

AJAE Appendix for Unemployment Benefits, Food Insecurity, and
Supplemental Nutrition Assistance Program Spending

WEI FU CHEN HUANG FENG LIU

2022-04-05

Note: The material contained herein is supplementary to the article named in the title and published
in the *American Journal of Agricultural Economics*.

Table A1. Effect of Unemployment Insurance on Household Food Insecurity, Alternative Samples

Variable	(1) Types (1-4)+52 weeks	(2)	(3) Types (1-3)+26 weeks	(4)	(5) Types (1-3)+52 weeks	(6)	(7) Types (1-2)+26 weeks	(8)
<i>Food insecurity status</i>								
Maximum weekly UI benefit (in \$100)	-0.025*** (0.009)	-0.024** (0.011)	-0.021** (0.009)	-0.026*** (0.009)	-0.024** (0.010)	-0.029*** (0.010)	-0.023** (0.010)	-0.029** (0.011)
Observations	32,406	32,406	23,360	23,360	27,538	27,538	18,968	18,968
Mean dependent variable	0.417	0.417	0.415	0.415	0.422	0.422	0.396	0.396
<i>Food insecurity level</i>								
Maximum weekly UI benefit (in \$100)	-0.152*** (0.051)	-0.271*** (0.066)	-0.205*** (0.052)	-0.308*** (0.071)	-0.151** (0.061)	-0.275*** (0.073)	-0.183*** (0.068)	-0.274*** (0.086)
Observations	13,516	13,516	9,691	9,691	11,620	11,620	7,509	7,509
Mean dependent variable	4.785	4.785	4.766	4.766	4.799	4.799	4.746	4.746
State-level welfare policies	Y	Y	Y	Y	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y	Y	Y
State-specific linear trend		Y		Y		Y		Y

Table A1 (continued). Effect of Unemployment Insurance on Household Food Insecurity, Alternative Samples

Variable	(9)	(10)	(11)	(12)	(13)	(14)
	Types (1-2)+52 weeks	Types (1-6)+26 weeks	Types (1-6)+26 weeks	Types (1-6)+26 weeks	Types (1-6)+52 weeks	Types (1-6)+52 weeks
<i>Food insecurity status</i>						
Maximum weekly UI benefit (in \$100)	-0.026** (0.010)	-0.034*** (0.011)	-0.017** (0.008)	-0.012* (0.007)	-0.019** (0.008)	-0.015* (0.009)
Observations	22,419	22,419	40,467	40,467	47,644	47,644
Mean dependent variable	0.405	0.405	0.422	0.422	0.430	0.430
<i>Food insecurity level</i>						
Maximum weekly UI benefit (in \$100)	-0.145** (0.068)	-0.245*** (0.080)	-0.148*** (0.042)	-0.193*** (0.055)	-0.126*** (0.044)	-0.171*** (0.054)
Observations	9,081	9,081	17,071	17,071	20,473	20,473
Mean dependent variable	4.788	4.788	4.694	4.694	4.733	4.733
State-level welfare policies	Y	Y	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y
State-specific linear trend		Y		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on household food insecurity using equations 1 and 2 with the CPS-FSS weights. The six unemployment types are respectively job losers (on temporary layoffs), other job losers, temporary job ended, job leavers, re-entrants, and new entrants. We run a number of robustness checks combining different unemployment types with different lengths of unemployment spells. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A2. Effect of Unemployment Insurance on SNAP Enrollment (Alternative Sample), 1st Part

Variable	(1)	(2)	(3)	(4)
	SNAP enrollment			
Maximum weekly UI benefit (in \$100)	-0.019*** (0.006)	-0.017*** (0.005)	-0.011*** (0.003)	-0.010** (0.004)
Observations	78,540	78,540	78,540	78,540
Mean dependent variable	0.141	0.141	0.141	0.141
State-level policies			Y	Y
State-level economic attributes		Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend				Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on the likelihood of enrolling in SNAP for all families whose claimed UI benefits are above \$100 with the March CPS weights. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A3. Effect of Unemployment Insurance on SNAP Benefits (Alternative Sample), 2nd Part

Variable	(1)	(2)	(3)	(4)
	SNAP benefits			
Maximum weekly UI benefit (in \$100)	-237.372** (92.765)	-205.168** (79.758)	-228.772*** (77.547)	-175.824* (97.526)
Observations	11,082	11,082	11,082	11,082
Mean dependent variable	2877.407	2877.407	2877.407	2877.407
State-level policies			Y	Y
State-level economic attributes		Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend				Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on the amount of SNAP benefits received by households who participate in both UI and SNAP programs using the March CPS weights. Unlike the primary analyses in Table 6, we now add the restriction that the claimed annual UI benefits have to be above \$100 in concern of any reporting error. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A4. Effect of Unemployment Insurance on Demographics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variable	Head age		Married		Share of whites		Presence of children under 6		Share of members aged 20-60	
<i>UI-eligible sample</i>										
Maximum weekly UI benefit (in \$100)	-0.613***	-0.465***	0.003	-0.010	-0.005	0.009	0.006	0.011	0.001	-0.001
	(0.183)	(0.166)	(0.009)	(0.008)	(0.007)	(0.006)	(0.004)	(0.009)	(0.002)	(0.002)
Observations	27,670	27,670	27,670	27,670	27,670	27,670	27,670	27,670	27,670	27,670
Mean dependent variable	43.231	43.231	0.508	0.508	0.791	0.791	0.235	0.235	0.698	0.698
<i>UI-recipient sample</i>										
Maximum weekly UI benefit (in \$100)	0.097	0.125	0.000	-0.000	0.002	0.002	0.002	0.003	0.001	-0.000
	(0.074)	(0.100)	(0.006)	(0.009)	(0.005)	(0.005)	(0.003)	(0.004)	(0.002)	(0.002)
Observations	78,991	78,991	78,991	78,991	78,991	78,991	78,991	78,991	78,991	78,991
Mean dependent variable	43.283	43.283	0.569	0.569	0.785	0.785	0.269	0.269	0.674	0.674
State-level welfare policies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
State-specific linear trend		Y		Y		Y		Y		Y

Table A4 (continued). Effect of Unemployment Insurance on Demographics

Variable	(11) Share of high school degrees	(12)	(13) Share of some college and more	(14)	(15) One-person family	(16)	(17) Regular-sized family	(18)
<i>UI-eligible sample</i>								
Maximum weekly UI benefit (in \$100)	0.001 (0.005)	-0.008 (0.005)	-0.003 (0.005)	0.006 (0.006)	0.007 (0.007)	0.002 (0.007)	0.010 (0.009)	0.013 (0.010)
Observations	27,670	27,670	27,670	27,670	27,670	27,670	27,670	27,670
Mean dependent variable	0.304	0.304	0.308	0.308	0.113	0.113	0.806	0.806
<i>UI-recipient sample</i>								
Maximum weekly UI benefit (in \$100)	0.003 (0.005)	0.005 (0.004)	-0.001 (0.004)	-0.000 (0.004)	-0.008** (0.003)	-0.003 (0.003)	0.012*** (0.004)	0.006 (0.005)
Observations	78,991	78,991	78,991	78,991	78,991	78,991	78,991	78,991
Mean dependent variable	0.276	0.276	0.318	0.318	0.116	0.116	0.813	0.813
State-level welfare policies	Y	Y	Y	Y	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y	Y	Y
State-specific linear trend		Y		Y		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on demographics of the UI-eligible households using the CPS-FSS weights and the sample of UI-recipients using the March CPS weights. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A5. Effect of Unemployment Insurance on Food Insecurity: Two-Month Average

Variable	(1)	(2)	(3)	(4)
	Food insecurity status		Food insecurity level	
Maximum weekly UI benefit (in \$100)	-0.027*** (0.010)	-0.027** (0.012)	-0.190*** (0.066)	-0.296*** (0.097)
Observations	27,670	27,670	11,343	11,343
Mean dependent variable	0.410	0.410	4.754	4.754
State-level welfare policies	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on both the likelihood and the conditional severity of household food insecurity using the two-month averages of state maximum weekly UI benefits with the CPS-FSS weights. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A6. Effect of Unemployment Insurance on SNAP Usage: Two-Month Average

Variable	(1)	(2)	(3)	(4)
	SNAP enrollment		SNAP benefits	
Maximum weekly UI benefit (in \$100)	-0.014*** (0.004)	-0.014*** (0.005)	-264.802*** (98.361)	-193.488 (122.859)
Observations	78,991	78,991	11,159	11,159
Mean dependent variable	0.141	0.141	2877.492	2877.492
State-level welfare policies	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on both SNAP participation and the claimed value of SNAP benefits using the two-month averages of state maximum weekly UI benefits with the March CPS weights. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A7. Effect of Unemployment Insurance on Food Insecurity Status: Alternative Measure

Variable	(1)	(2)	(3)	(4)
	Food insecurity status			
Maximum weekly UI benefit (in \$100)	-0.016*** (0.005)	-0.015*** (0.005)	-0.020*** (0.006)	-0.028*** (0.007)
Observations	27,670	27,670	27,670	27,670
Mean dependent variable	0.270	0.270	0.270	0.270
State-level welfare policies			Y	Y
State-level economic attributes		Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend				Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on household food insecurity status using the commonly-used binary measure with the CPS-FSS weights. Specifically, the dependent variable is coded as 1 if the household has low or very low food security, and 0 if the household is highly or moderately food secure. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A8. Effect of Unemployment Insurance on Food Insecurity: Log UI

Variable	(1)	(2)	(3)	(4)
	Food insecurity status		Food insecurity level	
Log maximum weekly UI benefit	-0.112** (0.046)	-0.106** (0.052)	-0.866*** (0.271)	-1.395*** (0.375)
Observations	27,670	27,670	11,343	11,343
Mean dependent variable	0.410	0.410	4.754	4.754
State-level welfare policies	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on both the likelihood and the conditional severity of household food insecurity using the logarithm of state maximum weekly UI benefits with the CPS-FSS weights. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A9. Effect of Unemployment Insurance on SNAP Usage: Log UI

Variable	(1)	(2)	(3)	(4)
	SNAP enrollment		SNAP benefits	
Log maximum weekly UI benefit	-0.065*** (0.019)	-0.059** (0.025)	-1156.021*** (417.068)	-941.304* (534.903)
Observations	78,991	78,991	11,159	11,159
Mean dependent variable	0.141	0.141	2877.492	2877.492
State-level welfare policies	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on both SNAP participation and the claimed value of SNAP benefits using the logarithm of state maximum weekly UI benefits with the March CPS weights. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A10. Effect of Unemployment Insurance on Food Insecurity, Subsample

Variable	(1)	(2)	(3)	(4)
	Food insecurity status		Food insecurity level	
	Households with children under 5			
Maximum weekly UI benefit (in \$100)	-0.034** (0.017)	-0.013 (0.025)	-0.123* (0.071)	-0.225** (0.091)
Observations	5,846	5,846	3,167	3,167
Mean dependent variable	0.542	0.542	4.313	4.313
	Households without children under 5			
Maximum weekly UI benefit (in \$100)	-0.022*** (0.008)	-0.025*** (0.008)	-0.224*** (0.064)	-0.314*** (0.083)
Observations	21,824	21,824	8,176	8,176
Mean dependent variable	0.375	0.375	4.925	4.925
	Households with high-educated members			
Maximum weekly UI benefit (in \$100)	-0.018* (0.009)	-0.013 (0.013)	-0.149 (0.106)	-0.180* (0.102)
Observations	15,413	15,413	5,313	5,313
Mean dependent variable	0.345	0.345	4.678	4.678
	Households without high-educated members			
Maximum weekly UI benefit (in \$100)	-0.036** (0.014)	-0.036** (0.016)	-0.234*** (0.077)	-0.316*** (0.081)
Observations	12,257	12,257	6,030	6,030
Mean dependent variable	0.492	0.492	4.821	4.821
State-level welfare policies	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on both the likelihood and the conditional severity of household food insecurity separately for subsamples of households using the CPS-FSS weights. We consider households with and without children under age 5, and those that do and do not have members with education levels above high school. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A11. Effect of Unemployment Insurance on SNAP Usage, Subsample

Variable	(1)	(2)	(3)	(4)
	SNAP enrollment		SNAP benefits	
	Households with children under 5			
Maximum weekly UI benefit (in \$100)	-0.019** (0.007)	-0.026*** (0.009)	-261.767*** (81.216)	-217.723* (111.553)
Observations	21,217	21,217	4,980	4,980
Mean dependent variable	0.235	0.235	3474.786	3474.786
	Households without children under 5			
Maximum weekly UI benefit (in \$100)	-0.008* (0.004)	-0.005 (0.005)	-200.691** (91.892)	-141.993 (124.367)
Observations	57,774	57,774	6,179	6,179
Mean dependent variable	0.107	0.107	2396.099	2396.099
	Households with high-educated members			
Maximum weekly UI benefit (in \$100)	-0.011*** (0.004)	-0.014*** (0.004)	-216.778 (146.859)	35.245 (190.971)
Observations	47,084	47,084	5,182	5,182
Mean dependent variable	0.110	0.110	2797.075	2797.075
	Households without high-educated members			
Maximum weekly UI benefit (in \$100)	-0.010* (0.006)	-0.003 (0.006)	-225.034*** (65.886)	-241.728*** (68.600)
Observations	31,907	31,907	5,977	5,977
Mean dependent variable	0.187	0.187	2947.212	2947.212
State-level welfare policies	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on both SNAP participation and the claimed value of SNAP benefits separately for subsamples of households using the March CPS weights. We consider households with and without children under age 5 in the upper two panels. We measure children's ages based on the year that the SNAP questions were referred to. We also study the respective impacts for households that do and do not have members with education levels above high school. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A12. Placebo Effects of Unemployment Insurance on Food Insecurity

Variable	(1)	(2)	(3)	(4)
	Food insecurity		Food insecurity level	
<i>Panel A: Re-/new entrants:</i>				
Maximum weekly UI benefit (in \$100)	-0.005 (0.012)	0.009 (0.014)	-0.091 (0.064)	0.029 (0.090)
Observations	17,328	17,328	8,073	8,073
Mean dependent variable	0.466	0.466	4.667	4.667
<i>Panel B: Job leavers with unemployment duration > 26 weeks:</i>				
Maximum weekly UI benefit (in \$100)	0.049* (0.027)	0.059 (0.049)	-0.134 (0.334)	-0.195 (0.673)
Observations	954	954	420	420
Mean dependent variable	0.440	0.440	4.898	4.898
<i>Panel C: Re-/new entrants or job leavers with unemployment duration > 26 weeks:</i>				
Maximum weekly UI benefit (in \$100)	-0.001 (0.012)	0.012 (0.014)	-0.088 (0.066)	0.016 (0.093)
Observations	18,295	18,295	8,500	8,500
Mean dependent variable	0.465	0.465	4.679	4.679
<i>Panel D: Not in the labor force:</i>				
Maximum weekly UI benefit (in \$100)	0.005 (0.005)	0.009 (0.008)	0.020 (0.030)	0.061 (0.054)
Observations	58,997	58,997	25,000	25,000
Mean dependent variable	0.424	0.424	5.245	5.245
State-level policies	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
State-specific linear trend		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on both the likelihood and the conditional severity of household food insecurity using equations 1 and 2 with the CPS-FSS weights based on UI-ineligible households. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A13. Effect of Unemployment Insurance on Food Insecurity Status Transition

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Food security to low food security	Food security to low food security	Low food security to very low food security	Low food security to very low food security	Food security to very low food security	Food security to very low food security
Maximum weekly UI benefit (in \$100)	-0.001 (0.006)	-0.007 (0.006)	-0.054*** (0.018)	-0.054*** (0.016)	-0.027*** (0.008)	-0.032*** (0.007)
Observations	0.182	0.182	0.396	0.396	0.128	0.128
Mean dependent variable	24,713	24,713	7,461	7,461	23,166	23,166
State-level welfare policies	Y	Y	Y	Y	Y	Y
State-level economic attributes	Y	Y	Y	Y	Y	Y
Household characteristics	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y
State-specific linear		Y		Y		Y

Note: This table estimates the impact of an increase in the maximum weekly UI benefits on the transition in household food insecurity status based on equation 1 using the CPS-FSS weights. Results on maximum UI durations, household characteristics and state-level controls are not reported. Standard errors are in parentheses and clustered at the state level. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.