
ECON 4438 Paper 3

Impact of a Change from NAP to
SNAP on Employment in Puerto Rico

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Introduction

SNAP:

- United States food stamps program
- Federal program funded based on need

NAP:

- Puerto Rico food stamp program
- Fixed grant given by United States government

Should SNAP replace NAP given it increases number of eligible individuals and benefit amounts?

Goal of Paper

- Counterfactual simulation to estimate impact of program change from NAP to SNAP on labor
- Measuring:
 - Change in probability of employment
 - Change in number of hours worked
 - Change in take up rate of benefits

Data

- Puerto Rico Community Survey Public Use Microdata Sample (PRCS PUMS) for 2023
- 27,427 individual/household level observations
- For each individual, information on their personal characteristics, employment status, income, welfare receipt, and survey weight was taken

Model Overview

- Eligibility and benefit amount for both NAP and SNAP calculated using program schedules
- Probit regression of employment on received benefit amounts and controls, separate for men and women
- Regression of weekly hours worked on received benefit amounts and controls
- Probit regression of benefit receipt given eligibility for program on received benefit amounts and controls
- Calculation of differences between NAP and SNAP

Results - Employment

- Average elasticity of employment in response to changes in benefit amounts is -0.039164
- A transition from NAP to SNAP results in 72, 671 less individuals being employed
- This is a 5.543% increase in overall unemployment rate for the population of Puerto Rico

Results - Hours Worked

- Average elasticity of weekly hours worked in response to changes in benefit amounts is -0.017788
- A transition from NAP to SNAP reduces the weekly number of hours worked by the population by 720,194
- This is a 1.5598% decrease in the number of hours worked by the entire population of Puerto Rico

Results - Take Up

- Average elasticity of benefit take up in response to changes in benefit amounts is 0.05577
- A transition from NAP to SNAP results in 35,351 more eligible individuals actually receiving benefits
- This is a 4.68% increase in the take up rate of benefits across the population of Puerto Rico



Questions?

Appendix

Left - Men's Employment

$$\begin{aligned} \text{Employment} = \Phi(\alpha + \beta_1 \text{SimBenefits} + \beta_2 \text{HighSchool} + \beta_3 \text{GED} + \beta_4 \text{Associates} \\ + \beta_5 \text{Bachelors} + \beta_6 \text{Masters} + \beta_7 \text{Doctorate} + \beta_8 \text{Closure1} \\ + \beta_9 \text{Closure2} + \beta_{10} \text{Closure3} + \beta_{11} \text{Closure4} + \beta_{12} \text{Age} + \beta_{13} \text{Age}^2 \\ + \beta_{14} \text{Married}) \end{aligned}$$

Right - Women's Employment

$$\begin{aligned} \text{Employment} = \Phi(\alpha + \beta_1 \text{SimBenefits} + \beta_2 \text{HighSchool} + \beta_3 \text{GED} + \beta_4 \text{Associates} \\ + \beta_5 \text{Bachelors} + \beta_6 \text{Masters} + \beta_7 \text{Doctorate} + \beta_8 \text{NOC} + \beta_9 \text{OCUnder6} \\ + \beta_{10} \text{FER} + \beta_{11} \text{Age} + \beta_{12} \text{Age}^2 + \beta_{13} \text{Married}) \end{aligned}$$

	<i>Employment</i>
<i>SimBenefit</i>	−0.003 *** (1.52 × 10 ^{−6})
<i>HighSchool</i>	−0.0321 *** (0.006)
<i>GED</i>	−0.2216 *** (0.012)
<i>Associates</i>	0.0600 *** (0.008)
<i>Bachelors</i>	0.0877 *** (0.007)
<i>Masters</i>	0.3149 *** (0.014)
<i>Doctorate</i>	0.2720 *** (0.025)
<i>Closure1</i>	0.2038 *** (0.013)
<i>Closure2</i>	−0.0433 *** (0.011)
<i>Closure3</i>	0.1037 *** (0.1037)
<i>Closure4</i>	0.9098 *** (0.022)
<i>Age</i>	0.0644 *** (0.001)
<i>Age</i> ²	−0.0007 *** (9.8 × 10 ^{−6})
<i>Married</i>	0.3877 *** (0.006)
<i>CNST</i>	−0.0237 (0.018)
Pseudo R ²	1.00
No. obs.	5053

	<i>Employment</i>
<i>SimBenefit</i>	−0.0004 *** (1.67 × 10 ^{−6})
<i>HighSchool</i>	−0.0363 *** (0.007)
<i>GED</i>	−0.1796 *** (0.015)
<i>Associates</i>	0.1383 *** (0.008)
<i>Bachelors</i>	0.2916 *** (0.007)
<i>Masters</i>	0.2184 *** (0.011)
<i>Doctorate</i>	0.3050 *** (0.021)
<i>NOC</i>	0.1888 *** (0.004)
<i>OCUnder6</i>	0.0802 *** (0.011)
<i>FER</i>	0.2660 *** (0.021)
<i>Age</i>	0.0456 *** (0.0456)
<i>Age</i> ²	−0.0004 *** (1.32 × 10 ^{−5})
<i>Married</i>	0.1444 *** (0.006)
<i>CNST</i>	0.2429 *** (0.021)
Pseudo R ²	1.00
No. obs.	4895

Appendix

Hours Worked Regression

$$WKHP = \alpha + \beta_1 SimBenefit + \beta_2 WageIncome + \beta_3 HighSchool + \beta_4 GED + \beta_5 Associates + \beta_6 Bachelors + \beta_7 Masters + \beta_8 Doctorate + \beta_9 Age + \beta_{10} Age^2 + \beta_{11} Female + \beta_{12} Married$$

	<i>WKHP</i>
<i>SimBenefit</i>	-0.0010 *** (7.14 × 10 ⁻⁵)
<i>WageIncome</i>	6.196 × 10 ⁻⁵ *** (2.84 × 10 ⁻⁶)
<i>HighSchool</i>	0.0698 (0.296)
<i>GED</i>	-0.6320 (0.350)
<i>Associates</i>	1.3087 *** (0.329)
<i>Bachelors</i>	1.9162 *** (0.287)
<i>Masters</i>	2.0117 *** (0.418)
<i>Doctorate</i>	0.7937 (0.753)
<i>Age</i>	0.6653 *** (0.043)
<i>Age</i> ²	-0.0075 *** (0.0001)
<i>Female</i>	1.7325 *** (0.204)
<i>Married</i>	-0.2845 (0.223)
<i>INDP2</i>	-1.3132 *** (0.372)
<i>INDP3</i>	-2.4876 *** (0.339)
<i>INDP4</i>	-1.9969 *** (0.312)
<i>INDP5</i>	2.6632 *** (0.670)
<i>CNST</i>	20.1419 *** (0.916)

Appendix

Benefit Take Up Regression

$$P(WelfareReceipt|Eligible = 1) = \Phi(\alpha + \beta_1 SimulatedBenefit + \beta_2 HouseholdSize + \beta_3 Age + \beta_4 Age^2 + \beta_5 Female)$$

	<i>Employment</i>
<i>SimBenefit</i>	$7.91 \times 10^{-5} ***$ (1.01×10^{-6})
<i>HouseholdSize</i>	$0.0572 ***$ (0.002)
<i>R65</i>	$-0.1736 ***$ (0.004)
<i>Age</i>	$-0.0061 ***$ (0.0003)
<i>Age</i> ²	$6.584 \times 10^{-5} ***$ (3.47×10^{-6})
<i>Female</i>	$0.117 ***$ (0.004)
<i>CNST</i>	$0.7387 ***$ (0.008)
Pseudo <i>R</i> ²	0.9218
No. obs.	7866