Working for Your Bread: The Labor Supply Effects of SNAP

By Marianne Bitler, Jason Cook, and Jonathan Rothbaum

A1. Benefit Formula Details

Net income is calculated by subtracting the following deductions: the *standard deduction* meant to allow for routine unavoidable costs (in 2020, the standard deduction for a household with 1-3 members was $167), the *earnings deduction* of 20% of any earnings, the *dependent care deduction* for expenses on child or dependent care required for the recipient to work, the *child support deduction* for child support payments, the *medical expense deduction* for medical expenses exceeding $35 a month for elderly or disabled members, and finally an *excess shelter deduction*. The excess shelter deduction is the amount of housing costs that surpass net income after applying all other disregards. This amount has an upper-limit determined by the federal government.

Shelter deductions are a function of countable income and shelter expenditures, which can include housing payments, rent, and utility payments. The countable income for a case is calculated by combining unearned income with earned income (after applying the 20% disregard) and all deductions besides the shelter deduction (i.e., $CntInc = UnErnInc + 0.8 ErnInc - OtrDed$). The shelter deduction is then calculated as any excess shelter costs above half of the countable income up to some cap ($SheltDed = min\left[Cap, ShelCosts - \frac{CntInc}{2}\right]$). Next, net income is simply countable income after the shelter deduction is applied ($NI = CntInc - SheltDed$). Finally, benefits are calulated as follows: $Benefits = max\left[MaxBenefit - 0.3 * NI, MinBenefit\right]$.

There is also a gross income limit of 130% of the Federal Poverty Guideline, which is rarely binding, and does not apply in some states using rules called Broad-Based Categorical Eligibility. During the years of the data, Oregon used Broad Based Categorical Eligibility to raise the gross income test to 185% of the federal poverty line, while Colorado eliminated an asset test (not discussed here) and left the gross income test at 130%.

A2. Figure and Tables

Table A1—: Net Income Formula and Descriptive Statistics.

Sample	Colorado (2012-2013)		Oregon (2009-2019)	
	Full (1)	Earner (2)	Full (3)	Earner (4)
Earned Income	329.3 (681.0)	954.8 (500.1)	344.2 (695.9)	1,033.0 (566.8)
Unearned Income	378.2 (465.1)	75.6 (195.7)	401.5 (500.9)	52.6 (162.9)
WTR Child Care Ded.	0.04 (0.19)	0.09 (0.29)		
Child Care Ded. (> 0)	264.7 (492.8)	244.5 (190.4)		
WTR Child Support Ded.	0.02 (0.14)	0.02 (0.14)		
Child Support Ded. (> 0)	281.6 (317.8)	277.4 (175.2)		
WTR Medical Ded.	0.05 (0.21)	0	0.09 (0.28)	0
Medical Ded. (> 0)	347.5 (4,743.0)	0		
WTR Shelter Ded.	0.74 (0.44)	0.86 (0.34)	0.74 (0.44)	0.89 (0.31)
Shelter Ded. (> 0)	405.1 (261.8)	386.1 (136.6)	425.6 (186.9)	412.0 (120.7)
Benefit Amount	288.0 (205.6)	356.6 (195.5)	226.8 (165.6)	267.1 (184.5)
ABAWD	0.13 (0.33)	0.13 (0.34)	0.30 (0.46)	0.37 (0.48)
Elderly/Disabled	0.35 (0.48)	0	0.34 (0.48)	0
N	5,665,000	1,331,000	49,270,000	10,180,000

Note: The table provides means and standard deviations (in parentheses) of different inputs to the SNAP benefits formula. Columns 1 and 3 are for the full sample of SNAP recipients, while columns 2 and 4 limit observations to the "earner sample," i.e., cases with at least one dollar of earned income and that have no elderly or disabled members. Row headers with (> 0) signify that the average amount conditions on having a non-zero value for the given disregard.
Source: Administrative SNAP data, Colorado and Oregon.

Table A2—: Bunching Estimates (Net Income = 0).

	Colorado		Oregon	
	Density	Frequency	Density	Frequency
Full Earner Sample	0.000*	-221.9*	0.001***	410,200***
	(0.000)	(4,696)	(0.000)	(28,110)
# in SNAP Unit				
1	-0.000	-371.1	0.002***	398,500***
	(0.000)	(3,775)	(0.000)	(26,740)
2	0.000**	3,984**	0.000**	12,570**
	(0.000)	(2,063)	(0.000)	(5,350)
3	0.000*	3,295*	0.000	4,739
	(0.000)	(2,030)	(0.000)	(3,718)
4+	-0.000	-363.7	-0.000	-5,523
	(0.000)	(1,272)	(0.000)	(4,076)
Amount of Shelter Deduction				
$0	0.002***	14,360***	0.002	111,800
	(0.000)	(3,222)	(0.003)	(150,200)
$1-299	0.000	2,469	-0.001	-61,130
	(0.000)	(2,595)	(0.000)	(36,630)
$300-499	-0.000	-9,652	-0.000	-1,651
	(0.000)	(4,248)	(0.000)	(20,060)
$500+	-0.001	-666.1	-0.000	-14,560
	(0.000)	(266.8)	(0.000)	(8,464)

	Colorado			
	No Self Emp. Income		Some Self Emp. Income	
	Density	Frequency	Density	Frequency
# in SNAP Unit				
1	-0.000	-4,625	0.002***	3,470***
	(0.000)	(3,517)	(0.000)	(475.9)
2	0.000*	2,367*	0.000*	613.3*
	(0.000)	(1,764)	(0.000)	(468.8)
3	0.000*	2,686*	0.000	249.3
	(0.000)	(1,619)	(0.000)	(477.7)
4+	0.000	138.6	-0.000	-221.9
	(0.000)	(1,171)	(0.000)	(429.9)

Note: Bunching estimates and standard errors (in parethneses) are calculated using the method explained in Section **??**. *, **, and *** denote statistical significant respectively at $p < 0.10$, $p < 0.05$, and $p < 0.01$.
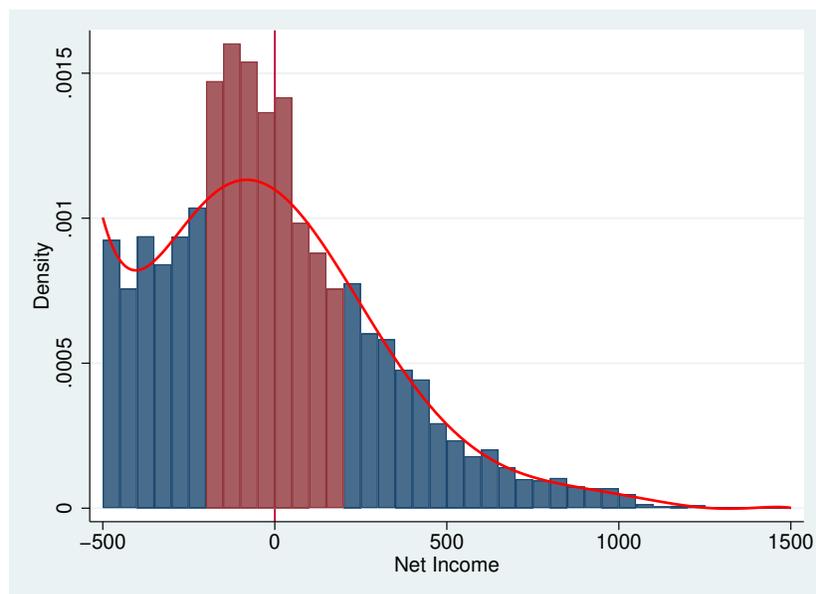*Source:* Administrative SNAP data, Colorado and Oregon.

Figure A1. : Example of Bunching Calculation — Colorado Single-Unit Cases with Self-Employment Income

Note: Bunching is estimated by fitting a seventh degree polynomial to the count data and including bin fixed effects for each bin within $200 of either side of the net income equals zero kink (in red). Bunching is calculated by summing together the bin fixed effects. This figure is the density of Colorado single-unit cases with some self-employment income.
Source: Administrative SNAP data, Colorado.
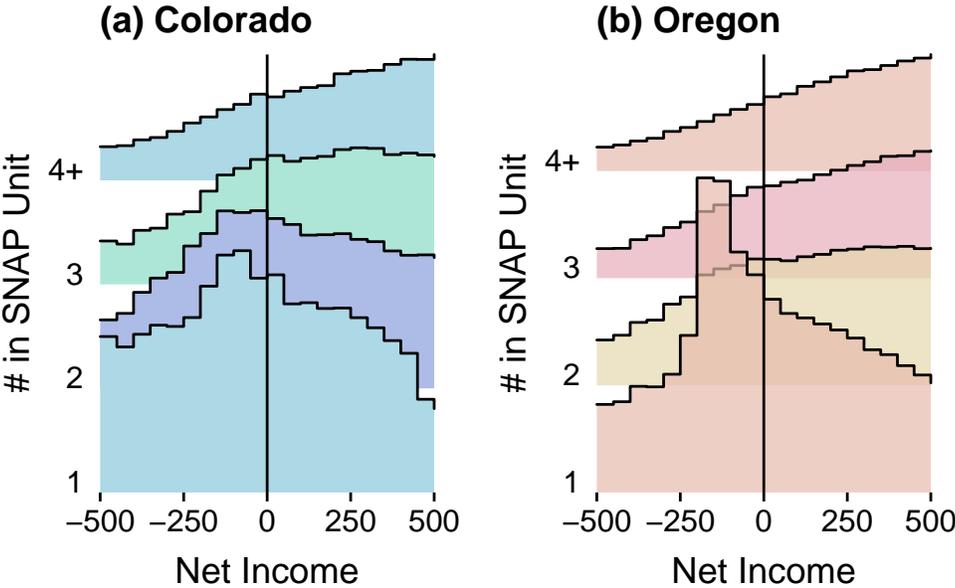
(a) Colorado　　　　**(b) Oregon**

Figure A2. : Density of Cases by Case Size Near Net Income =0

Note: Panels A and B plot SNAP case densities by net income (x-axis) and by the number of people in the SNAP unit.
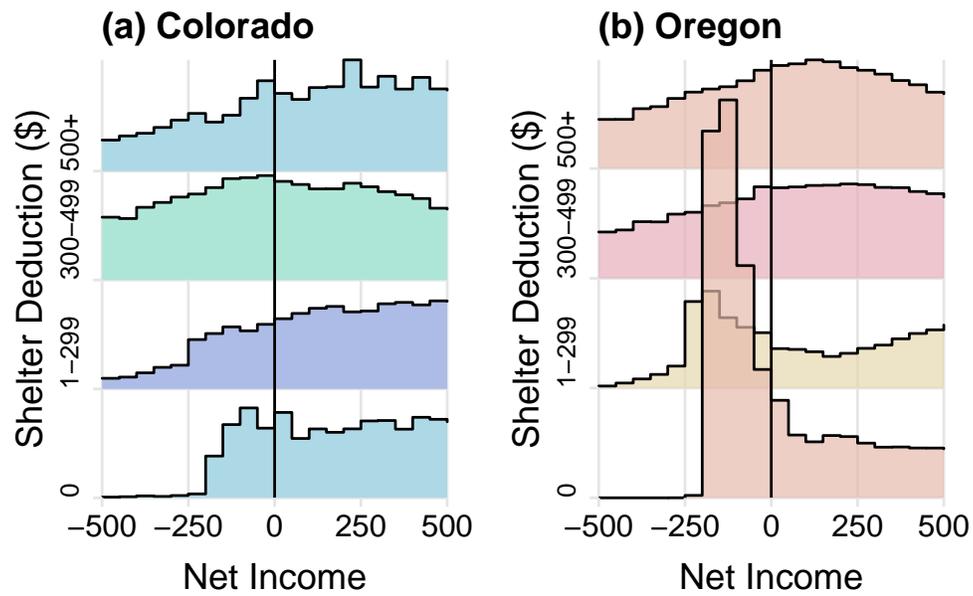*Source:* Administrative SNAP data, Colorado and Oregon.

Figure A3. : Density of Cases by Shelter Deduction Near Net Income =0

Note: Panels A and B plot SNAP case densities by net income (x-axis) and by levels of shelter deduction.

Source: Administrative SNAP data, Colorado and Oregon.