The Economic Contributions of Healthy Food Incentives

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FORWARD

For more than a decade, healthy food incentive programs increased the purchasing power of low-income families to buy fruits and vegetables. Numerous non-profits and government agencies run these programs using a variety of program designs, marketed with different names, in nearly every state of the country. Despite this variety, a commonality of these programs is that they provide people, most often families and individuals enrolled in the Supplemental Nutrition Assistance Program (SNAP, formerly known as food stamps), with more money to buy produce at grocery stores, corners stores, and farmers' markets. Another commonality is that research consistently demonstrates that healthy food incentive programs reduce hunger, improve nutrition, and support the local agriculture and retail sectors.[1]

Some of the programs operating across the country today partner with just a few markets or stores. Others offer incentives through hundreds of retail locations across an entire state. Regardless of their current program reach, they all share the potential to benefit far more people, retailers, farmers and communities if they expanded more broadly – for example across states or the entire country. That level of expansion would require a significant investment from policymakers.

This pioneering study shows that broad expansions of healthy food incentives would provide powerful returns on that investment – for families, grocers, and farmers, as well as more broadly among the state economies where such benefits are expanded.

For example, for every $1 invested in a healthy food incentive program, we can expect to see up to $3 in economic activity generated as a result.

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[1] The body of scientific literature on these topics is expanding rapidly. For a helpful overview of the current evidence base, see SNAP Incentives Support Local Economies and Local Health Efforts, prepared by Fitzgerald Canepa Consulting and available with free account at
https://snapincentives.voicesforhealthykids.org/

And, if healthy food incentives programs were made available at grocery stores, corners stores, and farmers' markets nationwide, annually we could expect to see an additional:

- $683M - $1.41B in families' pockets to spend on food
- $1.6B - $3.2B contribution to the national economy
- $518M - $1.1B in labor income for workers nationwide

The report also provides detailed estimates for expansion across nine different states.

In short, healthy food incentives would have a tremendous economic impact in addition to their well-recognized impact on public health.

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This report is the result of an innovative collaboration spanning the country. In 2019, *SPUR (CA)* and *Fair Food Network (MI)* joined together as the project leads based on a mutual interest in better understanding the economic impact of incentive programs. These two organizations, assisted by Project Director Dr. Ronit Ridberg *(University of California, Davis)*, then engaged ten additional partner organizations that operate incentive programs in states across the country, including: *Ecology Center (CA), Field & Fork Network (NY), Iowa Healthiest State Initiative (IA), Nourish Colorado (CO), Reinvestment Partners (NC), Sustainable Food Center (TX), The Food Basket (HI), University of California San Diego (CA), Vouchers 4 Veggies – EatSF (CA), and Washington State Department of Health (WA).* This group served as the project's Advisory Committee and contributed program data as critical inputs to the analysis, as well as provided crucial context, insight and feedback on study design and reporting.

To conduct the economic modeling, this coalition partnered with a team of agricultural economists from Colorado State University, including Dr. Dawn Thilmany, Dr. Allison Bauman, Erin Love, and Dr. Becca B.R. Jablonski. Each organization provided data from their existing program to the CSU researchers who, in turn, used that data to create three types of estimates:

1) The economic contributions of each program at its current scale, and
2) The economic contributions that a hypothetical healthy food incentive program would have if it were scaled statewide in the states in which partners were based

3) The economic contributions that a hypothetical healthy food incentive program would have if it were scaled nationwide

As with any study that seeks to quantify the impacts of activity in a future scenario, this study combines historical data with a set of assumptions based on program implementation experience. These estimates are grounded in reasonable projections of what "statewide expansion" would mean: number of people participating, number of retail outlets participating, amount of incentives redeemed, and additional economic impact of healthy food incentive programs that, by design, encourage buying locally-grown fruits and vegetables. The results presented in this study reflect a range of estimates comprising low-bound and high-bound scenarios. Because of that approach, the economic findings produced by the modeling range from conservative to very conservative estimates of the impacts of scaling incentive programs.

Conservative as the estimates may be, they nonetheless convey a clear message: **healthy food incentive programs do far more than just reduce hunger and improve nutrition. These programs also support economic development and jobs.** They provide increased purchasing power for low-income families who can stretch their food budgets further. These food dollars drive additional sales at grocery stores and farmers markets. And those sales, in turn, circulate in the local economy, providing a boost to workers, businesses, farmers, and communities all throughout the supply chain.

This research demonstrates that states are well-served by their investments in healthy food incentive programs, and both state and federal policymakers would be wise to double down on these commitments. Such investments reflect real and widespread returns not only for the health of constituents, but also for the health of economies.

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EXECUTIVE SUMMARY

WHAT IS THE ISSUE?

According to the USDA's 2020 annual report[2], in 2019 (before the COVID-19 pandemic) 13.7 million Americans, including more than 2.4 million households with children, faced hunger. These figures have increased significantly in 2020 as a result of the global pandemic. Beyond hunger, many lack consistent access to nutrient-rich foods, such as fruits and vegetables, because of both budget limitations and access to such goods at the markets where they shop. Healthy food incentive programs provide people, most often those enrolled in the Supplemental Nutrition Assistance Program (SNAP), with additional money to buy produce at grocery stores, corner stores, and farmers' markets. The goal of this project is to highlight the broader economic contributions of healthy food incentive programs that leverage food assistance dollars to help buyers buy more produce.

WHAT DID THE STUDY FIND?

Beyond enhancing the healthy options and food security of participating households, incentive programs contribute to the workers, enterprises and economies of places where participating markets and stores are located (Table i). Economic contributions of existing programs to a state's economy range from $150,000 to over $5 million and have an estimated contribution multiplier ranging from 1.1 to 1.6 for incentives spent at retail food stores, with the multiplier increasing to a range from 2.4 to 3.1 for incentives spent on farm-direct sales (i.e., farmers' markets, farm stands, community supported agriculture).

Table i. Current economic contribution of existing incentive program

State	Organization name	Output ($)	Jobs (jobs)	Labor Income ($)
California	Ecology Center's Market Match Program	5,617,678	23.1	1,224,665
California	SPUR	158,575	1.1	59,788
California	UCSD Mas Fresco	147,446	1.1	55,784
California	Vouchers 4 Veggies[3]	958,431	5.4	284,400
Colorado	Nourish Colorado	452,438	2.3	104,655
Hawaii	The Food Basket's DABUX	151,760	0.9	35,987
Iowa	Iowa Healthiest State Initiative	214,430	1.6	63,780
Michigan	Fair Food Network	5,156,419	38.9	1,578,152
New York	Field & Fork Network	357,299	1.6	82,237

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[2] https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/
[3] Data from San Francisco program only

State	Organization name	Output ($)	Jobs (jobs)	Labor Income ($)
North Carolina	Reinvestment Partners	236,696	2.1	84,601
Texas	Sustainable Food Center	314,028	1.4	66,371
Washington	Washington State Department of Health	3,811,013	24.7	1,198,031

Moreover, the potential impact of scaling incentive programs for statewide access represents a potentially significant bolster to the state-level economies where pilots have already shown that partnerships with various food outlets will facilitate SNAP users shifting some of their food assistance dollars to new purchases (Table ii). The ranges of economic impact if there are investments to scale are wide-ranging because there is still much to learn about how various food market outlets would operationalize such programs, and then, how SNAP participants would respond and reallocate their broader household spending. Potential impacts at the state level range from $6 million to over $400 million and $1.6 billion to $3.2 billion at the national level with an estimated contribution multiplier ranging from 1.1 to 2.9 for incentives spent at retail food stores and 2.4 to 3.1 for incentives spent on farm-direct sales (i.e., farmers' markets, farm stands, community supported agriculture).

Table ii. Potential economic contribution if incentive programs were scaled statewide

State	Output (millions)	Jobs (jobs)	Labor Income (millions)
California	$123 − 409	855 − 1,679	$45 − 88
Colorado	$12 − 38	92 − 179	$4 − 8
Hawaii	$9 − 22	74 − 120	$3 − 4
Iowa	$6 − 20	54 − 111	$2 − 4
Michigan	$30 − 128	252 − 661	$10 − 26
New York	$69 − 228	521 − 1,025	$27 − 53
North Carolina	$31 − 104	273 − 542	$11 − 22
Texas	$85 − 273	647 − 1,226	$31 − 59
Washington	$23 − 83	167 − 364	$8 − 17
U.S.	$1,558 − 3,197	10,467 − 21,548	$518 − 1,066

HOW WAS THE STUDY CONDUCTED?

To estimate the current economic impacts of food incentive programs, we used data from 12 currently operating incentive programs in nine states for either the 2018 or 2019 market year, as well as 2016 state-level data from the commercially available software IMpact Analysis for PLANning (IMPLAN) from the IMPLAN Group LLC. Data collected include incentive redemptions and SNAP reimbursements by market channel (e.g., Supermarket chains or large/corporate grocers, small scale or community retailers, farmers' markets/CSA/Farm stand), noting if the program had a locally grown component (i.e., if they required participating food market locations to

purchase a certain amount of produce locally, defined as within the state for the purposes of this study).

To scale up incentive programs, we first estimate an average incentive to SNAP ratio by market channel from current incentive programs. We then multiply the average incentive to SNAP ratio by SNAP redemptions to get estimated incentive redemptions for a range of scenarios. To frame scenarios, we use data from the U.S. Department of Agriculture Food and Nutrition Service (USDA FNS) on SNAP redemptions, in combination with estimated targets for expansion to determine the total sales the programs will generate and then use IMPLAN data to estimate the economic contributions.

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INTRODUCTION

According to the USDA's 2020 annual report[4], in 2019 (before the COVID-19 pandemic) 13.7 million Americans, including more than 2.4 million households with children, faced hunger. These figures have increased significantly in 2020 as a result of the global pandemic. Beyond hunger, many lack consistent access to nutrient-rich foods, such as fruits and vegetables, because of both budget limitations and access to such goods at the markets where they shop. A relatively new USDA program, now supported by Congress, the Gus Schumacher Nutrition Incentive Program (GusNIP), is one example from a portfolio of programs nationwide that aims to increase fruit and vegetable purchasing among Supplemental Nutrition Assistance Program (SNAP) consumers by providing incentives that stretch their food dollar. These funded projects are likely to have a positive impact across a diverse set of stakeholders: to consumers through improvements in food security; through a positive economic contribution to local farmers and grocery store owners; through an increase in sales and expansion of their customer base; and more broadly, to local economies through spillovers from benefits to the former.

More broadly, many organizations operating incentive programs have missions that also align with supporting local farmers as a vital aspect of more just and regionally-focused food systems. In response to these interests, SPUR (CA) and Fair Food Network (MI) joined together as the project leads based on a mutual interest in better understanding the economic impact of incentive programs. These two organizations then engaged ten additional partner organizations that operate incentive programs in states across the country. This group served as the project's Advisory Committee and contributed program data, provided context, insight and feedback on study design and reporting. Along with Colorado State University, this team came together to frame and estimate the potential economic impacts of a variety of expansion scenarios of healthy food incentives at grocery stores and farmers' markets across various geographies. The organizations running incentive programs that comprise the Advisory Committee of this project are:

- The Food Basket (HI) – DABUX
- Ecology Center (CA) - Market Match Program
- Fair Food Network (MI) – Double Up Food Bucks Michigan
- Field & Fork Network (NY) – Double Up Food Bucks NY
- Iowa Healthiest State Initiative (IA) – Double Up Food Bucks IA

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[4] https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/

- Nourish Colorado (formerly LiveWell Colorado) (CO) – Double Up Food Bucks CO
- Reinvestment Partners (NC) – Bull City Bucks
- SPUR (CA) – Double Up Food Bucks CA
- Sustainable Food Center (TX) – Double Up Food Bucks TX
- University of California San Diego (CA) - Más Fresco / More Fresh
- Vouchers 4 Veggies (CA) – EatSF / Vouchers for Veggies
- Washington Department of Health (WA) – Complete Eats and SNAP Market Match

In addition to allowing individual programs across the U.S. to assess the economic contributions of their programs to their state economy, the compilation of these analyses is an important element of building the policy case for expanding incentives to a larger share of SNAP participants and markets across the U.S. This mission has become even more timely given recent increases in food security because of the COVID pandemic and subsequent economic impacts to at-risk households.

Although not all incentive programs require a local purchasing focus, there is great interest in exploring the potential positive economic impact within communities when food supply chain activities occurring within a region are increased or shifted to more locally owned transactions, particularly for perishable and fresh products like fruits and vegetables. Because of the interest in "relocalization" across a number of US communities, a Colorado State University team of engaged researchers began developing assessment and estimation methods better suited to more localized food systems over a decade ago. At the heart of our approach is understanding how the changing nature of supply chain linkages within a community's businesses may influence the broader economic activity of the region. In collaboration with colleagues throughout the US, this led to the development of the Toolkit on the Economics of Local Food Systems, now evolving into a community of practice, coordinated by the U.S. Department of Agriculture Agricultural Marketing Service (USDA AMS). This project is yet another example that uses the best practices and community-based methods to estimate local economic contributions and impacts of food system policies and programs.

For this report, we explore how healthy food incentives may differentially affect several sets of stakeholders in the food supply chain. First, we estimate how spending with farmers who sell to different markets (direct vs. intermediated through retailers) will create a relatively higher economic contribution or impact through customized economic impact estimates that more accurately represent this set of food system

activities and markets. But, there are also potential economic benefits from the new sales with food retailers, that will vary by whether they have local procurement strategies in place (or not). So, again, this project created estimated multipliers for several different scenarios in the food retailers that are participating in the incentive programs (and future scenarios). By integrating the data provided by the project's Advisory Committee and using U.S. Department of Agriculture Economic Research Service (USDA ERS) reports on SNAP user spending patterns and the USDA Agricultural Management Survey (USDA ARMS) data on direct/local farm expenditures, we provide a customized multiplier estimating a broad set of economic outcomes for the communities where healthy food incentive initiatives are currently being undertaken. Moreover, we provide estimates for a number of scenarios that illustrate how the program could be expanded across a wider set of SNAP participants and locations in the US.

DATA

To estimate the current economic impacts of food incentive programs, we use data from currently operating incentive programs and 2016 state-level data from the commercially available software IMpact Analysis for PLANning (IMPLAN) from the IMPLAN Group LLC. To evaluate potential estimated impacts if current programs were to scale up, we use data from the U.S. Department of Agriculture Food and Nutrition (USDA FNS), in combination with estimated targets for expansion and data from current incentive programs to determine the total sales the programs will generate and then use IMPLAN to estimate the economic impacts.

CURRENT INCENTIVE PROGRAM DATA

We collected data on incentive programs from 12 organizations across nine states, including California, Colorado, Hawaii, Iowa, Michigan, New York, North Carolina, Texas and Washington. Data is from 2019 for Iowa and North Carolina and 2018 for all other partners. Data collected include incentive redemptions and SNAP reimbursements by market channel (e.g., supermarket chains or large/corporate grocers, small scale or community retailers, farmers' markets/community supported agriculture (CSA)/farm stand). Incentive redemptions include incentives linked to SNAP, Supplemental nutrition program for women, infants and children (WIC), vegetable prescription program (Rx), and farmers' market nutrition program (FMNP). We also collected data from each program on their program design, if the program had a locally grown component (e.g., customers earn incentives only on the purchase of locally grown food, or if the program requires participating food market locations to purchase a

certain amount of produce locally), and funding sources, see table 1. More details on the data collected from program partners can be found in appendices A and B[5].

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[5] We initially collected data from a small subset of Advisory Committee members that would allow us to estimate incentive spending based on incentive spending per household, but decided that estimating incentives based on the much broader pool of data with which to calculate the incentive to SNAP ratio would be the most accurate.

Table 1. Annual incentive redemptions, local component details and percentage of funding from federal sources for existing programs

State	Program name	Program type	Supermarket chains or large/corporate grocers (e.g., Kroger, Whole Foods, Save A Lot)	Small scale or community retailers (e.g., food co-op, corner store, independent grocer, grocer with less than 10 locations)	Farmers' markets, farm stands and CSA	Does this program have a locally grown component?[6]
California	Ecology Center's Market Match Program	SNAP			1,590,693	Yes
		WIC			293,047	
California	SPUR	SNAP		96,365		Yes
California	UCSD Mas Fresco	SNAP	92,150			No
California	Vouchers 4 Veggies[7]	Rx/WIC	194,971	99,173	163,565	No
Colorado	Nourish Colorado	SNAP	10,762	19,240	137,909	Yes
Hawaii	Food Basket	SNAP		22,847	49,120	Yes
Iowa	Iowa Healthiest State Initiative	SNAP	117,743	4,274	32,219	Yes
Michigan	Fair Food Network	SNAP	870,975	1,667,973	612,576	Yes
New York	Field & Fork Network	SNAP			141,051	Yes
North Carolina	Reinvestment Partners	SNAP[8]	177,981			No
Texas	Sustainable Food Center	SNAP			33,867	Yes
		WIC			12,532	
		FMNP			56,059	
Washington	Washington Department of Health	SNAP	1,520,520		489,263	No
		Rx	180,970			No

[6] We assume produce purchases from farmers' markets, farm stands and CSAs are 100% local (i.e., grown within the state).

[7] Data from San Francisco program only

[8] This program straddles between being a SNAP and an Rx program, for the purposes of this project we assume SNAP is the focus of the program

To scale up incentive programs, we estimate an average incentive to SNAP ratio by market channel, for all programs for which data was available. To calculate the average incentive-to-SNAP ratio, we first calculated the incentive-to-SNAP ratio by market channel for each program that provided data. To calculate the average incentive-to-SNAP ratio for each market channel, we took an average of all incentive-to-SNAP ratio by market channel. The incentive-to-SNAP ratio for grocery stores includes all programs with sales at supermarket chains or large/corporate grocers and small scale or community-based retailers. The incentive-to-SNAP ratio for corner stores includes only programs with sales at small scale or community-based retailers. And the incentive-to-SNAP ratio for farmers' markets, farm stands and Community Supported Agriculture programs (CSAs) includes only programs with sales through these market channels. Due to propriety data concerns, data collection on total SNAP reimbursements was not available and/or not accurate for all programs. Based on feedback from program partners, we only used the data for which we had a high confidence in the accuracy of estimates[9].

SECONDARY DATA AND SCENARIOS

After collecting all necessary primary data from current incentive programs, we use U.S. Department of Agriculture Food and Nutrition (USDA FNS) reports for the percentage of SNAP redemptions by market type for the U.S.[10] and farmers' market SNAP redemptions by state[11] for fiscal year 2019 (table 2) to allocate SNAP redemptions across market channels. SNAP redemptions for grocery stores and corner stores are not available by state, so we use the FY2019[12] percentage of redemptions by firm type nationally to estimate the redemptions in grocery and corner stores for each state. While farmers' market SNAP redemption data is available by state[13], we use the farmers' market SNAP redemptions as a percentage of total SNAP for FY2019 to allocate spending at farmers' markets across all scenarios as we assert it more accurately represents future allocation of farmers' market spending. To allocate the spending by market outlet to each state, we use SNAP redemptions by state for

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[9] Hawaii participating retailer SNAP data was provided but was not included.

[10] https://fns-prod.azureedge.net/sites/default/files/resource-files/2019-SNAP-Retailer-Management-Year-End-Summary.pdf

[11] https://fns-prod.azureedge.net/sites/default/files/resource-files/SNAP-Farmers-Markets-Redemptions-13.19.pdf

[12] Allocation of SNAP redemptions across grocery stores and corner stores has been relatively stable in recent years. In FY2013, 93.34% of redemptions were at grocery stores and 5.04% were at corner stores.

[13] https://fns-prod.azureedge.net/sites/default/files/resource-files/SNAP-Farmers-Markets-Redemptions-13.19.pdf

FY2013[14] and FY2019[15] (table 3). The two years were chosen to represent the potential range including a high SNAP participation year (2013) and a low SNAP participation year (2019).

Table 2. Percent of total SNAP redemptions for FY2019 for all market outlets types that could accept fruit and vegetable incentives[16]

	% of total SNAP redemptions		
State	Farmers' markets	Grocery stores	Corner stores
California	0.06%		
Colorado	0.05%		
Hawaii	0.27%		
Iowa	0.02%		
Michigan	0.06%	93.08%	5.50%
New York	0.07%		
North Carolina	0.01%		
Texas	0.00%		
Washington	0.07%		
U.S.	0.04%		

Source: Grocery and corner store data from USDA FNS SNAP FY2019 Retailer Management Annual report. Farmers' market data from USDA FNS FY19 SNAP farmer's market redemptions.

Table 3. SNAP redemptions in dollars for FY2013 and FY2019 by state

State	SNAP redemptions FY2013 ($)	SNAP redemptions FY2019 ($)
California	7,594,436,019	5,979,831,518
Colorado	829,111,116	641,629,202
Hawaii	486,762,749	443,739,041
Iowa	590,756,083	433,748,982
Michigan	2,895,195,224	1,700,113,050
New York	5,554,758,748	4,258,151,970
North Carolina	2,468,469,496	1,894,041,966
Texas	6,008,789,198	4,831,534,354
Washington	1,672,486,040	1,184,973,752
U.S.	75,982,528,877	55,611,300,724

Source: Redemptions by fiscal year from USDA FNS SNAP Retailer Management Annual report (FY2013 and FY2019).

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[14] https://fns-prod.azureedge.net/sites/default/files/snap/2013-SNAP-Retailer-Management-Annual-Report.pdf;
[15] https://www.cbpp.org/research/food-assistance/snap-caseload-and-spending-declines-have-accelerated-in-recent-years
[16] See appendix C for more details on the market outlets included

We are using FY2013 to represent a high SNAP participation year and FY2019 to represent a low SNAP participation year so as to provide realistic lower and upper bounds of our estimates of economic contribution if incentive programs were expanded. But due to the growth in SNAP participation at farmers' markets, there were more redemptions in FY2019 than in FY2013. Subsequently, we assume that FY2019 more accurately represents the allocation of farmers' market SNAP spending in our expansion scenarios and use farmers' market SNAP redemptions as a percent of total SNAP redemptions in FY2019 to estimate SNAP redemptions at farmers' markets for our low and high scenarios (table 4).

Table 4. Estimated SNAP redemptions in dollars for a high and low SNAP participation year by state and market outlet

State	High SNAP participation (based on FY2013)			Low SNAP participation (based on FY2019)		
	Grocery stores ($)	Corner stores ($)	Farmers' markets ($)	Grocery stores ($)	Corner stores ($)	Farmers' markets ($)
California	7,063,584,941	417,693,981	4,862,988	5,561,841,295	328,890,733	3,829,099
Colorado	771,156,249	45,601,111	406,305	596,779,321	35,289,606	314,430
Hawaii	452,738,033	26,771,951	1,294,247	412,721,682	24,405,647	1,179,852
Iowa	549,462,233	32,491,585	105,670	403,429,928	23,856,194	77,586
Michigan	2,692,821,078	159,235,737	1,649,307	1,581,275,148	93,506,218	968,504
New York	5,166,481,112	305,511,731	3,852,231	3,960,507,147	234,198,358	2,953,033
North Carolina	2,295,923,478	135,765,822	325,093	1,761,648,433	104,172,308	249,442
Texas	5,588,774,833	330,483,406	164,698	4,493,810,103	265,734,389	132,430
Washington	1,555,579,266	91,986,732	1,095,340	1,102,144,087	65,173,556	776,060
U.S.	70,671,350,108	4,179,039,088	31,269,846	51,762,380,268	3,061,250,181	22,886,272

Source: Redemptions for grocery and corner stores for each state are estimated by applying market channel allocation percentages (Table 2) to total SNAP redemptions using the USDA FNS SNAP Retailer Management Annual report (FY2013 and FY2019 – Table 3). Redemptions for farmers markets are estimated using the USDA FNS SNAP Retailer Management Annual report (FY2013 and FY2019 – Table 3) and USDA SNAP Farmers' market redemptions (FY2019).

Next, scenarios were created to represent if programs were able to expand and reach specific percentages of market outlets (with ranges based on feedback from the advisory committee and project partners). Scenarios and the rationale for estimates are explained in table 5 and a map of all scenarios is presented in figure 1. Results are presented only for the scenarios representing the upper and lower bound, described as scenarios A and B. Scenario A, the upper bound, assumes a high SNAP participation year (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets). Scenario B, the lower bound, assumes a low SNAP participation year (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets).

Table 5. Scenarios for statewide expansion

Market Outlet	Percentage of eligible market outlets that offer incentives	Rationale
Grocery	Low 60% High 90%	Unrealistic to achieve 100% of grocery outlets because 1) current model is opt-in and 2) depending on program design, there are some technological hurdles that may keep some grocery stores from participating Clarifying key assumption: this percentage is of grocery stores that already accept SNAP not "all grocery stores"
Farmers market	Low 80% High 100%	From a policy argument it is difficult to declare 100% of participation in any program without causing doubt, but program partners think it is possible.
Corner store	Low 10% High 25%	Based on partner feedback, there are many challenges in working with corner stores, especially related to technology and store-owner buy-in, so scenarios reflect pessimism about greater adoption.

Figure 1. Scenario map

Universe of Potential People	Our reach within that universe	IMPLAN Scenarios: Local Component or No?

Many people on SNAP [High Bound – FY '13 serves as base]

SCENARIO A
Many retail outlets offer incentives [high penetration]
Grocery = 90%
Farmers' Market = 100%
Corner Store = 25%

Low penetration

Program Has Local Component [High Bound of Econ Impact]

Program Has No Local Component [Low Bound of Econ Impact]

Local Component

No Local Component

IMPLAN

Local Component

No Local Component

Fewer People on SNAP [Low Bound FY '19 serves as base]

High Penetration

SCENARIO B
Few retail outlets offer incentives [low penetration]
Grocery = 60%
Farmers' Market = 80%
Corner Store = 10%

Local Component

No Local Component

METHODOLOGY

Economic contribution assessments can help tell the story of how a food system initiative, policy, or program stimulates economic activity in the economy, not just in the local food and agricultural sector, but throughout many sectors within the entire economic region of interest. IMPLAN is a commonly used input-output model that provides a framework to track the flow of money from one entity to another throughout an economy in a given period of time. It allows us to conduct an economic contribution analysis, measuring how endogenous variables (i.e., those within the model) respond to exogenous changes (i.e., additional spending in the economy resulting from incentive programs)[17]. An economic contribution analysis defines the magnitude of a project or program's role within the context of the overall economy of a region, while an economic impact assessment estimates the change in cash flowing through specific linkages throughout the economy after a shock. In this study, we focus on the economic contributions of incentive programs. However, if a state-level program is funded by 100% federal dollars, then the state-level contributions presented here can also be considered impacts. Figure 2 provides a high-level overview of the data used for the economic contribution analysis.

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[17] We use IMPLAN data, but all calculations are conducted outside of IMPLAN in a spreadsheet to allow for customized economic sectors and sectoral linkages. We estimate Type SAM multipliers and assume industry sectors, employee compensation, proprietor income and households are endogenous. Other property type income and taxes on production and imports are assumed to be exogenous.

Figure 2. Data going into the IMPLAN analysis

SNAP reimbursements by market channel

X

Average incentive to SNAP ratio for participating programs

X

Market penetration, based on scenarios

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Estimated incentive reimbursements by market channel (we use actual reimbursements for estimating current contributions)

Estimating total incentives that will be input into IMPLAN

30% spent on groceries

70% on restaurants and nonfood items

Allocation of incentive spending to industries in the economy

Spending at farmers' market/farm stands/CSA's

Spending at grocery/corner stores

If local purchasing requirement we increase the amount purchased locally by 20% for expansion scenarios and by actual local percentage for current scenario

ALLOCATED INCREASED SPENDING ACROSS THE ECONOMY

An important component to consider is the displacement of spending in the economy as a result of incentive programs. While participants are required to spend incentives on fresh fruits and vegetables, they are not prohibited from reallocating their cash budget, which may lead to transferring cash previously used on produce to instead be used to purchase food at restaurants or nonfood items. While participants

are likely to spend more on fresh fruits and vegetables as a result of the incentive program, we assume they reallocate at least some of their increased purchasing power resulting from the incentive program to eating at restaurants and on nonfood items. For more detail about this displacement, see the "Estimating the economic contribution of existing incentive programs" section below.

To estimate the economic contribution of incentive programs, we increase spending at food and beverage stores and direct-to-consumer marketing channels (e.g., farmers' markets, farm stands, CSAs) by the percentage of the incentive program we estimate will be spent on food, and then allocate the remaining spending to increase levels in nonfood sectors throughout the economy. Note that participants are required to spend incentives on fresh fruits and vegetables. When we talk about the percentage of incentives that will be spent on food and nonfood items, we are not inferring that participants will be spending incentives on nonfood items. Rather, as a result of the incentive program, participants have a larger total monthly budget and they have reallocated portions of their cash budget previously devoted to food to increasing food purchases as well as purchases of and nonfood items. A portion of the new money circulating in the economy is used by businesses to purchase inputs and pay workers from within the state and it circulates in the state's economy, while the remaining flows out of the state into the national and global economy. The amount of inputs that each sector in the economy purchases locally is called the regional purchase coefficient (RPC). RPCs are estimated for each sector of the economy by IMPLAN using a gravity model. In this project, we modify the RPC for the farming sectors to capture the effects of incentive programs requiring produce to be purchased locally[18]. The increase in local spending on inputs has a ripple effect through the economy (indirect and induced effects). The initial increase in spending from incentive programs plus the resulting increase in spending through the economy is estimated as the total economic contribution.

IMPLAN DATA AND CREATING A NEW LOCAL FOOD SECTOR
The structure of IMPLAN is based on National Income and Product Accounts (NIPA) and National Industry Accounts[19], with the purpose of tracking gross domestic product (GDP).

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[18] By increasing the RPC, we are assuming the total output of the farming sector is increasing as a result of a change in demand. The changes we are modeling are less than 1% of total industry output and thus it is reasonable to assume there will not be any resulting structural changes in the industry when increasing production to meet new demand.

[19] https://www.bea.gov/industry/input-output-accounts-data

Data are available for the industries down to the 4-digit NAICS code. In this study, we are interested in modeling impacts of fruit and vegetable sales at farmers' markets, CSAs and farm stands, none of which have a sector in IMPLAN. The USDA Agricultural Management Survey (USDA ARMS)[20] provides detailed farm financial data including input costs, wages, and proprietor income. We use this data for producers that participate in direct-to-consumer markets only (i.e., farmers' market, CSA, farm stand and other direct) to create a local food sector in IMPLAN (see appendix C for details)[21]. In order to estimate economic contributions in terms of jobs, we need to estimate the average number of jobs on a farm in the local food sector. We estimate employment in the local food sector by dividing hired labor expenditures by local food wages estimated using ARMS data in previous research[22], assuming employees work full time for a six-month growing season. Using this newly created sector, we can more accurately model the economic contribution of incentives spent at farmers' markets, CSAs and farm stands.

We will use three measures of economic activity: output, employment and labor income. Output is the value of industry production (sales plus net inventory change). Employment is an industry-specific mix of full-time, part-time, and seasonal employment. Employment is a job, that job can either be a full-time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same. Jobs are calculated following the U.S. Bureau of Economic Analysis (USDA BEA) and Bureau of Labor Statistics (USDA BLS) definition which is the full-time/part-time annual average. For example, one job lasting 12 months is equivalent to 2 jobs lasting 6 months. Employment is an annual average and is not equal to the full-time equivalents. Labor income includes employee compensation and proprietor income. Employee compensation includes wages, salaries, benefits, and payroll taxes. Proprietor income is current production income of sole proprietors, partnerships and tax-exempt cooperatives and excluded dividends, monetary interest received by nonfinancial business and rental income received if not primarily in the real estate business. Labor income can be negative if there is a net loss to the proprietor.

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[20] https://www.ers.usda.gov/data-products/arms-farm-financial-and-crop-production-practices/
[21] So as to not double count economic activity through the addition of a new sector, we "net out" sales in the local foods sector by taking half each from the existing conventional vegetable and melon and fruit sectors, respectively.
[22] https://doi.org/10.1002/aepp.13059

MARGINING

In IMPLAN, retail sectors only sell services (e.g., grocery stores do not sell groceries, they sell a service); we say that retail sectors are margined. Margins allow us to allocate sales to the correct industries by tracing consumer expenditures through retail, wholesale and transportation back to the industries that manufactured the product that is ultimately sold; this is called the value chain. This is an important concept for us to model accurately; when we want to model the impact of an additional $100 spending at grocery stores, we do not give full credit and increase spending at grocery stores by $100. Instead, we go backwards through the value chain in the economy and allocate that $100 along the way, from the retail store to transportation services to the last place a meaningful transformation of the product was made, which in the case of incentive program spending at grocery stores is at the farm (Figure 3). Conversely, we assume money spent at farmers' markets, farm stands and CSAs goes directly to the farmer and therefore is not allocated along the value chain (i.e., margined).

Figure 3. Tracing a sale of $100 at a grocery store through the economy[23]

| Producer value = $48 | Transportation and wholesale costs = $22 | Retail markup = $29 |

Total Revenue/purchase price = $100
Marginal revenue/retail producer price = $29

To allocate spending throughout the value chain for each retail (i.e., margined) sector of the economy where we assume an increase in spending, we increase spending in the sector in which the last meaningful transformation occurred and use IMPLAN margins to allocate spending along the supply chain. When modeling increased spending at grocery stores, rather than assuming a typical grocery basket, we

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[23] Total does not add up to $100 due to rounding

assume incentive redemptions will be spent only on fresh fruits and vegetables given the spending criteria of the program[24]. Note that we do not margin spending at farmers' markets, CSA's or farm stands, we assume spending goes directly to the farmer.

The remainder of the description of our methodology is split into two sections. The first section describes how we use IMPLAN to estimate economic contributions and impacts of existing incentive programs. The second section describes how we estimate economic contributions if programs were scaled to reach all types of market outlets statewide.

ESTIMATING THE ECONOMIC CONTRIBUTION OF EXISTING INCENTIVE PROGRAMS

When a person receives incentives, their purchasing power increases (referred to below as "new money"). While incentives can only be used to purchase fresh fruits and vegetables, participants are not prohibited from using other funds they intended to use for food purchases on nonfood items (i.e., a substitution effect). A study by USDA ERS on the economic impacts of SNAP[25] shows that when SNAP recipients' purchasing power increases, they put 30% of their new money toward "food at home" (i.e., groceries). The remaining 70% of the new money goes toward other expenses such as prepared food, transportation, housing, utilities, clothes, and everything else that people spend money on in the economy (Figure 4).

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[24] For more details on the margining approach, see Appendix E.

[25] Canning, Patrick and Brian Stacy. The Supplemental Nutrition Assistance Program (SNAP) and the Economy: New Estimates of the SNAP Multiplier, ERR-265, U.S. Department of Agriculture, Economic Research Service, July 2019. Available at: https://www.ers.usda.gov/webdocs/publications/93529/err-265.pdf?v=1289.2

Figure 4. Distribution of additional SNAP spending
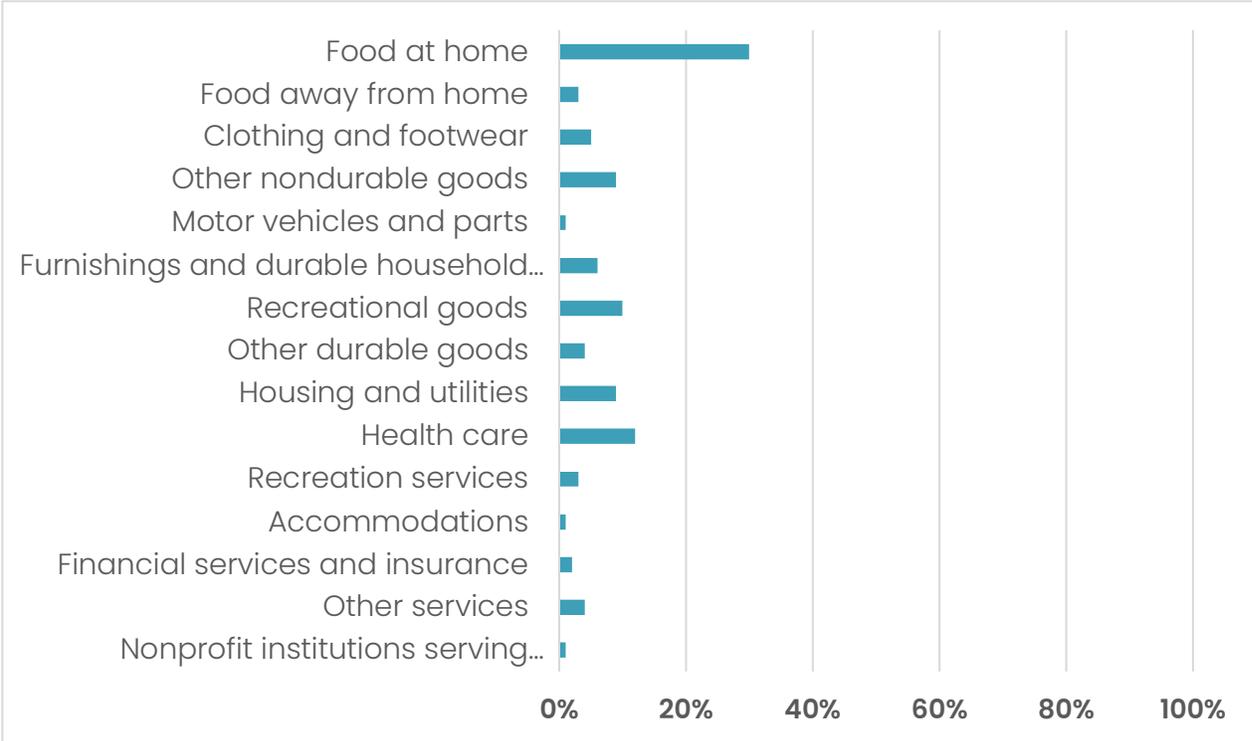
Source: USDA ERS, 2019, The Supplemental Nutrition Assistance Program (SNAP) and the Economy: New Estimates of the SNAP Multiplier.

When the 30% of the new money that goes toward groceries gets spent at a farmers' market (or another farm-direct retail location), that whole portion of money is modeled in IMPLAN as going toward the local food sector. In other words, 100% of the 30% goes to the local food sector, including the farmers and their agricultural suppliers (for more detail on how that sector is defined, see Appendix D). In contrast, when the 30% of the new money that goes toward groceries is spent at a grocery store or corner store, we have modeled it in IMPLAN so that 48% is allocated to fruit and vegetable farmers, 16% to wholesale trade, 6% to truck transportation, and 29% to retail food and beverage stores (see Appendix E). In all cases, the remaining 70% of the new money is allocated to the food away from home and nonfood sectors (Appendix E).

Once all of the spending is correctly allocated to all sectors of the economy, we multiply the spending in each sector by the percentage of that spending that we

estimate occurs locally[26] to get the direct impact on the economy that will be input into the model. The total contribution is the direct effect plus the ripple effect of increased spending throughout the economy. For those programs that require grocery stores to purchase local produce or only provide incentives when customers buy local produce, we set the amount of fruits and vegetables purchased locally to the actual (or estimated) percentage of purchases that were local.[27] To calculate the implied contribution multiplier[28], we take the total contribution divided by the amount of incentives.

ESTIMATING THE ECONOMIC IMPACT IF EXISTING PROGRAMS WERE SCALED STATEWIDE

To scale up incentive programs, we use the average incentive to SNAP ratio by market channel, estimated using data from current programs, USDA FNS SNAP reimbursements by market channel, and expansion targets (as described in the data section). This results in an estimated incentive spending by market channel for each state. Estimated incentive redemptions for Scenario A (as described in Figure 1) are represented by the columns labeled "High" in Table 6. Estimated incentive redemptions for Scenario B (as described in Figure 1) are represented by the columns labeled "Low" in Table 7. In order to compare results of programs with a local purchasing requirement at grocery stores, we adjust the IMPLAN model to assume an increase in purchases from local fruit and vegetable farmers by 20%.

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[26] We assume the local purchasing percentage is 100% for all retail (including farmers' markets) and service sectors and assume the local purchasing percentage is the model RPC for all other industries.
[27] For more details see Appendix F.
[28] We calculate a type SAM multiplier.

Table 6. Estimated incentive spending by market channel for each state, in dollars, assuming high SNAP participation (based on FY2013 levels). Scenario A is represented by columns labeled "High"

	Grocery store incentive redemptions ($)		Corner stores incentive redemptions ($)		Farmers' markets/CSAs/Farm stand incentive redemptions ($)		Total incentive redemptions ($)	
Incentive to SNAP ratio	2.1%		3.1%		82.9%			
Scenario and % of eligible market outlets that offer incentives	High 90%	Low 60%	High 25%	Low 10%	High 100%	Low 80%	High	Low
California	134,911,161	$89,940,774	$3,192,066	$1,276,827	$4,031,259	$3,225,007	142,134,486	94,442,608
Colorado	14,728,723	9,819,149	348,489	139,396	336,814	269,451	15,414,026	10,227,995
Hawaii	8,647,084	5,764,723	204,594	81,838	1,072,889	858,311	9,924,567	6,704,872
Iowa	10,494,471	6,996,314	248,304	99,322	87,597	70,078	10,830,373	7,165,714
Michigan	51,431,620	34,287,747	1,216,898	486,759	1,367,222	1,093,777	54,015,740	35,868,284
New York	98,677,367	65,784,912	2,334,756	933,903	3,193,374	2,554,700	104,205,498	69,273,514
North Carolina	43,851,062	29,234,041	1,037,538	415,015	269,492	215,593	45,158,092	29,864,650
Texas	106,742,980	71,161,986	2,525,593	1,010,237	136,529	109,223	109,405,102	72,281,447
Washington	29,710,835	19,807,223	702,973	281,189	908,002	726,401	31,321,810	20,814,814
U.S.	1,349,789,659	899,859,773	31,936,706	12,774,682	25,921,686	20,737,349	1,407,648,052	933,371,804

Notes: Incentive to SNAP ratio is an average of the set of incentive to SNAP ratios reported by program partners. Scenarios were created to reach specific percentages of market outlets based on feedback from the advisory committee and project partners. Underlying data based on redemptions for grocery and corner stores for states are estimated by applying market channel allocation percentages (Table 2) to total SNAP redemptions using levels reported in the USDA FNS SNAP Retailer Management Annual report (FY2019 – Table 3). Redemptions for farmers markets are estimated using the USDA FNS SNAP Retailer Management Annual report (FY2013 and FY2019) and USDA SNAP Farmers' market redemptions (FY2019).

Table 7. Estimated incentive spending by market channel for each state, in dollars, assuming low SNAP participation (based on FY2019 levels). Scenario B is represented by columns labeled "Low".

	Grocery store incentive redemptions ($)		Corner stores incentive redemptions ($)		Farmers' markets/CSAs/Farm stand incentive redemptions ($)		Total incentive redemptions ($)	
Incentive to SNAP ratio	2.1%		3.1%		82.9%			
Scenario and % of eligible market outlets that offer incentives	High 90%	Low 60%	High 25%	Low 10%	High 100%	Low 80%	High	Low
California	106,228,562	70,819,041	2,513,422	1,005,369	3,174,199	2,539,359	111,916,182	74,363,769
Colorado	11,398,205	7,598,804	269,687	107,875	260,652	208,522	11,928,545	7,915,200
Hawaii	7,882,791	5,255,194	186,511	74,604	978,059	782,447	9,047,360	6,112,245
Iowa	7,705,323	5,136,882	182,312	72,925	64,316	51,453	7,951,951	5,261,259
Michigan	30,201,614	20,134,409	714,585	285,834	802,858	642,287	31,719,058	21,062,530
New York	75,643,830	50,429,220	1,789,771	715,909	2,447,968	1,958,375	79,881,570	53,103,503
North Carolina	33,646,659	22,431,106	796,097	318,439	206,779	165,423	34,649,536	22,914,968
Texas	85,829,666	57,219,778	2,030,773	812,309	109,780	87,824	87,970,220	58,119,911
Washington	21,050,435	14,033,624	498,064	199,226	643,329	514,663	22,191,828	14,747,512
U.S.	987,893,703	658,595,802	23,394,432	9,357,773	18,971,976	15,177,581	1,030,260,111	683,131,156

Notes: Incentive to SNAP ratio is an average of the set of incentive to SNAP ratios reported by program partners. Scenarios were created to reach specific percentages of market outlets based on feedback from the advisory committee and project partners. Underlying data based on redemptions for grocery and corner stores for states are estimated by applying market channel allocation percentages (Table 2) to total SNAP redemptions using levels reported in the USDA FNS SNAP Retailer Management Annual report (FY2019 – Table 3). Redemptions for farmers markets are estimated using the USDA FNS SNAP Retailer Management Annual report (FY2013 and FY2019) and USDA SNAP Farmers' market redemptions (FY2019).

RESULTS

We provide results for the economic contribution of each state's current incentive program and the economic contribution if that program were scaled statewide. An economic contribution analysis defines the magnitude of a project or program's role within the context of the overall economy of a region. If a state's incentive program is 100% federally funded, then the economic contribution numbers presented here can also be considered an economic impact, as we can assume the money to fund the incentives is new money into the economy that would not otherwise be available. Results are presented for each state separately.

ECONOMIC CONTRIBUTION OF CURRENT INCENTIVE PROGRAMS

In this section we calculate the economic contribution of existing fruit and vegetable incentive programs on their states' economies.

California

We analyzed four incentive programs in California operated by: Ecology Center, SPUR, UCSD, and Voucher 4 Veggies. We present current contribution results for each program and then one set of high and low bound scaling scenarios for the whole state.

Ecology Center's Market Match Program

The Ecology Center's Market Match Program operates in farmers' markets, farm stands, and CSAs. For more information about the program, visit www.marketmatch.org. In 2018, the Ecology Center's Market Match program provided $1,883,740 of incentives that were spent across the state of California (~38 counties), all of which went directly to farmers through sales at farmers' markets, farm stands and CSAs (Table 8). The resulting economic contribution to California's economy of this program was $5,618K, 23.1 jobs[29] and $1,225K in labor income[30]. The implied output multiplier is 3.0 for farm-direct sales and overall. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 3.0 dollars.

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[29] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[30] Employee compensation and proprietor income

Table 8. Incentives, economic contribution and implied output multiplier for the 2018 Market Match incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	1,883,740	5,617,678	23.1	1,224,665	3.0
Incentives spent on F&V at retail food sales	-	-	-	-	-
All incentives	1,883,740	5,617,678	23.1	1,224,665	3.0

In looking at the employment contributions to the agricultural sector, we see $247K in labor income were created in the agricultural sector as a result of the Ecology Center's 2018 Market Match incentive program, with the majority coming from fruit and vegetable farmers (Table 9). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of the Market Match program to the food retail sector are 0.14 jobs and $6K in labor income.

Table 9. Employment contributions for the farm and grocery sectors for the Ecology Center's 2018 incentive program

	Incentives ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		5.8	247,483
Fruit and vegetable farmers	1,883,740	*5.3*	*227,030*
Retail food sector		0.14	5,504

SPUR
SPUR's incentive program, Double Up Food Bucks California, operates in small-scale community retailers. SNAP customers earn incentives when they buy California-grown fresh fruits and vegetables and can redeem those incentives on any fresh fruits and vegetables[31]. For more information about the program, visit https://www.spur.org/featured-project/double-food-bucks-california. In 2018, SPUR provided $96K of incentives that were spent in Santa Clara County, CA, all of which

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[31] SPUR estimates that 20% of incentives are spent on California-grown produce.

went to food retailers (Table 10). The resulting economic contribution to California's economy of this program was $159K, 1.1 jobs[32] and $60K in labor income[33]. The implied output multiplier is 1.6 for incentives spent at food retailers and overall. This means, that for every dollar spent on incentives at food retailers the contribution to the economy was 1.6 dollars.

Table 10. Incentives, economic contribution and implied output multiplier for SPUR's 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	–	–	–	–	–
Incentives spent on F&V at retail food sales	96,365	158,575	1.1	59,788	1.6
All incentives	96,365	158,575	1.1	59,788	1.6

In looking at the employment contributions to the agricultural sector, we see $ 5K in labor income were created in the agricultural sector as a result of SPUR's 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 11). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of SPUR's program to the food retail sector are 0.11 jobs and $4K in labor income.

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[32] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[33] Employee compensation and proprietor income

Table 11. Employment contributions for the farm and grocery sectors for SPUR's 2018 incentive program

	Incentives ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		0.1	4,867
Fruit and vegetable farmers	96,365	*0.1*	*3,371*
Retail food sector		0.11	4,345

UCSD Mas Fresco

University of California San Diego's Mas Fresco program operates in large grocery stores. For more information about the program, visit https://ucsdcommunityhealth.org/work/morefresh/. In 2018, UCSD's Mas Fresco program provided $92K of incentives that were spent in Orange County, San Diego County, and Los Angeles County (CA) all of which went to food retailers with no local purchasing requirement (Table 12). The resulting economic contribution to California's economy of this program was $147K, 1.1 jobs[34] and $56K in labor income[35]. The implied output multiplier is 1.6 for incentives spent at food retailers and overall. This means, that for every dollar spent on incentives at food retailers the contribution to the economy was 1.6 dollars.

Table 12. Incentives, economic contribution and implied output multiplier for UCSD's Mas Fresco 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	–	–	–	–	–
Incentives spent on F&V at retail food sales	92,150	147,446	1.1	55,784	1.6
All incentives	92,150	147,446	1.1	55,784	1.6

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[34] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[35] Employee compensation and proprietor income

In looking at the employment contributions to the agricultural sector, we see $ 4K in labor income were created in the agricultural sector as a result of UCSD's Mas Fresco 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 13). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of UCSD's Mas Fresco program to the food retail sector are 0.10 jobs and $4K in labor income.

Table 13. Employment contributions for the farm and grocery sectors for UCSD's Mas Fresco 2018 incentive program

	Incentives ($)	Emp.(jobs)	Labor income ($)
All ag sectors (not just F&V farmers)	92,150	0.1	3,891
Fruit and vegetable farmers		*0.1*	*2,690*
Retail food sector		0.10	4,147

Vouchers 4 Veggies
Vouchers 4 Veggies operates in farmers' markets, farm stands, CSAs, small-scale retailers, and large grocery stores. For more information about the program, visit https://eatsfvoucher.org/. In 2018, Vouchers 4 Veggies provided $458K of incentives that were spent in San Francisco, California with $164K going directly to farmers through sales at farmers' markets, farm stands and CSAs and $294K going to food retailers (Table 14). The program has no local purchasing requirement for purchases at food retailers. The resulting economic contribution to California's economy of this program was $958K, 5.4 jobs[36] and $284K in labor income[37]. The implied output multiplier is 3.9 for farm-direct sales, 1.6 for incentives spent at food retailers, and weighting these effects, an overall multiplier of 2.1. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 3.0 dollars, and for every dollar spent at food retailers the contribution to the economy was 1.6 dollars.

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[36] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[37] Employee compensation and proprietor income

Table 14. Incentives, economic contribution and implied output multiplier for Voucher 4 Veggies' 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp.(jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	163,565	487,783	2.0	106,338	3.0
Incentives spent on F&V at retail food sales	294,144	470,649	3.4	178,063	1.6
All incentives	457,709	958,431	5.4	284,400	2.1

In looking at the employment contributions to the agricultural sector, we see $34K in labor income were created in the agricultural sector as a result of Voucher 4 Veggies' 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 15). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of Voucher 4 Veggies' program to the food retail sector are 0.34 jobs and $14K in labor income.

Table 15. Employment contributions for the farm and grocery sectors for Voucher 4 Veggies' 2018 incentive program

	Incentives ($)	Emp.(jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		0.9	33,909
Fruit and vegetable farmers	457,709	*0.7*	*28,299*
Retail food sector		0.34	13,715

Colorado

Nourish Colorado's Double Up Food Bucks program (run under the name LiveWell Colorado until 2020) operates in farmers' markets, farm stands, CSAs, small-scale retailers, and large grocery stores. To qualify for participation all incentive dollars must be spent on Colorado-grown produce. For more information about the program, visit https://doubleupcolorado.org/. In 2018, Nourish Colorado provided $167,911 of incentives that were spent across the state of Colorado with $137,909 going directly to farmers through sales at farmers' markets, farm stands and CSAs and $30,002 going to food retailers, where customers are required to purchase only

Colorado grown produce (Table 16). The resulting economic contribution to Colorado's economy of this program was $452K, 2.3 jobs[38] and $105K in labor income[39]. The implied output multiplier is 2.9 for farm-direct sales, 1.6 for incentives spent at food retailers, and weighting these effects, an overall multiplier of 2.7. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 2.9 dollars, and for every dollar spent at food retailers the contribution to the economy was 1.6 dollars.

Table 16. Incentives, economic contribution and implied output multiplier for Nourish Colorado's 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	137,909	402,964	1.9	86,669	2.9
Incentives spent on F&V at retail food sales	30,002	49,473	0.4	17,986	1.6
All incentives	167,911	452,438	2.3	104,655	2.7

In looking at the employment contributions to the agricultural sector, we see $20K in labor income were created in the agricultural sector as a result of Nourish Colorado's 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 17). Due to the complexities of employment in the agricultural industry, labor income is a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of Nourish Colorado's program to the retail sector are 0.05 jobs and $1.7K in labor income.

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[38] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[39] Employee compensation and proprietor income

Table 17. Employment contributions for the farm and grocery sectors for Nourish Colorado's 2018 incentive program

	Incentives ($)	Emp.(jobs)	Labor income ($)
All ag sectors (not just F&V farmers)	167,911	0.5	19,645
Fruit and vegetable farmers		*0.4*	*17,605*
Retail food sector		0.05	1,676

Hawaii

Hawaii's DABUX incentive program operates in farmers' markets, farm stands, CSAs, and small-scale retailers. To qualify for participation all incentive dollars must be spent on Hawaii-grown produce. For more information about the program, visit https://www.hawaiifoodbasket.org/da-bux. In 2018, Hawaii's DABUX program provided $72K of incentives that were spent across the state of Hawaii with $49K going directly to farmers through sales at farmers' markets, farm stands and CSAs and $23K going to food retailers, where customers are required to purchase only Hawaii grown produce (Table 18). The resulting economic contribution to Hawaii's economy of this program was $152K, 0.9 jobs[40] and $36K in labor income[41]. The implied output multiplier is 2.4 for farm-direct sales, 1.4 for incentives spent at food retailers, and weighting these effects, an overall multiplier of 2.1. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 2.4 dollars, and for every dollar spent at food retailers the contribution to the economy was 1.4 dollars.

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[40] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[41] Employee compensation and proprietor income

Table 18. Incentives, economic contribution and implied output multiplier for Hawaii's DABUX 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	49,120	119,523	0.6	25,297	2.4
Incentives spent on F&V at retail food sales	22,847	32,237	0.3	10,690	1.4
All incentives	71,967	151,760	0.9	35,987	2.1

In looking at the employment contributions to the agricultural sector, we see $ 6K in labor income were created in the agricultural sector as a result of DABUX's 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 19). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of DABUX's program to the food retail sector are 0.0 jobs and $1K in labor income.

Table 19. Employment contributions for the farm and grocery sectors for Hawaii DABUX's 2018 incentive program

	Incentives ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		0.3	6,436
Fruit and vegetable farmers	71,967	*0.2*	*6,020*
Retail food sector		0.0	1,049

Iowa

Iowa Healthiest State Initiative operates in farmers' markets, farm stands, CSAs, small-scale retailers, and large grocery stores. To qualify for participation at small-scale retailers all incentive dollars must be spent on Iowa-grown produce, there is no local requirement for purchases at large scale retailers. For more information about the program, visit http://www.doubleupiowa.org. In 2019, Iowa Healthiest State Initiative provided $154K of incentives that were spent across the state of Iowa with $32K going directly to farmers through sales at farmers' markets, farm stands and CSAs and $122K going to food retailers, where customers are required to purchase only Iowa

grown produce if the retailers are small (Table 20). The resulting economic contribution to Iowa's economy of this program was $214K, 1.6 jobs[42] and $64K in labor income[43]. The implied output multiplier is 2.5 for farm-direct sales, 1.1 for incentives spent at food retailers, and weighting these effects, an overall multiplier of 1.4. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 2.5 dollars, and for every dollar spent at food retailers the contribution to the economy was 1.1 dollars.

Table 20. Incentives, economic contribution and implied output multiplier for the Iowa Healthiest State Initiative 2019 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	32,219	79,224	0.4	16,550	2.5
Incentives spent on F&V at retail food sales	122,017	135,206	1.2	47,231	1.1
All incentives	154,236	214,430	1.6	63,780	1.4

In looking at the employment contributions to the agricultural sector, we see $5K in labor income were created in the agricultural sector as a result of the Iowa Healthiest State Initiative's 2019 incentive program, with the majority coming from fruit and vegetable farmers (Table 21). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of the Iowa Healthiest State Initiative's program to the food retail sector are 0.18 jobs and $5K in labor income.

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[42] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[43] Employee compensation and proprietor income

Table 21. Employment contributions for the farm and grocery sectors for the Iowa Healthiest State Initiative's 2019 incentive program

	Incentives ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		0.1	4,623
Fruit and vegetable farmers	154,236	*0.1*	*3,975*
Retail food sector		0.18	4,548

Michigan

Michigan's Fair Food Network operates Double Up Food Bucks in farmers' markets, farm stands, CSAs, small-scale retailers, and large grocery stores. For more information about the program, visit https://fairfoodnetwork.org/projects/double-up-food-bucks/. Independent grocers participating in the Double Up Food Bucks program in Michigan in 2018 were required to purchase 18% of their produce from Michigan growers during the prime growing season, which meant that roughly 15% of all produce purchased by participating grocers during the year came from Michigan farms.

In 2018, Fair Food Network provided $3M of incentives that were spent across the state of Michigan with $613K going directly to farmers through sales at farmers' markets, farm stands and CSAs and $2.5M going to food retailers (Table 22). The resulting economic contribution to Michigan's economy of this program was $5M, 38.9 jobs and $1.6M in labor income. The implied output multiplier is 2.7 for farm-direct sales, 1.4 for incentives spent at food retailers, and weighting these effects, an overall multiplier of 1.6. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 2.7 dollars, and for every dollar spent at food retailers the contribution to the economy was 1.4 dollars.

Table 22. Incentives, economic contribution and implied output multiplier for Fair Food Network's 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	612,576	1,640,392	8.1	347,949	2.7
Incentives spent on F&V at retail food sales	2,538,948	3,516,027	30.8	1,230,203	1.4
All incentives	3,151,524	5,156,419	38.9	1,578,152	1.6

In looking at the employment contributions to the agricultural sector, we see $ 108K in labor income were created in the agricultural sector as a result of Fair Food Network's 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 23). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of Fair Food Network's program to the food retail sector are 3.38 jobs and $97K in labor income.

Table 23. Employment contributions for the farm and grocery sectors for Fair Food Network's 2018 incentive program

	Incentives ($)	Emp.(jobs)	Labor income ($)
All ag sectors (not just F&V farmers)	3,151,524	5.0	108,300
Fruit and vegetable farmers		4.4	94,716
Retail food sector		3.38	96,904

New York

New York's Field & Fork Network incentive program operates in farmers' markets, farm stands, and CSAs. For more information about the program, visit https://doubleupnys.com/about-the-program/. In 2018, Field & Fork Network provided $141K of incentives that were spent across the state of New York, all of which went directly to farmers through sales at farmers' markets, farm stands and CSAs (Table 24). The resulting economic contribution to New York's economy of this program was

$357K, 1.6 jobs[44] and $82K in labor income[45]. The implied output multiplier is 2.5 for farm-direct sales and overall. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 2.5 dollars.

Table 24. Incentives, economic contribution and implied output multiplier for Field & Fork Network's 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	141,051	357,299	1.6	82,237	2.5
Incentives spent on F&V at retail food sales	–	–	–	–	–
All incentives	141,051	357,299	1.6	82,237	2.5

In looking at the employment contributions to the agricultural sector, we see $ 18K in labor income were created in the agricultural sector as a result of Field & Fork Network's 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 25). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of Field & Fork Network's program to the food retail sector are 0.01 jobs and $321 in labor income.

Table 25. Employment contributions for the farm and grocery sectors for Field & Fork Network's 2018 incentive program

	Incentives ($)	Emp.(jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		0.4	17,538
Fruit and vegetable farmers	141,051	*0.4*	*16,964*
Retail food sector		0.01	321

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[44] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[45] Employee compensation and proprietor income

North Carolina

North Carolina's Reinvestment Partners incentive program operates in large grocery stores and there is no local purchasing requirement. For more information about the program, visit https://reinvestmentpartners.org/what-we-do/produce-prescriptions/overview.html. In 2019, Reinvestment Partners provided $178K of incentives that were spent across the state of North Carolina, all of which went to food retailers, where customers were not required to purchase any North Carolina grown produce to participate in the program (Table 26). The resulting economic contribution to North Carolina's economy of this program was $237K, 2.1 jobs[46] and $85K in labor income[47]. The implied output multiplier is 1.3 for incentives spent at food retailers and overall. This means, that for every dollar spent at food retailers the contribution to the economy was 1.3 dollars.

Table 26. Incentives, economic contribution and implied output multiplier for Reinvestment Partners' 2019 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	–	–	–	–	–
Incentives spent on F&V at retail food sales	177,981	236,696	2.1	84,601	1.3
All incentives	177,981	236,696	2.1	84,601	1.3

In looking at the employment contributions to the agricultural sector, we see $3K in labor income were created in the agricultural sector as a result of Reinvestment Partners' 2019 incentive program, with the majority coming from fruit and vegetable farmers (Table 27). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of Reinvestment Partners' program to the food retail sector are 0.27 jobs and $7K in labor income.

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[46] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same

[47] Employee compensation and proprietor income

Table 27. Employment contributions for the farm and grocery sectors for Reinvestment Partners' 2019 incentive program

	Incentives ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		0.1	2,587
Fruit and vegetable farmers	177,981	*0.1*	*1,948*
Retail food sector		0.27	6,766

Texas

Texas' Sustainable Food Center incentive program operates in farmers' markets, farm stands, and CSAs. For more information about the program, visit https://sustainablefoodcenter.org/programs/double-up-food-bucks. In 2018, Sustainable Food Center provided $102K of incentives that were spent across the state of Texas, all of which went directly to farmers through sales at farmers' markets, farm stands and CSAs (Table 28). The resulting economic contribution to Texas' economy of this program was $314K, 1.4 jobs[48] and $66K in labor income[49]. The implied output multiplier is 3.1 for farm-direct sales and overall. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 3.1 dollars.

Table 28. Incentives, economic contribution and implied output multiplier for Sustainable Food Center's 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	102,458	314,028	1.4	66,371	3.1
Incentives spent on F&V at retail food sales	–	–	–	–	–
All incentives	102,458	314,028	1.4	66,371	3.1

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[48] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[49] Employee compensation and proprietor income

In looking at the employment contributions to the agricultural sector, we see $14K in labor income were created in the agricultural sector as a result of Sustainable Food Center's 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 29). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of Sustainable Food Center's program to the food retail sector are 0.01 jobs and $296 in labor income.

Table 29. Employment contributions for the farm and grocery sectors for Sustainable Food Center's 2018 incentive program

	Incentives ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		0.4	13,690
Fruit and vegetable farmers	102,458	*0.3*	*12,326*
Retail food sector		0.01	296

Washington

Washington State Department of Health's operates in farmers' markets, farm stands, and large grocery stores. Their program does not have a local purchasing requirement. For more information about the program, visit https://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/PublicHealthSystemResourcesandServices/Funding/FruitandVegetableIncentivesProgram. In 2018, Washington State Department of Health provided $2M of incentives that were spent across the state of Washington with $489K going directly to farmers through sales at farmers' markets and farm stands and $1.7M going to food retailers (Table 30). The resulting economic contribution to Washington's economy of this program was $4M, 24.7 jobs[50] and $1M in labor income[51]. The implied output multiplier is 2.7 for farm-direct sales, 1.5 for incentives spent at food retailers, and weighting these effects, an overall multiplier of 1.7. This means, that for every dollar spent on incentives at farm-direct outlets the contribution to the economy was 2.7 dollars, and for every dollar spent at food retailers the contribution to the economy was 1.5 dollars.

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[50] Employment is a job, that job can either be a full time or a part-time job and a person can hold more than one job, so the job count and number of persons employed is not necessarily the same
[51] Employee compensation and proprietor income

Table 30. Incentives, economic contribution and implied output multiplier for Washington State Department of Health's 2018 incentive program

	Incentives ($)	Economic contribution			Output multiplier
		Output ($)	Emp. (jobs)	Labor income ($)	
Incentives spent on farm-direct sales to local F&V farmers	489,263	1,301,328	5.7	279,934	2.7
Incentives spent on F&V at retail food sales	1,701,490	2,509,685	19.1	918,097	1.5
All incentives	2,190,753	3,811,013	24.7	1,198,031	1.7

In looking at the employment contributions to the agricultural sector, we see $149K in labor income were created in the agricultural sector as a result of Washington State Department of Health's 2018 incentive program, with the majority coming from fruit and vegetable farmers (Table 31). Due to the complexities of employment in the agricultural industry, labor income may be a better measure of employment contribution than are jobs for the agricultural sector. Employment contributions of Washington State Department of Health's program to the food retail sector are 2.07 jobs and $72K in labor income.

Table 31. Employment contributions for the farm and grocery sectors for Washington Department of Health's 2018 incentive program

	Incentives ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		4.2	149,459
Fruit and vegetable farmers	2,190,753	*3.5*	*122,697*
Retail food sector		2.07	71,787

ECONOMIC CONTRIBUTION OF INCENTIVE PROGRAMS IN STATEWIDE SCALING SCENARIOS

In this section, we estimate the economic contribution of each incentive program if it were scaled statewide, as described in the methods section.

California

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[52]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from California farmers or see a boost of 20% in sales of CA grown produce because of the program.

If California's incentive program were scaled statewide, the upper bound for total incentives spent in the state is $142M (Table 32). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $233M, 1,630 jobs and $86M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $409M, 1,679 jobs, and $88M in labor income. The lower bound for total incentives spent in the state is $74 million (Table 33). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $123M, 855 jobs, and $45M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $214M, 880 jobs, and $46M in labor income.

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[52] See Table 5 for more details.

Table 32. Potential economic contributions across the state's economy if incentive programs were scaled statewide in California for Scenario A, assuming high SNAP participation and high market penetration

		No local component for retail food sales			Local component for retail food sales		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	4,031,259	12,021,996	49	2,620,818	12,021,996	49	2,620,818
Incentives spent on retail food sales to all F&V farmers	138,103,228	220,973,743	1,581	83,602,048	397,398,432	1,630	85,683,775
All incentives	142,134,486	232,995,739	1,630	86,222,866	409,420,428	1,679	88,304,593

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 33. Potential economic contributions across the state's economy if incentive programs were scaled statewide in California for Scenario B, assuming low SNAP participation and low market penetration

		No local component			Local component		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	2,539,359	7,572,861	31	1,650,898	7,572,861	31	1,650,898
Incentives spent on retail food sales to all F&V farmers	71,824,410	115,244,461	824	43,603,059	206,903,113	848	44,613,610
All incentives	74,363,769	122,817,322	855	45,253,957	214,475,975	880	46,264,508

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 3.0 for incentives spent on farm-direct purchases (Table 34). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 3.0 dollars to California's economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.6 dollars (if there is no local purchasing requirement) and 2.9 dollars (if there is a local purchasing requirement) to California's economy.

Table 34. Implied output contribution multipliers if incentive programs were scaled statewide in California

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	3.0	3.0	3.0	3.0
Incentives spent on retail food sales to all F&V farmers	1.6	2.9	1.6	2.9
All incentives	1.6	2.9	1.7	2.9

Lastly, we look at the employment contributions to California's economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $142M, for a program without a local purchasing requirement contributes an estimated $6M in labor income for the agricultural sector, with $5M of that in the fruit and vegetable farming sector, and 153 jobs and $6.23M in labor income for the food retail sector (Table 35). For a program with a local purchasing requirement, employment contributions are slightly higher, with $8M in labor income to the agricultural sector and 153 jobs and $6.24M in labor income to the retail sector. The lower bound, assuming incentives of $74M, for a program without a local purchasing requirement contributes an estimated $3.37M in labor income to the agricultural sector, with $2.40M of that contributed by fruit and vegetable producers. Plus, we estimate a gain of 80 jobs and $3.24M in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $3.96M in labor income to the agricultural sector, and 80 jobs and $3.25M in labor income to the retail sector.

Table 35. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in California

	Scenario A High SNAP participation, high market penetration					Scenario B Low SNAP participation, low market penetration				
		No local		Local			No local		Local	
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		180	6,361,092	213	7,505,380		95	3,366,584	112	3,961,616
Fruit and vegetable farmers	142,134,486	*137*	*4,517,140*	*162*	*5,317,526*	74,363,769	*72*	*2,402,675*	*85*	*2,818,912*
Retail food sector		153	6,226,652	153	6,239,173		80	3,240,199	80	3,246,381

Colorado

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[53]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from Colorado farmers or see a boost of 20% in sales of CO grown produce because of the program.

If Colorado's incentive program were scaled statewide, the upper bound for total incentives spent in the state is $15.4M (Table 36). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $22.3M, 176 jobs and $8.2M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $38.3M, 179 jobs, and $8.3M in labor income. The lower bound for total incentives spent in the state is $7.9 million (Table 37). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $11.6M, 92 jobs, and $4.2M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $19.8M, 92 jobs, and $4.3M in labor income.

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[53] See Table 5 for more details.

Table 36. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Colorado for Scenario A, assuming high SNAP participation rates and high market penetration

	Incentives ($)	No local component for retail food sales			Local component for retail food sales		
		Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	336,814	984,157	5	211,671	984,157	5	211,671
Incentives spent on retail food sales to all F&V farmers	15,077,212	21,306,757	172	7,961,339	37,352,393	174	8,074,028
All incentives	**15,414,026**	**22,290,913**	**176**	**8,173,010**	**38,336,550**	**179**	**8,285,699**

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 37. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Colorado for Scenario B, assuming low SNAP participation rates and low market penetration

	Incentives ($)	No local component			Local component		
		Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	208,522	609,292	3	131,046	609,292	3	131,046
Incentives spent on retail food sales to all F&V farmers	7,706,678	11,013,053	89	4,115,468	19,186,612	90	4,147,979
All incentives	**7,915,200**	**11,622,345**	**92**	**4,246,514**	**19,795,904**	**92**	**4,279,025**

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 2.9 for incentives spent on farm-direct purchases (Table 38). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 2.9 dollars to Colorado's economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.4 dollars (if there is no local purchasing requirement) and 2.5 dollars (if there is a local purchasing requirement) to Colorado's economy.

Table 38. Implied output contribution multipliers if incentive programs were scaled statewide in Colorado

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	2.9	2.9	2.9	2.9
Incentives spent on retail food sales to all F&V farmers	1.4	2.5	1.4	2.5
All incentives	1.4	2.5	1.5	2.5

Lastly, we look at the employment contributions to Colorado's economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $15.4M, for a program without a local purchasing requirement contributes an estimated $212K in labor income for the agricultural sector, with $161K of that in the fruit and vegetable farming sector, and 19 jobs and $637K in labor income for the food retail sector (Table 39). For a program with a local purchasing requirement, employment contributions are slightly higher, with $243K in labor income to the agricultural sector and 19 jobs and $637K in labor income to the retail sector. The lower bound, assuming incentives of $7.9M, for a program without a local purchasing requirement contributes an estimated $113K in labor income to the agricultural sector, with $87K of that contributed by fruit and vegetable producers, and 10 jobs and $326K in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $129K in labor income to the agricultural sector, and 10 jobs and $326K in labor income to the retail sector.

Table 39. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in Colorado

	Scenario A High SNAP participation, high market penetration					Scenario B Low SNAP participation, low market penetration				
		No local		Local			No local		Local	
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		7	211,594	9	243,461		4	113,005	5	129,274
Fruit and vegetable farmers	15,414,026	6	161,363	7	185,354	7,915,200	3	86,860	3	99,121
Retail food sector		19	636,727	19	637,356		10	325,780	10	325,984

Hawaii

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[54]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from Hawaii farmers or see a boost of 20% in sales of HI grown produce because of the program.

If Hawaii's incentive program were scaled statewide, the upper bound for total incentives spent in the state is $10M (Table 40). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $14M, 119 jobs and $4.4M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $22M, 120 jobs, and $4.5M in labor income. The lower bound for total incentives spent in the state is $6 million (Table 41). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $9M, 74 jobs, and $2.8M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $14M, 74 jobs, and $2.8M in labor income.

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[54] See Table 5 for more details.

Table 40. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Hawaii for Scenario A, assuming high SNAP participation and high market penetration

	Incentives ($)	No local component for retail food sales			Local component for retail food sales		
		Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	1,072,889	2,610,646	12	552,541	2,610,646	12	552,541
Incentives spent on retail food sales to all F&V farmers	8,851,679	11,238,883	106	3,877,196	19,790,530	108	3,929,727
All incentives	9,924,567	13,849,528	119	4,429,738	22,401,176	120	4,482,268

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 41. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Hawaii for Scenario B, assuming low SNAP participation and low market penetration

	Incentives ($)	No local component			Local component		
		Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp.(jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	782,447	1,903,918	9	402,963	1,903,918	9	402,963
Incentives spent on retail food sales to all F&V farmers	5,329,798	6,890,730	65	2,374,682	11,973,036	65	2,377,581
All incentives	6,112,245	8,794,648	74	2,777,645	13,876,954	74	2,780,544

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 2.4 for incentives spent on farm-direct purchases (Table 42). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 2.4 dollars to Hawaii's economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.3 dollars (if there is no local purchasing requirement) and 2.2 dollars (if there is a local purchasing requirement) to Hawaii's economy.

Table 42. Implied output contribution multipliers if incentive programs were scaled statewide in Hawaii

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	2.4	2.4	2.4	2.4
Incentives spent on retail food sales to all F&V farmers	1.3	2.2	1.3	2.2
All incentives	1.4	2.3	1.4	2.3

Lastly, we look at the employment contributions to Hawaii's economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $10M, for a program without a local purchasing requirement contributes an estimated $220K in labor income for the agricultural sector, with $161K of that in the fruit and vegetable farming sector, and 10 jobs and $362K in labor income for the food retail sector (Table 43). For a program with a local purchasing requirement, employment contributions are slightly higher, with $223K in labor income to the agricultural sector and 10 jobs and $362K in labor income to the retail sector. The lower bound, assuming incentives of $6M, for a program without a local purchasing requirement contributes an estimated $149K in labor income to the agricultural sector, with $114K of that contributed by fruit and vegetable producers. Plus, we estimate a gain of 6 jobs and $218K in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $151K in labor income to the agricultural sector, and 6 jobs and $218K in labor income to the retail sector.

Table 43. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in Hawaii

| | Scenario A
High SNAP participation, high market penetration | | | | | Scenario B
Low SNAP participation, low market penetration | | | | |
| | | No local | | Local | | | No local | | Local | |
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		31	219,553	31	222,332		19	149,102	19	150,767
Fruit and vegetable farmers	9,924,567	*27*	*161,411*	*28*	*162,026*	6,112,245	*17*	*113,600*	*17*	*113,969*
Retail food sector		10	361,588	10	361,881		6	218,230	6	218,273

Iowa

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[55]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from Iowa farmers or see a boost of 20% in sales of IA grown produce because of the program.

If Iowa's incentive program were scaled statewide, the upper bound for total incentives spent in the state is $11M (Table 44). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $12M, 110 jobs and $4.2M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $20M, 111 jobs, and $4.2M in labor income. The lower bound for total incentives spent in the state is $5M (Table 45). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $6M, 54 jobs, and $2M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $10M, 54 jobs, and $2M in labor income.

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[55] See Table 5 for more details.

Table 44. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Iowa for Scenario A, assuming high SNAP participation and high market penetration

		No local component for retail food sales			Local component for retail food sales		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	87,597	215,395	1	44,995	215,395	1	44,995
Incentives spent on retail food sales to all F&V farmers	10,742,776	11,877,168	109	4,149,388	20,001,700	110	4,192,305
All incentives	10,830,373	12,092,563	110	4,194,383	20,217,095	111	4,237,300

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 45. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Iowa for Scenario B, assuming low SNAP participation and low market penetration

		No local component			Local component		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	51,453	126,519	1	26,429	126,519	1	26,429
Incentives spent on retail food sales to all F&V farmers	5,209,806	5,788,164	53	2,023,135	9,744,953	54	2,043,110
All incentives	5,261,259	5,914,683	54	2,049,564	9,871,472	54	2,069,540

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 2.5 for incentives spent on farm-direct purchases (Table 46). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 2.5 dollars to Iowa's economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.1 dollars (if there is no local purchasing requirement) and 1.9 dollars (if there is a local purchasing requirement) to Iowa's economy.

Table 46. Implied output contribution multipliers if incentive programs were scaled statewide in Iowa

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	2.5	2.5	2.5	2.5
Incentives spent on retail food sales to all F&V farmers	1.1	1.9	1.1	1.9
All incentives	1.1	1.9	1.1	1.9

Lastly, we look at the employment contributions to Iowa's economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $11M, for a program without a local purchasing requirement contributes an estimated $28K in labor income for the agricultural sector, with $19K of that in the fruit and vegetable farming sector, and 16 jobs and $394K in labor income for the food retail sector (Table 47). For a program with a local purchasing requirement, employment contributions are slightly higher, with $30K in labor income to the agricultural sector and 16 jobs and $394K in labor income to the retail sector. The lower bound, assuming incentives of $5M, for a program without a local purchasing requirement contributes an estimated $15K in labor income to the agricultural sector, with $10K of that contributed by fruit and vegetable producers. Plus, we estimate a gain of 8 jobs and $191K in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $16K in labor income to the agricultural sector, and 8 jobs and $191K in labor income to the retail sector.

Table 47. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in Iowa

| | Scenario A
High SNAP participation, high market penetration | | | | | Scenario B
Low SNAP participation, low market penetration | | | | |
| | | No local | | Local | | | No local | | Local | |
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		1	27,568	1	29,596		0.4	14,617	0.4	15,600
Fruit and vegetable farmers	10,830,373	*1*	*19,112*	*1*	*20,817*	5,261,259	*0.3*	*10,347*	*0.3*	*11,174*
Retail food sector		16	394,062	16	394,258		8	191,173	8	191,264

Michigan

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[56]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from Michigan farmers or see a boost of 20% in sales of MI grown produce because of the program.

If Michigan's incentive program were scaled statewide, the upper bound for total incentives spent in the state is $54M (Table 48). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $75M, 643 jobs and $26M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $128M, 661 jobs, and $26M in labor income. The lower bound for total incentives spent in the state is $21M (Table 49). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $30M, 252 jobs, and $10M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $50M, 259 jobs, and $10M in labor income.

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[56] See Table 5 for more details.

Table 48. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Michigan for Scenario A, assuming high SNAP participation and high market penetration

		No local component for retail food sales			Local component for retail food sales		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	1,367,222	3,661,228	18	776,595	3,661,228	18	776,595
Incentives spent on retail food sales to all F&V farmers	52,648,518	71,392,394	625	25,082,775	124,054,591	643	25,607,563
All incentives	54,015,740	75,053,622	643	25,859,370	127,715,819	661	26,384,157

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 49. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Michigan for Scenario B, assuming low SNAP participation and low market penetration

		No local component			Local component		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	642,287	1,719,953	8	364,825	1,719,953	8	364,825
Incentives spent on retail food sales to all F&V farmers	20,420,244	27,860,319	244	9,793,212	48,329,690	251	9,980,194
All incentives	21,062,530	29,580,272	252	10,158,037	50,049,643	259	10,345,019

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 2.7 for incentives spent on farm-direct purchases (Table 50). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 2.7 dollars to Michigan's economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.4 dollars (if there is no local purchasing requirement) and 2.4 dollars (if there is a local purchasing requirement) to Michigan's economy.

Table 50. Implied output contribution multipliers if incentive programs were scaled statewide in Michigan

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	2.7	2.7	2.7	2.7
Incentives spent on retail food sales to all F&V farmers	1.4	2.4	1.4	2.4
All incentives	1.4	2.4	1.4	2.4

Lastly, we look at the employment contributions to Michigan's economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $54M, for a program without a local purchasing requirement contributes an estimated $729K in labor income for the agricultural sector, with $544K of that in the fruit and vegetable farming sector, and 69 jobs and $1.983M in labor income for the food retail sector (Table 51). For a program with a local purchasing requirement, employment contributions are slightly higher, with $837K in labor income to the agricultural sector and 69 jobs and $1.985M in labor income to the retail sector. The lower bound, assuming incentives of $21M, for a program without a local purchasing requirement contributes an estimated $297K in labor income to the agricultural sector, with $224K of that contributed by fruit and vegetable producers. Plus, we estimate a gain of 27 jobs and $769K in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $339K in labor income to the agricultural sector, and 27 jobs and $770K in labor income to the retail sector.

Table 51. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in Michigan

	Scenario A High SNAP participation, high market penetration					Scenario B Low SNAP participation, low market penetration				
		No local		Local			No local		Local	
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		59	728,912	70	837,338		23	296,928	28	338,975
Fruit and vegetable farmers	54,015,740	52	543,774	62	619,135	21,062,530	21	224,389	24	253,617
Retail food sector		69	1,982,660	69	1,985,330		27	769,486	27	770,456

New York

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[57]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from New York farmers or see a boost of 20% in sales of NY grown produce because of the program.

If New York's incentive program were scaled statewide, the upper bound for total incentives spent in the state is $104M (Table 52). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $132M, 1,007 jobs and $52M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $228M, 1,025 jobs, and $53M in labor income. The lower bound for total incentives spent in the state is $53 million (Table 53). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $69M, 521 jobs, and $27M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $117M, 525 jobs, and $27M in labor income.

[57] See Table 5 for more details.

Table 52. Potential economic contributions across the state's economy if incentive programs were scaled statewide in New York for Scenario A, assuming high SNAP participation and high market penetration

	Incentives ($)	No local component for retail food sales			Local component for retail food sales		
		Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	3,193,374	8,089,205	36	1,861,828	8,089,205	36	1,861,828
Incentives spent on retail food sales to all F&V farmers	101,012,124	123,790,936	972	50,260,545	220,127,960	989	50,782,126
All incentives	104,205,498	131,880,141	1,007	52,122,373	228,217,165	1,025	52,643,954

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 53. Potential economic contributions across the state's economy if incentive programs were scaled statewide in New York for Scenario B, assuming low SNAP participation and low market penetration

	Incentives ($)	No local component			Local component		
		Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	1,958,375	4,960,801	22	1,141,788	4,960,801	22	1,141,788
Incentives spent on retail food sales to all F&V farmers	51,145,129	63,815,289	499	25,883,659	112,007,407	503	25,836,133
All incentives	53,103,503	68,776,090	521	27,025,447	116,968,207	525	26,977,921

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 2.5 for incentives spent on farm-direct purchases (Table 54). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 2.5 dollars to New York's economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.2 dollars (if there is no local purchasing requirement) and 2.2 dollars (if there is a local purchasing requirement) to New York's economy.

Table 54. Implied output contribution multipliers if incentive programs were scaled statewide in New York

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	2.5	2.5	2.5	2.5
Incentives spent on retail food sales to all F&V farmers	1.2	2.2	1.2	2.2
All incentives	1.3	2.2	1.3	2.2

Lastly, we look at the employment contributions to New York's economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $104M, for a program without a local purchasing requirement contributes an estimated $956K in labor income for the agricultural sector, with $764K of that in the fruit and vegetable farming sector, and 130 jobs and $4M in labor income for the food retail sector (Table 55). For a program with a local purchasing requirement, employment contributions are slightly higher, with $1M in labor income to the agricultural sector and 130 jobs and $4M in labor income to the retail sector. The lower bound, assuming incentives of $53M, for a program without a local purchasing requirement contributes an estimated $527K in labor income to the agricultural sector, with $428K of that contributed by fruit and vegetable producers. Plus, we estimate a gain of 66 jobs and $2M in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $582K in labor income to the agricultural sector, and 66 jobs and $2M in labor income to the retail sector.

Table 55. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in New York

	Scenario A High SNAP participation, high market penetration					Scenario B Low SNAP participation, low market penetration				
		No local		Local			No local		Local	
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		67	956,120	79	1,064,911		35	526,668	41	581,680
Fruit and vegetable farmers	104,205,498	*59*	*763,986*	*69*	*839,582*	53,103,503	*31*	*427,913*	*36*	*466,177*
Retail food sector		130	4,200,384	130	4,203,010		66	2,129,306	66	2,129,375

North Carolina

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[58]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from North Carolina farmers or see a boost of 20% in sales of NC grown produce because of the program.

If North Carolina's incentive program were scaled statewide, the upper bound for total incentives spent in the state is $45M (Table 56). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $60M, 532 jobs and $21M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $104M, 542 jobs, and $22M in labor income. The lower bound for total incentives spent in the state is $23 million (Table 57). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $31M, 273 jobs, and $11M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $53M, 277 jobs, and $11M in labor income.

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[58] See Table 5 for more details.

Table 56. Potential economic contributions across the state's economy if incentive programs were scaled statewide in North Carolina for Scenario A, assuming high SNAP participation and high market penetration

		No local component for retail food sales			Local component for retail food sales		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	269,492	722,957	4	153,681	722,957	4	153,681
Incentives spent on retail food sales to all F&V farmers	44,888,601	59,697,206	529	21,337,303	102,946,975	538	21,795,261
All incentives	45,158,092	60,420,163	532	21,490,984	103,669,932	542	21,948,942

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 57. Potential economic contributions across the state's economy if incentive programs were scaled statewide in North Carolina for Scenario B, assuming low SNAP participation and low market penetration

		No local component			Local component		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	165,423	443,777	2	94,335	443,777	2	94,335
Incentives spent on retail food sales to all F&V farmers	22,749,545	30,525,281	270	10,911,270	52,443,720	275	11,104,359
All incentives	22,914,968	30,969,058	273	11,005,605	52,887,496	277	11,198,694

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 2.7 for incentives spent on farm-direct purchases (Table 58). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 2.7 dollars to North Carolina's economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.3 dollars (if there is no local purchasing requirement) and 2.3 dollars (if there is a local purchasing requirement) to North Carolina's economy.

Table 58. Implied output contribution multipliers if incentive programs were scaled statewide in North Carolina

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	2.7	2.7	2.7	2.7
Incentives spent on retail food sales to all F&V farmers	1.3	2.3	1.3	2.3
All incentives	1.3	2.3	1.4	2.3

Lastly, we look at the employment contributions to North Carolina's economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $45M, for a program without a local purchasing requirement contributes an estimated $688K in labor income for the agricultural sector, with $524K of that in the fruit and vegetable farming sector, and 69 jobs and $2M in labor income for the food retail sector (Table 59). For a program with a local purchasing requirement, employment contributions are slightly higher, with $814K in labor income to the agricultural sector and 69 jobs and $2M in labor income to the retail sector. The lower bound, assuming incentives of $23M, for a program without a local purchasing requirement contributes an estimated $353K in labor income to the agricultural sector, with $269K of that contributed by fruit and vegetable producers. Plus, we estimate a gain of 35 jobs and $866K in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $416K in labor income to the agricultural sector, and 35 jobs and $866K in labor income to the retail sector.

Table 59. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in North Carolina

	Scenario A High SNAP participation, high market penetration					Scenario B Low SNAP participation, low market penetration				
		No local		Local			No local		Local	
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		19	688,405	23	813,638		10	352,822	12	416,251
Fruit and vegetable farmers	45,158,092	*14*	*523,685*	*17*	*621,264*	22,914,968	*7*	*268,891*	*9*	*318,338*
Retail food sector		69	1,706,943	69	1,708,791		35	865,513	35	866,299

Texas

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[59]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from Texas farmers or see a boost of 20% in sales of TX grown produce because of the program.

If Texas' incentive program were scaled statewide, the upper bound for total incentives spent in the state is $109M (Table 60). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $159M, 1,212 jobs and $58M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $273M, 1,226 jobs, and $59M in labor income. The lower bound for total incentives spent in the state is $58M (Table 61). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $85M, 647 jobs, and $31M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $146M, 654 jobs, and $31M in labor income.

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[59] See Table 5 for more details.

Table 60. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Texas for Scenario A, assuming high SNAP participation and high market penetration

		No local component for retail food sales			Local component for retail food sales		
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	136,529	418,454	2	88,441	418,454	2	88,441
Incentives spent on retail food sales to all F&V farmers	109,268,572	159,022,689	1,210	57,767,563	272,965,179	1,225	58,452,742
All incentives	109,405,102	159,441,143	1,212	57,856,004	273,383,633	1,226	58,541,184

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 61. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Texas for Scenario B, assuming low SNAP participation and low market penetration

		No local component			Local component		
	Incentives ($)	Output ($)	Emp.(jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	87,824	269,176	1	56,891	269,176	1	56,891
Incentives spent on retail food sales to all F&V farmers	58,032,087	84,786,108	646	30,806,418	145,453,486	653	31,151,806
All incentives	58,119,911	85,055,283	647	30,863,309	145,722,662	654	31,208,697

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 3.1 for incentives spent on farm-direct purchases (Table 62). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 3.1 dollars to Texas' economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.5 dollars (if there is no local purchasing requirement) and 2.5 dollars (if there is a local purchasing requirement) to Texas' economy.

Table 62. Implied output contribution multipliers if incentive programs were scaled statewide in Texas

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	3.1	3.1	3.1	3.1
Incentives spent on retail food sales to all F&V farmers	1.5	2.5	1.5	2.5
All incentives	1.5	2.5	1.5	2.5

Lastly, we look at the employment contributions to Texas' economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $109M, for a program without a local purchasing requirement contributes an estimated $872K in labor income for the agricultural sector, with $656K of that in the fruit and vegetable farming sector, and 137 jobs and $4.5M in labor income for the food retail sector (Table 63). For a program with a local purchasing requirement, employment contributions are slightly higher, with $1M in labor income to the agricultural sector and 137 jobs and $4.5M in labor income to the retail sector. The lower bound, assuming incentives of $58M, for a program without a local purchasing requirement contributes an estimated $465K in labor income to the agricultural sector, with $350K of that contributed by fruit and vegetable producers. Plus, we estimate a gain of 73 jobs and $2.3M in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $549K in labor income to the agricultural sector, and 73 jobs and $2.4M in labor income to the retail sector.

Table 63. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in Texas

	Scenario A High SNAP participation, high market penetration					Scenario B Low SNAP participation, low market penetration				
		No local		Local			No local		Local	
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		31	871,700	37	1,029,742		17	465,113	20	549,032
Fruit and vegetable farmers	109,405,102	22	656,333	27	783,380	58,119,911	12	350,428	14	417,901
Retail food sector		137	4,483,777	137	4,487,133		73	2,381,921	73	2,383,619

Washington

We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[60]). And we also present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets). We compare results for programs in which there is no local purchasing requirement for grocery stores to that in which grocery stores are either required to purchase at least 20% of their produce from Washington farmers or see a boost of 20% in sales of WA grown produce because of the program.

If Washington's incentive program were scaled statewide, the upper bound for total incentives spent in the state is $31M (Table 64). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $47M, 352 jobs and $17M in labor income. If the program does have a local purchasing requirement, the estimated upper bound for the economic contribution increases to $83M, 364 jobs, and $17M in labor income. The lower bound for total incentives spent in the state is $15 million (Table 65). This results in an estimated economic contribution to the state's economy (for a program without a local purchasing requirement) of $23M, 167 jobs, and $8M in labor income. If the program does have a local purchasing requirement, the estimated lower bound for the economic contribution increases to $39M, 172 jobs, and $8M in labor income.

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[60] See Table 5 for more details.

Table 64. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Washington for Scenario A, assuming high SNAP participation and high market penetration

	Incentives ($)	No local component for retail food sales			Local component for retail food sales		
		Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	908,002	2,415,077	10	519,517	2,415,077	10	519,517
Incentives spent on retail food sales to all F&V farmers	30,413,808	44,860,141	341	16,410,814	80,889,415	354	16,973,470
All incentives	31,321,810	47,275,217	352	16,930,332	83,304,492	364	17,492,988

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

Table 65. Potential economic contributions across the state's economy if incentive programs were scaled statewide in Washington for Scenario B, assuming low SNAP participation and low market penetration

	Incentives ($)	No local component			Local component		
		Output ($)	Emp. (jobs)	Labor income ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	514,663	1,368,886	6	294,467	1,368,886	6	294,467
Incentives spent on retail food sales to all F&V farmers	14,232,849	21,223,293	161	7,763,352	37,988,745	166	7,972,829
All incentives	14,747,512	22,592,179	167	8,057,819	39,357,630	172	8,267,296

Notes: Low market penetration assumes the program will reach 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets (see Table 5).

The implied output contribution multipliers if incentive programs were scaled statewide is 2.7 for incentives spent on farm-direct purchases (Table 66). So, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 2.7 dollars to Washington's economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.5 dollars (if there is no local purchasing requirement) and 2.7 dollars (if there is a local purchasing requirement) to Washington's economy.

Table 66. Implied output contribution multipliers if incentive programs were scaled statewide in Washington

	Scenario A (upper bound)		Scenario B (lower bound)	
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	2.7	2.7	2.7	2.7
Incentives spent on retail food sales to all F&V farmers	1.5	2.7	1.5	2.7
All incentives	1.5	2.7	1.5	2.7

Lastly, we look at the employment contributions to Washington's economy if the incentive program were scaled statewide. The upper bound, assuming incentives of $31M, for a program without a local purchasing requirement contributes an estimated $1.6M in labor income for the agricultural sector, with $1.2M of that in the fruit and vegetable farming sector, and 37 jobs and $1.2M in labor income for the food retail sector (Table 67). For a program with a local purchasing requirement, employment contributions are slightly higher, with $1.9M in labor income to the agricultural sector and 37 jobs and $1.3M in labor income to the retail sector. The lower bound, assuming incentives of $15M, for a program without a local purchasing requirement contributes an estimated $783K in labor income to the agricultural sector, with $595K of that contributed by fruit and vegetable producers. Plus, we estimate a gain of 17 jobs and $592K in labor income to the food retail sector. For a program with a local purchasing requirement, contributions are slightly higher with $903K in labor income to the agricultural sector, and 17 jobs and $593K in labor income to the retail sector.

Table 67. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in Washington

| | Scenario A High SNAP participation, high market penetration | | | | | Scenario B Low SNAP participation, low market penetration | | | | |
| | | No local | | Local | | | No local | | Local | |
	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)		51	1,646,807	58	1,903,410		24	782,522	28	902,524
Fruit and vegetable farmers	31,321,810	*41*	*1,248,102*	*47*	*1,442,737*	14,747,512	*19*	*594,942*	*22*	*685,999*
Retail food sector		37	1,263,683	37	1,266,776		17	591,963	17	593,171

U.S. NATIONWIDE

We estimate the potential economic contributions that would occur nationwide if incentive programs were scaled, under the assumptions the programs would be reaching a wider set of market outlets, and accordingly SNAP participants, across the U.S. as described in the methods section. We present an upper bound (scenario A), assuming high SNAP participation (based on FY2013) and high market penetration (reaching 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets[61]). For a more conservative estimate, we present a lower bound (scenario B), assuming low SNAP participation (based on FY2019) and low market penetration (reaching 60% of eligible grocery stores, 10% of eligible corner stores, and 80% of eligible farmers' markets).

It should be noted that, unlike scenarios presented for state-based results, we do not compare whether or not there are local purchasing requirements within programs, since for nationwide estimates using IMPLAN, "local" would essentially be considering all domestic production as local (and only exclude imports).[62]

If incentive program were scaled nationwide, the upper bound for total incentives spent in the U.S. is $1.4B (Table 68). This results in an estimated economic contribution to the national economy of $3.2B, 22K jobs and $1.1B in labor income. The lower bound for total incentives spent in the U.S. is $683M. This results in an estimated economic contribution to the national economy of $1.6B, 10K jobs, and $518M in labor income.

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[61] See Table 5 for more details.

[62] While we could model a 20% decrease in imports, such a decrease is a more difficult assumption to make with confidence, given all the dynamics of global trade, and the fact that production of some healthful produce choices are seasonal and not widely produced in the US during winter months.

Table 68. Potential economic contributions across the U.S. economy if incentive programs were scaled nationwide for Scenario A, assuming high SNAP participation and high market penetration and Scenario B, assuming low SNAP participation and low market penetration

	Scenario A				Scenario B			
	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Output ($)	Emp. (jobs)	Labor income ($)
Incentives spent on farm-direct sales to local F&V farmers	25,921,686	111,591,065	449	22,613,402	15,177,581	65,338,434	263	13,240,525
Incentives spent on retail food sales to all F&V farmers	1,381,726,365	3,085,623,521	21,100	1,043,741,776	667,953,575	1,492,373,983	10,204	504,810,672
All incentives	1,407,648,052	3,197,214,586	21,548	1,066,355,179	683,131,156	1,557,712,416	10,467	518,051,197

Notes: High market penetration assumes the program will reach 90% of eligible grocery stores, 25% of eligible corner stores, and 100% of eligible farmers' markets (see Table 5).

For the contribution multipliers if incentive programs were scaled nationwide, we present a range, based on the multipliers estimated from each state (Table 69). Although we are referring to this as a national economic contribution, we decided to frame the analysis considering how economic activity would change across a representative set of participants, farmers, markets and communities, and then scale those representative contributions to the national level considering the overall number and size of those impacted stakeholders. Since we had the most detailed data from states where we considered programs already in place, the ranges for representative contributions are "bound" by the multiplier levels estimated for those programs and places.

Following this logic, for every dollar of incentives spent on farm direct purchases, we estimate it will result in a contribution of 2.5 to 3 dollars to the U.S. economy. In contrast, for every dollar of incentives spent at food retail stores, it will result in an estimated contribution of 1.1 to 1.6 dollars (if there is no local purchasing requirement) and 1.9 to 2.9 dollars (if there is a local purchasing requirement) to the U.S. economy.

Table 69. Implied output contribution multipliers if incentive programs were scaled nationwide

| | Scenario A (upper bound) | | Scenario B (lower bound) | |
	No local component for retail food sales	Local component for retail food sales	No local component for retail food sales	Local component for retail food sales
Incentives spent on farm-direct sales to local F&V farmers	2.4 – 3.1	2.4 – 3.1	2.4 – 3.1	2.4 – 3.1
Incentives spent on retail food sales to all F&V farmers	1.1 – 1.6	1.9 – 2.9	1.1 – 1.6	1.9 – 2.9
All incentives	1.1 – 1.6	1.9 – 2.9	1.1 – 1.7	1.9 – 2.9

Lastly, we look at the employment contributions to the U.S. economy if the incentive program were scaled nationwide. The upper bound, assuming incentives of $1.4B, contributes an estimated $50.3M in labor income for the agricultural sector, with $33.1M of that through hiring in the fruit and vegetable farming sector, and 1.8K jobs and $59M in labor income for employees within the food retail sector (Table 70Table 67). The lower bound, assuming incentives of $683M contributes an estimated $24.7M in labor income to the agricultural sector, with $16.3M of that contributed by fruit and

vegetable producers. Plus, we estimate a gain of 900 jobs and $28.7M in labor income to the food retail sectors.

Table 70. Employment contributions for the farm and grocery sectors if incentive programs were scaled up in U.S.

	Scenario A High SNAP participation, high market penetration			Scenario B Low SNAP participation, low market penetration		
	Incentives ($)	Emp. (jobs)	Labor income ($)	Incentives ($)	Emp. (jobs)	Labor income ($)
All ag sectors (not just F&V farmers)	1,407,648,052	1,827	50,366,555	683,131,156	893	24,735,495
Fruit and vegetable farmers		*1,309*	*33,126,033*		*640*	*16,333,191*
Retail food sector		1,874	59,245,322		907	28,652,554

CONCLUSION

Given the prevalence of food insecurity in the US pre-COVID and noted expansion of need for and participation in food assistance programs in recent months, there is likely to be great attention paid to this aspect of the social safety net in the coming months. Given that many Americans lack consistent access to healthy food, and budget limitations are eased through SNAP programs, incentives for benefits to be used on nutrient-dense foods is a popular policy option. For almost a decade, a portfolio of projects has been funded to offer incentives to those who want to choose fresh fruits and vegetables, along with food supply chain partners willing to accept and track such purchases with a bit more detail. Beyond improved diets, there is interest in considering the positive impact of incentive programs across a diverse set of stakeholders.

In this study on Estimating the Potential Impact of Expanded Healthy Food Incentives, we present current economic implications for communities that operate such programs, potential impacts from statewide scaling up of existing programs, and ultimately, an estimate of what economic contributions may emerge from nationwide expansion of the program. We show that food retailers, corner stores and farmers' markets that adopt incentive programs available to SNAP-participating consumers will experience positive impacts through an increase in sales and expansion of their customer base.

To estimate the magnitude of economic impacts across 12 partners in 9 states (with California having several distinct programs), we take the management choices of those programs into consideration in order to customize a model of economic activity. As a result, a range of economic estimates expected to occur if incentive programs were expanded is presented along with details on the variety of assumptions and approaches used to scale incentive programs. To estimate the current economic impacts of food incentive programs, we use data from programs that were active as of 2018 or 2019 related to incentive redemptions and SNAP reimbursements by market channel as well as noting whether the program had a locally grown component. To scale up incentive programs, we estimate an average incentive to SNAP ratio by market channel, alongside U.S. Department of Agriculture Food and Nutrition (USDA FNS) report estimates on the percentage of SNAP redemptions by market type for the U.S. To allocate the spending by market outlet to each state, we use SNAP redemptions by state for FY2013 and FY2019, high and low SNAP participation years.

Just as the potential impact of scaling incentive programs for statewide access represents a potentially significant bolster to the economies of currently participating states, we also present very preliminary nationwide estimates of what economic activity might occur if incentives were broadly available across the US. It is our hope this can provide some guidance to those considering the tradeoffs of such a policy decision, and of course, motivate a research agenda for why refining such an assessment has value for policymakers.

APPENDIX A. FOOD INCENTIVE PROGRAM INITIAL DATA COLLECTION

Food incentive programs data collection

Q21 What is the name of your program?

_____

Q22 What is your name?

_____

Q23 What is your email address?

_____

Q1 Please indicate which program design matches (or most closely matches) your program. Choose one:

○ Earn on SNAP, redeem on fruit and veg: SNAP shoppers earn incentives when they buy anything SNAP eligible using SNAP. Incentives can only be spent on fruit and vegetables. (1)

○ Earn on fruit and veg, redeem on SNAP: SNAP shoppers earn incentives when they buy fruits and vegetables using SNAP. Incentives can be spent on anything SNAP eligible. (2)

○ Earn on fruit and veg, redeem on fruit and veg: SNAP shoppers earn incentives when they buy fruits and vegetables using SNAP. Incentives can be spent only on fruit and vegetables. (3)

○ Vouchers are provided to low-income (SNAP eligible or other) individuals to purchase fruits and vegetables at participating retailers. (4)

○ Other (5) _____

Q2 Does your program have a locally-grown component? If so, please check all that apply

☐ Customers can only earn incentives on purchases of locally-grown produce (1)

☐ Customers can only redeem incentives on purchases of locally-grown produce (2)

☐ The local component of program is not visible to customer, but retailer must meet a certain threshold of local purchasing to continue offering incentives (3)

☐ There is no locally-grown component in our program (4)

☐ Other (5) _____

Q3 Please describe the amount of incentive provided to an individual
(for example: dollar-for-dollar match up to $10/$20 per day; $5 voucher; $5 incentive for every $10 spent on eligible product, etc.)

_____

Q4 In which food incentive programs do you participate? Check all that apply

☐   SNAP (1)

☐   WIC (2)

☐   Rx (3)

☐   Other (4) _____

Display This Question:

If In which food incentive programs do you participate? Check all that apply = SNAP

Q5 What are the types of food system partners you have included in your SNAP program?

☐   Supermarket chains or large/corporate grocers (e.g., Kroger, Whole Foods, Save A Lot) (1)

☐   Small scale or community retailers (e.g., food co-op, corner store, independent grocer, grocer with less than 10 locations) (2)

☐   Farm stands (3)

☐   Farmers' markets (4)

☐   Community Supported Agriculture (CSA) (5)

☐   Food hubs (6)

☐   Other (7) _____

Q6 In 2018, what was the total value of SNAP reimbursements at ${lm://Field/1}?

_____

Display This Question:

If In which food incentive programs do you participate? Check all that apply = WIC

Q7 What are the types of food system partners you have included in your WIC programs?

☐   Supermarket chain or large/corporate grocery (e.g., Kroger, Whole Foods, Save A Lot) (1)

☐   Small scale or community retailer (e.g., food co-op, corner store, independent grocer, grocer with less than 10 locations) (2)

☐   Farm stand (3)

☐   Farmers' markets (4)

☐   Community Supported Agriculture (CSA) (5)

☐   Food hub (6)

☐   Other (7) _____

Q8 In 2018, what was the total value of WIC reimbursements at ${lm://Field/1}?

_____

Display This Question:

If In which food incentive programs do you participate? Check all that apply = Rx

Q9 What are the types of food system partners you have included in your Rx programs?

☐ Supermarket chain or large/corporate grocery (e.g., Kroger, Whole Foods, Save A Lot) (1)

☐ Small scale or community retailer (e.g., food co-op, corner store, independent grocer, grocer with less than 10 locations) (2)

☐ Farm stand (3)

☐ Farmers' markets (4)

☐ Community Supported Agriculture (CSA) (5)

☐ Food hub (6)

☐ Other (7) _____

Q10 In 2018, what was the total value of Rx reimbursements at ${lm://Field/1}?

_____

Q11 What are the types of food system partners you have included in your "other" food incentive programs, as indicated above?

☐   Supermarket chain or large/corporate grocery (e.g., Kroger, Whole Foods, Save A Lot) (1)

☐   Small scale or community retailer (e.g., food co-op, corner store, independent grocer, grocer with less than 10 locations) (2)

☐   Farm stand (3)

☐   Farmers' markets (4)

☐   Community Supported Agriculture (CSA) (5)

☐   Food hub (6)

☐   Other (7) _____

Q12 In 2018, what was the total value of "other" food incentive program reimbursements at ${Im://Field/1}?

_____

Q13 If your program operates with partners (i.e., retailers, grocery stores, farmers markets) in more than one state, please share details.

_____

Q14 Do you believe a substantial number of farms and ranches from another state do business with your market partners (we may ask for more information on this)?

○ Yes (1)

○ No (2)

END OF BLOCK: PROGRAM SCOPE

START OF BLOCK: WHAT ARE SOME OF THE UNIQUE ASPECTS OF YOUR INCENTIVE PROGRAM?

Q15 Are you able to obtain information from your program partners about their purchases? Check all that apply

☐ What share of their purchases are from local/regional owned farm or food businesses? (1)

☐ Is there evidence from the retailer of increased sales of fresh produce (or any food product eligible for incentives)? (2)

☐ What share of program partners market or store expenditures are on labor and payroll? (3)

☐ SNAP sales at program partner locations (4)

Q16 Have you collected information on whether your program participants...

☐ Buy more eligible foods (1)

☐   Reallocate more money to spend on foods besides eligible foods at the same market where they use the incentives (2)

☐   Reallocate the money to spend on food at any type of market (3)

☐   Reallocated money to spend more on other essential needs for their household (4)

☐   Other (5) _____

Q17 If it would help us provide more refined estimates, could you collect any of the following data if you don't already have it on hand?

☐   What share of program partner purchases are from local/regional owned farm or food businesses? (1)

☐   Is there evidence from retailers of increased sales of fresh produce (or any food product eligible for incentives)? (2)

☐   What share of program partners market or store expenditures are on labor and payroll? (3)

☐   SNAP sales at program partner locations (4)

☐   Did program participants buy more eligible foods? (5)

☐   Did program participants reallocate more money to spend on foods besides eligible foods at the same market where they use the incentives? (6)

☐   Did program participants reallocate the money to spend on food at any type of market? (7)

☐   Did program participants reallocate money to spend more on other essential needs for their household (8)

☐   What share of program partners market or store expenditures are on labor and payroll? (9)

☐   Other (10) _____

END OF BLOCK: HELP US UNDERSTAND MORE

APPENDIX B. FOOD INCENTIVE PROGRAM FOLLOW-UP DATA COLLECTION

Food incentive programs data collection - Follow up

Q1 In this survey, we are asking a few follow up questions that will allow us to more accurately estimate the economic impact if your program was scaled statewide. These data will enable us to make a more accurate estimate for you team but are not necessary. If you do not have the data that we are asking for, we will use data collected from other teams as well as secondary data to make your estimates.

Even if you are not able to provide all data requested in the survey, sharing anything you do have will allow us to improve estimates. If for some reason your data do not fit into the way in which these questions are asked, please feel free to email us relevant data.

If you have any questions, please email Allie: allie.bauman@colostate.edu

Q2 What is your name?

_____

Q3 What is your email address?

_____

Q4 What is the name of your organization?

_____

Q5 For each of the incentive programs in which you participate, check the box next to each program if you have data on the number of **households and/or individuals** that your program reached for the year in which you provided your incentive redemption data (for most teams this is 2018). Please check all that apply. If you do not have these data, go to the next question.

☐ SNAP (1)

☐ WIC (10)

☐ Rx (3)

☐ Other (4) _____

Q6 How many individuals and/or households did your program reach in the year for which you provided your incentive redemption data (for most teams this is 2018) at each location? Please share whatever data that you have.

	Individuals (1)	Household (2)

Supermarket chains or large/corporate grocers (e.g., Kroger, Whole Foods, Save A Lot) (1)	•	•
Small scale or community retailers (e.g., food co-op, corner store, independent grocer, grocer with less than 10 locations) (2)	•	•
Farmers' markets, farm stands, Community Supported Agriculture (CSA) (4)	•	•
Food hubs (6)	•	•
Other (7)	•	•

Q7 Please include any clarifying information, if needed.

_____

END OF BLOCK: INDIVIDUALS AND HOUSEHOLDS

Q8 For each of the incentive programs in which you participate, check the box next to each program if you have data on the numbers of **locations by market outlet (e.g., 10 grocery stores, 30 farmers' markets)** that your program reached for the year in which you provided your incentive redemption data (for most teams this is 2018). Please check all that apply.

☐ SNAP (1)

☐ WIC (2)

☐ Rx (3)

☐ Other (4) _____

Q9
What are the numbers of locations by market outlet (e.g., 10 grocery stores, 30 farmers' markets) that your program reached for the year in which you provided your incentive redemption data (for most teams this is 2018)?

	# of locations (1)
Supermarket chains or large/corporate grocers (e.g., Kroger, Whole Foods, Save A Lot) (1)	•

Small scale or community retailers (e.g., food co-op, corner store, independent grocer, grocer with less than 10 locations) (2)	•
Farmers' markets, farm stands, Community Supported Agriculture (CSA) (3)	•
Food hubs (6)	•
Other (7)	•

Q10 Please include any clarifying information, if needed.

_____

END OF BLOCK: BLOCK 7

APPENDIX C. MAPPING USDA FNS FIRM TYPES TO INCENTIVE PROGRAM DATA

USDA FNS Description[63]	What category does this correspond to when thinking about market penetration?[64]
Super Store	Grocery
Supermarket	Grocery
Large Grocery Store	Grocery
Military Commissary	Grocery
Medium Grocery Store	Grocery
Small Grocery Store	Grocery
Fruits/Vegetable Specialty	Grocery
Non-profit Food Buying Co-op	Grocery
Convenience Store	Corner store
Combination Grocery/Other	Grocery
Community Supported Agriculture Organization	Direct-Marketed Farm Channel
Farmers' Market	Direct-Marketed Farm Channel
Direct Marketing Farmer	Direct-Marketed Farm Channel
Seafood Specialty	n/a – not relevant to study
Meat/Poultry Specialty	n/a – not relevant to study
Internet Retailer	n/a – not relevant to study
Bakery Specialty	n/a – not relevant to study
Communal Dining Facility	n/a – not relevant to study
Meal Delivery Service	n/a – not relevant to study
Shelter for Battered Women and Children	n/a – not relevant to study
Drug and/or Alcohol Treatment Program	n/a – not relevant to study
Group Living Arrangement	n/a – not relevant to study
Homeless Meal Provider	n/a – not relevant to study
Private Restaurant/Meal Delivery	n/a – not relevant to study
Senior Citizens' Center/Residential Building	n/a – not relevant to study

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[63] Based off categories in FNS Retailer Reports: https://www.fns.usda.gov/snap/retailer/data
[64] Based on categories SPUR, FFN, CSU discussed for percentages of market penetration

APPENDIX D. DATA USED TO CREATE THE LOCAL FOOD SECTOR IN IMPLAN

In order create the local food sector in IMPLAN, we use the expenditure patters as described in the ARMS data. Some of these expenditures require margining (e.g., gasoline, farm equipment). We use a rule of thumb for these margined industries with 25% going to retail, 25% going to truck transportation and 50% going to the industry that produced/manufactured the product[65]. The tables below describe the expenditures (margined and not) from the ARMS data.

Variable	Expense (ARMS data)	NAICS	Margin		NAICS	Average RPC (IMPLAN data)
Purchased livestock expense	12557	112	no		111	39.62%
Purchased feed expense	22979	111	no		112	100.00%
Other variable expense	10840	339	yes		221	78.99%
Seed and plant expense	16899	111	no		324	42.28%
Fertilizer expense	37262	325	yes		325	15.97%
Fuel and oil expense	13136		yes		339	11.46%
Maintenance and repair expense	15229		no		420	95.84%
Machine hire and custom work expense	5983		no		447	72.41%
Utility expense	9475	221	no		484	76.15%
Other livestock related expense	3078	112	no		811	94.79%
Charge to principal operator labor and management	32759	Proprietor income	no		Proprietor income	1
Labor expense	44302	Labor	no		Labor	1

	Margin	NAICS	Sector
Fuel and oil expense	0.5	324	Petrol
	0.25	447	Gas station
	0.25	484	Transport
Fertilizer expense	0.5	325	Chem
	0.25	420	Wholesale
	0.25	484	Transport
Other variable expense	0.5	339	Misc.
	0.25	420	Wholesale
	0.25	484	Transport

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[65] More details available in Appendix D

APPENDIX E. ALLOCATION OF MARGINS FOR RETAIL SECTORS

In IMPLAN, there are two sectors that represent fruit and vegetable producer (vegetable and melon farming and fruit farming). We assume 50% of the spending allocated to the farmer from spending at retail food stores goes to vegetable and melon farms and 50% goes to fruit farms and use IMPLAN margins to allocate the remaining spending along the value chain. Note that we do not margin spending at farmers' markets, CSA's or farm stands, the margining discussed here is in the creation of the local food sector.

Air transportation, rail transportation, water transportation, pipeline transportation and truck transportation are all added together and placed in the truck transportation sector. When allocating margins along the value chain for an increase in spending at 46 Health and personal care stores, the IMPLAN margining results in retail sales at multiple retailers including 444 Bldg materials & garden dealers, 447 Gasoline stations, 452 General merch stores, 453 Misc retailers, and 454 Non-store retailers. Because we are only increasing sales at 46 Health and personal care stores, we aggregate the IMPLAN margin for all retail sectors and use the aggregated number as the margin for 46 Health and personal care stores. Similarly, when allocating margins to 451 Sports- hobby- book & music stores, there are multiple retail stores including 444 Bldg materials & garden dealers, 452 General merch stores, and 453 Misc retailers. We aggregated the IMPLAN margin for all retail sectors and use the aggregated margin as the margin for 451 Sports- hobby- book & music stores. See tables below for detailed IMPLAN margins for our sectors of interest. Margins for retail food and beverage stores are an average based on IMPLAN margins from spending at 1112 Vegetable and melon farming and 1113 Fruit farming.

Distribution of increased spending from incentive redemptions, aggregated

Category (from the USDA ERS SNAP report)[66]	% of expend. in each category[67]	Corresponding IMPLAN sectors	Margined	Producing/manufacturing, transportation/wholesale, retail sectors	Margin
Food at home	30%	111 Local Food	No	111 Local Food	100%
		445 food & beverage stores	Yes	1112 Vegetable and melon farming	24%
				1113 Fruit farming	24%
				42 Wholesale Trade	16%
				445 food & beverage stores	29%
				484 Truck transportation	6%
Food away from home	3%	722 Food svcs & drinking places	No	722 Food svcs & drinking places	100%
Clothing and footwear	5%	448 Clothing & accessories stores	Yes	315 Apparel	41%
				42 Wholesale Trade	12%
				448 Clothing & accessories stores	45%
				484 Truck transportation	2%
Other nondurable goods	9%	447 Gasoline stations	Yes	324 Petroleum & coal prod	63%
				42 Wholesale Trade	19%
				447 Gasoline stations	17%
				484 Truck transportation	2%
		446 Health & personal care stores	Yes	325 Chemical Manufacturing	55%
				42 Wholesale Trade	11%
				446 Health & personal care stores	32%
				484 Truck transportation	2%
Motor vehicles and parts	1%	441 Motor veh & parts dealers	Yes	336 Transportation eqpmt	55%
				42 Wholesale Trade	5%
				441 Motor veh & parts dealers	39%

[66] For more details, see Table 6 and Appendix table A3 in Canning, Patrick and Brian Stacy. The Supplemental Nutrition Assistance Program (SNAP) and the Economy: New Estimates of the SNAP Multiplier, ERR-265,U.S. Department of Agriculture, Economic Research Service, July 2019.
[67] Percentage are allocated between non-margined sectors equally if there is more than one corresponding IMPLAN sector (with the exception of food at home). For example, the 9% towards nondurable goods is split evenly between gasoline stations and health and personal care stores.

Category (from the USDA ERS SNAP report)[68]	% of expend. in each category[69]	Corresponding IMPLAN sectors	Margined	Producing/manufacturing, transportation/wholesale, retail sectors	Margin
				484 Truck transportation	1%
Furnishings and durable household equipment	6%	442 Furniture & home furnishings	Yes	337 Furniture & related prod	44%
				42 Wholesale Trade	7%
				442 Furniture & home furnishings	42%
				484 Truck transportation	7%
		443 Electronics & appliances stores	Yes	334 Computer & oth electron	57%
				42 Wholesale Trade	11%
				443 Electronics & appliances stores	32%
				484 Truck transportation	1%
Recreational goods	10%	451 Sports- hobby- book & music stores	Yes	339 Miscellaneous mfg	35%
				42 Wholesale Trade	11%
				451 Sports- hobby- book & music stores	52%
				484 Truck transportation	2%
		441 Motor veh & parts dealers	Yes	336 Transportation eqpmt	55%
				42 Wholesale Trade	5%
				441 Motor veh & parts dealers	39%
				484 Truck transportation	1%
Other durable goods	4%	443 Electronics & appliances stores	Yes	334 Computer & oth electron	57%
				42 Wholesale Trade	11%
				443 Electronics & appliances stores	32%
				484 Truck transportation	1%

[68] For more details, see Table 6 and Appendix table A3 in Canning, Patrick and Brian Stacy. The Supplemental Nutrition Assistance Program (SNAP) and the Economy: New Estimates of the SNAP Multiplier, ERR-265,U.S. Department of Agriculture, Economic Research Service, July 2019.
[69] Percentage are allocated between non-margined sectors equally if there is more than one corresponding IMPLAN sector (with the exception of food at home). For example, the 9% towards nondurable goods is split evenly between gasoline stations and health and personal care stores.

Category (from the USDA ERS SNAP report)[70]	% of expend. in each category[71]	Corresponding IMPLAN sectors	Margined	Producing/manufacturing, transportation/wholesale, retail sectors	Margin
Housing and utilities	9%	531 Real estate	No	531 Real estate	100%
		562 Waste mgmt & remediation svcs	No	562 Waste mgmt & remediation svcs	100%
		221 Utilities	No	221 Utilities	100%
Health care	12%	621 Ambulatory health care	No	621 Ambulatory health care	100%
		622 Hospitals	No	622 Hospitals	100%
		623 Nursing & residential care	No	623 Nursing & residential care	100%
Recreation services	3%	713 Amusement- gambling & recreation	No	713 Amusement- gambling & recreation	100%
Accommodations	1%	721 Accommodations	No	721 Accommodations	100%
Financial services and insurance	2%	523 Securities & other financial	No	523 Securities & other financial	100%
		524 Insurance carriers & related	No	524 Insurance carriers & related	100%
Other services	4%	485 Transit & ground passengers	No	485 Transit & ground passengers	100%
		517 Telecommunications	No	517 Telecommunications	100%
		49A Postal service, couriers & messengers	No	49A Postal service, couriers & messengers	100%
		518 Internet & data process svcs	No	518 Internet & data process svcs	100%
		541 Professional- scientific & tech svcs	No	541 Professional- scientific & tech svcs	100%
		812 Personal & laundry svcs	No	812 Personal & laundry svcs	100%

[70] For more details, see Table 6 and Appendix table A3 in Canning, Patrick and Brian Stacy. The Supplemental Nutrition Assistance Program (SNAP) and the Economy: New Estimates of the SNAP Multiplier, ERR-265,U.S. Department of Agriculture, Economic Research Service, July 2019.
[71] Percentage are allocated between non-margined sectors equally if there is more than one corresponding IMPLAN sector (with the exception of food at home). For example, the 9% towards nondurable goods is split evenly between gasoline stations and health and personal care stores.

		624 Social assistance	No	624 Social assistance	100%
		811 Repair & maintenance	No	811 Repair & maintenance	100%
		611 Educational svcs	No	611 Educational svcs	100%
Nonprofit institutions serving households	1%	813 Religious- grantmaking- & similar orgs	No	813 Religious- grantmaking- & similar orgs	100%
Total expenditures	100%				

IMPLAN margins by producing sector

MARGINS	IMPLAN margins
Retail - Food and beverage stores	
1112 Vegetable and melon farming	48.11%
42 Wholesale Trade	17.07%
445 food & beverage stores	28.40%
481 Air transportation	0.14%
482 Rail Transportation	0.18%
483 Water transportation	0.11%
484 Truck transportation	5.91%
Retail - Food and beverage stores	
1113 Fruit farming	49.16%
42 Wholesale Trade	15.85%
445 food & beverage stores	28.85%
481 Air transportation	0.24%
482 Rail Transportation	0.09%
483 Water transportation	0.18%
484 Truck transportation	5.64%
448 Clothing & accessories stores	
315 Apparel	41.34%
42 Wholesale Trade	12.26%
448 Clothing & accessories stores	44.56%
481 Air transportation	0.11%
482 Rail Transportation	0.01%
484 Truck transportation	1.71%
447 Gasoline stations	
324 Petroleum & coal prod	62.77%
42 Wholesale Trade	18.65%
447 Gasoline stations	16.93%

MARGINS	IMPLAN margins
482 Rail Transportation	0.13%
483 Water transportation	0.21%
484 Truck transportation	0.83%
486 Pipeline transportation	0.47%
452 General merch stores	
322 Paper Manufacturing	61.40%
42 Wholesale Trade	5.33%
452 General merch stores	30.28%
481 Air transportation	0.01%
482 Rail Transportation	0.06%
484 Truck transportation	2.91%
46 Health and personal care stores	
325 Chemical Manufacturing	55.24%
42 Wholesale Trade	10.98%
444 Bldg materials & garden dealers	3.40%
446 Health & personal care stores	12.83%
447 Gasoline stations	2.77%
452 General merch stores	6.07%
453 Misc retailers	6.56%
454 Non-store retailers	0.00%
481 Air transportation	0.38%
482 Rail Transportation	0.57%
483 Water transportation	0.03%
484 Truck transportation	1.17%
441 Motor veh & parts dealers	
336 Transportation eqpmt	55.08%
42 Wholesale Trade	5.47%
441 Motor veh & parts dealers	38.68%
481 Air transportation	0.06%
482 Rail Transportation	0.11%
484 Truck transportation	0.59%
442 Furniture & home furnishings	
337 Furniture & related prod	43.52%
481 Air transportation	0.02%
482 Rail Transportation	0.05%
483 Water transportation	0.00%
484 Truck transportation	7.12%
42 Wholesale Trade	7.07%
442 Furniture & home furnishings	42.22%
443 Electronics & appliances stores	

MARGINS	IMPLAN margins
334 Computer & oth electron	56.50%
42 Wholesale Trade	10.55%
443 Electronics & appliances stores	31.92%
481 Air transportation	0.23%
484 Truck transportation	0.80%
452 General merch stores	
339 Miscellaneous mfg	34.88%
42 Wholesale Trade	11.49%
444 Bldg materials & garden dealers	0.94%
451 Sports- hobby- book & music stores	5.26%
452 General merch stores	1.84%
453 Misc retailers	43.53%
481 Air transportation	0.11%
482 Rail Transportation	0.03%
484 Truck transportation	1.93%
443 Electronics & appliances stores	
334 Computer & oth electron	56.50%
42 Wholesale Trade	10.55%
443 Electronics & appliances stores	31.92%
481 Air transportation	0.23%
484 Truck transportation	0.80%

APPENDIX F. LOCAL PURCHASING REQUIREMENT

To model local purchases of fruits and vegetables by food retailers, we increase the RPC on vegetable and melon farms and fruit farms, wholesale trade and truck transportation to 1.0 (its highest possible level) for those programs with a 100% local requirement. For those programs that require a certain percent of local purchases, we increase the RPCs by the corresponding percentage.

To model a local purchasing requirement for the expansion scenarios, we increase the RPC for vegetable and melon farms, fruit farms, wholesale trade, and truck transportation by 20%.