How Do We Know If the Food System Is Sustainable?

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Overview

• Project description: Goal, objectives, methods

• Indicators selected

• Lessons learned
  – What indicators can and can’t do
  – Designing good indicators
  – Maximizing the potential of indicators to be useful and used
Goal and objectives

**Goal:** to develop credible, legitimate indicators of ‘good food’ for the Kellogg Foundation (WKKF)

**Objectives:**

- Define healthy, green, fair and affordable as food attributes for WKKF
- Develop a broadly credible set of national indicators of good food for WKKF and simple, readily comprehensible tools for displaying them
- Use the indicators to assess the current availability of good food in the United States
Definitions:

Attribute = a food system quality

Indicator = a positive change in the attribute (e.g., toward greater fairness or health)

Measure = the data showing change in an indicator over time
Core Team:

John Fisk, Project Director
Molly Anderson, Project Manager
Gail Feenstra, UC-Davis
Michael Rozyne, Red Tomato
Stephanie Daniels, Sustainable Supply
Sarah Borron, Research Assistant
Simca Horwitz, Research Assistant

+ approximately 65 informants and reviewers
Food and Society
Theory of Change
(From 2% to 10%)
Methods:

- literature review
- snowball interviews
- selection of key dimensions of attributes
- selection of indicators
- choice of metrics
- feedback on draft from participants
- selection of graphics
Key decisions about methods:

- Participatory or ‘expert driven’?
- National or community-based?
- Food product or food system attributes?
Project Description

Food System

Production Stage

WKKF’s Original Focus
Key decisions about methods:

- Participatory or “expert driven”?
- National or community-based?
- Food product or food system attributes?
- Impacts or states?
Project Description

**Pressures**
- Demand for particular kinds of food
- Shareholder demand for profits
- Food business owners', managers' & investors' decisions
- Demand for access to land & other resources for agricultural production
- Demand for new retail outlets
- Demand for transportation options
- Number of farmers

**Drivers**
- Changes in structure of agriculture
- Changes in farming practices
- Availability of land & other resources needed for agriculture
- Population size
- Immigration
- Public awareness of impacts (feedback loops)

**States**
- "Market Basket" = Amount, quality, and kind of foods available for sale
- Retail outlets (number, type)
- Accessibility of retail outlets
- Price of market basket
- Amount & kind of food grown at home, bartered or given away
- Extent of agricultural genetic diversity

**Responses**
- Public participation in food system decisions
- Funding & investment in food systems
- Research
- Regulations
- Policy
- Social safety net (e.g., Food Stamps)

**Impacts**
- % of people:
  - Who are food-secure (or vulnerable to food-insecurity?)
  - With access to culturally-appropriate foods
  - Who have healthy weights
  - Without diet-related diseases
  - % of farmers with sustainable livelihoods
  - % of wage-workers in food system with livable wages
  - Soil, air & water quality
  - Wild biodiversity
  - Aesthetic value of landscapes
  - Community well-being (economic & social)
Key decisions about methods:

- Participatory or “expert driven”?
- National or community-based?
- Food product or food system attributes?
- Impacts or states?
- Criteria for indicators and metrics?
**Indicators criteria:**
- measurable
- relevant
- most important trends and impacts
- sensitive/responsive to changes over time
- hierarchical
- promote learning and effective feedback

**Measures criteria:**
- valid and reliable
- timely
- collected and reported consistently over a broad range
- publicly available
- transparent
Healthy Food Systems

INDICATOR:
Death rates of diet-related diseases are decreasing

CURRENT TREND:
Getting Better

US Death Rates: Diet-related Causes

Death Rate (age adjusted annual rates per 100,000 people)

1999 2000 2001 2002 2003 2004 2005 2006

Healthy Food

Source: National Vital Statistics Reports, National Center for Health Statistics, Centers for Disease Control
Healthy Food Systems

INDICATOR:
Adult overweight and obesity prevalences are decreasing

CURRENT TREND:
Getting Worse

Prevalence of Overweight and Obesity: US Adults

Source: National Center for Health Statistics, Centers for Disease Control
Healthy Food Systems

Indicator: Child overweight prevalence is decreasing

Current Trend: Getting Worse

Prevalence of Overweight: US Children and Adolescents

Source: National Center for Health Statistics, Centers for Disease Control
Healthy Food Systems

INDICATOR: Fruit and vegetable consumption meets current US dietary guidelines

* ... still not meeting guidelines

CURRENT TREND: No Change*

US Daily Consumption of Fruits and Vegetables

Four and one-half cups (nine servings) of fruits and vegetables are recommended daily for the reference 2,000-calorie level, with higher or lower amounts depending on the caloric level.

Source for data: Behavioral Risk Factor Surveillance System, United States, as reported in Blanck et al. (2008)
Healthy Food Systems

Indicator:
The incidence of food contamination is decreasing

Current Trend: Mixed

Incidence of Major Food-Borne Diseases

Source: Foodborne Diseases Active Surveillance Network (FoodNet), Centers for Disease Control
Hot Spots:

• Prevalence of Type II diabetes in children aged 10-19.

• Disparities in diabetes prevalence between white and colored populations (especially Native Americans).

• Cost to society of overweight and obesity.

• Pesticide body burden.

• Prevalence of antibiotic resistance due to animal agricultural production.
Promising innovations for health:

- Direct farmer-to-consumer sales are growing in value.
- Number of farm-to-school programs is growing.
- Public policy promotes substitution of healthier foods into diets.
INDICATOR: *...but still far below the poverty threshold
Farmworkers receive wages sufficient to support a household for full-time work

CURRENT TREND: Getting Better*

Field and Livestock Farmworkers' Wages

Source: National Agricultural Workers Survey, as reported in Kandel (2008)
Fair Food Systems

INDICATOR:
The percentage of farmworkers hired through labor contractors is declining

CURRENT TREND:
Getting Worse

Percentage of All Farmworkers Hired Through Labor Contractors

Year

Source: National Agricultural Workers Survey
INDICATOR:
Food system workers have safe, healthy working conditions

CURRENT TREND:
Getting Better?

Incidence of Nonfatal Injuries and Illnesses

Source: Bureau of Labor Statistics, Department of Labor
INDICATOR:
Food system workers have safe, healthy working conditions

CURRENT TREND:
Mixed

Fatal Occupational Injuries
Farm and Food Processing Workers

Source: Bureau of Labor Statistics, Department of Labor
INDICATOR:
Average net farm income of small & mid-scale family farms matches or exceeds median national household income

CURRENT TREND:
Mixed

Average Net Income

Dollars (non-adjusted)

Year


- Farming occupation/higher sales
- Farming occupation/lower sales
- Median household income
Fair Food Systems

INDICATOR:
Acreage of mid-scale family farms is holding stable

CURRENT TREND:
Getting Worse

Status of Commercial Farms

Source: ARMS
INDICATOR:
Farmers retain a consistent proportion of the food dollar

CURRENT TREND:
Getting Worse

Where the Food Dollar Goes

Source: Economic Research Service, USDA
**Hot Spots:**

- Discrepancy in cancer rates and neurological disorder prevalence between farmworkers and other occupational groups
- Concentration of market by top 4 firms in a sector
- Long-term decline in amount of farmland held and worked by minorities, in comparison with whites
- Pesticide exposure in farmworkers’ children
- Number of child fieldworkers
Promising Innovation:

- The number of US farmers certified under independent (third-party) programs including labor standards to protect workers’ rights is increasing.
National Indicators:

- Farmland is remaining in production.
- Soil quality is improving.
- Water contamination by pesticides in agricultural areas is improving.
- The nitrogen balance of US farming systems is declining.
- Agricultural production emits declining amounts of greenhouse gases.
Hot Spots:

- Growth of the Gulf of Mexico Dead Zone.
- Pharmaceutical, hormone and other organic contamination of freshwater from livestock facilities.
- Average number of calories from food system activities required to provide one calorie of food.
- Population trends of farmland birds.
Promising Innovations:
- Amount of land under IPM and organic production is increasing.
- Amount of acreage in federal conservation programs is increasing.
- The number of US food and beverage manufacturers participating in a GHG reduction program is increasing.
The prevalence of household food security is increasing.
The prevalence of child food security is increasing.
Increases in wages and salaries are greater than increases in food prices.
Hot Spots:

- Adequacy of maximum food stamp levels to provide households with a healthy diet, according to current dietary guidelines.
- Relative cost per calorie of nutrient-dense and calorie-dense food.
- Increase in costs of healthy staples.
- Rural and urban communities where adequate supplies of healthy foods are not available (‘food deserts’).
Promising Innovations:

- Low-income people’s access to fresh, locally grown produce is increasing.
- Access to food assistance programs is overcoming barriers and becoming simpler.
Lessons Learned

• What indicators can and can’t do
Lessons Learned

- What indicators can and can’t do
- How to design good indicators
Lessons Learned

• What indicators can and can’t do

• How to design good indicators

• How to maximize the potential of indicators to be useful and used
Lessons Learned

- Make sure data are feasible to collect
- Institutionalize responsibility
- Connect indicators with action plans
- Use to test your theory of change, and revise as needed
- Communicate indicators clearly to decision-makers
- Report indicators at intervals relevant to decision-making and rate of change in attributes
Lessons Learned

You get what you measure; but as a society, we probably measure what we care about. And we have not cared enough about the healthfulness, sustainability, justness or affordability of our food supply.