Cooperative Extensions: Measuring Economic Impact

Custom Research Brief • June 10, 2008

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Table of Contents

I. Research Methodology and Parameters

Project Challenge:

The director of the Cooperative Extension at a mid-sized, land grant university approached the Council with the following challenge:

> Are other land grant universities measuring the economic impact of their extension programs? What are the results of the impact assessments? And how are assessment results being used?

Sources:

- United States Department of Agriculture – Available at: http://www.usda.gov/wps/portal/usdahome
- National Association of State Universities and Land Grant Colleges (NASULGC) – Available at: https://www.nasulgc.org/NetCommunity/Page.aspx?pid=183&srcid=-2
- Journal of Extension – Available at: http://www.joe.org/
- The Chronicle of Higher Education – Available at: http://chronicle.com/
- Educational Resources Information Center (ERIC) – Available at: http://www.eric.ed.gov/
- Internet, via search engines and multiple websites, including university websites

Research Parameters:

- As requested by the member, this research brief focuses on measuring the economic impact of Cooperative Extension programs. In order to ascertain the extent to which Extension offices measure the impact of the programs they coordinate, the Council reached out to the directors (or equivalent position) of 57 offices (with a response rate of 31*) and asked the following questions:

    1. Does your office assess the economic impact of the programs offered, if so, how frequently?
    2. How are the results of impact studies reported (e.g., short impact briefs versus comprehensive studies measuring the impact of a range of extension services)?
    3. How are results being used (e.g., to lobby for increased funding)?

  This information is presented in Section III (Survey Results) and Section IV (Uses of Impact Assessment Data) of this brief and provides an overview of how Extension offices around the nation are measuring the economic impact of programming. Additionally, we included information about other forms of impact (e.g., non-economic) that contacts report measuring.

- Additional information included comes from a secondary literature review and is meant to provide insight into the ways in which impact is assessed. For a complete list of secondary literature sources used, please refer to the bibliography.

*Only 30 out of 31 contacts who responded to our request agreed to participate in this research effort.

II. SUMMARY OF FINIDNGS

Observations

Assessing Economic Impact

- Based on a secondary literature review as well as responses from 30 Extension offices (57 total contacted), the Council found that most Cooperative Extension offices conduct some type of program assessment, typically in the form of "Impact Briefs" that assess the impact of individual programs at the county level. Metrics vary from the level of understanding/amount of knowledge learned to quantifiable improvements in crop production, for example.
- Economic impact assessments are less common and are typically applied only to a limited number of programs in any given office, most commonly agriculture or natural resource programs. While economic data is generally regarded as the most valuable, many offices struggle with creating standard metrics and training Extension faculty to use them.
- A handful of Extension offices conduct comprehensive assessments, either on their own or by contracting with consultants such as Battelle. University economic impact statements often include assessments of the impact of Extension programs.

Purpose of Assessment

Regardless of the type of impact assessment (targeted issue briefs or comprehensive review), the purpose of measuring impact is common to all universities. In general, Extension offices leverage the positive results generated from an economic impact study to:

1. Lobby for increased funding from local, state, and federal sources, among others
2. Guide program development
3. Report to key stakeholders the success of specific programs
4. Gain positive public relations exposure

Results of Assessment

Because Extension programs are heavily dependent on geographic location, local industry, and specific community needs, it is difficult to identify key findings or comparable measures from economic impact assessments. While results vary, the primary goal of assessment is to demonstrate success and identify areas for improvement. For example, impact reports highlight increased agricultural production as a result of pest eradication, a lower incidence of youth drug-use as a result of 4-H participation, or increased local business development resulting from strategic planning and marketing workshops.

III. SURVEY RESULTS

The Council received 30 responses from email outreach. Information received is reported in the table below (pages 4 – 16). Contacts who did not respond are not included. See Appendix A for a complete list of universities contacted:

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
The Alabama Cooperative (Alabama A&M University, Auburn University and Tuskegee University)	No	N/A	N/A	N/A
University of Alaska, Fairbanks	No; Other forms of impact are assessed	Impact briefs; Primary focus is on knowledge outputs at the time of learning	• With the move toward greater accountability to the USDA, the office is moving from assessing short-term knowledge outputs to longer-term community impacts. The director of Extension comments that, "In one sense, we are a small state with islands of service across large distances. Our economy of scale means we have limited capacity."	N/A
University of Arizona	No; Other forms of impact are assessed	Impact briefs; Briefs describe county-level and state-level success that comprises aggregate results from a specific program (See Section IV for more information)	• Has no standard protocol for economic versus other forms of assessment • Each Extension faculty member is required to assess the impact of their program and then compile an annual report summarizing the results. Following the Logic Model (see Section V), assessment is typically done during the learning phase, but varies depending on the program.	County Reports: http://ag.arizona.edu/extension/counties/index.html

Note: "N/A" indicates that the information was not available or the contact declined to provide the information requested.

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
University of Arkansas Cooperative Extension Service (University of Arkansas and University of Arkansas Pine Bluff)	Yes	Impact briefs; Each county Extension agent is required to submit impact statements about three programs (as opposed to single events) per year	• The Extension office developed a template that county agents use when reporting the impact of programs. Assessment does not typically measure direct economic impact. Specifically, the template guides agents to: 1. Assign the report with a descriptive title indicating the purpose and impact of the program 2. Write a short "success story" describing the effects of the program 3. Outline the structure of how the program was delivered (e.g., format) 4. Report on the scope of program (e.g., number of towns where the program was implemented and the number of citizens reached) 5. Explain the impact across a short, medium, and long timeframe, where applicable 6. Discuss how the program "solved" the original issue • Extension measures the economic impact of all programs where applicable.	• Extension template available: http://intranet.uaex.edu/xerox4.asp • See Appendix B for example impact brief (not available online)
University of California	Yes	Impact briefs highlighting the impact of the major programs offered by the Extension	• Impact is assessed, but it is not done so on a regular basis. Advisers assess outcomes on a variety of indicators including acquisition of knowledge, behavior modification, and economic impact.	N/A

Note: "N/A" indicates that the information was not available or the contact declined to provide the information requested.

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
Colorado State University	Yes	Impact briefs as well as comprehensive studies highlighting the impact of the major programs offered by the Extension	N/A	Comprehensive Assessment of Colorado's 4-H program: http://www.joe.org/joe/2007october/rb8.shtml
University of Connecticut	Economic impact is not assessed	N/A	N/A	N/A
University of Florida IFAS Extension (Florida A&M University and University of Florida)	No; Other forms of impact are assessed	Impact briefs (See Section IV for more information)	• Impact is measured at the time of learning (e.g., at the conclusion of a workshop/programming series) as well as several months or a year later to assess behavior changes that result from educational programming. Despite follow-up studies, assessment is generally not economic in nature.	N/A

Note: "N/A" indicates that the information was either not available or the contact declined to provide the information requested.

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies

University of Georgia Cooperative Extension (University of Georgia and Fort Valley State College)	Yes	Impact briefs	• Economic impact assessment is done on an ad hoc basis depending on the program being assessed. Impact is typically measured at the time of learning. County- and state- level faculty are required by the Dean of Extension to submit one impact brief per year. Briefs typically outline the need for the given program and discuss subsequent results and impact. The University of Georgia is moving towards assessing the long-term impact of programming.
			• The University of Georgia has also developed an internal database that documents all educational programming delivered. Data tracked includes the:
			  • Program name and nature
			  • Number of participants
			  • Total number of program hours
			  • Number of faculty members participating
			  • Number of volunteers participating
				Impact briefs: http://www.caes.uga.edu/applications/impactstatements/

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
University of Idaho	No; Other forms of impact are assessed	Impact briefs	• The vast majority of impact data is assessed through surveys at the time of learning and thus does not incorporate economic data. • Individual faculty at the university as well as the director of Extension conduct analyses of specific programming efforts, and these are typically reported to county commissioners. • Impact statements are distributed to county commissioners, advisory boards, and other decision makers. There has not been a coordinated, statewide effort to analyze the overall value of CES in Idaho.	4-H Impact Study: http://www.joe.org/joe/2005august/a4.shtml
Iowa State University	Yes	Impact briefs as well as comprehensive studies highlighting the impact of the major programs offered by the Extension office. Both assessments are conducted internally and include economic impact data.	• While most impact assessment is based on survey data, the director of Communications and External Relations for Iowa's Cooperative Extension suggests measuring impact either at local-levels using both anecdotal and quantitative (economic) evidence of success and/or conducting comprehensive studies at the state-level that tout the success of Extension as a whole. • The director remarks that these "big numbers" and local "success stories" have the greatest impact on stakeholders.	See Appendix C for example impact brief (not available online)

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
University of Kentucky	No; Other forms of impact are assessed	Impact briefs and comprehensive studies; Briefs assess impact at the county-level while comprehensive studies look at impact of specific programs at the state-level. In addition, individual counties conduct annual summaries of several of their strongest programs.	• Impact has been assessed internally and conducted either at the time of learning or in a follow-up studies.	Impact briefs and Annual County Reports can be found at: https://warehouse.ca.uky.edu/AgWeb/pubreports/

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
Louisiana Cooperative Extension Service **(Louisiana State University and Southern University and A&M College System)**	Yes	Impact briefs; Economic impact is reported through formal, online written reports as well as in detailed reports that break impact down by parish (county) (See Section IV for more information)	• Economic impact assessment is most frequently performed for programs relating to agriculture, natural resource-based commodities, and enterprises that are market based because the impact of educational programs on increased economic activity can be measured (e.g., yield increases, costs reduced, businesses started). • Extension measures the impact of its programs when they result in clear economic impact (yields increased, costs reduced, etc.). • Contacts in this office note that it is much more challenging to measure the economic impact of family and consumer science and 4-H programs because their benefits are not typically market based, but instead are social-based goods (that have to be valued in a non-market economy). For example, assessing health issues obesity, increased exercise, and smoking cessation does have positive economic benefits, create value, and improve quality of life, but it is difficult to measure these benefits. Economic values can be placed on quality of life improvements, reduced health care costs, and a more productive workforce, but these must be calculated independent of typical market-based goods like agricultural crops, timber, and/or eco-tourism businesses developed. Staff remark that they "do [their] best to capture these values as often as [they] can (at least annually)."	Example of Parish-Level Impact Reports : http://www.lsuagcenter.com/NR/rdonlyres/C54666 71-D5BE-40DD-88C6-0BC847D1FC1B/38694/ Union_Highlights_Spring 07.pdf

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
University of Maine	Yes	Impact briefs	• In recent years, the Extension office at the University of Maine has increased the frequency with which it assesses economic impact and ROI. Typically, economic assessment is conducted in agricultural and small business programs. Contacts note that youth and community development programs are harder to assess economically.	N/A
Maryland Cooperative Extension (University of Maryland and University of Maryland Eastern Shore)	No; Other forms of impact are assessed	Informal "success stories" of specific programs are posted online	• Economic impact is not assessed	Extension Success Stories: http://extension.umd.edu/about/impacts/index.cfm
Michigan State University	Yes	Impact briefs as well as comprehensive studies highlighting the impact of the major programs offered by the Extension office (See Section IV for more information)	• Although the majority of Michigan's Extension programming assessment is not economic-based, contacts note that the Extension office does occasionally use economic data when reporting to stakeholders and lobbying for funding. For example, the office has calculated a $9 ROI for every $1 of Federal dollars spent.	N/A

Note: "N/A" indicates that the information was either not available or the contact declined to provide the information requested.

III. Survey Results

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
University of Missouri Extension (University of Missouri and Lincoln University)	Yes	Impact briefs; The director of each program area is responsible for assessing program impact	• Each of the Extension office's five directors (one for each area of programming) conduct independent studies that focus on specific aspects of the programs they run. Individual reports are then combined into a comprehensive study. Economic indicators are measured where possible.	N/A
Montana State University	Yes, however, impact has not been assessed recently	The last study measured the impact of the state's 4-H program and was conducted in 2001	N/A	4-H Study: http://www.montana.edu/www4h/4hsurvey.pdf
University of Nebraska	Yes	Extension-wide study	• The extension-wide impact assessment was conducted for the Institute of Agriculture and Natural Resources at the University of Nebraska and thus focus primarily on measuring the economic impact of programs relating to agriculture and natural resources.	Extension-wide study: http://atworkfornebraska.unl.edu/survey/Nebraska_IANR_Report.pdf

Note: "N/A" indicates that the information was either not available or the contact declined to provide the information requested.

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
University of New Hampshire	Yes	Impact briefs (See Section IV for more information)	• Extension collects economic impact data mainly on agricultural and natural resource programs. Typically information is collected by farmers and land owners who self-report the impact that Extension programming, learning, and support has had on their agricultural practices. • In other cases, the office uses existing economic data to "estimate" impact. This is done most regularly in the Integrated Pest Management (IPM) program -- where a producer may report fewer applications of a particular chemical as a result of Extension recommendations. The cost of the application by the number of applications the producer didn't apply is then calculated to provide economic impact data. • Less frequently, and usually as part of a grant application, Extension staff collect economic impact data in youth and family programs. For example, staff note that they have collected information regarding juvenile delinquency rates and extrapolate an estimate of the effect that programming has on keeping youth out of the judicial system and the associated cost-savings. However, contacts believe that this assessment is difficult to do with great validity. • The high cost of conducting a comprehensive assessment of Extension programming prohibits such a study from being completed.	Examples of impact briefs: • http://extension.unh.edu/success/index.cfm?fuseaction=home.story&story_id=44 • http://extension.unh.edu/success/index.cfm?fuseaction=home.story&story_id=28 • http://extension.unh.edu/success/index.cfm?fuseaction=home.story&story_id=47

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
Cornell University	Yes	The impact of Extension programs is assessed as part of a university-wide economic impact study	• A second university-wide study is on track to be completed at the end of June 2008.	University-wide impact assessment study: http://www.landgrant.cornell.edu/cu/cms/landgrant/upload/EconomicImpactOnNYS.pdf
North Dakota State University	Yes	Extension-wide study conducted by outside company	• In 2007, the University commissioned its first comprehensive economic study since the 1980s. The extension office used Ohio State and the University of Nebraska as models for this assessment.	N/A
Ohio State University	Yes	Impact briefs; Extension-wide study conducted by Battelle	• Internal departments and county offices are asked to continually assess economic impact. Information is collected throughout the year, however, each spring, departments are asked to turn in a summary of economic impact data for annual accounting • In addition, an Extension-wide study was conducted in January 2005 by Battelle.	Extension-wide study: http://extension.osu.edu/about/extension_report.pdf

Note: "N/A" indicates that the information was not available or the contact declined to provide the information requested.

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
Oklahoma State University	Yes	Impact briefs; Extension-wide study conducted by Battelle (See Section IV for more information)	• Economic impact is collected where possible. • Additionally, extension staff calculate the ROI for specific programs and initiatives. • In 2007, Oklahoma State University contracted with Battelle to conduct a broad assessment of both outreach and teaching programs. • Extension has recently hired an Agricultural Communications staff member to collect and then present economic assessment data.	N/A
Oregon State University	Yes	The impact of Extension programs is assessed as part of a university-wide economic impact study	N/A	University Economic Impact Study: http://oregonstate.edu/economic-impact/OSU_economic_impact-URL.pdf
South Dakota State University	Yes	Impact briefs	• Economic impact is only assessed 5-10% of the time.	Impact briefs: http://agbiopubs.sdstate.edu/articles/CLM07.pdf
University of Tennessee	Yes	Impact briefs	• Economic impact data is collected to use to report to stakeholders. Economic impact is measured throughout all areas of Extension. • Specifically there are three programs that Extension conducts follow-up assessments on each year and then there are an additional six impact studies conducted in areas that vary from year-to-year.	See Appendix D for example impact brief (not available online)

Note: "N/A" indicates that the information was either not available or the contact declined to provide the information requested.

III. SURVEY RESULTS

University	Measure Economic Impact?	Format of Assessment Reports	Specific Assessment Information: Frequency of economic assessment and/or other pertinent details to assessment efforts	Links to Impact Studies
Texas AgriLife Extension Service (Prairie View A&M University and Texas A&M University)	Yes	Impact briefs	• The Extension office expects an economic impact study on all major state-wide programs to be conducted by Extension faculty.	Impact briefs: http://agrilifeextension.tamu.edu/strategyimpact/economicimpact/
Utah State University	Economic impact is not assessed	N/A	N/A	N/A
University of Wyoming	Yes	Impact briefs	• Extension staff conduct qualitative assessments as well as demonstrated impact statements (economic assessment) that is reported to stakeholders at the state, university, county and federal levels.	Impact briefs: http://ces.uwyo.edu/esusda.asp

Note: "N/A" indicates that the information was either not available or the contact declined to provide the information requested.

IV. Uses of Impact Assessment Data

Below are common reasons why Cooperative Extension offices conduct impact assessments and the typical audiences to whom results are reported (Diem, 2003; 2004).

Purpose of Economic Impact Assessment	Audience Involved			
	Elected Officials/Funding Units	University Administrators	Internal Extension Decision-Makers	News Media
To hold Extension staff accountable for invested resources	✓	✓	✓	✓
To continually improve the organization's effectiveness			✓	
To be able to describe Extension's strengths to stakeholders and funding bodies that allow staff to differentiate Extension from other agencies and organizations	✓	✓		
To justify the investment of time and effort put into Extension programming, as well as the dedication of public and private funds	✓	✓		✓
To satisfy the requirements of political bodies and funding agencies that support Extension	✓	✓		✓
To yield tangible results that serve as a basis for scholarly publications as well as awards and recognition			✓	
To market Extension programs to prospective participants			✓	
To announce Extension's various successes to the media to build positive public relations				✓

IV. Uses of Impact Assessment Data

Over the course of research, several contacts shared detailed, university-specific information about how the Extension office uses or has used impact assessment. The below profiles provide more in-depth information about how universities use economic assessment data.

University	Specific Purpose of Assessing Economic Impact
Louisiana State University	Results are used to: • Demonstrate annualized ROI to funders and stakeholders • Justify state and federal budget needs on an annual basis • Plan program growth and delineate funding for emerging programs, state needs, and other opportunities • Share with parish (county) level government leaders and stakeholders to help secure local funding Results are reported to: • Internal decision makers (e.g., university and Extension leadership) • State and federal legislators • Congressional delegation aides • Representatives in the Governor's office • Economic development agency heads • State commissioner of agriculture and forestry • News media (via press releases)
University of New Hampshire	**General Uses:** Extension staff use the economic impact analysis results (as well as other societal and environmental outcome data) in a variety of ways including to report to federal funders, grant funders, and state and county legislators. Contacts note that this information is not used to lobby for more funding but, rather, is used to communicate to key stakeholders the value of their current contributions. **Agriculture and Natural Resources:** Extension staff assess impact most regularly in the Integrated Pest Management (IPM) program – where, for example, a producer may report fewer applications of a particular chemical as a result of Extension recommendations. Extension staff would then multiply the cost of the application by the number of applications the producer *did not* apply. This type of reporting is required in order for the Extension office to receive various federal/state IPM grants.
UF/IFAS Extension (University of Florida and Florida A&M University)	Economic impact data is primarily used to: • Lobby for increased funding • Maintain steady funding during budget crunches • Demonstrate success to key stakeholders Extension staff report that using economic impact data to increase (or keep funding levels steady) has been most successful at the county level, as opposed to state or federal.

IV. USES OF IMPACT ASSESSMENT DATA

University	Specific Purpose of Assessing Economic Impact
University of Arizona	Economic impact data is primarily used to: • **Lobby for increased funding:** Extension staff used economic impact data as one of several tools to lobby for increased funding. As a result of sharing economic impact data, Extension recently received $1.5 million which will be used to fund the salaries of 20 new staff members • **Account for spending of grant dollars:** Grant funding makes up approximately half of the Extension budget at the University of Arizona.
Michigan State University	The results of impact assessment were used to convince state legislators to continue funding the Extension office at a time when their budget was in danger of being eliminated. Recently, state funding was increased for the first time in ten years. This is a major accomplishment for the Extension office and staff believe that this increase can be largely attributed to their ability to show the impact that Extension programming has over a period of time. Specifically, the Extension staff have concluded that for every one dollar of federal funding the office receives, they are able to create nine dollars of impact. This statistic is used often with federal legislators to lobby for increased funding.
Oklahoma State University	From the Extension-wide economic impact study that was conducted by Battelle, Extension staff pulled the most compelling data and created one-to-two page impact briefs to give to stakeholders as well as the USDA in order to maintain federal funds.

V. Assessing Impact: The University of Minnesota - "Building Extension's Public Value" Program

Below is a description of the "Building Extension's Public Value" program offered through the University of Minnesota. The information provides an overview of the program as well as how it relates to the assessment of Extension's economic impact.

Background

In response to a fiscal crisis that threatened to severely restrict state funding to the Cooperative Extension at the University of Minnesota, "Building Extension's Public Value Program" was formed. Directed by Dr. Laura Kalambokidies, the purpose of the program is to teach Extension faculty how to most effectively demonstrate the public value of their programs as opposed to focusing solely on how programming effects direct participants.

Training

The program provides an overview of the public sector's role in the economy and focuses on market failure -- areas where public sector activities provide value to the economy because the private sector fails to meet demand. Extension faculty are then taught where and how their programs fit into different areas of the economy to make up for shortcomings in the private sector.

Goal

The goal is to broaden the spectrum of reasons why Extension is valuable to the economy and thus provide a more compelling rational for continued, or increased, funding then was originally being given to state legislatures. Specifically, the basic question that this program teaches Extension faculty to effectively answer is "why are Extension programs important and why should tax payers, and thus the state legislator, care about continuing these efforts?" In addition, the goal of this program is to allow Extension faculty to develop and deliver programs to satisfy market failures as opposed to just the individuals they are serving through a given program.

Economic Impact Assessment

Thus far, training does not focus on teaching Extension faculty to quantify the public value of their programming and therefore assign a monetary value to Extension's public contributions. However, Dr. Kalambokidies notes that devising tools that guide Extension faculty to measure economic impact is one of the logical next steps for the program. Despite this future goal, she notes that it is easier to assess economic value for some types of programs (e.g., agriculture) than others (e.g., youth programs) and thus she is worried that stakeholders and legislators will more strongly support those programs where economic data is available.

To date, the director of the program, Dr. Laura Kalambokidis has delivered training to Extension faculty throughout Minnesota and has given training workshops to approximately nine other states.

V. Assessing Impact: The Logic Model

Extension staff can measure economic impact at multiple stages throughout any given initiative but the timing can impact the type of assessment that is conducted (e.g., economic versus quantitative). Over the course of research, many Extension staff noted that they follow the Logic Model when planning impact assessment. Below is a summary of Logic Modeling:

Logic Modeling

Logic Modeling breaks measurable outcomes into three different areas: learning, action, and impact (see table below). Based on these three areas, research suggests that assessment is the simplest and most cost effective (and thus most common) during the learning phase.

Outcomes		
Learning (short term)	**Action (intermediary)**	**Impact(long term)**
• Awareness • Knowledge • Attitudes • Skills • Opinions • Aspirations • Motivations	• Behavior • Practice • Decisions • Policies	• Social • Economic • Civil • Environmental

While many Extension staff note that they are trying to increase the frequency with which they measure the economic impact of programming, there remain strong arguments for conducting assessment during the learning phase of programming (and thus collecting data that does not speak to a direct economic impact). Assessment at the time of learning is most valuable for several reasons (Arnold, 2002):

1. It provides an entry point to understanding and using logic modeling for program evaluation
2. It can be conducted either by Extension staff or through self-reporting survey instruments
3. It is a concrete and useful way for Extension educators with little or no training in evaluation methods to experience and practice systematic inquiry for the programs they provide.
4. There is little cost associated

V. Assessing Impact: Measuring at the Time of Learning

During the course of research, the Council learned that most Extension offices assess impact at the time of learning (e.g., at the conclusion of a program or workshop series). While this does not typically yield direct economic impact data, staff note that using this type of data is still useful when reporting to stakeholders, sharing results with the public, or lobbying for increased funding. Research suggests, and the Council's primary research interviews support, that there are there are different ways to measure impact at the time of learning (Raidl et al, 2004; Davis, 2003). Below are three of the most common forms of assessment used and the benefits of each.

Three Types of Assessment at the Learning Phase

1. **Observation:** Used most frequently with younger children, Extension staff observe changes in behavior that result from educational programming. For example, when teaching children about the importance of hand-washing, Extension staff might observe how frequently and thoroughly children wash their hands at targeted times of the day (e.g., before lunch). Recording this information over a set period of time (e.g., two weeks) provides insight into the effectiveness of the program.

2. **Pre- and Post- Test:** Extension staff asks participants to complete a survey before and after a given program to gauge the amount of learning that takes place.

3. **Retrospective Pre-Test:** At the completion of an Extension educational program, staff administer surveys that ask participants to reflect on what they knew prior to attending the program and then what they feel they learned. Specifically, each question on the survey asks participants to rate their answer pre- and post-programming. Not only is this model more time efficient than the traditional pre- and post-test assessment, but research suggests that "when participants are asked to respond to a question about how much they know about a particular subject after they have some basic knowledge of the subject itself, they are more able to accurately reflect on the degree of change in knowledge or attitude." (Davis, 2003).

   Typically respondents rate their answers on a Likert Scale where 1 indicates "strongly disagree" and 5 indicates "strongly agree." For example, a survey given at a strategic planning workshop might include the follow-in questions (Davis, 2003):

Please rate answers on a 1 to 5 scale where "1" indicates that you strongly disagree with the statement and "5" indicates that you strong agree.		
Question	**Pre-Workshop**	**Post-Workshop**
I have a basic awareness of the mechanics of strategic planning		
I know what the key components of strategic planning are		
I think I could facilitate a strategic planning process		
I have the skills necessary to facilitate a strategic planning process		

V. Assessing Impact: Health Education Programming

Measuring the Economic Impact of Health Education Programs

Unlike agriculture and natural resource-based commodities and enterprises, health management and improvement does not have economic indicators built-in to use when assessing impact (e.g., you can *directly* measure crop yield increases, but not the cost-savings of weight loss reduction). For this reason, the influence of health education programs often must be calculated indirectly. Barbara O'Neill, Extension Specialist in Financial Resource Management at Rutgers Cooperative Extension, offers five methods to quantify the economic impact of health education programs (O'Neill, 2008):

1. **Survey Program Participants:** One way to assess the economic impact of health education programs is to ask participants how their health has affected their finances. Ideally, improved physical wellbeing resulting from health education programs will positively impact participants' financial status. Among other questions, surveys typically ask participants to estimate a dollar value for improved health practices.

2. **Time Value of Money Analysis:** This metric takes into consideration the average onset of chronic health problems and the affect of health education delivered by Extension has on prolonging illness or disease (e.g., diabetes). Ideally, health education programs teach participants about proper nutrition, diet, and exercise thereby minimizing health care expenses.

3. **Extrapolation from Published Cost Estimates:** Using national data on the cost savings of improving health, it is possible for Extension staff to estimate the cost-benefit of educating citizens about improved health practices. For example, the US Department of Health and Human Services estimates that a 10 percent weight loss will reduce an overweight person's lifetime medical costs by $2,200. Thus, if an Extension program helps 500 people lose 10 percent of their body weight, the economic impact is $1.1 million.

4. **Cost-Benefit Analyses:** A cost-benefit analyses takes into account the cost of delivering a health education program. For example, if it costs $200,000 to deliver a program that yields $1.1 million in economic impact, the cost-benefit ratio is 5.5 to 1. Thus, the economic benefit is $5.50 for every $1 spent to implement the program.

5. **Return on Investment (ROI):** To calculate the ROI on any given program, Extension offices use the economic impact data they have (such as the numbers calculated above) and apply them into the following formula: (Benefits-Costs/Costs). Using the figures calculated above, the ROI would be $4.50 to every $1 spent.

V. ASSESSING IMPACT: 4-H

The Economic Impact of 4-H Programs

Traditionally, Extension staff convey the impact of 4-H programs through anecdotal evidence and success stories of individuals who participate in the program. While these results speak to the successes of 4-H, assessment that includes quantitative data are seen as better measures of effectiveness and are, in fact, beginning to become more common place. It is important to note that collecting quantitative 4-H data does not typically measure direct economic impact, however Extension contacts note that economic impact of 4-H (e.g., salary gaps between 4-H and non-4-H participants) can only be collected by completing follow-up studies with former 4-H youth many years after they have participated in programming. To date, several states have conducted comprehensive survey assessments that analyze the effects of the 4-H participation on the behaviors and attitudes of youth participants. In 2002, Kirk Astroth of Montana State University Extension Service and George Haynes of the university Department of Health and Human Development developed a survey to assess the 4-H program in their state (this is the most recent impact study the Montana Extension Service has completed). Astroth and Haynes (2002) reported that 4-H participants in Montana are:

More likely than non-participating youth to:

- Succeed in school, earning more "As" than other kids
- Be involved as leaders in their school and community
- Be looked to as role models by other youth
- Help in their community

Less likely than non-4-H youth to:

- Shoplift or steal
- Use illegal drugs of any kind to get high
- Smoke cigarettes
- Damage property for the fun of it
- Skip school or cut classes without permission

This model has been used by other Extension offices, such as in Idaho and Colorado, to assess 4-H programs. In Idaho (Goodwin et al, 2005), survey questions were categorized into seven subscales and consisted of 73 questions. The subscales include:

1. Positive identify: Personal power, self esteem
2. Social competency: Leadership, planning and decision making, and resistance skills
3. Relationships with adults
4. Self confidence
5. Empowerment
6. Kindheartedness
7. Skills

Below is an example of questions on the Idaho 4-H survey:

During the past year did you…	Yes or No
Cheat on a test?	
Drink any alcohol without parental permission?	
Shoplift?	
Use any drugs like marijuana, methamphetamines, or cocaine; or sniffed glue or other fumes to get high?	
Drive a car when you've been drinking?	
Carry a gun to school?	
Smoke cigarettes?	

VI. APPENDIX A

The Council reached out to the Cooperative Extension offices at the following universities:

- The Alabama Cooperative (Alabama A&M University, Auburn University and Tuskegee University)
- University of Alaska, Fairbanks
- University of Arizona
- University of Arkansas Cooperative Extension Service (University of Arkansas and University of Arkansas Pine Bluff)
- University of California
- Colorado State University
- University of Connecticut
- Delaware State College
- University of Delaware
- University of Florida IFAS Extension (Florida A&M University and University of Florida)
- Fort Valley State College
- University of Georgia Cooperative Extension University of Georgia and Fort Valley State College)
- University of Guam
- University of Hawaii
- University of Idaho
- University of Illinois
- Purdue University
- Iowa State University
- Kansas State University
- Kentucky State University
- University of Kentucky
- Louisiana Cooperative Extension Service (Louisiana State University and Southern University and A&M College System)
- University of Maine
- Maryland Cooperative Extension (University of Maryland and University of Maryland Eastern Shore)
- University of Massachusetts
- Michigan State University
- University of Minnesota
- Mississippi State University Extension (Mississippi State University and Alcorn State University)
- University of Missouri Extension (University of Missouri and Lincoln University)
- Montana State University-Bozeman
- University of Nebraska
- University of Nevada, Reno
- University of New Hampshire
- Rutgers - the State University of New Jersey
- New Mexico State University
- Cornell University
- North Carolina A&T State University
- North Carolina State University
- North Dakota State University
- Ohio State University
- Langston University
- Oklahoma State University
- Oregon State University
- Pennsylvania State University
- University of Rhode Island
- Clemson University Cooperative Extension Service (Clemson University and South Carolina State University)
- South Dakota State University
- Tennessee State University
- University of Tennessee
- Texas AgriLife Extension Service (Prairie View A&M University and Texas A&M University)
- Utah State University
- University of the Virgin Islands
- VA Cooperative Extension (Virginia Polytechnic Institute & State University and Virginia State University)
- Washington State University
- West Virginia University
- University of Wisconsin-Madison
- University of Wyoming

VI. Appendix B: Sample Impact Brief Sent from the University of Arkansas

University of Arkansas Cooperative Extension Service: Highlights from an Economic Impact Brief

County Impact Statements - Drew County: "Rice Research Verification Program Puts Money In Producer's Pockets"

The Rice Research Verification Program (RRVP) helped rice growers in the Delta improve crop management during the 2001 growing season. Drew County producer Nelson Crow participated in the program. As a result, Nelson yielded 170 bu/acre, which is 30 bushels higher than the historical field average. The net return on the Drew County field after all production costs including land charge was $100.84/acre.

In a time of low commodity prices and high production costs, it is imperative that producers use production inputs like fertilizer, herbicides and fuel as efficiently as possible in order to maximize net returns. Producers cooperating in the 2001 RRVP produced rice yields that averaged 161 bu/acre more than the projected 2001 state average (138 bu/acre). This additional yield translates into about $84.84/acre ($3.26/bushel) additional income.

The RRVP tests and verifies research-based production recommendations to ensure they are appropriate for grower use on large commercial production fields. The verification program also identifies emerging problems that growers encounter and helps find practical solutions for these problems.

Impacts:

- RRVP participants averaged 161 bu/acre compared to the predicted state average of 138 bu/acre. This is a 16% increase over the state average yield.
- Drew County participant Nelson Crow's RRVP field averaged 170 bu/acre. This is a 21% increase over his historical field average.
- 75% of the RRVP producers produced rice yields higher than their normal average.
- 100% of the fields had positive net returns as a result of the RRVP.
- Participants in the RRVP averaged $84.84/acre net returns.

VI. Appendix C: Sample Impact Brief Sent from Iowa State University

Iowa State University: Highlights from an Economic Impact Brief

Manufacturing in Iowa

- Iowa has 6,600 manufacturing companies. Ninety percent have fewer than 100 employees.
- Manufacturing is an important part of the Iowa economy. Manufacturing creates 21 percent of the wealth (Gross Domestic Product) in the state.
- Manufacturing is important for rural Iowa. One in four people in rural Iowa work in a manufacturing plant.
- Manufacturers tend to pay health benefits, which is important for farmers who have second jobs in manufacturing plants.

The Manufacturing Extension Partnership (MEP) in Iowa

- The Manufacturing Extension Partnership (MEP) is run by the Department of Commerce's National Institute of Standards and Technology (NIST).
- In Iowa the MEP program is run by Iowa State University Extension's Center for Industrial Research and Service (CIRAS).
- Last year, the companies that CIRAS and CIRAS partners worked with reported that the MEP program helped create $159 million of impact in Iowa and helped create or retain 1,320 jobs.

The Center for Industrial Research and Service (CIRAS), a unit of Iowa State University Extension, improves the quality of life in Iowa by enhancing the performance of industry through research, education, and technical assistance. Last year 577 companies in Iowa reported $122 million in new investments, $7 million in costs saved or avoided, and $62 million in sales gained or retained. Company executives stated that 1,658 jobs were added or retained as a result of the technical assistance and education they received from CIRAS and its partners. In addition to direct project assistance to companies, CIRAS staff provided educational information to 11,000 individuals in FY07.

Account managers throughout the state meet with clients to assess needs and provide links to resources that companies can use to increase their competitiveness. Solutions are offered through a combination of direct assistance from center staff, university faculty, partner organizations, and outside consultants. CIRAS staff have expertise in biorenewables, engineering, government procurement, management practices, productivity, and quality systems. The center is supported in part by the DoC/NIST Manufacturing Extension Partnership, the DoD/DLA Procurement Technical Assistance Program, the DoC/EDA University Center Program, and the USDA BioPreferred program.

DOC/NIST – Manufacturing Extension Partnership: The Hollings Manufacturing Extension Partnership (MEP) provides knowledge and problem-solving services to improve the productivity, economic competitiveness, and technological capabilities of America's manufacturers. The MEP, a program of the U.S. Department of Commerce's National Institute of Standards and Technology (NIST), has been serving manufacturers since 1988. Not-for-profit and university-based centers, serving all 50 states and Puerto Rico, are funded by federal, state, local, and private resources.

An independent third-party survey of clients from across the entire MEP system reported increased and retained sales of $6.7 billion, $1.7 billion in new private-sector investment, and cost savings of $1.1 billion in FY06. Nearly 53,000 jobs were created or retained.

The program reported $159 million of impact over the past year.

VI. Appendix D: Sample Impact Brief Sent from the University of Texas

University of Texas: Highlights from an Economic Impact Brief

Statewide Economic Assessment: 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 resource development produce substantial returns to the state. Using research, questionnaires, observations and sales records, an estimated economic impact is $210 million from July 1, 2006 through June 30, 2007 for statewide educational programs.

Crop Variety Trials: Tennessee farmers produce about 1.1 million acres of oilseed, grain and cotton crops. UT Extension crop variety testing data is used extensively by 80% of these farmers to select the seed that they use to plant their crops. Results from the variety testing program have helped farmers increase yields by $95 million.

Master Beef Producer: A new intensive education program for cattle producers was developed to improve management of beef cattle operations. Of 2,500 participants, 65% reported that the economic impact of the education they received through the program would range from $1,000 to $5,000 per year for their farms, generating benefits of $7.5 million.

4-H Centers: UT Extension operates four 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.

Nutrition Education: UT Extension Nutrition Education Programs reach approximately two million annually through group meetings, worksite sessions, direct mail, television and radio programs. Nutrition education studies have found cost/benefit ratio of $1.00/$10.64. This translates to a return of $39 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, such as diabetes and high blood pressure. For every dollar spent on UT Extension health education programs, $25 is saved on direct medical costs and indirect expenditures, resulting in $38 million benefit to Tennessee.

Tennessee Saves: The UT Extension Tennessee Saves program teaches personal savings and financial management. 51% of participants increased their savings or investment, generating an annual estimated savings/investment of $6.1 million. In addition, 59% reduced debt. Reductions averaged $66.36 per month, for a total estimated debt reduction generated as the result of program participation across the state of more than $9.6 million annually.

Tennessee 4-H Scholarships: UT Extension's 4-H program is the largest youth development program in the state, serving more than 320,000 each year. Over 90 scholarships totaling $72,900 are awarded annually for post-secondary education.

VI. Appendix D: Sample Impact Brief Sent from the University of Texas

University of Texas: Highlights from an Economic Impact Brief (cont.)

Feeder Cattle Marketing

Feeder cattle buyers prefer to purchase truckload lots of cattle that are similar in age, size, weight and color, and they are willing to pay premiums to producers who participate in cooperative marketing ventures to assemble cattle to meet their needs.

Extension agents and specialists helped beef cattle producers to market feeder cattle thorough cooperative marketing arrangements, including alliances, graded feeder calf sales, and age and source verification programs. As a result, farmers realized $2.2 million in additional sales revenue.

Volunteerism

UT Extension agents and specialists made over 296,000 contacts to recruit, select, train and utilize volunteers for various programs and services. Volunteers extended the education offered by paid staff, and contacted over 600,000 additional Tennesseans through their service. Using the Independent Sector's dollar value of a volunteer hour in Tennessee ($15.98/hour), the value of these volunteer efforts is $2.2 million.

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