

Food Systems and Sustainability: Health, Food and Nutrition Indicators*

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Indicators and Measures, Trends	Data Sources and Comments
<i>Sociodemographic Indicators [Drivers]</i>	
<p style="text-align: center;">Growing population (total number, growth rate)</p> <ul style="list-style-type: none"> • From 1950 – 2005, population increased from 151 million to 296 million; growth rate of 1.2% 	<p>U.S. Census Bureau, Centers for Disease Control, National Center for Health Statistics, <i>Health, United States, 2007</i></p>
<p style="text-align: center;">Aging population (total number, growth rate 65+ yrs; growth rate 75+ yrs)</p> <ul style="list-style-type: none"> • Population 65+ yrs grew 2.0% per year from 1950 – 2005. • In 2005, 37 million 65+ yrs. • 6% of population 75+ yrs in 2005; projected to increase to 9% by 2030 and 12% by 2050. 	<p>U.S. Census Bureau, National population projections. Centers for Disease Control, National Center for Health Statistics, <i>Health, United States, 2007</i></p>
<p style="text-align: center;">Growing racial and ethnic diversity (% ethnic groups, changes)</p> <ul style="list-style-type: none"> • In 2006, 15% Hispanic (1980-6%), 12% African American (1980-10%), 4% Asian (1980-2%), 1% American Indian [~ 30% total] 	<p>Centers for Disease Control, National Center for Health Statistics, <i>Health, United States, 2007</i> Waters, M.C., <i>Am J. Public Health</i>, 2000 90(11):1735-7</p>
<p style="text-align: center;">Poverty highest among children (rate, changes, comparison w adults)</p> <ul style="list-style-type: none"> • Overall poverty rate in 2005 = 12.6% (11.3% in 2000) • Rate for children = 17.6% in 2005 	<p>Centers for Disease Control, National Center for Health Statistics, <i>Health, United States, 2007</i></p>

Indicators and Measures, Trends	Data Sources and Comments
<i>Health Status, Conditions [Impacts]</i>	
<p>Increasing diet-related disease prevalence (diabetes) (<i>changes in prevalence</i>)</p> <ul style="list-style-type: none"> • Diabetes prevalence increased from 8.3% (1988-94) to 10.2% (2001-4) 	<p>Centers for Disease Control, National Center for Health Statistics, <i>Health, United States, 2007</i></p> <p>Limitations: each disease has complex genetic and environmental causes in addition to diet. The diet-disease links are not fully understood, especially for diseases like diabetes (see Jones, 2008)</p>
<p>Increasing prevalence of adult and childhood overweight and obesity (<i>changes in prevalence for adults, children</i>)</p> <ul style="list-style-type: none"> • Overweight among pre-school children 2-5 yrs doubled from 7%-14% in period 1988/1994 – 2003/2004. • Overweight among school-age children increased 60% from 11% to 19% in same period. • Obesity among adults 20-74 yrs increased from 13% to 34% in period 1960/1962 – 2003/2004. 	<p>Centers for Disease Control, National Center for Health Statistics, National Health and Nutrition Examination Survey (NHANES)</p> <p>Limitations: Overweight and obesity are due to many factors including lack of physical activity and genetic predisposition. Eating healthier foods may not reduce overweight and obesity unless other social and environmental factors change as well. Obesity and overweight are not perfectly correlated with diet-related disease; obese people who are physically active have reduced risks of diet-related diseases.</p> <p>NHANES has limitations due to self-reported consumption data and is only available every 2 years.</p>
<i>Food Consumption Indicators [States]</i>	
<p>Fruit and vegetable consumption fails to meet U.S. dietary guidelines (<i>% adults meeting f/v guidelines</i>)</p> <ul style="list-style-type: none"> • 1999/2002: 28% of adults met fruit guideline (2 serv/day) and 32% met veg guideline (3 serv/day). • 2005 Guidelines = 4 serv/day fruit; 5 serv/day veggies. 	<p>Centers for Disease Control, National Center for Health Statistics, National Health and Nutrition Examination Survey (NHANES), US DHHS/USDA, Casagrande et al. <i>Am J Prev Med</i> (2007)</p> <p>Limitations: Fruits and vegetables are only part of a healthy diet. Recommended consumption (serv/day) may change in the future.</p>

Indicators and Measures, Trends	Data Sources and Comments
<p data-bbox="313 275 719 306">Food Venues, Sources [States]</p> <p data-bbox="250 310 781 489">Direct farmer-to-consumer sales are growing in value (changes in sales, compare to non-direct sales, number of farm, number of farmers markets, CSAs)</p> <ul data-bbox="285 499 797 1121" style="list-style-type: none"> • Value of ag products sold directly to individuals for human consumption increased almost 50% (from \$812 million in 2002 to \$1.2 billion in 2007); still only 0.4% of total sales, 0.3% of food purchases for home consumption • Total non-direct fruit/veg sales increased by only 25%. • Number direct sales farms increased almost 20% from 116,733 (2002) to 136,817 (2007) • Number of farmers markets increased almost 7% to 4,685 (Aug 2008). • Number of CSAs increased from 50 (1990) to > 2,200 (2009). 	<p data-bbox="841 310 1365 453">USDA Agricultural Census 2007; ERS- Food prices, expenditures, food at home, 2007; USDA AMS (farmers markets); www.localharvest.org (CSAs)</p> <p data-bbox="821 495 1382 737">Limitations: The Agricultural Census is only conducted every 5 years (2007 was just released). The Census probably does not capture all sales. Farmers have some incentive to under-report direct sales if participating in a farmers market in which they must pay a portion of total sales to participate. Minority farmers are underreported. Direct sales do not translate directly into food consumption.</p> <p data-bbox="821 768 1382 1010">Direct sales are not always a viable option for many mid-scale farmers. While foods available for direct sale are often healthy, that is not always true. Direct sales (e.g. from farmers markets) also include jams, jellies, sweets, high-fat baked goods and refined flours. Buying direct is not always convenient for consumers and may require extra travel in buying foods (increasing carbon footprint if using a car).</p> <p data-bbox="821 1041 1308 1073">CSA data from Localharvest.org is estimated.</p>
<p data-bbox="285 1167 797 1310">Number of farm-to-school programs that source foods from local/sustainable farms is increasing (number of farm-to-school programs)</p> <ul data-bbox="285 1314 727 1381" style="list-style-type: none"> • 2,051 programs in 2009; 8,776 schools; 40 states 	<p data-bbox="881 1167 1325 1234">National Farm to School Program, www.farmtoschool.org</p> <p data-bbox="821 1241 1365 1444">Limitations: Data relies on self-reporting schools. The number of children is not included. The presence of a farm to school program does not guarantee that all children are participating or that they are eating healthier foods. Trend data is not available on this site. F2S may not be appropriate for all farmers or schools. Their vary significantly.</p>
<p data-bbox="269 1455 764 1522">Weekly restaurant meals consumed by adults</p> <ul data-bbox="285 1528 727 1596" style="list-style-type: none"> • 32% of adults 18-44 yrs eat 4+ weekly restaurant meals 	<p data-bbox="833 1455 1373 1591">Centers for Disease Control, National Center for Health Statistics, National Health and Nutrition Examination Survey (NHANES)</p> <p data-bbox="821 1598 1373 1629">Limitation: self-reported. First time measured 2007.</p>
<p data-bbox="313 1644 719 1675">Food outlets increasingly larger</p> <ul data-bbox="285 1682 792 1894" style="list-style-type: none"> • Conventional supermarkets = 58% (2006), 65% (1986) • Small neighborhood groceries = 3% (2006), 14% (1986) • Supercenters, club stores (eg Costco) = 18% (2006), .4% (1986) 	<p data-bbox="841 1644 1365 1780">USDA AMS, "Supply Chain Basics: The Dynamics of Change in the U.S. Food Marketing Environment," July 2008 (Tropp, Ragland, Barham)</p> <p data-bbox="821 1787 1357 1839">Limitation: limited trend data. Future reports may not measure same data.</p>

Indicators and Measures, Trends	Data Sources and Comments
<i>Food/Ag Policies [Responses]</i>	
<p>Public policies promoting substitution of healthier foods into diet (<i>Number of state initiatives to improve quality of foods available to school children, types of policies</i>)</p> <ul style="list-style-type: none"> • 23 states considered school nutrition legislation in 2006 • 13 states enacted legislation to require diabetes screening and/or management and/or to raise awareness at school. • 10 states have laws requiring some form of nutrition education in school curriculum. 	<p>National Conference of State Legislatures “State Legislation on Childhood Obesity Options 2007”</p> <p>Limitations: an excellent list of state policy measures and initiatives but it may be incomplete. Regulations to promote healthier foods in schools are fairly new and vary from state to state. It is unclear how these policies translate to changed behavior or how successful they are in improving health outcomes. Their success is highly dependent on how they are implemented and monitored. This likely varies greatly from state to state.</p>

SUMMARY: Conditions, Comments about Trends

Sociodemographic Indicators [Drivers]

- With longer life expectancy comes increasing prevalence of chronic diseases.
- We are an aging population
- Racial diversity is expected to increase in the future.
- Data shows major disparities in health and access to health care by socioeconomic status, race, ethnicity.
- Improvements have not been equally distributed by income, race, ethnicity education or geography.
- The poverty rate is highest among children, who are therefore at higher risk for obtaining healthful diets.

Health Status, Conditions [Impacts]

- Data show a high prevalence in general, of people with unhealthy lifestyles and behaviors which are risk factors for chronic diseases.
- The prevalence of diabetes, obesity, overweight, have increased.
- Obesity increases risk of heart disease, diabetes, stroke. There is a major disparity by SES.

Food Consumption [States]

- Adequate intake of fruits, vegetables may decrease risk for chronic disease, help individuals maintain healthy weight.

- Adequate fruits and vegetable intake is often the limiting component in a balanced, healthful diet with whole, minimally processed foods, that emphasizes plant-based foods, lower on the food chain (and with a lower carbon footprint).
- Fruit and vegetable consumption does not meet minimum of 5 servings/day for ~ 70% of adults [higher percentage now that minimum = 9 servings/day]

Food Venues, Sources [States]

- Direct sales from regional farms to consumers usually represent whole, minimally processed foods; access to fresh fruits and veggies
- Direct sales increased 50% from 2002 to 2007, but still only represents 0.4% of total ag sales and 0.3% of total food purchases for home consumption (from food stores).
- Number of farmers markets increased 7% from 2006 to 2008; Number of CSAs increased 40-fold from 1990 to 2009 (~ 20 years).
- Number of Farm-to-school programs increased to > 2,000 (in 40 states). Farm-to-school programs provide farm fresh foods to school meals, purchased from regional farmers; they often include school gardens, farm tours, nutrition/food education and recycling/composting programs.
- About 1/3 of adults eat 4+ restaurant meals/week.
- Superstores are quickly becoming the major venue through which consumers buy food. Percentage of food expenditures through superstores went from 0.4% in 1986 to almost 18% in 2006 (20 years).

Food Policies [Responses]

- In 2006, legislatures continued to be active in considering policy options to address the obesity epidemic. Aiming to start early to prevent the onset of chronic conditions, legislators considered a variety of policy approaches to facilitate opportunities for a healthier diet and more exercise beginning in childhood. The chart at: <http://www.ncsl.org/programs/health/ChildhoodObesity-2006.htm>, provides an overview of the more prevalent legislative approaches considered or enacted in 2006 throughout the U.S.
- Another excellent resource: Prevention Institute: Strategic Alliance ENACT: <http://www.preventioninstitute.org/sa/enact/government/govtfoodpolicy.php>, resources on food and other policies for a more sustainable community, including the food system.

NEEDS/ RECOMMENDATIONS

(1) Improved data Collection

- Local, state and national data collection systems to inform community efforts, foster accountability and build understanding of disease prevention and health equity must receive continued and increased funding (Prevention Institute, 2009; CDC NCHS, 2007).

- Explore new methodologies for capturing the value of social, environmental and health benefits such as the “social return on investment” methodology used to calculate social, environmental and health benefits and resulting financial values for East Ayrshire Council’s Food for Life Initiative (provides healthy school meals to primary pupils). [See www.footprintconsulting.org.]
- Consider a process for vetting new indicators and collecting data which is currently not being collected in a systematic and public way. This data would allow us to better track trends for which there is only sporadic information. Examples might include:
 - Positive attributes of regional, sustainable food systems (urban agriculture, income generated by small farmers not counted in the Ag Census, income from farmers markets, CSAs, farm to school, farm to institution programs)
 - Educational indicators related to the public (especially children) understanding where their food comes from and how it is produced, processed, distributed.

(2) Improve food/ag policies, educational opportunities and community-based programs that support linkages between youth and elders so that cultural knowledge can be passed to the next generation.

(3) Improve food/ag policies, educational opportunities and community-based programs that help create a culture of wellness, health and equity in the food system.

*** Notes about Indicators**

Most of the indicators/sources/ limitations suggested here (those in black), as well as the indicator framework, are taken from the *Charting Growth* Project, began at the Wallace Center in 2006 with funding from the Food and Society Initiative of the W.K. Kellogg Foundation (John Fisk, project director; Molly Anderson, project manager), upon which I (Feenstra) worked as a core team member. The *Charting Growth* Project developed a set of broadly credible national indicators of “good food,” e.g. food that is healthy, fair, green and affordable. Most of the indicators here come from the “healthy food” section of the *Charting Growth* project. As a team, we selected 4 or 5 indicators for each section, using commonly agreed upon criteria—that indicators are: measureable, relevant, address the most important trends and impacts, are responsive to changes over time, and promote learning for decision-making. I added additional indicators (green) for this document with less robust trend data but which provide important insights about food/ consumption. Data has been updated.

Additional References

Casagrande SS, Y Wang, C Anderson and TL Gary. 2007. Have Americans increased their fruit and vegetable intake? The trends between 1988 and 2002. *Am J Prev Med.* 32(4):354-5.

Jones, Oliver AH, Mahon L. Maguire and Julian L. Griffin. 2008. Environmental pollution and diabetes: a neglected association. *The Lancet* 371: 287-288.

Prevention Institute. 2009. *Reducing Inequities in Health and Safety through Prevention*.

Waters, M.C., *Am J. Public Health*, 2000 90(11):1735-7.

For useful information about indicator development models, see:

http://esl.jrc.it/envind/theory/handb_03.htm#fn1.