Accounting for Rents and Net Implicit Rental Income in a SPM-like Measure Using Rental Equivalence for Owner-occupied Housing

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Research Study

- **Objective**
  - Produce poverty measures that account for implicit income which homeowners have but is not available to renters
  - Use Consumer Expenditures Survey (CE) data as CPS ASEC does not collect sufficient data
- **Background**
  - SPM current
  - CNSTAT Panel recommendations and implications
- **Methods**
  - For 2021, examine the impact of accounting for owner-occupied housing
    - Thresholds – FMR & reported rental equivalence
    - Resources – include implicit resources for owners
    - Poverty rates
  - Start with SPM threshold and resource measure assumptions

Current Estimation of SPM Thresholds

- 5 years of CE Interview data, lagged by one year
- *FCSUti* out of pocket (OOP) spending + in-kind benefits
- Estimation: CUs with at least one child
- Reference: CUs with 2 adults & 2 children
- Rank reference CUs based on *FCSUti* to produce means within median (M) 47th-53rd percentile range
- Produce 3 thresholds based on group specific (S+U)
- Apply 3- parameter equivalence scale and geo adjust (S+U) to produce thresholds for others

$$FCSUti_{i,2021} = (F_{i,qyr} + C_{i,qyr} + S_{i,qyr} + U_{i,qyr} + ti_{i,qyr}) * 4 * \left(\frac{FCSUTI\_CPI_{2021}}{FCSUti\_CPIyr}\right)$$

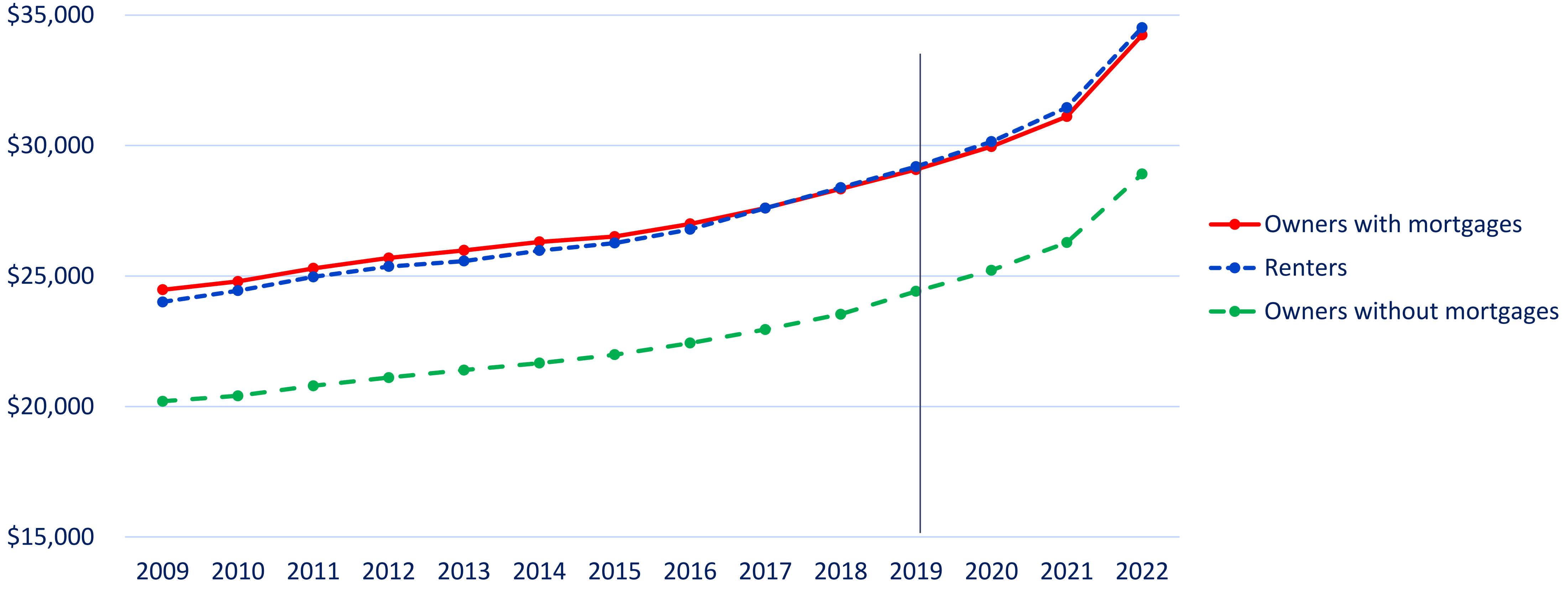
$$SPM_{j,2021} = 0.83 * (1.2 * FCSUti_{M,2021} - SU_{M,2021} + SU_{M,j,2021}),$$

where j = owner with mortgage, owner without mortgage, renter

$\frac{SU_{M,j}}{SPM_{j,2021}} = \alpha j$ = *housing share of 2A+2C SPMj*$_{,2021}$ *thresholds*

$$SPM_{j,g,2021} = [(\alpha j * MRI_g) + (1 - \alpha j)] * SPM_{j,2021}$$

2 Adult-2 Child SPM Thresholds Based on FCSUti with In-kind Benefits



NOTE: 2009-2018 historic thresholds based on 2021 methods (https://www.bls.gov/pir/spm/spm_historic_thresholds.htm);2019 revised-2022 as previously published

Consistency between Thresholds and Resources for Renters–Introduced with 2020 SPM Thresholds

Threshold: *Represents a "needs standard"*

Renters – 1 threshold
Value of the "flow of services" from rental housing, the "market value" =
- What is paid out of pocket
- In-kind rental subsidy

consistent

- Renters can use
  - Money SPM resources
  - In-kind rent subsidy

Owners – 2 thresholds

What is paid out of pocket (mortgage principal, interest, property taxes, home-owners insurance, M&R expenses)

consistent

- Owners can use
  - Money resources

Resources: *What can be used to meet "needs?*

Inconsistency within SPM Thresholds

Threshold: *Represents a "needs standard"*

Renters – 1 threshold
Value of the "flow of services" from rental housing, the "market value" =
- What is paid out of pocket
- In-kind rental subsidy

inconsistent

Owners – 2 thresholds
What is paid out-of-pocket (mortgage principal, interest, property taxes, home-owners insurance, M&R expenses)

consistent

consistent

Resources: *What can be used to meet "needs?*

- Renters can use
  - Money SPM resources
  - In-kind rent subsidy

- Owners can use
  - Money resources

Panel's Critique of Current Treatment of Housing in Thresholds

"…less conceptually clear and transparent than it could be, and there are four primary concerns with the current calculation."

- Related to estimation
  1. Three thresholds based on OOP spending + in-kind renter benefits
     - *PROBLEM: tenure choice is endogenous (at least to some extent) and all three groups face the same basic need for shelter* (could also be related to "concept" : value of flow of services from housing so treat owners and renters same)
  2. Geographic adjustment to housing (S+U) components of thresholds using MRI_Census: SPM groups together all nonmetropolitan areas in a state
     - *PROBLEM: ignores what may be large costs differentials across counties*
- Related to concept
  3. SPM does little to adjust housing costs for basic quality (but what about *FCti*?)
  4. Shelter needs do not draw on the U.S. Department of Housing and Urban Development's (HUD's) Fair Market Rents, FMRs as cost of decent, affordable housing each year in every local market in U.S.

CNSTAT Panel Recommendations Related to Housing

(note added 10-31-23)

Component	Topic	Recommendation
Thresholds	**Shelter represents rents (concept)**	**5.1** Housing to be represented by shelter costs of renters only; based on HUD Fair Market Rents (gross rents=shelter rent + utilities) (NOTE: CE research on rental equivalence for owners)
	No distinction of thresholds by housing group (estimation)	**5.3** Discontinue separate by housing group; account for lower spending by owners without mortgages in resources
	Geographic adjustment (estimation)	**5.5** Apply geographic adjustment for housing based on FMRs for MSAs and nonmetro county level
Resources	**Add implicit rental income in owner resources (concept)**	**5.6** Census Bureau: include implicit rental income for owners in resources (rental equivalence or FMR)
	Subtract owner expenses related to homeownership (concept)	**5.7** Census Bureau: subtract owner mortgage interest payments, property taxes, insurance, and other maintenance expenses; cap owner expenses at rental equivalence so net implicit (gross) rental income cannot be negative; when using FMRs, owner expenses within 37th-43rd percentile of owner expenses

NOTE: CNSTAT Panel Recommendation for owners based on the economics literature and international standards for national accounts: **owners are both renters and enterprises (landlords)**

Valuing Shelter/Housing in Thresholds

- Flow of services
  - Market rents
  - Reported rental equivalence
  - Imputed rents (regression)
- User costs of capital
  - Market value of home
  - Nominal mortgage rate
  - Depreciation, insurance, M&R
  - Property tax rate
  - Income tax rate
  - Expected appreciation rate
- Return to investment
  - Gross implicit rent = capitalization rate*market value of home

FMR – 40th percentile of **gross rent (= shelter rent + utilities)** for typical rental units occupied by recent movers in local housing market; built in last 2 years; excludes public housing

REQ - *If someone were to rent this (including part of the property currently being used for business, farming, or rented/home today) how much do you think it would rent for monthly, unfurnished and **without utilities**?*

Threshold Choice Has Implications for Resources

Thresholds

Same **FMR** (**includes utilities**) as in threshold for household

REQ - *If someone were to rent this (including part of the property currently being used for business, farming, or rented/home today) how much do you think it would rent for monthly, unfurnished and **without utilities**?*

Resources

- Net implicit **gross** income= (FMR-"40th percentile" owner expenses)
- Net implicit **gross** income= ("REQ+U"- owner expenses)
- Net implicit income = (REQ - owner expenses)

CE-Based Research

Research Thresholds for 2021: Parameters

- No change from current SPM thresholds
  - 20% multiplier to account for other basic goods and services not in FCSUti
  - 83% of median CE based values (CE based expenditures & rental equivalence)
  - 3-parameter equivalence scale applied to CE based components (same as used for SPM)
  - Reference unit: consumer units with 2 adults and 2 children

- Additional new based on Panel's recommendations
  - Expand estimation sample to all consumer units & restrict to CUs with 1 CU per household (our choice: exclude CUs living college/university student housing)
  - 3 years of Consumer Expenditure Survey - Interview data 2019Q2-2021Q1 (still lag by 1 year)
  - Adjust CE-based expenditures using composite consumer price indexes: FCSUti CPI-U or FCti CPI-U
  - Geographic adjustment using: "FMR_HUD" & we produce "MRI_CE" similar to MRI_Census

Research 2-Adult+2-Child Thresholds Based on Food, Clothing, Shelter, Utilities, Telephone, & Internet

Median
FCSUti or FCti

(Shelter + Utilities)=$FMR_{g,j}$

$1.2 * (0.83 * FCti_{yr} + FMR_{yr,n,2br})$

geo adjust implicitly with $FMR_{g,j}$

Owner shelter (S)=reported rental equivalence (REQ)

$1.2 * (0.83 * FCSUti_{yr})$

geo adjust (*SU*) with FMR_g

$1.2 * (0.83 * FCSUti_{yr})$

geo adjust (*SU*) with MRI_CE_g

FMRs Assignment to Households to Produce Thresholds and FMR-based Resources for 2021

- Monthly gross rent (shelter and utilities) at state-county level for each of the following
  - Studio (0 bedrooms)
  - 1, 2, 3, 4+ bedrooms* (although could adjust for more bedrooms)
- CNSTAT Panel recommendation that assignment be based on characteristics of estimation sample adults and children (see page 74)
- **Assignment we make also based on HUD guidelines regarding gender and generation of adults**
- ***NOTE: FMR assignment is based on household characteristics***
  - ***NOT on the shelter unit characteristics***
  - ***e.g., 1 person living in a 1-bedroom apartment is assigned the FMR for a studio apartment***

Adults	Same generation	Number of children	Gender of children	Bedrooms assigned
1	n/a	0	n/a	0
1	n/a	1	Either M/F	2
1	n/a	2	Same gender	2
1	n/a	2	Different genders	3
2	Yes	0	n/a	1
2	No	0	n/a	2
2	Yes	1	Either M/F	2
2	No	1	Either M/F	3
2	Yes	2	Same gender	2
2	Yes	2	Different genders	3

Thanks for Kalee Burns at Census Bureau for sending FMRs by county/state for 2021.

Geographic Adjustments: Median Gross Rent Indexes and FMR Indexes for the Same 65 CE Primary Sampling Units (PSU)

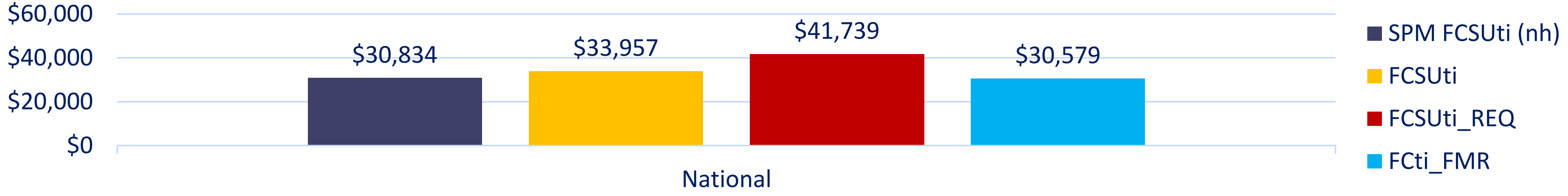
For 2021	MRI Census	MRI CE	FMR Index
Mean	1.034	1.031	1.081
Standard deviation	0.290	0.285	0.360
Minimum	0.645	0.661	0.671
Maximum	1.975	2.031	2.139
New York-Newark-Jersey City, NY-NJ-PA	1.421	1.458	1.827
Phoenix-Mesa-Scottsdale, AZ	1.057	1.057	1.123

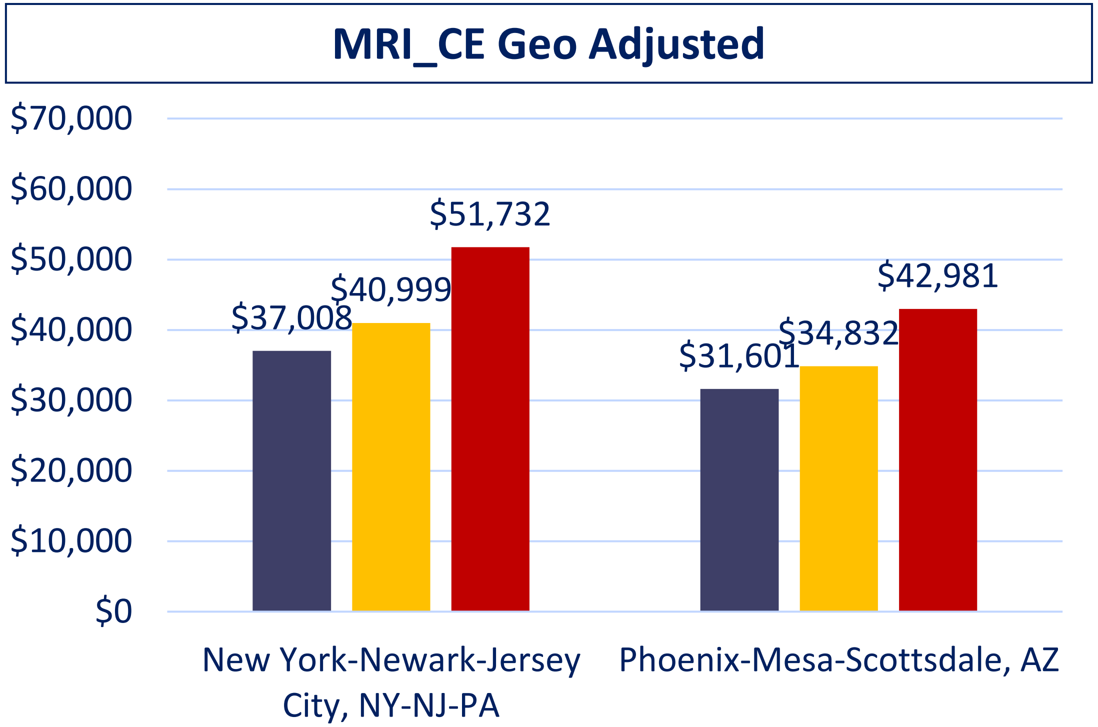
MRI_CE & MRI_Census based on median gross rents for 2 bedrooms, 1 complete bath, full kitchen)
65 are large, self-representing PSUs (set does not include rural PSUs and many non-self-representing PSUs)
60 percent of PSUs have a FMR index that is larger than the MRI CE.
70 percent of PSUs have a FMR index that is larger than the MRI Census.

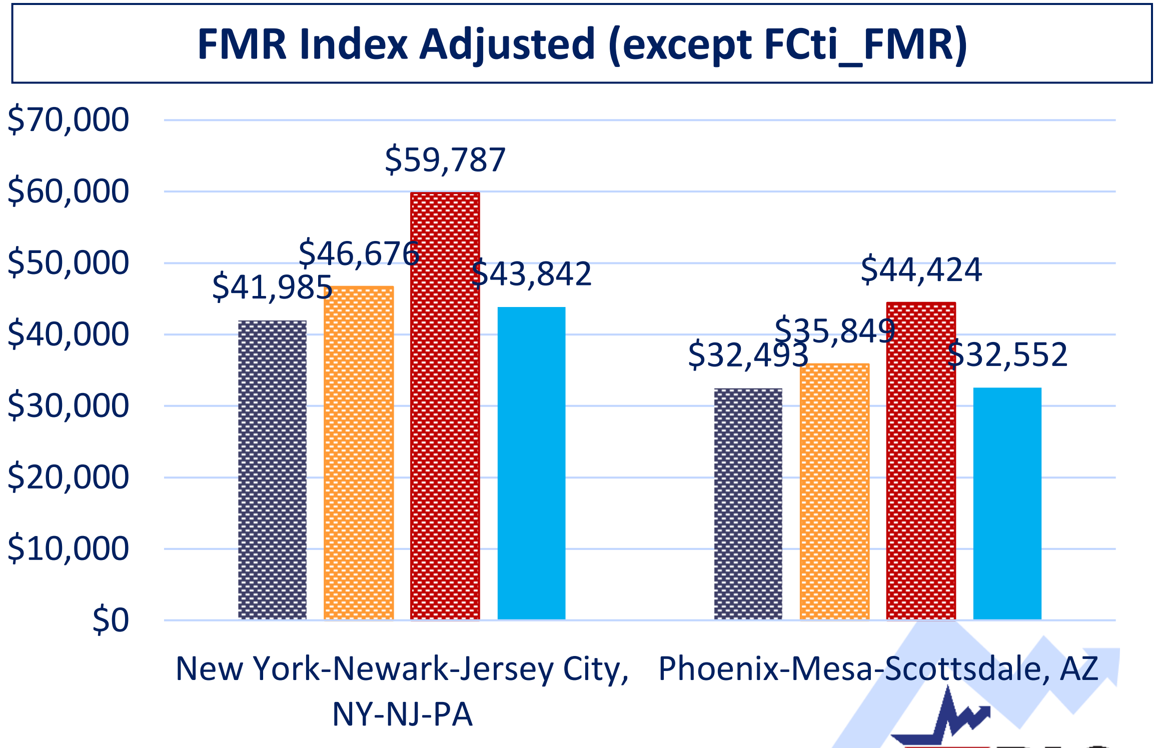
All 91 CE PSUs	MRI CE	FMR Index
Correlation	0.946	
Mean	0.941	0.978
Std	0.294	0.351
Min	0.449	0.594
Max	2.031	2.139

Moving to a Single Thresholds for 2021: 2-Adult 2-Child Thresholds

All but SPM thresholds based on 3 years of CE, 1 year lagged, & all CUs with 1-CU/HH



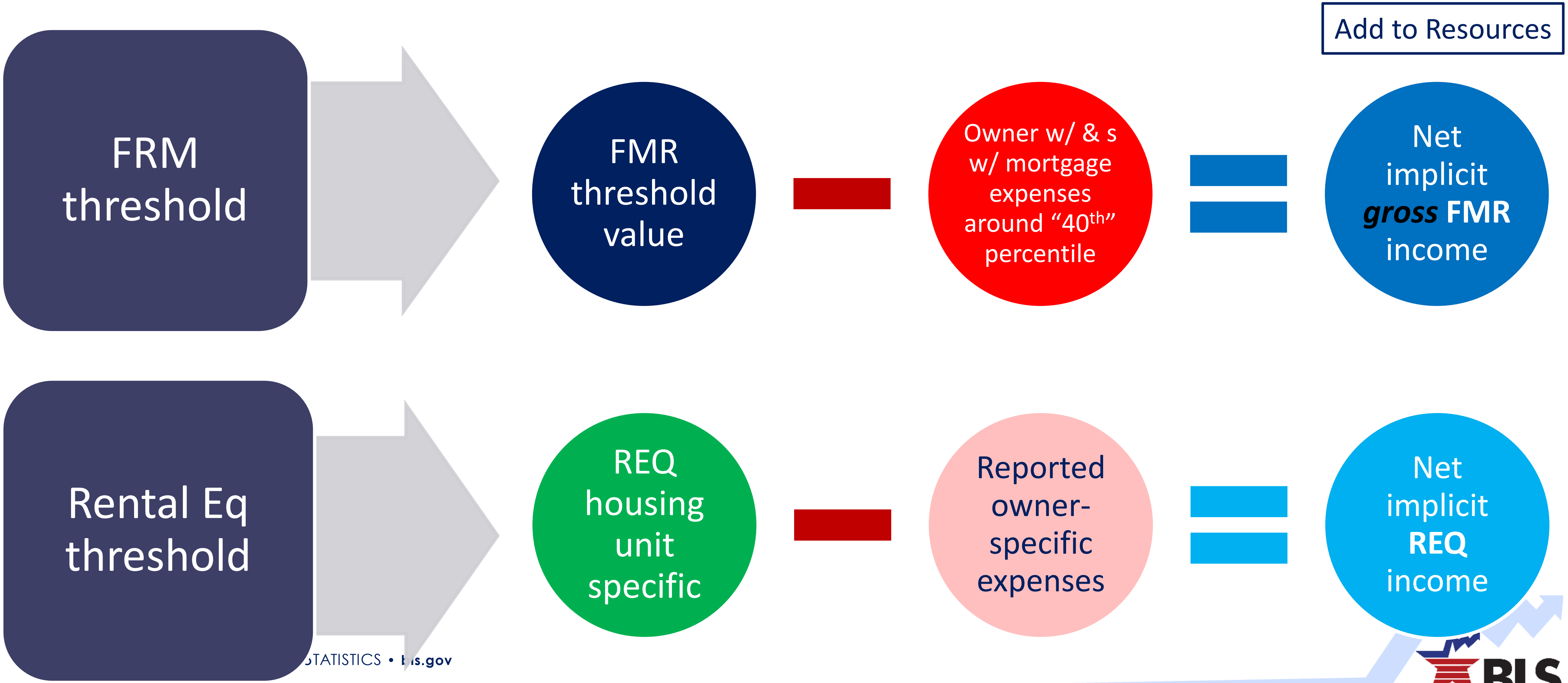




SPM Resources Based on CE

- CE data from 2021Q2-2022Q1 to represent 2021
- CE annual after-tax income (includes SNAP) using TAXSIM 32
- Add annualized in-kind transfers: LIHEAP, NSLP, WIC, rent subsidies (cap at threshold "S+U")
- Subtract annualized
  - Child support paid to another consumer unit
  - Work-related expenses for earners only
    - Childcare expense if both parents are working (Panel rec. but not using: if one parent in school/training or disabled)
    - ½ out-of-pocket transportation expenses
    - Occupation expenses
    - Cap the sum of the above at lowest earnings for a parent
  - Out-of-pocket health expenditures (we set "negative expenditures" = 0)

Add to SPM Resources: Owner Flow of Services Concept when FMR vs. Rental Equivalence in Thresholds



Add to SPM Resources: Owner Flow of Services Concepts that are Comparable – When FMRs in Thresholds

- Since FMRs include shelter rent & utilities, add utilities to owner rental equivalence

Add to Resources

FRM threshold

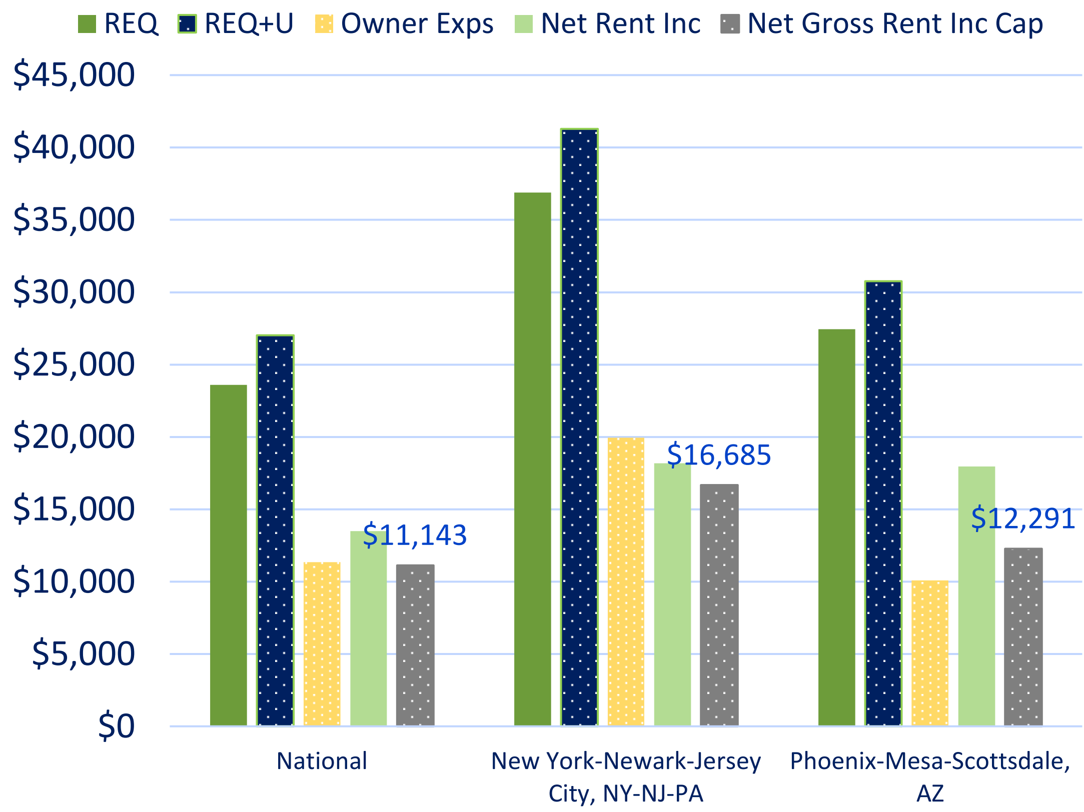
FMR threshold value − Owner w/ & s w/ mortgage expenses around "40th" percentile = Net implicit ***gross*** FMR income

Gross REQ (rent eq + owner utilities) − Reported owner-specific expenses = Net implicit ***gross* REQ** income (FMR capped)

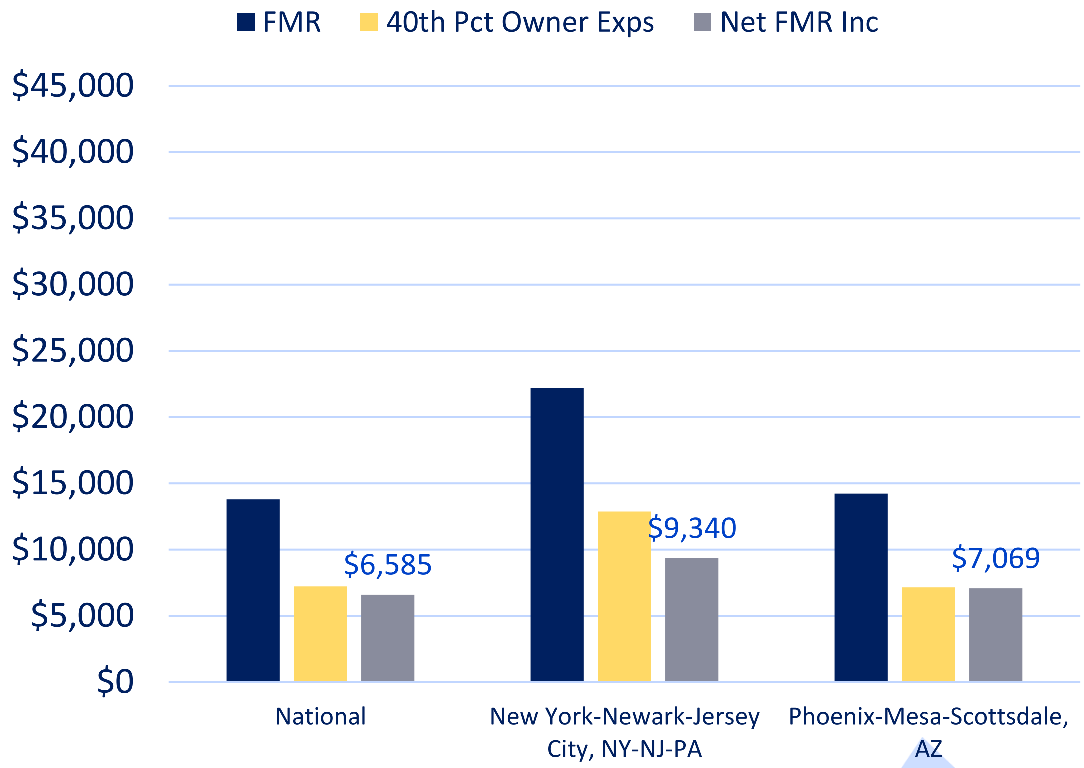
Components of Owner Implicit Rental Income: 2021

(edited 10-31-23)

(Rental Equivalence +Utilities) – Reported Owner Expenses



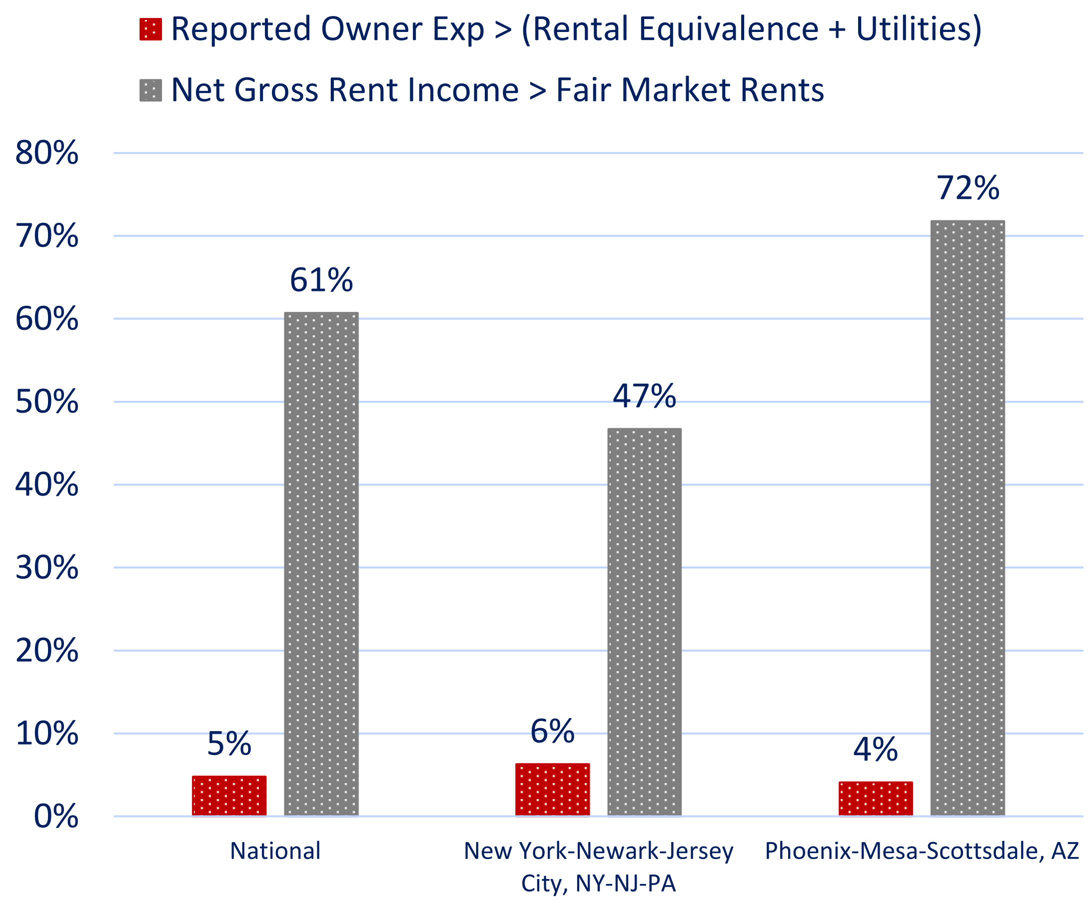
Fair Market Rents – Owner Expenses Around 40th Percentile

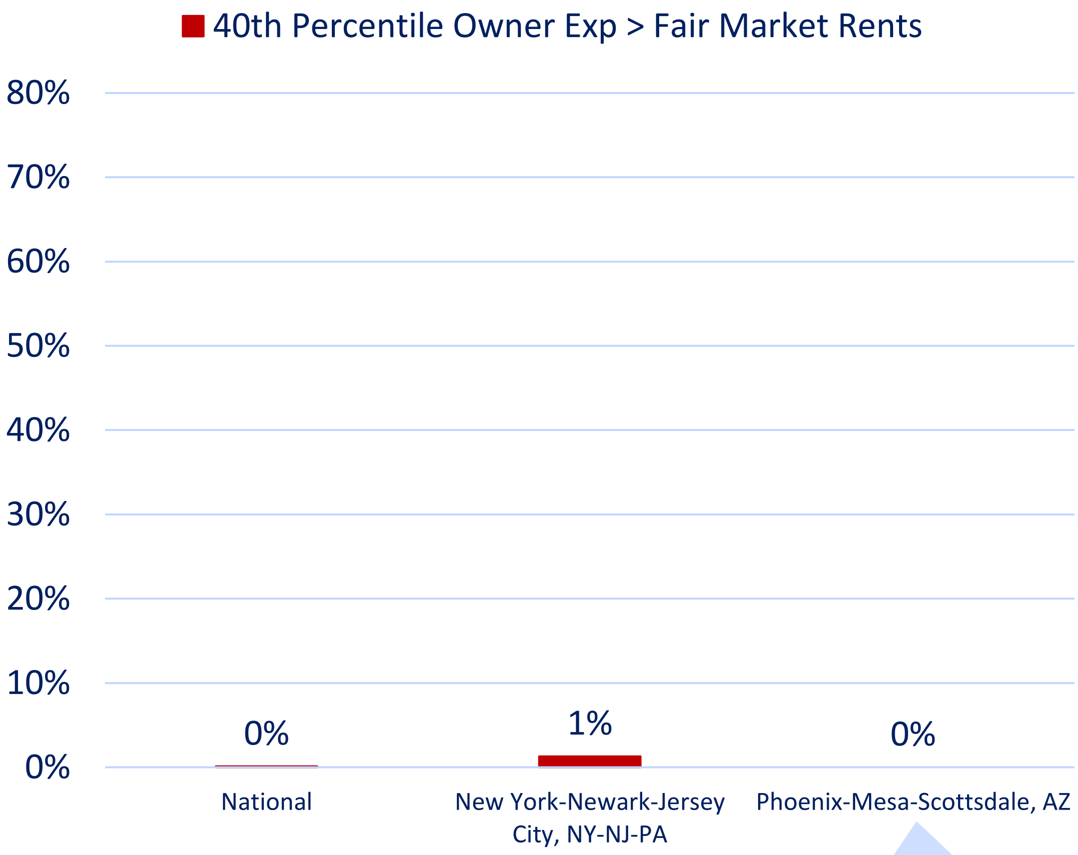


NOTE: Net Rent Inc would be used with Threshold that includes owner rental equivalence; Net Gross rent Inc Cap would be used with Threshold with FMR for all.
Net rents set to $0 if negative; "owner expenses" (like work-related expenses) could be paid for using other resources

Percent of Owners with Capped Net Rental Income at FMR at Top and $0 at Bottom when Thresholds Based on FMRs: 2021

(edited 10-31-23)





red represents losses; gray represent capped at FMR

Population Official and SPM Poverty Rates: 2021

Threshold	Official Poverty		SPM – 3 Thresholds (OOP IK)	
Resource Measure	**Official Published**	**CE Before Tax Approx.**	**SPM Published**	**CE Approx.***
All	11.6%	11.7%	7.8%	14.1%
Age				
Under 18 years	15.3%	16.3%	5.2%	13.6%
18 to 64 years	10.5%	10.3%	7.9%	12.9%
65 years and older	10.3%	10.1%	10.7%	19.0%
Tenure				
Owner w/ mortgage	4.2%	4.3%	3.5%	6.9%
Owner w/o mortgage	11.2%	11.7%	8.0%	15.2%
Renter	22.0%	22.1%	13.5%	23.5%

*For 2021, BLS used TAXSIM v. 32 to calculate after tax income; identified errors include underestimation of EIP and CTC

Population Research Population Poverty Rates: 2021

(edited 10-31-23)

	5 years of CE, 1 year lag, CUs with number of children > 0		1 threshold based on 3 years of CE, 1 year lag, all CUs with 1 CU per household			
Geographic Rent Index	**MRI CE**	MRI CE	MRI CE	MRI CE	**N/A**	**N/A**
Housing in Threshold	**OOP IK (3 thrs)**	OOP IK (1 thrs)	OOP IK	REQ	**FMR**	**FMR**
Owner Housing in Resource	**N/A**	N/A	N/A	Net Rent Inc	**FMR Net Gross Income**	**REQ Net Gross Income Capped**
All	14.1%	14.6%	17.3%	18.9%	**16.6%**	**15.2%**
Age						
Under 18 years	13.6%	13.6%	16.6%	21.6%	**16.0%**	**15.5%**
18 to 64 years	12.9%	13.2%	15.3%	17.7%	**15.1%**	**14.1%**
65 years and older	19.0%	21.0%	25.3%	19.7%	**22.8%**	**18.6%**
Tenure						
Owner w/ mortgage	6.9%	6.8%	8.1%	7.1%	**5.7%**	**5.0%**
Owner w/o mortgage	15.2%	18.5%	21.9%	15.0%	**16.2%**	**11.8%**
Renter	23.5%	22.6%	26.7%	39.0%	**32.6%**	**32.6%**
PSU						
New York-Newark-Jersey City, NY-NJ-PA	14.0%	14.1%	16.3%	21.4%	**21.8%**	**20.5%**
Phoenix-Mesa-Scottsdale, AZ	10.8%	11.2%	14.7%	15.7%	**15.2%**	**14.3%**

Change % of Median so that Renter Poverty Rates Unchanged

	5 years of CE, 1 year lag, CUs with number of children > 0		1 threshold based on 3 years of CE, 1 year lag, all CUs with 1 CU per household			
Geographic Rent Index	**MRI CE**		MRI CE	MRI CE	**N/A**	**N/A**
Housing in Threshold	**OOP IK (3 thrs)**		OOP IK	REQ	**FMR**	**FMR**
Owner Housing in Resource	**N/A**		N/A	Net Rent Inc	**FMR Net Gross Income**	**REQ Net Gross Income Capped**
Renter	23.5%		26.7%	39.0%	**32.6%**	**32.6%**
Renter	**23.5%**		**23.5%**	**23.5%**	**23.5%**	**23.5%**

Median
FCSUti or FCti

(Shelter + Utilities)=$FMR_{g,j}$

$1.2 * (0.XX * FCti_{yr} + FMR_{yr,n,2br})$
geo adjust (*SU*) with FMR_g

Owner shelter (S)=reported rental equivalence (REQ)

$1.2 * (0.XX * FCSUti_{yr})$
geo adjust (*SU*) with MRI_CE_g or $FMR_{g,j}$

Opportunities and Challenges Regarding Panel's Recommendations (edited 10-27-23)

- Advantages
  - Consistency between thresholds and resources
    - But when using FMR in thresholds we do not have consistency with FCti (different points in the distribution)
  - Transparency
    - Reduced number of components for threshold estimation
  - Simplicity in estimation, ease in explaining, understandable to public
    - One threshold (as opposed to three), simple to estimate and explain, understandable to public
    - Resources based on REQ simple to estimate and explain, and likely understandable to public
- Disadvantages
  - Data availability
    - Requires net implicit income from owner occupied housing in resources and CPS ASEC does not collect sufficient information to produce such a measure
  - Transparency
    - Increased number of components for resources
  - Simplicity in estimation, ease in explaining, understandable to public
    - Doubtful with respect to net implicit rental income based on FMRs

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Why FMRs Are Not a Good Measure of the Flow of Services from Owner-occupied Housing

Relationship Between Rental Unit Characteristics and FMR Number of Bedrooms: Implication for Owners with Mortgages

(a reason why FMRs in resources result in higher poverty rates)

		FMR-Bedroom Assignment Based on Adults and Children				
		0	1	2	3	4+
Reported Number of Bedrooms	.	0.0%	35.6%	64.4%	0.0%	0.0%
	0	**35.6%**	**64.4%**	0.0%	0.0%	0.0%
	1	**53.1%**	**31.4%**	9.2%	6.3%	0.0%
	2	**39.3%**	**33.1%**	**19.1%**	6.5%	2.0%
	3	18.4%	27.8%	29.7%	**19.5%**	4.5%
	4+	7.8%	23.3%	26.2%	28.4%	**14.3%**

Interpretation: 53.1% of CUs living in 1-bedroom housing units are being assigned FMRs for studio apartments. Thus, in resources, the implicit gross rent when based on FMRs is an underestimation of the flow of services from housing for CUS who report living in a 1-bedroom owned housing unit.

Relationship Between Rental Unit Characteristics and FMR Number of Bedrooms: Implication for Owners without Mortgages

(a reason why FMRs in resources result in higher poverty rates)

		FMR-Bedroom Assignment Based on Adults and Children				
		0	1	2	3	4+
Reported Number of Bedrooms	.	52.2%	32.6%	4.3%	5.6%	5.4%
	0	**69.1%**	0.0%	**30.9%**	0.0%	0.0%
	1	**58.0%**	**32.5%**	8.7%	0.4%	0.4%
	2	**49.4%**	**33.4%**	**11.7%**	4.3%	1.3%
	3	29.1%	**37.6%**	18.7%	**9.4%**	5.2%
	4+	19.5%	**37.2%**	21.4%	13.0%	**9.0%**

Interpretation: 58% of CUs living in 1-bedroom housing units are being assigned FMRs for studio apartments. Thus, in resources, the implicit gross rent when based on FMRs is an underestimation of the flow of services from housing for CUS who report living in a 1-bedroom owned housing unit.

Relationship Between Rental Unit Characteristics and FMR Number of Bedrooms: Implication for Capping Rental Subsidies in Resources

		FMR-Bedroom Assignment Based on Adults and Children				
		0	1	2	3	4+
Reported Number of Bedrooms in Rental Unit	.	34.9%	41.6%	9.0%	8.7%	5.8%
	0	**89.1%**	7.6%	1.0%	2.3%	0.0%
	1	**72.7%**	**17.2%**	6.9%	2.3%	0.8%
	2	**35.8%**	17.8%	**29.9%**	13.4%	3.1%
	3	22.7%	12.0%	25.1%	**29.2%**	11.0%
	4+	28.3%	7.6%	15.7%	19.3%	**29.2%**

Interpretation: 72.7% of renter CUs living in 1-bedroom housing units are being assigned FMRs for studio apartments. Thus, rent subsidies that enter resources are capped at the studio apartment.