

Changes under Consideration for 2021: Thresholds

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Current Estimation of SPM Thresholds

- At the CU level, convert 5 years of quarterly 2-Child FCSU expenditures to thresholds year dollars using the All Items CPI for all urban consumers (CPI-U), and to 2 adult with 2 children reference unit thresholds using the 3-parameter equivalence scale

$$FCSU_{i,q} = F_{i,q} + C_{i,q} + S_{i,q} + U_{i,q} \qquad FCSU_{i,2016} = \left(\frac{CPI_{2016}}{CPI_{yr}} \right) * FCSU_{i,q} * 4$$

- Rank CUs by equivalized 2A+2C $FCSU_{i,2016}$ expenditures.
- Housing tenure-specific thresholds produced based on means within 30th-36th percentile range (identified as “E”) of $FCSU_{i,2016}$

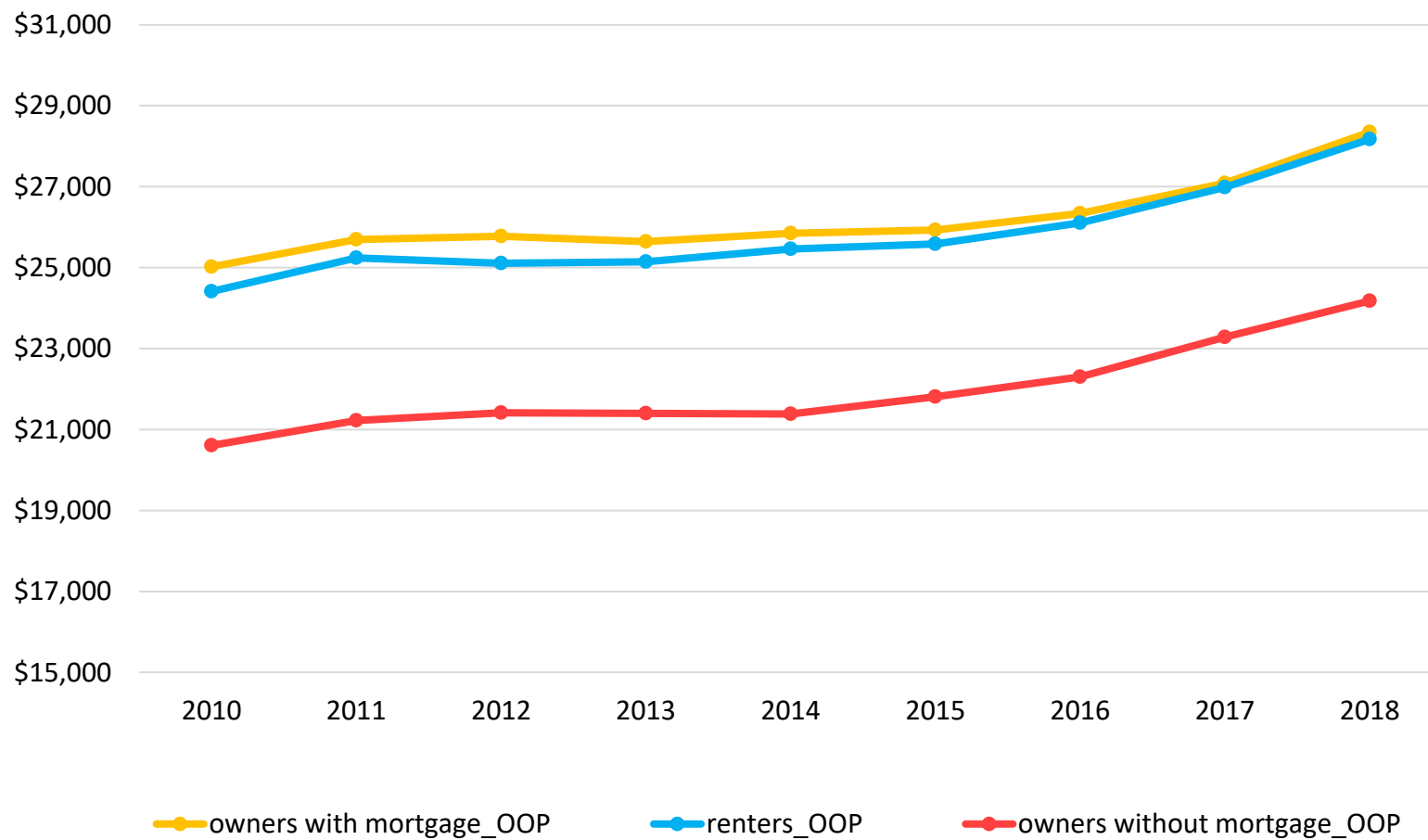
$$SPM_{j,2016} = 1.2 * FCSU_{E,2016} - SUE + SUE_j \qquad \frac{SUE_j}{SPM_{E,j}} = \alpha_j = \text{housing share of 2A+2C } SPM_{E,j} \text{ thresholds}$$

- At threshold level, apply geographical price adjustment (MRI) for sub-national thresholds

$$SPM_{j,g,2016} = [(a_j * MRI_g) + (1 - a_j)] * SPM_{j,2016}$$



SPM Thresholds for 2 Adults with 2 Children: OOP FCSU by Housing Tenure (33rd percentile)



Planned Changes for Production of “National” Initial Threshold

- Presented previously
 - Impute in-kind benefits
 - Expand estimation sample from consumer units with exactly two kids
 - CUs with any number of children
 - All CUs
 - Move base of thresholds from 33rd percentile to percentage of median
 - Move telephone out of utilities
 - Geographic adjustment of expenditure data prior to threshold creation
- Other
 - Add home internet to FCSU
 - Base thresholds on 3 years of CE data rather than 5 years
 - Lag thresholds one year
 - To convert earlier quarterly FCSU expenditures into threshold year dollars: move from using annual CPI-U to composite FCSU annual averages



Not Planned as Changes for Thresholds

- Use price indexes that reflect spending to update 3-5 years of CE data to threshold year dollars
 - SPM thresholds: spending based
 - CPI: rental equivalence
- Different equivalence scale
- Addition of medical/health care to FCSU
- Use of specific categories of goods and services (e.g., personal care and non-work related transportation) rather than 20% multiplier
- Use of 12 months of CU data rather than multiple quarterly by 4



Presented Previously

Change Planned	Justification
In-kind benefits	Consistency in measurement with resources
Expand sample	
Child>0	Represents larger share of the population
All CUs	Represents full population
Percentage of median	Reduces impact of in-kind benefit imputations; expectation of greater stability
Telephone service separate (not in housing utilities)	Increased cell service expenditures as share of total; cell not geo specific
Geo adjust CU-level FCSU	Results in “national” dollars

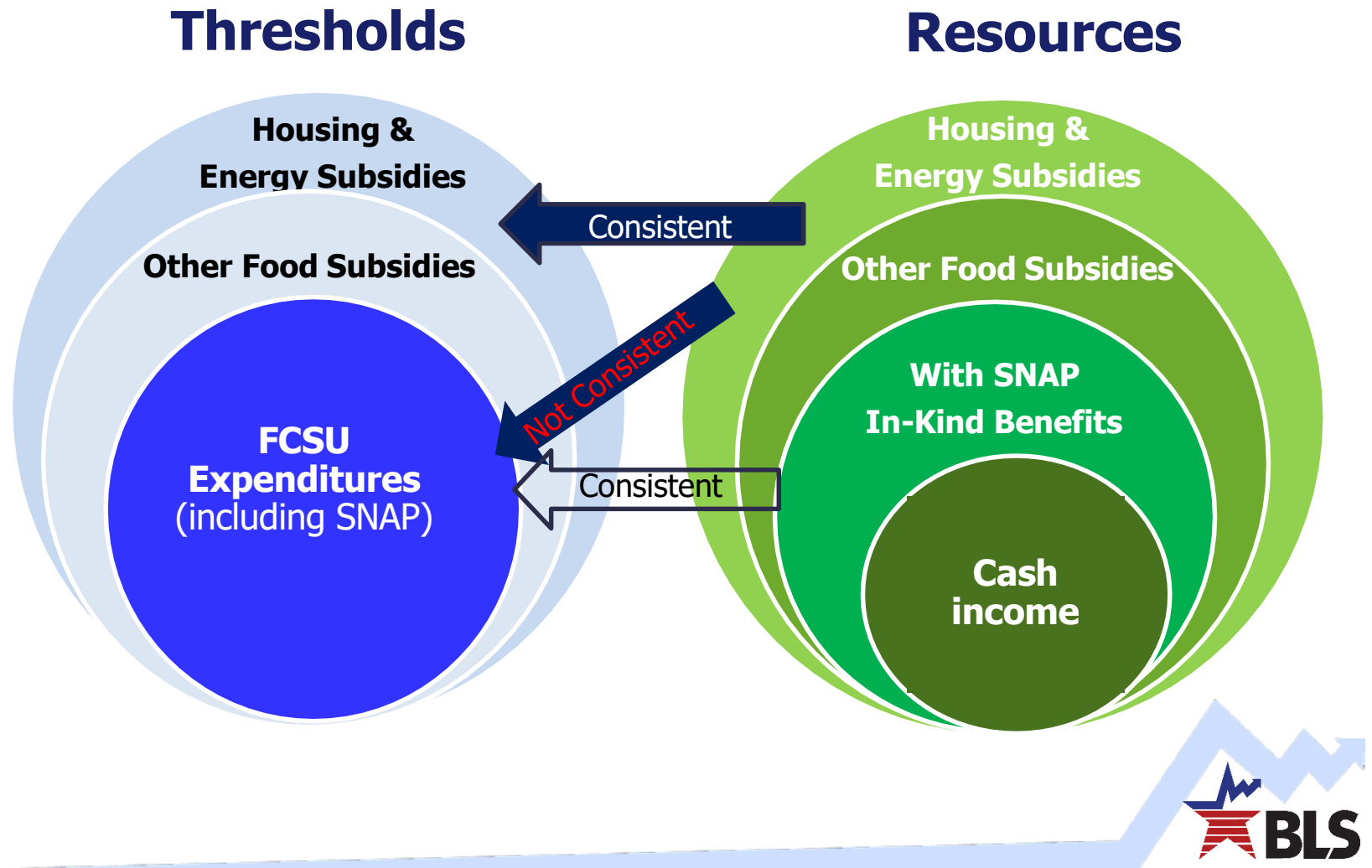


Other

Change Planned	Justification
Add internet	Increased means of communication in addition to telephone
3 years of CE data	In combination with increasing sample size, reduce impact of expansion or recession
Lag by 1 year	CPS ASC data not available in time to produce in-kind benefits for thresholds for most recent year
Composite FCSU CPI-U	More reflective of threshold component price changes



In-kind Benefits Included in FCSU

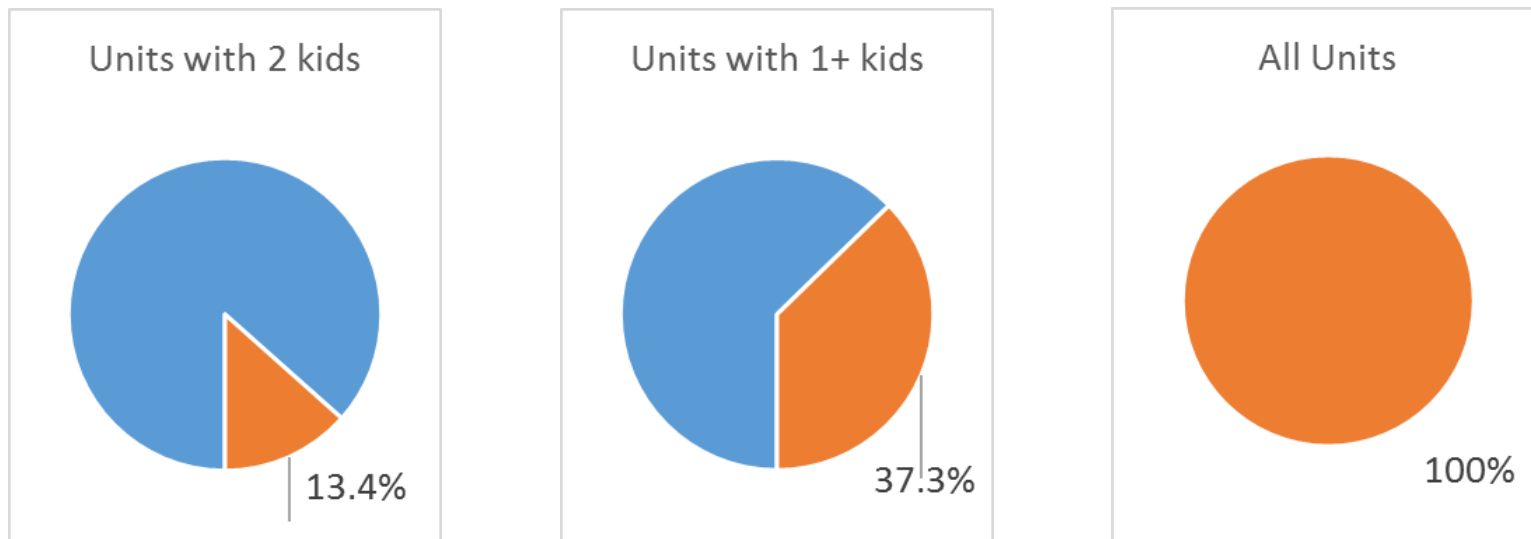


Expand the Estimation Sample from CUs with Two Children to CUs Any Children to All Consumer Units: Unweighted Sample Sizes

	CU's with 2 kids	CU's with 1+ kids	All CU's
Total Estimation Sample (percentage of all CUs)	n = 14,668 (11.3%)	n = 40,623 (31.3%)	n = 129,604 (100%)
30-36th ptile FCSU	n=860	n=2,396	n= 7,632
Owners with mortgage	305	773	1,730
Owners without mortgage	112	332	2,646
Renters	443	1,291	3,256

Source: Bureau of Labor Statistics, Consumer Expenditure Survey Interview Data, 2012Q2-2017Q1.

Expand Estimation Sample to Include All Consumer Units: Results Restricted to the 30-36th Percentile Range of FCSU Expenditures

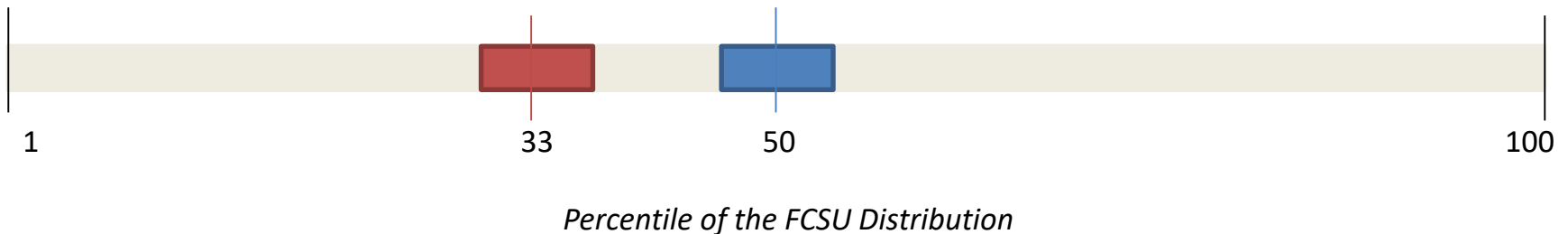


- **Increase sample size**
- **Reflect spending patterns of a larger share of the population**

Interpretation: When the estimation sample includes all consumer units, those within the 30-36th percentile of FCSU expenditures include 13.4% with exactly 2 children and 37.3% are CUs with any number of children

Source: Bureau of Labor Statistics, Consumer Expenditure Survey Interview Data, 2012Q2-2017Q1.

Change Base of Thresholds: Move to the a Percentage of the Median



- Move base to median
- Reduce impact of imputed benefits
- Allow for future incorporation of medical expenses

Expanding the Sample and Moving to the Median: 2016

Weighted Distribution of Consumer Units within Percentile Ranges for 2016 Threshold Estimation Samples							
		30-36 Percentile of FCSU Expenditures			47-53 Percentile of FCSU Expenditures		
		CUs with 2 Children	CUs with One or More Children	All CUs	CUs with 2 Children	CUs with One or More Children	All CUs
		(n=860)	(n=2,396)	(n=7,632)	(n=864)	(n=2,425)	(n=7,711)
Weighted Percentage Distributions (%)							
Number of Children in CU							
	0	0.0	0.0	62.7	0.0	0.0	66.0
	1	0.0	40.0	15.4	0.0	45.3	15.3
	2	100.0	35.2	13.4	100.0	36.0	12.3
	3	0.0	16.6	5.6	0.0	13.3	4.7
	4 or more	0.0	8.2	2.9	0.0	5.4	1.7
Housing Tenure							
	Owner with Mortgage	38.2	34.5	23.9	50.3	47.5	34.0
	Owner without Mortgage	12.9	13.7	34.1	9.0	9.1	26.3
	Renter	48.9	51.8	42.0	40.7	43.4	39.7
Participation in Public Assistance Program							
	Public Housing	2.4	2.2	2.1	1.4	1.2	1.1
	Government Assistance with Rents	2.0	2.4	1.9	1.4	1.6	0.8
	SNAP	21.9	22.4	13.3	12.5	13.4	6.7
	Welfare Income	2.0	2.8	1.2	1.4	1.2	0.8
	Medicaid	34.7	39.0	21.6	21.9	25.3	13.6
Someone in the CU Has...							
	Medicare	8.3	9.5	31.2	4.2	8.1	27.2
	Private Health Insurance	65.2	63.8	65.9	74.3	73.4	73.1

NOTE: Consumer units living in college or university student housing are out of scope.

Source: Garner, IARIW-World Bank Conference 2019; data: Bureau of Labor Statistics, Consumer Expenditure Survey Interview Data, 2012Q2-2017Q1.

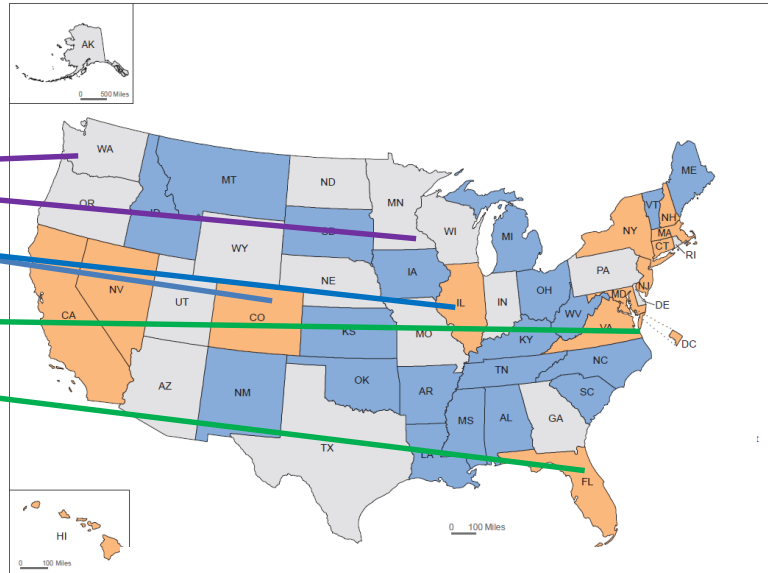
Geo-adjust CU Level FCSU Resulting in “National” Dollar Thresholds (as opposed to average dollars)

- Spatial differences in shelter and utility costs are already embedded in the 2A+2C SPM thresholds (Bishop, Lee, and Zeager 2017)
- As currently published, *no attempt to account for spatial differences in housing costs* before producing “national average” SPM thresholds

Owners with mortgages

Owners without mortgages

Renters



Additional Changes

Treatment of Telephone and Internet

$$\text{Published: } SPM_{j,2016} = 1.2 * FCSU_{E,2016} - SU_{t,E,2016} + SU_{t,j,2016}$$

$$\text{Alternative: } SPM_{j,2016} = 1.2 * FCTSU_{E,2016} - SU_{E,2016} + SU_{j,2016}$$

$$\text{Alternative: } SPM_{j,2016} = 1.2 * FCISU_{E,2016} - SU_{t,E,2016} + SU_{t,j,2016}$$

$$\text{Alternative: } SPM_{j,2016} = 1.2 * FCTISU_{E,2016} - SU_{E,2016} + SU_{j,2016}$$

Other Changes

- 3 to 5 years of CE Interview data
- Lag by 1 year
- Adjust quarterly FSCE by created “composite FCSU-CPI-U”

$$FCSU_{i,2016} = \left(\frac{FCSU_{CPI,2016}}{FCSU_{CPI,yr}} \right) * FCSU_{i,yr}$$

Impacts Relative to Published

Change Planned	Impact on Thresholds	Impact on Housing Shares
In-kind benefits	own with mortgage: 2.8% higher Renters: 3.4% higher owners w/o mortgages: 4.5% higher	Marginal impact
Expand sample		
Child>0	own with mortgage: 3.1% lower Renters: 2.7% lower owners w/o mortgages: 2.2% lower	Marginal impact
All CUs	own with mortgage: 4.3% higher Renters: 4.3% higher owners w/o mortgages: 9.6% higher	own with mortgage: 50.2% to 50.9% renters: 49.7% to 50.5% owners w/o mortgages: 41.1% to 44.8%
Percentage of median (80.8%= "33"/"median" FCSU)	Marginal impact	Marginal impact
Telephone service separate (not in housing utilities)	Marginal impact but for owners w/o mortgages: 1.7% lower	own with mortgage: 50.2% to 44.2% renters: 49.7% to 44.1% owners w/o mortgages: 41.1% to 33%
Geo adjust CU-level FCSU	own with mortgage: 1.9% higher Renters: 1% higher owners w/o mortgages: 2.9% higher	Marginal impact

Impacts related to published based on 2 children, 5 years of data, around 33rd percentile; "marginal"= less than 0.3%

All but expanded sample based on estimation sample with 2 children

All results based on thresholds produced for 2016 but for geo adjustment which is based on 2014



Impacts Relative to Published

Change Planned	Impact on Thresholds	Impact on Housing Shares
Add internet	own with mortgage: 1.7% higher Renters: 2.1% higher owners w/o mortgages: 1.1% higher	own with mortgage: 50.2% to 49% renters: 49.7% to 48.7% owners w/o mortgages: 41.1% to 39.4%
3 years of CE data	own with mortgage: 0.7% higher Renters: 2.4% higher owners w/o mortgages: 3.0% higher	own with mortgage: 50.2% to 49.3% renters: no change owners w/o mortgages: 41.1% to 41.5%
Lag by 1 year	own with mortgage: 0.4% lower Renters: 0.8% lower owners w/o mortgages: 2.0% lower	Marginal for all but owners w/o mortgages: 41.1% to 40.5%
Use created “composite FCSU CPI-U”	own with mortgage: 2.0% higher Renters: 2.3% higher owners w/o mortgages: 1.9% higher	owner with mortgage: 50.2% to 49.8% renters: marginal owners w/o mortgages: 41.1% to 40.7%

Impacts related to published based on 2 children, 5 years of data, around 33rd percentile; “marginal”= less than 0.4%
All results based on thresholds produced for 2016



Combined Changes Based on 30-36th Percentile of FCSU: SPM 2016 2A+2C Thresholds

Published

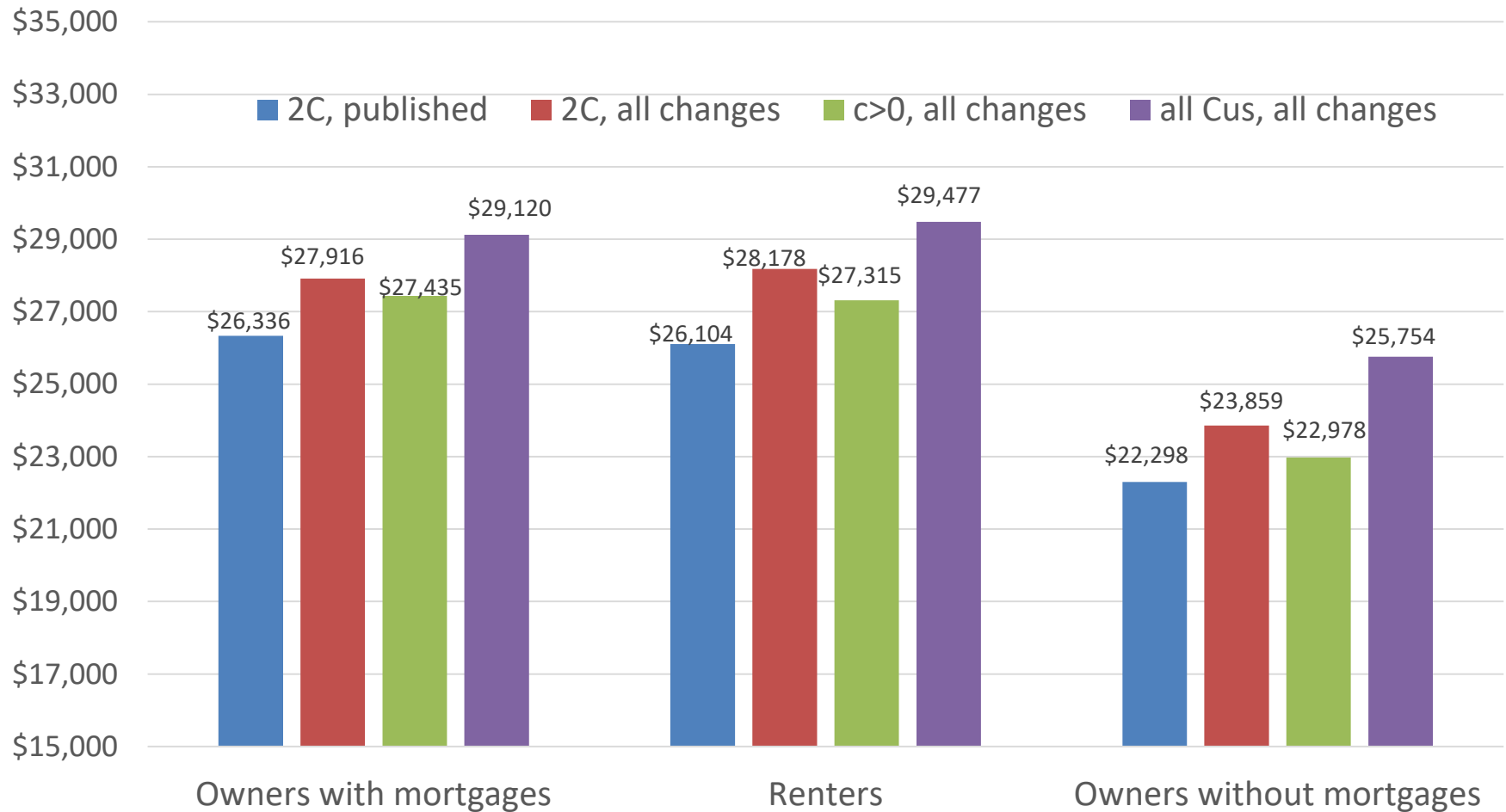
- 5 years of CE data
- no lag
- No in-kind benefits (other than SNAP)
- Telephone in housing utilities
- Internet not included
- Use All Items CPI-U to adjust quarterly CU FCSU expenditures to threshold year dollars

Combined Changes

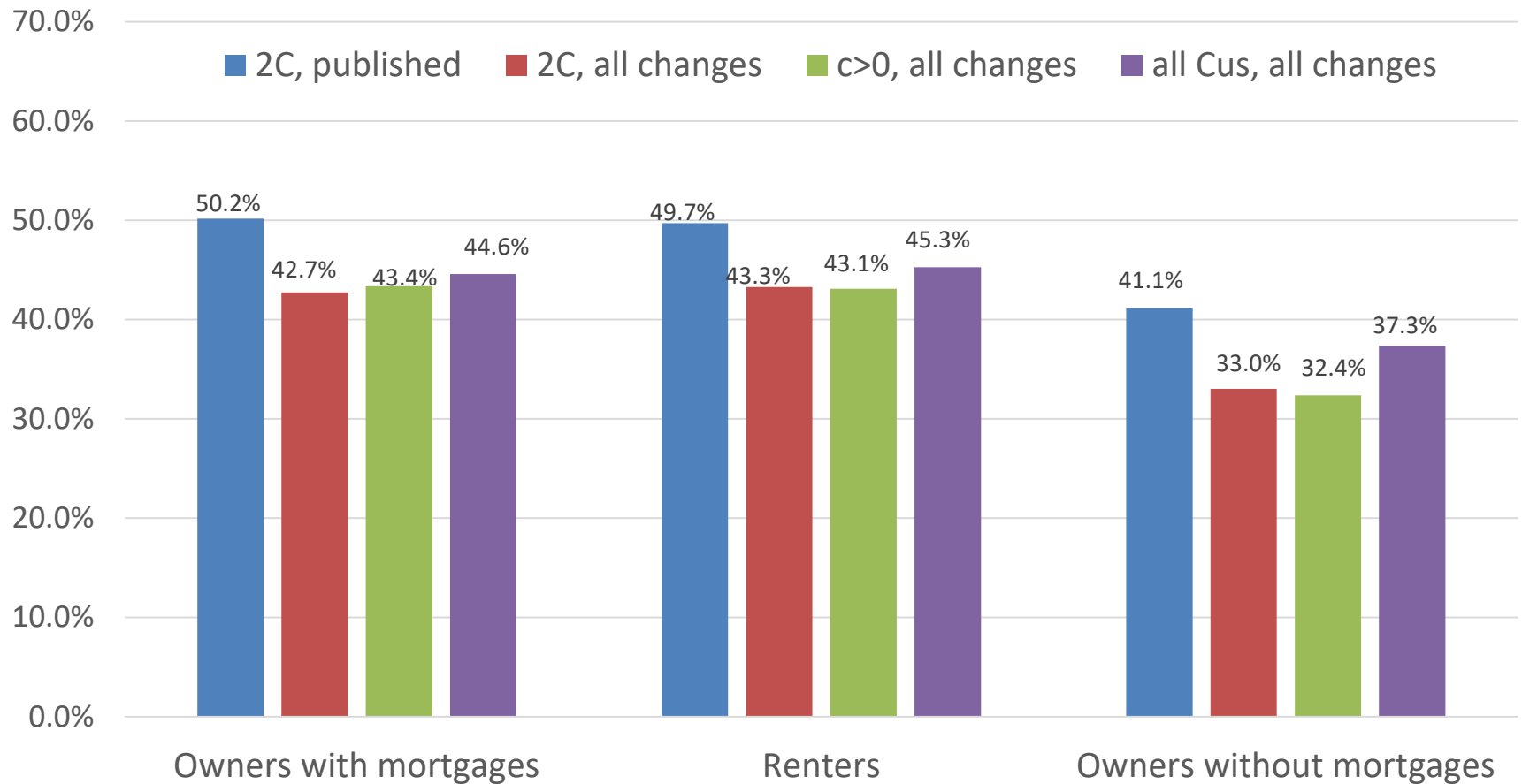
- 3 years of CE data
- 1-year lag
- In-kind benefits added
- Telephone not in housing utilities
- Internet added
- Use composite FCSU CPI-U to adjust quarterly CU FCSU expenditures to threshold year dollars

NOTE: Not including geo adjusting FCSU expenditures at CU level before thresholds estimation at this time

Impact of Combined* Changes Based on 30-36th Percentile of FCSU and Different Estimation Samples: SPM 2016 2A+2C Thresholds



Impact of Combined* Changes Based on 30-36th Percentile of FCSU: S+U as % of SPM 2016 2A+2C Thresholds



Select % of Median to Offset Impact of Changes to Equate to Published

$$SPM_{j,2016} = 1.2 * FCSU_{E,2016} - SUE + SUE_j$$

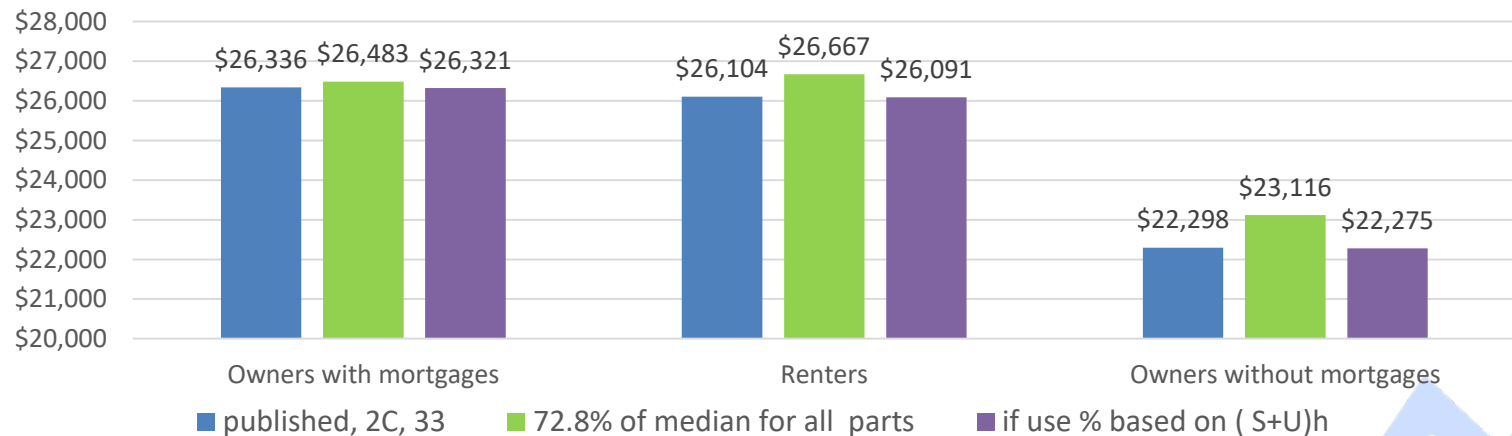
$$SPM_{j,2016} = 1.2 * 72.8\% * FCSU_{E,2016} - 72.8\% * SU_E + 72.8\% * SU_{E,j}$$

$$SPM_{j,2016} = 1.2 * 72.8\% * FCSU_{E,2016} - 79.6\% * SU_E + 78.2\% * SU_{E, \text{own w mort}}$$

$$SPM_{j,2016} = 1.2 * 72.8\% * FCSU_{E,2016} - 79.6\% * SU_E + 74.7\% * SU_{E, \text{own no mort}}$$

$$SPM_{j,2016} = 1.2 * 72.8\% * FCSU_{E,2016} - 79.6\% * SU_E + 75.7\% * SU_{E, \text{renter}}$$

2016 SPM Thresholds for 2A+2C: Published vs % Median FCSU vs Housing Specific %



Discussion of Planned Changes

Change Planned	Justification	
In-kind benefits	Consistency in measurement with resources	
Expand sample		
Child>0	Represents larger share of the population	
All CUs	Represents full population	
Percentage of median	Reduces impact of in-kind benefit imputations; expectation of greater stability	
Telephone service separate (not in housing utilities)	Increased cell service expenditures as share of total; cell not geo specific	
Geo adjust CU-level FCSU	Results in “national” dollars	
Add internet	Increased means of communication in addition to telephone	
3 years of CE data	In combination with increasing sample size, reduce impact of recession	
Lag by 1 year	CPS ASC data not available in time to produce in-kind benefits for thresholds for most recent year	
Composite FCSU CPI-U	More reflective of threshold component price changes	

Discussion of Changes Not Planned

Change	Justification	
Use of price index to reflect spending for owner occupants	Price indexes not available	
Different equivalence scale	What to	
Medical/health care	How to value	
Specific expenditures rather than multiplier	Which goods and services to include	
Use of 12 months of CE data	No longitudinal weights	

Contact Information

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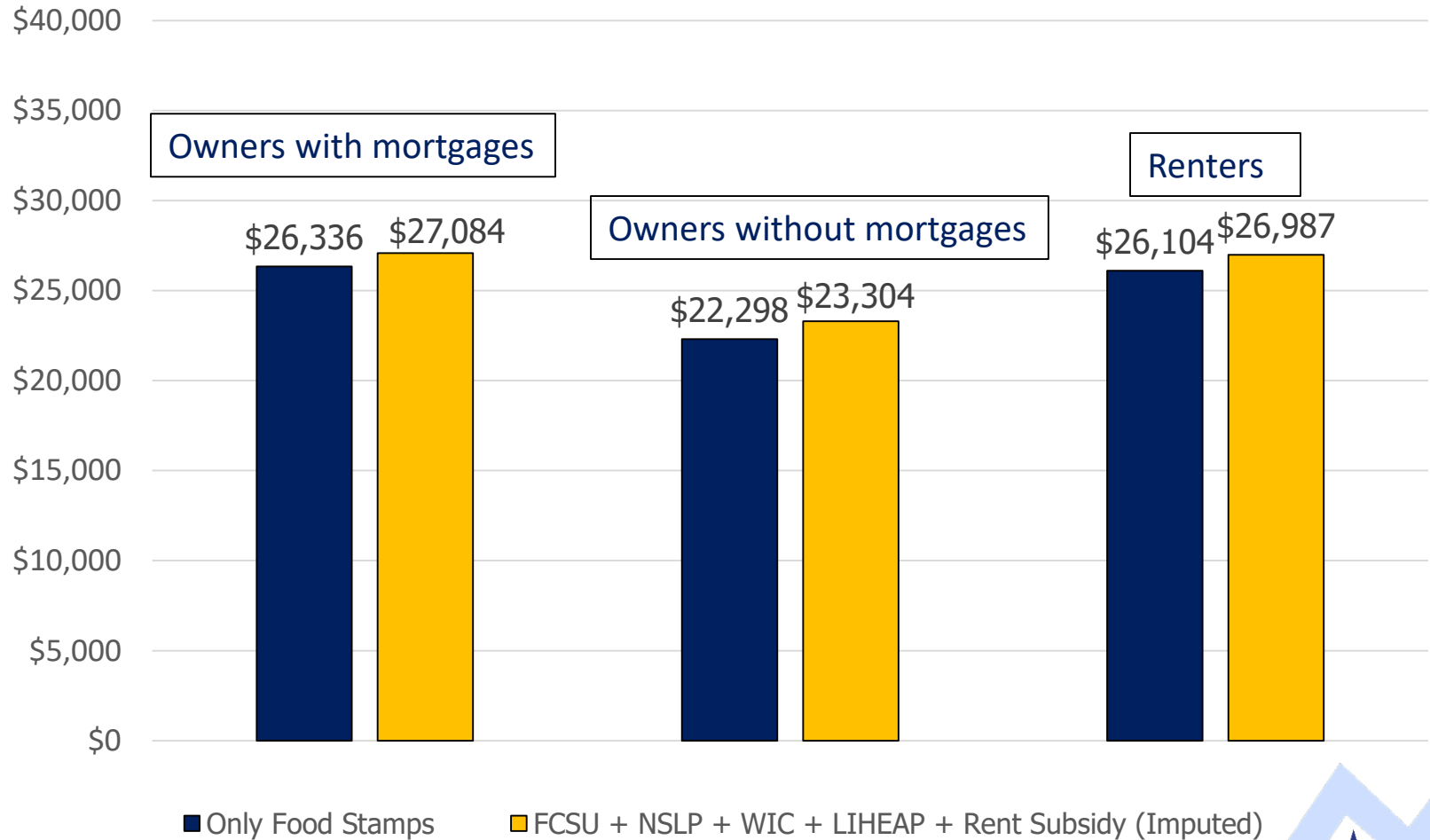


Two-Adult-Two-Child Research Experimental Supplemental Poverty Measure (SPM) Thresholds, 2010-2018

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Owners with mortgages	\$25,018	\$25,703	\$25,784	\$25,639	\$25,844	\$25,930	\$26,336	\$27,085	\$28,342
Standard error	\$323	\$347	\$368	\$289	\$345	\$297	\$280	\$276	\$329
Percentage of Sample	0.486	0.459	0.439	0.438	0.415	0.371	0.382	0.382	0.394
Owners without mortgages	\$20,590	\$21,175	\$21,400	\$21,397	\$21,380	\$21,806	\$22,298	\$23,261	\$24,173
Standard error	\$341	\$298	\$233	\$337	\$470	\$417	\$390	\$471	\$424
Percentage of Sample	0.093	0.110	0.120	0.115	0.108	0.119	0.129	0.113	0.137
Renters	\$24,391	\$25,222	\$25,105	\$25,144	\$25,460	\$25,583	\$26,104	\$27,005	\$28,166
Standard error	\$379	\$378	\$398	\$400	\$363	\$282	\$302	\$263	\$253
Percentage of Sample	0.421	0.431	0.442	0.447	0.476	0.510	0.489	0.505	0.469

<https://www.bls.gov/pir/spmhome.htm>

2016 SPM Thresholds with and without In-Kind Imputed Benefits: 2 Adults with 2 Children (“2A+2C”)



Based on no geo adjustment to FCSU at CU level, 30-36th percentile FCSU

Geo-Adjust for Spatial Differences in Housing Costs at the CU Level

Add Step before Thresholds Production

At Consumer Unit Level, move telephone to $F_i + C_i$ and out of housing ($S_i + U_i$)

At Housing Group j Level for All CUs, produce quality-adjusted normalized housing prices (generated for each housing group) for ($S_i + U_i$) for areas a ($QANP_{a,j}$)

At Consumer Unit Level, adjust housing expenditures to reflect “national” dollars

$$FCSU'_{i,yr} = F_i + C_i + Tele_i + \frac{S_i + U_i}{QANP_{a,j}}$$

$$FCSU'_{i,2014} = \left(\frac{CPI_{2014}}{CPI_{yr}} \right) * FCSU'_{i,yr}$$

Continue as before....



Impact of Not Including Telephone in Housing on 2016 2A+2C SPM Thresholds and Housing Shares

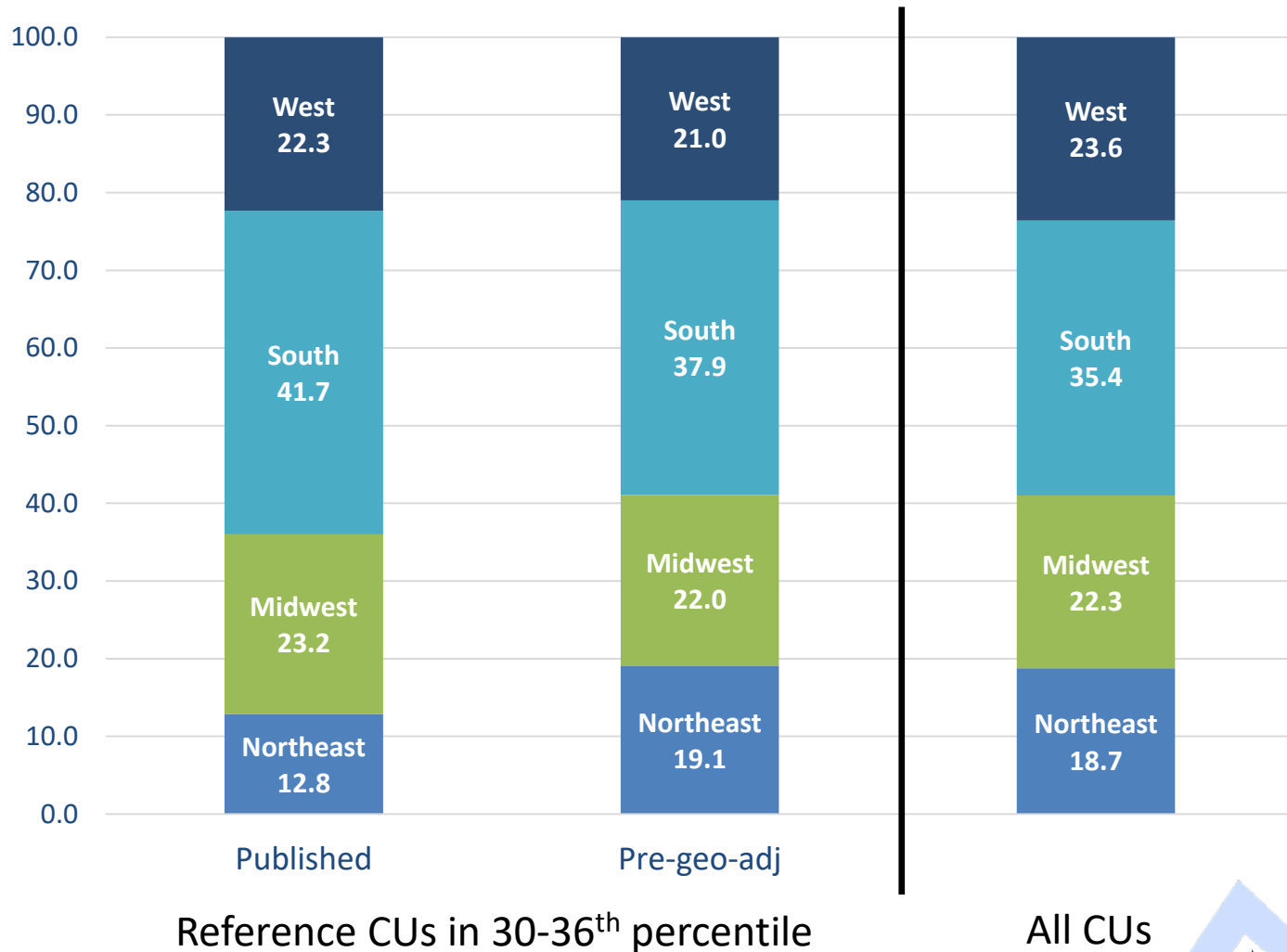
Important for Census Bureau geographic (MRI) adjustment for sub-national thresholds

$$\text{Published: } SPM_{j,2016} = 1.2 * FCSU_{E,2016} - SU_{E,2016}^t + SU_{j,2016}^t$$

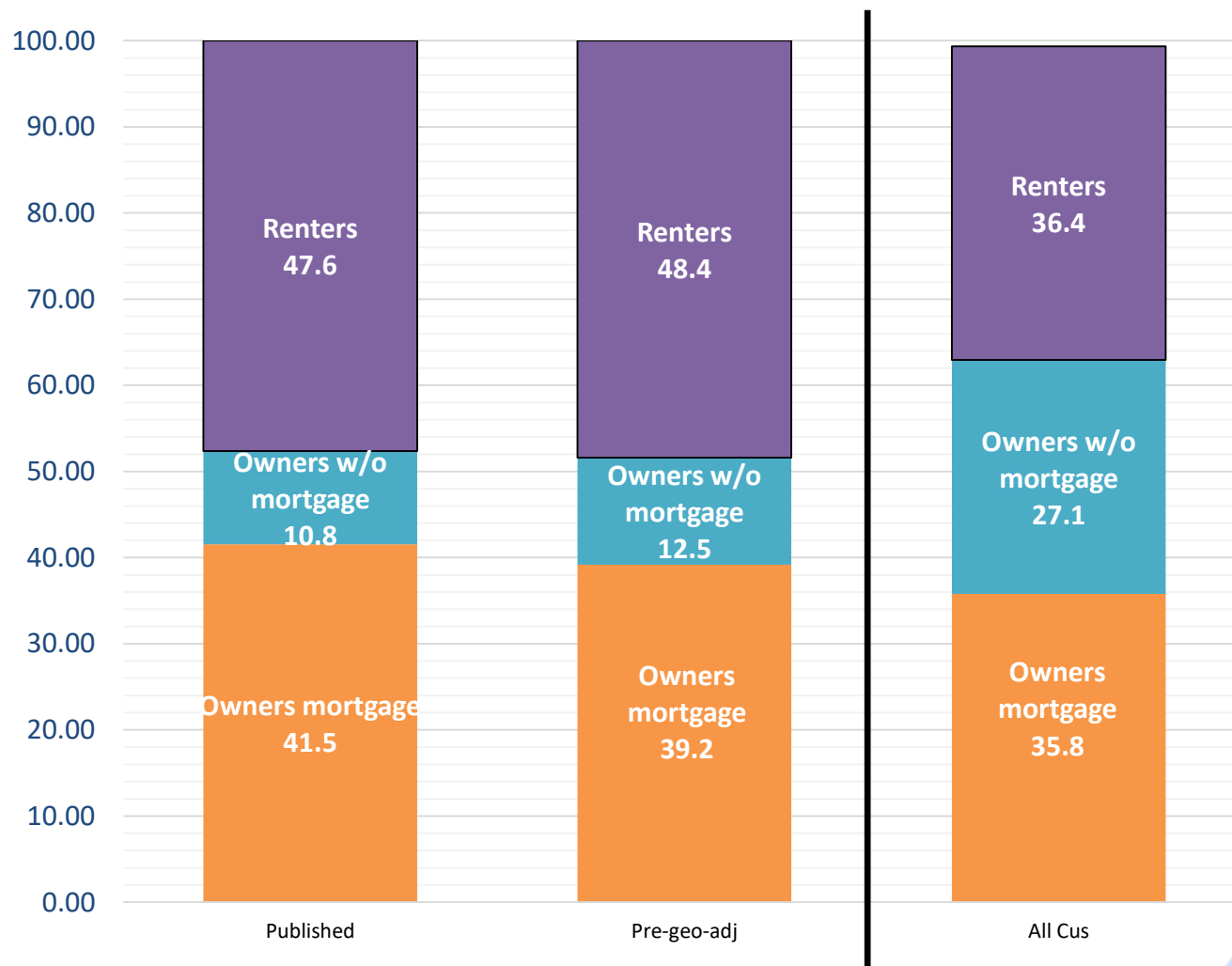
$$\text{Alternative: } SPM_{j,2016} = 1.2 * FCTS U_{E,2016} - SU_{E,2016} + SU_{j,2016}$$

		Published Threshold	Published Housing Share	Alternative Threshold	Alternative Housing Share
Owners with Mortgages		\$26,336		\$26,286	
	shelter		33.6%		33.6%
	utilities		16.7%		10.6%
	<i>housing total</i>		50.3%		44.2%
Renters		\$26,104		\$26,243	
	shelter		36.3%		36.3%
	utilities		13.2%		7.8%
	<i>housing total</i>		49.5%		44.1%
Owners without Mortgages		\$22,298		\$21,921	
	shelter		18.2%		18.2%
	utilities		23.6%		14.8%
	<i>housing total</i>		41.8%		33.0%

Percentage Distribution of CUs in 30-36th Percentile Range of FCSU Published vs. with Pre-Geo-adjust FCSU Before Threshold Estimation: 2014



Percentage Distribution of SPM Reference CUs in 30-36th Percentile Range of FCSU: Published vs. with Pre-Geo-adjustment by Housing Tenure 2014



Reference CUs in 30-36th percentile

All CUs



Combined Impact of Geo-Adjusting S+U at CU Level and Moving Telephone: 2014 Thresholds for 2A+2C

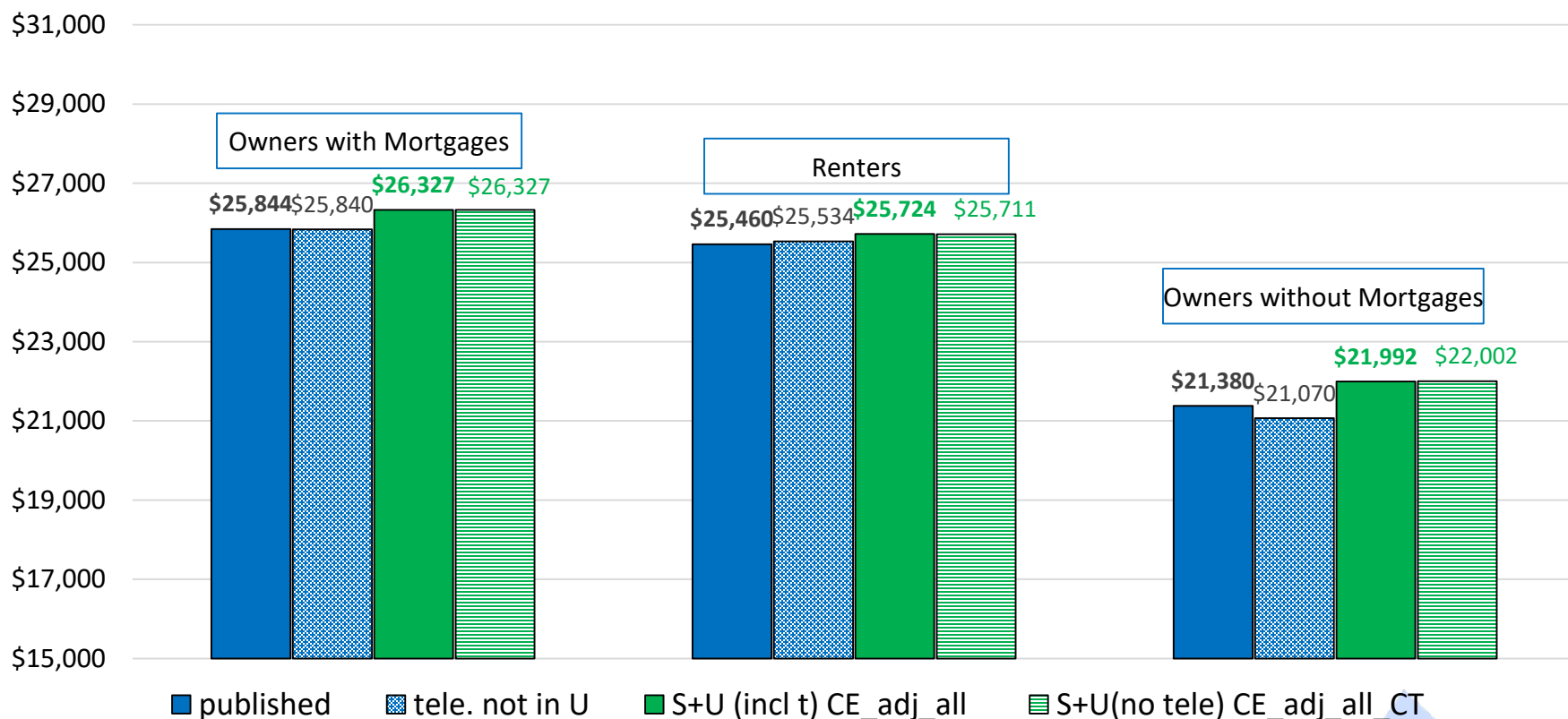
- Geo-adjusting S+U at CU level small impact on threshold levels
- Relatively large impact on housing share adjusted for differences in rents across areas to produce sub-national thresholds

2014 SPM 2A+2C Thresholds Housing Expenditure Shares for 2014 2A+2C: Published and When Shelter and Utilities Price-Adjusted at CU Level

		Published	Telephone not in Utilities	for Thresholds with S+U Adjusted at CU Level	
				Telephone in Housing Share	Telephone not in Housing Share
Owners with Mortgages					
	shelter	34.1%	34.1%	34.1%	34.0%
	utilities	16.6%	11.1%	16.6%	11.1%
	housing total	50.7%	45.2%	50.7%	45.1%
Renters					
	shelter	36.4%	36.3	35.5%	35.5%
	utilities	13.6%	8.2	13.9%	8.3%
	housing total	50.0%	44.5%	49.4%	43.8%
Owners without mortgages					
	shelter	18.3%	18.5	17.9%	17.9%
	utilities	22.2%	14.2	23.0%	16.4%
	housing total	40.4%	32.7%	40.9%	34.3%

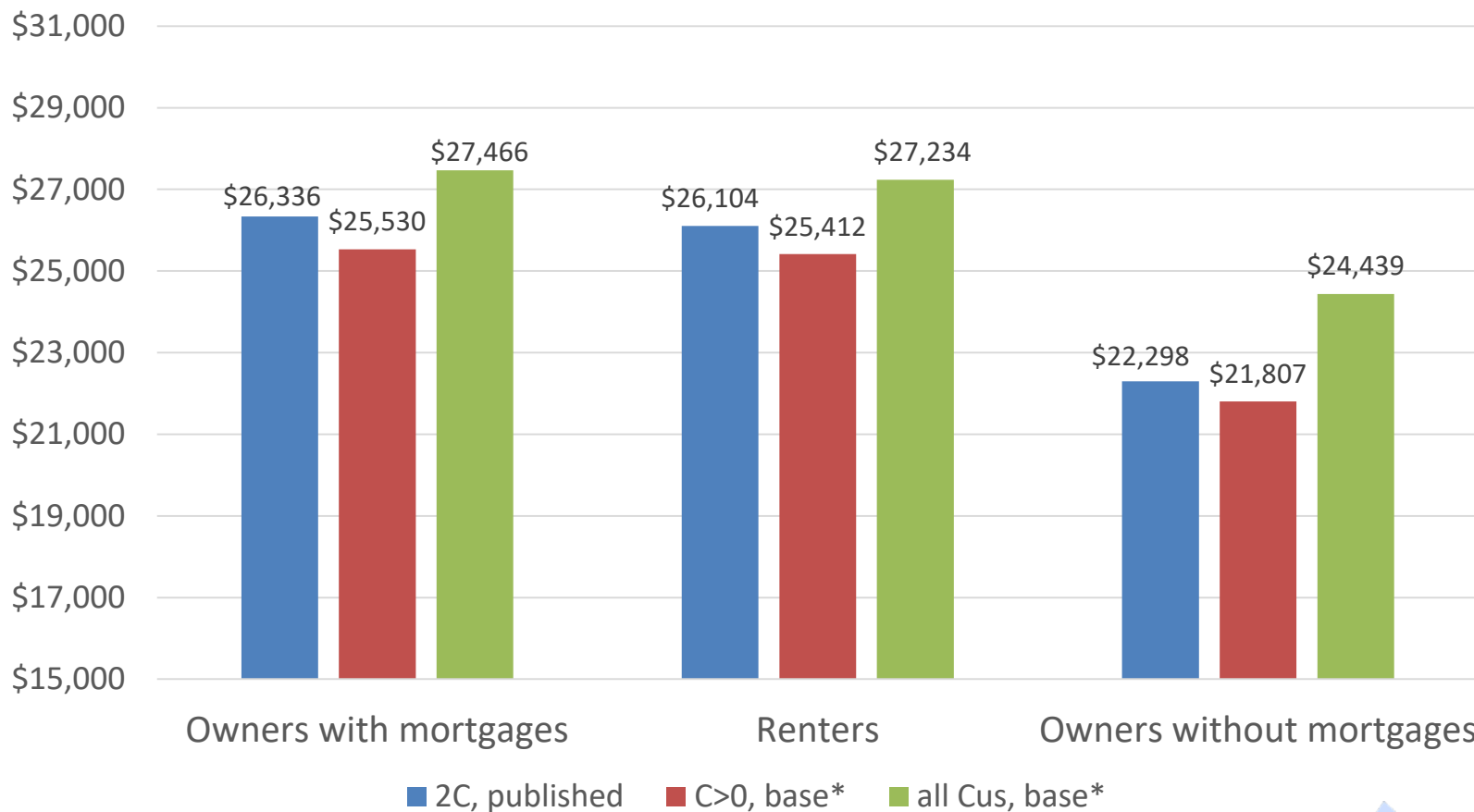
2014 2 A+2 C SPM Thresholds Moving Telephone out of Housing Utilities and with and without Quality-Adjusted Normalized “Prices” Applied to S_i+U_i

$$SPM'_{j,2014} = 1.2 * FCTSU'_{E,2014} - SU'_{E,2014} + SU'_{j,2014}$$

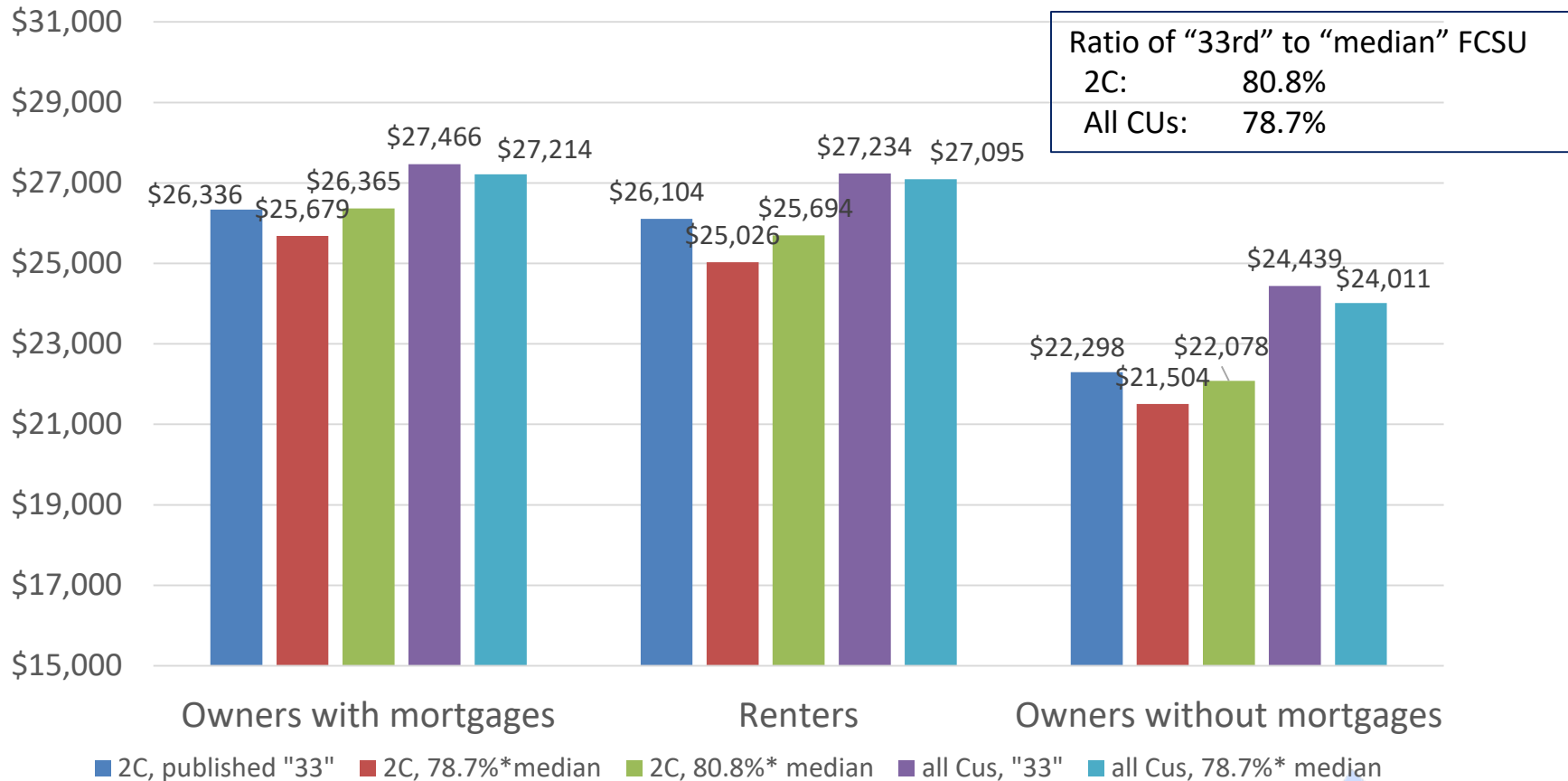


NOTE: geo adjustments produced separated for each housing group and CE_adj_all based on all CUs with data from 2010Q2-2015Q1

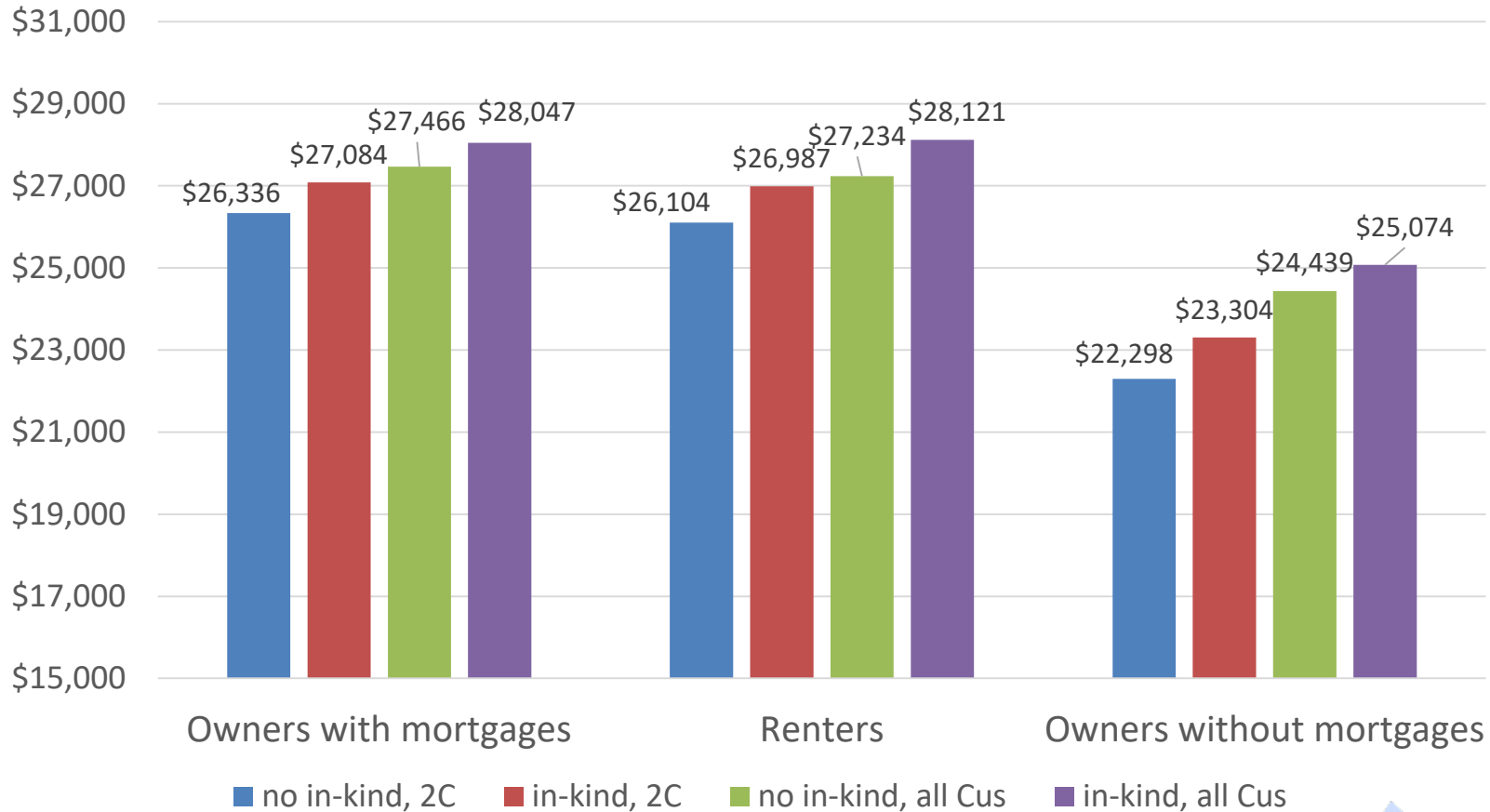
Impact of Changing Estimation Sample (5 Years of CE Data, 30-36th percentile of FCSU): 2016 2A+2C



Impact of Moving to the Median & 2C vs. All CUs Estimation Sample (5 Years of CE Data): 2016 2A+2C



Impact of Including In-Kind Benefits vs. Not & 2C vs. All CUs Estimation Unit (5 Years of CE Data): 2016 2A+2C



Impact of Telecom Added to FCSU but not in Utilities: 2016 Thresholds for 2A+2C

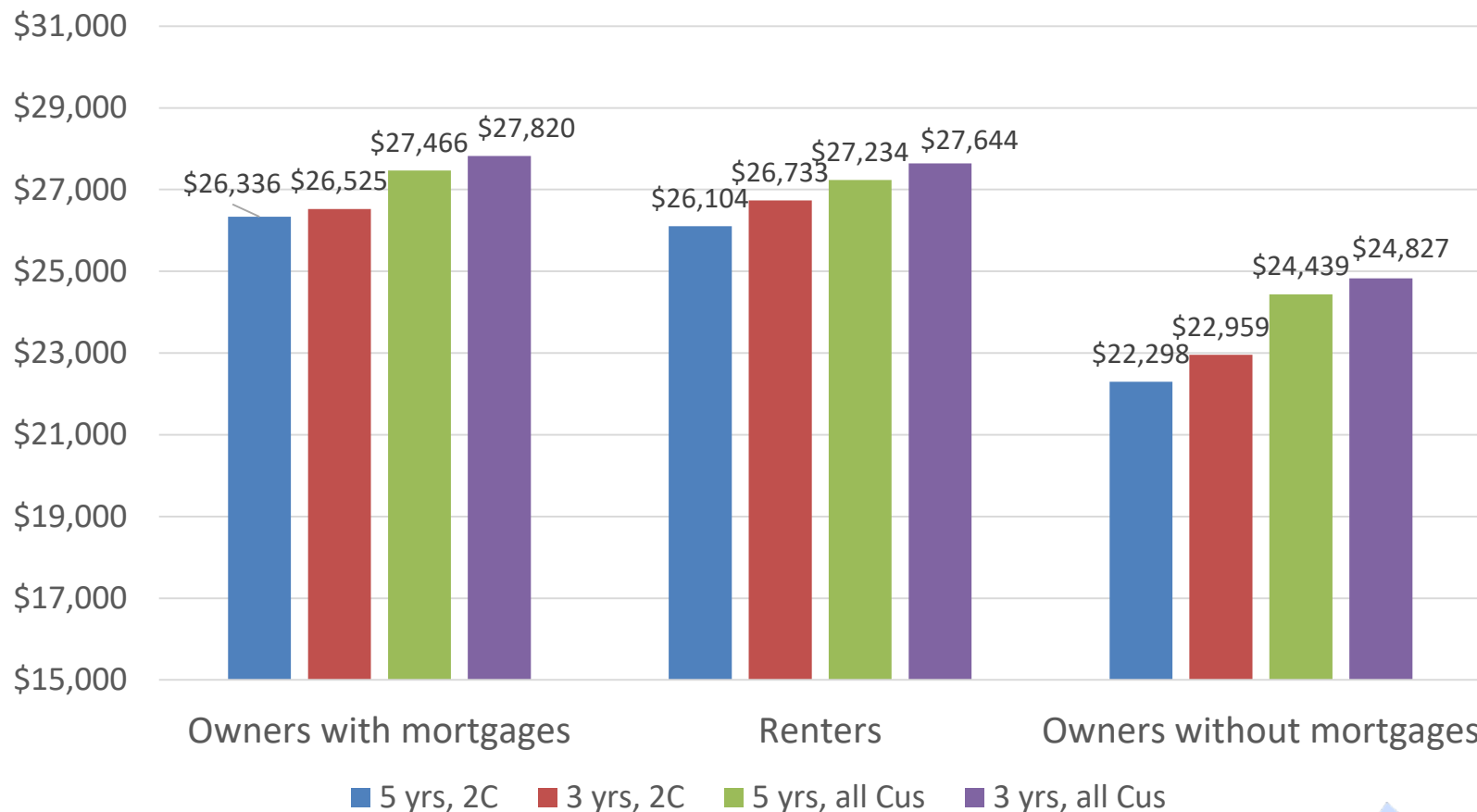
Important for Census Bureau geographic (MRI) adjustment for sub-national thresholds

$$\text{Alternative: } SPM_{j,2016} = 1.2 * FCTISU_{E,2016} - SU_{E,2016} + SU_{j,2016}$$

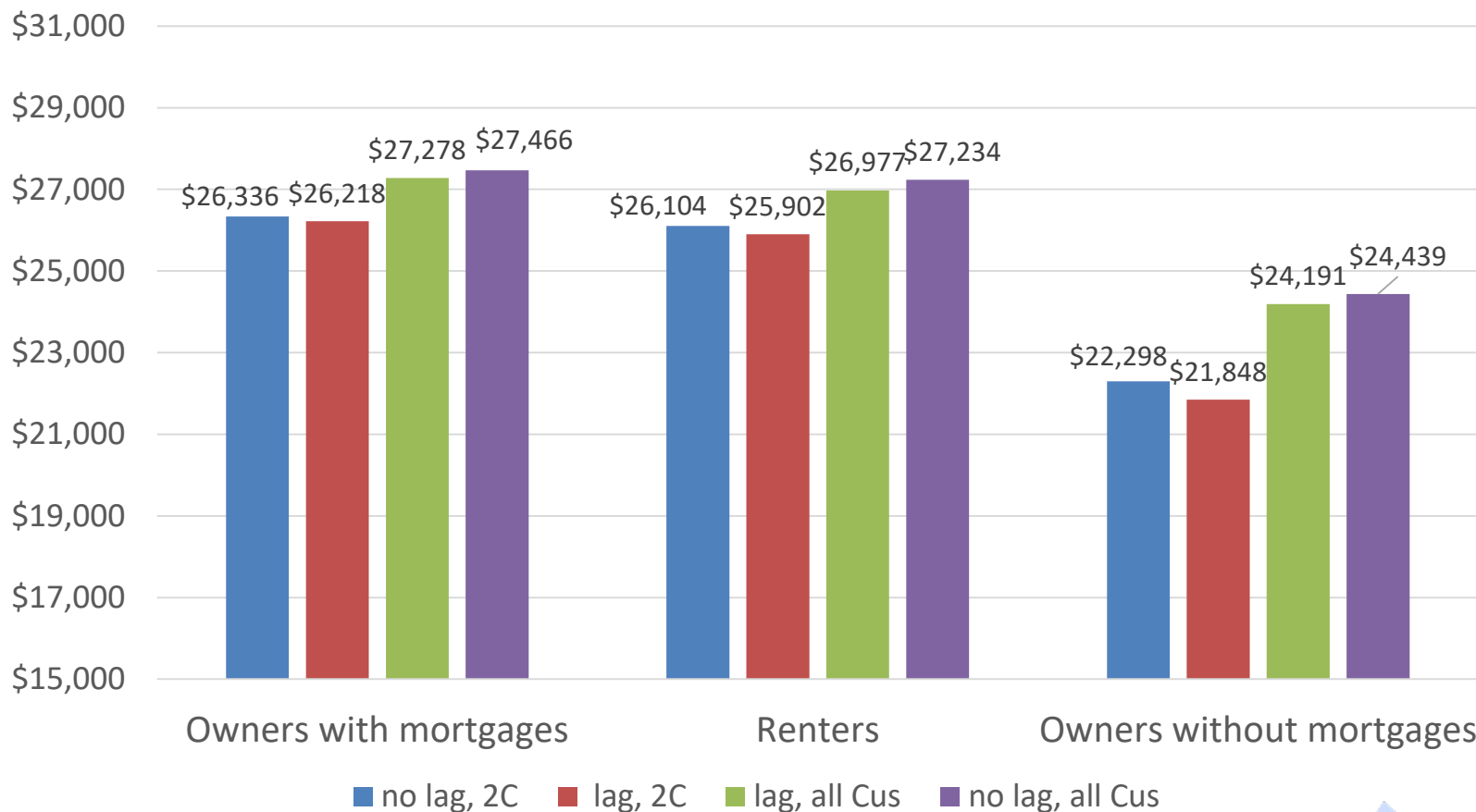
				Alternative Thresholds				
	Published Threshold	Published Housing Share	Thresholds with Tele not in U	Housing Share	Thresholds with Tele in U; Internet not in U	Housing Share	Thresholds with I+T not in U	Housing Share
Owners with Mortgages	\$26,336		\$26,286		\$26,786		\$26,677	
shelter		33.6%		33.6%		32.4%		32.5%
utilities		16.7%		10.6%		16.6%		10.5%
housing total		50.3%		44.2%		49.0%		43.0%
Renters	\$26,104		\$26,243		\$26,661		\$26,806	
shelter		36.3%		36.3%		36.0%		35.8%
utilities		13.2%		7.8%		12.7%		7.4%
housing total		49.5%		44.1%		48.7%		43.2%
Owners without Mortgages	\$22,298		\$21,921		\$22,552		\$22,327	
shelter		18.2%		18.2%		18.3%		18.4%
utilities		23.6%		14.8%		21.1%		13.5%
housing total		41.8%		33.1%		39.4%		31.9%

Based on estimation sample composed of 2 children, no geo adjustment to FCSU at CU level, 30-36th percentile FCSU

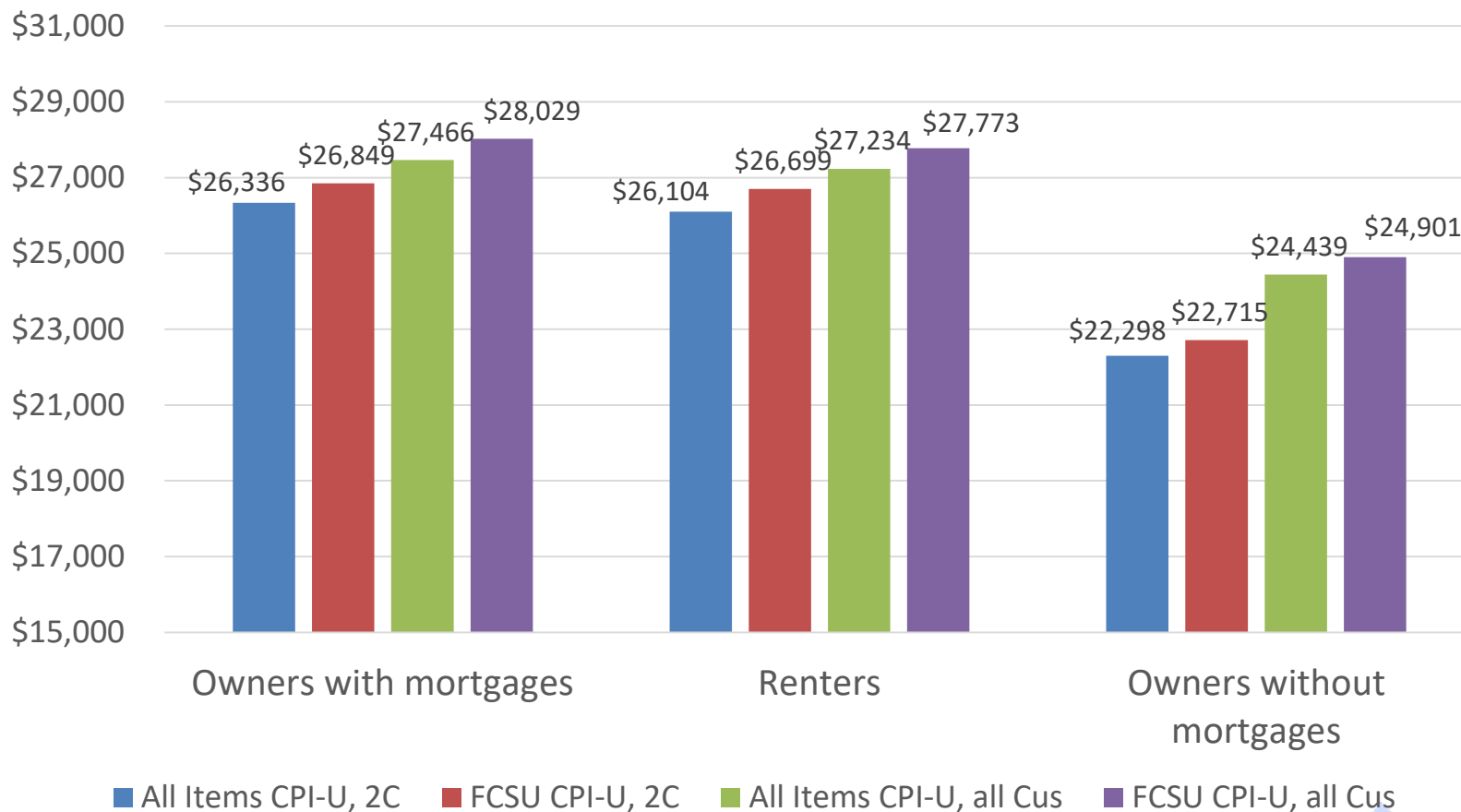
Impact of 5 Years vs. 3 Years of CE Data & 2C vs. All CUs Estimation Unit: 2016 2A+2C Thresholds



Impact of Lagging vs. Not Lagging by 1 Year & 2C vs. All CUs Estimation Unit (5 Years of CE Data): 2016 2A+2C Thresholds



Impact of Adjusting by Composite FCSU CPI-U vs. All Items CPI-U & 2C vs. All CUs Estimation Unit (5 Years of CE Data): 2016 2A+2C



Impact of Using 3 Years of Data and 1-year Lag: 2016 2A+2C Based on “33rd” Percentile FCSU



Refining What is Included in FCSU

- Already incorporated in FCSU—does not include in red
 - Shelter and utilities for primary residence only
 - Home equity loans or lines of credit
 - Vacation shelter or utilities
 - Other lodging like away at school
 - Food
 - Food and/or rent as pay
- Additional Refinements
 - Shelter maintenance and repairs
 - Floor repair and replacement
 - Food
 - Food or board at school (keep school meals)
 - Catered affairs
 - Apparel
 - Watches
 - Jewelry
 - Watch and jewelry repair
 - Clothing rental
 - Clothing storage

