# Age Differences and Macroeconomic Effects On Food Stamp Program Participation

## So Yeong Lim
Ph.D. Candidate
Department of Agricultural Economics
Purdue University
lim47@purdue.edu

## Susan E. Chen
Assistant Professor
Department of Economics, Finance and Legal Studies
University of Alabama
sechen@cba.ua.edu

## Brigitte S. Waldorf
Professor
Department of Agricultural Economics
Purdue University
bwaldorf@purdue.edu

# Age Differences and Macroeconomic Effects On Food Stamp Program Participation

## So Yeong Lim*, Susan E. Chen**, and Brigitte S. Waldorf*

\* Purdue University, \**University of Alabama

## Introduction

### Motivation

Well-known: persistent macro-economic effects on the duration of welfare participation (Fitzgerald, 1995; Hoynes, 2000; Ribar, 2005)

Little understood: age-specific effects of macroeconomic conditions on welfare participation propensities.

Significance : essential to predict future demand for food stamp benefits in view of the aging US population.
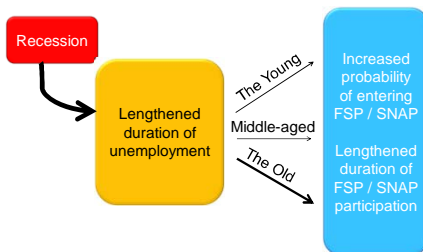
### Goals of Study

Investigation of:
- age differences in transitions into and out of the Food Stamp Program (FSP);
- macroeconomic impacts on FSP transitions;
- age differences in macroeconomic effect sizes.

Note: The FSP is currently called Supplemental Nutrition Assistance Program (SNAP).

## Conceptual Framework

- Age differences in unemployment duration: older people experience longer unemployment spells (Chan and Stevens, 2001)

## Data

### Data Source

Survey of Income and Program participation (SIPP) 2004 panel: monthly surveys during October 2003 to December 2007.

### Samples

Potentially FSP/SNAP-eligible persons:
- income < 200% of poverty threshold
  or
- authorized to receive FSP/SNAP benefits
  or
- actually participated in the FSP/SNAP

1. **Entry sample** (N=297,810)
   Household-month observations without participation in previous month
2. **Continuation sample** (N=100,170)
   Household-month observation with participation in previous month
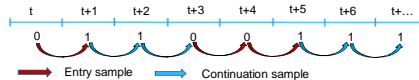
**Table**. FSP Participation Spells by Age

| Age | < 20 | 20-29 | 30-39 | 40-49 | 50-59 | 60+ | Total |
|---|---|---|---|---|---|---|---|
| Number of spells | 217 | 2,167 | 2,052 | 1,886 | 1,398 | 1,386 | 9,106 |
| Mean spell length [months] | 8.0 | 10.0 | 11.2 | 11.3 | 12.9 | 17.0 | 12.0 |

Source: Author's own calculation using SIPP 2004 panel

## Method

### Transitions into and out of the FSP/SNAP

t  t+1  t+2  t+3  t+4  t+5  t+6  t+...
0   1    1    1    0    1    1    1

— Entry sample    → Continuation sample

### Random Effects Probit

$$y_{it} = \begin{cases} 1 & \text{if a household } i \text{ participated in period } t \\ 0 & Otherwise \end{cases}$$

Entry: $P(y_{it}=1|y_{i,t-1}=0) = X_{it}\beta + u_{it}$

Continuation: $P(y_{it}=1|y_{i,t-1}=1) = X_{it}\beta + e_{it}$

$u_{it} = \mu_i + \varepsilon_{it}, \quad \mu_i \sim N(0,\sigma_\mu^2) \quad and \quad \varepsilon_{it} \sim N(0,\sigma_\varepsilon^2)$

$e_{it} = \nu_i + \eta_{it}, \quad \nu_i \sim N(0,\sigma_\nu^2) \quad and \quad \eta_{it} \sim N(0,\sigma_\eta^2)$

## Results and Discussion

**Table**. Parameter Estimates – Entry and Continuation Models

| Variable | Entry | | Continuation | |
|---|---|---|---|---|
| | Model 1 | Model 2 | Model 1 | Model 2 |
| Monthly household income | 4.0E-04*** | 4.0E-04*** | 3.9E-05*** | 3.9E-05** |
| | (2.1E-05) | (2.1E-05) | (1.7E-05) | (1.7E-05) |
| Monthly household income squared | -6.5E-09*** | -6.6E-09*** | -9.7E-10 | -9.8E-10 |
| | (1.9E-09) | (1.9E-09) | (9.0E-10) | (9.0E-10) |
| White | -0.388*** | -0.387*** | -0.065** | -0.066** |
| | (0.028) | (0.028) | (0.027) | (0.027) |
| Male | -0.294*** | -0.293*** | -0.224*** | -0.224*** |
| | (0.026) | (0.026) | (0.029) | (0.029) |
| Age under 20 | 1.307*** | 3.174*** | -0.846*** | -2.473*** |
| | (0.074) | (0.620) | (0.088) | (0.729) |
| Age 20-29 | 1.151*** | 1.400*** | -0.429*** | -0.858*** |
| | (0.041) | (0.285) | (0.045) | (0.325) |
| Age 30-39 | 0.919*** | 1.122*** | -0.364*** | -1.010*** |
| | (0.042) | (0.284) | (0.046) | (0.329) |
| Age 40-49 | 0.882*** | 1.318*** | -0.222*** | -0.727** |
| | (0.040) | (0.283) | (0.043) | (0.328) |
| Age 50-59 | 0.814*** | 0.913*** | -0.189*** | -0.650* |
| | (0.040) | (0.298) | (0.044) | (0.347) |
| College education | -0.257*** | -0.257*** | -0.094*** | -0.095*** |
| | (0.024) | (0.024) | (0.026) | (0.026) |
| Working status | -0.547*** | -0.548*** | -0.531*** | -0.531*** |
| | (0.023) | (0.023) | (0.026) | (0.026) |
| Marital status | -0.542*** | -0.543*** | -0.130*** | -0.131*** |
| | (0.028) | (0.028) | (0.031) | (0.031) |
| Number of kids within family | 0.141*** | 0.141*** | 0.165*** | 0.166*** |
| | (0.011) | (0.011) | (0.011) | (0.011) |
| Living in Metropolitan area | -0.112*** | -0.112*** | 0.013 | 0.009 |
| | (0.027) | (0.027) | (0.029) | (0.029) |
| Monthly state unemployment rate | 0.065*** | 0.102*** | 0.065*** | -0.034 |
| | (0.010) | (0.020) | (0.012) | (0.026) |
| Quarterly average weekly wages | -2.5E-04*** | -2.1E-04 | 2.3E-04*** | 3.2E-04 |
| | (9.5E-05) | (2.0E-04) | (1.0E-04) | (2.4E-04) |
| Age under 20 * Unemployment rate | | -0.056 | | 0.279*** |
| | | (0.067) | | (0.084) |
| Age 20-29 * Unemployment rate | | -0.036 | | 0.117*** |
| | | (0.030) | | (0.036) |
| Age 30-39 * Unemployment rate | | -0.032 | | 0.107*** |
| | | (0.030) | | (0.037) |
| Age 40-49 * Unemployment rate | | -0.054* | | 0.128*** |
| | | (0.030) | | (0.037) |
| Age 50-59 * Unemployment rate | | -0.074** | | 0.121*** |
| | | (0.032) | | (0.039) |
| Age under 20 * Wage | | -0.002*** | | 2.4E-04 |
| | | (0.001) | | (0.001) |
| Age 20-29 * Wage | | -8.1E-05 | | -2.3E-04 |
| | | (2.9E-04) | | (3.2E-04) |
| Age 30-39 * Wage | | -4.2E-05 | | 1.2E-04 |
| | | (2.8E-04) | | (3.1E-04) |
| Age 40-49 * Wage | | -2.0E-04 | | -2.1E-04 |
| | | (2.8E-04) | | (3.1E-04) |
| Age 50-59 * Wage | | 3.7E-04 | | -2.1E-04 |
| | | (2.9E-04) | | (3.3E-04) |
| Constant | -3.075*** | -3.295*** | 1.933*** | 2.369*** |
| | (0.104) | (0.204) | (0.113) | (0.245) |
| Log likelihood | -20559.1 | -20547.8 | -12841.8 | -12829.5 |
| Number of observation | 297,810 | 297,810 | 100,170 | 100,170 |

Notes: *** p<0.01, ** p<0.05, * p<0.1. Numbers in parentheses are standard errors.
Household income was deflated by Consumer Price Index (Base 1982-84=100).
The omitted age category is 60+.

### Acknowledgement

### Key Findings

| | Entry Probability | Continuation Probability |
|---|---|---|
| **Age differences** | *Decreases* as people get older | *Increases* as people get older |
| **Macro-economy** | Increase during recessions | |
| **Age differences in macroeconomic impact** | Younger people (age 20-29 and 30-39) enters the FSP at higher rate than older people in response to increasing unemployment rate. | Macro-economic impacts for the elderly (60+) is significantly smaller than for other age groups. Increases in the unemployment rate most strongly affects the continuation probabilities of the very young. |

### Other Findings:

- Extremely poor households do not enter the FSP/SNAP.
- Being white, male, college educated, working, or married lowers the chances of entering and of staying in the FSP/SNAP.
- Having children increases the chances of entering and staying in the FSP/SNAP.
- Living in metropolitan areas decreases the probability of entry in the FSP.

### References

Chan, S. and A. Stevens (2001). Job loss and employment patterns of older workers. *Journal of Labor Economics 19* (2), 484-521.

Fitzgerald, J. (1995). Local labor markets and local area effects on welfare duration. *Journal of Policy Analysis and Management 14* (1), 43-67.

Hoynes, H. (2000). Local labor markets and welfare spells: do demand conditions matter? *Review of Economics and Statistics 82* (3), 351-368.

Ribar, D. (2005). Transitions from Welfare and the Employment Prospects of Low-Skill Workers. *Southern Economic Journal 71* (3), 514-534.

### Contact Information
Please contact lim47@purdue.edu for more information.

### Conceptual Framework diagram

Recession → Lengthened duration of unemployment → (The Young / Middle-aged / The Old) → Increased probability of entering FSP / SNAP; Lengthened duration of FSP / SNAP participation