

## Measuring CRED Outcomes in Economic Terms

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Measuring Extension program outcomes in economic terms is daunting! Challenges include multi-site evaluation, programs conducted over wide geographic areas, identifying economic measures, not to mention actual data collection! Despite these challenges, the University of Tennessee Extension has successfully defined and measured economic indicators for several years. The benefits produced include:

- Annual statewide economic value report
- Annual statewide cost-benefit analysis
- Annual cost-benefit statement for every county Extension office
- Focus on impactful, powerful end results
- Increased communication with stakeholders

Cost-benefit analysis communicates the value of public investments in a way most stakeholders and citizens understand. Extension has employed multiple perspectives to document monetary benefits of adopting the various practices and behaviors taught by its programs, including: non-market value, savings, reduced costs and increased income. Despite using these various techniques, describing Extension's economic impact on a county-wide or state-wide basis, across all program areas, has remained tedious, if not impossible. Six years ago, the University of Tennessee deployed a cost-benefit analysis tool as part of a one-stop, custom reporting software used by 95 county Extension offices. This session will focus on practical approaches used by UT Extension for cost-benefit analysis, including cost-benefit calculators.

In this video (<https://youtu.be/6EXbaPSXaHg>), Joseph Donaldson, from the University of Tennessee Extension, shows Tennessee's tool and explains how it is used to report outcomes in economic terms. The following documents are examples from the University of Tennessee followed by the workshop discussions led by Allison Nichols and Mary Leuci focused on how we, who work on CRED programs, can adopt some of these techniques in our own states and nationally.

# SOLUTIONS

*For A Better*

## *Statewide Economic Assessment Protocol Tennessee*

We are measuring the extent that UT Extension programs annually contribute to economic activity in the state of Tennessee. Our assessment focuses on UT Extension effectiveness for increasing revenue, increasing savings, and making investments in plant or equipment for farms, small businesses, communities, families and individuals. Nearly 3,000 stakeholders participated in the 2010 UT Extension strategic planning effort, and they told us that economic measures were one of the most important criteria for evaluating Extension programs (Donaldson & Hastings, 2010).

### Recurring Economic Impacts

*Recurring economic values (increased revenue, increased savings, and one-time capital purchases) for up to two years after program:*

**1. Evaluation Studies by Extension Specialists**

Review SUPER impact statements for evaluation studies by Extension specialists. Sum the recurring economic values from these studies.

**2. SUPER Outcomes**

Review SUPER statewide outcomes. Programs currently being monitored for recurring economic impacts include: row crops pest control, row crops irrigation, forage systems, beef systems, nursery production, fruit and vegetable production, horse health, and community leadership.

**3. Jobs Created and/or Maintained**

The sum (1+2) is the total estimate of recurring economic impacts. Divide the sum by \$50,000. The result is the total number of jobs created and/or maintained using the U.S. Department of Defense estimates (University of Tennessee Institute for Public Service, 2006).

### One-Time Economic Impacts

*One-time non-recurring economic values*

**4. SUPER Outcomes**

Review SUPER statewide outcomes. Programs currently being monitored for one-time (non-recurring) economic values include: family economics, beef marketing, 4-H scholarships, and farm financial planning.

**5. Volunteerism**

Use SUPER Activity Report for total volunteer hours contributed to UT Extension programs. Multiply the total hours by the Independent Sector's dollar value of a volunteer hour in Tennessee, \$19.42 (Independent Sector, 2011).

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**6. Nutrition Education**

Obtain the total amount of funds invested by UT Extension in nutrition education programs from USDA-NIFA Annual Report calculations. Multiply this amount by \$10.64. Nutrition education studies have found cost/benefit ratio of \$1.00/\$10.64 (Lewis, 1998; Wessman, Betterley & Jensen, 2002).

**7. Health Literacy**

Obtain the total amount of funds invested by UT Extension in health literacy programs from USDA-NIFA Annual Report calculations. Multiply the amount by \$25. Research has shown that for every dollar spent on health literacy programs, \$25 is saved on direct medical costs and indirect expenditures.

**8. Total Economic Impact**

Sum the one-time economic impacts (4+5+6+7). Add the one-time and recurring economic impacts for the total, estimated economic impact that results from UT Extension programs.

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**References**

Donaldson, J.L. & Hastings, S. (2010). Extension stakeholder survey for strategic planning. Available: <https://utextension.tennessee.edu/strategicplanning/Pages/Updates.aspx>

Independent Sector (2011). *Value of volunteer time*. Available: [http://www.independentsector.org/volunteer\\_time](http://www.independentsector.org/volunteer_time)

Lewis, E.C. (1998). Cost benefit analysis of Virginia EFNEP: Calculating indirect benefits and sensitivity analysis. Unpublished master's thesis. Blacksburg: Virginia Polytechnic Institute and State University.

University of Tennessee (2006). Institute for Public Service. Available:<http://www.ips.tennessee.edu/>

Wessman, C., Betterley, C., Jensen, H. (2002). An evaluation of the costs and benefits of Iowa's Expanded Food and Nutrition Education Program. Ames: Iowa State University Extension.

*Prepared by Joseph L. Donaldson*

# Advancing Tennessee

## Statewide Economic Assessment

FY 2014

UT Extension extends the knowledge and expertise of the University to the people of Tennessee through agents and specialists in all 95 counties of the state. Educational programs in 4-H youth development, agriculture and natural resources, family and consumer sciences, and community economic development produce substantial returns to the state. Using research, questionnaires, observations, and sales records, an economic impact was estimated at **more than \$493 million** from July 1, 2013 through June 30, 2014 for statewide educational programs.

### Recurring Economic Impacts – \$296.4 million – 5,930 jobs created or maintained

*Recurring economic values (increased revenue, increased savings, and one-time capital purchases) for up to two years after program*

#### **Crop Variety Trials, Pest Control, Irrigation, Marketing, and Precision Agriculture**

UT Extension crop variety testing data is used extensively by 80% of Tennessee farmers to select the seed that they use to plant their oilseed, grain and cotton crops. Results from the variety testing program have helped farmers increase yields by identifying the varieties that will perform best in their farming operations. In 2014, the higher yields resulted in approximately \$102.4 million in additional income to Tennessee farmers. Again this year, farmers increased the number of irrigated acres used for corn, cotton, and soybean production. Based on UT research, average yield increases from irrigation resulted in an additional \$18.3 million in farm income. Based on an average cost of \$900 per acre, Tennessee row crop producers invested more than \$59 million in their local economy by purchasing center pivot irrigation equipment. Row crop producers increased returns by \$2.6 million on 94,100 acres by using forward pricing market opportunities as compared to selling at harvest. By using no-till production as a best management practice, it is estimated that production costs were reduced by more than \$18 million.

#### **Pesticide Safety Education Program and Urban Integrated Pest Management**

The Pesticide Safety Education Program had 1041 certifications and 5459 re-certifications; research has estimated annual benefits of \$38 million. Additionally, UT Extension taught more than 2,800 pest management professionals how to effectively manage pests found in and around structures, saving an estimated \$1.4 million to the pest management industry.

#### **Forage Systems**

UT Extension educated farmers on the benefits of warm-season grasses, clover, and stockpiling tall fescue. Extension also demonstrated hay storage, feeding methods to reduce waste and spoilage, and broadleaf weed control. Tennessee farmers saved more than \$12.2 million from better forage production, including following fertilizer recommendations, storage, and feeding practices.

#### **Agritourism and Community Economic Development**

Tennessee agritourism operators look to Extension for education regarding budgeting, safety, customer service, technical assistance, and more. A recent survey of 200 agritourism operators showed that as a result of Extension programs, sales increased by a combined \$7.5 million. Other Extension community economic development programs produced an estimated \$1.3 million in increased revenue and capital purchases; examples included assisting local charities to obtain grant funds and providing assistance to small businesses.

#### **4-H Centers**

UT Extension's 4-H program is the largest youth development program in the state, serving more than 320,000 participants each year. UT Extension operates three 4-H Centers across the state, providing summer camping and year-round educational experiences. The 4-H Centers are funded by user fees and provide an economic impact to the communities where they are located by employing staff and purchasing equipment, food, and supplies with a local annual impact of more than \$2 million per location.

#### **Turfgrass Weed Management**

UT Extension's turfgrass education program focused on technical assistance and education to economically control weeds, and the estimated savings to Tennesseans managing golf courses, sod farms, and athletic fields was \$10 million.

### ***Saving Our Bees***

In 2014, 120 Tennesseans completed the UT Extension Beemaster program. These beekeepers learned how to save honeybee colonies from various catastrophes, including parasitic mites, with an estimated 10,500 bee colonies saved (valued at \$700 per hive for bees, hive parts, medications, and honey production). The total value of the saved colonies, hive parts, and honey production is valued at \$7.3 million.

### ***Optimizing Nursery, Fruit, and Vegetable Production***

Tennessee nursery growers depend on UT Extension's educational programs and plant, pest and soil diagnostic services to produce and market healthy crops. Likewise, the state's fruit and vegetable growers depend on Extension agents and specialists regarding variety selection, management, and marketing. The state's ornamental, fruit, and vegetable producers realized more than \$1.1 million in increased revenue or savings as a result of UT Extension recommendations.

### ***Optimizing Animal Production***

Extension agents emphasized quality assurance, reproductive management, nutrition, and marketing with Tennessee beef producers 2014, increasing returns by \$10 million. Tennessee horse owners depend on UT Extension's research-based programs for horse health and nutrition. UT Extension taught rotational grazing to increase forage production, vaccinations, dental care, and correct deworming practices. These practices helped 205 horse owners, owning more than 1,000 horses, to save a combined \$1.3 million.

## **One-Time Economic Impacts – \$196.6 million**

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### *One-time non-recurring economic values*

#### ***Nutrition Education***

Family and Consumer Sciences nutrition education programs reach approximately two million Tennesseans annually through group meetings, worksite sessions, television, and radio programs. Nutrition education studies have found cost/benefit ratio of \$1.00/\$10.64. This translates to a return of over \$100.7 million for the investment in UT Extension's nutrition education programs for the state of Tennessee.

#### ***Health Literacy***

Increasing health literacy and adopting healthy habits such as increasing exercise and participating in health screenings have shown to improve health and reduce the risk of many chronic diseases. For every dollar spent on UT Extension Family and Consumer Sciences health education programs, \$25 is saved on direct medical costs and indirect expenditures, resulting in a \$64.8 million benefit to Tennessee.

#### ***Tennessee Saves***

The Tennessee Saves program instructs Tennesseans in sound financial practices, encourages them to build assets, and encourages them to reduce dependence on credit and discharge debt. In 2014, the estimated economic impact of clientele's saving and the debt reduction was \$26.2 million.

#### ***Volunteerism***

UT Extension agents and specialists managed volunteers for various programs and services. Volunteers extended the education offered by paid staff and contacted over 800,000 additional Tennesseans through their service. Using the Independent Sector's dollar value of a volunteer hour in Tennessee (\$20.13/hour), the value of the 244,095 volunteer hours served was \$4.9 million.

## **Cost-Benefit Analysis – \$1 to \$8.13**

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For every \$1 in public funds invested in UT Extension programs, an estimated \$8.13 is returned to the people of Tennessee.

*Prepared by Joseph L. Donaldson, Ph.D.*

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## **Measuring Community Development Outcomes in Economic Terms**

### **Discussion I**

For each of your CRED topic areas (table tent names) please discuss:

What (CRED) programs do you have in your state that have recurring economic outcomes? What are the specific recurring outcomes?

What (CRED) programs do you have in your state that have one-time economic outcomes? What are the specific one-time outcomes?

What (CRED) programs do you have that relay quantifiable outputs and outcomes such as volunteer time, in-kind contributions, actual jobs created, etc.? What does each program produce?

What (CRED) programs do you have that are based on specific research that is attached to an economic value such as the ones illustrated in the video – nutrition education and health literacy?

Each table reports back

## Discussion 2

Each table should write one simple economic outcome statement for your CRED program area. Explain how you would come up with a \$ amount to insert in each statement.

Example from the video:

“Agritourism operators look to Extension for education regarding budgeting, safety, customer service, technical assistance, and more. A recent survey of 200 agritourism operators showed that as a result of Extension programs, sales increased by a combined \$7.5 million. Other Extension community economic development programs produced an estimated \$1.3 million in increased revenue and capital purchases; examples included assisting local charities to obtain grant funds and providing assistance to small businesses.”

Each table reports back.

For more details and access regional reports, tools, etc.:  
**[http://srdc.msstate.edu/measuring\\_impact/index.html](http://srdc.msstate.edu/measuring_impact/index.html)**