

# Preliminary Cost-Benefit Analysis for Urban Agriculture

## *An Introduction*

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Photos on title page

<http://detroitcitychick.blogspot.com/2011/05/detroit-food-policy-council-invites.html>

<http://www.organicnation.tv/photos/wisconsin/4962639>

<http://blog.metro trends.org/2011/08/growing-opportunity-chicagos-public-housing/>

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## **Preface**

Cost-benefit analysis (CBA) can provide a powerful tool for communicating the economic value of urban agriculture to policymakers, funders, and other decision makers. This guide introduces the basics of cost-benefit analysis and prepares urban agriculture practitioners to conduct a preliminary-level CBA.

We explain what CBA is and how it is used by decision makers, and we provide cautionary notes on using CBA. We outline steps in conducting a cost-benefit analysis and suggest measures that may be used to evaluate benefits that are commonly attributed to urban agriculture. The benefits discussed in this guide include community economic development, human development, neighborhood revitalization, food security, and environmental improvement.

This guide is designed for urban agriculture practitioners who do not have a background in economics or research. It illustrates how CBA might be conducted by projects with limited resources and expertise, in order to develop preliminary estimates of the monetary value of urban agriculture.

We recommend that CBA be only one of the ways in which you articulate the value of urban agriculture.

# **Introduction: Cost-Benefit Analysis and Urban Agriculture**

## **Urban Agriculture**

Urban agriculture is “the growing, processing and distributing of food and other products through intensive plant cultivation and animal husbandry in and around cities” (Bailkey and Nasr 1999). *City farming* and *urban farming* are sometimes used synonymously with *urban agriculture*. *Community gardening* is a similar idea, although it often refers specifically to production for gardeners’ own use rather than for sale.

## **Cost-Benefit Analysis**

Cost-benefit analysis aims to compare what would happen in the absence of a project (also called a *baseline*) with what happens after the project has been implemented (the project *outcome*). The costs of the project are weighed against the benefits that have accrued during this period of time.

CBA provides a way of answering questions such as:

- Do a project’s total benefits exceed its costs?
- Of alternative activities and projects, which one achieves the greatest benefit when compared to cost?

Costs and benefits are expressed in numerical and monetary terms. For example, the number of jobs created by a project may be weighed against the costs of the project, broken down per job. For purposes of this guide, we discuss benefits that are valued in monetary terms (such as increase in wages) as well as benefits that are not monetized (such as the number of jobs created).

### Sample Cost-Benefit Analysis

This example weighs the costs of an urban agriculture project against the benefits of the vegetables produced. The figures are calculated per household during the first year of the project.

Benefits: Vegetables produced by a household, expressed as what they would have cost to purchase

Baseline, during the year before the project started	\$25
In the year after the project started	\$325
Total benefits of project per household	$\$325 - \$25 = \$300$

Costs: Project costs, such as wages, training, and inputs

	\$10,000
Number of households	100
Total costs of project per household	\$100

Net benefits: Analysts typically use *net* benefits rather than *total* benefits in the cost-benefit equation. See below.

Total benefits	–	Total costs	=	Net benefits
\$300		– \$100		= \$200

Benefit-cost ratio: Net benefits / Total costs =  $\$200 / \$100$

Figure 1: Sample Cost-Benefit Analysis

Why net benefits rather than total benefits? CBA ratios use *net* benefits rather than *total* benefits. Net benefits are total benefits minus the costs of the project. This helps analysts to avoid presenting a “break-even” ratio, which most decision makers would not consider compelling.

For example, if a project’s costs are \$100, and its total benefits are \$100, then the project has merely broken even. There is no monetary justification for doing it. Uncertainties are inherent in any project, and a project should *more than* break even in order to be worth the risk that these uncertainties entail.

Why present a benefit-to-cost ratio, instead of cost-to-benefit? Even though the technique is usually called a “cost-benefit ratio,” the ratio itself is presented as benefit-to-cost. The benefit is the figure of most interest in CBA.

CBA may serve as a tool in project evaluation by indicating how well a project has met an objective. When planning a CBA, a project’s objectives help identify the benefits of interest. For example, if a project aims to increase vegetable production per household, then project staff should establish a baseline measure of current household vegetable production. A CBA

compares the change in production during a period of time with project costs during the same period (see Figure 1).

CBA may be used at different points in a project's cycle. It can be used to project future impacts, or to analyze work that is already underway or complete.

CBA can also be a component of other studies, such as feasibility studies or business plans. This guide does not discuss these other studies.

## **Decision Makers and Cost-Benefit Analysis**

Many decision makers are current or potential supporters of urban agriculture. They include lawmakers at different levels of government, food policy council members, community organization directors, and economic development professionals. These decision makers routinely draw upon concrete, quantitative information—especially monetary information—to determine the need for different projects, evaluate project impacts, and set priorities.

Quantitative and monetary information cannot convey everything that decision makers need to know about urban agriculture. However, it conveys information about value and worth in a language that speaks to people in many different professions. It allows you to make a case for your work when compared with other projects and interests, many of which also use monetary information.

Many types of non-quantitative information, such as the stories that you convey about the impacts of a project, remain very important in communicating with decision makers. Evaluated by numbers alone, urban agriculture projects may not look beneficial. Stories provide the context within which the numbers help you make your case. See also page 9.

## **How Big Should the Ratio Be?**

There is no rule of thumb for how large the ratio between benefits and costs should be. At the beginning of your project, try to find out what your decision maker audience considers significant. Will a 2:1 ratio be compelling? Are they looking for a larger ratio?

Aim for the largest ratio you can. The approach to CBA presented in this guide requires a comfortable buffer between benefits and costs. Decision makers familiar with economic analysis may raise concerns that you have not included some of the factors used in professional CBA, such as discounting (see page 10). A large ratio—say 6:1 instead of 2:1—helps you to respond to these concerns.

When you present your ratio at the completion of your analysis, be prepared to discuss non-monetized benefits. These can help compensate for smaller ratios in the minds of decision makers. At the same time, however, the more intangible the non-monetized benefits are, the bigger the quantitative benefit-cost ratio should be.

## Cautionary Notes

### The Importance of Non-Quantitative Information

Non-quantitative information, such as the stories that you convey about the impacts of a project, remain very important in making your case to decision makers. Cost-benefit analysis conveys only some of the benefits of urban agriculture. Many of the benefits are intangible and cannot be expressed in monetary terms or in numbers—they cannot be monetized or quantified.

For example, practitioners cite relationship building as an important benefit. We can *approximate* relationship building by measuring things like membership in neighborhood organizations or collaborative work among different organizations. (See *Surrogate Measures*, page 10.) However, many of the relationships that develop in urban agriculture are informal. They might not develop through organizations, and they may be difficult to detect and measure.

### Unanticipated Costs and Benefits

Some costs and benefits may be unanticipated. They may not become apparent until after baseline measures have been taken.

For example, Project YE'ES in Sacramento aimed to foster job creation, and found that the project also fostered youth leadership skills and access to higher education in unexpected ways (Feenstra et al. 1999).

Evaluating the impact and success of projects is an ongoing, emergent process. CBA may help raise important new questions as well as answer existing questions.

## Terminology

The following terms are commonly used in cost-benefit analysis.

### Direct and Indirect Costs and Benefits

Direct costs and benefits are closely related to the project.

- Direct costs include administrative salaries and expenditures on seeds and other inputs.
- Direct benefits include food produced and jobs created.

Indirect costs and benefits are a secondary result of the project.

- Indirect costs include the value lost when land is used agriculturally and not in other ways—see *opportunity costs*, below.
- Indirect benefits include the additional business that neighborhood merchants enjoy because of increased activity that the project brings to the area—see *multipliers*, below.

## Surrogate Measures

Many factors of interest in a cost-benefit analysis are difficult to measure. *Surrogate measures* provide a reasonable approximation of these factors.

For example, the “food security of children” is not a single quantifiable factor but instead involves a complexity of social, economic, political, and nutritional issues. One rough approximation of the food security of children may be obtained from school district figures on free and reduced-price meals. The percent of children at a particular school or in a school district who receive these meals provides some indication of the food security of children in that area. This percentage would serve as a surrogate measure of children’s food security.

## Factors Outside the Scope of This Guide: Discounting, Multipliers, and Opportunity Costs

These factors play a prominent role in professional cost-benefit analyses. They are outside the scope of this guide, but you should be aware of them:

- *Discounting.* Costs and benefits calculated today will likely not have the same worth in the future. In addition, people tend to value costs and benefits incurred today more than those that they may incur in the future (Cellini and Kee 2010, p. 518). Discounting also accounts for inflation and prospective interest.
- *Multipliers.* Multipliers represent the ripple effects that a project has when its benefits (or costs) flow through a neighborhood and beyond.

For example, a popular argument for “buying local” makes use of this idea. Money spent at a locally owned business is said to “stay local” and foster further economic growth.

- *Opportunity costs.* An opportunity cost is what you have *not* gained because you did one thing and not another.

For example, urban land may be put to different uses. Decision makers may need to decide whether to allocate land for urban agriculture or for a public park. An opportunity cost of urban agriculture, in this case, would be the loss of the benefits of that park.

Similarly, if a parks and recreation department commits staff time to a neighborhood garden, that staff time is no longer available to other activities.

## **Initiating a Cost-Benefit Analysis**

At the heart of cost-benefit analysis is a comparison between baseline measures taken at the beginning of a study, and subsequent measures taken at a later time. In this section, we outline the initial steps in CBA and list resources to help establish baseline measures.

Initial steps in developing CBA:

1. Determine the objectives of the analysis: What do you want to know?
2. Define the level of analysis and timeframe: Whose costs and benefits should be recognized, and over how long?
3. Define costs and benefits: What will you measure?
4. Establish baseline measures: What data will you collect?

It is vital that you define clearly the level of analysis and timeframe, identify direct and indirect costs and benefits, and be consistent with these throughout your analysis.

## **A. Determine the Objectives of the Analysis: What Do You Want to Know?**

The objectives of a CBA should be connected to quantifiable outcomes of the project's objectives. For example:

- If a project aims to improve household food security, you might measure household increases in fruit and vegetable consumption, for the money spent on the project.
- If a project aims to increase economic self-sufficiency, you might measure change in the wages of project participants, for the money spent on the project.

In this guide, we identify several potential outcomes of urban agriculture—several types of benefits that relate to different social, economic, and environmental outcomes of urban agriculture. Many practitioners and scholars of urban agriculture promote these beneficial outcomes.

1. Community Economic Development
2. Human Development
3. Neighborhood Revitalization
4. Food Security
5. Environmental Improvement

Suggested measures of these outcomes are summarized in tables beginning on page 19.

## **B. Define the Level of Analysis and Timeframe: Whose Costs and Benefits Should Be Recognized, and Over How Long?**

### Level of Analysis

The *level of analysis* defines whose costs and benefits you will focus on. When practiced effectively, urban agriculture impacts many levels of society, including individuals, organizations, neighborhoods, and cities.

An analysis may address any of these levels, but it must be consistent. *If you evaluate any benefits of a project for a specific neighborhood, you must also examine the costs and any other benefits at that neighborhood level.*

Review the suggested measures that appear in tables beginning on page 20 when considering which level of analysis is most appropriate. Some measures may be difficult (or impossible) to obtain at some levels. For example, urban agriculture may improve air quality. However, air moves, and changes in air quality may not be attributable to a specific project. Moreover, changes in air quality may not be discernible at localized levels (such as in households or neighborhoods), and data on air quality at those levels may be difficult to collect.

### Timeframe

The *timeframe* defines how far into the future you will measure costs and benefits. One year may be realistic to measure changes in factors such as vegetable production. A longer period, such as five years, may be needed to measure changes in job skills or education. You may wish to begin by collecting baseline data and then collect data about change after one year, and each year thereafter for as long as you have sufficient resources and continue to obtain useful information.

## C. Define Costs and Benefits: What Will You Measure?

### The Rigor of the Analysis

This guide recommends a “middle ground” in the rigor of your analysis. A thorough cost-benefit analysis is beyond the capacity of most urban agriculture practitioners. Therefore, this guide distinguishes between the “ideal” cost-benefit analysis undertaken by professional economists, and a more preliminary approach to CBA that you may find more feasible.

Figure 2 illustrates four different levels of cost-benefit analysis that range from the ideal to the anecdotal. They range from rigorous analyses that are calculated with mathematical models using a thorough set of factors, to the anecdotal claims that we make in everyday conversation.

The levels at either end of this continuum are unlikely to be practical for most urban agriculture practitioners. At one end, ideal analyses require expertise and considerable resources. Yet at the other end, anecdotal claims are unlikely to convince decision makers. In the rest of this section, we focus on measures that provide preliminary evidence to substantiate claims, as described in the shaded column.

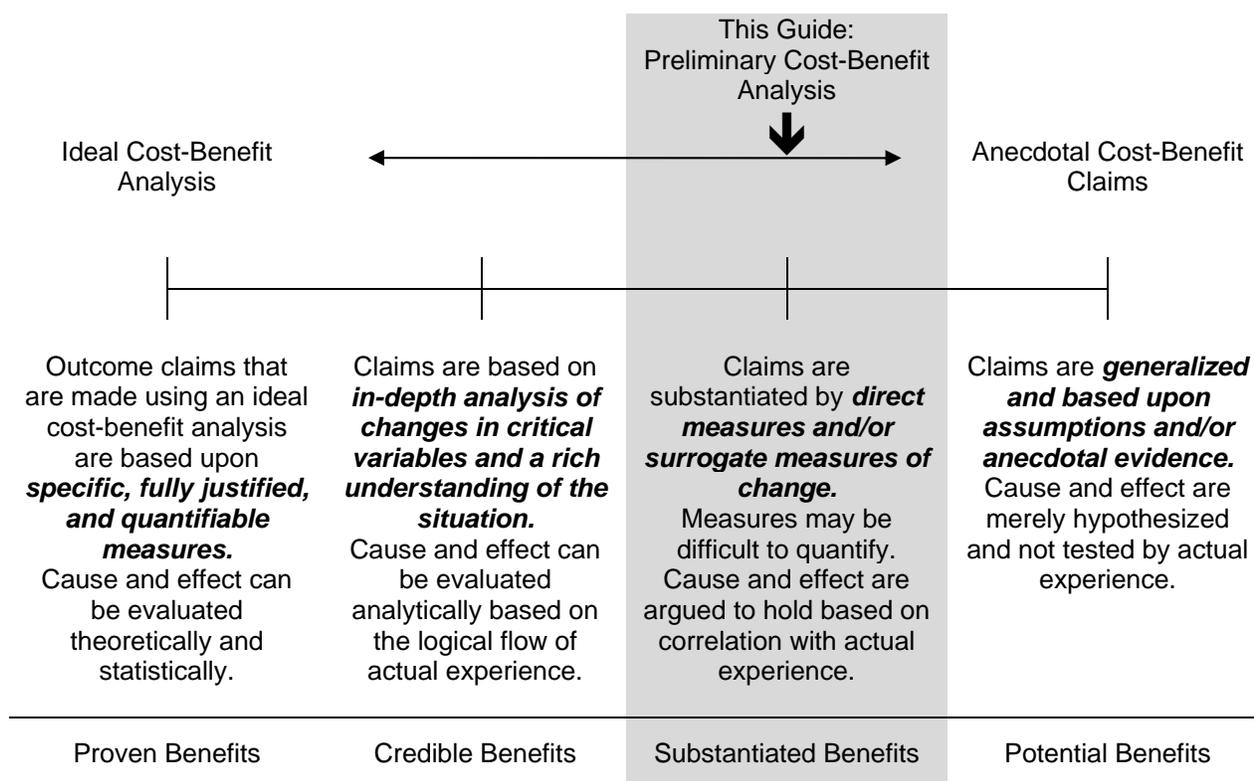


Figure 2: Four levels of cost-benefit analysis, from ideal to anecdotal

We advise conducting a “preliminary” CBA that is in between the ideal and the anecdotal. In the tables that begin on page 19, we highlight the factors that we suggest urban agriculture practitioners focus on when conducting a preliminary CBA. We reference other resources to guide data collection. In some cases, we also identify the factors that would be included in an ideal CBA and explain why we do not advise using them here.

We focus mostly on benefits. The distinction between ideal and preliminary CBA affects benefits more than it affects costs. The direct costs of urban agriculture projects are often relatively straightforward to measure. Some of them are summarized on page 25.

### List as Many Costs and Benefits as Possible

Begin by listing as many costs and benefits as possible, even if you are not able to research every item and even if some items cannot be quantified or monetized. Your list will provide important context for your analysis and findings. The list may also alert you to unanticipated outcomes of urban agriculture.

### Decide How You Will Measure Costs and Benefits

Suggested measures are listed in the tables that begin on page 19. These should serve only as a guideline. The tables merely suggest ways of organizing information about the many benefits of urban agriculture. Note, for example, that the benefits listed in Table 1 also appear in other tables. We encourage you to select the benefits of greatest importance to your project, add benefits that we have omitted, and create your own tables.

## D. Establish Baseline Measures: What Data Will You Collect?

### Resources to Guide Data Collection

Obtaining measures of these benefits involves collecting data, for example by conducting surveys of project participants or neighborhood residents or by searching online for publicly available data. To assist with this data collection process, we refer you to several of the excellent resources designed for researching community food projects.

These resources are listed over the next few pages. Each of them provides detailed and important background on collecting information and conducting assessments. We recommend that you become familiar with the principles and approaches that they describe.

<b><u>Community Food Project Evaluation Handbook and Toolkit (a two-volume set)</u></b>	
<p>National Research Center, Inc. 2006. Community Food Project Evaluation Handbook and Toolkit. Venice, Calif.: Community Food Security Coalition.  <a href="http://nesfp.org/sites/default/files/uploads/cfp_evaluation_handbook.pdf">http://nesfp.org/sites/default/files/uploads/cfp_evaluation_handbook.pdf</a>  <a href="http://nesfp.org/sites/default/files/uploads/cfp_evaluation_toolkit.pdf">http://nesfp.org/sites/default/files/uploads/cfp_evaluation_toolkit.pdf</a></p>	
Description	Specific Sections Pertinent to CBA
<p>The <i>Handbook</i> (224 pages) provides detailed, step-by-step instructions for developing and implementing evaluation processes, including selecting outcomes, designing studies, collecting and analyzing data, and communicating results. Although it specifically addresses evaluation rather than research, it provides valuable instruction that is also useful to practitioners who wish to conduct research.</p> <p>The companion <i>Toolkit</i> (293 pages and CD) provides data collection templates to assist in conducting focus groups, surveys, and interviews.</p>	<p>In the <i>Handbook</i>:</p> <ul style="list-style-type: none"> <li>• Selecting Evaluation Strategies and Study Designs (Chapter 5, pp. 67–85).</li> </ul> <p style="padding-left: 40px;">An overview of common evaluation methods, such as interviews and surveys, appears on pp. 77–85 in this chapter.</p> <ul style="list-style-type: none"> <li>• Collecting Data (Chapter 7, pp. 103–116).</li> </ul> <p>In the <i>Toolkit</i>:</p> <ul style="list-style-type: none"> <li>• Selecting a Sample of Participants to Survey (Appendix III, p. 249).</li> </ul>

**What's Cooking in Your Food System? A Guide to Community Food Assessment**

Siedenburg, Kai and Kami Pothukuchi. 2002. What's Cooking in Your Food System? A Guide to Community Food Assessment. Venice, Calif.: Community Food Security Coalition. 123 pp. <http://www.wkkf.org/resource-directory/resource/2007/11/whats-cooking-in-your-food-system-a-guide-to-community-food-assessment>

<b>Description</b>	<b>Specific Sections Pertinent to CBA</b>
<p><i>What's Cooking</i> presents step-by-step instructions for planning, designing, and conducting a community food assessment and for making use of an assessment's findings.</p> <p>A community food assessment is a "collaborative and participatory process that systematically examines a broad range of community food issues and assets, so as to inform change actions to make the community more food secure" (p. 11).</p>	<ul style="list-style-type: none"><li>• Designing and Doing the Assessment Research (Chapter 5, pp. 59–75).</li><li>• Common Sources of Data for Community Food Assessments (Appendix 2, pp. 89–97).</li></ul> <p>Includes internet addresses for a wide variety of public data sources.</p> <ul style="list-style-type: none"><li>• County Food System Indicators (Appendix 3, pp. 98–110).</li></ul> <p>Some sources listed in this appendix may also provide data at sub-county levels.</p> <ul style="list-style-type: none"><li>• Data Collection Techniques: Strengths and Weaknesses (Appendix 5, pp. 113–115).</li></ul>

**Whole Measures for Community Food Systems: Values-Based Planning and Evaluation**

Abi-Nader, Jeanette, Adrian Ayson, Keecha Harris, Hank Herrera, Darcel Eddins, Deb Habib, Jim Hanna, Chris Paterson, Karl Sutton, and Lydia Villaneuva. 2009. *Whole Measures for Community Food Systems: Values-Based Planning and Evaluation*. Portland, Ore.: Community Food Security Coalition. 39 pp.  
<http://www.wholecommunities.org/pdf/WholeMeasuresCFS.pdf>

<b>Description</b>	<b>Specific Sections Pertinent to CBA</b>
<p><i>Whole Measures</i> is a “tool for evaluation, planning, and dialogue geared toward organizational and community change” (p. 7). The guide provides step-by-step instructions for forming an evaluation team composed of diverse stakeholders, defining the intended outcomes of a project, rating the project’s impact for each outcome, discussing the results in a way that promotes learning, and summarizing and sharing the results.</p>	<ul style="list-style-type: none"> <li>• Individual Ratings (Step 4, pp. 11–12).</li> </ul> <p>The guide’s ratings scales are applied to a variety of factors that are relevant to the benefits of urban agriculture. These ratings are best understood in the context of the Whole Measures process described starting on p. 9.</p>

**Handbook of Practical Program Evaluation**

Cellini, Stephanie Riegg and James Edwin Kee. 2010. Cost-effectiveness and cost-benefit analysis. In *Handbook of Practical Program Evaluation*, ed. Joseph S. Wholey, Harry P. Hatry, and Kathryn E. Newcomer, 493-530. San Francisco: Jossey-Bass.

<b>Description</b>	<b>Specific Sections</b>
<p>While not designed specifically for community food projects, this extensive manual includes a detailed chapter on cost-benefit analysis that is understandable to many practitioners.</p> <p>The chapter discusses at greater length some of the practicalities and caveats introduced in this guide. Each step is illustrated with reference to a real-world CBA.</p>	<ul style="list-style-type: none"> <li>• Decide Whose Costs and Benefits Should Be Recognized (pp. 498–499).</li> <li>• Identify and Categorize Costs and Benefits (pp. 499–502).</li> <li>• Project Cost and Benefits Over the Life of the Program (pp. 503–504).</li> <li>• Monetize (Place a Dollar Value on) Costs (pp. 504-509).</li> <li>• Quantify and Monetize Benefits (pp. 509–517).</li> </ul>

## Suggested Measures of Urban Agriculture Benefits and Costs

### 1. Community Economic Development Benefits

**Table 1: Benefits related to community economic development**

benefit	expected direction of change
financial independence	
employment rate	↑
average wages	↑
participation in welfare or food stamp programs	↓
housing	
home ownership rate	↑
economic food security	
fresh fruits and vegetables available within a 1-mile radius	↑
children's food security	↑

**Table 2: Data collection resources for community economic development measures**

Suggested Data Collection Methods	Data Collection Resources (in addition to those starting on page 15)
Surveys of community residents	<p><u><i>Community Food Project Evaluation Toolkit</i></u></p> <ul style="list-style-type: none"> <li>• Farmers' Market Customer Survey Template, esp. #15–16, p. 95</li> <li>• Community Gardener Survey for Adults Template, esp. #8–10, pp. 128–129</li> <li>• Community Gardener Survey for Youth Template, esp. #9–10, pp. 131–132</li> </ul> <p><u><i>Whole Measures</i></u></p> <ul style="list-style-type: none"> <li>• Thriving Local Economies table, pp. 28–29</li> </ul>
Census and other publicly available data sources	<p><u><i>What's Cooking in Your Food System?</i></u></p> <p>Web addresses for specific data sources are listed for:</p> <ul style="list-style-type: none"> <li>• Community and Household Demographics, p. 89</li> <li>• Low-Income and Vulnerable Population Demographics, p. 90</li> <li>• Hunger and Food Insecurity, pp. 90–91</li> <li>• Food and Nutrition Resources, Programs, and Services, pp. 93–94</li> <li>• Community Economic Development, pp. 94–95</li> </ul>

## 2. Human Development Benefits

**Table 3: Benefits related to human development**

benefit	expected direction of change
financial independence	
employment rate	↑
average wages	↑
participation in welfare or food stamp programs	↓
education	
educational attainment	↑
capacity building	
connections that project participants create and maintain with community groups	↑
leadership skills	↑
fundraising ability	↑
business skills	↑

**Table 4: Data collection resources for human development measures**

Suggested Data Collection Methods	Data Collection Resources (in addition to those starting on page 15)
Surveys of project participants	<p><i>Community Food Project Evaluation Toolkit</i></p> <ul style="list-style-type: none"> <li>• Farmers' Market Customer Survey Template, esp. #15–16, p. 95</li> <li>• Community Gardener Survey for Adults Template, esp. #8–9 and 11, pp. 128–129</li> <li>• Community Gardener Survey for Youth Template, esp. #6 and 9–12, pp. 131–133</li> </ul>
Census and other publicly available data sources	<p><i>What's Cooking in Your Food System?</i></p> <p>Web addresses for specific data sources are listed for:</p> <ul style="list-style-type: none"> <li>• Community and Household Demographics, p. 89</li> <li>• Low-Income and Vulnerable Population Demographics, p. 90</li> <li>• Hunger and Food Insecurity, pp. 90–91</li> <li>• Food and Nutrition Resources, Programs, and Services, pp. 93–94</li> </ul>

### 3. Neighborhood Revitalization Benefits

**Table 5: Benefits related to neighborhood revitalization**

benefit	expected direction of change
housing	
home ownership rate	↑
vacancy rate	↓
community	
# active community organizations	↑
sharing of goods, services, information	↑
connections among community groups	↑
community leadership	↑
crime	
911 calls or incidents	↓
gang activity	↓
drug activity	↓
trash dumping	↓
house fires, building fires	↓
violent deaths	↓
juvenile delinquency	↓
neighborhood business vitality	↑

**Table 6: Data collection resources for neighborhood revitalization measures**

Suggested Data Collection Methods	Data Collection Resources (in addition to those starting on page 15)
Surveys of neighborhood residents and businesses	<p><i>Community Food Project Evaluation Toolkit</i></p> <ul style="list-style-type: none"> <li>Community Gardener Survey for Adults Template, esp. #9, p. 128</li> <li>Community Gardener Survey for Youth Template, esp. #10, p. 132</li> </ul> <p><i>Whole Measures</i></p> <ul style="list-style-type: none"> <li>Strong Communities table, pp. 20–21</li> </ul>
Counts or analysis of law enforcement records	Law enforcement reports and records of 911 calls provide information on changes in crime. Some crime data may be obtained from newspaper crime blotter sections. Your law enforcement agency may also share your interest in evaluating the impact of urban agriculture on crime, and it may be willing to provide you with data. Consider engaging local law enforcement in your project.
Census and other publicly available data sources	<p><i>What's Cooking in Your Food System?</i></p> <p>Web addresses for specific data sources are listed for:</p> <ul style="list-style-type: none"> <li>Community and Household Demographics, p. 89</li> <li>Low-Income and Vulnerable Population Demographics, p. 90</li> <li>Transportation and Food Access, p. 94</li> <li>Neighborhood Indicators, p. 97</li> </ul>

## Neighborhood Revitalization Measures Not to Include in a Preliminary CBA

We do not advise measuring change in social or economic infrastructure, such as:

- property values
- tax revenue
- school ratings
- public transit services

An “ideal” CBA may include measures of change in these variables. However, many factors affect them, and estimating the specific influence of an urban agriculture project on changes in these benefits would be very difficult.

## 4. Food Security Benefits

**Table 7: Benefits related to food security**

benefit	expected direction of change
consumption	
dietary intake	↑
% consumption of fruits and vegetables vs. prepared foods	↑
economic food security	
fruits and vegetables available within a 1-mile radius	↑
children's food security	↑
health	
exercise	↑
chronic disease	↓
low-income preschool obesity rate	↓
capacity building	
nutrition knowledge	↑
mental health, mental outlook, personal wellness	↑

**Table 8: Data collection resources for food security measures**

Suggested Data Collection Methods	Data Collection Resources (in addition to those starting on page 15)
Surveys of project participants	<p><u><i>Community Food Project Evaluation Toolkit</i></u></p> <ul style="list-style-type: none"> <li>• Farmers' Market Customer Survey Template, esp. #15–16, p. 95</li> <li>• Community Gardener Survey for Adults Template, esp. #8–10, pp. 128–129</li> <li>• Community Gardener Survey for Youth Template, esp. #9–11 pp. 131–132</li> <li>• Community Garden Overview Tracking Form for Produce, p. 137</li> </ul> <p><u><i>Whole Measures</i></u></p> <ul style="list-style-type: none"> <li>• Healthy People table, pp. 24–25</li> </ul>
Census and other publicly available data sources	<p><u><i>What's Cooking in Your Food System?</i></u></p> <p>Web addresses for specific data sources are listed for:</p> <ul style="list-style-type: none"> <li>• Community and Household Demographics, p. 89</li> <li>• Low-Income and Vulnerable Population Demographics, p. 90</li> <li>• Hunger and Food Insecurity, pp. 90–91</li> <li>• Public Health and Nutrition, p. 91</li> <li>• Food and Nutrition Resources, Programs, and Services, pp. 93–94</li> <li>• Transportation and Food Access, p. 94</li> </ul>

## 5. Environmental Improvement Benefits

**Table 9: Benefits related to environmental improvement**

benefit	expected direction of change
soil quality	↑
wildlife	↑
plant biodiversity	↑
green space or open space	↑

These benefits should be evaluated only within the project area.

**Table 10: Data collection resources for environmental improvement measures**

Suggested Data Collection Methods	Data Collection Resources (in addition to those starting on page 15)
Surveys of neighborhood residents	<i>Whole Measures</i> <ul style="list-style-type: none"> <li>Sustainable Ecosystems table, pp. 26–27</li> </ul>
Census and other publicly available data sources	<i>What's Cooking in Your Food System?</i> Web addresses for specific data sources are listed for: <ul style="list-style-type: none"> <li>Environment, pp. 95–96</li> <li>Neighborhood Indicators, p. 97</li> </ul>

### Environmental Improvement Measures Not to Include in a Preliminary CBA

An “ideal” CBA may also include measures of change in other environmental outcomes, such as air quality and stormwater runoff. These factors relate to broader circumstances and would be difficult to correlate with a specific urban agriculture project. We do not advise evaluating them.

## 6. Costs

We identify two levels of costs of urban agriculture:

- *Project-Level Costs* reflect costs incurred by organizations, grant-funded projects, and other entities that coordinate urban agriculture efforts.
- *Individual Producer–Level Costs* reflect the costs that project participants incur in producing food.

Together, these two levels reflect most of the costs that should be taken into account in an urban agriculture CBA. Some items may not apply to all projects, and some projects may incur costs not listed here. Modify your measures of costs as appropriate to your project.

### Project-Level Costs

- start-up costs
  - land acquisition
  - soil amendment
  - soil reclamation
  - purchase of buildings
  - other building and site costs
- inputs
  - seeds and plants
  - equipment
- labor
- management costs
  - administration
  - maintenance
  - insurance
  - other overhead
- managerial and workforce training

### Individual Producer–Level Costs

- labor
  - Producer labor in urban agriculture may not be paid, particularly if farmers and gardeners produce food for their own use. We recommend that you fully monetize labor costs even when labor is not paid, for example by setting an assumed value of labor and tracking time worked. An appropriate starting point for an assumed value of labor may be the standard living wage in a community.
- seeds and plants
- equipment
- transportation to and from production site

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[http://nesfp.org/sites/default/files/uploads/cfp\\_evaluation\\_toolkit.pdf](http://nesfp.org/sites/default/files/uploads/cfp_evaluation_toolkit.pdf)

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