

# The Income and Safety Net Participation of the U.S. Homeless Population

Work in progress – Draft, do not cite

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Disclaimer: This paper, which has been subject to a limited Census Bureau review, is released to inform interested parties of research and to encourage discussion. Any opinions and conclusions expressed herein are those of the authors and do not represent the views of the U.S. Census Bureau. The Census Bureau has reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applies to this release, authorization number CBDRB-FY2022-CES005-015.

# Motivation

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- We seek to understand the material circumstances of those experiencing homelessness
  - Prior work has been hampered by the difficulties of surveying this population and its exclusion from household surveys
  - Absent good data, people form opinions based on what they see, but what is most visible may not be representative
- Ideally we will learn the long-term patterns of deprivation they face and their use of the safety net as well as how these change around an observed time of homelessness
  - Can help us learn about the causes and consequences of homelessness and design policies to aid this population

# What we do

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- We link homeless individuals from the 2010 Census to administrative data to provide the first national calculation of this population's formal employment, income, and connections to the safety net
- We examine longitudinal patterns to learn about the persistence of severe deprivation and the magnitude of changes preceding and following a spell of homelessness
- Our approach benefits from large samples that are designed to represent national homelessness patterns, including the unsheltered

# Preview of key findings



# Connected to work and safety net, yet severely deprived

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- Nearly all sheltered homeless and vast majority of unsheltered have formal earnings or benefit receipt
  - 97% of sheltered and 93% of unsheltered in year observed as homeless have at least one benefit or earnings
- Population has very low formal income
  - Median cash income plus in-kind transfers \$7,500 (sheltered) and \$5,500 (unsheltered) in year observed as homeless
- Nearly half of all homeless individuals formally employed, but earnings very low
  - Median earnings among workers \$8,300 (both sheltered and unsheltered) in year observed homeless

# Deprivation is long-term, but income level and sources change over time

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- Median income including in-kind transfers is under \$10,000 over the four years prior to and six years after an individual is observed homeless
- Small and transitory changes in employment and earnings around an observed homeless spell
- A moderate share of homeless individuals receive disability benefits, but this share grows over time
  - 19% (sheltered) and 29% (unsheltered) had SSI or DI in year observed as homeless; rises to 34% and 40% six years later
- Homeless individuals' employment declines and disability program receipt increases over ten years, possibly indicating a deterioration in health

# Robustness checks

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- We confirm our findings for alternative samples and with different linkage methods:
  - Those without prior HMIS shelter enrollment
  - Sheltered homeless in the ACS and HMIS
    - For years besides 2010
    - Where linkage adjustment based on extensive information
  - Census homeless excluding people with duplicate housed records on the Census
  - Census homeless including those counted outdoors at night (TNSOLs)
- We also calculate migration-adjusted SNAP receipt to assess bias from incomplete geographic SNAP coverage

# Overview of prior work





# Challenges faced by prior work

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- This population is particularly difficult to survey; reasons include mobility and lack of address, mistrust of authorities, mental health challenges, substance abuse (Glasser, Hirsch, and Chan 2014)
- Homeless individuals are largely excluded from household surveys and neglected in the extreme poverty literature
  - Not generally interviewed in the Current Population Survey (CPS) and Survey of Income and Program Participation (SIPP)
  - American Community Survey (ACS) includes people in shelters but does not identify them in public data
- Most existing studies are limited in geography or scope, outdated, and/or based entirely on self-reported information
  - Typical study might draw on a few hundred people who happened to be at a given service location or encampment
  - Most recent detailed national survey is from 1996 (Burt et al 1999)
- Promising recent work using administrative data (Metraux et al. 2018, Von Wachter et al. 2020), but limited to a handful of cities

# Theoretical framework

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- O'Flaherty (2009) applies results from life cycle-permanent income theory (e.g. Hall 1978) to homelessness
- Models housing consumption as stochastic sum of permanent and transitory component; homelessness is lowest level
  - Permanent component reflects long-term circumstances, e.g. education, substance abuse, health, family support, criminal history
  - Transitory component reflects short-term, typically unanticipated changes that affect resources, e.g. job or benefit loss, eviction, health or relationship shock
- Probability of becoming homeless depends on size of permanent component and volatility of transitory component; if permanent component low, even very small shocks can lead to homelessness

# Data



# 2010 Census

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- The Census's Service-Based Enumeration (SBE) operation counted homeless individuals at shelters, soup kitchens, food vans, and targeted non-sheltered outdoor locations (TNSOLs) from March 29-31, 2010
- Frame was built using internet research, queries to local officials, validation and advance visits
- Prior work has shown that the Census's coverage of the homeless population was surprisingly good, with about 80-90% of homeless shelter users included in its count (Meyer, Wyse, and Corinth 2022)

# American Community Survey (2006-2018)

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- The ACS has collected micro-data on people in emergency and transitional shelters since 2006
  - Excludes domestic violence shelters and unsheltered locations
- The survey samples randomly from a frame based on the shelter list used in the decennial Census
  - Between censuses, updates to the group quarters (GQ) frame that includes homeless shelters are a secondary priority to housing unit updates
  - The largest shelter list updates are made every ten years in preparation for the decennial Census

# Administrative income and resource data

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- Taxable income
  - 1040 Extracts (2003-2016), W2s (2005-2016), 1099-Rs (2003-2016)
- Supplemental Nutrition Assistance Program (SNAP)
  - Illinois (2009-2016), Indiana (2005-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2005-2016)
- Temporary Assistance for Needy Families (TANF) and General Assistance – New York only(2007-2016)
- Medicare (2006-2016) and Medicaid (2007-2015)
- Disability and veterans' benefits
  - DI receipt in Medicare (2006-2016), SSI (2010-2014, 2016), USVETS (2007-2015), OASI receipt in Medicare (2006-2016)
- Housing assistance
  - HUD PIC and TRACS (2003-2016)
- Birth and death dates (2019 Numident)

# Homeless Management Information System (HMIS) data

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- Also draw on shelter use microdata from L.A. (2004-2014), Houston (2004-2015), and Chicago (2014-2019)
- Federally funded shelters must track clients' program use in HMIS; some others elect to do so
- Records contain individual and family-level information, some characteristics and service-use dates; can be linked at person level to administrative data
- Service-use dates allow us to compare results across different temporal conceptions of the homeless population (e.g. a point-in-time sample to a sample of all those who were homeless during a year)
- We can also look at income and program receipt surrounding the onset of homelessness

# Methods



# Linking across datasets

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- We link datasets using Protected Identification Keys (PIKs) assigned by the Census Bureau's Personal Identification Verification System (PVS)
- PVS uses name, date of birth, gender, and address from the Census to search for matching records in a Social Security Administration (SSA) reference file
- PVS assigns a linkage key to 69% of the sheltered homeless, 42% at food vans and soup kitchens, and 17% at TNSOLs in the 2010 Census
- Most of the unPIKed did not provide personal information to enumerators (e.g. they were sleeping or enumerated by sight at a bustling service location)

# Adjusting for non-linkage

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- We adjust for non-linkage using inverse probability weights (IPWs)
- In the Census, our IPW model adjusts individual-level weights for the homeless based on age, race, gender, Hispanic origin, state, homeless location type
  - We exclude people counted at outdoor locations from our main analyses due to concerns about conditional non-randomness of linkage but include them in robustness checks
- In the ACS, we have a much richer set of covariates, including self-reported income and program receipt; in HMIS linkage is based on social security number
  - We present key outcomes for the ACS and HMIS sheltered homeless as a check on the validity of our linkage methods

# Defining our homeless and comparison groups

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- In our main analysis, we calculate longitudinal income and program participation for four groups of adults (ages 25-59 in 2010):
  1. Census sheltered homeless (89,500 in linked sample)
  2. Census unsheltered homeless (people counted at soup kitchens and food vans; 49,500 in linked sample)
  3. ACS single housed poor (unmarried adults surveyed in the first half of 2010, reweighted to match the characteristics of the homeless; 55,000 in linked sample)
  4. ACS overall housed (housed adults surveyed in the first half of 2010; 994,000 in linked sample)
- For SNAP and Medicaid, we limit sample to people who in 2010 lived in a state for which we have data in year  $t$

# Characteristics of sample and comparison groups, ages 25-59

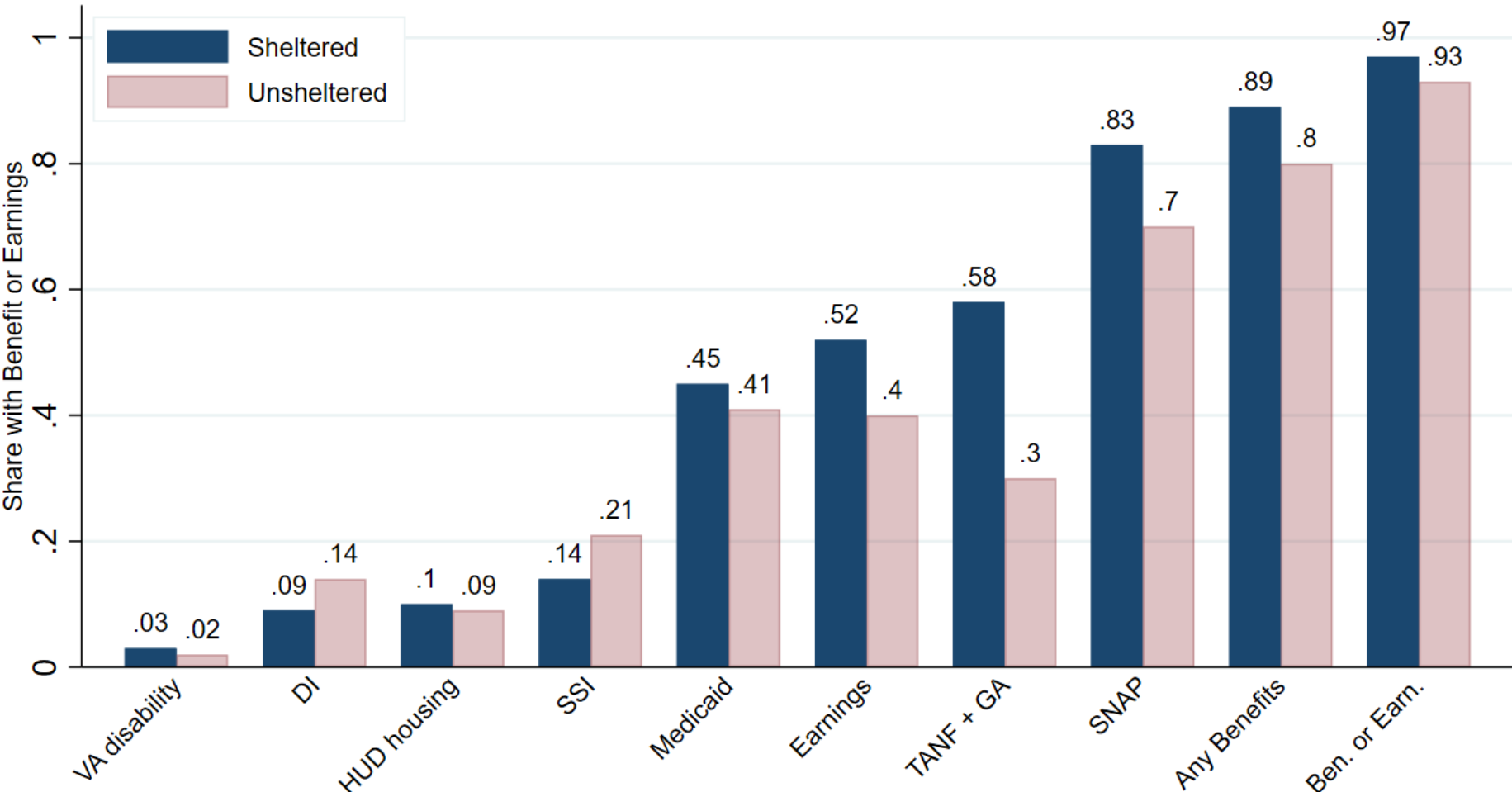
	Sheltered Homeless (Census)	Unsheltered Homeless (Census)	Housed Single Poor (ACS)	Overall Housed (ACS)
Age (mean)	43.48	44.43	43.85	42.35
Age 25-29	0.11	0.09	0.10	0.14
Age 30-39	0.22	0.20	0.21	0.27
Age 40-49	0.34	0.36	0.35	0.30
Age 50-59	0.33	0.35	0.34	0.29
Female	0.33	0.26	0.30	0.51
White	0.49	0.52	0.50	0.76
Black	0.40	0.38	0.39	0.13
Other race	0.04	0.04	0.10	0.11
Hispanic	0.14	0.15	0.15	0.15
Share assigned linkage key	0.69	0.42	0.86	0.92
Weighted total	128,400	118,200	4,846,000	72,270,000
Sample size	89,500	49,500	55,000	994,000

Sources: 2010 Decennial Census, 2010 ACS

Notes: Approved for release by the Census Bureau's Disclosure Review Board, authorization number CBDRB-FY2022-CES005-015

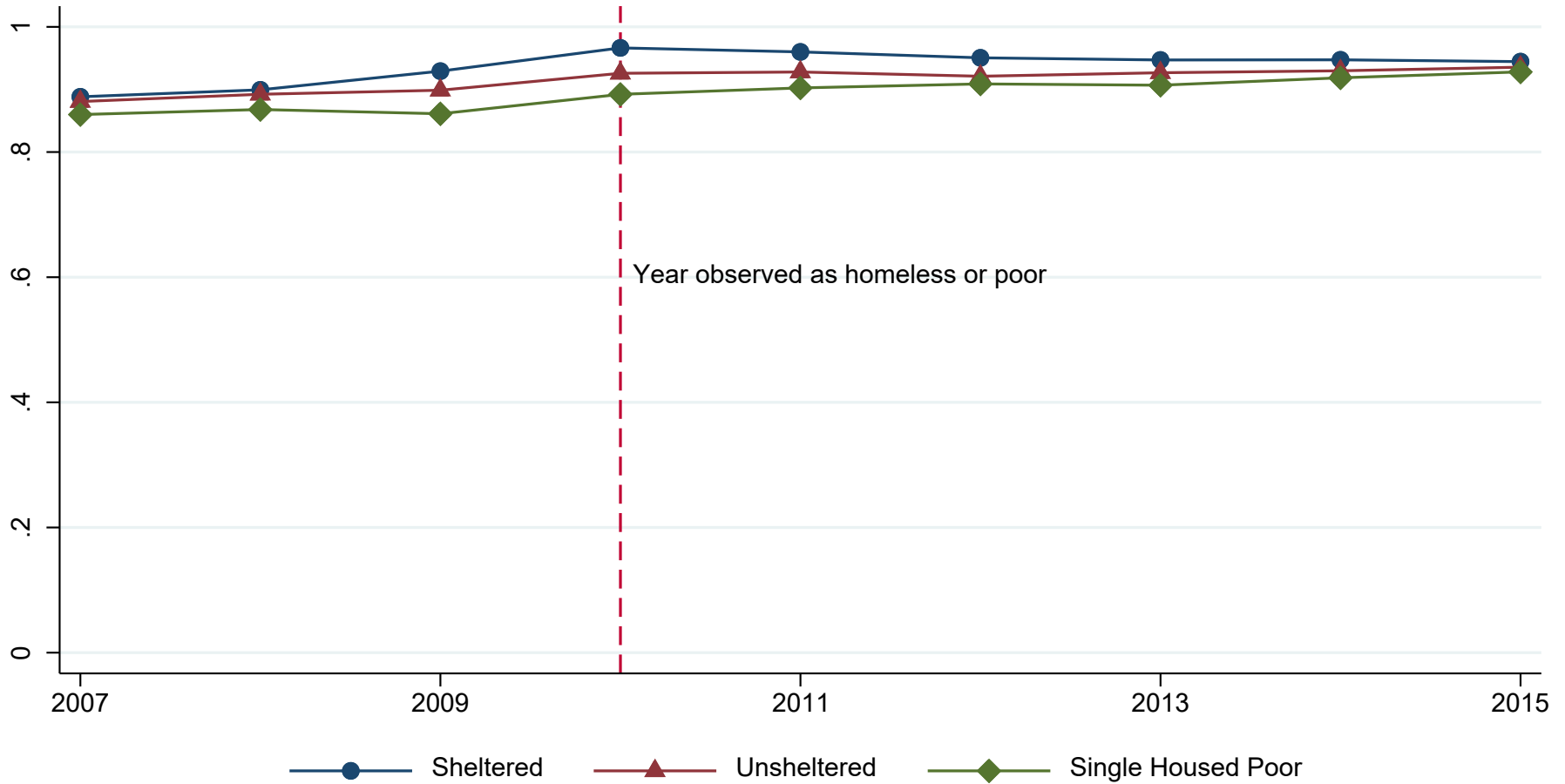
# Employment, income, and safety net program participation

# Benefit receipt and earnings in year observed as homeless, ages 25-59



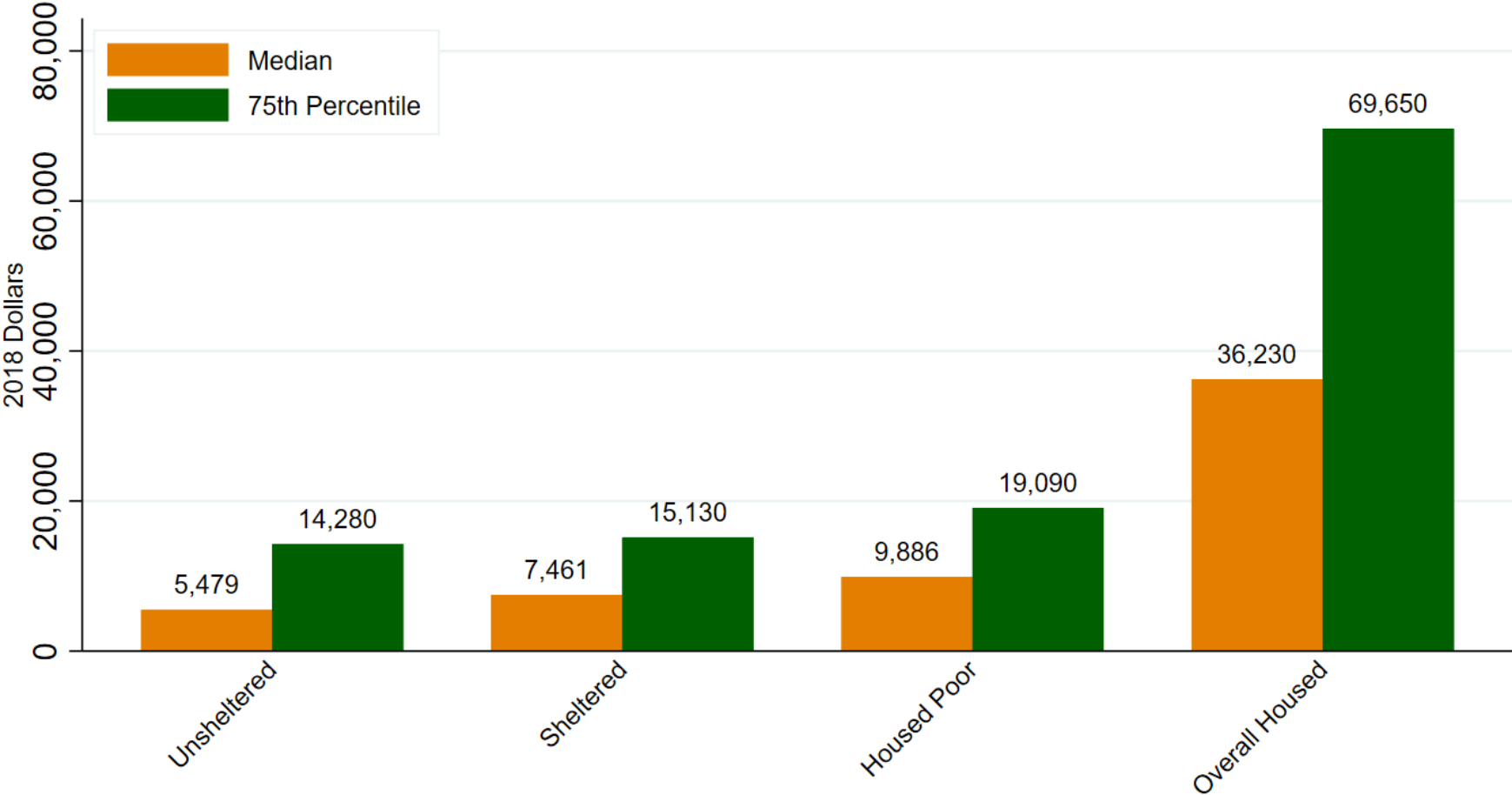
Sources: 2003-2016 HUD PIC & TRACS, 2007-2015 Administrative VA Dataset, 2006-2014 Medicare Datasets, 2007-2015 Medicaid dataset, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016)  
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# Share with benefits or earnings over time



Sources: 2010 Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets, 2003-2016 HUD PIC & TRACS, 2007-2015 Administrative VA Dataset, 2006-2014 Medicaid Datasets, 2007-2015 Medicaid dataset, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016)  
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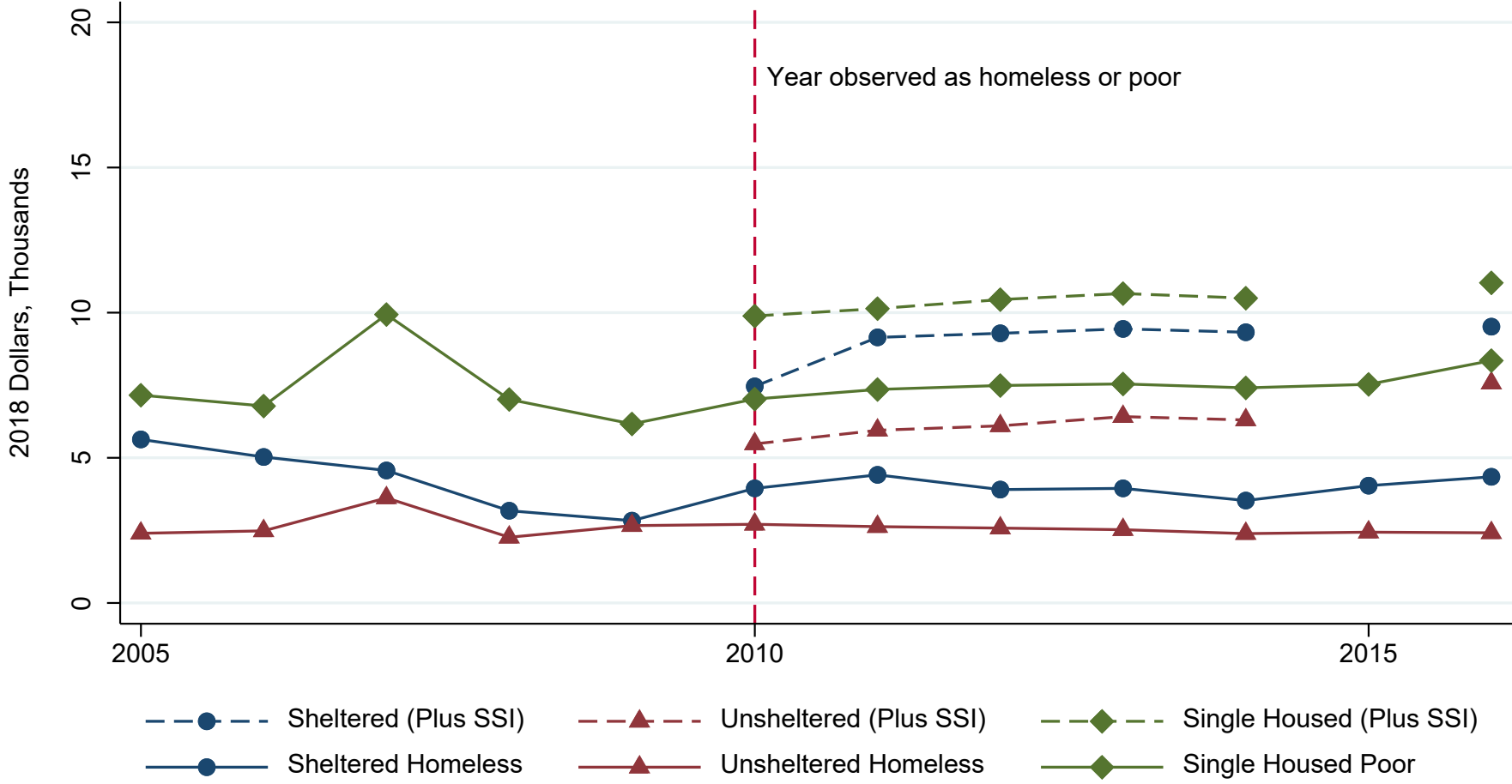
# Income including in-kind transfers in year observed as homeless, poor, or housed



Sources: 2003-2016 HUD PIC & TRACS, 2007-2015 Administrative VA Dataset, 2006-2014 Medicare Datasets, 2007-2015 Medicaid dataset, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016)  
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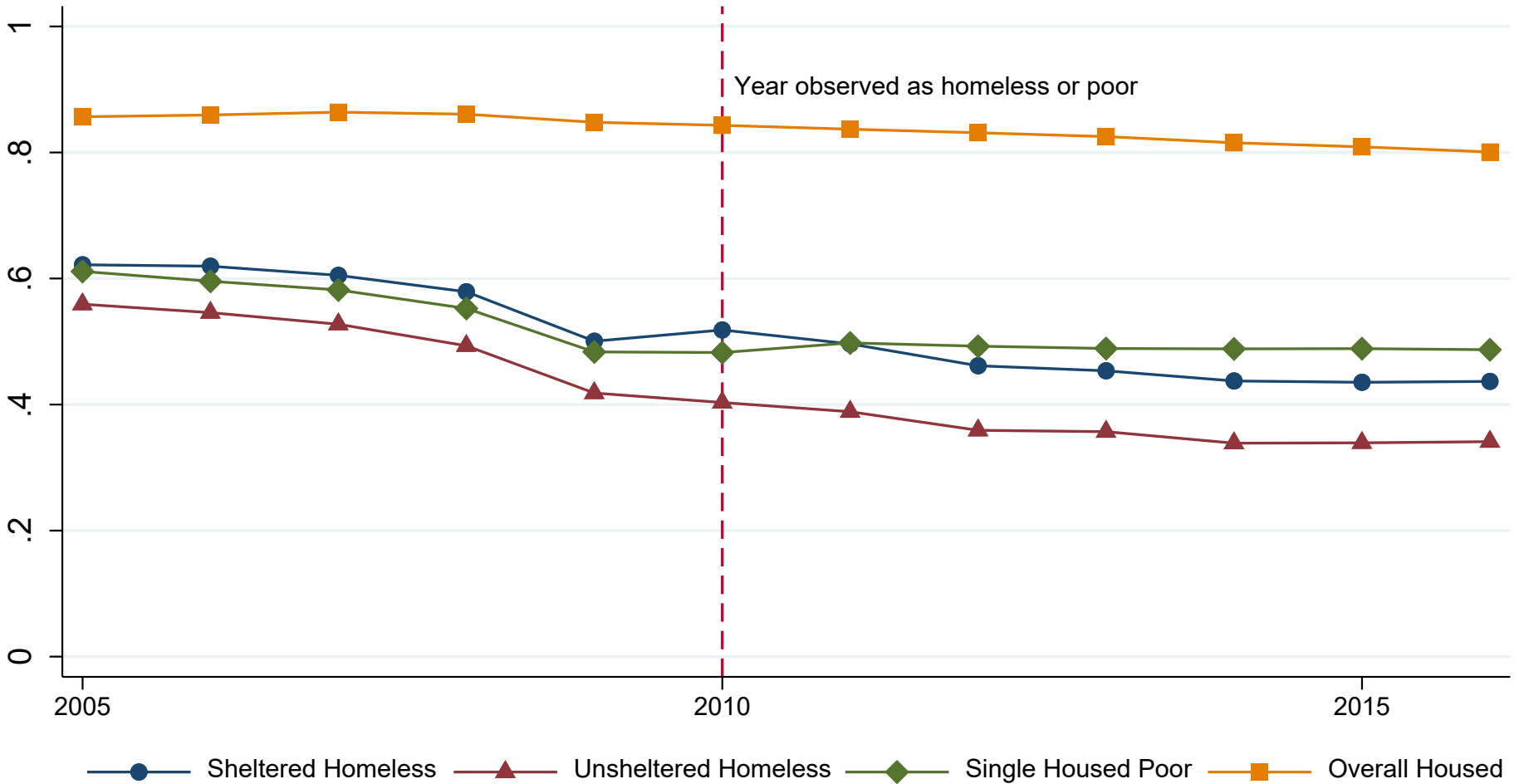


# Median income including in-kind transfers of 2010 homeless, 2005-2016

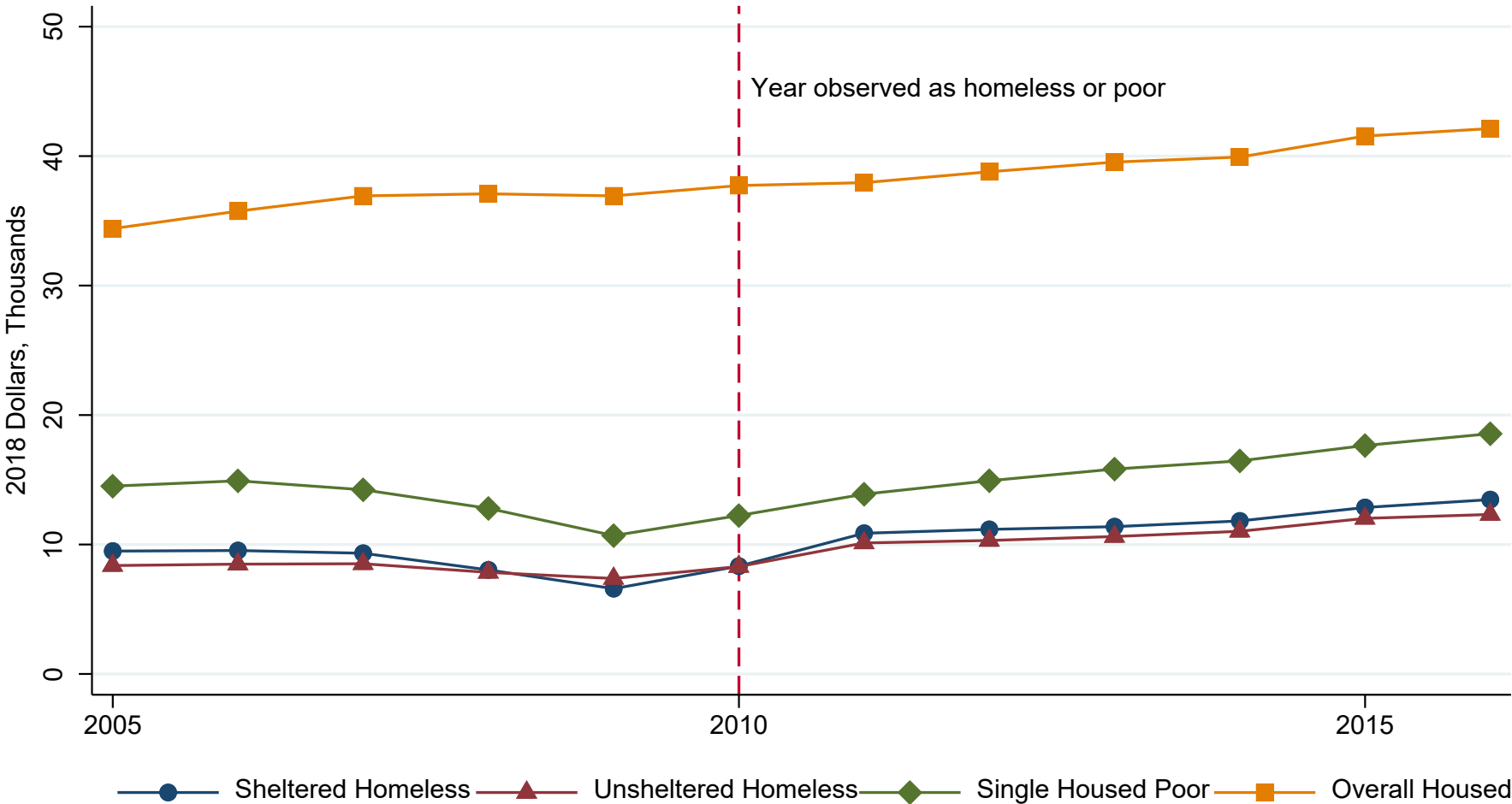


Sources: 2010 Census, 2010 ACS, SSI Datasets (2010-2014, 2016), 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets, 2004-2016 IRS 1099R Datasets, 2003-2016 HUD PIC & TRACS, SNAP datasets  
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# Earnings of 2010 homeless, 2005-2016

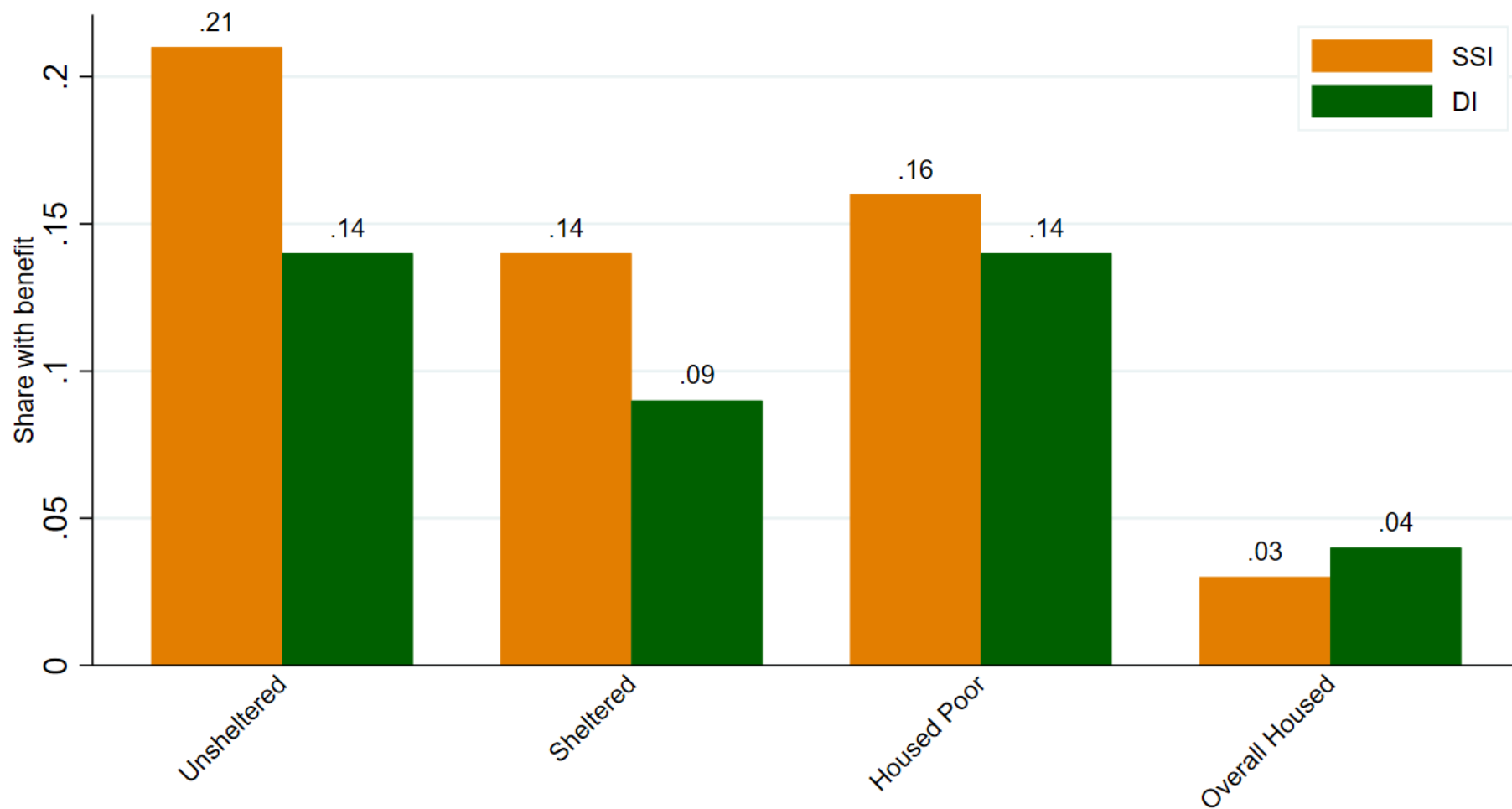


# Median earnings among employed over time

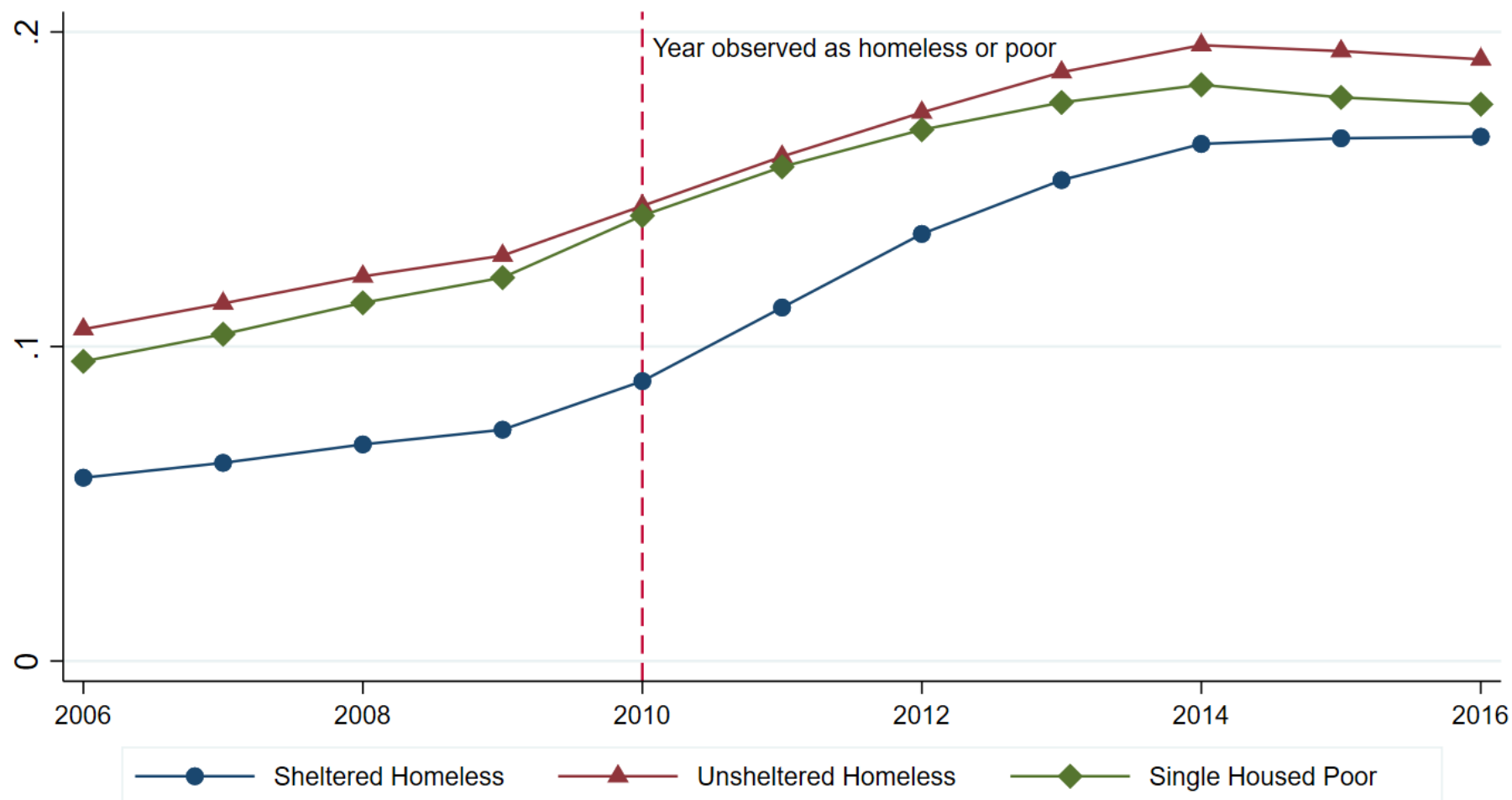


Sources: 2010 Decennial Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets  
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# Share with disability benefits in year observed as homeless, poor, or housed



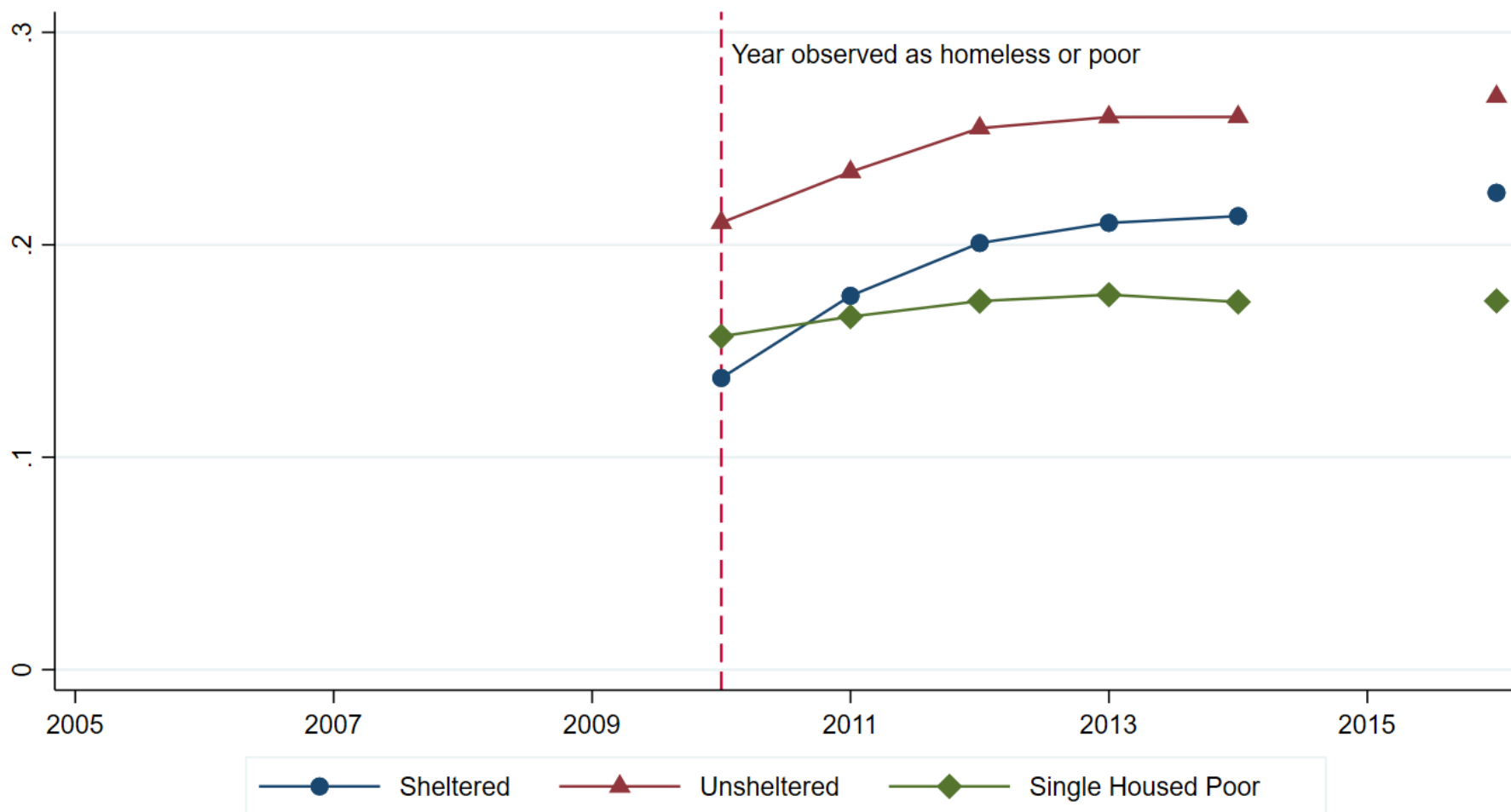
# DI receipt of 2010 homeless according to Medicare records, 2006-2016



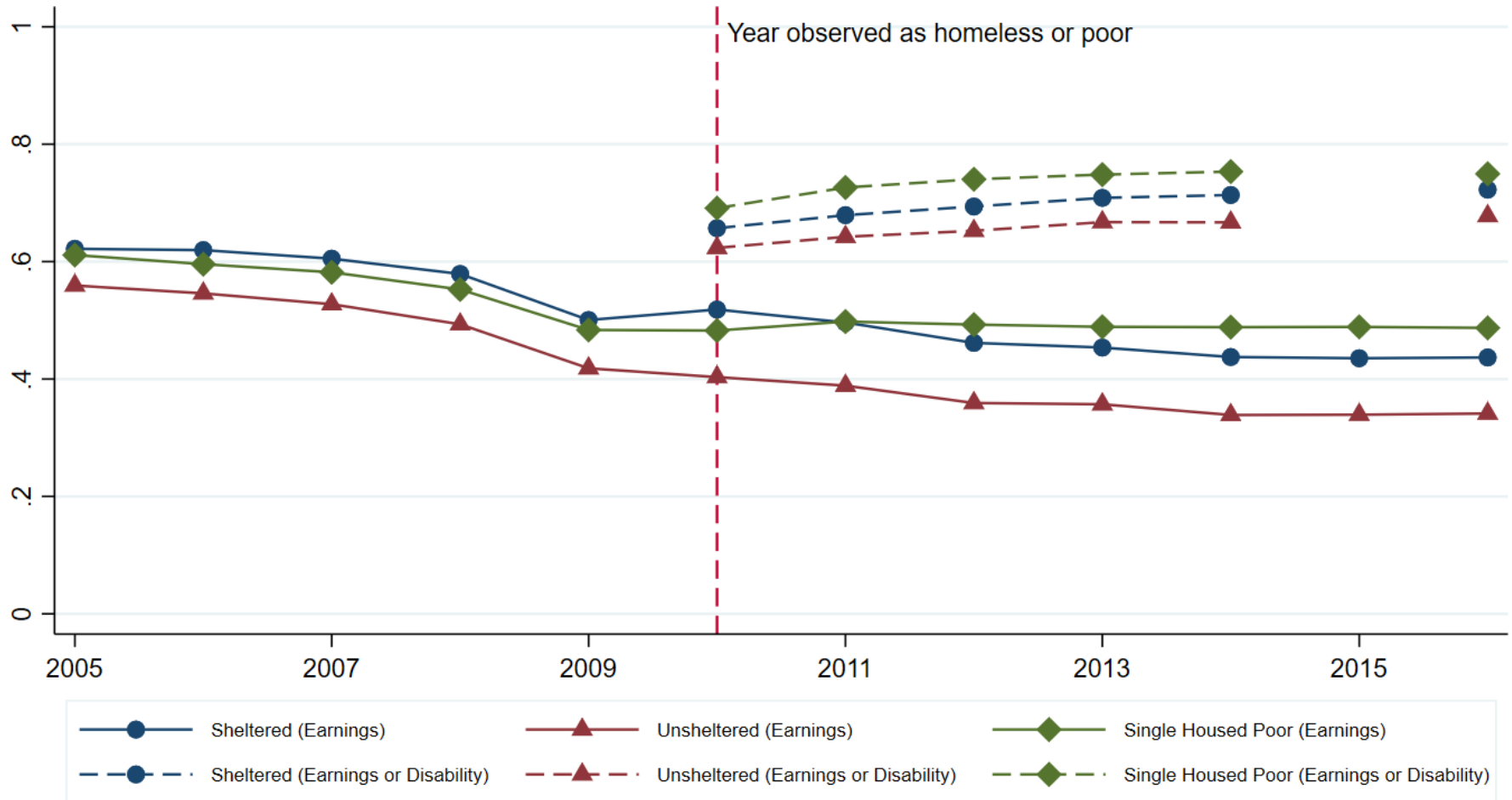
Sources: 2010 Decennial Census, 2010 ACS, 2006-2014 Medicare Datasets

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# SSI receipt of 2010 homeless, 2010-2016

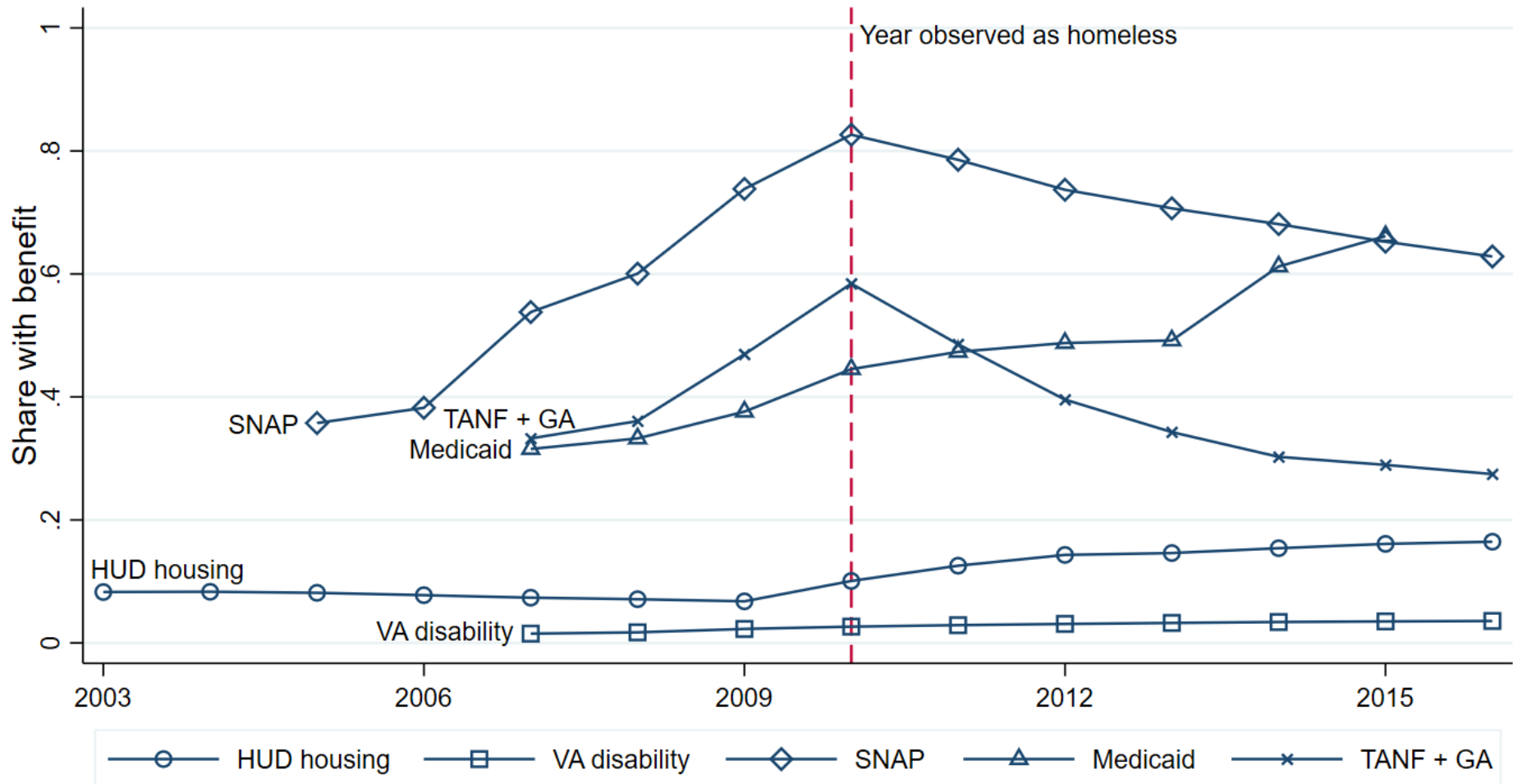


# Share with earnings and earnings or disability benefits over time



Sources: 2010 Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets, 2006-2014 Medicare Datasets  
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# Program receipt of 2010 sheltered homeless, 2003-2016

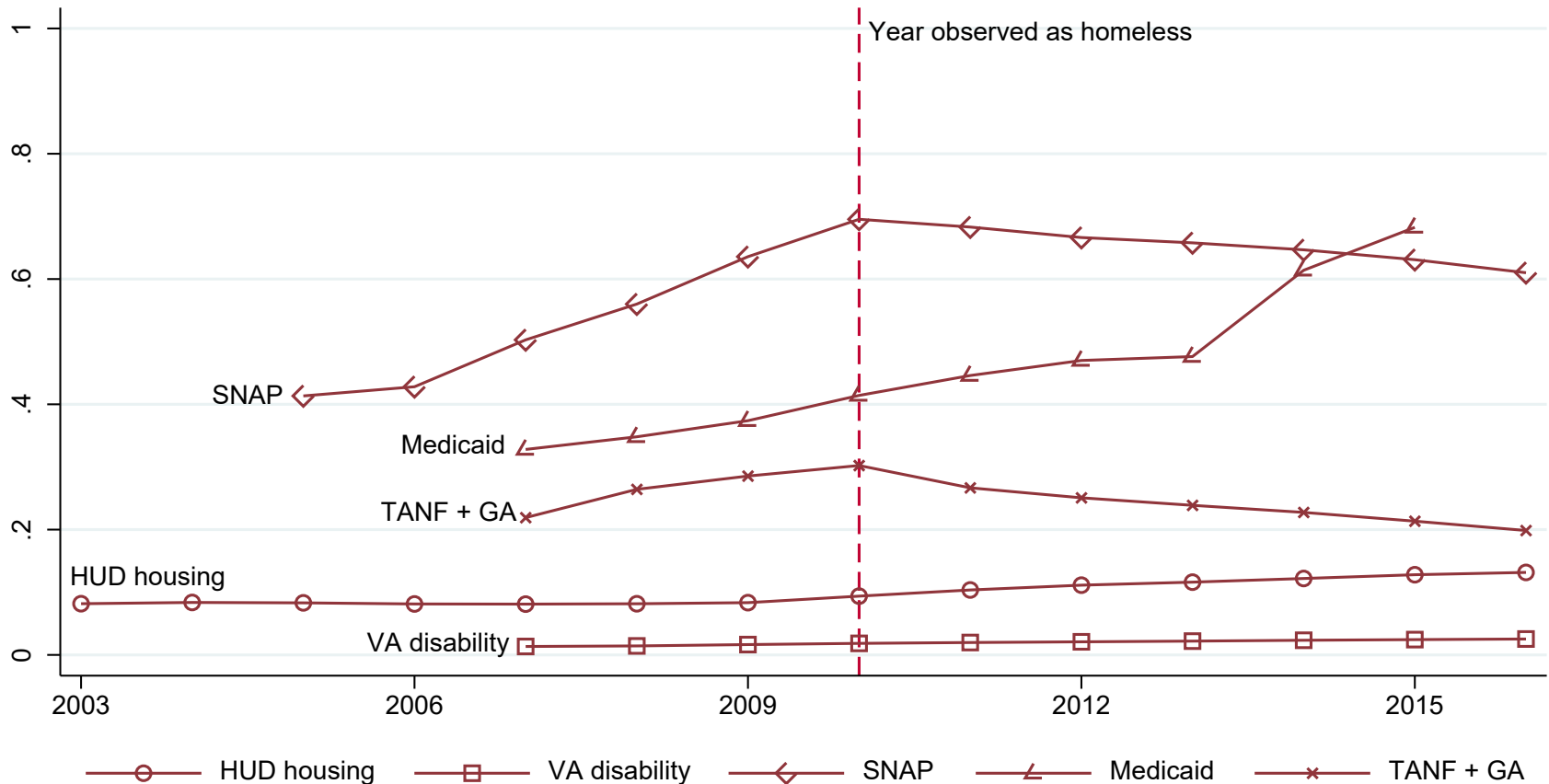


Sources: 2003-2016 HUD PIC & TRACS, 2007-2015 Administrative VA Dataset, 2006-2014 Medicare Datasets, 2007-2015 Medicaid dataset, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016)

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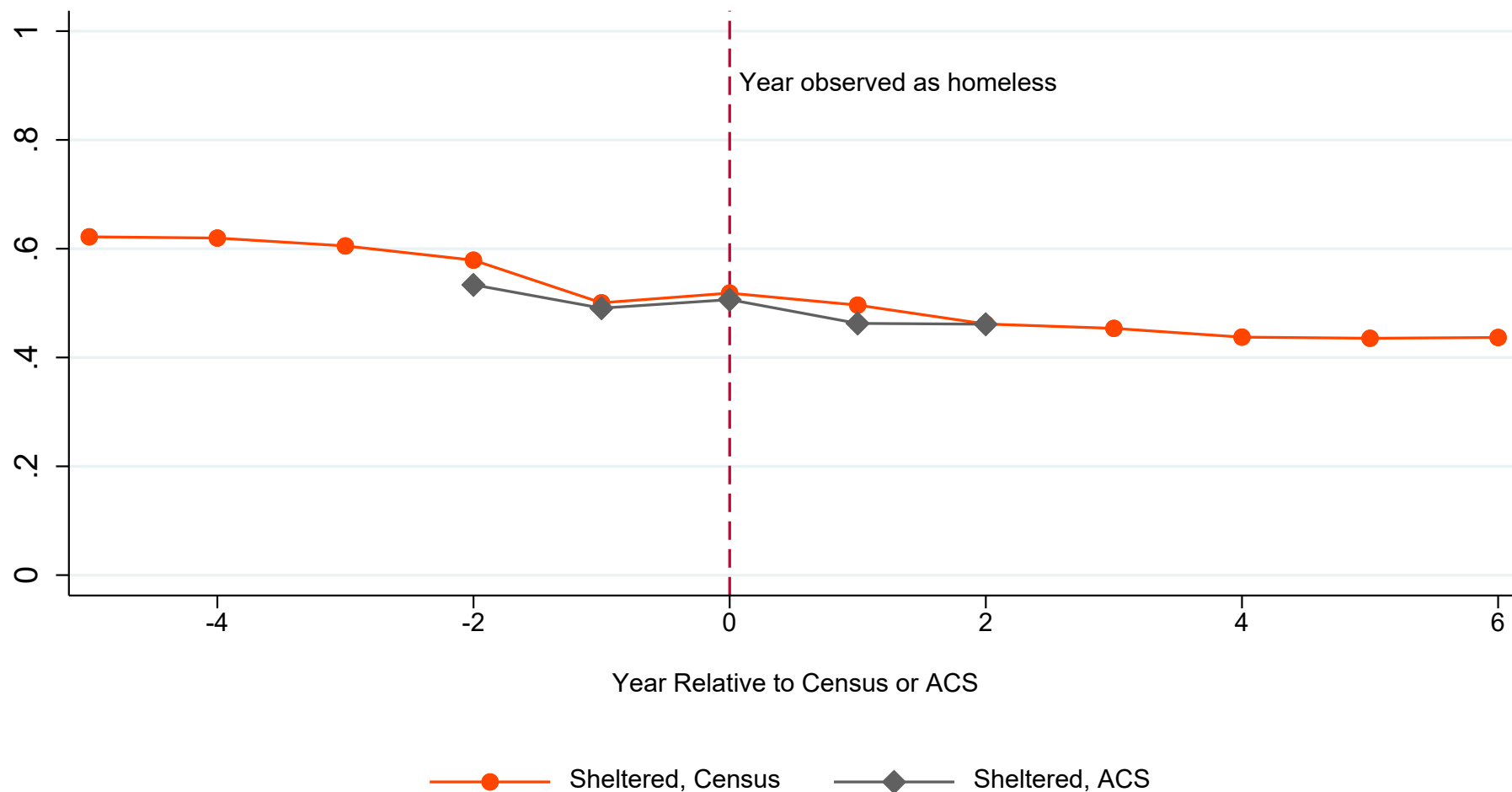
# Program receipt of 2010 unsheltered homeless, 2003-2016



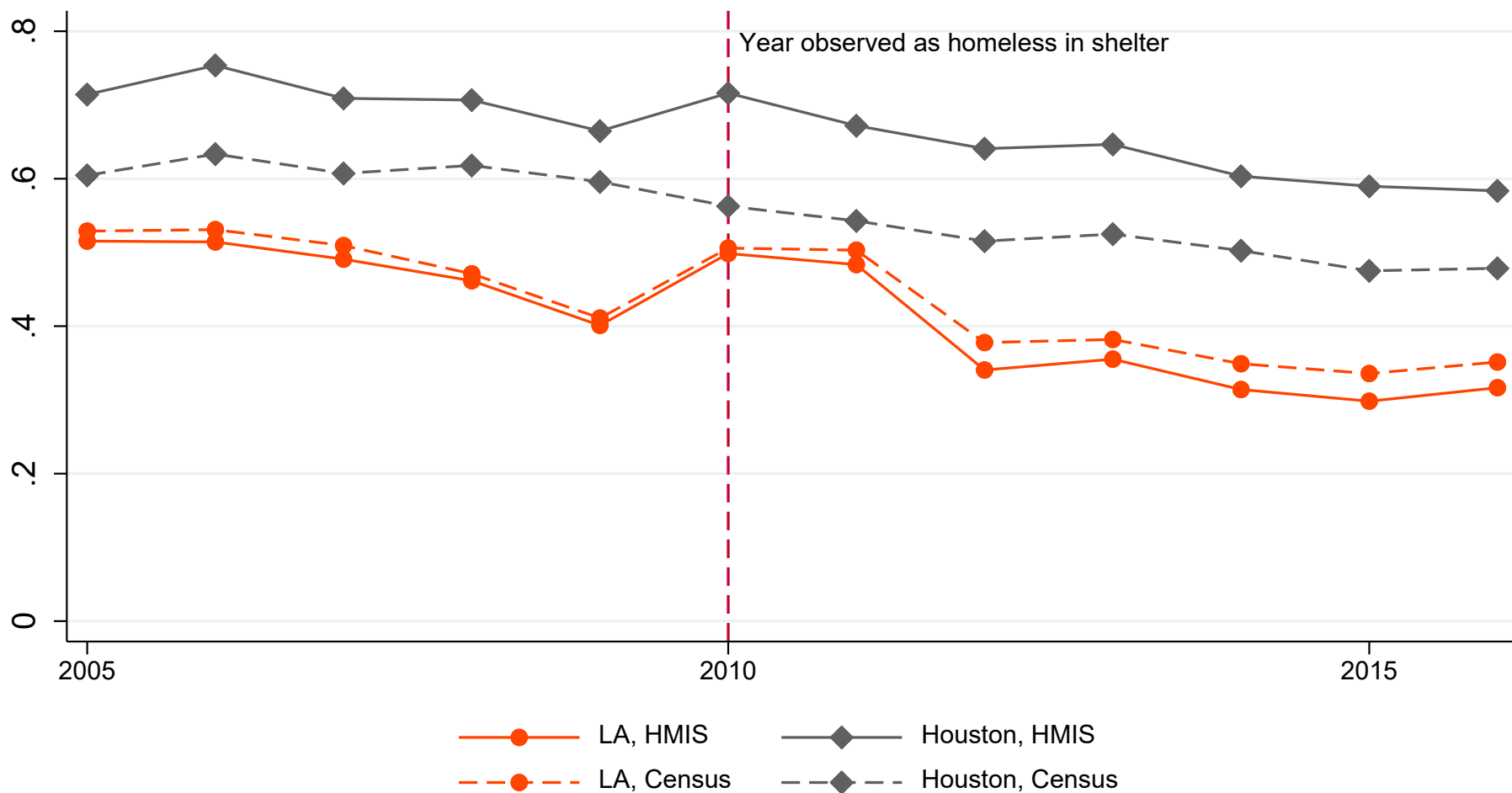
Sources: 2003-2016 HUD PIC & TRACS, 2007-2015 Administrative VA Dataset, 2006-2014 Medicare Datasets, 2007-2015 Medicaid dataset, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016)  
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# Robustness checks

# Share of ACS and Census sheltered homeless with earnings

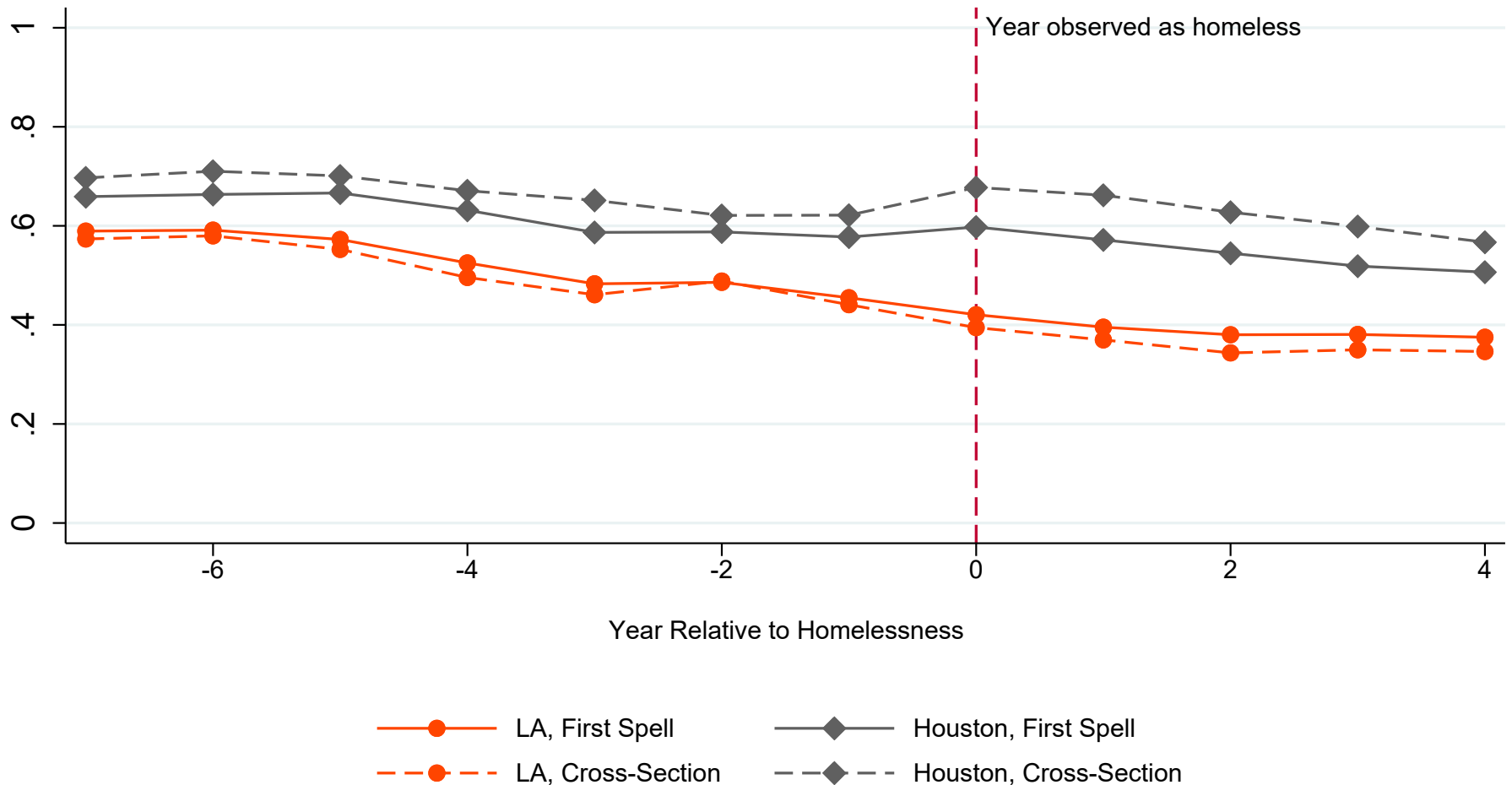


# Share of HMIS and Census sheltered homeless with earnings

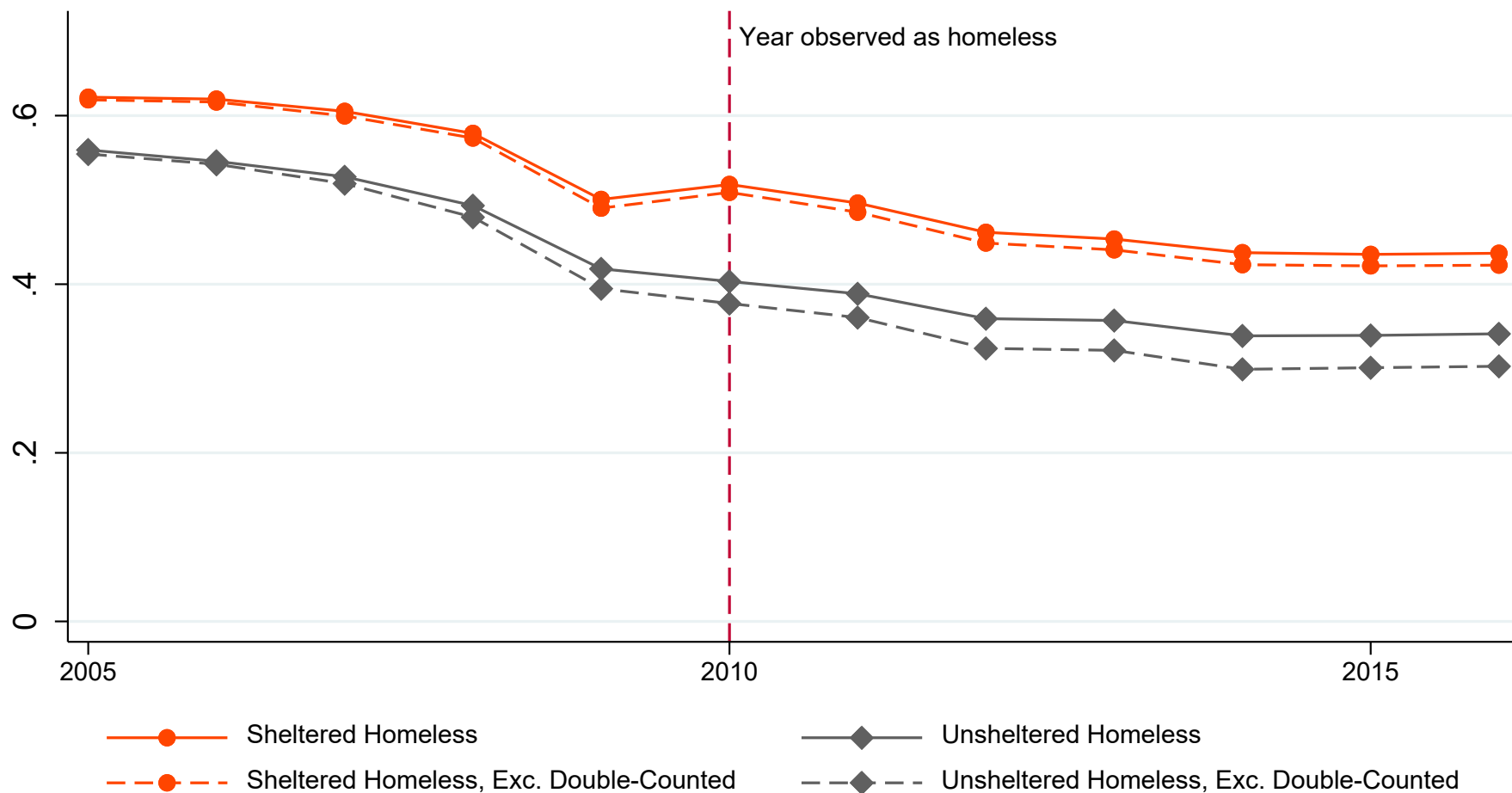


Sources: 2010 Decennial Census, Los Angeles (2004-2014) and Houston (2004-2015) HMIS datasets, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets  
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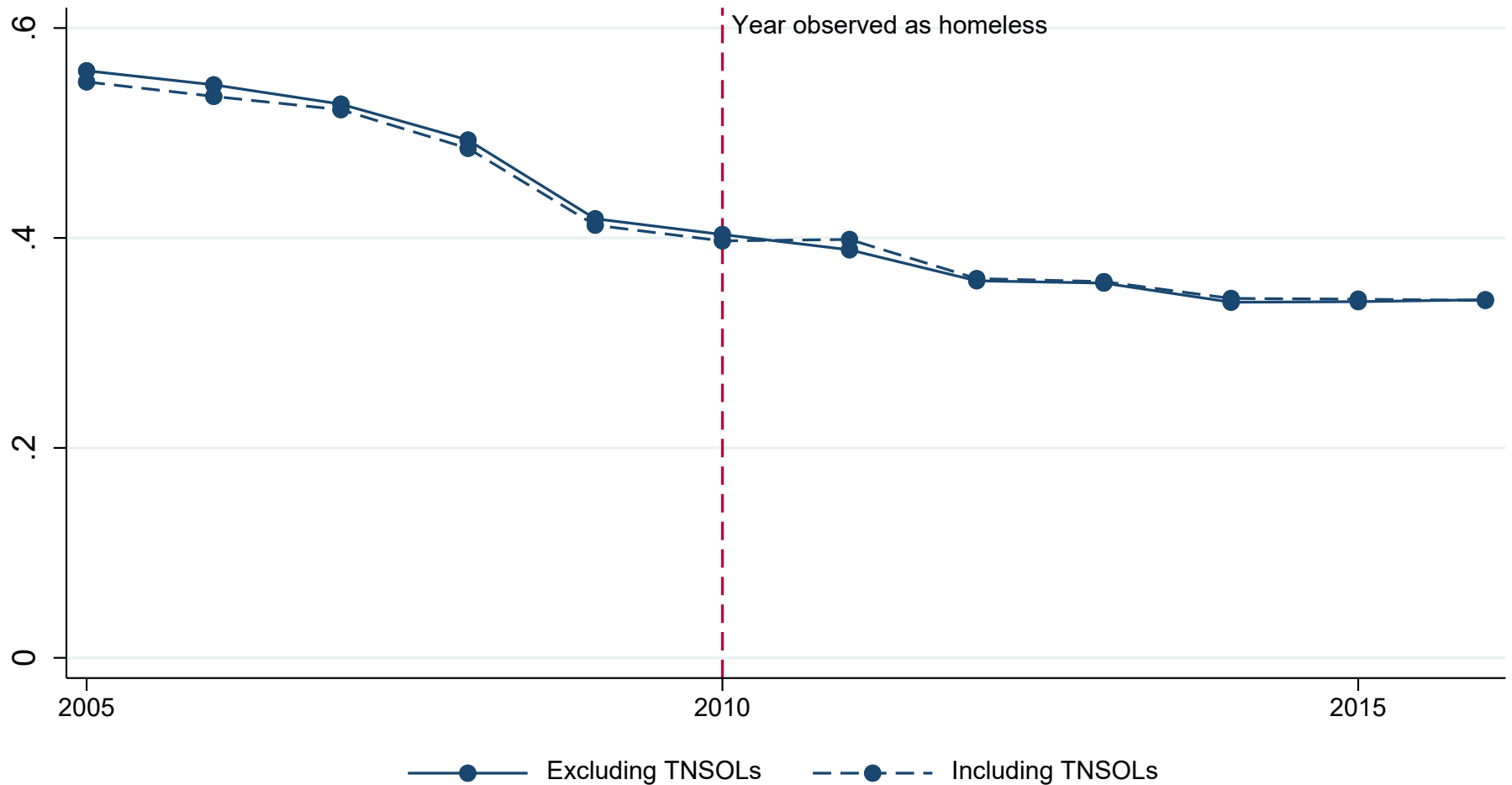
# Share with earnings in HMIS (sample of first spells compared to cross-section)



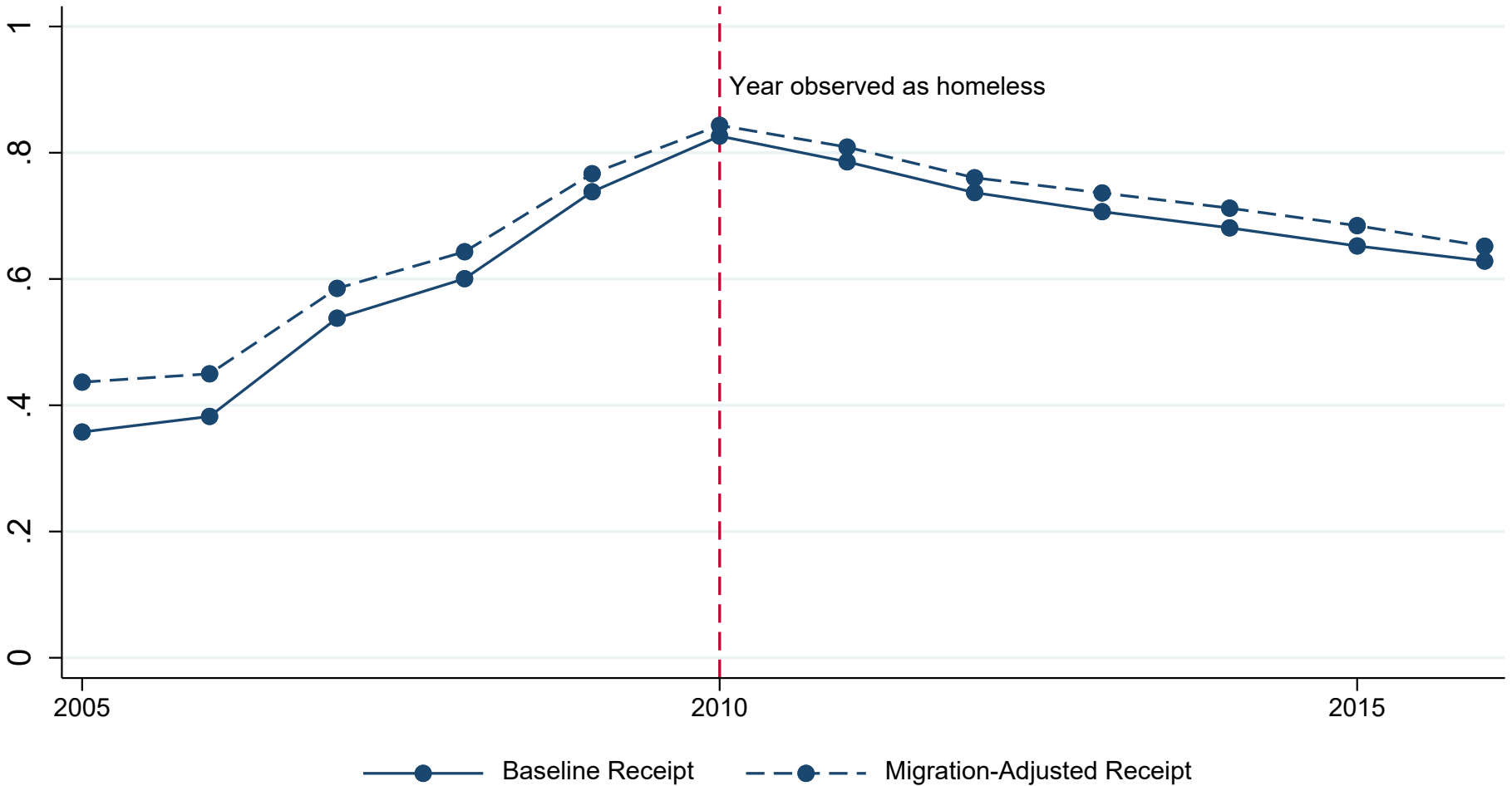
# Share with earnings in Census excluding double-counted



# Share of Census unsheltered with earnings including TNSOLs

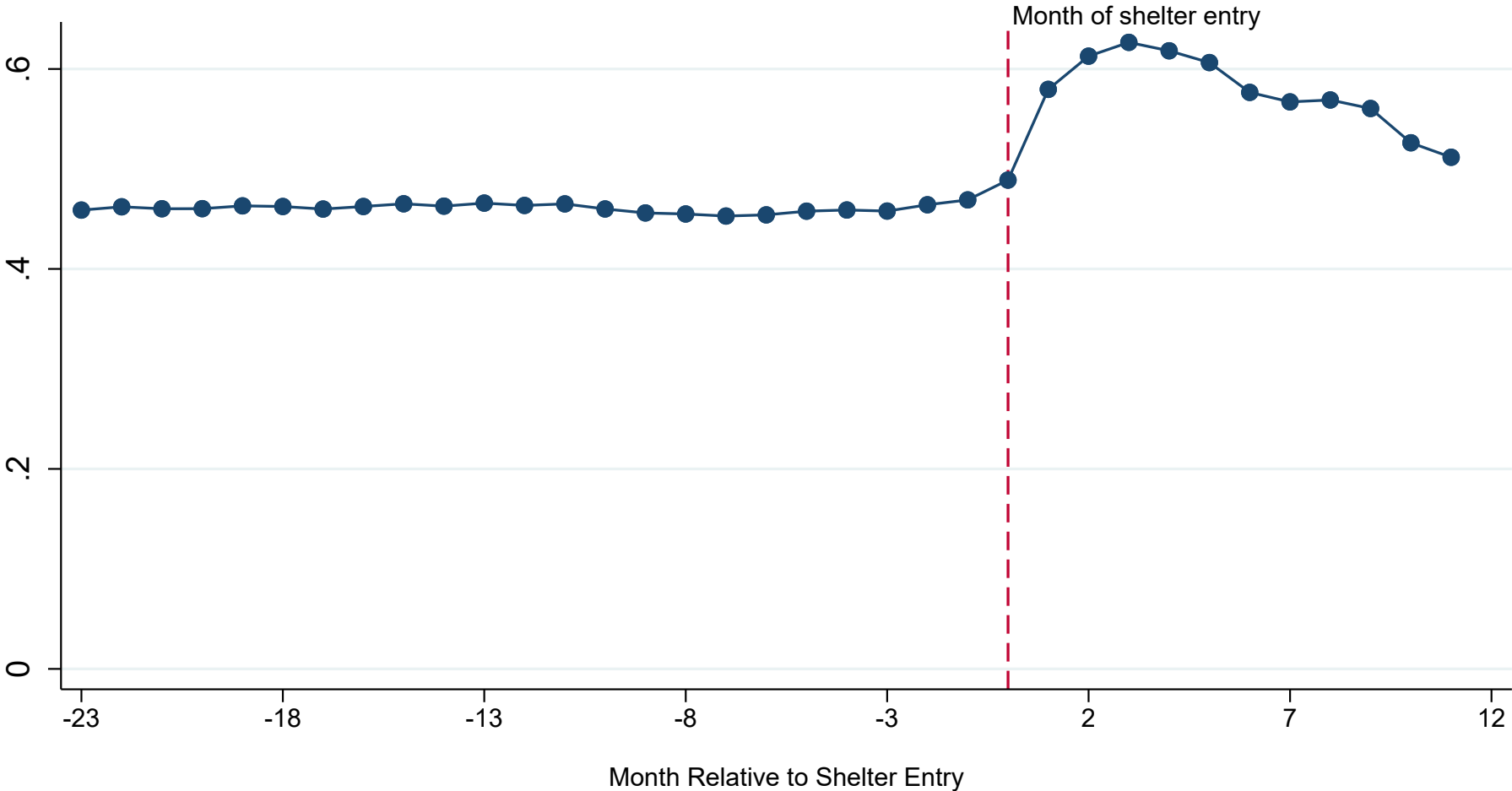


# Migration-adjusted share of sheltered homeless with SNAP





# Monthly SNAP receipt in Chicago HMIS data



Source: Chicago (2014-2019) HMIS dataset, Illinois SNAP dataset (2009-2016)  
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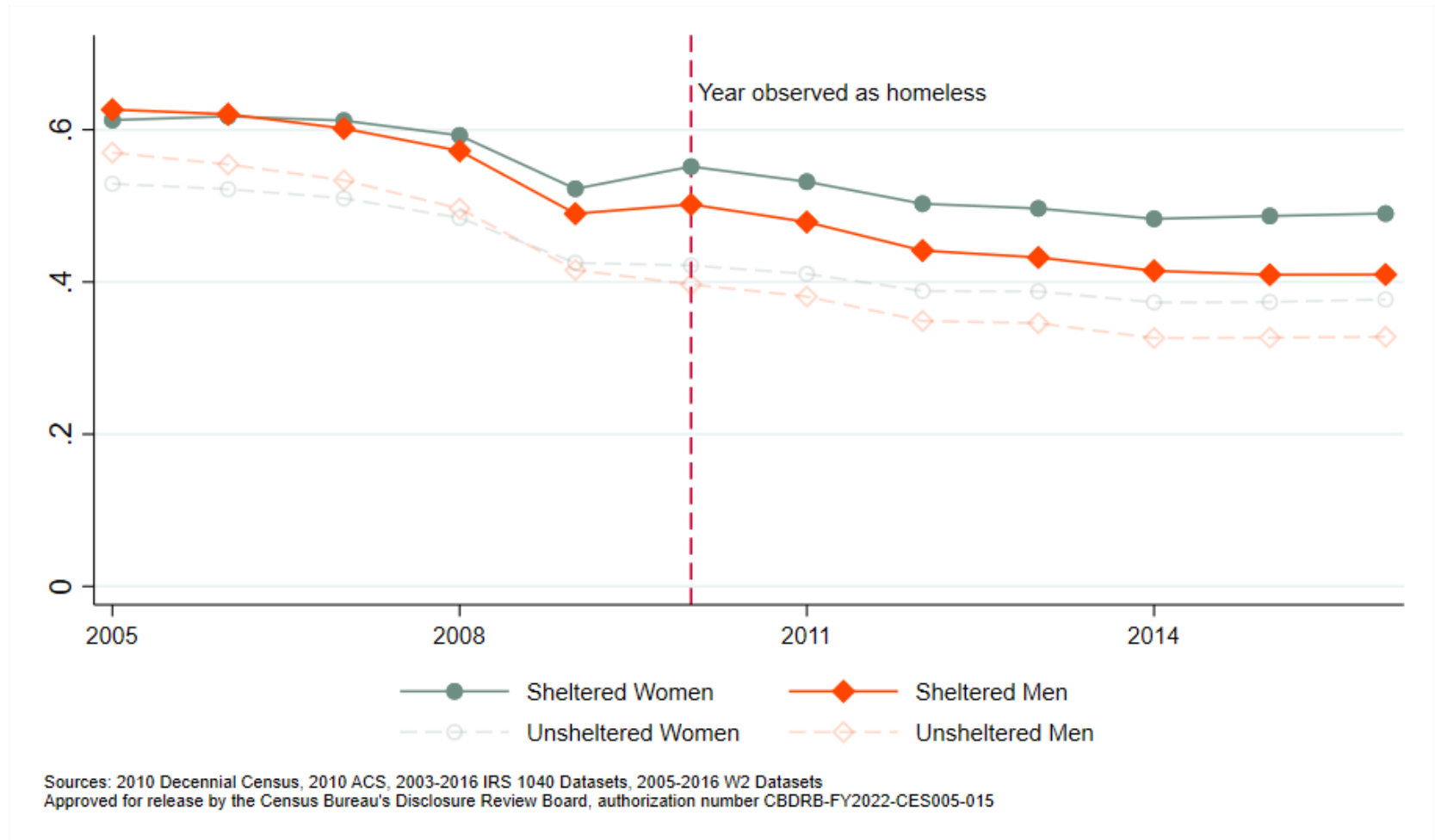
# Results by subgroup (gender, ethnicity, race, and state)

# Results by gender

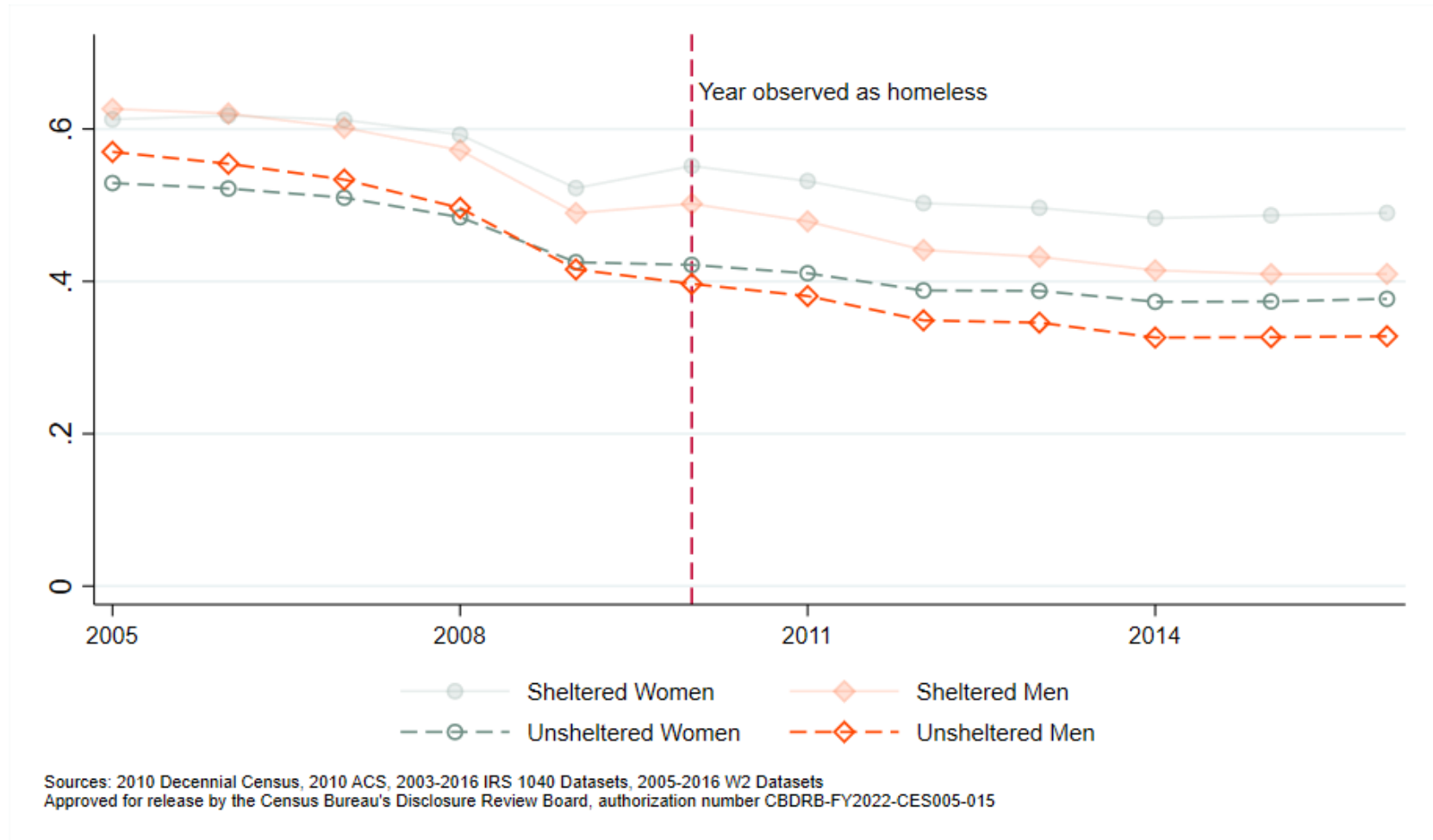
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- Dividing individuals into sheltered or unsheltered status, women are more connected to employment and benefits and have higher earnings and income than men in the year observed as homeless
  - Unsheltered women also receive disability benefits at higher rates than unsheltered men, but disability benefit receipt is similar for sheltered men and women
  - These patterns persist over time, with differences being especially pronounced in the years after they are observed as homeless
- While both women and men experience disruptions to earnings and employment prior to being observed as homeless, these disruptions appear to be less persistent for women than for men (especially for sheltered women)
- Our SNAP data suggest that at least 45% of sheltered women (60% max) and 22% of unsheltered women (50% max) have dependent children in the year observed as homeless
  - At least 10% of sheltered men (25% max) and 5% of unsheltered men (35% max) have children

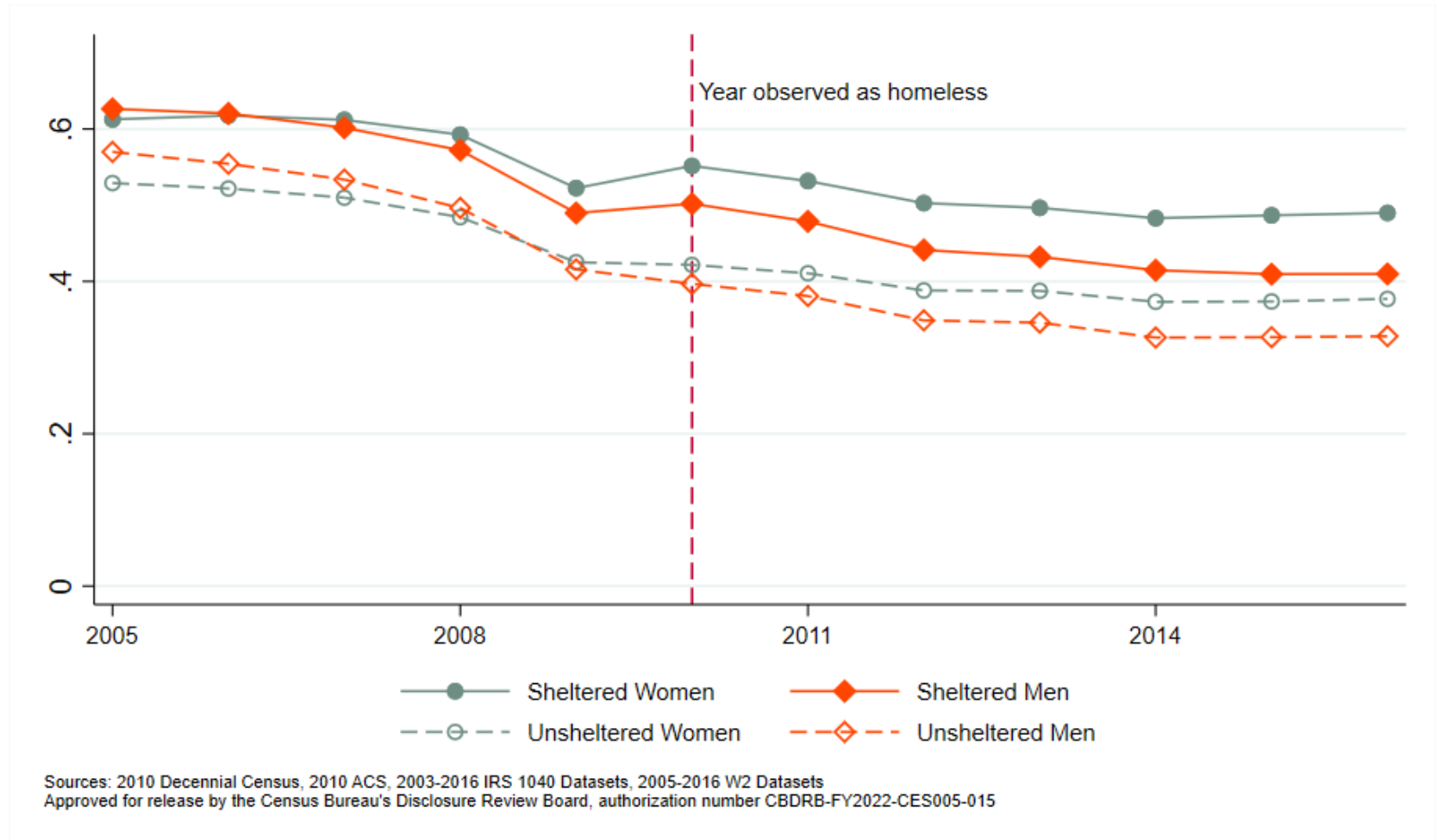
# Share with earnings by gender



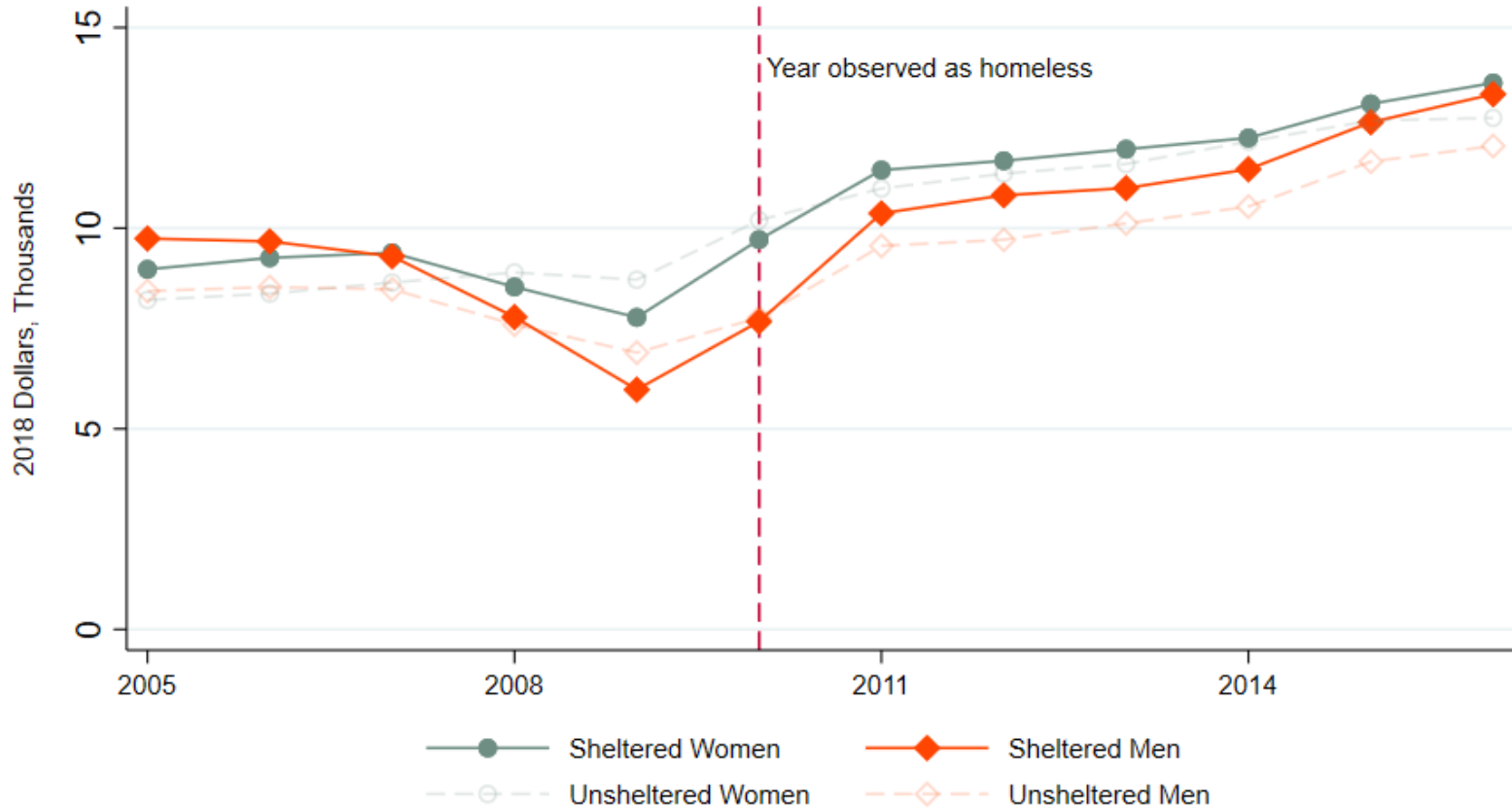
# Share with earnings by gender



# Share with earnings by gender

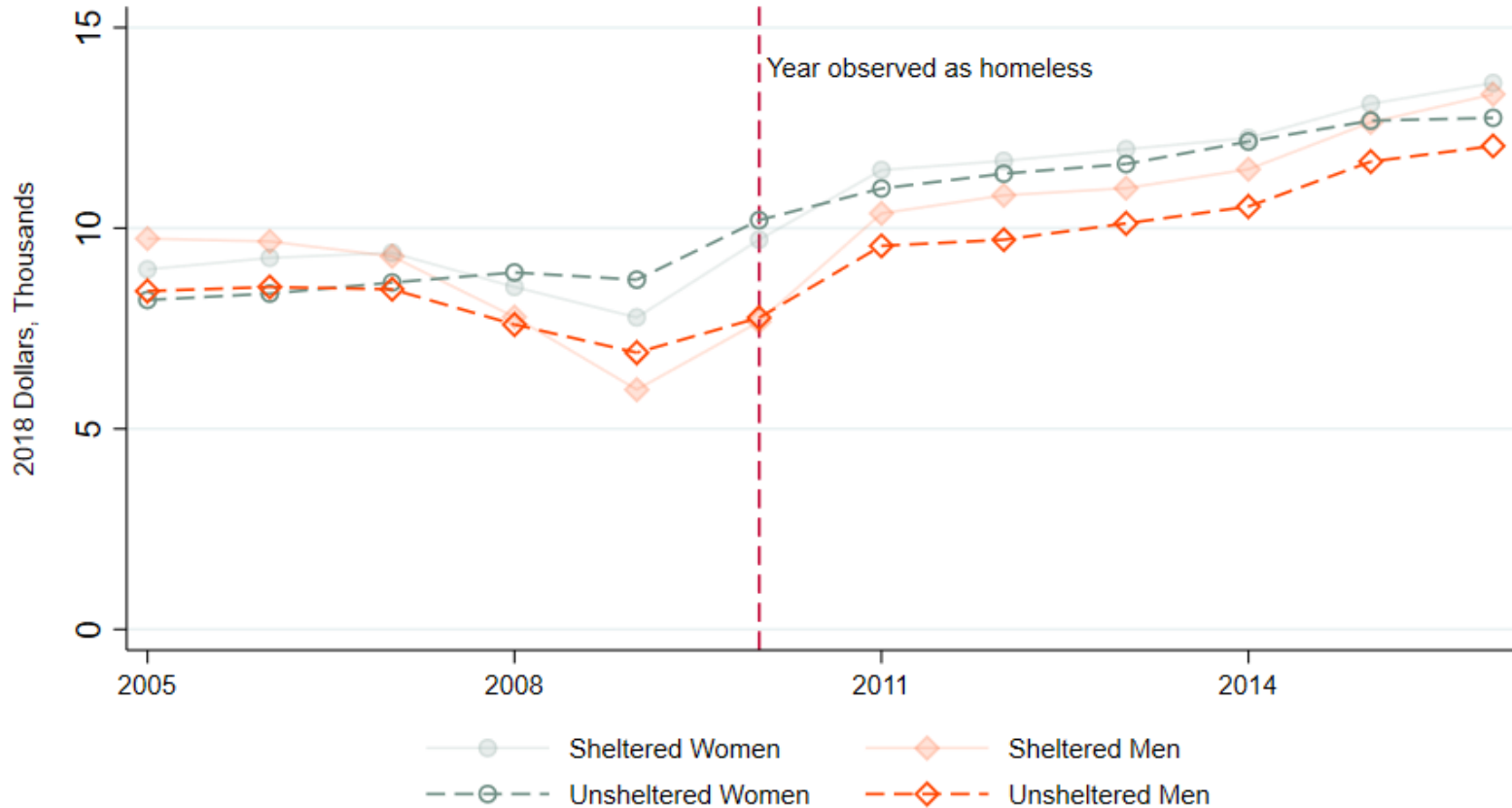


# Median earnings (conditional on positive) by gender



Sources: 2010 Decennial Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets  
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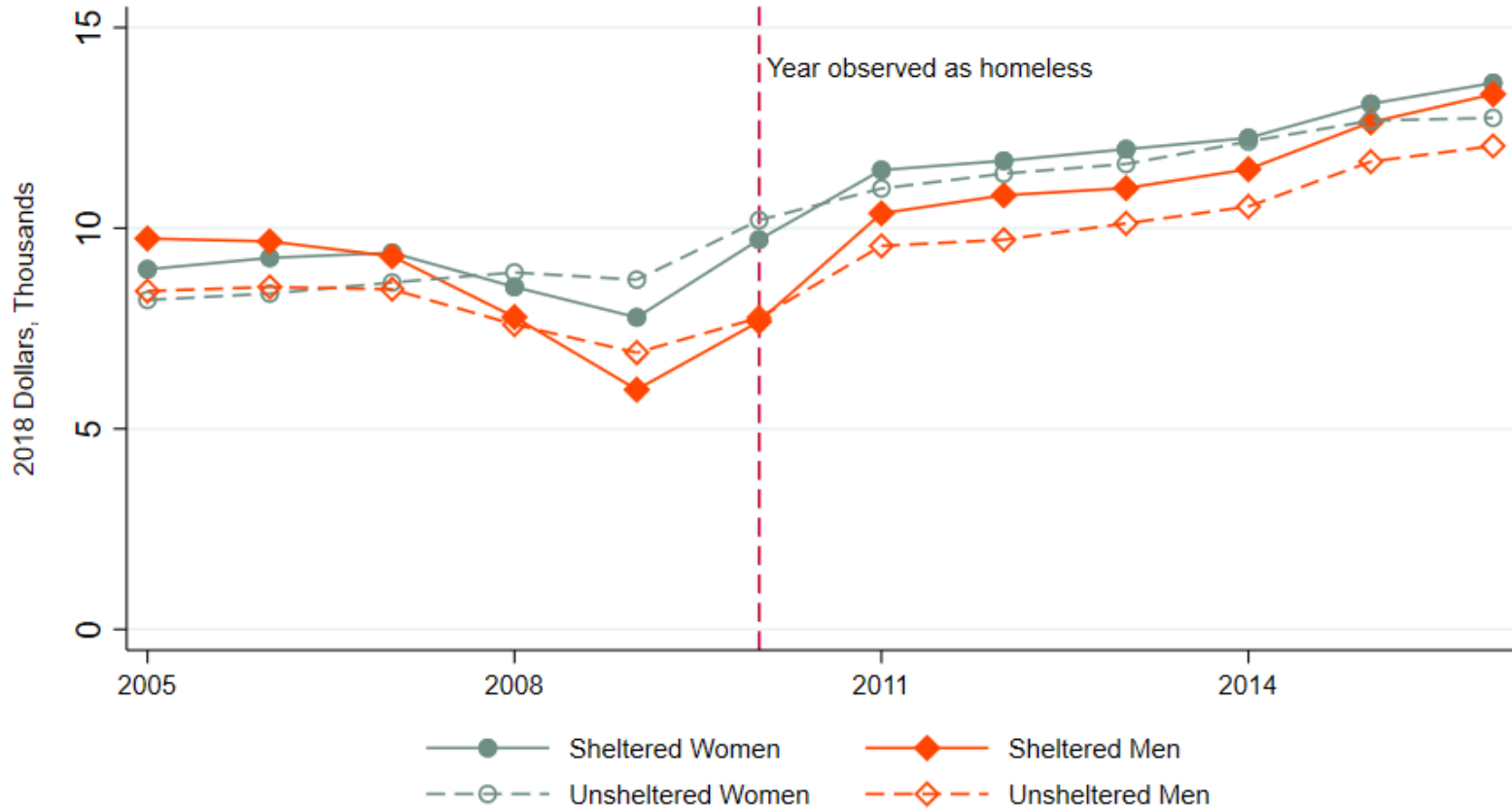
# Median earnings (conditional on positive) by gender



Sources: 2010 Decennial Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets  
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# Median earnings (conditional on positive) by gender



Sources: 2010 Decennial Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets  
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# 75<sup>th</sup> percentile of income plus in-kind transfers by gender (no SSI)



Sources: 2010 Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets, 2004-2016 IRS 1099R Datasets, 2003-2016 HUD PIC & TRACS, SNAP datasets  
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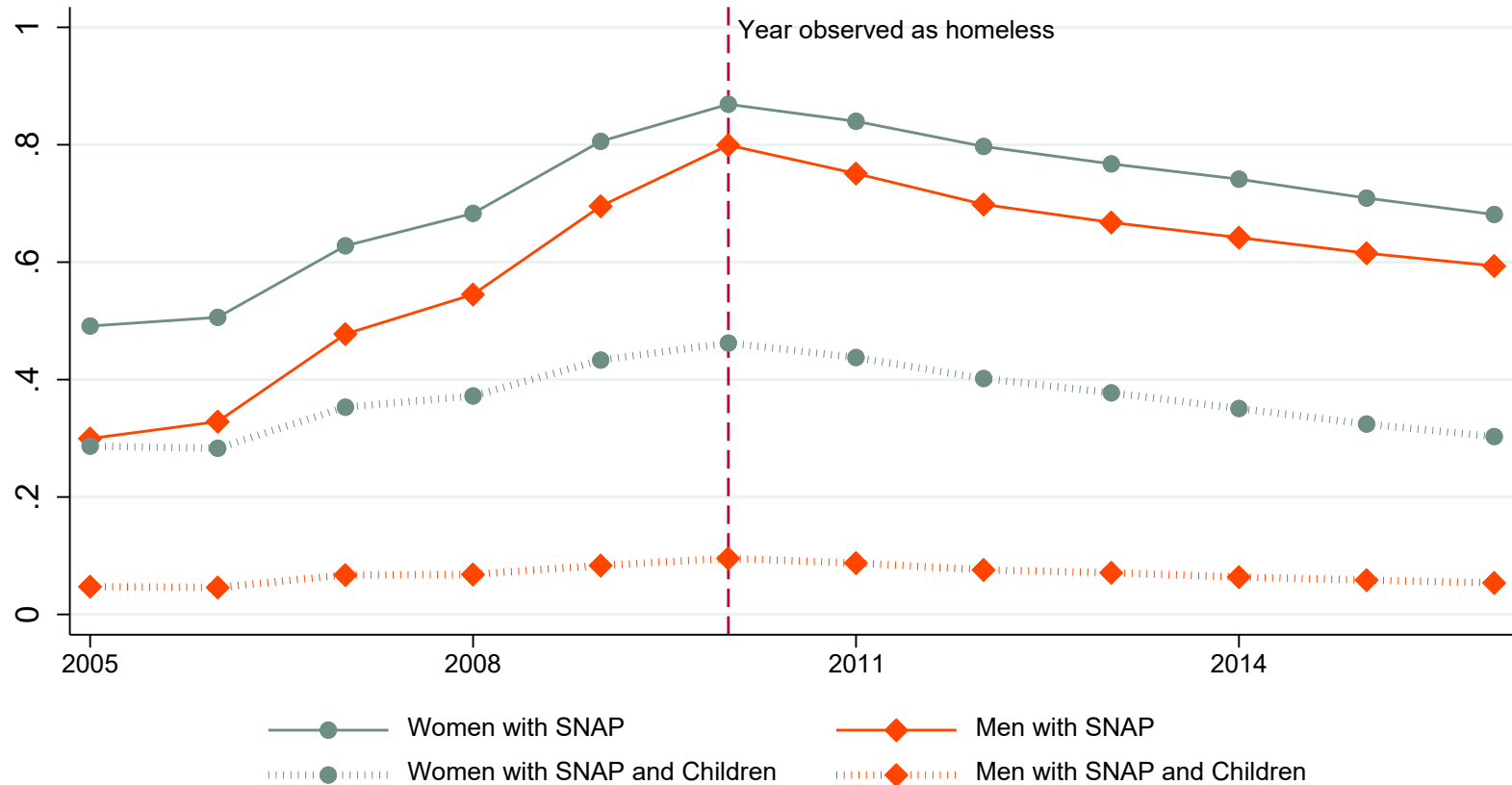
Sources: 2010 Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets, 2004-2016 IRS 1099R Datasets, 2003-2016 HUD PIC & TRACS, SNAP datasets  
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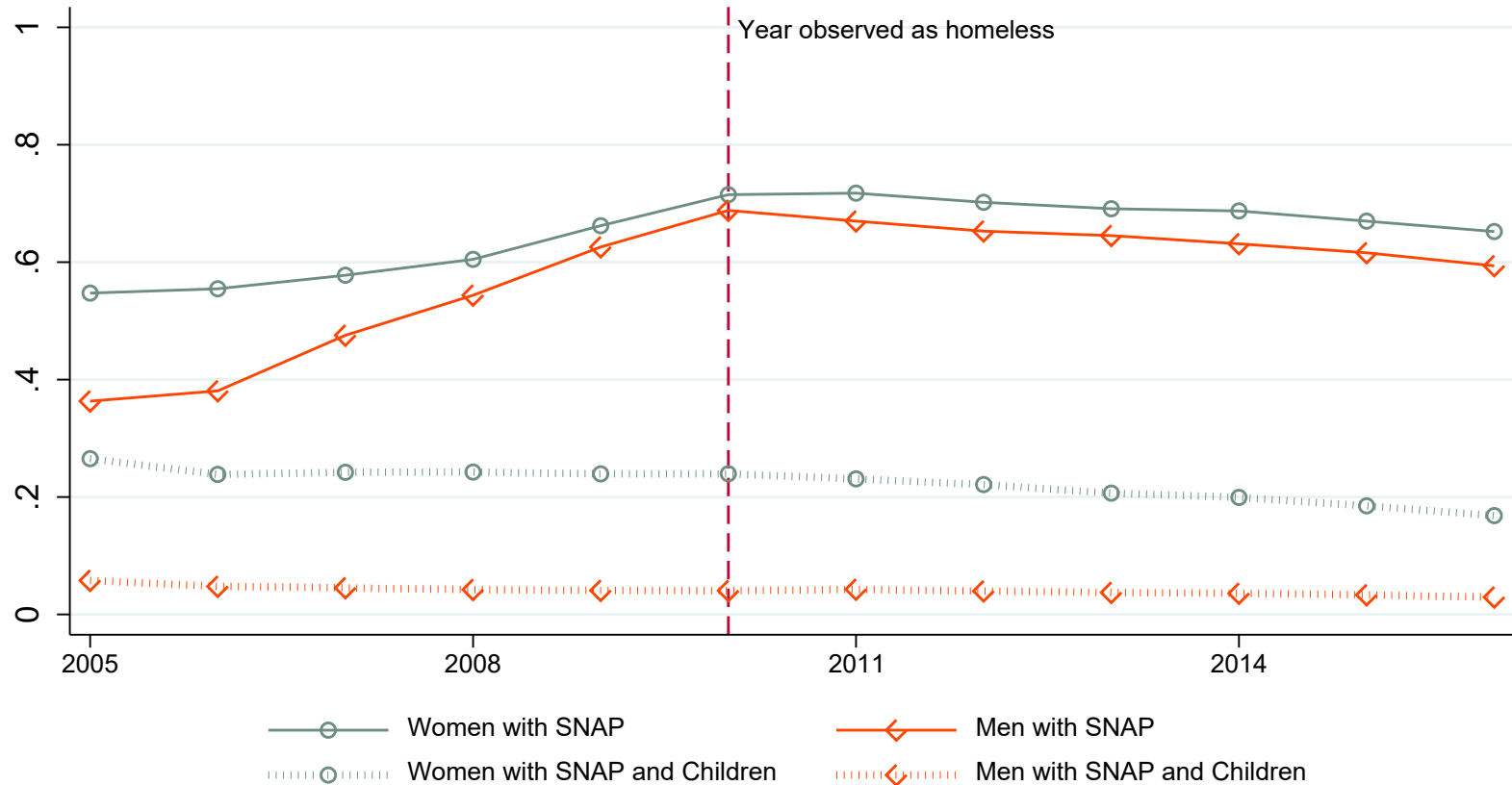
Sources: 2010 Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets, 2004-2016 IRS 1099R Datasets, 2003-2016 HUD PIC & TRACS, SNAP datasets  
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# Share of sheltered men and women with SNAP and with children



Sources: 2010 Decennial Census, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016)  
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# Share of unsheltered men and women with SNAP and with children



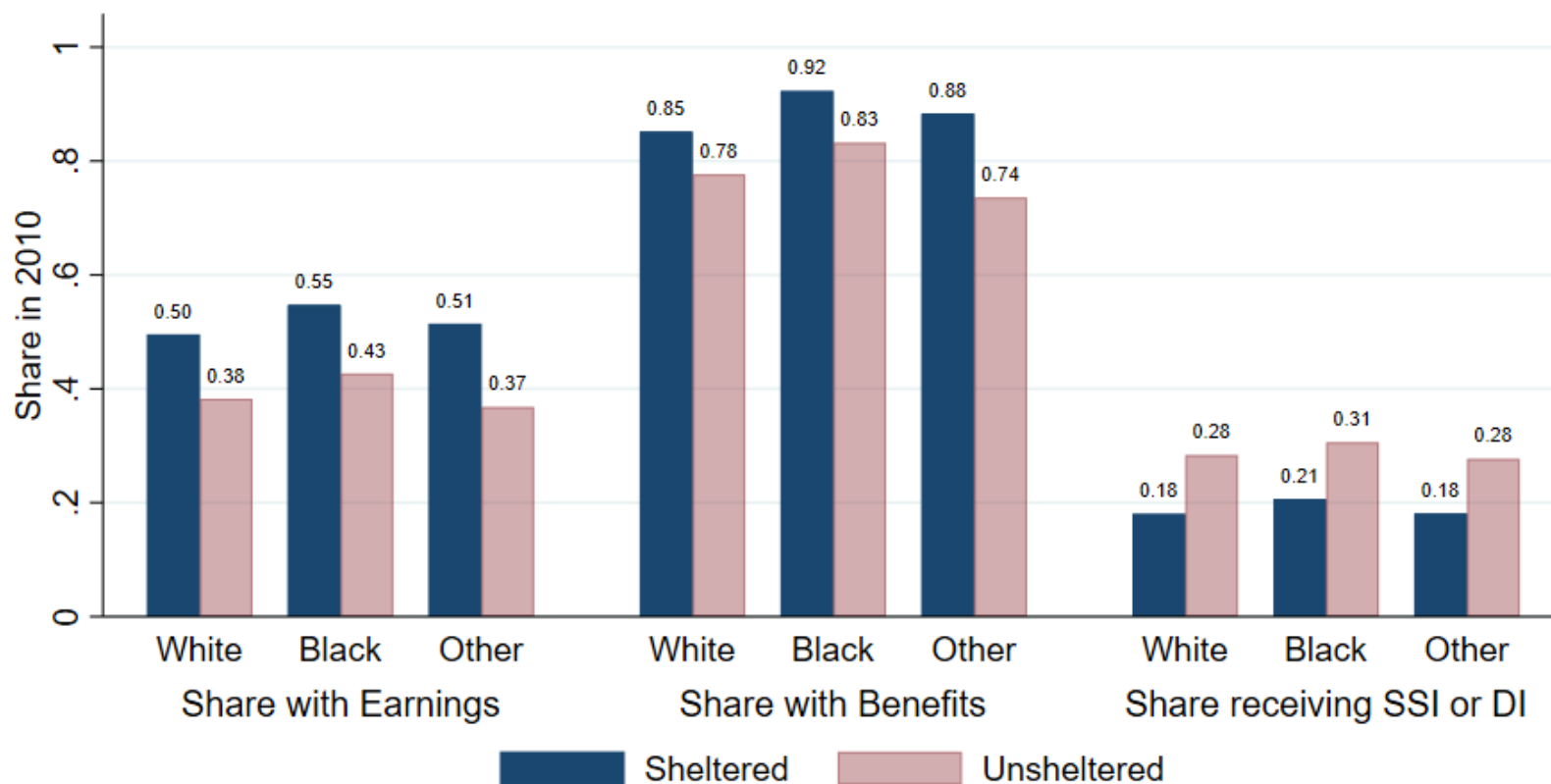
Sources: 2010 Decennial Census, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016)  
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# Results by race and ethnicity

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- Conditional on sheltered status, Black individuals have higher employment, earnings, income, and benefit receipt than White individuals and those of other races
  - Pattern is especially pronounced among the sheltered homeless
- Conditional on sheltered status, Hispanic individuals have higher earnings, employment, and income than non-Hispanic individuals, but they have similar (for the sheltered) or lower (for the unsheltered) rates of benefit receipt
- Unsheltered Hispanics have particularly elevated earnings and employment, even relative to sheltered Hispanics, and particularly low rates of benefit receipt

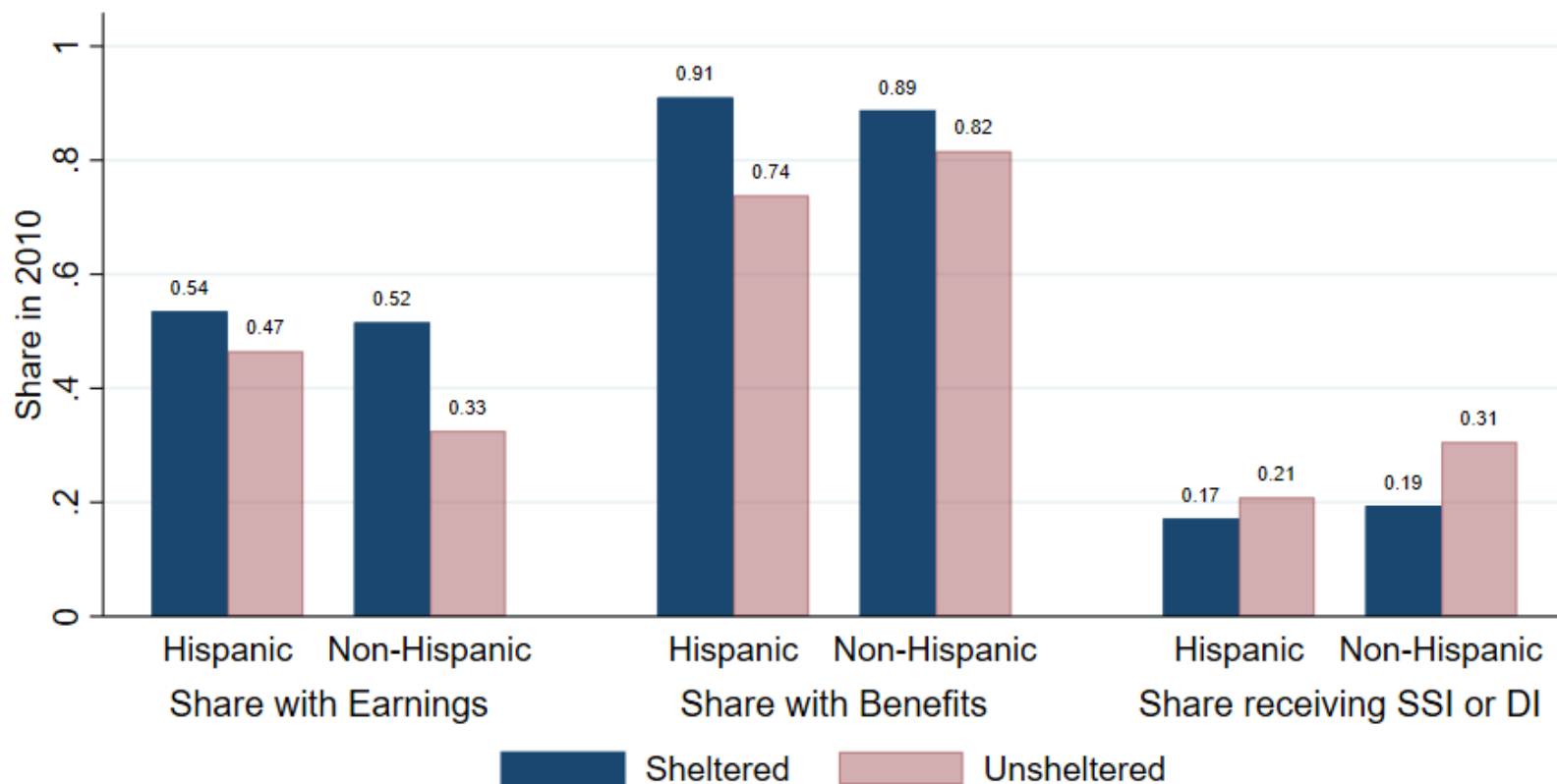
# Share with earnings, benefits, and disability program receipt by race



Sources: 2010 Decennial Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets, 2019 Numident, 2003-2016 HUD PIC & TRACS, 2007-2015 Administrative VA Dataset, 2006-2014 Medicare Datasets, 2007-2015 Medicaid dataset, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016), SSI Datasets (2010-2014, 2016)  
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# Share with earnings, benefits, and disability program receipt by ethnicity



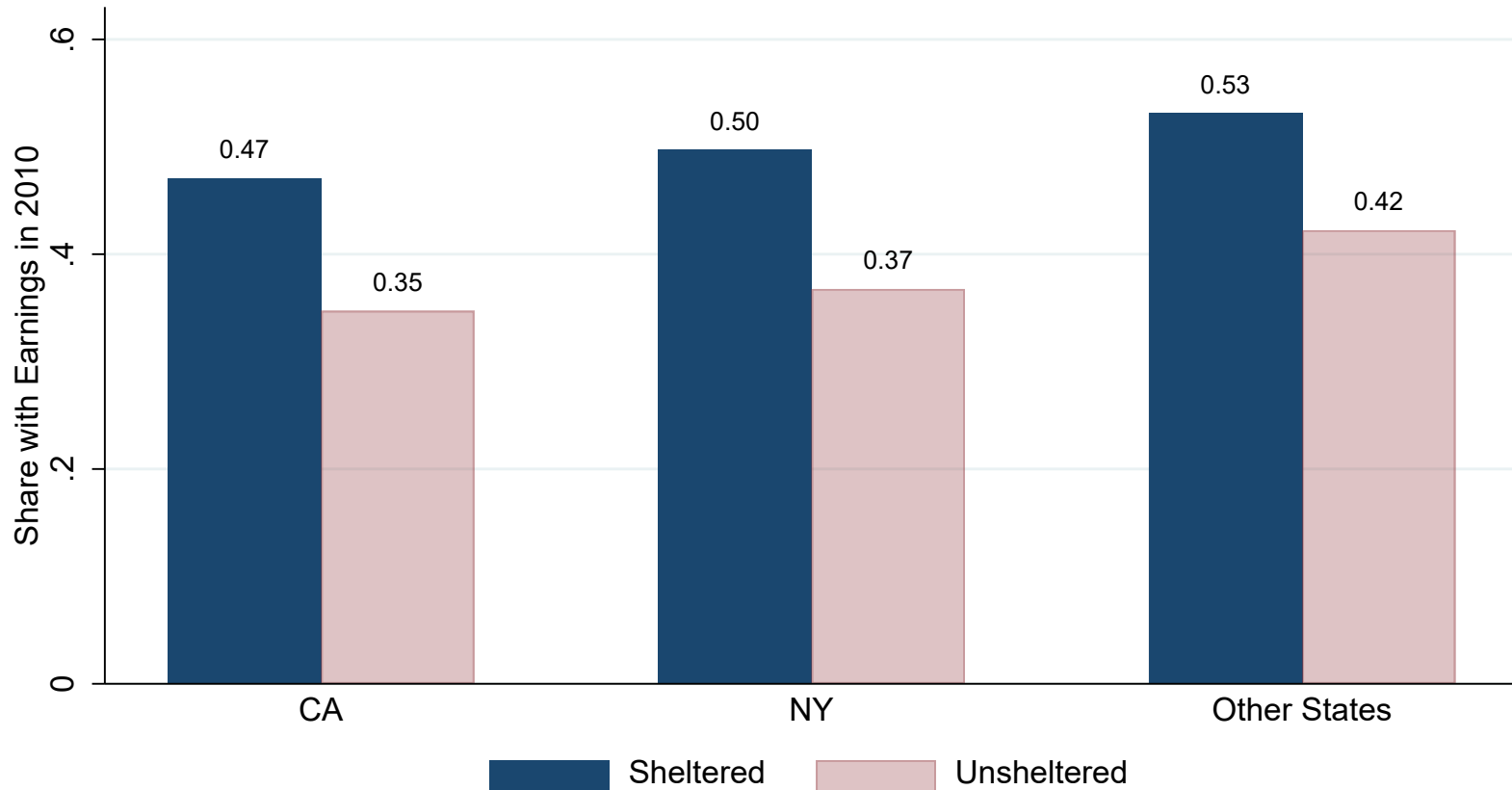
Sources: 2010 Decennial Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets, 2019 Numident, 2003-2016 HUD PIC & TRACS, 2007-2015 Administrative VA Dataset, 2006-2014 Medicare Datasets, 2007-2015 Medicaid dataset, SNAP datasets for Illinois (2009-2016), Indiana (2004-2016), New York (2007-2016), New Jersey (2007-2016), and Tennessee (2004-2016), SSI Datasets (2010-2014, 2016)  
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# Results by state

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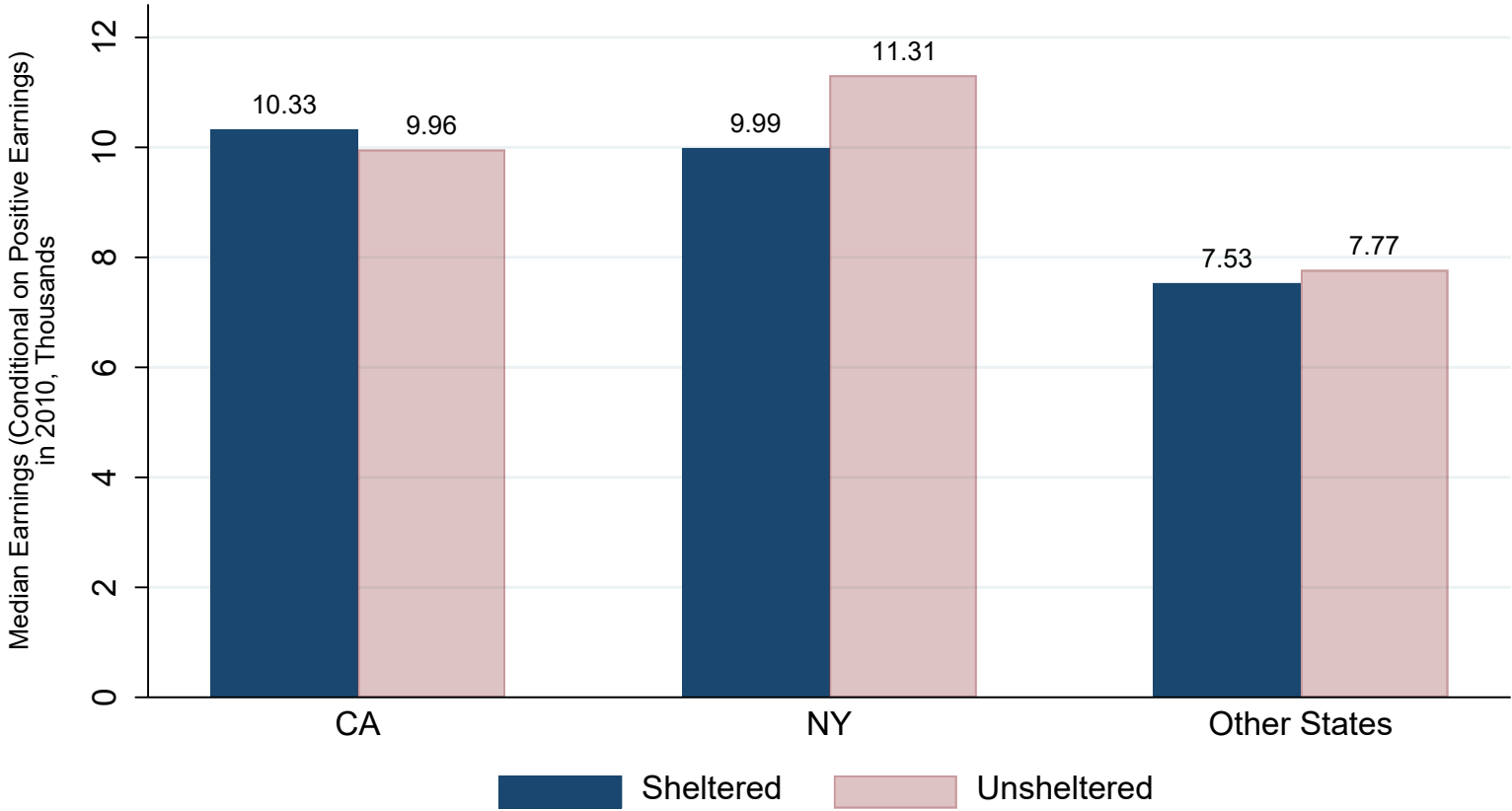
- Conditional on sheltered status, people in New York and California have similar rates of employment, earnings, and disability benefit receipt
- Those in other states are slightly more likely to work and are slightly less likely to receive disability benefits, but they have significantly lower earnings (conditional on working) than homeless people in New York and California

# Share with earnings by state



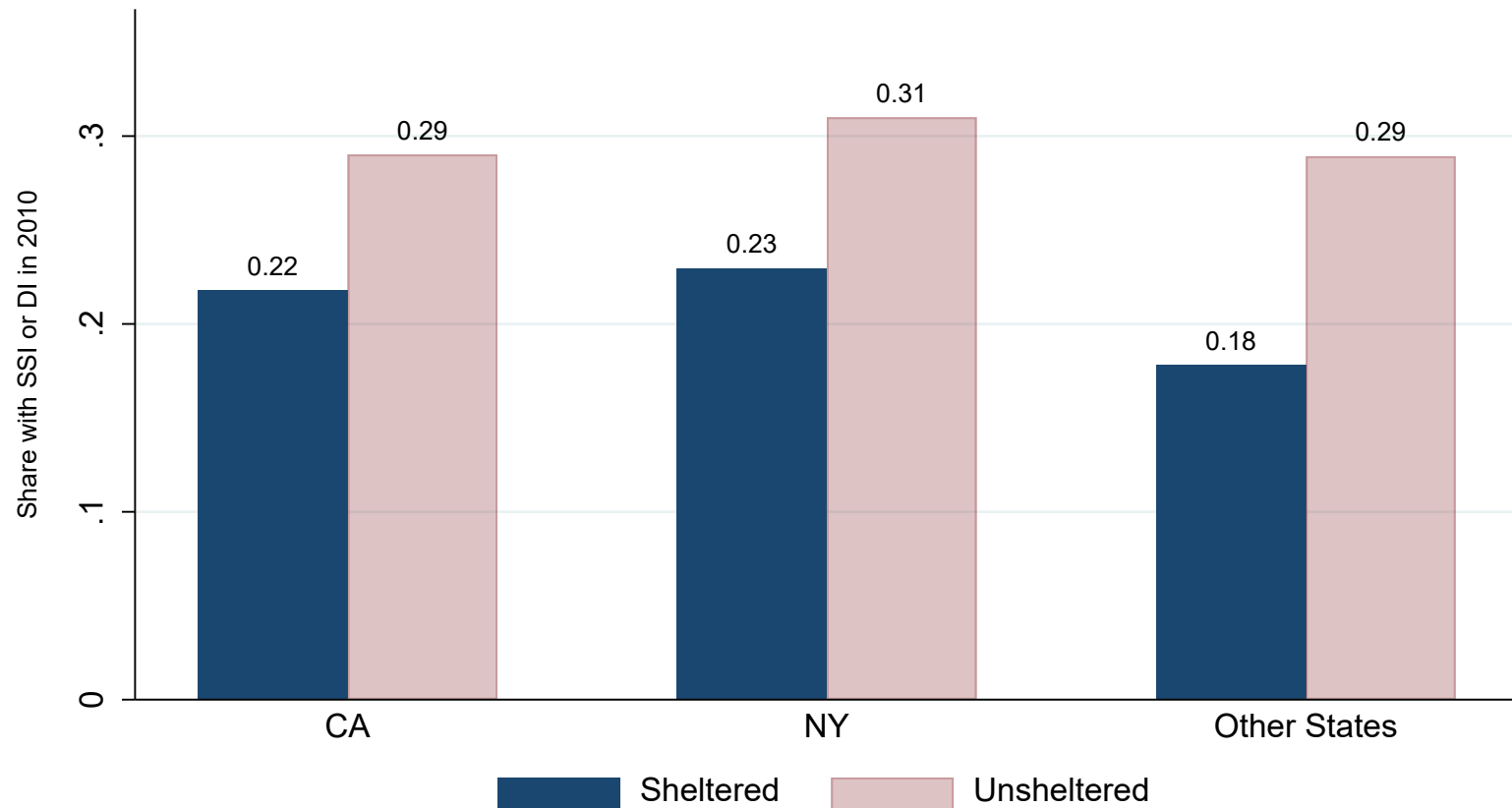
Sources: 2010 Decennial Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets  
Approved for release by the Census Bureau's Disclosure Review Board, authorization number CBDRB-FY2022-CES005-015

# Median earnings by state



Sources: 2010 Decennial Census, 2010 ACS, 2003-2016 IRS 1040 Datasets, 2005-2016 W2 Datasets  
Approved for release by the Census Bureau's Disclosure Review Board, authorization number CBDRB-FY2022-CES005-015

# Share receiving SSI or DI by state



Sources: SSI Datasets (2010-2014, 2016), 2006-2014 Medicare Datasets  
Approved for release by the Census Bureau's Disclosure Review Board, authorization number CBDRB-FY2022-CES005-015

# Discussion and conclusions



# Comparison to prior work on sheltered homeless earnings and employment

	Our Results	Von Wachter et al. (2020)	Metraux et al. (2018)
Sample description	National cross-section from 2010 Census	Sample of first enrollments in 2010-2018 (Los Angeles)	Sample of first enrollments in 1990-2002 (New York City)
Data sources	Census and IRS	HMIS and CA Unemp. Insurance (UI) data	New York shelter data and SSA earnings
Employment in homeless year or prior year	50% in 2009; 52% in 2010	29% in year before enrollment	42% in year of enrollment
Decline in employment prior to homelessness?	Yes – avg annual employment was 61% over 2005-2008	Only among recently employed; little change for full sample	Yes – avg annual employment was 48% in 10 yrs before enrollment
Mean earnings (cond on +) in homeless year or prior year	\$11,600 in 2009; \$13,500 in 2010 (2018 dollars)	\$9,970 in year before enrollment (2018 dollars)	\$7,700 in year of enrollment (2008 dollars)
Decline in earnings (cond on +) prior to homelessness?	Yes – avg annual earnings were \$14,000 over 2005-2008	Yes – mean quarterly earnings fall from \$5,000 to \$3,500 over two years	Yes – mean annual earnings \$11,000 in ten years prior to enrollment

# Discussion of comparison to prior work

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- We find somewhat higher employment rates and higher earnings (conditional on positive) than comparable prior work using administrative data
- As in prior work, we find some evidence of a drop in employment and earnings in year observed as homeless, but the magnitude of these changes is relatively small
  - Consistent with O'Flaherty (2009) – when income is very low, even small shocks can lead to homelessness
  - Also consistent with work showing that emergency payments of a few thousand dollars or less can prevent homelessness (Evans, Sullivan, and Wallskog 2016, Geyer et al. 2013)



# Conclusions

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- Contrary to widely held perceptions, many people become homeless despite being employed and despite being reached by the safety net
- Very low permanent income means that income and employment shocks need not be large to lead to homelessness; indeed, these shocks appear to be small when present
- We have shown that people who experience homelessness are very poor, but we also know that most people who are very poor are not homeless – more work is needed to understand why some people become homeless and others do not