AgriNovus INDIANA

Leveraging Technology to Improve Food Insecurity

July 2022

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SUBMITTED TO:
AGRINOVUS INDIANA

Foreword from AgriNovus Indiana

In the United States more than 37 million people, approximately 11 percent of the population, struggle with food insecurity – 883,000 of whom are Hoosiers, approximately 13 percent of Indiana's population. According to the United States Department of Agriculture's (USDA) Food and Nutrition Service, direct Supplemental Nutrition Assistance Program (SNAP) benefits reached a monthly cost of more than $9.6 billion in April 2022 with total SNAP expenditures surpassing $115 billion in 2021.

Over one-tenth of Indiana's population is food insecure, and 22 percent of Indianapolis residents live in food deserts, defined by USDA as an area in the United States with limited access to affordable and nutritious food. In 2015, the USDA estimated that between 20 and 50 million people in the U.S. lived in food deserts, according to an AgriNovus Indiana-commissioned report authored by Ernst & Young and Purdue University. The authors noted:

> *"… [A]s networks continue to expand it challenges and potentially eliminates the traditional notion of a food desert … One of the largest challenges facing businesses as they increase delivery offerings and build-out delivery systems is finding ways to include populations with limited internet connectivity. Food access in the future may be less dependent on transportation or proximity to a full-scale retail outlet and more dependent on reliable, accessible internet."*

Now is the time to turn this forecast into action. We must marshal resources to innovate and bring new approaches to better connect food supply to those who are food insecure. Relying on brick and mortar-based solutions alone is no longer enough and fails to fully leverage the innovation occurring elsewhere in the global economy. Inspired by innovators such as Amazon, GoPuff, JOKR and Instacart – all of whom transformed buying experiences with technology – opportunity exists to efficiently improve the ability to serve those in need while creating new markets for food suppliers and entrepreneurs who will create the enabling technologies. Together, we can lead this next chapter of innovation, efficiently increase access to food and create an entirely new category of agtech – HungerTech – that enables innovators to create durable, sustainable, profitable businesses that fulfill a critical need, improving service to those who are hungry.

Mitch Frazier
President & CEO
AgriNovus Indiana

Introduction

Food insecurity, described as "...the uncertainty of having, or unable to acquire, enough food due to insufficient money or other resources"[1] has become a leading indicator of economic well-being in the United States for two central reasons. First, almost 40 million Americans lived in food insecure households in 2020.[2] Second, there is a well-established set of negative health outcomes associated with food insecurity[3] which leads to dramatically higher health care costs.[4] These rates of food insecurity and the attendant consequences would have been far higher were it not for the Supplemental Nutrition Assistance Program (SNAP).

Participants in SNAP receive an electronic benefit transfer (EBT) which is then used in approved retail food stores to purchase food. SNAP is by far the largest food assistance program in the United States. In 2021, total expenditures on the program were over $100 billion. This amount is slightly inflated due to changes in the program structure during COVID-19 (e.g., all recipients temporarily received the maximum benefit level); pre-COVID-19, in 2019, program expenditures were $55.6 billion. In 2021, 41.5 million Americans received SNAP. This was up slightly from 2019 (35.7 million) but below 2013 when 47.6 million persons were on SNAP.

Given its size, policymakers, program administrators, and the public rightfully expect the program to succeed. In particular, one should anticipate that SNAP meets its primary goal of reducing food insecurity. Research has demonstrated that this is the case as SNAP recipients are up to 45 percent less likely to be food insecure than eligible non-participants once non-random selection into the program is addressed in econometric models.[5,6,7,8]

1 Coleman-Jensen, A., Rabbitt, M., Gregory, C., Singh, A. 2021. Household Food Security in the United States in 2020. ERR-298. Washington, DC: US Department of Agriculture, Economic Research Service.

2 Coleman-Jensen, A., Rabbitt, M., Gregory, C., Singh, A. 2021. Household Food Security in the United States in 2020. ERR-298. Washington, DC: US Department of Agriculture, Economic Research Service.

3 Gundersen, C., Ziliak, J. 2015. Food Insecurity and Health Outcomes. *Health Affairs* 34(11) 1830-1839.

4 Berkowitz, S., Palakshappa, D., Rigdon, J., Seligman, H., Basu, S. 2021. Supplemental Nutrition Assistance Program Participation and Health Care Use in Older Adults : A Cohort Study. *Annals of Internal Medicine*. 174(12) 1674-1682.

5 Gregory, C., Smith, T. 2019. Salience, Food Security and SNAP Receipt. *Journal of Policy Analysis and Management* 38(1) 124-154.

6 Gundersen, C., Dewey, A., Hake, M., Engelhard, E., Crumbaugh, A. 2017. Food Insecurity Across the Rural/Urban Divide: Are Counties in Need Being Reached by Charitable Food Assistance? *The ANNALS of the American Academy of Political and Social Science* 672(1) 217-236.

7 McKernan, S., Ratcliffe, C., Braga, B. 2021. The Effect of the US Safety Net on Material Hardship over Two Decades. *Journal of Public Economics* 197 104403.

8 Swann, C. 2017. Household History, SNAP Participation, and Food Insecurity. *Food Policy*, 73 1–9.

While SNAP has shown success, its potential for greater impact can be achieved with a few changes. To date, these proposed changes have centered on (1) SNAP benefits not being adequate to secure food for some recipients, (2) the lack of receipt by some food-insecure eligible households, and (3) the ineligibility of some food insecure households. What has received less attention, though, are potential changes in the ways that recipients use their benefits. Specifically, expanding online shopping methods can help SNAP recipients improve their food security status and, in the process, improve their nutritional status. This ability to use online shopping is particularly important as more of the population uses online shopping to obtain their food. In 2021, about one-in-three Americans shopped online for food at some point over the previous year.[9] This is a large increase from 2019 when less than one-in-five consumers shopped online for food. While part of this marked increase is due to COVID-19, the high proportions of those shopping online for food will not decrease and will likely increase further. In this report, there are outlined possible paths to making sure SNAP recipients will have full access to online food shopping.

This report begins with an overview of food insecurity in the United States including how it is measured, a broad overview of food insecurity over time, and its negative health and economic consequences. As part of this discussion, there is a review of some groups with high rates of food insecurity that could especially benefit from online SNAP shopping models. The report then covers SNAP, including its eligibility criteria and the structure of benefit levels followed by patterns of usage over time. The next section will cover some of the online SNAP pilot purchasing programs, which will include the extent of geographic and store coverage through these programs along with a review of some preliminary results and potential further innovations. The conclusion outlines policy implications, future research directions, and three specific recommendations on how to improve SNAP.

> *What has received less attention, though, are potential changes in the ways that recipients use their benefits. Specifically, expanding* **online shopping methods** *can help SNAP recipients improve their* **food security status** *and, in the process, improve their* **nutritional status.**

9 Brenan, M. 2021. More in U.S. Grocery Shopping Online, Fewer Dining Out. *Gallup News*, August 10.

Background

Food Insecurity

Measurement

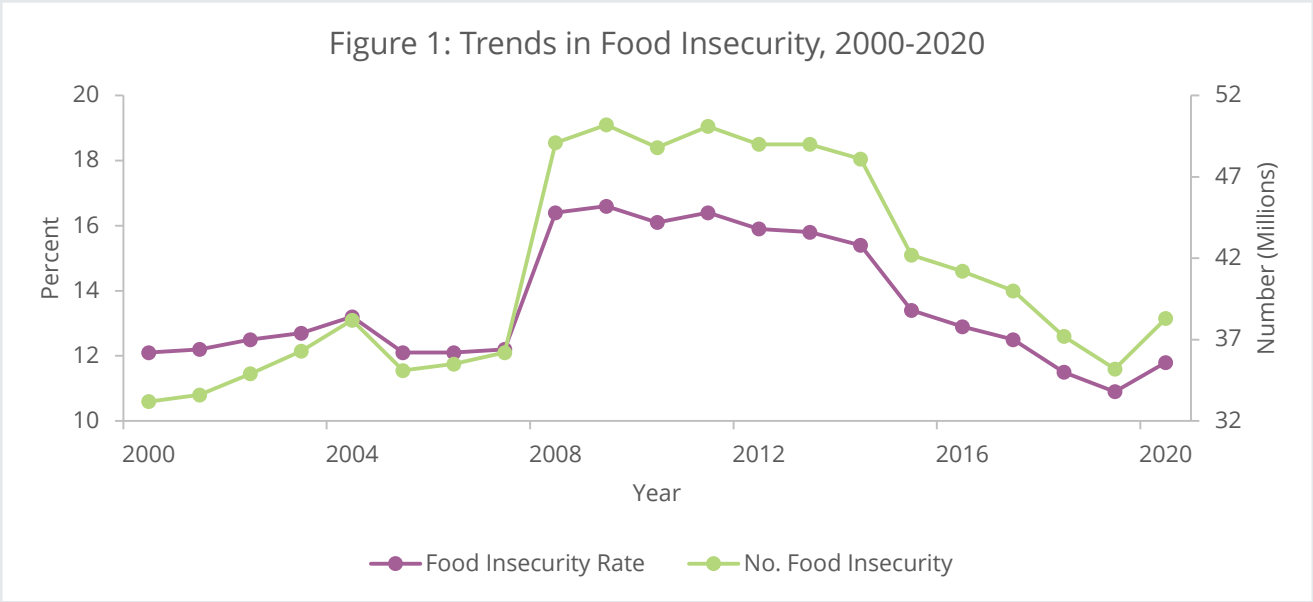
The official measure of food insecurity in the United States, as established by the United States Department of Agriculture (USDA), uses responses to eighteen questions about food hardships due to financial constraints experienced by households (ten questions for households without children and eighteen questions for households with children). Examples of survey questions include: Did you or the other adults in your household ever cut the size of your meals or skip meals because there was not enough money for food?; Were you ever hungry but did not eat because you could not afford enough food?; and Did a child in the household ever not eat for a full day because you could not afford enough food? The complete set of questions is here.[10]

The responses for most of these questions are yes, or no. In other cases, respondents are asked if something happened never, sometimes, or often. A response of sometimes or often is counted as an affirmative response. Other questions ask respondents if something happened almost every month, some months but not every month, or in only one or two months. A response of almost every month or some months but not every month is counted as an affirmative response. Based on these responses, households are delineated into three categories. A household is said to be (1) food secure if they respond affirmatively to two or fewer questions; (2) low food secure if they respond affirmatively to three to seven questions (three to five questions for households without children); and (3) very low food secure if they respond affirmatively to eight or more questions (six or more questions for households without children). Low food secure and very low food secure households are deemed food insecure.

Based on these categorizations, USDA publishes an annual report on food insecurity derived from questions on the December Supplement of the Current Population Survey (CPS). The set of questions, order of questions, and month of survey has been done in a consistent manner since 2000. Figure 1 displays the annual food insecurity rates and numbers from 2000 to 2020. Food insecurity rates were relatively steady from 2001 to 2007. They increased by about 30 percent during the Great Recession (December 2007 to June 2009) and stayed at this elevated level until 2014 when they began to decline, reaching an all-time low in 2019. Based on previous trends in food insecurity and anticipated increases in unemployment and poverty, some predicted sharp increases in food insecurity during COVID-19.[11] These increases did not occur, though, and rates were even below levels seen in 2017. This lack of increase during COVID-19 is commonly ascribed to the stimulus checks, the raising of all SNAP recipients to the maximum level, an increase in food distributed by the charitable sector, and a strong agricultural supply chain. In terms of the final point, despite a global pandemic, there were only small increases in food prices, a key determinant of food insecurity.

10 Coleman-Jensen, A., Rabbitt, M., Gregory, C., Singh, A. 2021. *Household Food Security in the United States in 2020.* ERR-298. Washington, DC: US Department of Agriculture, Economic Research Service.

11 Gundersen, C., Hake M., Dewey, A., Engelhard, E. 2021. Food Insecurity during COVID-19. *Applied Economic Perspectives and Policy* 43(1) 153-161.



Source: USDA. December Supplement of the Current Population Survey (CPS).

Some Key Determinants of Food Insecurity

Extensive literature has identified many of the factors that lead households to be at greater risk of food insecurity.[12] Some groups at greater risk could especially benefit from online SNAP shopping.

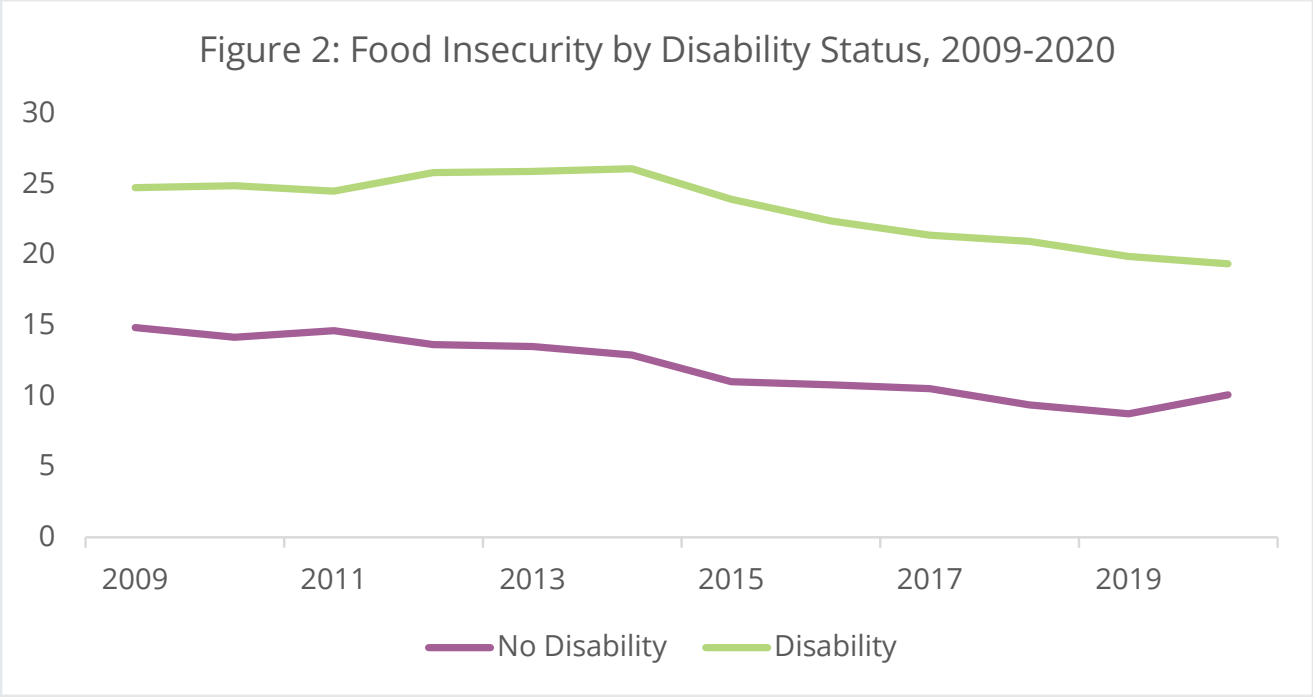
Before examining this, it is worth addressing the term "food deserts" and their connection with food insecurity and nutrition outcomes. As officially defined, these geographic areas have no discernible impact on food insecurity or other outcomes.[13] This does not mean that food access does not play any role in terms of food insecurity. In fact, each of the following determinants is related to food access. For example, persons with disabilities face a private "food desert" as they may face challenges getting enough food. Or, for example, transportation costs can make even close-by stores seem like being in a "food desert."

12 Gundersen, C., Ziliak J. 2018. Food Insecurity Research in the United States: Where We Have Been and Where We Need to Go. *Applied Economic Perspectives and Policy* 40(1) 119-135.

13 Zhen, C. 2021. Food Deserts: Myth or Reality? *Annual Review of Resource Economics* 13(1) 109-129.

PERSONS WITH DISABILITIES. Figure 2 displays food insecurity rates for households with at least one person with a disability in comparison to households without anyone with a disability. As shown in the figure, rates are substantially higher for those with disabilities than those without, with the gap being at least 10 percentage points in any year. Based on a still relatively sparse research base on this topic,[14] here are three things to emphasize.

1. Mental health disabilities have larger impacts than physical health disabilities even after controlling for other factors in multivariate models.
2. The impact of disability status on food insecurity even affects those higher on the income spectrum. These households are unlikely to be eligible for standard food assistance programs; this means approaches that differ from the general population may be needed.
3. The effect of disability on food insecurity varies by the severity of disability status. This points to the need to construct interventions differently depending on disability severity.



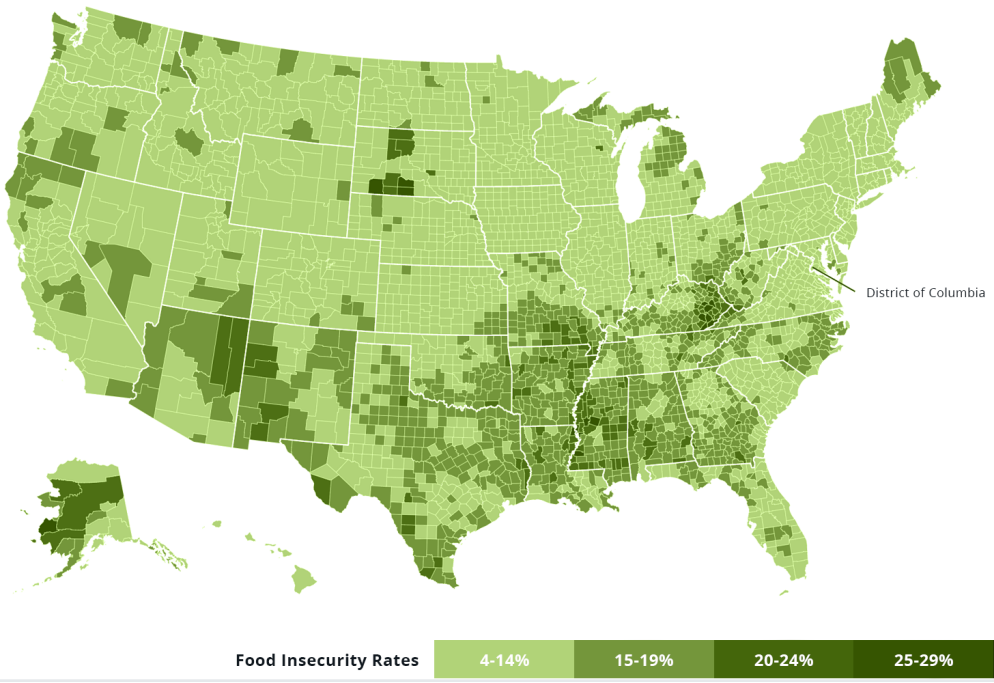
Source: Craig Gundersen. Data from 2009-2020 December Supplements of the Current Population Survey

AMERICAN INDIANS. Approximately half of American Indians live on American Indian Reservations with a high proportion of those living off-Reservations nearby. These Reservations have substantially higher rates of food insecurity than surrounding areas as seen in Figure 3.[15] For example, consider the case of North Dakota with a food insecurity rate of 6.7 percent for the entire state. There are three counties, though, with rates substantially higher – 15.6 percent (Rolette County), 15.3 percent (Benson County), and 18.2 percent (Sioux County). Each of these counties contain Reservations.

14 A full list is available in References to Footnote 14 at the end of the report: Browne, and Ponce, 2020; Burke et al., 2016; Coleman-Jensen, 2020; de Moraes et al., 2016; Guo et al., 2020; Heflin et al., 2019; Huang et al., 2010; Jackson et al., 2019; Karpur et al., 2021; Balistreri, 2019; Brown et al., 2018; Brucker, 2016; Brucker and Coleman-Jensen, 2017; Brucker and Nord, 2016; Noonan et al., 2016; Sonik et al., 2016

15 Feeding America's Map the Meal Gap project, https://map.feedingamerica.org/

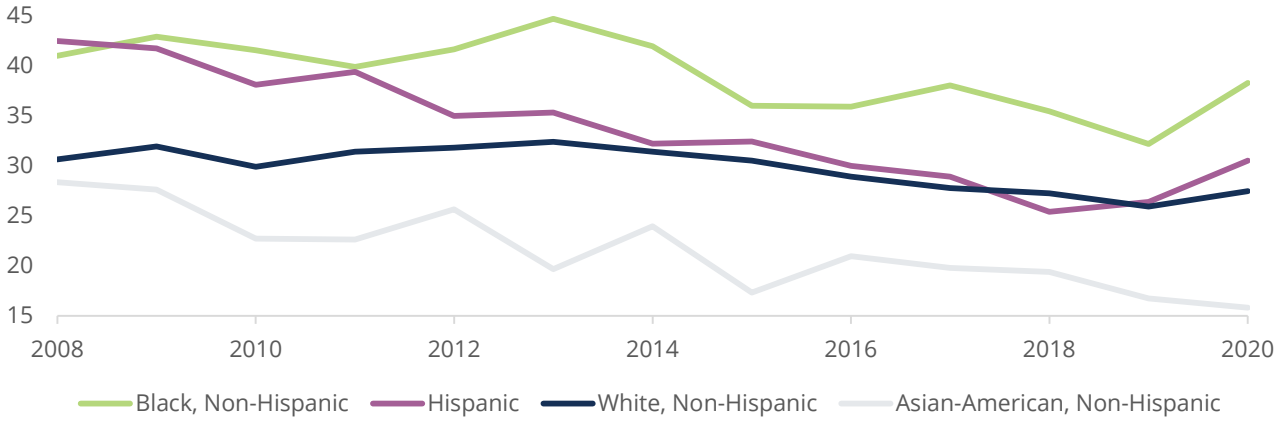
Figure 3: Food Insecurity in The United States



Source: Feeding America. https://map.feedingamerica.org/

RACE AND ETHNICITY. Black persons and Hispanics in the United States have higher rates of food insecurity than non-Hispanic whites and Asian-Americans.[16] In Figure 4, the results are displayed over time when the sample is limited to households with incomes less than 200 percent of the poverty line (roughly $50,000 for a family of four). The figure shows that in 2008, Black persons and Hispanics had similar rates of food insecurity while non-Hispanic whites and Asian Americans had substantially lower rates. By 2018, however, Hispanics had lower rates of food insecurity than non-Hispanic whites while Black persons still had higher rates.

Figure 4: Food Insecurity Rates, 2008-2020
Incomes less than 200% of the Poverty Line



Source: Craig Gundersen. Data from 2008-2020 December Supplements of the Current Population Survey.

16 Coleman-Jensen, A., Rabbitt, M., Gregory, C., Singh, A. 2021. *Household Food Security in the United States in 2020.* ERR-298. Washington, DC: US Department of Agriculture, Economic Research Service.

FOOD PRICES. For many Americans, the proportion of disposable income spent on food is relatively small – 10 percent or less. However, for lower-income Americans this can be up to 20 percent or more. Higher food prices, then, have a larger impact on low-income households. These higher food prices also lead to higher probabilities of food insecurity.[17,18,19]

TRANSPORTATION PRICES. To date, there have not been analyses on the effect of the broader costs of procuring food for the food insecure. While the costs of bringing food to retailers are incorporated into prices, what is not considered in these analyses is the costs of getting to food stores for consumers. This can be a large burden on those who must travel long distances to food stores, a burden that has become especially large over the past year with rising gasoline prices.

RURALITY. Within the broad categories of metro and nonmetro areas, food insecurity rates are quite similar. In 2020, the food insecurity rate in metro and nonmetro areas were 10.4 percent and 11.6 percent respectively.[20] In some years, these are reversed but they are always close in magnitude. Just like with other geographic categorizations, there is a great deal of variation in food insecurity rates within rural categorizations. The USDA has nine categories called rural urban continuum codes (RUCCs).[21]

Figure 5: Food Insecurity Rates by Rural Urban Continuum Codes

Description	# of Counties	Mean	SD	Minimum	Maximum
Counties in metro areas of 1 million population or more (RUCC=1)	432	0.102	0.012	0.040	0.192
Counties in metro areas of 250,000 to 1 million population (RUCC=2)	378	0.121	0.019	0.051	0.222
Counties in metro areas of fewer than 250,000 population (RUCC=3)	356	0.126	0.032	0.046	0.211
Urban population of 20,000 or more, adjacent to a metro area (RUCC=4)	214	0.136	0.036	0.071	0.221
Urban population of 20,000 or more, not adjacent to a metro area (RUCC=5)	92	0.137	0.050	0.054	0.234
Urban population of 2,500 to 19,999, adjacent to a metro area (RUCC=6)	592	0.143	0.067	0.058	0.255
Urban population of 2,500 to 19,999, not adjacent to a metro area (RUCC=7)	433	0.144	0.090	0.042	0.268
Completely rural or less than 2,500 urban population, adjacent to a metro area (RUCC=8)	220	0.146	0.129	0.031	0.288
Completely rural or less than 2,500 urban population, not adjacent to a metro area (RUCC=9)	423	0.146	0.195	0.033	0.273

Source: Craig Gundersen. https://map.feedingamerica.org/

17 Bronchetti, E., Christensen, G., Hoynes, H. 2019. Local Food Prices, SNAP Purchasing Power, and Child Health. *Journal of Health Economics* 68 102231.

18 Courtemanche, C., Carden, A., Zhou, X., Ndirangu, M. 2019. Do Walmart Supercenters improve food security? *Applied Economic Perspectives and Policy* 41(2) 177-198.

19 Gregory, C., Coleman-Jensen, A. 2013. Do High Food Prices Increase Food Insecurity in the United States? *Applied Economic Perspectives and Policy* 35 679–707.

20 Coleman-Jensen, A., Rabbitt, M., Gregory, C., Singh, A. 2021. *Household Food Security in the United States in 2020.* ERR-298. Washington, DC: US Department of Agriculture, Economic Research Service.

21 Gundersen, C., Kreider, B., Pepper, J., Tarasuk, V. 2017. Food Assistance Programs and Food Insecurity: Implications for Canada in Light of the Mixing Problem. *Empirical Economics* 52(3) 1065-1087.

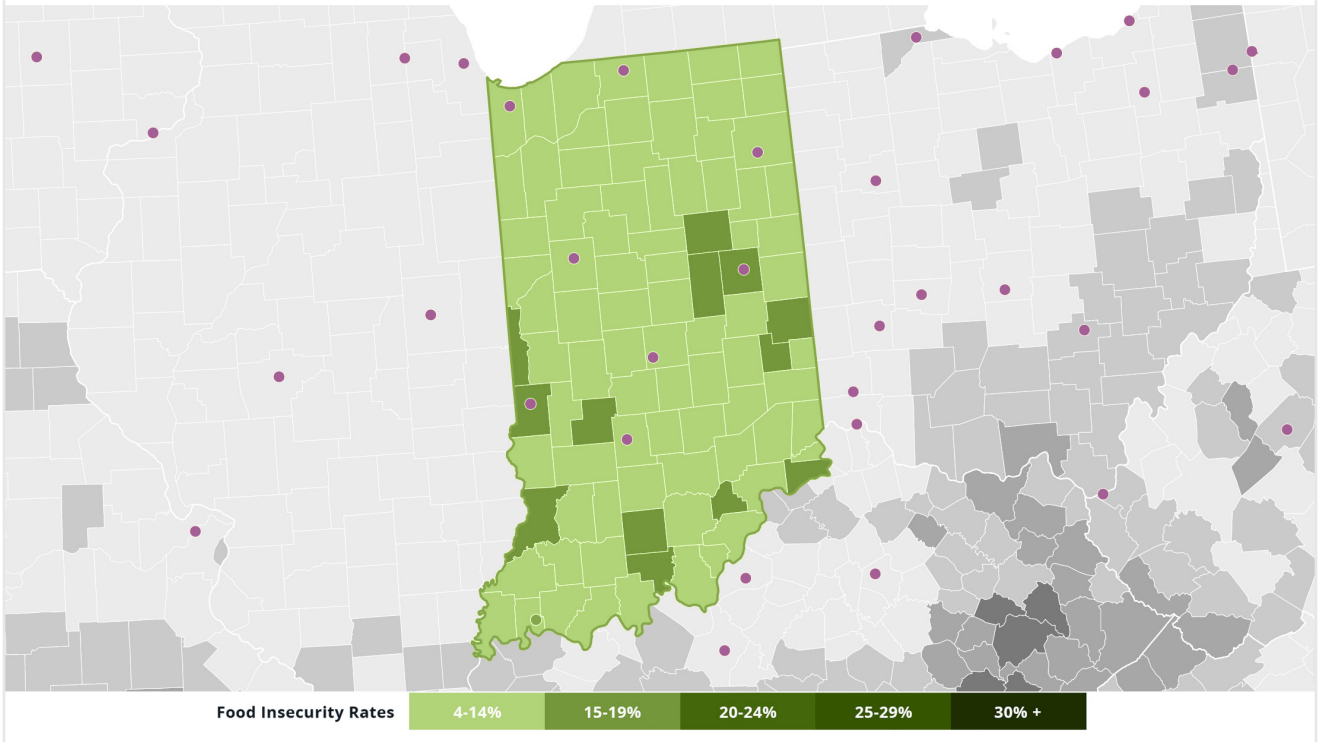
Figure 5 displays information regarding food insecurity rates in 2019, the most recent year for which this data is available by county in Map the Meal Gap. The rates in metro area counties of 1 million population or more (RUCC=1) are 10.2 percent while rates in the two most rural counties, near metro area with population under 2,500 (RUCC=8) and not near metro area with population under 2,500 (RUCC=9), are both 14.6 percent.

Along with the averages being higher in the most rural counties, the variation is much larger in these counties. For RUCC of 1, the minimum and maximum are 4.0 percent and 19.2 percent. For RUCC of 8 and RUCC of 9, the ranges are, respectively, 3.1 percent to 28.8 percent, and 3.3 percent and 27.3 percent. Looking at this more granularly, for RUCC of 8, the range is from three counties in North Dakota (3.1 percent, 4.5 percent, 4.8 percent) to three counties in Mississippi (23.7 percent, 24.1 percent, 28.8 percent) and for RUCC of 9, the range is, again, three counties in North Dakota (3.3 percent, 3.4 percent, 3.4 percent) and two counties in South Dakota and one in Kentucky (25.1 percent, 26.4 percent, 27.3 percent).

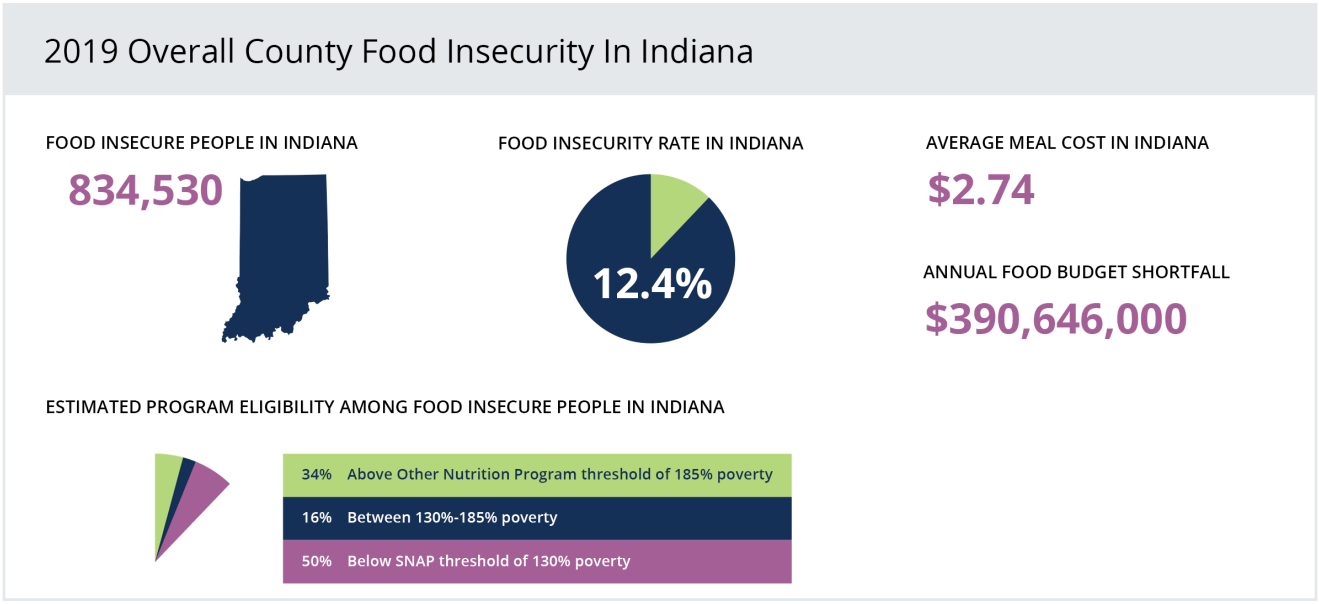
Food Insecurity Across Indiana

The probability of someone being food insecure varies widely based on the determinants discussed in the previous sub-section. These factors can also be correlated with geography or, in some cases, caused by geography. Food insecurity in Indiana based on data by Feeding America is seen in Figure 6. This is based on data from 2019 (the 2020 results are scheduled to be released in July 2022). For reasons noted above, the results will look similar in 2020 as in 2019.

Figure 6: Food Insecurity in Indiana



Source: Feeding America. https://map.feedingamerica.org/county/2019/overall/indiana



Source: Feeding America. https://map.feedingamerica.org/county/2019/overall/indiana

The food insecurity rate for Indiana was 12.4 percent which is 1.5 percentage points higher than the United States food insecurity rate. Similarly, when looking at child food insecurity rates in Indiana and the United States, they were 15.3 percent and 14.6 percent respectively. These food insecurity rates, though, mask variation across the state. For all persons, the lowest is Hamilton County (7.5 percent) and the highest is more than twice that in Fayette County (16.6 percent). In general, rates are lower in the northern part of the state with pockets of high rates in more southern counties bordering neighboring states (e.g., Switzerland County which borders Kentucky has a rate of 15.7 percent). The range in food insecurity rates for children is even wider – 7.2 percent in Hamilton County to 21.4 percent in Grant County.

As discussed above, food prices are a key determinant of food insecurity with Indiana having, on average, lower food prices. In 2019, the average cost of a meal for a food secure person was $2.74. This was lower than the national average ($3.13) and lower than all neighboring states. Nevertheless, there are some counties in Indiana with food prices higher than the national average. These counties are Franklin, Jasper, Owen, and Porter. With the exception of Porter, these all have populations under 50,000 people.

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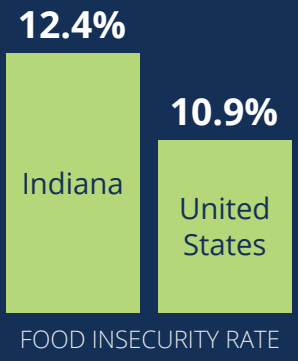


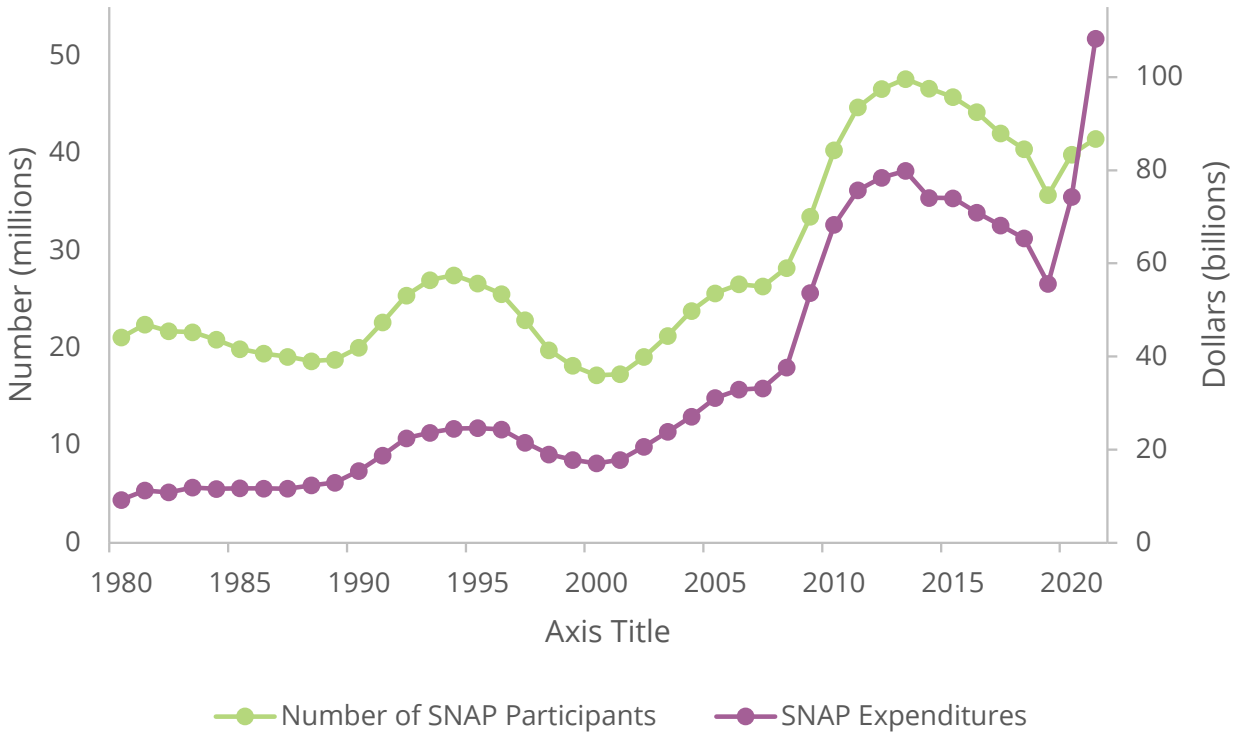
Supplemental Nutrition Assistance Program (SNAP)

History

The Food Stamp Act of 1964 established the Food Stamp Program in selected counties across the United States and by 1974, food stamps were available in all counties.[22] In 2008, the Food Stamp Program took on its current name of SNAP.[23] The program is administered by USDA through the Food and Nutrition Service (FNS) with partners at the state and local levels. SNAP has undergone numerous changes, but its basic structure has not changed since 1979.

The size of the program is seen in Figure 7 which shows the number of people enrolled and total expenditures on SNAP from 1980 to 2022. As seen there, the number of participants roughly doubled from 1980 to 2021, with a peak of 47 million recipients in 2013. The number of SNAP recipients and expenditures increase during economic downturns (e.g., in 1990) but in recent years, both have remained high even after recessions end. COVID-19 had a slight impact on the number of recipients which rose from 36 million to 42 million from 2019 to 2021. The number of recipients in 2021 was still less than in 2017. However, the impact on expenditures was substantially larger, from $56 billion to $108 billion. This is primarily because all recipients were temporarily raised to the maximum benefit level.

Figure 7: SNAP Participants and Expenditures: 1980-2021



Source: USDA Food and Nutrition Service

22 Almond, D., Hoynes, H., Schanzenbach, D. 2011. Inside the War on Poverty: The Impact of Food Stamps on Birth Outcomes. *The Review of Economics and Statistics* 93 387-403.

23 Bartfeld, J., Gundersen, C., Smeeding, T., Ziliak, J. Editors. 2015. *SNAP Matters: How Food Stamps Affect Health and Well Being*. Redwood City, CA: Stanford University Press.

Eligibility Criteria

There are three components of the eligibility criteria for SNAP.

GROSS INCOME TEST. The first criterion is based on the household's gross income before any deductions. The gross income needs to be less than 130 percent of the federal poverty threshold ($28,548 for a family of four in 2021). In addition, most states have set a higher gross income threshold of up to 200 percent of the poverty line. Some households are not subject to the gross income test, though, namely households with a senior or disabled person. In addition, households receiving other means-tested programs like Supplemental Social Security Income (SSI), Temporary Assistance for Needy Families (TANF), or General Assistance (GA) do not have to meet the gross income test.

NET INCOME TEST. For households that pass or are not subject to the gross income test, the net income test must be passed. Under this test, a household's net income must be less than the poverty threshold. Net income is calculated by gross income minus six deducted items. These include a 20 percent earned income deduction, standard deduction (based on household size), dependent care deduction, out-of-pocket medical expenditures that exceed $35 for senior or disabled members, child support payment deduction, and excess shelter expense deduction capped at $504.

ASSET TEST. Finally, households need to meet the asset criterion. Household assets are measured by summing up the value of assets held at financial institutions, stocks and mutual funds, rental properties, real estate, and other interest-earning assets, and the value of the applicant's vehicle. The value of a primary residence is not counted as an asset. Federal rules, however, exclude a certain amount from vehicle value if the vehicle's primary use was for business or income-producing purposes, transportation of a physically handicapped household member, or if the vehicle's value is no more than $4,650. Furthermore, states frequently loosen the limits by excluding one or more vehicles from household assets or a higher value. Under this, households cannot exceed $2,250 of asset values; the cutoff is $3,500 for a household with a senior or disabled member. The asset requirement is now waived in most states. In other states without waivers, the limit is often set at a higher threshold.

For those eligible for SNAP, benefit levels are calculated based on three components:

1. The maximum benefit allotments based on the household size;
2. The benefit reduction rate;
3. And, net income.

The maximum benefit is determined by the Thrifty Food Plan (TFP), the USDA-designed minimal cost to provide adequate nutrition.[24] Beneficiaries with positive net incomes are expected to spend 30 percent of net income on food purchasing. The benefit amounts are then set by subtracting 30 percent of the household's net income from the maximum allotment, which varies by the household size. (For income in the form of earnings, the deduction is 24 percent.) Households with zero-or-below net income receive maximum benefit. Maximum SNAP benefits varies by household size. The maximums are as follows: $250 for one person; $459 for two persons; $658 for three persons; $835 for four persons; $992 for five persons; $1,190 for six persons: $1,316 for seven persons; and $1,504 for eight persons. Each additional person beyond eight leads to a $188 increase in benefits.Furthermore, according to the design of the

24 Wilde, P., Llobrera, J. 2009. Using the Thrifty Food Plan to Assess the Cost of a Nutritious Diet. *Journal of Consumer Affairs* 43(2) 274–304.

SNAP benefit formula, the probability of food insecurity should be constant across the net income spectrum by virtue of SNAP receipt.

Enrollment in SNAP is not automatic, however, and one must formally apply to be in the program. How one applies for SNAP varies by state and, within states, by locality, although the general process is similar. Persons who are interested in enrolling in SNAP need to go to a caseworker with the information noted above to establish gross income, net income, and assets. If they can establish that they are eligible, they will be enrolled; in some cases, further information is needed from clients and another visit, or more, is needed. Along with the initial certification process, recipients need to recertify. How often this occurs depends on the state and by demographic characteristics. For example, in general, seniors must recertify less frequently than those with closer ties to the labor market. In addition, what needs to be done in the recertification process and how it is done (e.g., in-person or remotely) depends on the state.

Considering the need to take active steps to receive SNAP, a high proportion of eligible SNAP recipients – between 20 and 40 percent depending on how measured – do not participate. This is generally ascribed to three main factors. First, as seen above, enrolling in SNAP is not a straightforward process and because of this many will not apply.[25] While transaction costs might be a way to discourage those in less need from applying for a program, with SNAP the opposite appears to be true: those in most need, as defined by education and income, experience the most difficulty navigating the SNAP application process.[26] Second, the benefit level can be quite small—as low as $16 per month for one or two person households. Given the inverse relationship between income and SNAP benefit levels, this explains why households with incomes closer to the SNAP eligibility threshold are less likely to participate. Third, receiving SNAP may carry a stigma, due to a person's own distaste for receiving public assistance, the fear of disapproval from others when redeeming SNAP, and/or a possible negative reaction from caseworkers.[27,28,29,30]

A high proportion of eligible SNAP recipients – between 20 and 40 percent depending on how measured – do not participate.

25 Ponza, M., Ohls, J., Moreno, L., Zambrowski, A., Cohen, R. 1999. *Customer Service in the Food Stamp Program*. Princeton, NJ: Mathematica Policy Research, Inc.

26 Currie, J., Gahvari, F. 2008. Transfers in Cash and In-Kind: Theory Meets the Data. *Journal of Economic Literature* 46: 333–83.

27 Reutter, L., Veenstra, G., Love R., Raphael, D., Makwarimba, E. 2009. Who do They Think We are, Anyway?: Perception of and Responses to Poverty Stigma. *Qualitative Health Research* i19(3) 297–311.

28 Stuber, J., and Kronebusch, K. 2004. Stigma and Other Determinants in TANF and Medicaid. *Journal of Policy Analysis and Management* 23(3): 509-530.

29 Stuber, J., Schlesinger, M. 2006. Sources of stigma for means-tested government programs. *Social Science and Medicine* 63:933-945.

30 Wu, C., Eamon, M. 2010. Need for and Barriers to Accessing Public Benefits among Low-Income Families with Children. *Children and Youth Services Review* 32 (1): 58–66.

Reasons for Success

SNAP is the central component of the social safety net against hunger in the United States and multiple studies have found that it succeeds in this goal. As such, the large number of participants and concordant expenditures seen in Figure 7 is not surprising. Its success can be attributed to five main factors.

1. **REACHING THOSE IN NEED.** As discovered in the description of eligibility above, SNAP is directed toward those who are most in need of assistance. This allows the program to be cost-effective to the degree that benefits do not "leak" toward those who may be in less need.
2. **LEVERAGING TRADITIONAL RETAIL SECTOR.** For an assistance program to be successful, individuals need to be able to utilize the benefits or have the potential to utilize those benefits if needed. In the United States, there are tens of thousands of retail food outlets and, consequently, if one has the resources, one can purchase sufficient quantities of food. SNAP uses this retail structure as a way of getting food to recipients to the extent that there are over 260,000 stores that accept SNAP benefits.[31] By allowing recipients to shop in these stores, it allows them to engage in the same shopping processes as their neighbors.
3. **ENTITLEMENT STATUS.** For a program to be effective, it should not be beholden to policymakers funding discretion, nor should it place limits on how long individuals can receive benefits.[32] SNAP meets these demands. First, SNAP expands or contracts over time (as seen in Figure 7) based on the need for benefits, primarily driven by economic conditions. This occurs without any explicit need for policymakers to fund additional expenses needed for the program. This differs from other programs where funding is capped. Second, with a few exceptions, SNAP participants can stay on the program as long as needed.
4. **RELATIONSHIP TO WORK.** Consistent with SNAP's role as an anti-hunger program, most SNAP recipients do not face work requirements. While, in general, SNAP does not have work requirements, the program does not discourage work. As noted above, benefit levels decline as net income increases. By distributing benefits in this way, as someone approaches the income eligibility threshold, their benefit levels fall. This approach distinguishes SNAP from other assistance programs which distribute benefits in a lump-sum manner that is independent of income once someone is eligible. These programs have a substantial "cliff effect" and, for households near that cliff, it is often optimal to not earn more income by working more hours or accepting a higher-paying job because the effective tax rate often far exceeds 100 percent.
5. **DIGNITY AND AUTONOMY.** Along with shopping alongside their neighbors, SNAP recipients can also make their own choices about food that are consistent with their preferences, religious beliefs, dietary requirements, etc. This differs from some other programs that sharply delineate what recipients can and cannot obtain. By respecting the autonomy of recipients, this is one of the reasons for such high participation rates among eligible households, especially those with children.[33]

31 https://www.cbpp.org/snap-retailers-database

32 Gundersen, C. 2019. The Right to Food in the U.S.: The Role of the Supplemental Nutrition Assistance Program (SNAP). *American Journal of Agricultural Economics* 101(5) 1328-1336.

33 Gundersen, C. 2020. Ensuring the Dignity and Autonomy of SNAP Recipients. *Physiology and Behavior* 221(1) 112909.

Digitization of SNAP

Implications for Recipients

The current method used by SNAP to distribute benefits is through the EBT card. Every month the amount a household is eligible to receive is automatically added to the card. (The date when this occurs in any given month varies such that not all benefits are added the same day for all recipients.) When using these benefits, individuals swipe their EBT card and enter a PIN in the same manner as one would use a debit card. When making purchases at a store, some items may not be eligible for SNAP (e.g., paper towels, diapers) and those would be charged to a separate form of payment. Similarly, if the amount of funds available on the EBT card are insufficient to cover the purchases, the remaining amount would need to be charged to a separate form of payment. Prior to the introduction of EBT, recipients would have to use paper coupons. (EBT was fully implemented by 2004 in all states.) Along with streamlining the benefit distribution procedures and reducing fraud and abuse, the introduction of EBT helped to reduce the stigma that some recipients feel when using SNAP. Previously, someone using SNAP benefits was readily visible to others nearby to where the food purchase was being made. With EBT, the only ones who are aware a purchase is made using SNAP is the recipient and the clerk at the store helping to reduce the stigma associated with SNAP usage. To that degree, as stigma is one of the reasons for why people choose not to sign up for an assistance program, the introduction of EBT has helped to increase participation among the eligible population.

The introduction of online shopping using SNAP benefits has the potential to enhance the program for recipients in a number of areas, similarly to what occurred with the introduction of EBT. This holds over two main dimensions. First, as more households use online shopping, SNAP recipients can have the same opportunity. Just as with the broader population, for various reasons the majority of SNAP recipients will continue to shop in-person; but by allowing SNAP recipients the ability to shop online, they will have the same shopping options as non-SNAP recipients. Second, this will help to reduce stigma. While EBT cards help with this, some SNAP recipients still experience stigma causing consternation while in the store, and this may cause them to be less likely to recertify in the program (especially for those with lower benefit levels) or lead potential recipients to not enroll. An online shopping process will prevent anyone at the store from knowing that someone does or does not receive SNAP.

In addition to the broad benefits of online shopping with SNAP, some groups at high risk of food insecurity, as discussed above, are likely to see especially large advantages, specifically, persons with disabilities and American Indians. In terms of the former, getting to and navigating through a store can be a difficult process. Online shopping can help with this, especially if it includes a delivery option. In-person shopping can also be a challenge for those with mental health disabilities as the process can be, among other things, disorienting, confusing, and stressful. Shopping at home can greatly alleviate these challenges. In terms of American Indians, a high proportion live on or near Reservations. These are often far from food stores so delivery options can lessen the burden of getting to a store and widen the set of stores from which to choose. Something similar holds for those in remote rural areas, including in Indiana, who also may face burdens in getting to stores.

As discussed above, "food deserts" should primarily be thought of as applying at the individual level (e.g., to seniors who may have difficulties getting to a store even if it is within a quarter mile). For those persons, the introduction of online shopping will have a large impact as the challenges of getting to and navigating a store are diminished. There are also some families living in areas with little access to food stores, especially in rural areas. One potential solution to this is to build more "brick and mortar" stores. This has yet to occur and, given declining populations in these areas, it is unlikely to occur. With the expansion of online shopping, including online shopping for SNAP recipients, proximity to a food store should no longer be a factor in food insecurity.

The introduction of online shopping will have a large impact as the challenges of getting to and navigating a store are diminished.

Structure of Online Shopping for SNAP Recipients

To explore the potential advantages of online shopping for SNAP recipients, the 2014 Farm Bill required FNS to conduct a pilot test for online shopping.[34] In response, in 2016 FNS solicited applications from retailers to conduct a two-year pilot. Eight retailers were selected - Amazon, Dash's Market, Fresh Direct, Hy-Vee, Inc., Safeway, ShopRite, Walmart Stores Inc., and Wright's Markets, Inc. – with implementation in eight states - Alabama, Iowa, Maryland, Nebraska, New Jersey, New York, Oregon, and Washington. This pilot expanded rapidly, especially after the onset of COVID-19, such that by 2021, virtually all states and more stores were included in the pilot. However, in most of these states, the only stores in the pilot are Aldi, Amazon, and Walmart.[35]

Once more fully implemented, the development of online shopping for SNAP recipients will be the biggest change in the structure of purchasing since the introduction of EBT. For this to move forward, retailers must become certified to accept online purchases. Becoming certified is something retailers already must do to accept SNAP benefits and establish EBT purchases for in-store purchases.[36,37,38,39,40]

34 https://www.fns.usda.gov/snap/online-purchasing-pilot

35 Moran, C. 2021a. SNAP Online Availability is About to Explode. But Grocers Say They Still Face too many Hurdles. *Grocery Dive* February 16.

36 Hahn, H., Hawkins, R., Carther, A., Stern A. 2020. *Access for All: Innovation for Equitable SNAP Delivery*. Urban Institute.

37 Moran, C. 2020. Aldi, Instacart Bring SNAP Online Payments to 1K Additional Stores. *Grocery Dive* December 17.

38 Moran, C. 2021a. SNAP Online Availability is About to Explode. But Grocers Say They Still Face too many Hurdles. *Grocery Dive* February 16.

39 Moran, C. 2021b. Improving SNAP E-Commerce Functionality Takes Priority as More Grocers Chase EBT Dollars. *Grocery Dive* February 17.

40 Moran, C. 2021c. Inside SNAP Online: 2 Grocers Share Their Experiences with The USDA's Pilot. *Grocery Dive* February 18.

The certification process for online purchases, though, is stricter than the standard SNAP retail authorization process. Stores must meet one of two criteria.

- The first (Criterion A) is that stores need to have three stocking units of three staple food varieties in each of the staple food categories. The staple food categories are vegetables or fruits; dairy products; meat, poultry, or fish; and breads or cereals.In addition, they must have three stocking units of one perishable staple food variety in at least two staple food categories.
- Criterion B holds if more than 50 percent of a store's total gross retail sales are in staple foods.

There are some exceptions for stores that do not meet Criterion A or B but are in areas that are not well-served by other food retailers. In addition to meeting one of these criteria, stores must also already be SNAP-authorized retailers, have an e-commerce presence, and have various conditions regarding their website. These conditions include being able to message the customer if errors occur, not charging taxes on SNAP purchases, and allowing customers to purchase with both SNAP and cash.[41] The number of stores authorized by state vary widely. In Indiana, the following stores allow for online SNAP purchases – Aldi, Amazon, Jewel Osco, Meijer, Sam's Club Scan and Go, Schnuck's Market, Strack and Van Til, Town and Country, Van Til's Supermarket, Walmart, and Whole Foods.

Within these pilots, the methods used to make online purchases using SNAP are not standardized across stores except that they must meet the guidelines noted above. One example of how this has been implemented is seen in a partnership between Aldi and Instacart.[42] SNAP recipients need to enter their EBT card information in either the Aldi or Instacart app along with a form of payment for items not covered by SNAP that are included in orders. This could include things like paper towels and diapers, which are not covered by SNAP, but are often purchased at food stores. This additional payment method also covers costs beyond the amount available in SNAP benefits and will cover delivery fees that are assessed. Currently, SNAP benefits cannot be used for delivery fees.

The initial rollout of online purchasing, as seen in the listing above for Indiana, are mostly large retailers that allow customers to make purchases online. This has resulted in about 5 percent of all SNAP recipients buying food online. This aligns with expectations as this proportion should not be 100 percent, as many SNAP recipients (like non-recipients) prefer making purchases in person. Food purchases online can be more expensive than in stores, and the selection of food items may be more limited.

Like with any rollout of a new program, the beginning of the process can be slow as retailers learn a new system and government program administrators ascertain how best to make sure retailers are complying with the relevant requirements. The process is accelerating, though, as the program expands. This acceleration is seen in the increase in retailers and states in the program, but it is also seen in the systems being established. For example, e-commerce firms (e.g., Instacart, Freshop, Basketful) that are often the entity contracted to run online shopping by retailers now better understand the issues that need to be resolved with government regulations. These lessons can be applied to partnerships with other stores as online shopping expands.

41 For more on all of this see https://www.fns.usda.gov/snap/online-purchasing-pilot

42 Moran, C. 2020. Aldi, Instacart Bring SNAP Online Payments to 1K Additional Stores. *Grocery Dive* December 17.

There have, however, been several additional issues that may hinder online purchases. Such as:

- While there have been some glitches with EBT systems in stores, these have become relatively rare over time. These are still not uncommon with online purchases using SNAP, though. One issue that has emerged is the use of PINs when paying online. In stores, individuals enter their PINs at checkout. Online, though, the numbers can be scrambled to protect the confidentiality of PINs. This can lead to confusion for some consumers.
- Even in states where major retailers have set up online purchases, there are still portions of the state that are not being served. These are almost exclusively in rural areas.
- There are apps that allow SNAP recipients to ascertain their SNAP benefit balances. The largest of these apps are Providers (formerly FreshEBT) and ConnectEBT. This also allows them to see if their benefits have been replenished at the start of the month. Currently, though, these apps cannot be used to make purchases online.
- By the setup of online purchases with SNAP, recipients are supposed to be able to pay online with SNAP benefits and then pick up the food at the store. In fact, this is one of the requirements noted above for stores to be accepted into the program. Nevertheless, there are some reports of recipients having to pay when they pick up their food rather than pay online.
- Some stores offer both pick-up and delivery of groceries. For SNAP recipients, in at least some stores, individuals are only able to pick up groceries and delivery is not available, even if recipients would be willing to pay to have food delivered. Payment for delivery cannot be done using SNAP benefits.
- As seen in the listing of stores, these are primarily large retailers. This is due, in part, to an extensive approval and implementation process. Due to economies of scale, this is feasible for these large retailers. However, some small retailers – including many who serve a large SNAP clientele – have been unable to afford to navigate this process.[43] Additional funds for the USDA to help stores navigate this process was proposed under the "Expanding SNAP Options Act of 2021."[44] As of June 24, 2022, this bill has only been introduced and has not moved to the next stage.
- When making purchases in person, SNAP recipients can ascertain their remaining EBT card balance via the EBT system, but this is not always possible when making online purchases.


43 https://www.nationalgrocers.org/news/nga-lauds-usdas-expansion-of-snap-online-purchasing-for-independent-grocers/

44 Section 313 - https://www.congress.gov/bill/117th-congress/senate-bill/313

The above are all potential hindrances that would need to be addressed as SNAP online shopping is made more readily available. Along with making the shopping experience for SNAP recipients similar to non-SNAP recipients, online SNAP usage could lead to some further advantages. Here are three examples:

1. One of the key reasons for non-participation in SNAP are the low benefit levels for some potential recipients. (As discussed above, benefit levels are inversely related to income.) In other words, the benefit levels may not be high enough to overcome the costs associated with stigma. At least some potential recipients may be influenced to receive SNAP as the relative costs of stigma are reduced by online shopping.
2. The overwhelming proportion of SNAP benefits are spent on the first day of receipt. This is partially due to transportation and time costs – shopping on one day rather than multiple days reduces these costs. Some recipients would rather, though, shop more frequently. If they were able to shop more frequently, this may allow for the purchase of more perishables which can be healthier than non-perishables. One study showed that 87.5 percent of SNAP recipients found they could purchase more fresh fruits and vegetables when delivery was available.[45] By shopping online with delivery included, households will be enabled to use their benefits more frequently over the course of a month.
3. For many SNAP recipients, their entryway to online grocery shopping may be through the use of their benefits. This could be due to things such as the encouragement of caseworkers, direct advertising of this opportunity, and the positive experience of fellow SNAP recipients. The average amount of time someone stays on SNAP is a little under a year and so the use of online SNAP benefits is, on average, limited. However, once they realize the advantages of online shopping, they will continue to use these systems. Consequently, stores which allow for online purchases with SNAP will generate returns even after individuals depart the program.

> *One study showed that* **87.5 percent** *of SNAP recipients found they could purchase more* **fresh fruits and vegetables** *when delivery was available. By shopping online with delivery included, households will be enabled to use their benefits more frequently over the course of a month.*

45 Rhode Island Food Policy Council. 2022. *Lessons for RI from the Providence SNAP Delivery Pilot: How to Increase Access to Healthy Food for Rhode Islanders in Need*. Slides prepared for presentation at legislative roundtable.

Perspectives of Low-Income Americans about Online Access

To date, information about the use of online shopping by SNAP recipients is limited. One source of data on the perspectives of low-income Americans and online shopping is a recent survey of 117 Indiana households by Community Health Network. This survey inquires about households' participation in different programs, their access to various technologies, and their desire to use online shopping. The sample includes only lower-income persons who are likely to be eligible for programs like SNAP. The vulnerability of the sample displays a high proportion with disabilities (almost one-third), a low proportion in full-time employment (less than 20 percent), and more respondents being in poor or fair health than in very good or excellent health.

The results from this survey indicate the opportunities for using online shopping but also some of the barriers that consumers may face. Starting with the barriers, one-third of all persons in this survey do not have access to a reliable internet connection. This may be due, in part, to the older age of the sample – over half the respondents are over the age of 50. While access can be garnered (e.g., going to a library) this is a serious hurdle. As such, broader efforts to ensure internet connectivity would also benefit efforts to expand access to online food shopping. Perhaps due to this limited access, less than 20 percent reported shopping online for food.

Despite these barriers, there is interest from this vulnerable population in online shopping for groceries. Over 80 percent of the sample reports being at least "slightly likely" to use an EBT card to purchase groceries online if there were not any additional costs. Based on this sample and this survey, online shopping will become a large component of the food retail experience for vulnerable households if online shopping with SNAP were to become more widely available.

> *Over* **80 percent** *of the sample reports being at least "slightly likely" to use an EBT card to purchase groceries online if there weren't any additional costs.*

Conclusion

This report has provided background on food insecurity and SNAP, a broad overview of how online purchasing can improve the program, and an overview of key challenges faced when implementing online purchasing with SNAP. Based on these findings, there are three recommendations moving forward.

1. **IDENTIFY WAYS TO ELIMINATE DELIVERY COSTS FOR SNAP RECIPIENTS.** Food retailers need to recoup the costs of delivering food. There are various ways to do so including having minimum expenditure levels or charging fees for delivery. The latter would be especially burdensome to SNAP recipients with limited funds to spend on food and other necessities. This is especially true during the current era of high inflation. However, setting minimum expenditure levels would be acceptable for SNAP recipients as their spending levels are likely high enough to meet minimum expenditure requirements. One key caveat is needed for this, though. Only about 40 percent of SNAP recipients receive the maximum benefit; the other recipients, by definition, need to spend some portion of their own income on food. Even among those getting the maximum, the overwhelming majority spend some of their own income on food. So, to meet the minimum spend requirements, SNAP recipients should be allowed to use both SNAP and cash purchases to meet this minimum.
2. **LOWER BARRIERS FOR STORES TO ENTER PROGRAM.** In many communities, especially rural communities, small retail stores are a critical source of food for SNAP recipients. However, some of these stores may not meet all the requirements to be online grocers and/or may not have the resources to apply for the program. In making the regulations for stores to enter the program, they should be set in a way that does not unduly deter some stores from applying. Along with reducing the regulatory burdens on these grocery stores, passing United States Senate Bill 313 would enable smaller stores to access financial assistance to meet remaining regulations.[46]
3. **ENSURE SAME SHOPPING EXPERIENCE FOR SNAP AND NON-SNAP RECIPIENTS.** The primary reason for SNAP's success is that it grants recipients dignity and autonomy as they make their food choices. This dignity and autonomy should be maintained in any online system such that any purchases of food that are allowed for non-SNAP recipients should also be allowed for SNAP recipients. Currently this is the case but vigilance is needed to resist proponents of restricting SNAP purchases, some of whom may first single out online purchases for restrictions.

Almost 35 million Americans are food insecure and, in Indiana, over 800,000 people are food insecure. Along with being a serious problem in-and-of-itself, food insecurity is associated with negative health outcomes and higher health care costs. SNAP is central to reducing food insecurity. Fortunately, this program is a success story – its goal is to reduce food insecurity and it does. For it to continue to provide impact, the program must adapt to our changing food retail environment; in particular, the increased use of online purchases.

46 https://www.congress.gov/bill/117th-congress/senate-bill/313

References to Footnote 14

Balistreri, K. 2019. Food Insufficiency and Children with Special Healthcare Needs. *Public Health* 167 55-61.

Browne, J., Ponce, A. 2020. Assessing Food Insecurity in Individuals with Serious Mental Illness: A Pilot Training for Community Mental Health Providers. *Community Mental Health Journal.*

Brown, P., Durham, D., Tivis, R., Stamper, S., Waldren, C., Toevs, S., Gordon, B., Robb, T. 2018. Evaluation of Food Insecurity in Adults and Children with Cystic Fibrosis: Community Case Study. *Frontiers in Public Health* 6 10.3389/fpubh.2018.00348.

Brucker, D. 2016. Food Insecurity among Young Adults with Disabilities in the United States: Findings from the National Health Interview Survey. *Disability and Health Journal* 9 298-305.

Brucker, D., Coleman-Jensen, A. 2017. Food Insecurity Across the Adult Life Span for Persons with Disabilities. *Journal of Disability Policy Studies* 28(2) 109-118.

Brucker, D., Nord, D. 2016. Food Insecurity among Young Adults with Intellectual and Developmental Disabilities in the United States: Evidence from the National Health Interview Survey. *AJIDD-American Journal on Intellectual and Developmental Disabilities* 121(6) 520-532.

Burke, M., Martini, L., Cayir, E., Hartline-Grafton, H., Meade, R. 2016. Severity of Household Food Insecurity Is Positively Associated with Mental Disorders among Children and Adolescents in the United States. *Journal of Nutrition* 146 (10) 2019-2026.

Coleman-Jensen, A. 2020. U.S. Food Insecurity and Population Trends with a Focus on Adults with Disabilities. *Physiology and Behavior* 220 112865.

de Moraes, C., Marques, E., Reichenheim, M., Ferreira, M., Salles-Costa, R. 2016. Intimate Partner Violence, Common Mental Disorders and Household Food Insecurity: An Analysis Using Path Analysis. *Public Health Nutrition* 19 (16) 2965-2974.

Guo, B., Huang, J., Porterfield, S. 2020. Food Security and Health in Transition to Adulthood for Individuals with Disabilities. *Disability and Health Journal* 13(4) 100937.

Heflin, C., Kukla-Acevedo, S., Darolia, R. 2019. Adolescent Food Insecurity and Risky Behaviors and Mental Health During the Transition to Adulthood. *Children and Youth Services Review* 105 10.1016/j.childyouth.2019.104416.

Huang, J., Guo B., Kim, Y. 2010. Food Insecurity and Disability: Do Economic Resources Matter? *Social Science Research* 39(1) 111-124.

Jackson, D., Johnson, K., Vaughn, M. 2019. Household Food Insufficiency and Children Witnessing Physical Violence in the Home: Do Family Mental Illness and Substance Misuse Moderate the Association? *Maternal and Child Health Journal* 23(7) 961-970.

Karpur, A., Vasudevan, V., Lello, A., Frazier, T., Shih, A. 2021. Food Insecurity in Households of Children with Autism Spectrum Disorders and Intellectual Disabilities in the United States: Analysis of the National Survey of Children's Health Data 2016-2018. *Autism* 25(8) 2400-2411.

Noonan, K., Corman, H., Reichman, N. 2016. Effects of Maternal Depression on Family Food Insecurity. *Economics and Human Biology* 22 201-215.

Sonik, R., Parish, S., Ghosh, S., Igdalsky, L. 2016. Food Insecurity in US Households that Include Children with Disabilities. *Exceptional Children* 83(1) 42-57.