
Use of Unemployment Insurance and Food Stamps in Michigan

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USDA: SNAP & UI Project

SNAP - Supplemental Nutrition Assistance
Program formerly called Food Stamps

UI - Unemployment Insurance

USDA - U.S. Department of Agriculture,
Economic Research Service (ERS)

ADARE - Administrative Data Analysis and
Research: Georgia, Illinois, Maryland,
Missouri, Michigan, and Texas

Plus: California and Florida

Overview

Sample: All Michigan UI applicants (2001-2010) and all Michigan SNAP recipients (2006-2011)

1. SNAP before UI application
 - Prior SNAP 12 or 24 months or anytime before UI application
 - Prior SNAP use by UI eligibility, receipt, exhaustion, EB/EUC
2. SNAP after UI application
 - Sample: UI claims without SNAP in prior 12 months
 - SNAP receipt rates by UI eligibility, benefits, exhaustion, EUC
3. Regression model of SNAP after UI application
 - Differences by UI eligibility, exhaustion, age, gender, race, separation, industry, education, prior income, month and year
4. Does UI reduce return to SNAP? A regression discontinuity model of SNAP receipt after UI application among low income UI applicants

Michigan UI Applicants

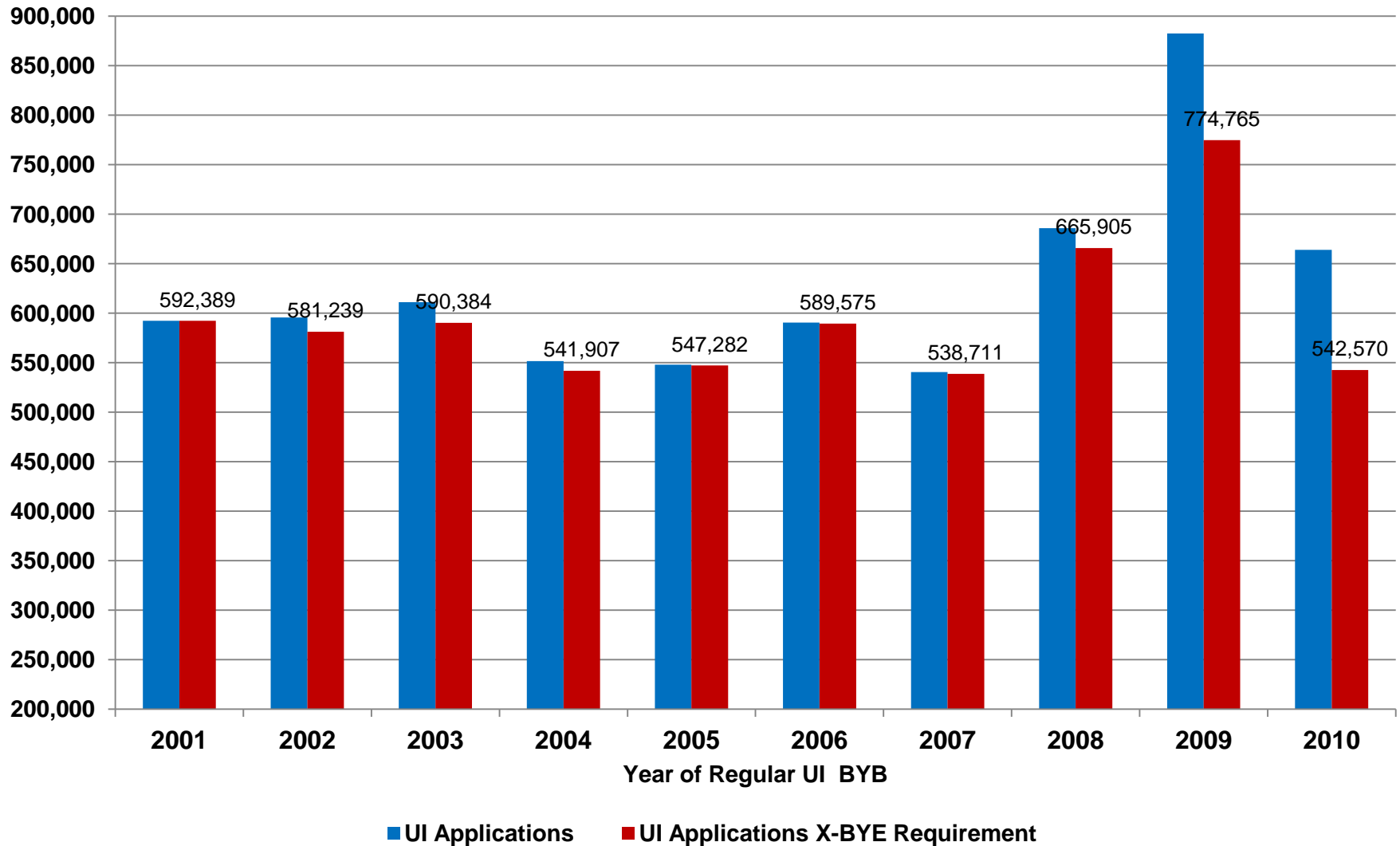
Among Michigan UI applicants:

- ❑ UI monetary eligibility (sufficient prior earnings)
- ❑ UI non-monetary eligibility (no quits or discharge)
- ❑ Full UI eligibility (both monetary and separation ok)
- ❑ UI benefit receipt
- ❑ UI exhaustion
- ❑ Use of Emergency Unemployment Compensation or EB

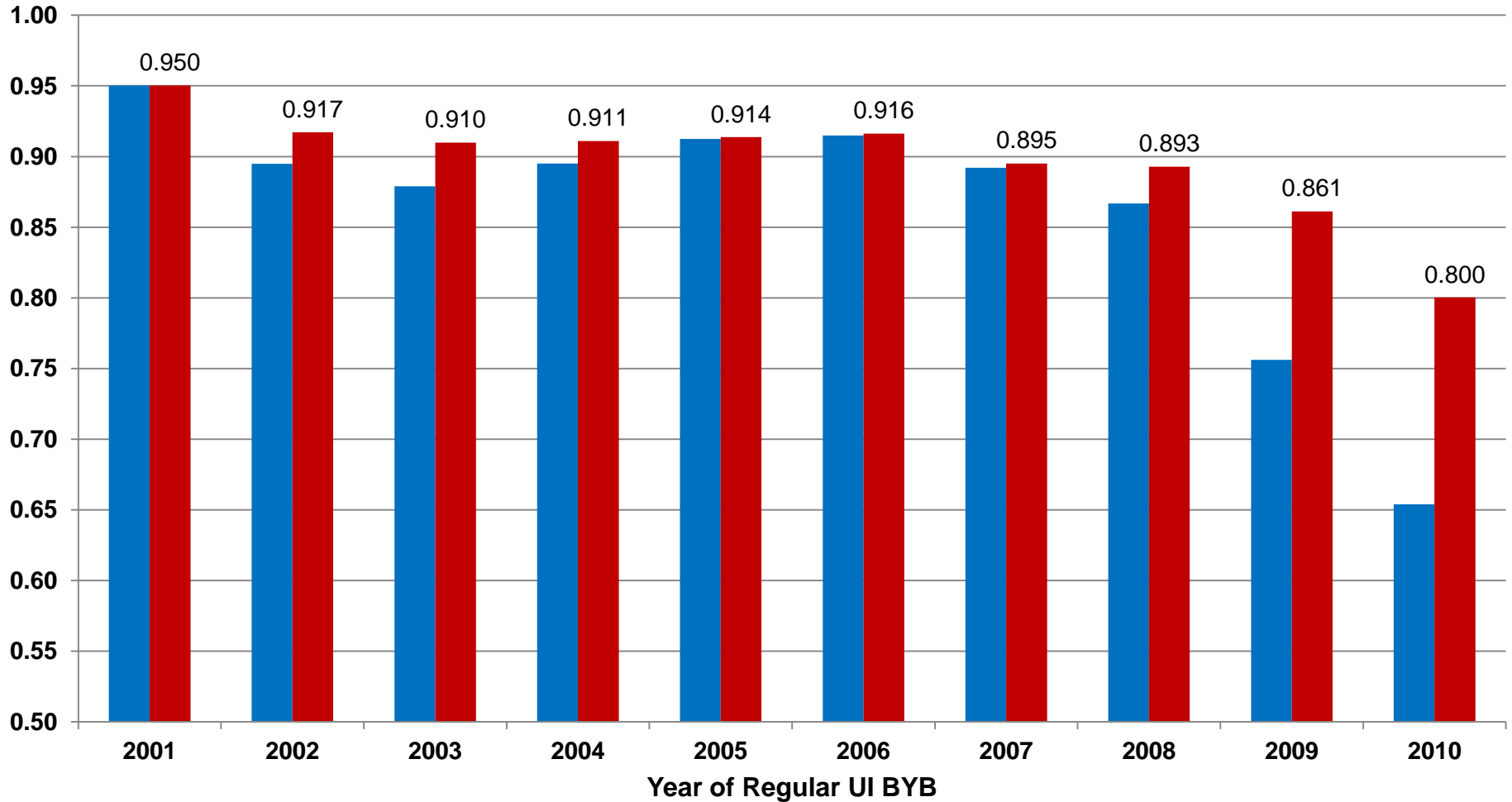
Remove additional regular UI claims by recipients transitioning to EUC/EB

- Examine UI benefit receipt and exhaustion

Michigan Regular UI Applications for Persons Age 18-64

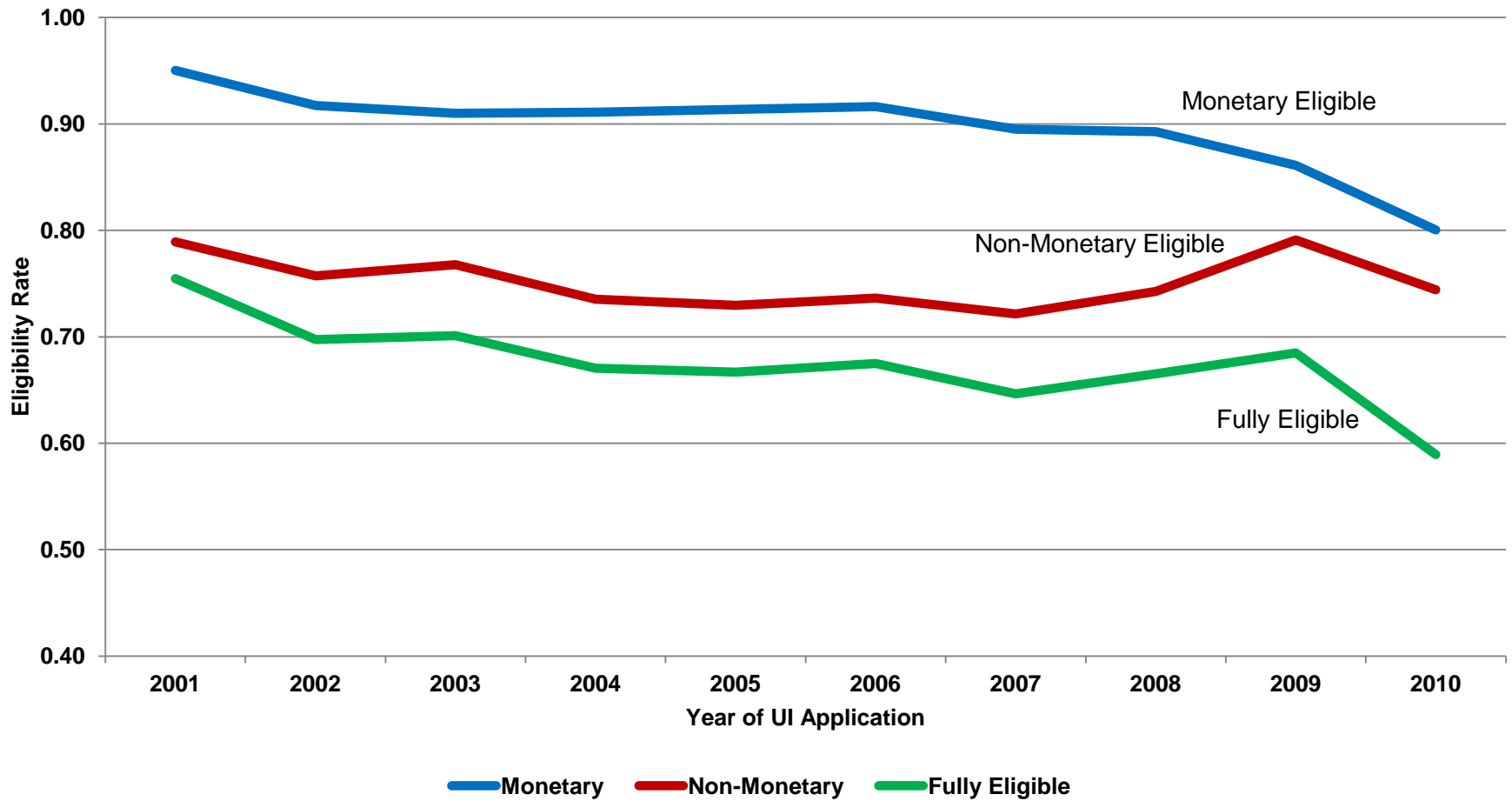


Monetary Eligibility Rates Among Michigan Regular UI Applicants Age 18-64 before and after Removing UI Re-Applications by EB/EUC Recipients at BYE



■ Monetary Eligibility Rate (Before) ■ Monetary Eligibility Rate (After)

Rates of Monetary, Non-Monetary and Full Regular UI Eligibility among Michigan UI Applicants Age 18-64 after Removing Claims Filed by Exhausted EB/EUC Recipients after BYE



1. SNAP before UI application

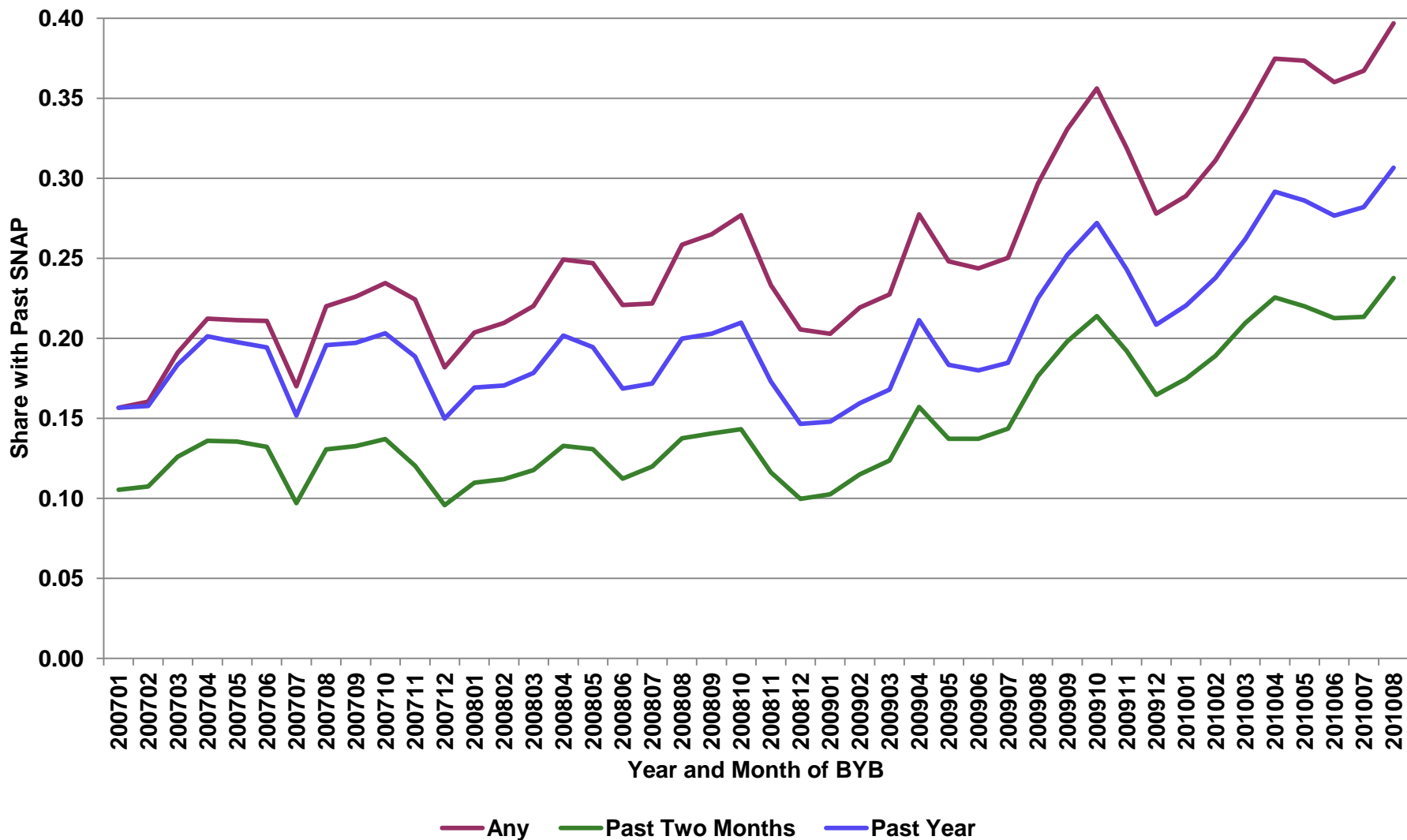
UI applicants having prior SNAP receipt

- Within prior 2 months: 15 to 23 percent
- Within prior 12 months: 15 to 30 percent
- Any prior SNAP: 15 to 40 percent (censoring)

Aspects of prior SNAP receipt

- Higher as labor market deteriorates
- July & December UI applicants lower prior SNAP
- Higher with longer look-back (censoring bias)

Share of All Michigan UI Applicants Age 18-64 having prior SNAP Receipt

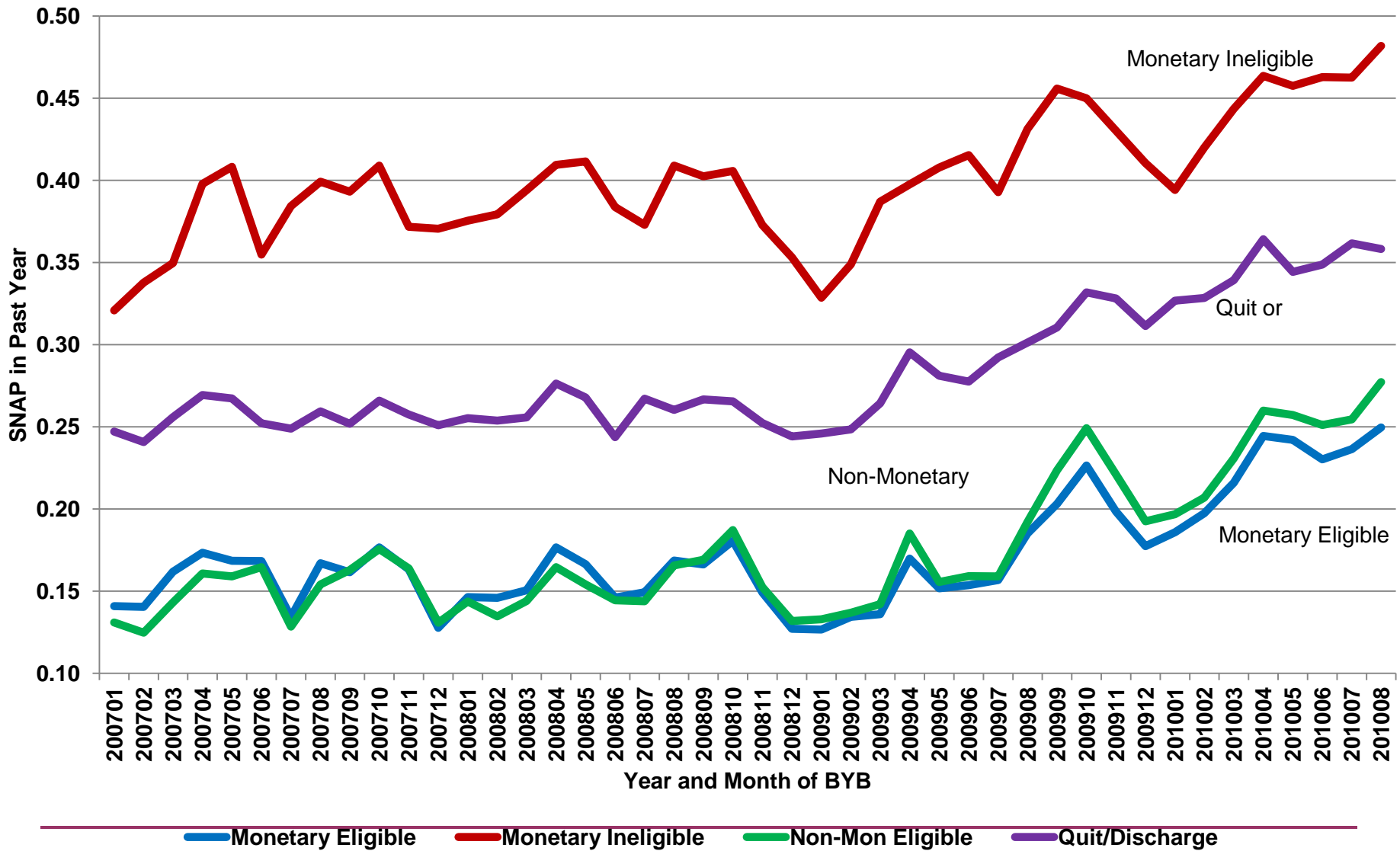


Prior SNAP by UI Eligibility

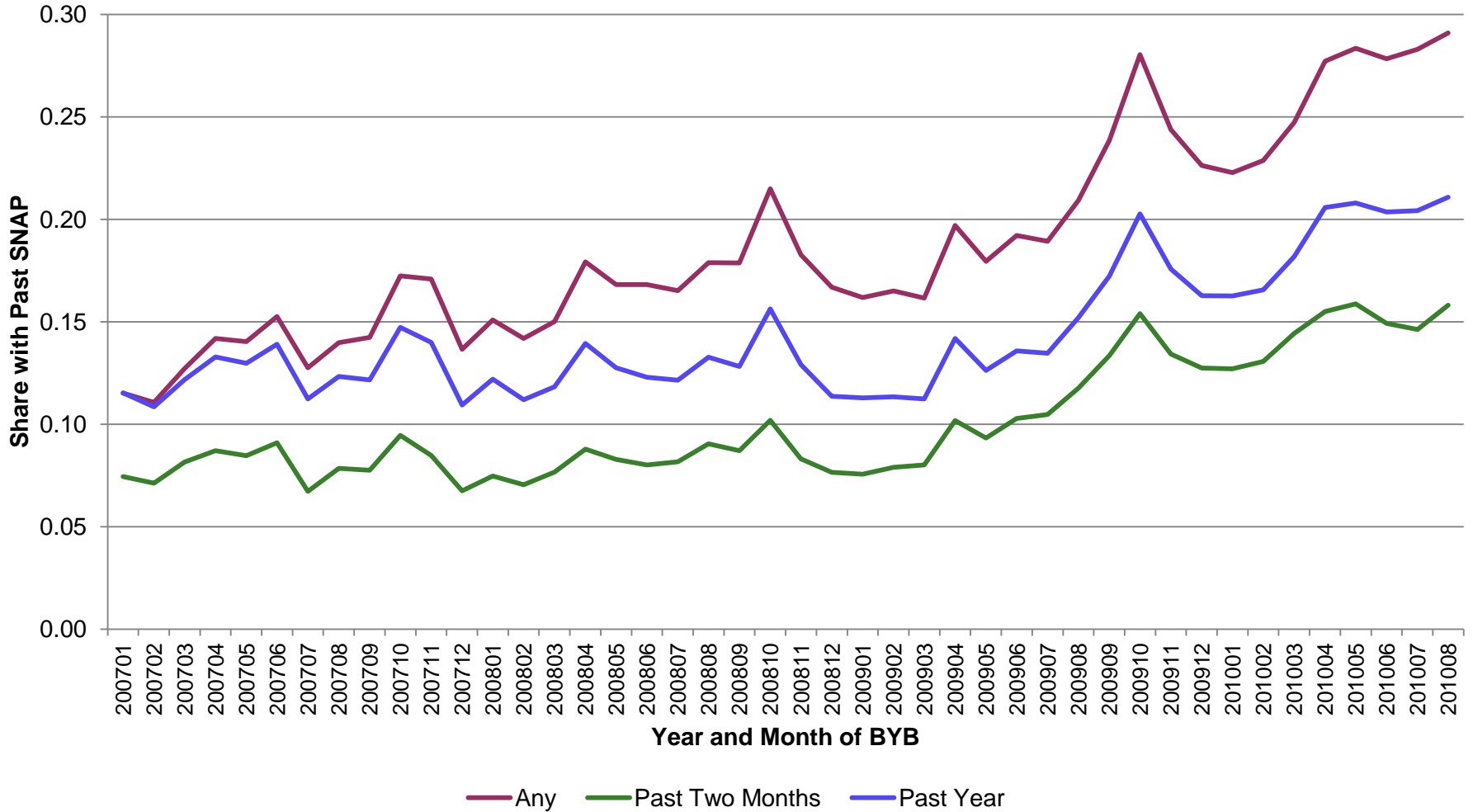
Rates of SNAP in prior 12 months by UI eligibility

- With monetary eligibility
- Without monetary eligibility
- With non-monetary eligibility
- Job separations by quit or discharge

Rates of SNAP Receipt among All Michigan Regular UI Applicants Age 18-64 in the 12 Months before UI Application by Monetary and Non-Monetary Eligibility Status



SNAP Receipt Prior to Regular UI Application Among Fully Eligible UI Applicants Age 18-64



Prior SNAP receipt by UI applicants

Prior SNAP receipt rates by **fully eligible** UI applicants are lower than for **all** UI applicants

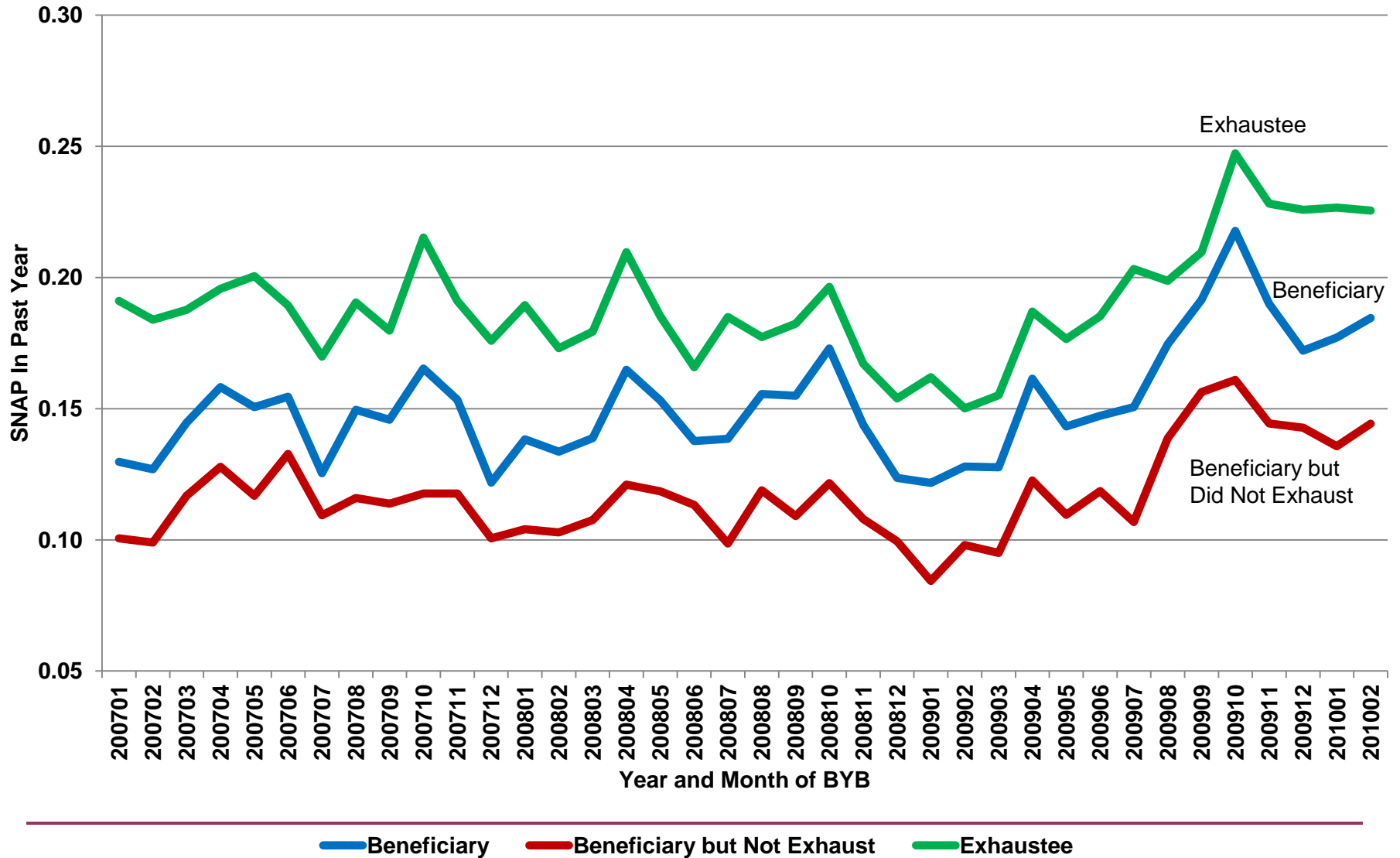
Time of SNAP before UI application	<u>All</u> UI Applicants		<u>Fully Eligible</u> UI Applicants
2 prior months	15 to 23 percent	>	8 to 16 percent
12 prior months	15 to 30 percent	>	12 to 21 percent
Any observable time	15 to 40 percent	>	12 to 27 percent

Prior SNAP use by UI Beneficiaries

Rates of SNAP receipt in the 12 months before UI application among beneficiaries:

- All UI beneficiaries
 - Beneficiaries who did not exhaust UI
 - Beneficiaries who exhausted UI

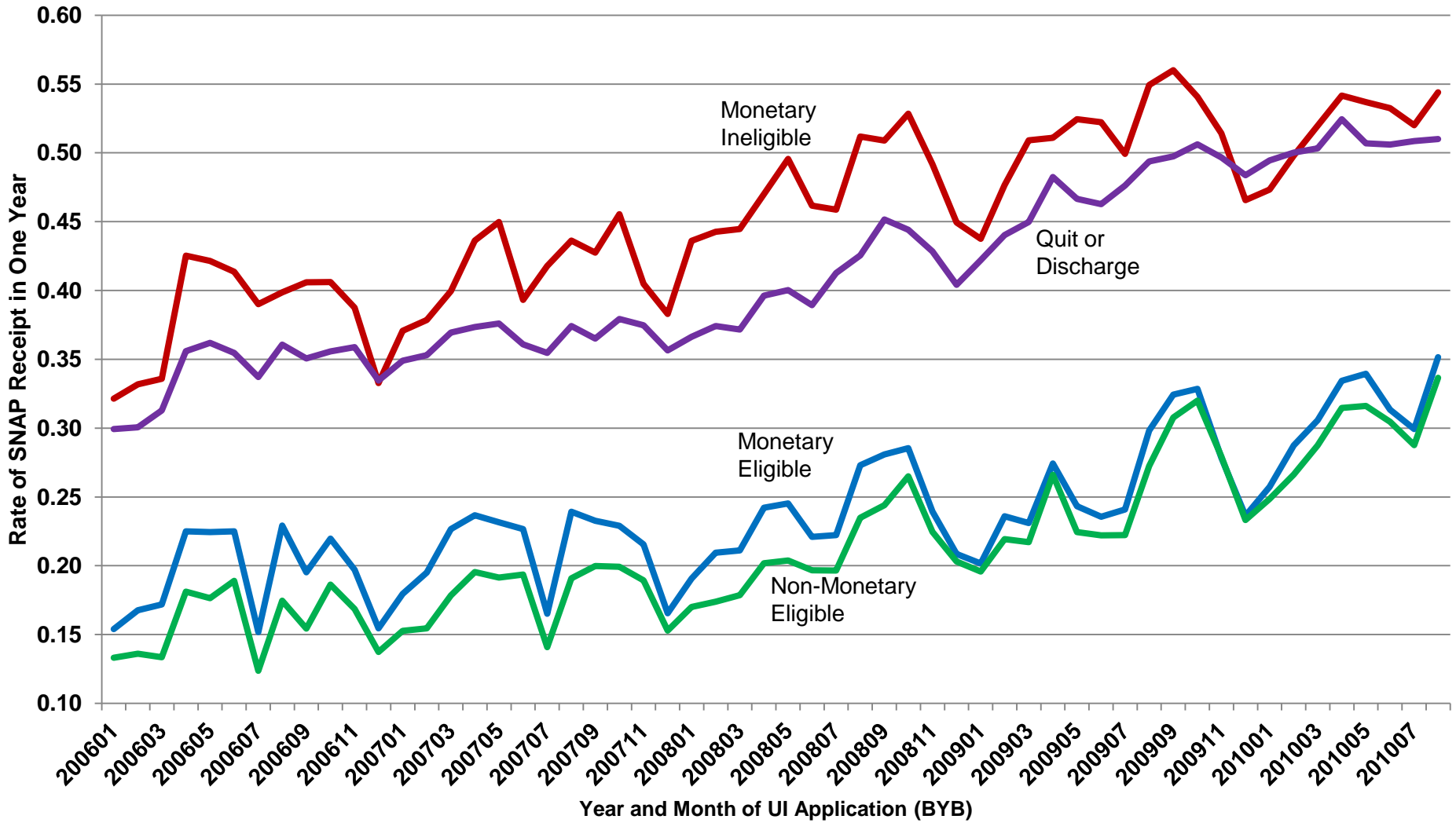
SNAP Receipt Rates among Michigan Regular UI Applicants Age 18-64 in the Year Prior to UI Application by Regular UI Benefit Receipt and Exhaustee Status



2. SNAP receipt after UI application

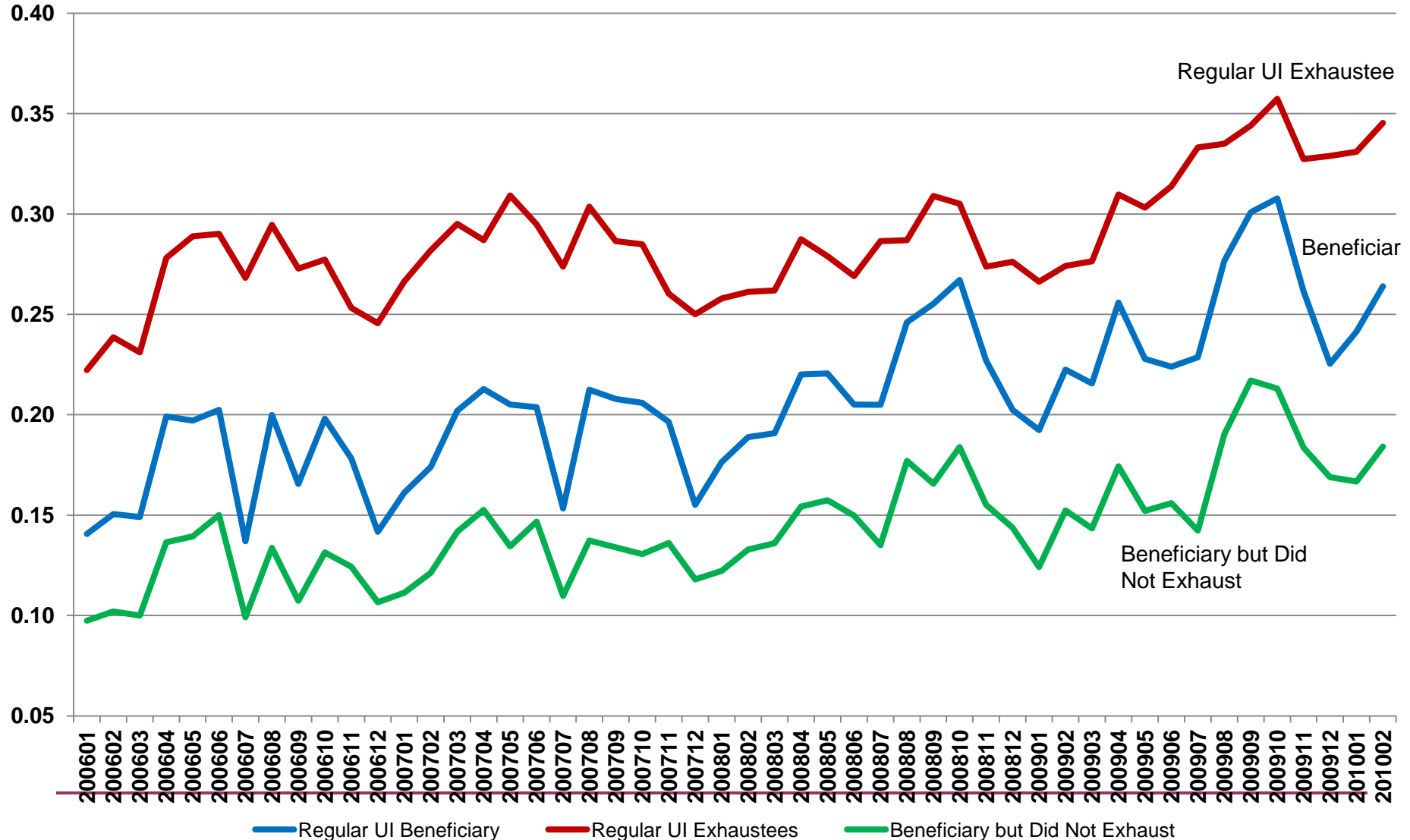
- SNAP receipt rates within one year after UI application among all applicants
 - UI eligibility conditions
 - Benefit receipt and exhaustion
 - Receipt of EB/EUC
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Shares of Michigan Regular UI Applicants Age 18-64 Who Receive SNAP within One Year of UI Filing **by UI Eligibility Status** Regardless of SNAP Receipt Prior to UI Application

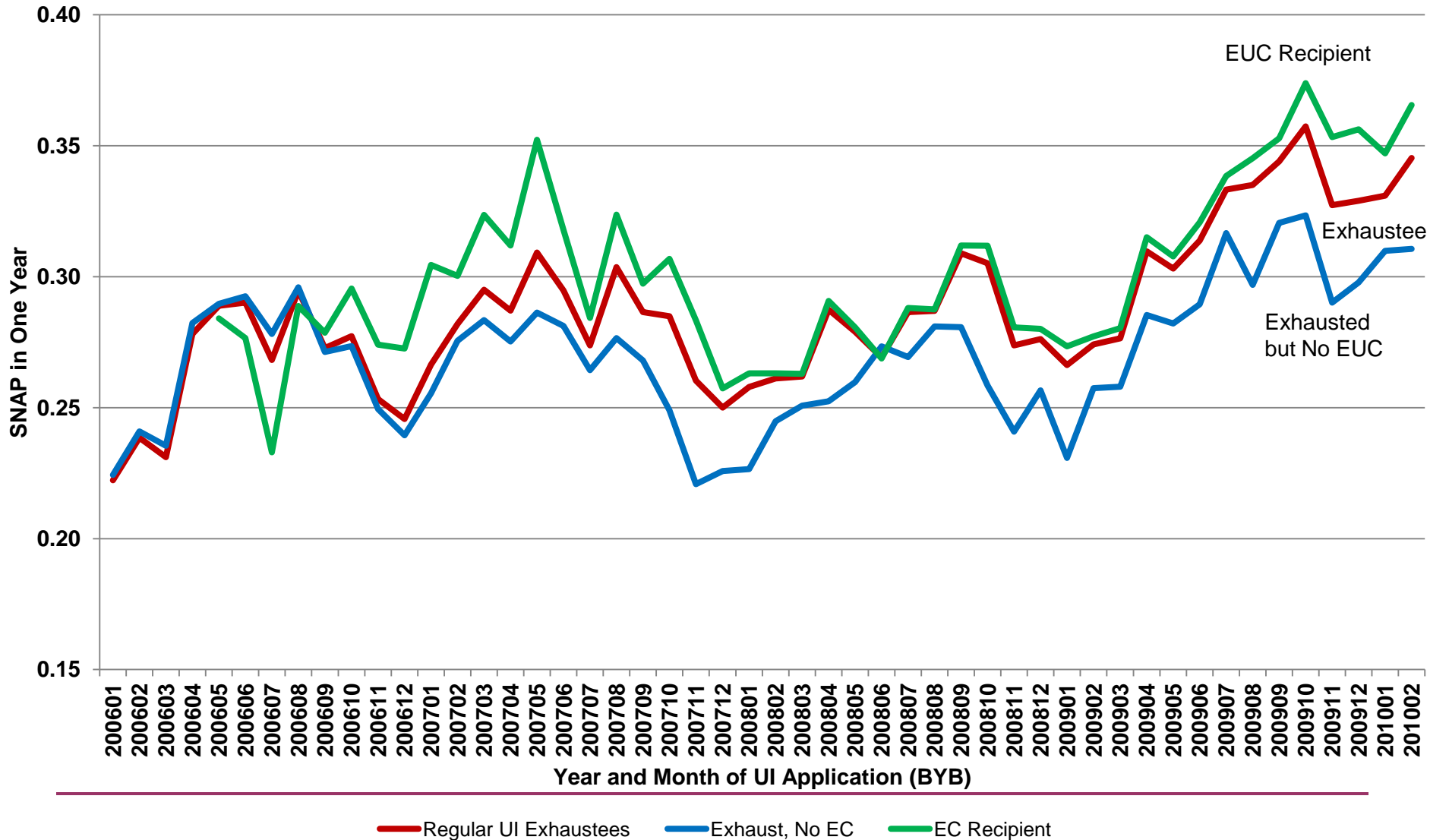


— Monetary Eligible — Monetary Ineligible — Non-Monetary Eligible — Quit/Discharge

Shares of Michigan UI Applicants Age 18-64 Who Receive SNAP within One Year of UI Application **by UI Beneficiary and Exhaustee Status** Regardless of SNAP Receipt Prior to UI Filing



Share of Michigan Regular UI Applicants Age 18-64 Receiving SNAP within One Year **after** UI Application by **Regular UI Exhaustion** and **EUC Receipt** Status Regardless of SNAP Receipt Prior to UI Application



3. A model of SNAP after UI Application

Linear probability model of SNAP receipt

- No restrictions on SNAP receipt prior to UI
- Dependent variable
 - SNAP receipt within 24 months after UI application date = 1, else = 0
 - Michigan UI applicants sample mean 20.1% SNAP
- Right hand side variables
 - UI eligibility, entitlement, benefit receipt, prior earnings
 - Age, gender, race, education, industry, month, county

Variable Description	Parameter Estimate	t-Statistic	Variable Mean
Mean SNAP receipt in 2 years after BYB			0.321
Monetary Ineligible	0.056	51.35	0.105
Monetary Eligible but Not a Beneficiary	0.008	8.72	0.096
UI Beneficiary but Not an Exhaustee	-0.044	-107.02	0.425
UI Exhaustee but Not an EC/EB Recipient	0.006	5.98	0.089
EC/EB Recipient	0.040	80.85	0.285
Weekly Benefit Amount (\$100)	-0.020	-27.17	3.033
WBA at Maximum	-0.018	-16.84	0.461
Regular UI Entitlement Length (Weeks)	-0.001	-4.11	24.9
Bottom Third of Earnings (5 Qtrs)	0.008	13.02	0.333
Middle Third of Earnings (5 Qtrs)	0.001	2.95	0.333
Top Third of Earnings (5 Qtrs)	-0.010	-17.34	0.333

Other regression parameters suggest

SNAP receipt after UI application was higher among:

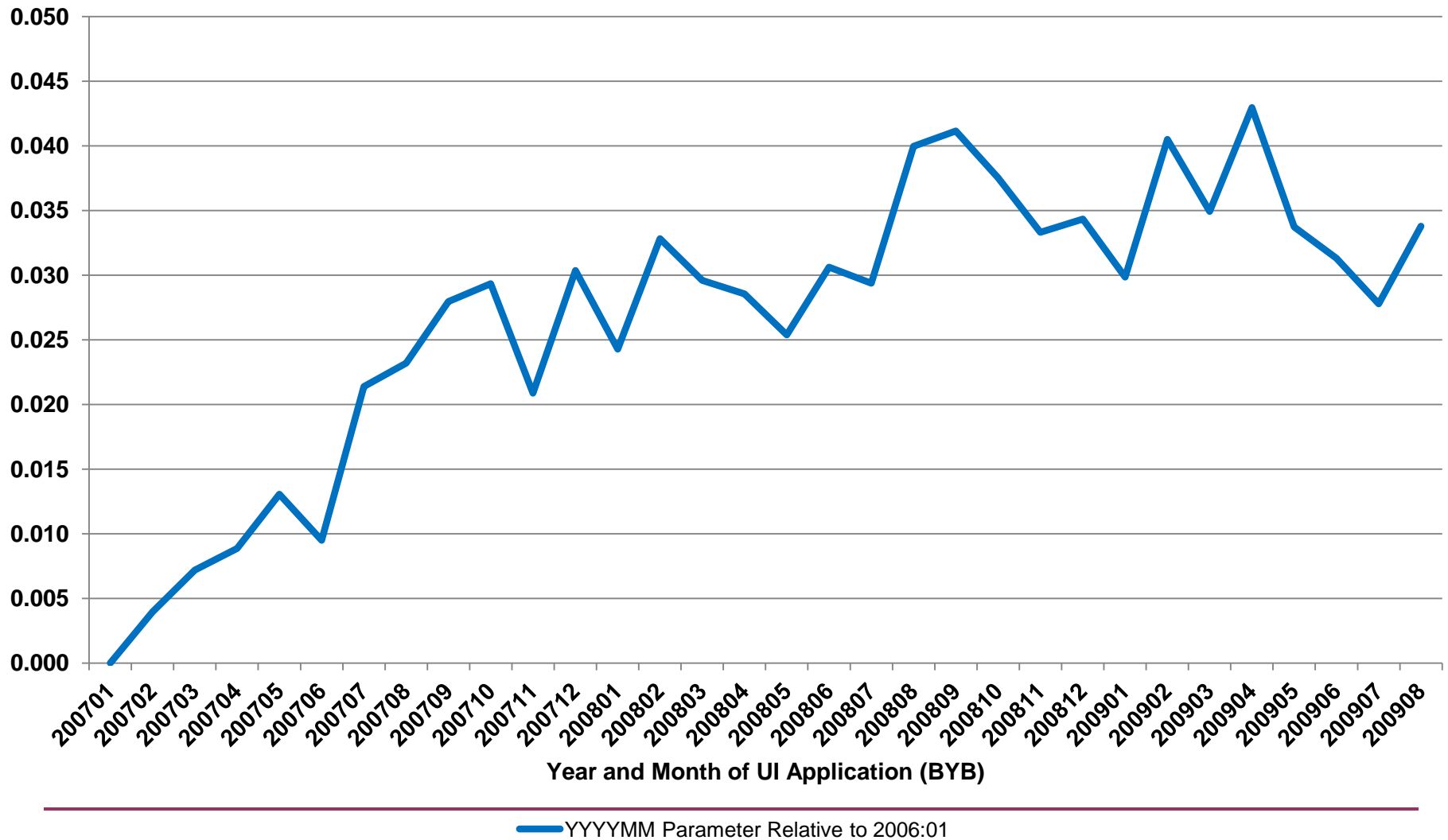
- Quits and discharge, monetary ineligible
- Aged 25-44, less educated
- Those with job tenure of 3 to 5 years
- Retail trade, hospitality, health care services

SNAP receipt after UI was less likely among

- Beneficiaries not exhausting UI entitlements

Regression time indicators summarized next:

Change in the Michigan SNAP Receipt Rate Relative to 2006:01 within Two Years After UI Application by Year and Month of UI BYB Controlling for Observable Factors



4. Does UI reduce return to SNAP?

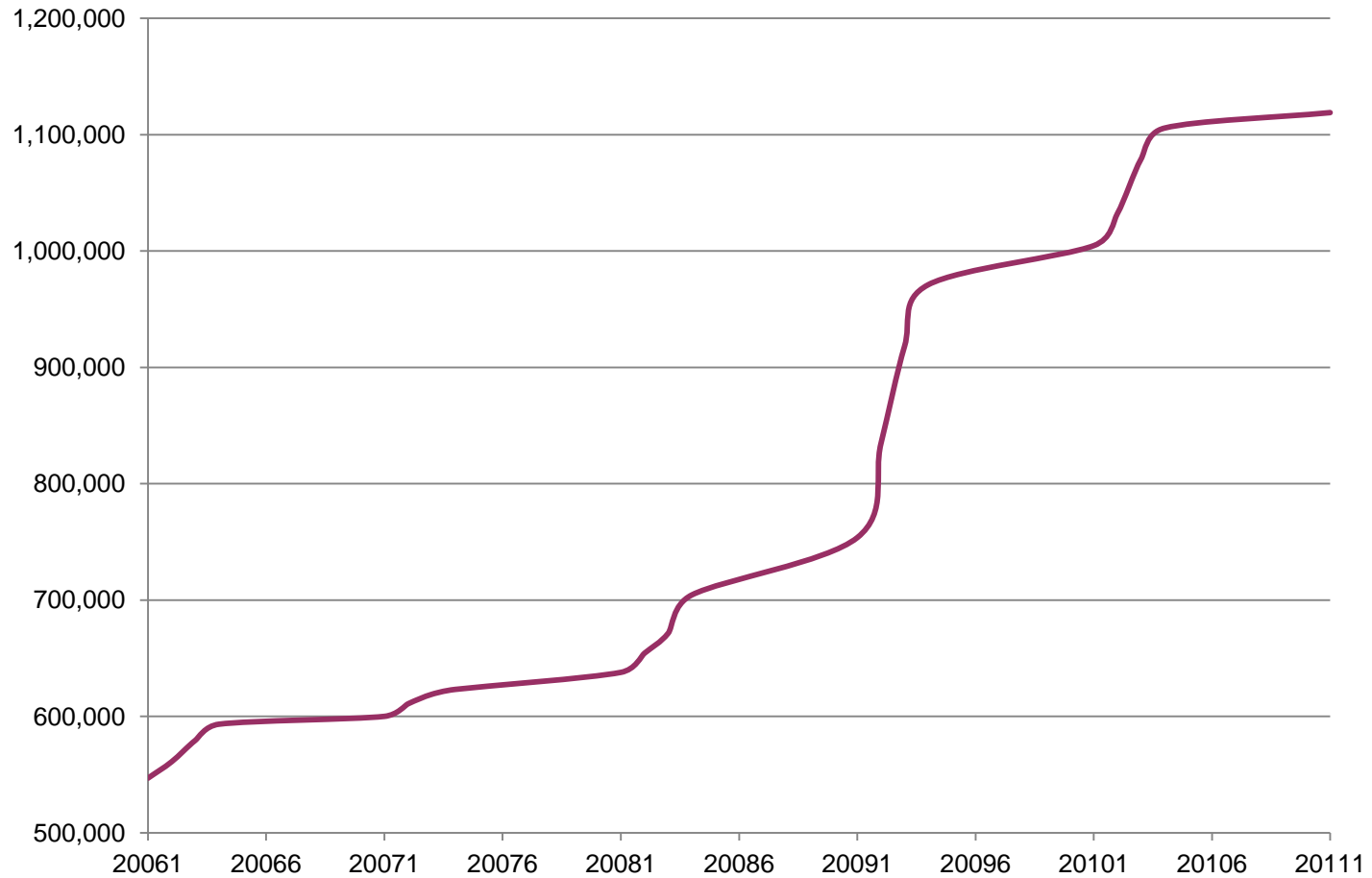
Sample selection and analysis sequence

- SNAP recipients
 - SNAP exits (4 months)
 - Exits for employment (qtr earnings > \$100)
 - Subsequent joblessness (qtr earnings < \$100)
 - UI application
 - UI receipt
 - SNAP return?
 - Different SNAP return rates by income level groups
 - Regression discontinuity at monetary eligibility
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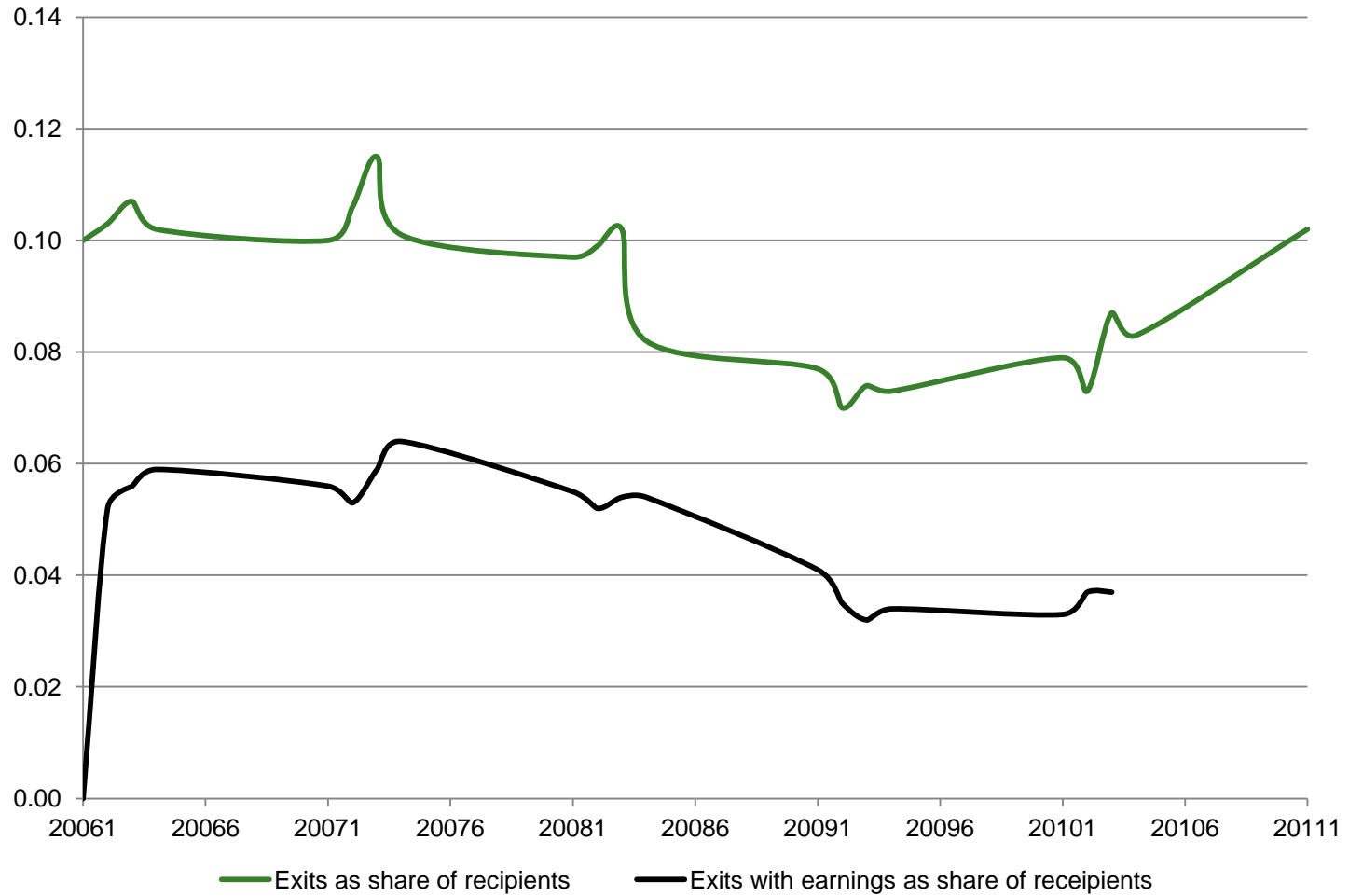
Michigan SNAP recipients and leavers (four month) by year and quarter

Year and quarter	Recipients	SNAP Exits	Exits w/ earnings
20061	546,855	54,635	28,680
20062	560,922	57,501	31,594
20063	579,305	61,839	34,163
20064	593,205	60,344	33,491
20071	599,943	59,742	31,982
20072	610,713	64,722	35,852
20073	618,881	71,332	39,516
20074	623,121	63,114	34,565
20081	637,748	61,751	33,150
20082	654,207	65,001	35,260
20083	671,324	68,181	36,344
20084	704,286	57,981	28,731
20091	753,556	57,899	26,492
20092	834,314	58,581	26,569
20093	918,059	68,166	31,251
20094	970,889	70,927	32,514
20101	1,004,468	79,764	37,486
20102	1,031,952	75,317	37,940
20103	1,078,819	93,828	
20104	1,105,563	91,263	
20111	1,118,824	113,733	

Michigan SNAP recipients by year and quarter, 2006Q1 to 2011Q1



Michigan SNAP four month exit rates



Summary of SNAP Receipt 2006:Q1 - 2007:Q3

	Number	Share
SNAP recipient-quarters	4,109,824	
Exited SNAP for any reason	430,115	0.105
Exited SNAP with earnings	235,278	0.547
Jobless within next 12 Quarters	21,312	0.091
Average quarters from exit to joblessness	5.8	na
Applied for UI	8,680	0.407
Minus: less than 2 quarters of earnings	435	0.050
Minus: discrepancy in monetary eligibility	840	0.097
Minus: returned to SNAP before UI	2,820	0.325
Analysis sample	4,585	
Returned to SNAP within one year	2,837	0.619
UI beneficiaries	2,690	0.587
Returned to SNAP within one year	1,601	0.595
Non-Beneficiaries	1,895	0.413
Returned to SNAP within one year	1,236	0.652

**Impact of UI Benefit Receipt on Return to SNAP
within Four Calendar Quarters of UI BYB**

Methodology	Parameter estimate	Standard error	t-statistic
Difference in means – ATE	-0.057	0.015	-3.92
OLS full model – ATE (UI endo)	-0.023	0.019	-1.21
2SLS – ATE consistent estimator	-0.065	0.031	-2.08

OLS controls: UI eligibility vars, job separation reason, prior earnings, age, sex, race, education, job tenure, household composition, prior industry, year, month.
 2SLS instruments: monetary eligibility, job separation reason—quit, beneficiary on prior UI claim but not an exhaustee.

UI Receipt an Endogenous Predictor

Models of return to SNAP

- UI beneficiary status is an endogenous binary predictor—OLS is not a consistent estimator.
- Angrist (2001) recommends two-stage least squares (2SLS) as a consistent estimator.

The 2SLS Estimator

- Let $X = [X_1 \ X_2]$, where X_1 are one or more instruments for D (UI receipt = 1, else 0). We include the monetary eligibility variable in X_1 .
- $D = a + b_1X_1 + B_2X_2 + e$, is run by OLS.
- Let the predicted values of D from the OLS be $D(\theta)$, then the second stage of 2SLS is a consistent estimator of b_1 :
- $y = a + b_1D(\theta) + B_2X_2 + e$

Impact of UI Benefit Receipt on the Likelihood of Return to SNAP by Weekly Benefit Amount Quintile Group using Two-Stage Least Squares

Quintile of calculated WBA	Parameter estimate	Standard error	t-statistic
Bottom 20 percent	-0.049	0.050	-0.99
Quintile 2	0.043	0.066	0.65
Quintile 3	-0.027	0.071	-0.39
Quintile 4	0.086	0.076	1.12
Top 20 percent	-0.218	0.084	-2.61

Local Average Treatment Effects (LATE) at Low Income

- Examine SNAP leavers with low earnings prior to joblessness and UI application
- Regression Discontinuity (RD) strategy “treatment” above discontinuity
- Use WBA as an RD “forcing variable”
- $WBA = f(\text{base period earnings})$
- WBA imputed for all low income applicants
- $d = 1$ if $(WBA_{\text{calculated}} - WBA_{\text{minimum}}) \geq 0$

Minimum UI Eligibility and Benefits

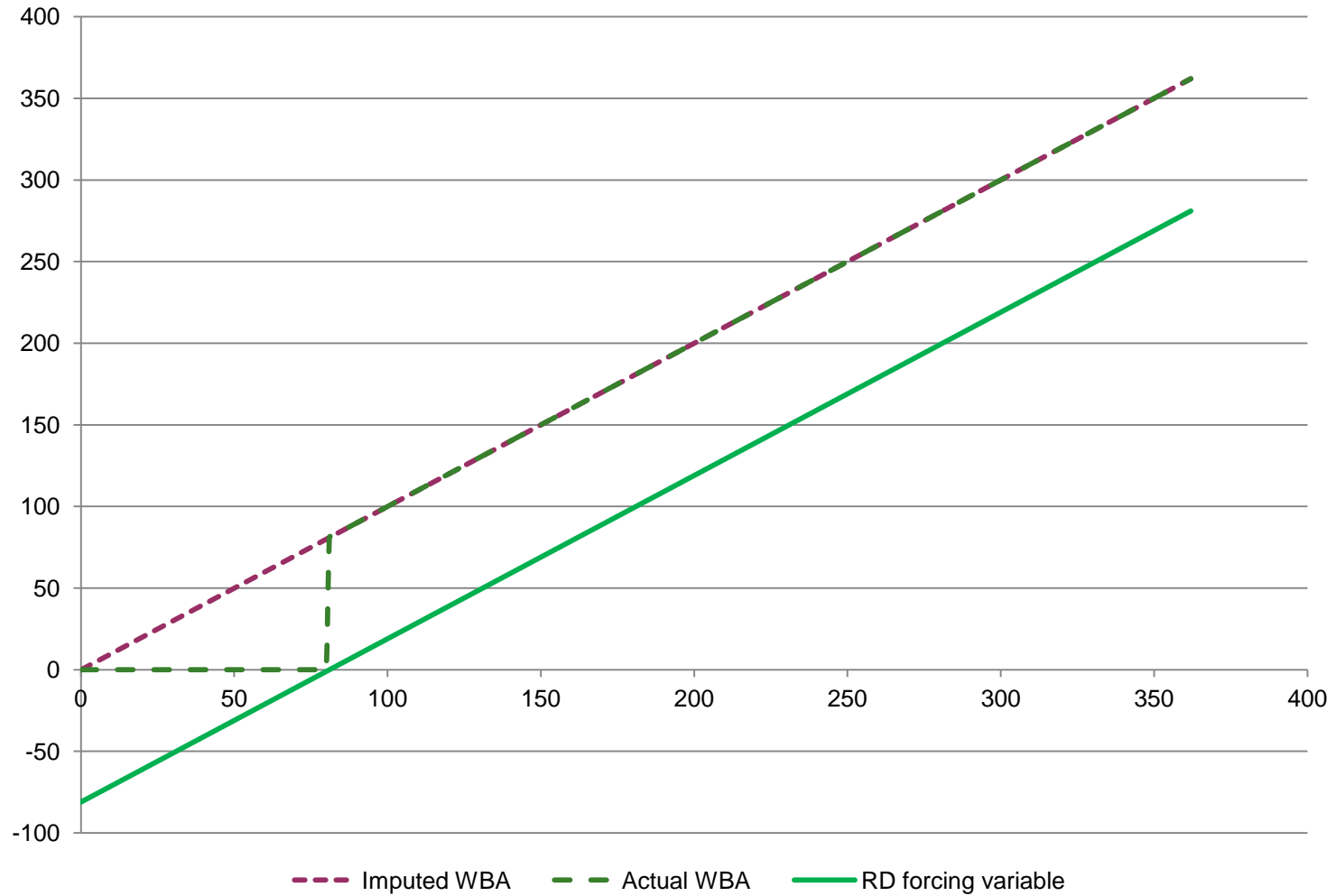
Michigan UI WBA = $0.041 * HQE$

Monetary eligibility requires: $\text{min } 1.5 * HQE$

From	To	Min HQE	Min BPE	Min WBA
Before	4/1/2007	\$1,998	\$2,997	\$81
4/1/2007	1/5/2008	\$2,697	\$4,046	\$110
1/6/2008	1/3/2009	\$2,774	\$4,161	\$113
1/4/2009	Since	\$2,871	\$4,307	\$117

WBA-Weekly benefit amount, HQE-High quarter earnings, BPE-Base period earnings

Actual and imputed UI WBA in Michigan



Identification in RD

- Identification requires that individuals are unable to precisely manipulate the forcing variable
- RD identification is tested like validity of random assignment
 - Baseline characteristics (predetermined variables) should have similar distributions just below and just above the threshold.

Identification, Sharp, Fuzzy RD

- No significant differences above and below threshold in mean values of:
 - Age, sex, race, income, number of children
 - Sharp RD versus Fuzzy RD
 - Some above threshold didn't get "treatment"
 - Imputed WBA = $f(\text{HQE}, \text{BPE})$
 - Instruments for identification
 - Monetary eligibility, quit prior job, prior UI no exh
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**Sharp Regression Discontinuity Models of the Impact of UI Benefit Receipt
on Return to SNAP around Minimum WBA Threshold**

Bandwidth	Total sample	At or above threshold	Below min WBA	OLS model		OLS with covariates	
				β	t-stat	β	t-stat
-2 to 1	43	30	13	-0.370	-1.93	-0.437	-2.12
-3 to 2	69	46	23	-0.384	-2.81	-0.394	-2.95
-4 to 3	105	71	34	-0.309	-2.94	-0.299	-2.77
-5 to 4	131	87	44	-0.307	-3.29	-0.306	-3.19
-6 to 5	159	107	52	-0.300	-3.43	-0.325	-3.70
-7 to 6	191	122	69	-0.257	-3.10	-0.273	-3.28
-8 to 7	223	141	82	-0.182	-2.27	-0.191	-2.36
-9 to 8	257	164	93	-0.171	-2.35	-0.178	-2.42
-10 to 9	294	186	108	-0.169	-2.46	-0.172	-2.50
-11 to 10	323	206	117	-0.083	-1.25	-0.086	-1.28

Fuzzy Regression Discontinuity Models of UI Benefit Receipt on Return to SNAP around the Minimum WBA Threshold

Band-width	Local linear		Quadratic		3rd order polynomial	
	β	<i>t</i> -stat	β	<i>t</i> -stat	β	<i>t</i> -stat
-2 to 1	-0.342	-1.42				
-3 to 2	-0.460	-2.87	-0.422	-2.50		
-4 to 3	-0.413	-2.94	-0.484	-3.66	-0.453	-3.25
-5 to 4	-0.367	-2.68	-0.531	-4.17	-0.492	-3.91
-6 to 5	-0.262	-1.70	-0.380	-2.56	-0.361	-2.27
-7 to 6	-0.262	-1.86	-0.369	-2.55	-0.421	-2.90
-8 to 7	-0.173	-1.20	-0.270	-1.97	-0.302	-1.99
-9 to 8	-0.187	-1.41	-0.162	-1.16	-0.246	-1.76
-10 to 9	-0.180	-1.43	-0.144	-1.08	-0.192	-1.42
-11 to 10	-0.053	-0.44	-0.113	-0.87	-0.055	-0.42
-12 to 11	-0.034	-0.29	-0.069	-0.55	-0.040	-0.31
-13 to 12	-0.044	-0.38	-0.077	-0.64	-0.077	-0.61
-14 to 13	-0.035	-0.31	-0.071	-0.58	-0.075	-0.62
-15 to 14	-0.069	-0.63	-0.080	-0.66	-0.105	-0.88
-16 to 15	-0.038	-0.35	-0.028	-0.23	-0.050	-0.41

**Impact of UI Benefit Receipt on Probability of Return to SNAP
within Four Calendar Quarters of UI BYB**

Methodology	Parameter estimate	Standard error	t-statistic
Difference in means – ATE	-0.057	0.015	-3.92
OLS full model – ATE	-0.023	0.019	-1.21
2SLS predicted UI – ATE	-0.065	0.031	-2.08
Sharp RD – LATE	-0.299	0.108	-2.77
Fuzzy RD – LATE	-0.413	0.140	-2.94

Summary

SNAP receipt between 2007 and 2010

During the year before UI application

- Up to 40% ineligible applicants
- Up to 20% UI beneficiaries
- Up to 25% UI exhaustees

During the year after UI application

- Up to 45% of UI non-beneficiaries
- Up to 28% of UI beneficiaries
- Up to 31% of UI exhaustees
- SNAP usage rates rose during the recession
- EUC slowed the flow from UI into SNAP

Summary

- Does UI reduce return to SNAP?
 - Average treatment effect -6.5 percentage points.
 - Among bottom 20 percent of beneficiary earners local average treatment effect (LATE) is negative but insignificant.
 - Among top 20 percent of beneficiary earners LATE is -21.8 percentage points, but the UI benefit is high enough to disqualify from SNAP.
 - Among those with low earnings just barely enough to qualify for UI, the LATE is about -41.3 percentage points. Suggesting at least temporary reduced dependence on SNAP.
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