

## Application of IMPLAN to Extension Programs: Economic Impacts of the University of Arizona Cooperative Extension SNAP-Ed Spending

### Abstract

Many Extension programs are turning to the input-output software IMPLAN to demonstrate economic impacts. IMPLAN is a powerful tool that can be used to estimate the total economic activity associated with an industry, event, or policy. One possible application, therefore, is to use program spending data to estimate the economic effects of Extension's presence in the region. Yet results should be interpreted with care because they can report gross—rather than net—economic effects. This article provides an example of IMPLAN application by estimating the net change in state economic activity resulting from University of Arizona Cooperative Extension SNAP-Ed spending.

**Ashley Kerna**  
Economic Impact  
Analyst  
[akerna@email.arizona.edu](mailto:akerna@email.arizona.edu)

**George Frisvold**  
Extension Economist,  
Resource Economics  
[frisvold@ag.arizona.edu](mailto:frisvold@ag.arizona.edu)

**Laurel Jacobs**  
Associate in  
Extension, Nutritional  
Sciences  
[jacobsl@email.arizona.edu](mailto:jacobsl@email.arizona.edu)

**Vanessa A. Farrell**  
Associate in  
Extension, Nutritional  
Sciences/SNAP-Ed  
[stanford@email.arizona.edu](mailto:stanford@email.arizona.edu)

**Linda Houtkooper**  
Associate Director,  
Programs  
[houtkoop@cals.arizona.edu](mailto:houtkoop@cals.arizona.edu)

**Scottie Misner**  
Specialist, Nutritional  
Sciences  
[misner@email.arizona.edu](mailto:misner@email.arizona.edu)

University of Arizona  
Tucson, Arizona

## Introduction

In response to growing demands for Extension to demonstrate the economic and social impacts of its work, several studies have used the input-output (I-O) modeling software, IMpact Analysis for PLANning (IMPLAN). IMPLAN estimates the total economic activity associated with a particular industry, event, or policy (Watson, Wilson, Thilmany, & Winter, 2007). It measures the direct economic effects as well as the multiplier effects from supply chain linkages (indirect effects) and household spending (induced effects). IMPLAN has become popular among Extension programs because, as Kirk, Allen, and Shideler (2014) aptly state, "outputs include an economic term virtually everyone is familiar with, dollars."

Extension programs that have the capacity to affect the supply of certain commodities, such as crop production, animal science, and forestry management programs, have used production-oriented I-O models to demonstrate additional economic activity that has resulted from program initiatives (Kirk,

Allen, & Shideler, 2014; Macouiller, Ray, Shreiner, & Lewis, 1992). Others, such as 4-H, have used consumption-oriented I-O models and 4-H record book data to estimate economic activity generated by spending related to 4-H programming (Harder & Hodges, 2011; Hill & Goodwin, 2015).

Another possible application of IMPLAN is to analyze the economic activity associated with Extension's presence in the region. In addition to providing jobs and salaries for its own personnel, Extension generates economic activity through spending on program implementation. Programs funded by in-state sponsors may conduct an economic contribution analysis, measuring the gross economic effects of the program, while programs supported by out-of-state funding sources (e.g., federal grants, foundations, and non-profit organizations) are able to conduct an economic impact analysis, measuring the net economic effects. This is an important distinction. Gross economic effects do not account for the fact that state or local funds spent on Extension efforts could have otherwise been spent on other public programs, which also would generate economic activity.

## **Economic Impacts of Federal Funding: SNAP-Ed Spending**

The Supplemental Nutrition Assistance Education program (SNAP-Ed) operates throughout Arizona to encourage healthy eating, increase physical activity, and maintain appropriate calorie balance for people in low-income households that receive or are eligible for SNAP benefits. The USDA's Food and Nutrition Service supports the state program by providing federal funding, which is then competitively awarded throughout the state by the Arizona Department of Health Services. By bringing money into the region that would otherwise not be there and spending it on program implementation, SNAP-Ed has an *economic impact* on the Arizona economy, generating sales, income, and jobs.

First, purchases made to support nutrition and physical activity outreach, such as curricula and food demonstration equipment, generate economic activity throughout the state. Second, the program employs residents to deliver the program, generating job impacts. These are called "direct effects." Furthermore, SNAP-Ed spending generates a ripple of economic activity in other industries of the Arizona economy, called "multiplier effects."

When SNAP-Ed purchases materials from suppliers, the suppliers must then source materials to produce those goods (e.g., the grocery store must purchase wholesale vegetables from producers). Those producers, in turn, purchase goods and services from other industries (e.g., the farm purchases seeds, equipment, etc.). These business-to-business transactions are called "indirect effects."

There is also increased economic activity because SNAP-Ed employs Arizona residents to provide its services. Program employees then spend their earnings on goods and services within the state economy (groceries, doctor visits, hobbies, eating out, etc.). These household-to-business transactions are called "induced effects."

## **Translating University of Arizona Cooperative Extension SNAP-Ed Program Spending to Economic Impact**

The University of Arizona Cooperative Extension (UA Extension) is an integral partner in SNAP-Ed programming, accounting for more than 40% of Arizona's allocation of SNAP-Ed funding (SNAP-Ed Budget Awarded Data). IMPLAN 3.0 was used to estimate the net change in state economic activity resulting from UA Extension SNAP-Ed spending. This economic impact includes UA Extension SNAP-Ed expenditures for program implementation (direct effects) as well as the economic activity generated from resource suppliers (indirect effects) and employee spending (induced effects).

The budget was divided into two components: payroll expenses and non-payroll expenses. Table 1 provides a summary budget of SNAP-Ed spending for 2012. These are the direct effects of program spending.

**Table 1.**  
UA Extension SNAP-Ed Program Summary  
Budget, 2012

<b>Expense Categories (Millions in current dollars)</b>	<b>2012</b>
Payroll Expenses	\$2.4
Non-Payroll Expenses	\$3.3
<b>Total Program Spending (Millions)</b>	<b>\$5.7</b>
Source: UA Extension SNAP-Ed Expense data	

To capture indirect effects (business-to-business transactions), non-payroll expenses were applied to the model by an IMPLAN institution spending pattern (ISP), where the ISP represents the typical spending pattern of a public education institution. Additionally, the local purchase percentages were set to the IMPLAN Arizona SAM model value, where the SAM model value reflects the proportion of purchases that were met by local production. The induced effects (household-to-business transactions) were captured by translating payroll expenses to income earned by UA Extension SNAP-Ed employees and applying it to the model by a labor income change. This measures the economic activity generated from employees spending their paychecks in Arizona. Table 2 reports the total economic impacts of UA Extension SNAP-Ed spending for 2012, with monetary values measured in current dollars.

**Table 2.**  
Total Economic Impact of UA Extension SNAP-Ed  
Spending, 2012

	<b>2012</b>
<b>Total Employment (FTE)</b>	<b>101</b>
Direct Employment	62
Indirect and Induced Employment	39

<b>Total Labor Income (\$ millions)</b>	<b>\$4.7</b>
Direct Labor Income	\$2.4
Indirect and Induced Labor Income	\$2.3
<b>Total Sales (\$ millions)</b>	<b>\$11.8</b>
Direct Sales	\$5.7
Indirect and Induced Sales	\$6.1
Source: Author's calculations; UA Extension SNAP-Ed Expense data, 2012; IMPLAN Group, LLC, 2011.	

In 2012, UA Extension SNAP-Ed spending generated \$5.7 million in direct economic activity (sales), with \$2.4 million representing the labor income earned by the 62 full-time equivalent (FTE) jobs directly supported by UA Extension SNAP-Ed. These direct impacts supported an additional 39 FTE jobs, \$2.3 million in income, and \$6.1 million in sales in other Arizona industries through indirect and induced effects. The total economic impact of UA Extension SNAP-Ed spending in 2012, including multiplier effects, was 101 FTE jobs, \$4.7 million in income, and \$11.8 million in total sales.

## Conclusions

IMPLAN can be used in a variety of ways to estimate the economic effects of Extension programs. One possible application is to use program expense data to estimate the effects of Extension programs on the regional economy. Yet care should be taken to determine what type of analysis should be conducted and whether the analysis measures gross or net economic effects.

## References

- IMPLAN Group, LLC. (2011). IMPLAN System (data and software). 16740 Birkdale Commons Parkway, Suite 206, Huntersville, NC 28078, [www.IMPLAN.com](http://www.IMPLAN.com)
- Harder, A., & Hodges, A. (2011). Economic impact analysis of 4-H youth livestock projects using IMPLAN. *Journal of Extension* [On-line], 49(1) Article 1TOT3. Available at: <http://www.joe.org/joe/2011february/tt3.php>
- Hill, R., & Goodwin, J. (2015). Using IMPLAN to evaluate the economic contribution of 4-H to Colorado and individual counties. *Journal of Extension* [On-line], 53(1), Article 1FEA6. Available at: <http://www.joe.org/joe/2015february/a6.php>
- Kirk, D. J., Allen, K. P., & Shideler, D.W. (2014). Economic activity analyses: the need for consensus. *Journal of Extension* [On-line], 52(3), Article 3COM2. Available at: <http://www.joe.org/joe/2014june/comm2.php>

Macouiller, D. W., Ray, D. E., Shriener, D. F., & Lewis, D. K. (1992). Estimating economic impacts of programming. *Journal of Extension* [On-line], 30(3), Article 3FEA6. Available at: <http://www.joe.org/joe/1992fall/a6.php>

University of Arizona Cooperative Extension SNAP-Ed Expense data from Accountant Principal. (2012). University of Arizona, Department of Nutritional Sciences.

Watson, P., Wilson, J., Thilmany, D., & Winter, S. (2007). Determining economic contributions and impacts: what is the difference and why do we care? *Journal of Regional Analysis and Policy*, 37(2), 140-146. Retrieved from: <http://jrap-journal.org/pastvolumes/2000/v37/F37-2-6.pdf>

---

Copyright © by *Extension Journal, Inc.* ISSN 1077-5315. Articles appearing in the Journal become the property of the Journal. Single copies of articles may be reproduced in electronic or print form for use in educational or training activities. Inclusion of articles in other publications, electronic sources, or systematic large-scale distribution may be done only with prior electronic or written permission of the Journal Editorial Office, [joe-ed@joe.org](mailto:joe-ed@joe.org).

If you have difficulties viewing or printing this page, please contact [JOE Technical Support](#)