for each consumer unit.

Housing Shares: 2015



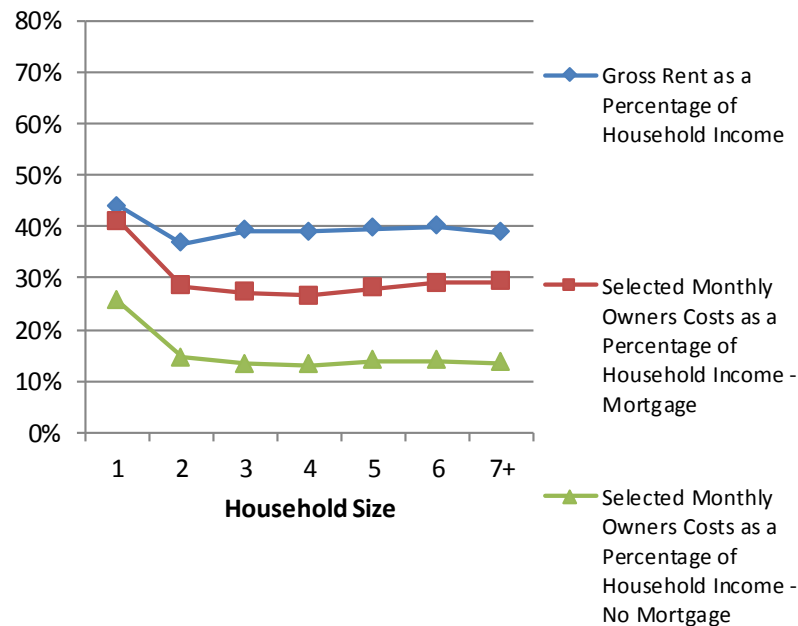
Source: Bureau of Labor Statistics, Division of Price and Index Number Research, September 2016.

Housing shares effect two aspects of the SPM calculation:

- Geographic adjustment on only the housing share of the threshold
- Value of housing assistance capped using the housing share of the threshold

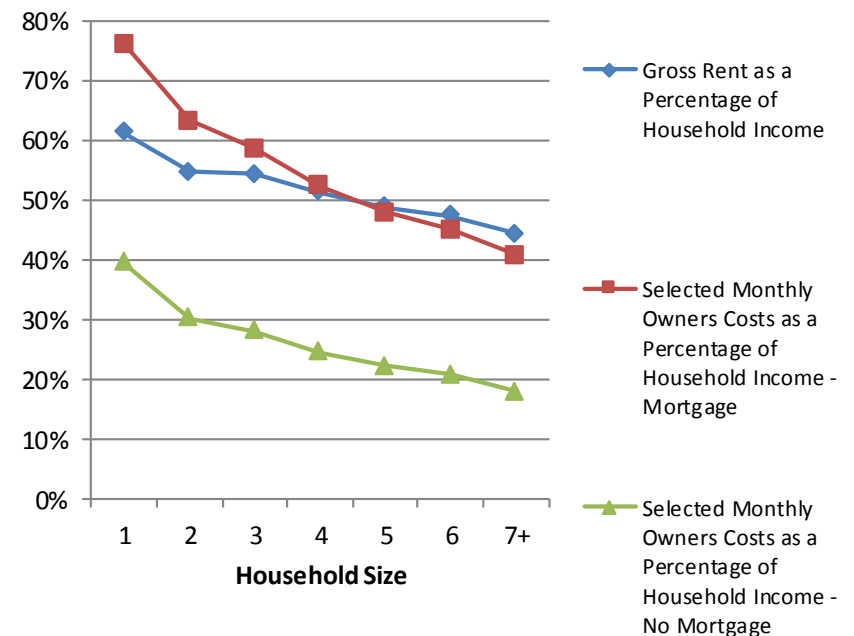
Alternative Estimates of Housing Shares

Figure 1. Total Population Housing Costs as a Percent of Income



Source: 2014 American Community Survey Five Year Data.
For more information, see census.gov/acs.

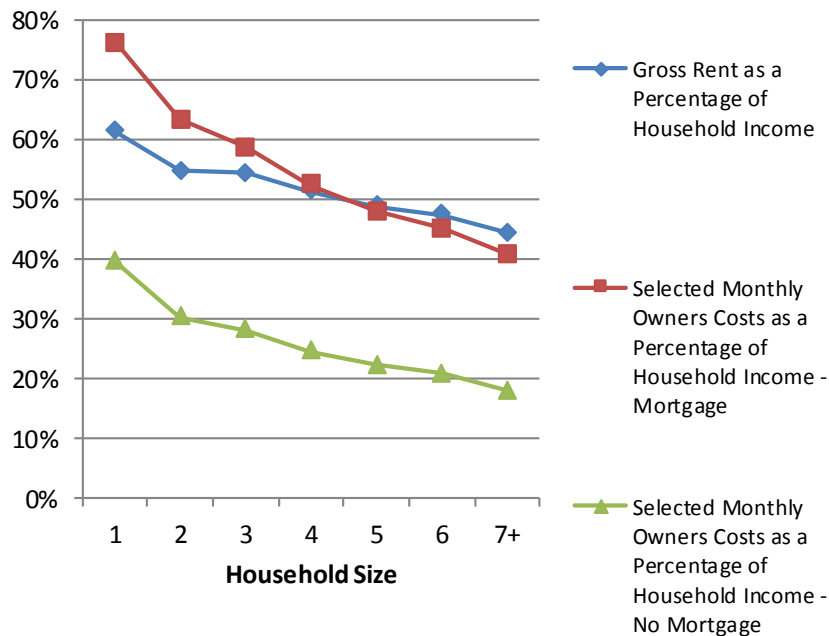
Figure 2. Housing Costs as a Percent of Income - Households with Income Less than 200 percent of Official Poverty



Source: 2014 American Community Survey Five Year Data.
For more information, see census.gov/acs.

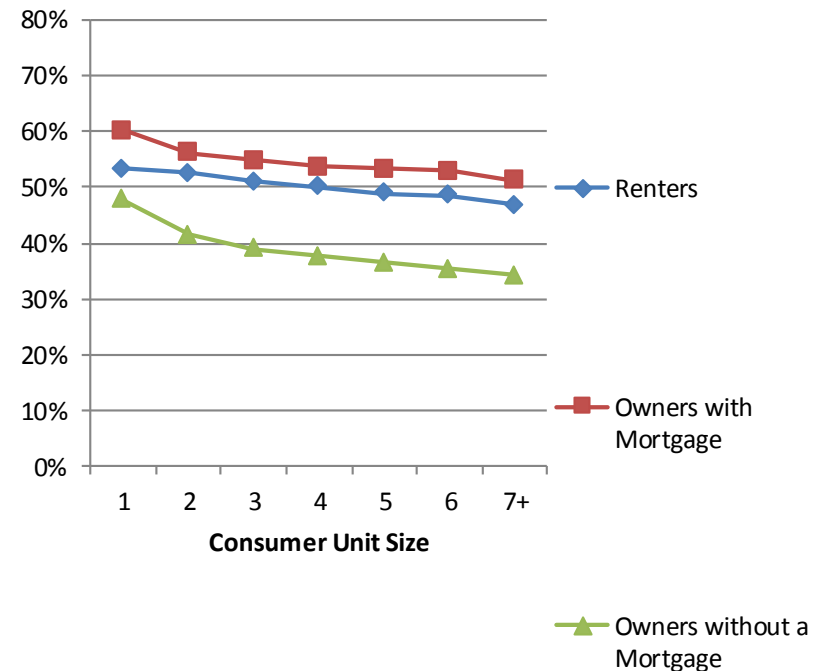
Comparing ACS to CE Estimates

Figure 2. Housing Costs as a Percent of Income - Households with Income Less than 200 percent of Official Poverty



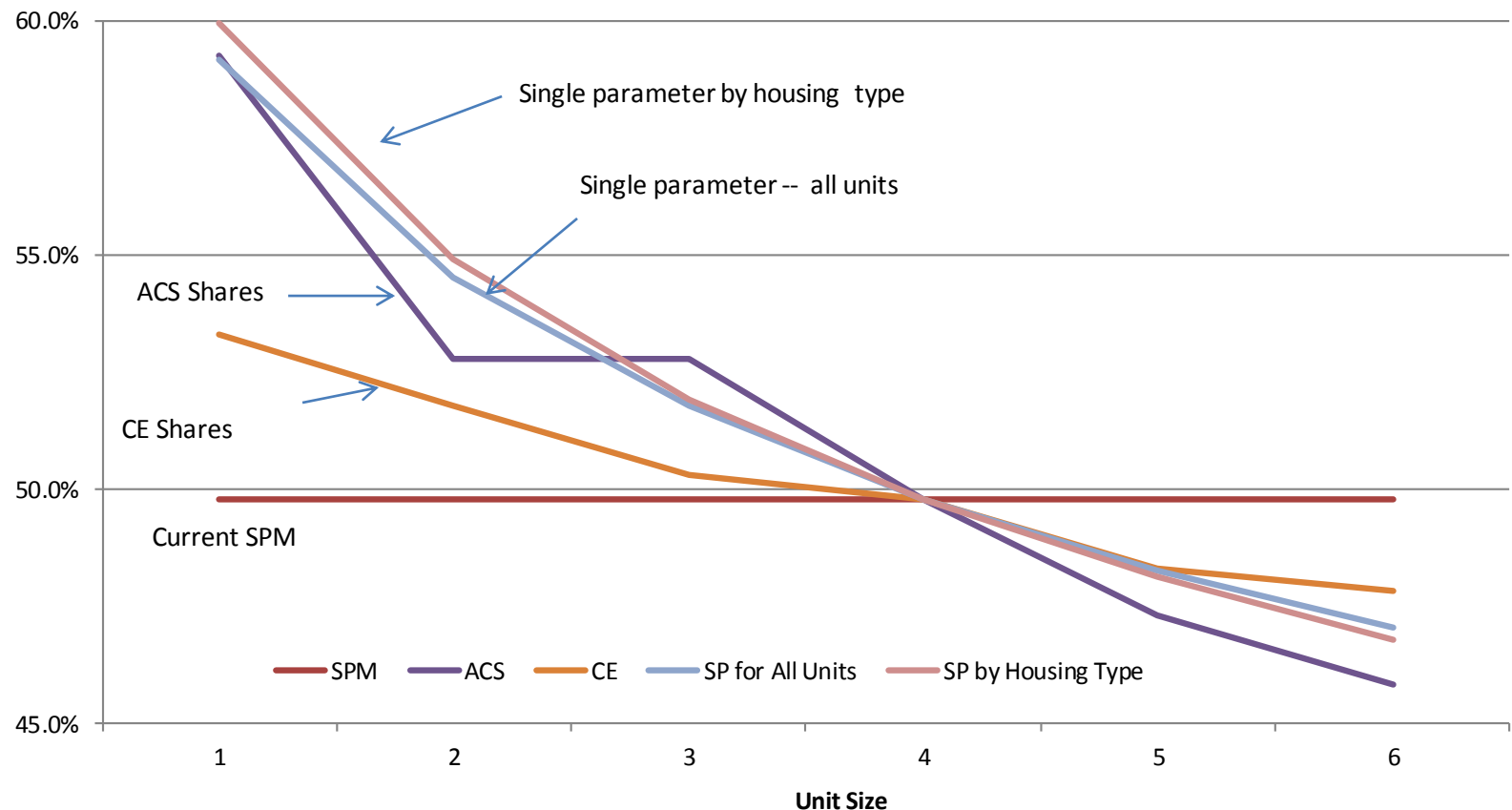
Source: 2014 American Community Survey Five Year Data.
For more information, see census.gov/acs.

Figure 3. Housing Expenditures as a Percent of the Sum of Food, Clothing, Shelter, Utilities (FCSU), and Other Basic Needs (20%) Expenditures



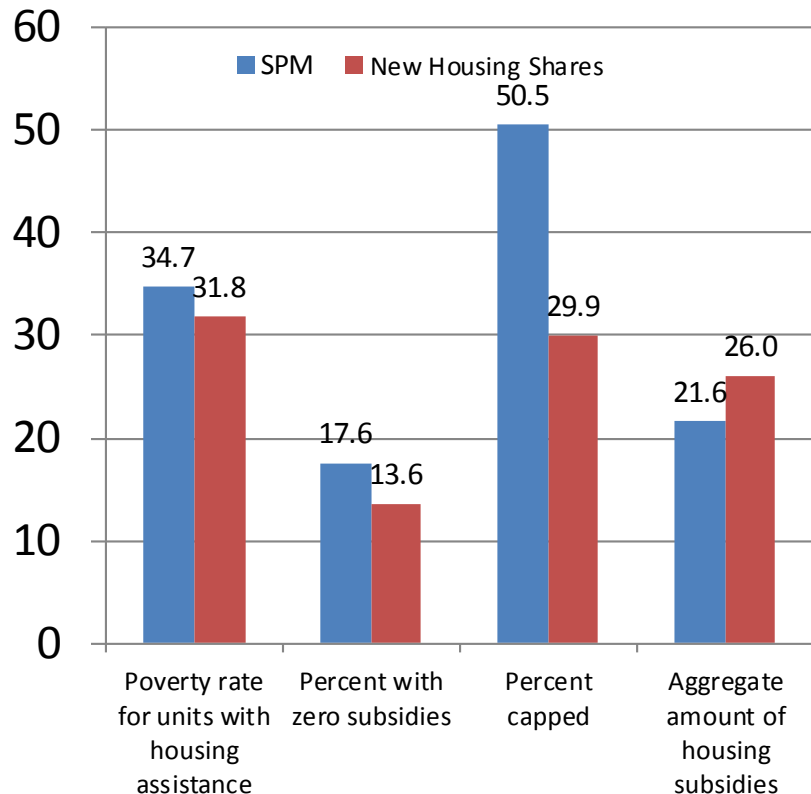
Source: Quarterly Consumer Expenditure Survey, all consumer units participating in 2008Q2-2013Q1

Housing Share of SPM Thresholds by Methodology



Source: Authors' calculations based on ACS 2014 5 year data, shares and alternative equivalence scales derived by Garner from CE data.

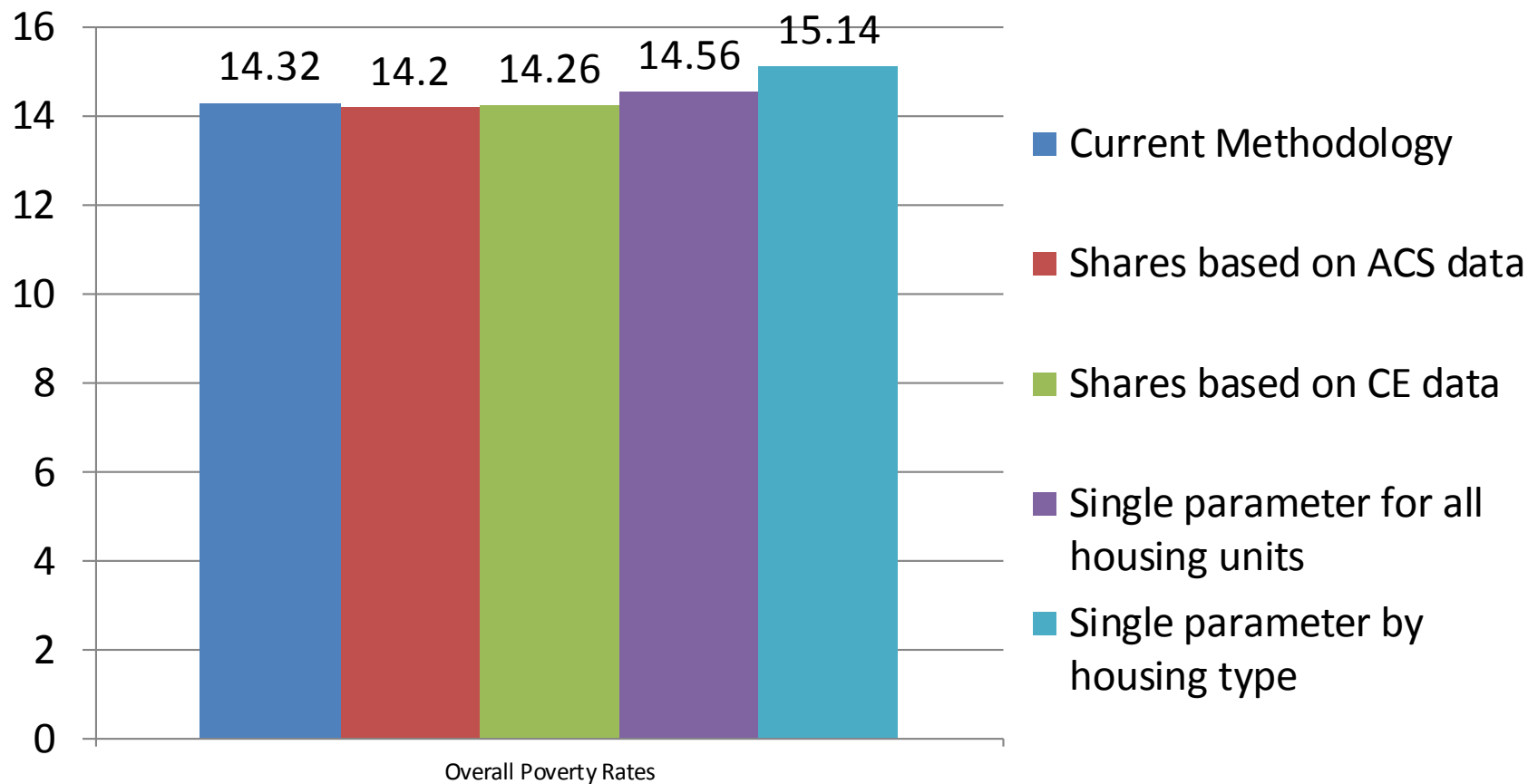
Prior research by Renwick and Mitchell on alternative housing shares



Source: Renwick and Mitchell, 2015, using 2013 CPS ASEC.

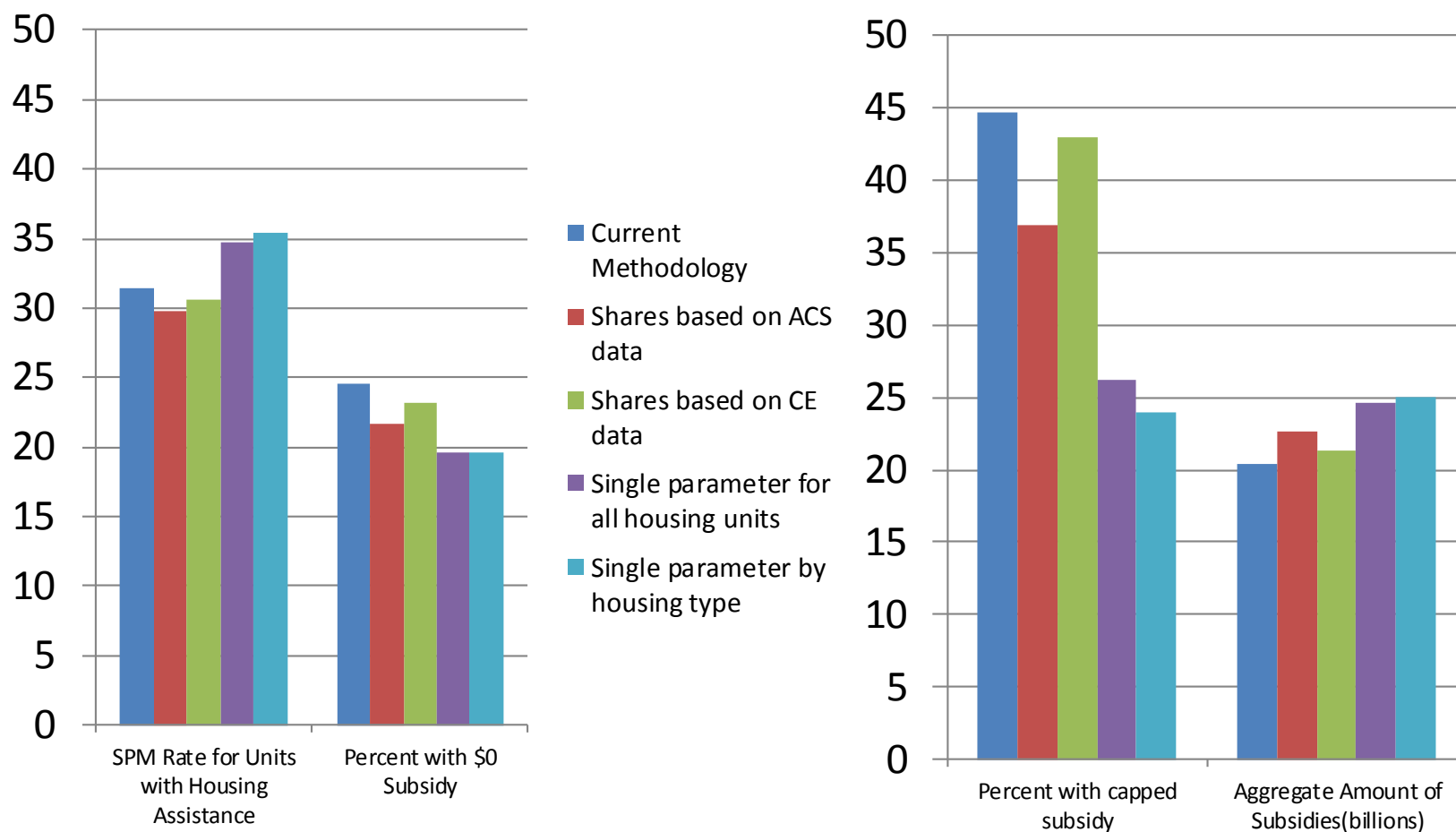
- Changed housing shares to 70 percent for one person units; 60 percent for two person units
- Increased effect of housing subsidies on SPM rates.

Overall poverty rates



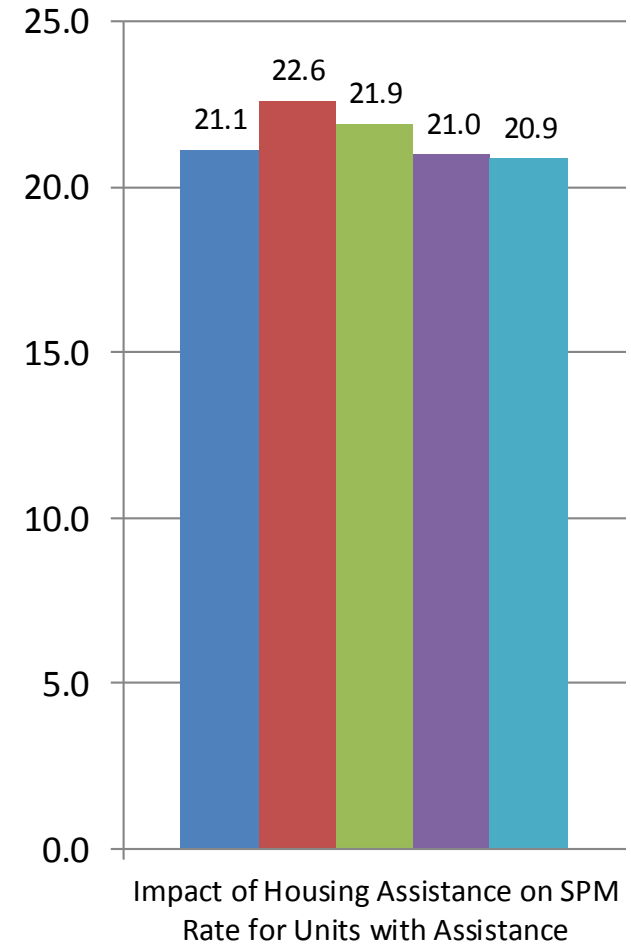
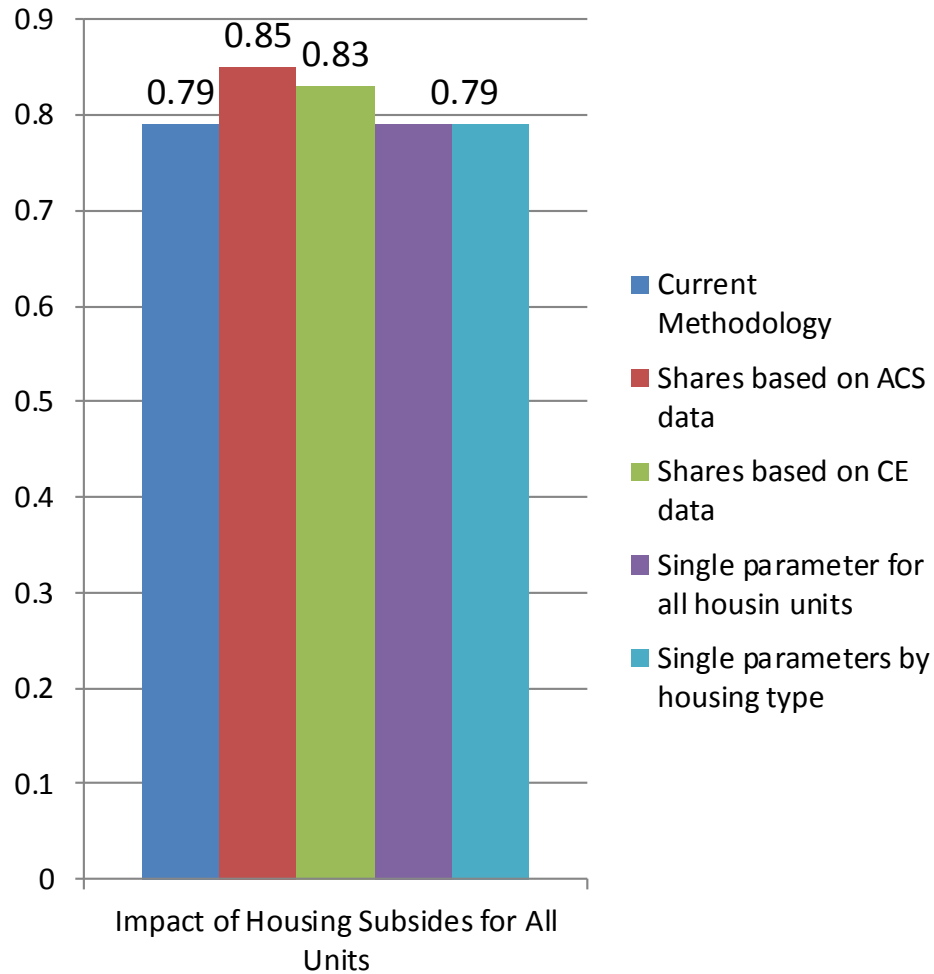
Source: 2015 Current Population Survey Annual Social and Economic Supplement.

Results: Units with Housing Subsidy



Source: 2015 Current Population Survey Annual Social and Economic Supplement.

Marginal Impact of Housing Subsidies



Source: 2015 Current Population Survey Annual Social and Economic Supplement.

Conclusions – Future Research

- While conceptually an interesting question, in practice changing the shares does little to change the impact of housing subsidies on SPM rates
- Other concerns with estimation of values of housing subsidies more important
- Need to develop a methodology to validate the existing and/or proposed equivalence scales

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Extra Slides

CE Operational Definition: Housing (Shelter + Utilities)

■ Shelter for primary residence

▶ For renters

- Rents
- Maintenance and repairs
- Tenants insurance

▶ For owners without mortgages

- Property taxes
- Home insurance
- Maintenance and repairs

▶ For owners with mortgages

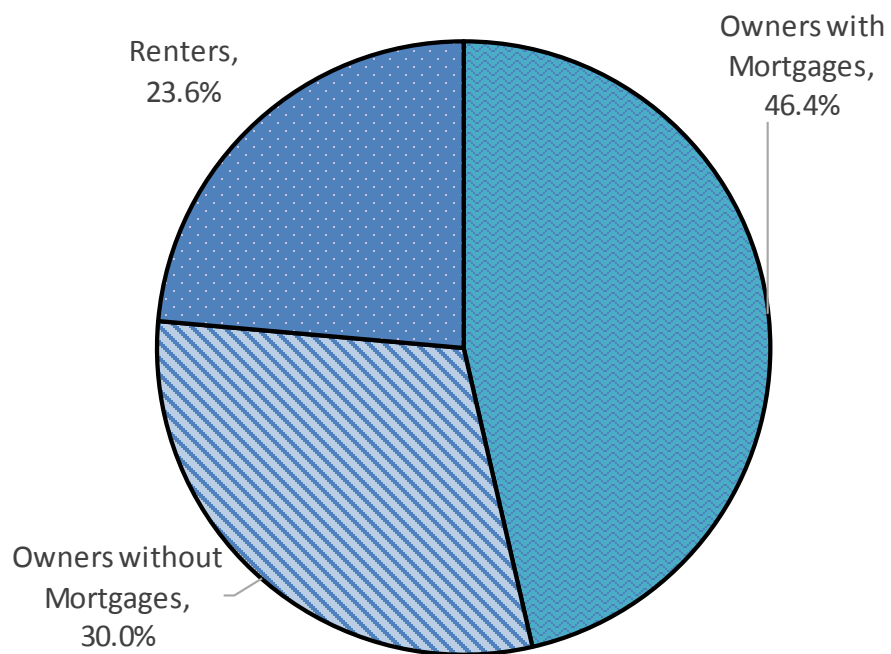
- Same as for owners without mortgages plus
- Mortgage interest
- Principal repayments
- (No home equity loans or lines of credit)

■ Utilities for primary residence

- Energy: natural gas, electricity, fuel oil, and other fuels
- Telephone service
- Water, sewage, and other public services

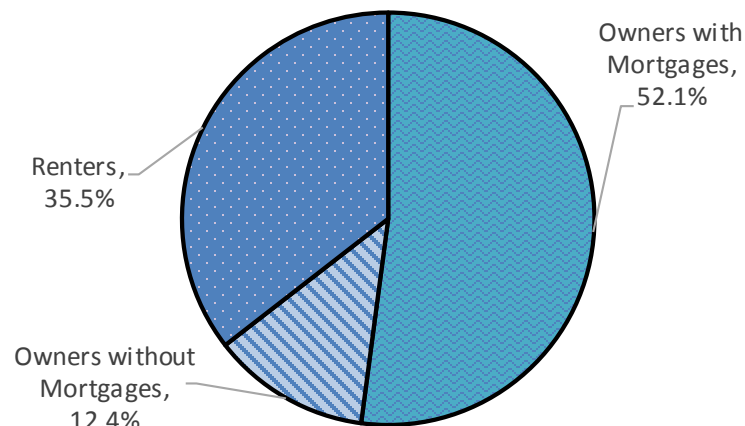


CE Weighted Sample for Equivalence Scale Estimation: Distribution of CUs by Housing Type

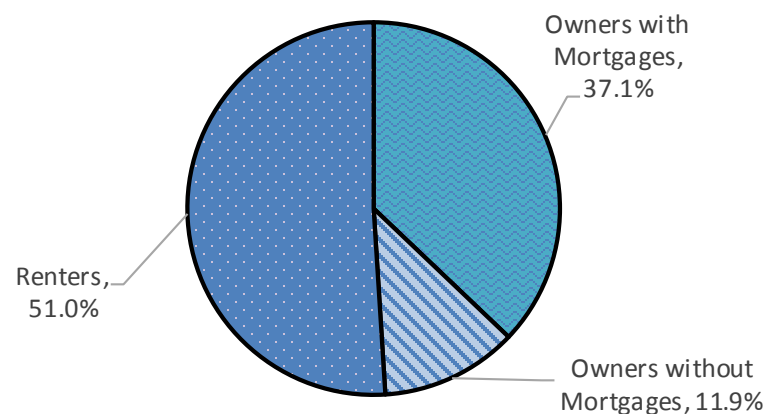


Source: Bureau of Labor Statistics, Garner's analysis of internal CE Interview data from 2008Q2 through 2013Q1, four quarters of data for each consumer unit.

CUs with Two Children: 2015 Thresholds

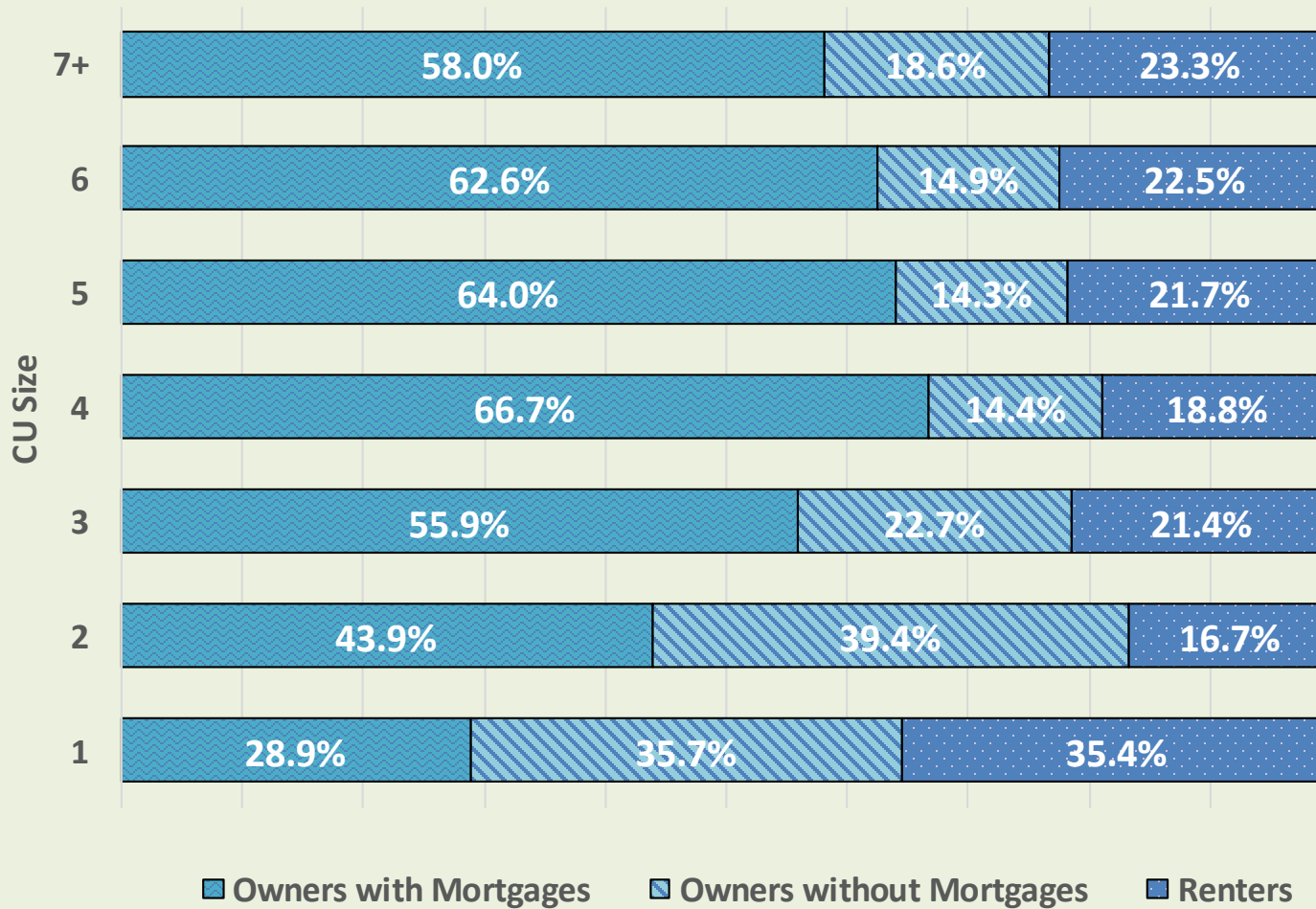


CUs with Two Children within 30-36th Percentile Range: 2015 Thresholds



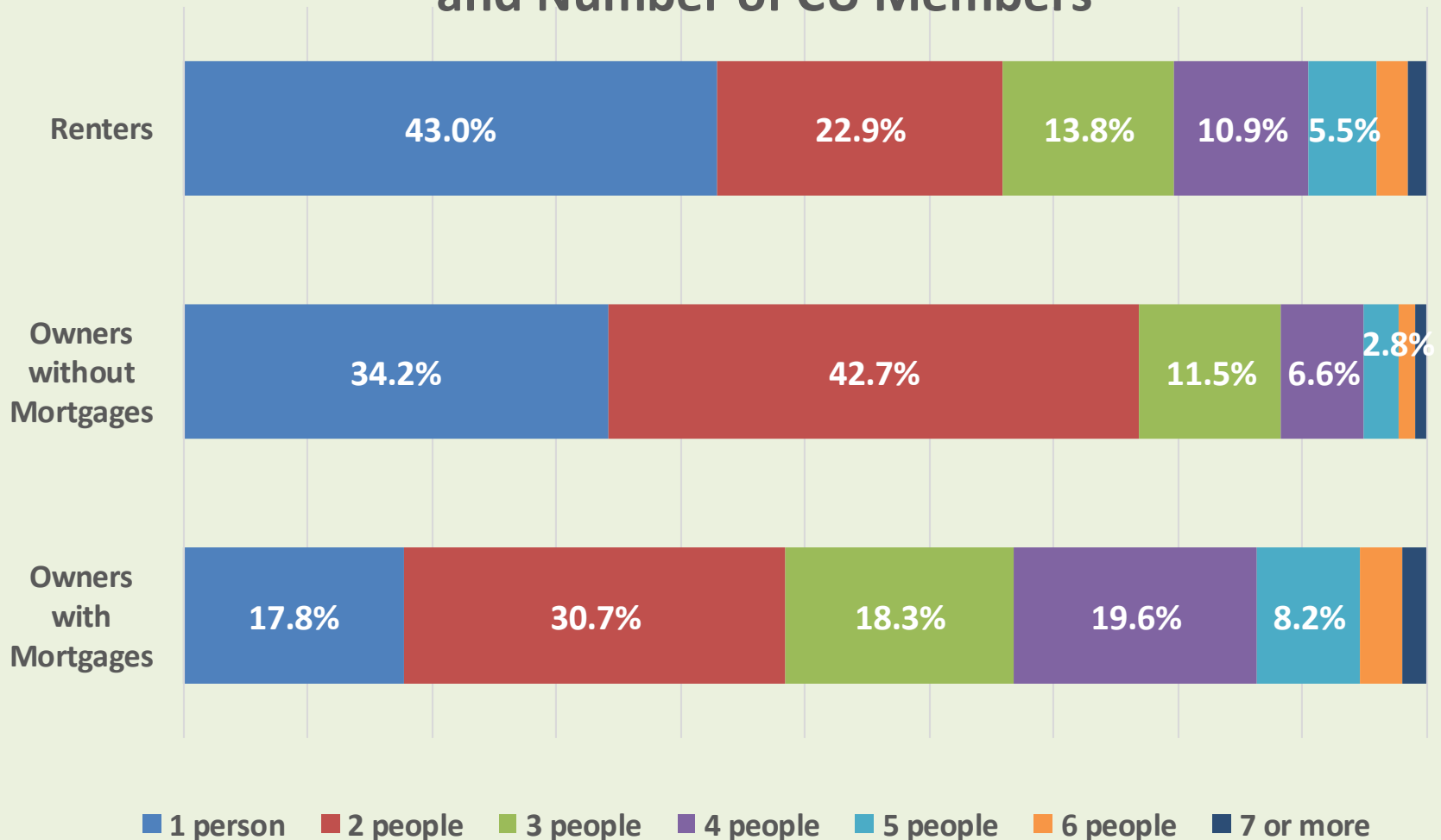
Source: Bureau of Labor Statistics, Garner's analysis of internal CE Interview data from 2011Q2 through 2016Q1, quarter independent

Distribution of CUs by Members by Housing Group



Source: Bureau of Labor Statistics, Garner's analysis of internal CE Interview data from 2008Q2 through 2013Q1, four quarters of data for each consumer unit.

Distribution of Consumer Units by Housing Groups and Number of CU Members

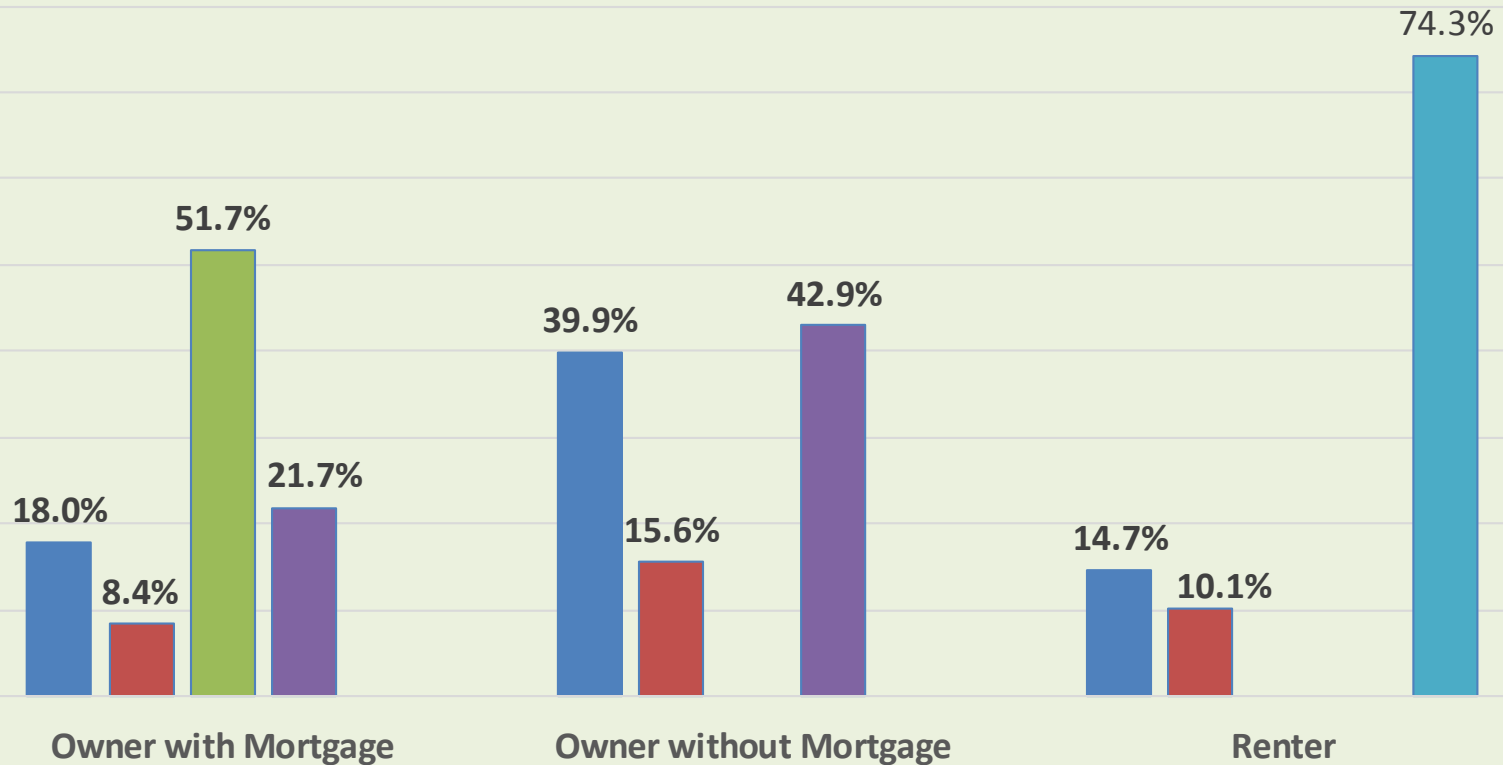


Source: Bureau of Labor Statistics, Garner's analysis of internal CE Interview data from 2008Q2 through 2013Q1, four quarters of data for each consumer unit.



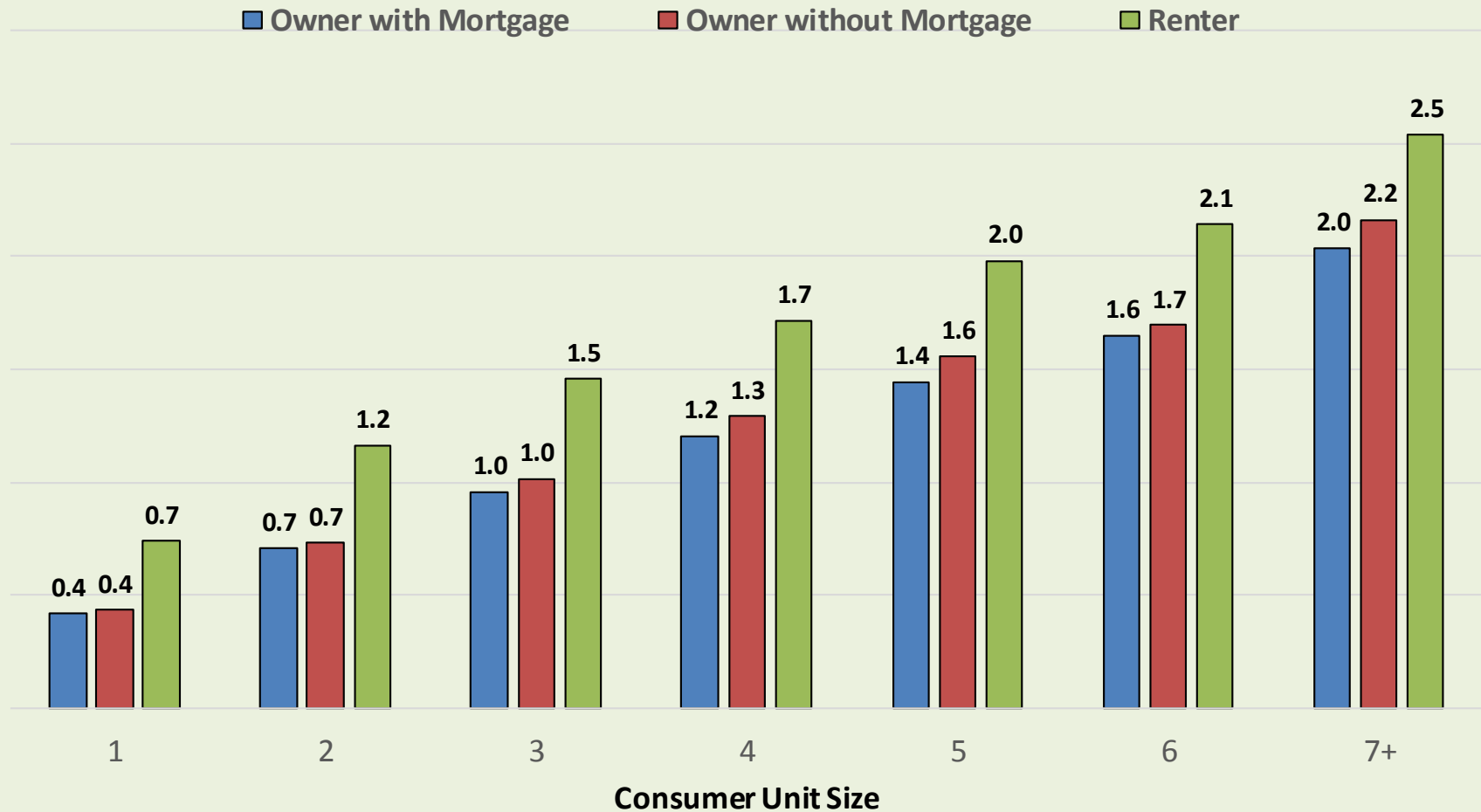
Shares of Housing Expenditures by Housing Type

Fuel/water Telephone Ser Mortg+Int Prop Tax, MR, Ins. Rent, MR, Inc.



Source: Bureau of Labor Statistics, Garner's analysis of internal CE Interview data from 2008Q2 through 2013Q1, four quarters of data for each consumer unit.

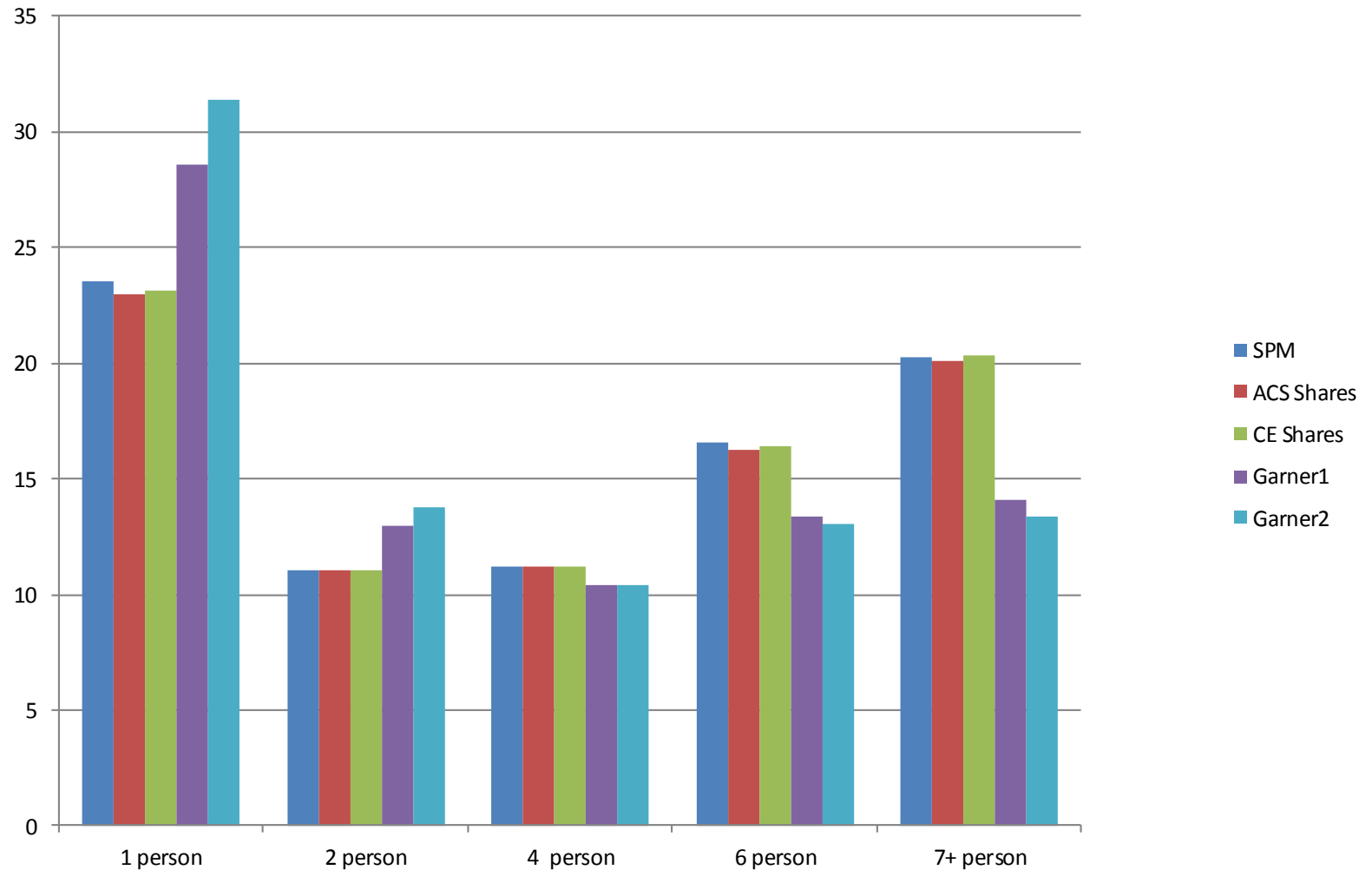
Average Number of CU Members per Bedroom



Source: Bureau of Labor Statistics, Garner's analysis of internal CE Interview data from 2008Q2 through 2013Q1, four quarters of data for each consumer unit. For housing units with 0 bedrooms but 1 room reported, recoded bedroom to 1 (bathrooms not included).

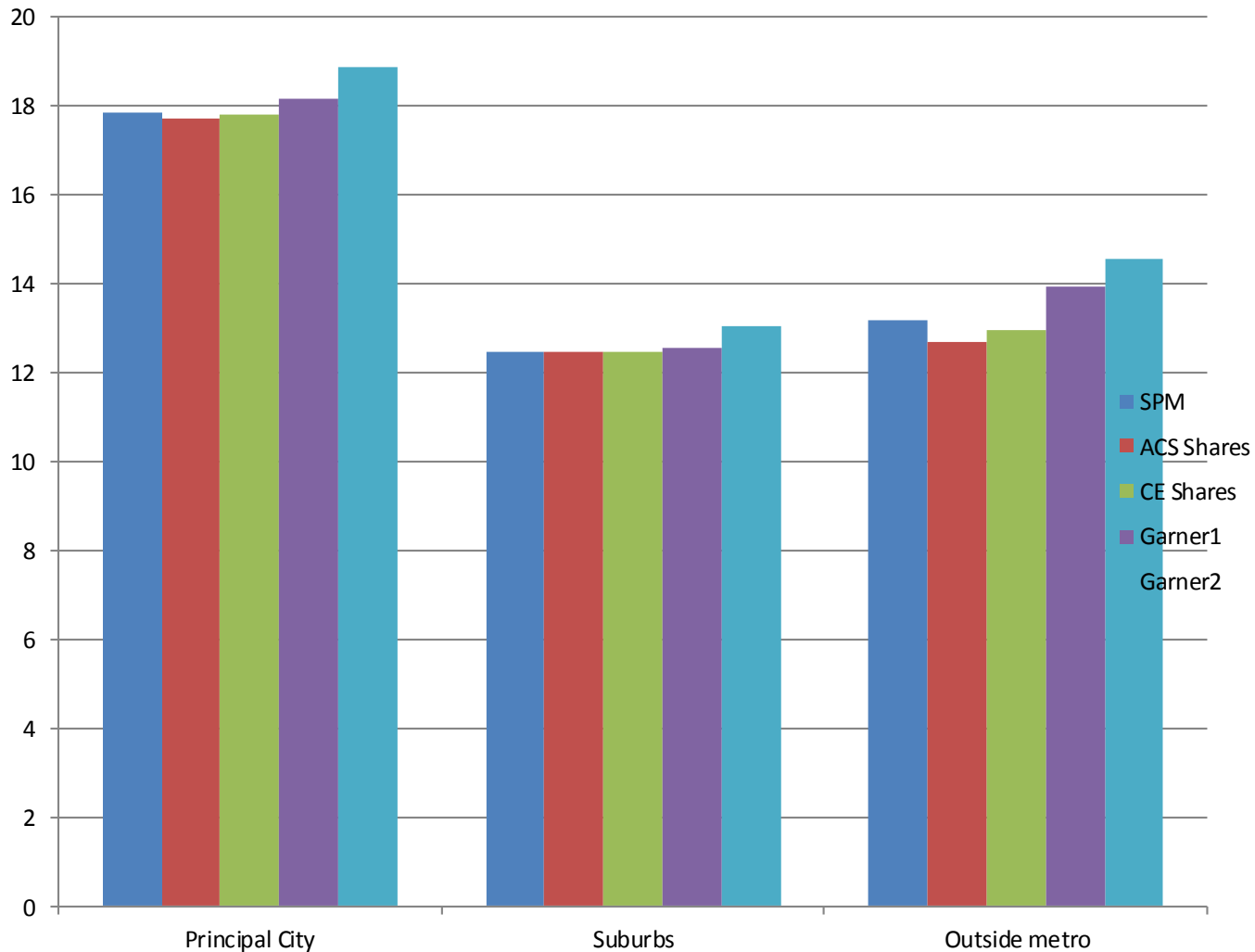


Unit Size



Source: 2015 Current Population Survey Annual Social and Economic Supplement.

Place of Residence



Age

