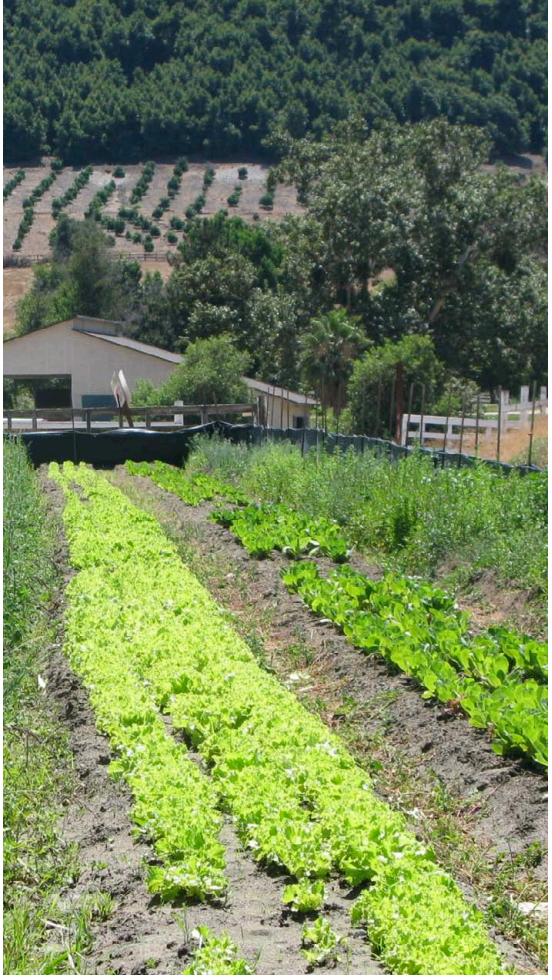

Assessing the San Diego County Food System: Indicators for a More Food Secure Future

December 2010

SAN DIEGO FOOD SYSTEM

SUSTAINABLE AGRICULTURE RESEARCH AND EDUCATION PROGRAM · UC

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College of Agricultural and Environmental Sciences

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This report and the collaborations that underpin it would not have been possible without the generous support of The California Endowment, whose commitment to food system research is helping to pave the way to a more food secure future for San Diego County. Also to the San Diego County Health and Human Services Agency whose staff contributed many hours to data gathering, explanations and analysis essential to the report as well as the countless experts throughout San Diego and the rest of California who have donated time and valuable expertise to this undertaking. The true energy and momentum for this project, however, derives from the San Diego Food System Working Group, whose multi-agency insights into the potential opportunities of a healthy food system have profoundly shaped this process. And last but not least, a debt of gratitude to all the growers, shippers, processors, servers and everyone else within the complex web we know as the food system who have demonstrated a commitment to improving quality, access and sustainability for future generations.

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Why a Food System Assessment?

As communities around the country begin to observe and acknowledge the far reaching impacts of our current food system, interest in connecting the dots by way of comprehensive local food system assessments has increased. Through these studies, communities examine the connections between production, distribution, consumption and waste disposal and measure their impacts on the environment, human health and livelihoods through a set of indicators over time. Understanding the trends and relationships between elements within the food system, ultimately assists community members and policy makers in pinpointing areas of concern and working for appropriate and equitable reforms.

This assessment is the product of collaboration among a unique coalition of governmental, public health, social service, environmental and agricultural experts from throughout San Diego County and is intended to serve as a catalyst for community based policy change. In particular, the goal of this document is to examine the overall viability of the food system in San Diego County and in so doing, to identify key steps necessary to strengthen the foundation for a thriving local food system.

Collaborators and Process

In May of 2009, the San Diego Food System Working Group was formed with a grant from The California Endowment. With their support, Working Group members who had been collaborating extensively, yet separately, for many years, began a formal collaboration on the Food System Assessment and Action Plan included here.

At the heart of the Working Group's objectives for a thriving local food system is collaboration amongst stakeholders. In this regard, the process of conceptualizing and executing an assessment and developing recommendations served as a strategic opportunity to demonstrate this collaboration. The first step included the establishment of monthly in-person meetings where Working Group members discussed and laid out food system goals and potential indicators to assess progress on those goals. The process of goal-setting and indictor identification was supported by professional facilitation from Ag Innovations Network and foodshed assessment experts from the University of California Davis. Ultimately, a framework and three overarching visions were selected in parallel to the California AgVision 2030 process under way at the California Department of Food and Agriculture[1]. The visions chosen by the San Diego Food System Working Group include:

- Better Health and Well-being of San Diego County Residents
- Agricultural Stewardship of San Diego County's Environmental Resource Base
- Thriving Communities and Sustainable Economic Growth

1 CDFA. (2009). "AgVision 2030." Retrieved November 5, 2010, from http://www.cdfa.ca.gov/agvision/.

As a means of informing these larger visions, the group identified a series of sub-goals, each addressing an important, yet more specific objective. As a means of measuring progress towards these goals, the Working Group then selected a set of indicators, for which the UC Davis team (Ellsworth and Feenstra) took the lead in collecting the quantitative data. Working Group members assisted the authors in data collection, as well as in the identification of technical experts for a series of approximately 20 interviews to provide context for indicator data.

Subsequent to identifying visions, goals and indicators, the Working Group began the process of developing a set of "stakeholder recommendations" intended to address areas of concern within the report and catalyze equitable and environmentally sound reform. These recommendations are available at the conclusion of this document and compiled separately in a report titled *Realizing a Sustainable Food System for All: An Action Plan for San Diego* available at www.SanDiegoFoodSystem.com.

Scope of the Study

The goal of this study is to deepen community understanding about the relationships and impacts of the current food system in San Diego County in order to better support human, environmental and economic health. Given this broad goal and diverse range of stakeholders, the scope of investigation is necessarily comprehensive, requiring analysis of a wide range of indicators throughout all phases of the food system. Given practical considerations of policy reform and community change-making, our study focuses primarily on data gathered at the county level, though in some cases, the City of San Diego serves as a proxy when data is not available at the county level. Where impacts are not easily or logically limited to the county level, such as in the case of impaired waterways or ocean fish landings, the parameters of investigation have been expanded to a regional scope.

Finally, for the purposes of comparison, local indicator data, whether it be county, city or region specific, is often compared to state and or national figures to help in contextualizing numbers and trends.

What is a Food System?

The phrase "food system" is used throughout this report to describe the entire set of processes involved in the production and consumption of food. It includes everything from the field (or the ocean) to the fork and back again, with many important steps along the way. Included within this definition are many processes and products that the consuming public may never see, such as the manufacture and application of farm inputs (fertilizers, pesticides, seeds), to the distribution, processing and packaging of food products, to the eventual management of wastes generated along the way.

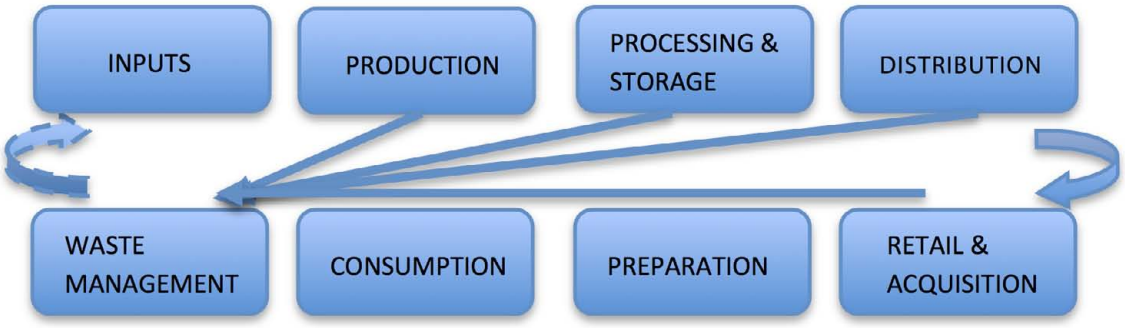


Figure i.i Food system flow diagram

A "foodshed," as described by Kloppenberg, et al. suggests a "flow of food into a particular place…a unifying and organizing metaphor" that unifies place and people, nature and society.[2] Throughout this report, the term foodshed is used to refer to the geographic area which supplies a given population with food. The food system also includes both the human actors and environmental resources needed to fuel the cycle, the interests of which must be balanced with the goal of generating safe, healthy and sufficient food. As demonstrated in Figure i.ii, a truly viable and sustainable food system encompasses the goals of social equity and human health, economic vitality, and environmental health and cannot function without any of its central components.

Figure i.ii Overlapping goals for a sustainable food system

Methodology

Multiple methods were employed in the generation of this report. First, a collaborative process was used, wherein a Working Group of diverse stakeholders from the County was established to provide the authors with primary input and feedback on report format, goals and indicators.

Numerous foodshed studies from a growing body of work were examined and shared with the Working Group to assist in indicator identification and data sourcing (see list of compiled assessments in Appendix H). The gathering and graphic depiction of data over time stands as the primary methodology underpinning the report. After compiling and organizing data for each indicator, phone interviews were conducted with Working Group members and technical experts identified by the Working Group, to assist in contextualization and analysis of trends.

Finally, site visits were conducted to provide an in-depth look at noteworthy programs or processes within the county's foodshed.

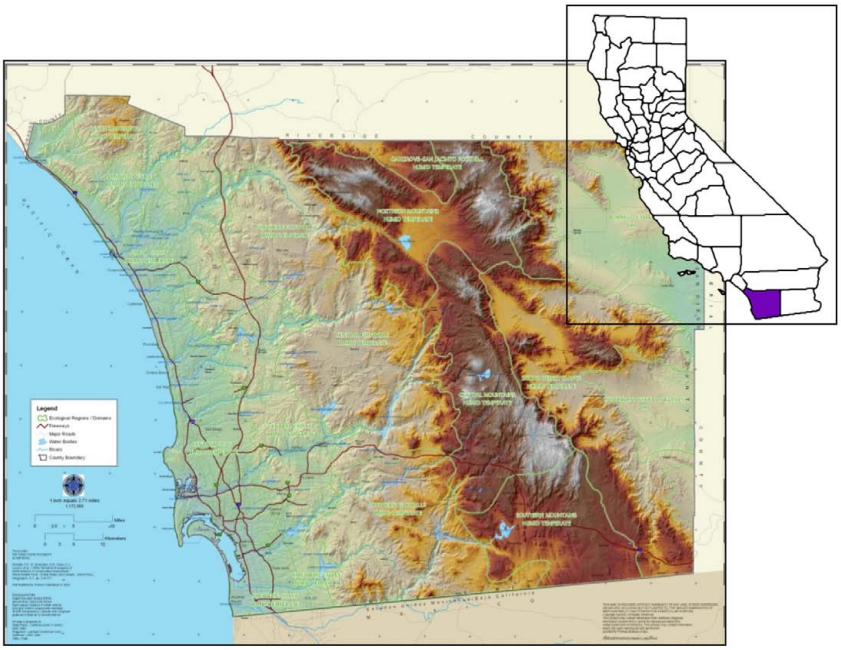
Major state and national level data sources used in this report include the United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) which conducts a Census of Agriculture every five years thus generating national, state and county level data on numerous topics of value to this study.

Also utilized are the University of California Los Angeles (UCLA), California Health Interview Survey (CHIS), the California Department of Education's Physical Fitness Report, the United States Census Bureau's Current Population Survey Food Security Supplement (CPS-FSS), California Department of Public Health, California Department of Fish and Game, U.S. Bureau of Labor Statistics and others.

On the local level, the County of San Diego Agriculture Weights and Measures (AW&M) as well as the San Diego County Water Authority (SDCWA) provided significant data as did the San Diego Master Gardeners and County of San Diego Environmental Services Department.

2 Kloppenburg, J., J. Hendrickson, et al. (1996). coming in to the foodshed. Rooted in the Land: Essays on Community and Place. W. Vitek and W. Jackson. New Haven, Yale University Press.

The authors of this report recognize that all data sources have limitations, and have taken care to note any of those limitations necessary for accurate interpretation of data herein. Limitations specific to a particular piece of data will be included along with the citation or in a footnote on the same page, while limitations with overall data sources (i.e. data collection methods) can be found in Appendix G at the conclusion of the report. In some cases, the data necessary to most effectively measure progress towards the goals identified by the Working Group was not available. In order to address this deficiency, indicators were modified to match the best available proxy data and in some cases, where proxy data was not available, desired indicators were eliminated. For a list of initial indicators prior to revision for data availability see Appendix E.



Source: Ecological Regions of San Diego County, County of San Diego Department of Planning and Land Use

San Diego County Profile – Quick Facts

- **Size of County:** San Diego County encompasses 4,261 square miles or 2,727,030 acres with 70 miles of Pacific coastline on its western edge and 60 miles of border with Mexico to the south. On its north, the County borders Orange and Riverside Counties, and on its east, Imperial County. San Diego is the 11th largest county in California by area.[3]

- **Population:** In 2010, the population of San Diego County reached an estimated 3,224,432, an increase of 14.6 percent since 2000, making it the second most populous county in California and the fifth most populous in the nation.[4]

- **Density:** Major population centers in San Diego County are located in the central and southwestern coastal areas. The largest city is San Diego with a population of 1,376,173, followed by Chula Vista, Oceanside, Escondido and Carlsbad. Much of the eastern part of the county is unincorporated, rural and sparsely populated.[5]

3 CSAC. (2010). "California Counties." Retrieved November 9, 2010, from http://www.counties.org/default.asp?id=398.
4 State of California, D. o. F. (2010). E-4 Population Estimates for Cities, Counties and State, 2001-2010 with 2000 Benchmark. Sacramento, State of California, Department of Finance.
5 Ibid.

- **Demographics:**

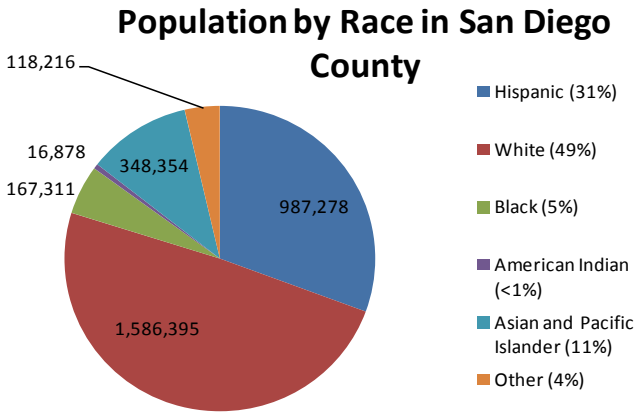


Figure i.iii Source: Population and Housing Estimates (2010), San Diego Region, SANDAG

- **Main economic drivers:** San Diego County's major industries are manufacturing, defense, tourism and agriculture. Biotechnology, ship repair, telecommunications, electronics and financial services are significant subsectors of these industries. Within the agricultural economy, which is the 16th largest of all counties nationwide, ornamental and nursery crops, as well as avocado, tomatoes, and citrus are the largest contributors.[6]

- **Unemployment and Cost of Living:** The median household income for San Diego was $72,963 in 2009 with an average annual income of $49,240 across all job sectors in 2009.[7] Unemployment within the county was approximately 10.6 percent as of August 2010, putting it slightly below that of the nation (12.4 percent).[8] Similarly, the consumer price index of San Diego, which represents the cost of a standard list of goods and services, was 244.2 in the first half of 2010, substantially higher than the average for U.S. cities (217.5).

- **Poverty and Public Benefits:** As of 2008, the percentage of the population living below the federal poverty level in San Diego County was 12.6 as compared to 14.2 percent in California.[9] Food insecurity in the county is estimated to be approximately 30 percent (see figure 1.16). Nevertheless, the county has one of the lowest rates of participation in food stamps (SNAP) in the nation with only 30 SNAP participants for every 100 people below 125% of the poverty level.[10]

- **Climate and Geography:** As the southwestern-most county in the lower 48 states, San Diego enjoys a mild, semi-arid climate along its Pacific coast with annual rainfall of approximately 10 inches. Inland, where greater topographic variation creates a variety of microclimates, temperatures are both cooler in the winter and hotter in the summer with annual rainfall in the mountains approaching 40 inches. Steep, rocky hillsides provide excellent growing conditions for avocados while abundant sun and lower elevations help citrus to thrive. Nevertheless, limited surface water and rainfall make access to water a persistent concern for farmers and residents throughout the county

6 Department of Agriculture Weights and Measures (2010). 2009 Crop Statistics and Annual Report. San Diego, County of San Diego, Department of Agriculture Weights and Measures.
7 SANDAG. (2010, August 2010). "Fast Facts: San Diego Region." Retrieved November 7, 2010.
8 Employment Development Department, S. o. C. (2010). "San Diego County Profile." Retrieved November 4, 2010, from www.labormarketinfo.edd.ca.gov/cgi/databrowsing/localAreaProfileQSResults.asp?selectedarea=San+Diego+County&selectedindex=37&menuChoice=localareapro&state=true&geogArea=0604000073&countyName=.
9 Census Bureau, U. S. (2010, August 16, 2010). "State and County Quick Facts: San Diego, California." Retrieved August 25, 2010, from http://quickfacts.census.gov/qfd/states/06/06073.html.
10 McBrayer, S., P. Ingrum, et al. (2009). San Diego County Report Card on Children and Families. San Diego, The Children's Initiative Johnson Group Consulting.

Vision 1: Better Health and Well-being of San Diego County Residents

National Trends

Photo courtesy of Susan Ellsworth

The health and well being of Americans is intimately connected to the food and drink we consume. The methods of production, processing and preparation, as well as the consumption choices we make, all play a role in whether food helps to nourish us or results in adverse health impacts. Yet, the majority of Americans are no longer familiar with how these practices affect the foods they purchase and consume.[11] This is partly a factor of increased urbanization, which results in greater distance between consumer and grower as well as the increasingly complex path from field to fork. The growing availability of cheap processed foods with ingredients of unknown origins also contributes to consumers' lack of awareness as to where their food comes from.

When combined with an increasingly sedentary lifestyle, the result is rapidly growing rates of diet-related health problems. Currently, more than 50 percent of Americans are overweight or obese,[12] with less than 1 percent consuming the recommended daily requirement of fresh fruits and vegetables, putting them at greater risk for Type II diabetes, heart disease, high blood pressure and stroke.[13] Despite slightly lower rates of overweight or obesity, San Diego County is no exception to this trend.

Yet, as noted in numerous reports including the Center for Disease Control's (CDC) recent guide to increasing fruit and vegetable consumption, a better understanding of food origin and the benefits of healthy eating, combined with increased access to fresh fruits and vegetables, has the ability to stem the tide of diet-related disease.[14]

San Diego County Trends

Though San Diego County experiences many of the same trends with regard to diet-related diseases and fresh food access as California and the nation as a whole, there are nevertheless notable deviations due to its unique geography, demographics and agricultural base.

Overall, access to fresh fruits and vegetables appears to be growing through a variety of venues including farmers' markets, food banks with the capacity to distribute produce, and school and community gardens. Yet, price remains a significant obstacle and access in rural areas and low-income communities is still insufficient as evidenced by a decline over the last five years in the number of both adults and children who consumed five or more fruits and vegetables a day (see Figure 1.13).

11 McClintock, N. (2009). "Why Farm the City? Theorizing Urban Agriculture Though a Lense of Metabolic Rift." Cambridge Journal of Regions, Economy, and Soceity **3**(2): 191-207.
12 Health and Human Services Agency, C. o. S. D. H. (2009). Healthy People 2010: Health Indicators for San Diego County. C. H. S. Unit, County of San Diego
13 Centers for Disease Control and Prevention (2010). The CDC Guide to Fruit and Vegetable Strategies to Increase Access, Availability and Consumption CDC.
14 Ibid.

By comparison, rates of obesity and overweight in youth, albeit less than for California as a whole, are well above the national goal of no more than 5 percent (see Figure 1.10).[15] Diabetes diagnosis for adults in San Diego County (6.3 percent) are slightly less than in California (7.8 percent) but are nevertheless above goals set by the county in its *Healthy People 2010: Indicators for San Diego County.*[16]

Breastfeeding is described as "one of the most effective and cost-effective preventative health measures" in the 2010 San Diego County Report Card on Children and Families. San Diego breastfeeding rates within the first 24-48 hours after birth (initiation) have remained steady, however, rates for breastfeeding without supplemental formula (exclusivity) and for continued breastfeeding up to six months after birth (duration) do not meet national objectives set by the CDC.[17]

The following goals and indicators provide data that describe the relationship between food, health and a sustainable food system in San Diego County.

Goal 1.1: San Diego County Residents Know Where Their Food Comes From, How It Is Grown and Who Grows It

Figure 1.1 Image courtesy of the San Diego Farm Bureau

Over the last century, Americans have moved from farms to cities (and later to suburbs) at an extraordinary rate. The primarily rural population of the late 1800s – approximately 80 percent of the nation's residents— began its shift away from agricultural lands in the early 1900s. This transition significantly altered the environment and society in the United States as the residential landscape shifted from agrarian communities to complex networks of development connected by roadways. Farming, an industry that once employed a large portion of the population, diminished to less than 1 percent of the country's workforce.[18] With this change, much of our basic knowledge about food and its corollary health benefits was lost. A healthy local food system depends on reconnecting those who consume food with those who grow it. A community that understands and values the full spectrum of processes involved in production, packaging, distribution, purchasing, and disposal of food is better able to make decisions that ultimately promote the health and the well-being of all its residents.

The following indicators help to generate a picture of how well San Diego residents understand the origins of the food they consume, including where and by whom it was cultivated and the practices involved in its production. Indicators also measure the extent to which San Diegans have access to and purchase these foods.

Indicator 1.1a: The Number of San Diego County Producers Who Use a San Diego Grown Label

Background: Though Country of Origin Labeling (COOL) for produce, seafood or other food products has become commonplace in our supermarkets, more localized labels indicating the particular county or region of production are just now beginning to catch on. Such labels help consumers to understand what is being grown in the local area and are thought to increase demand for local products through product differentiation and the establishment of an agricultural identity. For example,

15 McBrayer, S., P. Ingrum, et al. (2009). San Diego County Report Card on Children and Families. San Diego, The Children's Initiative. Johnson Group Consulting.
16 Health and Human Services Agency, C. o. S. D. H. (2009). Healthy People 2010: Health Indicators for San Diego County. C. H. S. Unit, County of San Diego
17 McBrayer, S., P. Ingrum, et al. (2009). San Diego County Report Card on Children and Families. San Diego, The Children's Initiative. Johnson Group Consulting.
18 Bureau of Labor Statistics (2010). Occupational Employment Statistics Highlights, U.S. Department of Labor.

San Diego is known for growing oranges and avocados. Such labels also facilitate the more deliberate purchasing decisions of those consumers already invested in buying local

Trend: Despite the introduction of a *San Diego Grown 365* label in 2004, the first and only local labeling initiative in the county, it was never fully adopted by producers and is currently not in use. Nevertheless discussion about the reintroduction of a San Diego Grown label continues in the hopes of increasing consumer awareness about food origin while supporting locally produced food and agriculture products.

Indicator 1.1b: Number of Farmers' Markets and Number of Certified Vendors

Background: In light of growing interest and support for local food production and efforts to increase access to fresh produce, farmers' markets have proliferated across the nation as well as in California and San Diego County. Farmers' markets offer consumers an opportunity to interface directly with producers while gaining a better understanding of when and how products are grown. Markets also enable producers to develop a loyal customer base while providing an important sales outlet particularly for smaller growers.

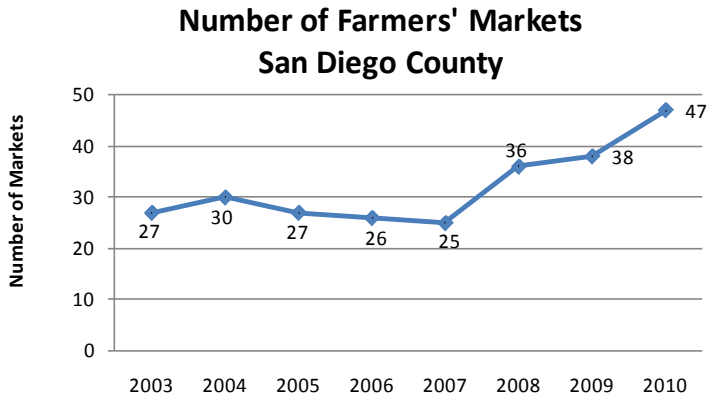


Figure 1.2 Source: County of San Diego Agriculture Weights and Measures, Crop

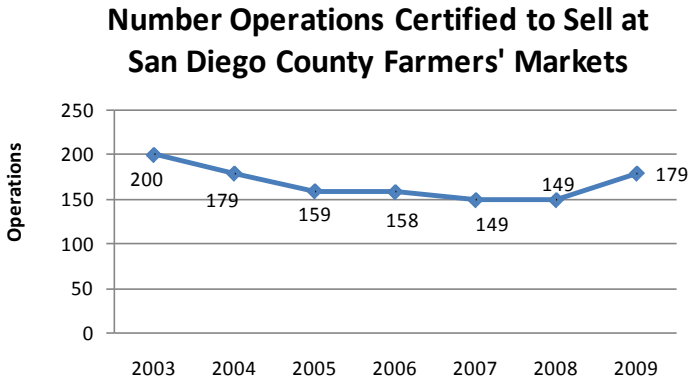


Figure 1.3 Source: County of San Diego Agriculture Weights and Measures, Crop

Trends: The number of farmers' markets in San Diego County, as shown in Figure 1.2 has grown significantly over the course of the last eight years, from 27 in 2003 to 47 in 2010, with four or five new markets slated to open in 2011. By comparison, the number of farm operations certified to sell at farmers' markets (Figure 1.3) has dropped from 200 to 179 during a similar period. The proliferation of markets, though seemingly a positive development for food access, is disproportionate to the number of producers with the ability to sell. In some cases, this has resulted in poorly attended markets where producers are not able to sell enough products to make the venture worthwhile. The decline in the number of farmers certified to sell is also attributable to vendor attrition, particularly among citrus and avocado vendors, after an initial rush to be certified.

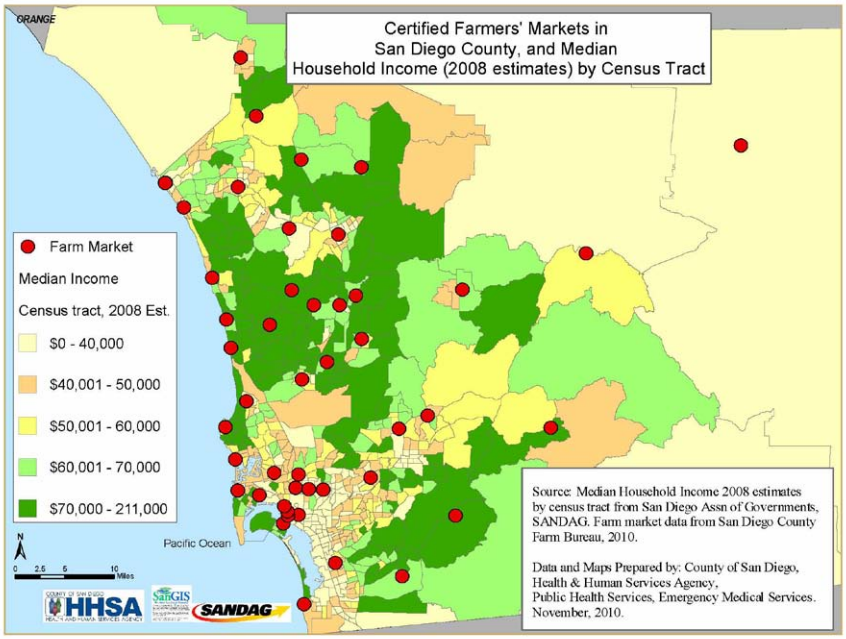


Figure 1.4 San Diego County Certified Farmers' Markets and Median Household Income by Census Tract

Indicator 1.1c: Number of Farms with Direct Sales and Direct Sales as a Percent of Total Sales

Background: Direct sales are sales of agricultural products by producers directly to consumers. Such sales take place through on-farm transactions such as u-pick, farm stands, or Community Supported Agriculture shares (CSAs) or off-site through farmers' markets, or restaurant sales, just to name a few. Across the nation the value of direct sales increased 26 percent between 1997 and 2007 by comparison with overall farm sales, which increased only 17 percent. The rate of increase in direct sales for Western States, including California, tops the national average at 134 percent.[19]

19 Diamond, A. and R. Soto (2009). Facts on Direct-to-Consumer Food Marketing: Incorporating Data from the 2007 Census of Agriculture, United States Department of Agriculture, Agricultural Marketing Service.

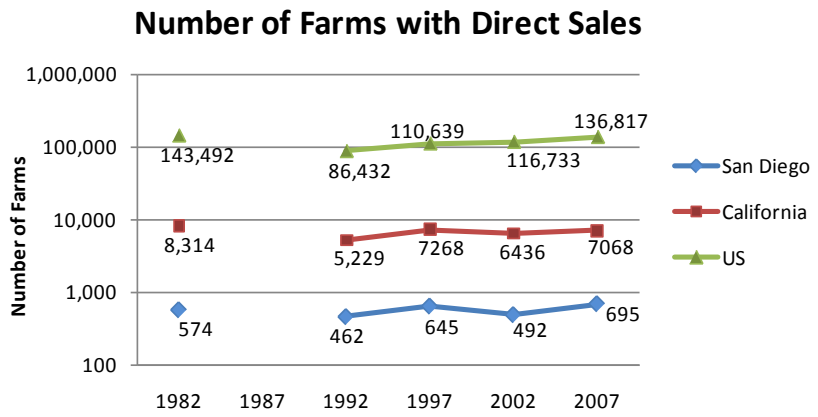


Figure 1.5 Source: United States Department of Agriculture, NASS, Census of Agriculture,
Market Value of Agricultural Products Sold Including Direct Sales
Note: Logarithmic scale. Data collection changed in 1997 at which time it began adjusting for coverage.
All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

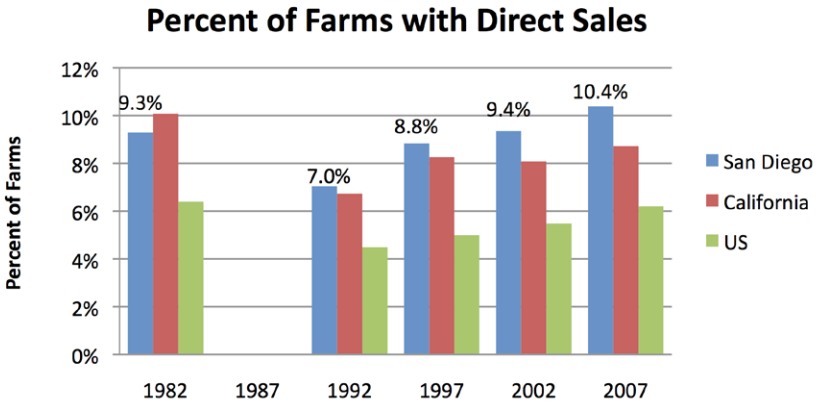


Figure 1.6 Source: United States Department of Agriculture, NASS, Census of Agriculture.
Market Value of Agricultural Products Sold Including Direct Sales
Note: Data collection changed in 1997 at which time it began adjusting for coverage.
All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

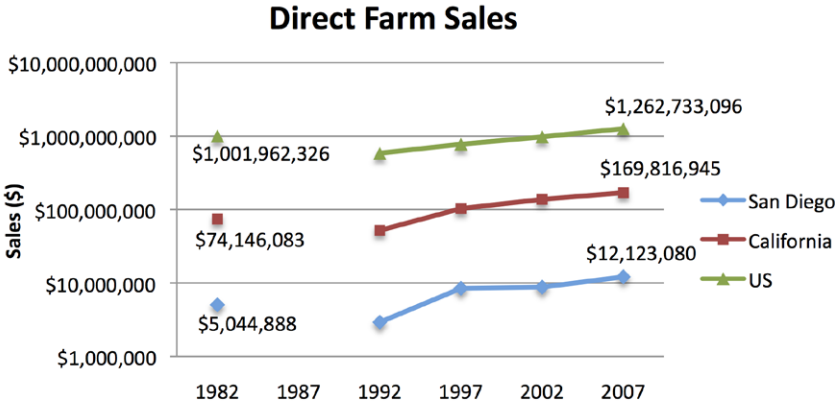


Figure 1.7 Source: United States Department of Agriculture, NASS, Census of Agriculture.
Table 2: Market Value of Agricultural Products Sold Including Direct Sales
Notes: Logarithmic scale. Data collection changed in 1997 at which time it began adjusting for coverage.
All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

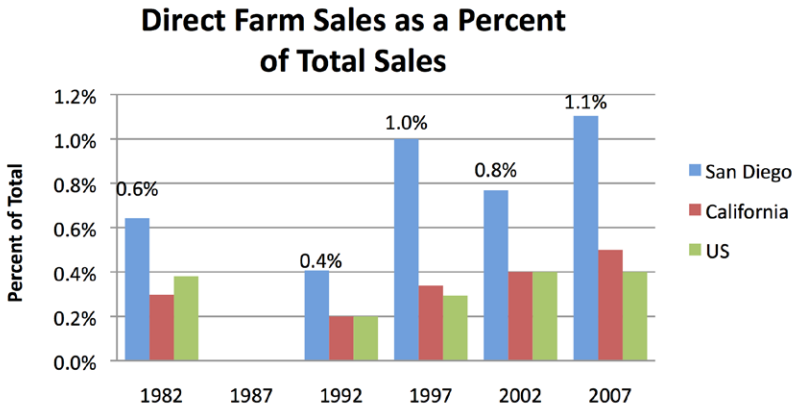


Figure 1.8 Source: United States Department of Agriculture, NASS, Census of Agriculture.
Market Value of Agricultural Products Sold Including Direct Sales
Notes: Data collection changed in 1997 at which time it began adjusting for coverage.
All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: Both the number and percent of farms with direct sales in San Diego County have grown modestly between 1982 and 2007, while in California and the U.S. the number of farms and percent with direct sales has declined somewhat with substantial fluctuations in intervening years.

Although the dollar value of direct sales in the county is relatively small compared to total farm sales, the volume has nevertheless increased significantly as a percent of total farm sales, nearly doubling between 1982 and 2007. The percent of direct farm sales compared to total farm sales for San Diego County in 2007 (1.1 percent) was more than twice that of California (0.5 percent) and nearly three times that of the U.S. (0.4 percent).

The robust nature of direct farm sales in San Diego County is attributable to several factors. First, the ability to grow year-round enables producers to market a wide range of fruits, vegetables, and animal products during all four seasons. Additionally, the proximity of agriculture to the expanding coastal metropolis of San Diego and North San Diego enables a more direct producer-consumer interface than in most other regions in the U.S. Finally, the last few years have seen a dramatically increased demand for local food.

Indicator 1.1d: Number of Community Supported Agriculture (CSA) Programs

Background: Community Supported Agriculture programs (CSAs) are marketing mechanisms in which consumers purchase a share of a farmer's yield, which is then distributed on a regular, often weekly basis to the purchasing individual. Such arrangements are considered to be of mutual benefit to the producer and consumer in that the share is purchased in advance of product distribution thus enabling a dispersal of risk between producer and consumer. The consumer enjoys the taste and health benefits of fresh, local produce while developing a deeper understanding of seasonality and a range of products he or she might not otherwise have exposure to. Across the United States, the number of CSAs has increased from 60 in 1990 to more than 3,500 in 2010.[20]

20 Agricultural Marketing Service. (2010). "Farmers Markets and Local Food Marketing." Retrieved July 21, 2010, from http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateL&rnavID=LearnAboutCSAsLinkWholesaleAndFarmersMarkets&rightNav1=LearnAboutCSAsLinkWholesaleAndFarmersMarkets&topNav=&leftNav=WholesaleandFarmersMarkets&page=WFMCommunitySupportedAgriculture&resultType=&acct=wdmgeninfo.

Trends: Currently there are 14 known CSAs located in San Diego County including at least one meat-based CSA. Ranging in scale from 10 to more than 2000 shares, the majority provide approximately 200 shares of fresh produce to customers throughout San Diego and bordering counties. As compared to citrus and avocado growers, smaller-scale diversified growers with direct marketing abilities, such as those utilizing a CSA-like model appear to be fairing quite well as demand for local produce continues to increase. Though a lack of historical data on the number of CSAs in the county makes it difficult to show a trend over time, most CSAs are fully subscribed and may be expected to increase in size or number of shares in the coming years. Nevertheless, as the total number of available shares within the county increases, producers may experience customer attrition unless consumer demand keeps pace.

Indicator 1.1e: Number of School Gardens

Photo courtesy of Sadie Sponsler

Background: School gardens provide a dynamic environment in which to enhance student health and achievement. And while using gardens as a curriculum tool is nothing new, increased interest in local food production and concern over rising obesity rates among children has led to the establishment of thousands of new school garden programs across the nation. In California alone, passage of AB 1352, the California Instructional School Garden Program, in 2006, enabled the disbursement of nearly 11 million dollars for the establishment of school gardens throughout the state.

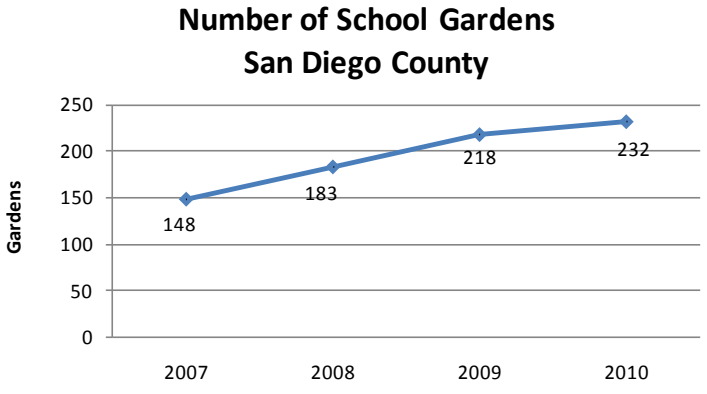


Figure 1.9 Source: San Diego Master Gardeners/U.C. Cooperative Extension
Notes: Data prior to 2007 not available

Trends: With 232 school gardens currently in operation out of 747 schools, approximately 30 percent of schools in San Diego County have access to a school garden. Ranging from a focus on native species, to job skills training, to nutrition and food preparation, these programs provide a unique opportunity for engaged, hands-on learning not always available in the classroom. With the allocation of nearly $900,000 in 2006 from the California Instructional School Garden Program, the number of school gardens has climbed steadily over the last four years. However, not all gardens are utilized to their full potential and maintenance and on-going funding remains a barrier to the longevity of programming.

Goal 1.2: San Diego County Residents, From Infants to Seniors, Consume More Healthful Foods

Every day, communities across the U.S. are inundated with cheap, high calorie soda and snack food, whether through advertising or the simple reality of what is available. In California, fast food restaurants are four times as prevalent as fresh food outlets and grocery stores.[21] In a landscape where inexpensive, highly-processed foods are so commonplace, it is not surprising that only a reported 16.1 percent of California adults eat their daily recommended amount of fruits and vegetables.[22] This low consumption rate places Californians at high risk for a number of chronic diseases. In fact, San Diego County spends an estimated $3 billion on healthcare costs related to overweight, obesity, and physical inactivity each year. It is important that significant effort be made to ensure all environments support healthy eating, including those with broad community audiences such as schools, hospitals, and military facilities.

Indicator 1.2a: Obesity and Overweight in School Age Children

Background: Since 1980, the number of children in the U.S. with a body mass index (BMI) in the 95th percentile, otherwise termed obese, has tripled. At present, according to the 2007-8 National Health and Nutritional Examination Survey (NHANES), approximately 17 percent of children under the age of 19 are obese.[23] Studies indicate that individuals experiencing obesity or overweight during childhood are significantly more likely to be obese as adults and to experience higher rates of diabetes and other diet-related diseases.[24] In an effort to monitor adolescent health and fitness, the California Department of Education (DOE) administers the physical fitness testing which includes in its assessment a BMI measurement.

Photo courtesy of Susan Ellsworth

21 California Center for Public Health Advocacy (2007). Searching for Healthy Food: The Food Landscape in California Cities and Counties. Los Angeles. 5.
22 Behavioral Risk Factor Surveillance System (2009). State Indicator Report on Fruits and Vegetables, 2009, National Center for Chronic Disease Prevention and Health Promotion
23 Ogden, C., M. Carroll, et al. (2010). "Prevalence of High Body Mass Index in US Children and Adolescents, 2007-2008." Journal of the American Medical Association **303**(3): 242-249.
24 McBrayer, S., P. Ingrum, et al. (2009). San Diego County Report Card on Children and Families. San Diego, The Children's Initiative.Johnson Group Consulting.

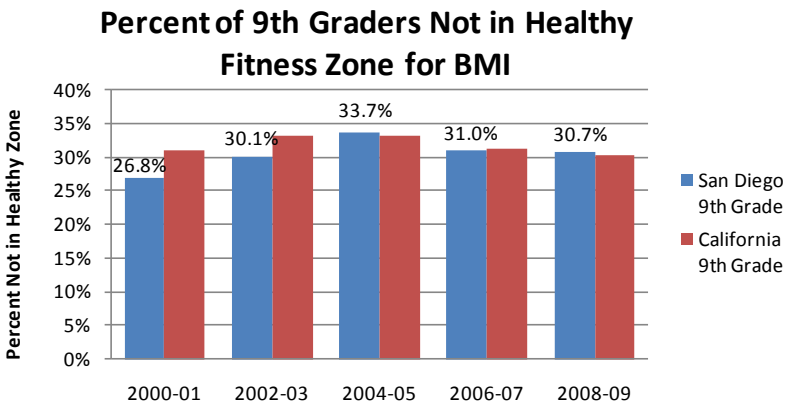


Figure 1.10 Source: California Department of Education, Physical Fitness Report
Notes: Healthy Fitness Zone is a criteria established by the Cooper Institute to represent a level of fitness that offers some degree of protection against diseases that result from sedentary living. A BMI of 14.5-26.5 would be considered within the Healthy Fitness zone for a ninth grade student depending on age and gender.

Trends: San Diego County's rate of childhood obesity and overweight as measured through physical fitness testing of school age children in grades five, seven and nine has not improved over the last decade.[25] For youth in ninth grade, the current rate of overweight rests at 31 percent as measured by a body mass index (BMI) in excess of that considered to be healthy.[26] This rate, up from 27 percent in 2001, puts San Diego well above the national goal of no more than 5 percent child obesity as set by the Department of Health and Human Services in their Healthy People 2010 national objectives. Rates of obesity and overweight in fifth and seventh grade are also well above these goals with approximately 30 percent of each age group outside of the Healthy Fitness Zone.

Indicator 1.2b: Percent of Type II Diabetes Diagnoses

Background: Currently, more than 23.6 million people or 7.8 percent of the population in the U.S. have been diagnosed with diabetes.[27] Of these, more than 90 percent are attributable to Type II diabetes, which is associated with obesity and inactivity. Though Type II diagnoses have historically occurred around age 40, as the rate of obesity and overweight in youth continues to grow, so too does the rate of early-onset Type II diabetes. Data on diabetes in youth and young adults in San Diego County is being gathered by the California Health Interview Survey (CHIS); however the number of cases is relatively small for this age group and can not be accurately reported at this time. As explained by the CDC, "it is hard to detect type 2 diabetes in children because it can go undiagnosed for a long time; because children may have no symptoms or mild symptoms; and because blood tests are needed for diagnosis."[28] Given these challenges, it is difficult to get an accurate view into the level of Type II diabetes among youth at the County level. As of 2007, the rate of diabetes amongst individuals under the age of 20, across the nation, was .22 percent or 186,300 individuals.[29]

25 California Department of Education (2008-2009). California Physical Fitness Test: Summary Report, San Diego, California Department of Public Education.
26 A healthy BMI, is one that falls within the Healthy Fitness Zone as described by the Cooper Institute, for the California Department of Education. For more information visit www.cde.ca.gov/ta/tg/pf/documents/pftperfstand10.pdf.
27 Health and Human Services Agency, C. o. S. D. H. (2009). Healthy People 2010: Health Indicators for San Diego County. C. H. S. Unit, County of San Diego
28 Centers for Disease Control and Prevention. (2010) "Children and Diabetes – More Information." Diabetes Public Health Resource. Retrieved November, 10, 2010 from www.cdc.gov/diabetes/projects/cda2.htm
29 American Diabetes Association. (2007). "Diabetes Statistics." Retrieved October, 10, 2010, from www.diabetes.org/diabetes-basics/diabetes-statistics/.

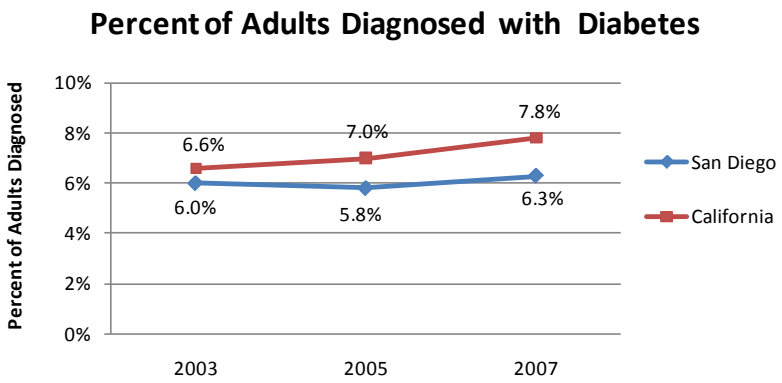


Figure 1.11: Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, Table: Ever Diagnosed with Diabetes
Notes: Type I and II combined

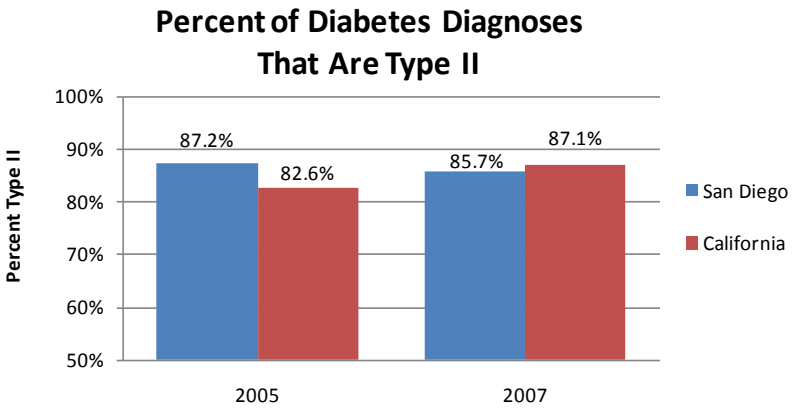


Figure 1.12: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, Table: Type of diabetes – Type I or Type II
Notes: Data only for adults

Trends: According to the California Health Interview Survey (CHIS), the overall rate of adult diabetes in San Diego County in 2007 was 6.3 percent, up from a 2001 CHIS study which put the rate at 5.5 percent (see Figure 1.11). Of these diagnoses, more than 85 percent are Type II, which is often associated with a lack of physical activity or overweight (see Figure 1.12). However, the rate of Type II in adults has remained fairly constant over the survey years, despite an increase in the percent of obese adults. This may be attributable to changes in definitions, difficulty in identification or the fact that not enough time has passed to see a relationship between rising rates of obesity and Type II diabetes diagnosis. Nevertheless, a continued rise in rates of obesity, particularly among children and adolescents, may result in an increased Type II diagnosis among San Diego County residents.

Determining the age of onset is another important factor, however data collection for diabetes in youth is not readily available at the county level.

Indicator 1.2c: Food Choice; Fruit and Vegetable Consumption and Sugary Drinks

Photo courtesy of Sadie Sponsler

Background: Both the quantity and quality of food consumed plays a significant role in the overall health and well being of individuals. In particular, choosing foods that provide essential nutrients without excessive saturated fat, sugar or salt is essential to the avoidance of numerous chronic and diet-related diseases and increased life expectancy.[30] Diets rich in fruits and vegetables, in particular, have been shown to reduce risk of heart disease, diabetes, stroke and high blood pressure.

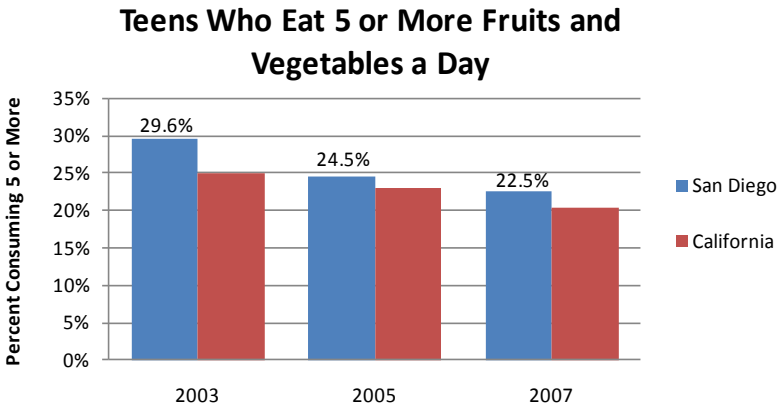


Figure 1.13: Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, Table: Eat five or more servings daily of fruits and vegetables - teens
Notes: Defined as individuals between the ages of 12 and 17 who eat 5 or more or less than 5 fruits and vegetables a day. 2001 data may exclude survey responses for which answers were unknown.

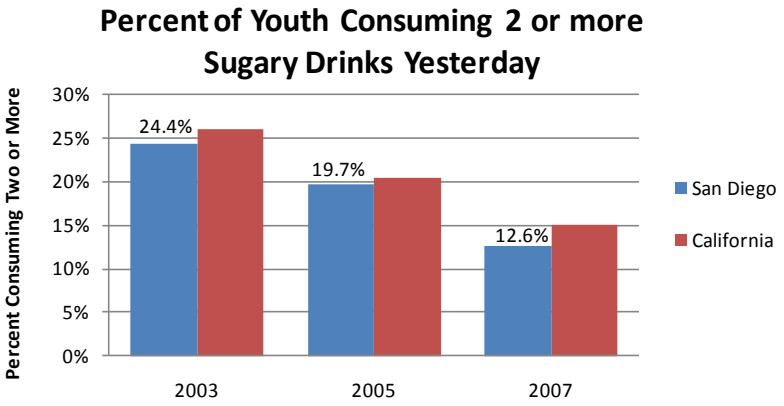


Figure 1.14: Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, Table: Soda or other sugary drinks consumed yesterday
Notes: Defined as individuals under 18 who consumed more than two sodas or sugary drinks yesterday.

30 Health and Human Services Agency, C. o. S. D. H. (2009). Healthy People 2010: Health Indicators for San Diego County. C. H. S. Unit, County of San Diego

Trends: Currently, the CDC suggests consuming five or more servings of fruits and vegetables a day, yet the number of children and adults in San Diego County who achieve this level of consumption is on the decline. For teens in particular, the number consuming the recommended servings declined by nearly a quarter (see Figure 1.13), from 30 percent in a 2003 to 22.5 percent in the 2007 CHIS survey. Nevertheless, these rates remain slightly above the state average. Though data on the rate of adults consuming five or more a day are not available for 2007, the 2005 rate was higher than for teens, at 47 percent, down from 51 percent in the 2001 CHIS survey. However, unlike teen consumption, the percent of adults consuming five or more servings a day in San Diego County (46.5 percent), is now less than for the state as a whole (48.7 percent).

Photo courtesy of Sadie Sponsler

Conversely, the amount of soda consumed by youth has declined by nearly 50 percent since 2007 from 24.4 percent consuming two or more sodas a day in 2003 to only 12.6 percent in 2007 (Figure 1.14). This reduction in consumption may be attributable to two different pieces of state legislation, the first banning soda sales in elementary and middle schools in 2003 (the California Childhood Obesity Prevention Act) and the second banning sales in high schools in 2005 (the Healthy Beverage Bill).

Indicator 1.2d: Number of Farm to School Programs

Background: Farm to school programs connect school age children and young adults with area farms through local sourcing of school food, farm visits and other agriculturally related curricula. Such programs, which are intended to improve the health and nutrition of youth as well as support small and medium-scale producers, have proliferated around the nation over the last ten years with more than 2,200 currently in existence in all 50 states. According to the National Farm to School Network, an estimated 72 programs exist in California alone, reaching more than 400 schools.[31]

Trends: While interest in and support for farm to school sourcing in San Diego County is on the rise, few consistent distribution networks or sourcing relationships exist yet. San Diego Unified School District, the largest district in the county, may be the first to formally launch a farm to school program in 2010 while a recent survey of 24 other district food service directors, representing 384 schools, revealed widespread interest in local sourcing. However, limited funds for school food have resulted in a lack of infrastructure required for storage and preparation of farm-fresh products among many county schools. Additionally, small and medium scale growers have, in many cases, struggled to meet the demands of school districts and other institutions due in large part to liability or product volume requirements from distributors or schools. As a result, a collaboration of school food advocates and producers are working to develop a mechanism for aggregating product as a means of enhancing distribution to better meet demand.

Other farm to school related programming, such as farm visits, food production in school gardens and agricultural curriculum offerings are relatively prevalent in the county and serve as important mechanisms for educating youth about the food system.

31 The Farm to School Network. (2010). "California Profile." Retrieved August 2, 2010, 2010, from http://www.farmtoschool.org/state-home.php?id=4.

Indicator 1.2e: Amount of Produce Distributed by Food Banks

Background: Traditionally, food banks have served as a mechanism for connecting food insecure populations with food that might otherwise go to waste. Due to spoilage rates and cost of refrigeration associated with produce distribution, food banks have served generally as a conduit for canned, dried or similarly non-perishable food. However as the health impacts of processed food, including high fat, sugar and preservative content, have become better understood, interest and support for fresh food distribution by way of food banks has grown.

Trends: San Diego County has three food banks, which distribute food through numerous partner agencies and in some cases direct services (see Figure 1.15). All three currently distribute fresh produce, both donated and purchased, in addition to dry and canned goods. Total produce distribution capacity in 2009 ranged from 337,500 lbs for the North County Food Bank to 3,490,705 lbs for the San Diego Food Bank to 3,717,288 lbs for the local Feeding America[32] food bank.

Nevertheless, insufficient storage and refrigeration for fresh foods and produce both at the food banks and their respective partner agencies, continues to be one of the primary obstacles to increased distribution. Similarly, the challenges associated with food preparation of culturally unfamiliar produce are also a barrier to successful fresh food distribution and utilization. Though some food banks do receive donations of locally grown fruits and vegetables from area farmers' markets, much of the produce distributed by food banks is derived from the California Association of Food Bank's Farm to Family Program. Within this program, produce from throughout California and the region that might otherwise not be marketable, is donated to or purchased by the program for cents on the dollar, and then trucked to various food banks throughout the state. Supplementing Farm to Family and farmers' market donations are donations from grocery stores and other produce programs including the Choice System and Foodlink. In the case of the North County Food Bank, some produce is even grown on-site by way of a community garden project aimed at directly mitigating food insecurity amongst its clients.

32 Feeding America is a national network of food banks, www.feedingamerica.org.

Farm to School at San Diego Unified School District

As the largest school district in the county and the second largest in the state, San Diego Unified School District (SDUSD) has made the provision of fresh, local foods a priority within its school meal program. With the launch of its Farm to School initiative in October 2010, SDUSD became the first school district in the county to regularly include locally grown fruits and vegetables in its school meals.[1] As a first step, the program sources local foods for their Harvest of the Month program. Local foods are featured once a week for a month in 188 school salad bars. This program will have the potential to provide all of its 135,000 students with food from local farms by Fall 2010.

SDUSD's efforts were combined with that of chefs, farmers, food service directors, and public health professionals involved with the Whole Foods Market / San Diego County Childhood Obesity Initiative Farm to School Taskforce to further increase healthy, local food procurement in San Diego County. Taskforce members worked closely with SDUSD and Tierra Miguel Foundation to create formal relationships between local food distributors and farmers. As a result, a total of 13 school districts aligned efforts in October 2010 to conduct farm to school activities.

1 Though San Diego Unified School District is the first district to start large-scale local sourcing, a number of other schools, primarily private or charter, have already begun to include some locally grown food in their school meals. For more information, visit: www.farmtoschool.org.

With the exception of avocados and citrus, the majority of produce finding its way to food bank clients in San Diego County is not locally grown, but rather a reflection of excess commodity crops from farmers or packers within the region.

Food Bank	Program	Produce Distributed (lbs)	Produce Origin	Annual Clients
Feeding America Food Bank	Farm to Family	2,196,103	Regional/National	
	Choice System	545,760	CA, AZ, OR, ID	
	Local Grocery Stores	975,425	National	
Feeding America Food Bank Total		**3,717,288**		**437,500**
North County Food Bank	General (90% grocery stores)	337,500	National	
North County Food Bank Total		**337,500**		**218,000**
San Diego Food Bank	Farm to Family	1,575,504	Regional/National	
	Local Business & Individuals	1,391,575	National/Local	
	Foodlink	523,626	Regional	
San Diego Food Bank Total		**3,490,705**		**304,000**
Total		**7,545,493**		**791,500**

Figure 1.15: Source: Feeding America Food Bank, North County Food Bank, San Diego Food Bank.
Notes: Data not publically available.

Goal 1.3: All San Diego County Residents Have Access to Affordable, Healthful, Culturally Desirable Foods at all Times

Boasting a Mediterranean climate with year-round growing conditions over an expanse of land the size of Rhode Island, San Diego County has the potential to improve access to healthy food among all its residents. Home to individuals from more than 30 countries, speaking more than 40 languages, San Diego has a unique aptitude for growing diverse crops throughout the year, thereby increasing access for all to healthy, culturally-appropriate foods. Yet, it is estimated that more than 164,000 (30% of adults whose income is less than 200 percent of the Federal Poverty Level) residents are food insecure, facing real concerns about the source of their next meal.[33]

33 California Health Interview Survey. (2007). "Food security (ability to afford enough food)." Retrieved November 9, 2010, from http://www.chis.ucla.edu/main/DQ3/output.asp?_rn=0.8378565.

Indicator 1.3a: Level of Food Security

Background: As defined by the U.S. Department of Agriculture, food security means "access by all members [of a household] at all times to enough food for an active, healthy life."[34] Thus, food insecurity can be understood as limited or uncertain availability of nutritionally adequate foods.[35] The number of households in the U.S. that experienced some food insecurity between 2001 and 2007 remained fairly even at approximately 11 percent, but saw a significant increase in 2008 to nearly 15 percent.[36] By comparison, in California the average of low and very low food insecurity rates for 2006-2008 was 12.2 percent, not a statistically significant difference from the U.S. average for 2006-2008, which was 12.0 percent.[37]

The food insecurity figures for San Diego County and California, described below, are substantially higher than the statewide and national figures gathered by the Economic Research Service due to differences in survey methodology. Food security questions in California and San Diego County were asked only of adults with incomes less than 200 percent of Federal Poverty Level. In the national survey all households were asked irrespective of income.

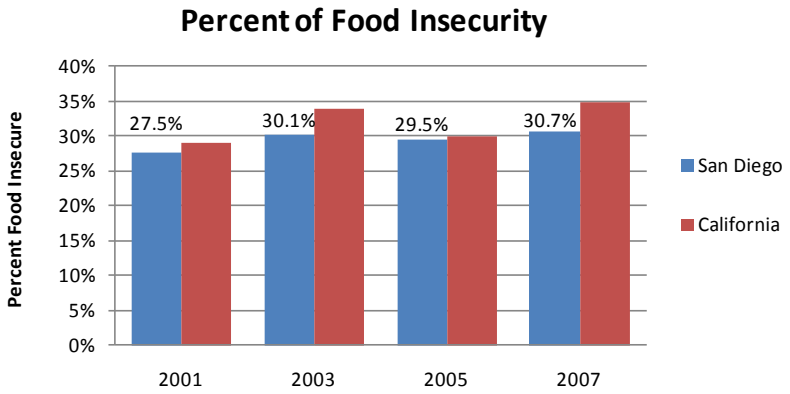


Figure 1.16: Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, Food security (ability to afford enough food)
Notes: CA and SD data was asked of low-income adults less than 200 percent of FPL

Trends: Though slightly lower than rates for California, rates of food insecurity in San Diego County have increased by more than three percent since 2001, demonstrating that reliable access to food amongst low-income adults has worsened (Figure 1.16). Nevertheless, both county and state trends are similar and indicate that populations, as of the latest data year, have become more food insecure. The economic downturn of 2008 will likely result in even higher rates of food insecurity as demonstrated in the U.S. numbers for 2008.

34 U.S. Department of Agriculture. (2009, 2009, November 16). "Food Security in the United States: Measuring Household Food Security." Retrieved August 2, 2010, from http://www.ers.usda.gov/Briefing/FoodSecurity/measurement.htm..
35 Ibid.
36 Nord, M., M. Andrews, et al. (2009). "Household Food Sercurity in the United States." ERS Report Summary Retrieved August 3, 2010, from www.ers.usda.gov/Publications/ERR83/ERR83_ReportSummary.pdf.
37 Nord, M., M. Andrews, et al. (2009). "Household Food Security in the United States, 2008." Measuring Food Security in the United States Retrieved November 9, 2010, from http://www.ers.usda.gov/Publications/ERR83/ERR83b.pdf.

Indicator 1.3b: Number of Farmers' Markets Utilizing Electronic Benefit Transfer (EBT) for Redemption of Public Benefits; Redemption Rate of CalFresh (Food Stamps) and WIC

Background: As the number of farmers' markets continues to grow across the nation, so too has recognition of the fact that many of the goods available there are out of reach for low-income community members. In an effort to increase access for individuals or households receiving public assistance benefits such as CalFresh (formerly known as SNAP or food stamps) or Woman, Infant and Children (WIC) vouchers, electronic benefit transfer machines (EBT) are increasingly being utilized at farmers' markets to enable redemption of these benefits for fresh, locally grown food. EBT machines are of benefit to both consumers and vendors and are an important step towards increasing access to local, fresh foods.

Photo courtesy of Anchi Mei

Trends: Use of EBT machines for public assistance benefit redemption at farmers' markets began in June 2008 with the City Heights Farmers' Market and has expanded to six additional markets in subsequent years. From September 2009 to August 2010, total EBT redemption at farmers' markets in San Diego County was $35,252.95 with average monthly redemption rates at the end of the period more than double those at the beginning. Increases in utilization have been ongoing since implementation, particularly in communities with lower average household incomes, reflecting greater outreach efforts and word of mouth about the availability of public benefit redemption at these farmers' markets.[38] At markets in higher income areas, EBT redemption is still insignificant. As of August 2010, City Heights was the most successful market in the nation with regards to EBT redemption.

Currently 18 markets are certified to accept WIC Farmers' Market Nutrition Program (FMNP) checks – of which participants receive five $4 checks a year for use only on fresh, California grown produce.[39] In addition, a new pilot program for WIC participants, which began in May 2010 at five sites throughout the state including the City Heights market, allows for the use of "fruit and vegetable checks" at farmers' markets in addition to grocery stores. Data on redemption of WIC "fruit and vegetable checks" and FMNP are not yet available to the public.

In light of positive reception by both benefit recipients and farmers' market vendors, expansion of EBT and WIC redemption opportunities is likely in advance of January 2012 at which point all markets

38 Data on EBT redemption from purchases made at farmers' markets is collected by the California EBT project and was made available by the San Diego County Health Services Department. At this time, this data is not readily available to the public.

39 CalFresh Program, D. o. S. S. (2010). "Certified Farmers' Markets 2010." Retrieved November 3, 2010, from www.cdph.ca.gov/programs/wicworks/Documents/FMNP/WIC-authorized CFM.pdf.

Photo courtesy of Susan Ellsworth

will be required to provide EBT access as stipulated in California Assembly Bill 537. Additional incentive programs exist, such as one managed by the International Rescue Committee, a national refugee support organization with offices in San Diego. The program, called Fresh Funds, provides matching funds up to 20 dollars per month for purchases made with SNAP, WIC and Supplemental Security Income (SSI), thereby helping to increase access to local produce even further. Between October 2009 and 2010, nearly $50,000 in EBT and WIC benefits was spent at farmers' markets that would not otherwise have been available for use at these venues.[40]

Indicator 1.3c: Number of Community Gardens

Background: As defined by the American Community Gardening Association, a community garden is any piece of land gardened by a group of people. Such gardens can be urban or rural, multi-acre or a fraction of an acre and located on public or private land. Community gardens, which have been shown to increase physical activity and nutrition while enhancing quality of life,[41] have grown in number to an estimated 18,000 across the U.S.[42] At the same time, the modes of community engagement and programming within community gardens have also increased in response to renewed interest in urban and home-scale food production.

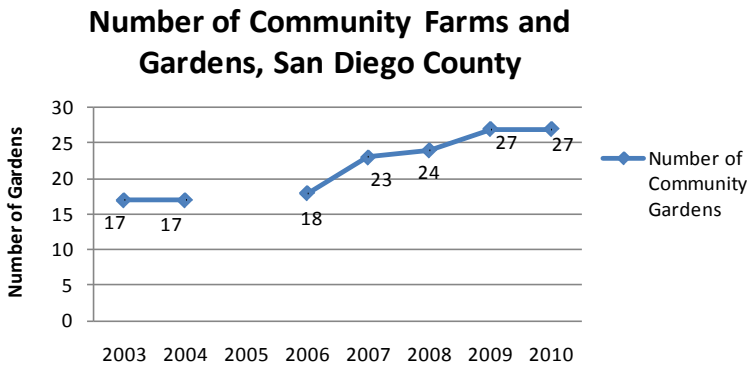


Figure 1.17: Source: Community Gardens, San Diego Master Gardeners
Notes: Data for 2005 not available

40 Data on annual combined redemption of WIC and CalFresh (or SNAP) are from the International Rescue Committee's Fresh Fund redemption data. For more information visit www.theirc.org/us-program/us-san-diego-ca

41 Twiss, J., J. Dickinson, et al. (2003). "Community Gardens: Lessons Learned From California Healthy Cities and Communities." American Journal of Public Health **93**(9): 1435-1438.

42 American Community Gardening Association. (2010). "Frequently Asked Questions." Retrieved August 3, 2010, from www.communitygarden.org/learn/faq.php.

Trends: Support for local and community based agriculture in San Diego County has increased dramatically over the last decade, with the number of gardens and farms increasing to 27 in 2010 from 17 just 7 years earlier (Figure 1.17). In addition to growth in the number of gardens across the county, diversity in programming and the range of communities served has expanded. In particular, the number of gardens with facilitated learning opportunities, such as agricultural training certificates or workshops run by non-profit community-based organizations, has increased to meet growing demand. At the close of 2010, six additional gardens were in the planning stages for spring of 2011.[43]

Nevertheless, establishment of new gardens, particularly in urban areas such as the City of San Diego, remains challenging due to the cost of land, competing land uses, bureaucratic inertia and restrictive zoning and permitting. The number of gardens in low-income communities remains disproportionately few despite notable progress in some areas. Within the 27 gardens noted above, the estimated number of community garden plots currently in use by individuals or households is 800, which does not include substantial community farm and shared plot acreage.

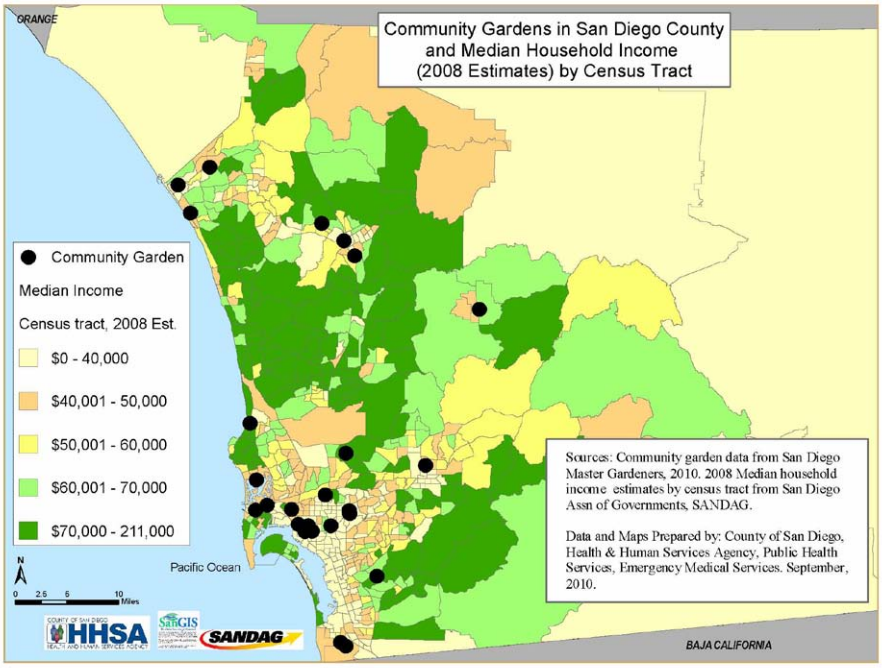


Figure 1.18 San Diego County Community Gardens and Median Household Income by Census Tract

Goal 1.4: Initiation and Duration of Breastfeeding, the Healthiest First Food, Increases in San Diego County

Breast milk is known as a perfect food for newborn and growing babies. The first milk, the substance produced in the first few days after birth, provides infants a matchless source of nutrients and antibodies while continued breastfeeding, particularly during the first six months of life, has positive ecological, financial, and health impacts. On average, a mother that breastfeeds can save more than $1,500 a year— allowing families to use money for other immediate needs.[44] Breastfed children also save

43 Dashe, J. (2010). Community Garden Interview. S. Ellsworth. San Diego.
44 The National Women's Health Information Center. (2010, August, 2010). "Why Breastfeeding is Important." Retrieved July 6, 2010, from www.womenshealth.gov/breastfeeding/why-breastfeeding-is-important/.

on healthcare costs due to reduced incidences of health problems, such as asthma, infections, and obesity. Policies that make breastfeeding a realistic option for all mothers can contribute to making San Diego County a healthier community.

Photo courtesy of Susan Ellsworth

Indicator 1.4a: Percent of Women Who Breastfeed, Including Any Breastfeeding and Exclusive Breastfeeding

Background: Nationally, breastfeeding initiation rates as measured during the first days after childbirth, have increased slightly to 75 percent, thereby meeting 2010 Healthy People objectives for initiation.[45] However, rates at six months and one year drop to 43 percent and 22 percent respectively, falling short of objectives for these respective ages by several percentage points. Exclusive breastfeeding, which refers to breastfeeding without formula supplementation, as measured at three and six months, is significantly lower at 33 and 13.3 percent respectively, again falling short of national objectives and demonstrating a trend of reduced breastfeeding over time.[46] In other words, though the overall percentage of mothers who attempt some breastfeeding continues to rise slightly, the percent that exclusively breastfeed, or breastfeed for a longer duration, is significantly lower and in some cases, on the decline. By comparison to national rates, the state of California is one of only ten states to meet all five Healthy People 2010 Objectives as laid out by the Centers for Disease Control and Prevention (CDC) with regards to breastfeeding.[47]

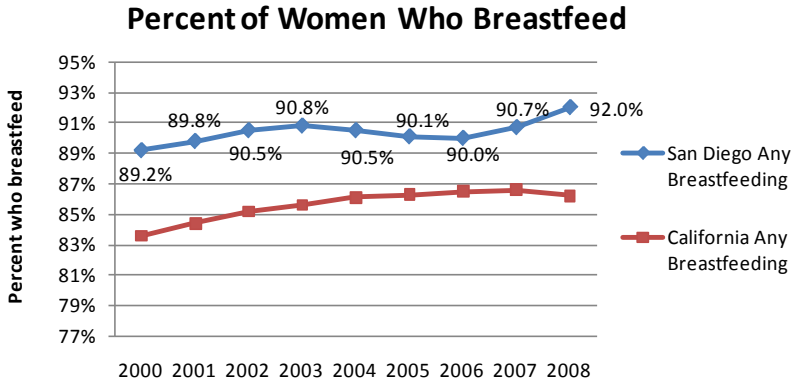


Figure 1.19: Source: California Department of Public Health, California In-Hospital Breastfeeding, County of Residence Table

Notes: "Any" includes "exclusive" breastfeeding. Data gathered at time of first specimen collection (24-48 hours)

45 Centers for Disease Control and Prevention. (2010). "Breastfeeding Among U.S. Children Born 1999-2007, CDC National Immunization Survey." Retrieved August 3, 2010, from www.cdc.gov/breastfeeding/data/NIS_data/index.htm.
46 Ibid.
47 Ibid.

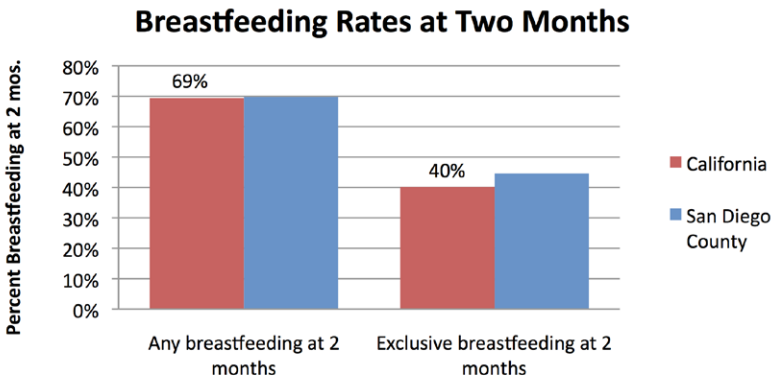


Figure 1.20: Source: California Department of Public Health, Breastfeeding among women in the Maternal and Infant Health Assessment (MIHA) 2006 sample
Note: Data gathered through self-administered survey and may not match numbers gathered in telephone or in-person surveys.

Trends: Breastfeeding rates in San Diego County, described as "any breastfeeding" in Figure 1.19, are measured during the first 24-48 hours after childbirth and include mothers who participate in any breastfeeding even if formula is used as a supplement. These rates, also known as "initiation" rates, continue to exceed those of the state and nation at approximately 92 percent as of the last survey year (2008).

Exclusive breastfeeding refers to feeding practices that include no formula. These rates, as measured during the first two days post partum, are considerably lower within San Diego County, at approximately 64 percent in 2008, and have improved slightly between 2001 and 2008.[48] Nevertheless, rates within San Diego County still exceed those of the state by more than 14 percent.

As with the national trends, both San Diego County and California show reduced breastfeeding rates for both any and exclusive breastfeeding as the infant gets older. In 2006, 69.7 percent of San Diego mothers and 69.4 percent of California mothers self-reported any breastfeeding two months after giving birth (see Figure 1.20). In the same year only 45.7 percent of San Diego mothers and 40.2 percent of California mothers indicated exclusive breastfeeding of their two-month-old infants. A sharp drop-off in both any and exclusive breastfeeding after the mother and infant leave the hospital is clear.[49]

Indicator 1.4b: Child's Age When Stopped Breastfeeding

Background: While rates of breastfeeding initiation in San Diego County are relatively high, rates of sustained breastfeeding are much lower. Studies indicate that increased duration of breastfeeding has the potential to positively impact development and health later in life. In particular, breastfeeding for more than nine months has been shown to significantly reduce rates of obesity in adulthood,[50] while other studies show an association between higher IQ, and stronger reading and writing abilities in children who were breastfed as compared to those who were not.[51]

48 Newborn Screening Test (2008). California In-Hospital Breastfeeding as Indicated on the Newborn Screening Test Form, Statewide Maternal County of Residence by Race/Ethnicity, California Department of Public Health.
49 Maternal and Infant Health Assessment (2006). Breastfeeding among women in the Maternal and Infant Health Assessment 2006 sample, 2 by maternal characteristics, California Department of Public Health.
50 Centers for Disease Control and Prevention and D. o. N. a. P. Activity (2007). "Does Breastfeeding Reduce the Risk of Pediatric Overweight?" Research to Practice Series, No. 4.
51 Kramer, M., F. Aboud, et al. (2008). "Breastfeeding and Child Cognitive Development." Archives of General Psychiatry 65(5): 578-584.

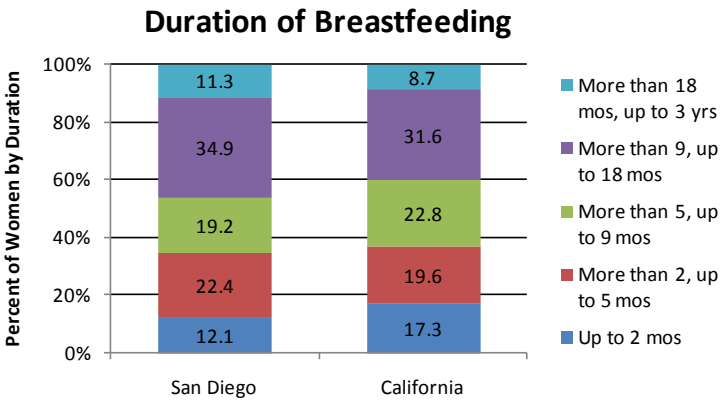


Figure 1.21: Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research
Notes: "Child's Age When Stopped Breastfeeding." Data only available for 2005, asked of children between the ages of 2 and 4.

Trends: Despite national recommendations that mothers breastfeed for 6 to 12 months, data on the duration of breastfeeding, particularly exclusive breastfeeding at the county level, is limited. Of women who report any breastfeeding in San Diego, 46.2 percent do so for more than 9 months with 11.3 percent breastfeeding for more than 18 months. By comparison, rates in California are lower in these categories - 40.3 percent at more than 9 months and 8.7 percent at more than 18.

Photo courtesy of Susan Ellsworth

Indicator 1.4c: Number and Percent of Baby-Friendly Hospitals

Background: Though breastfeeding seems like a natural choice given its economic and health benefits, many new mothers need support in making the decision to do so. Whether as a result of public perception or more subtle negative reinforcement, many women do not feel confident beginning or continuing to breastfeed and benefit from a high level of facilitation and support during the first days after childbirth. Baby-Friendly Hospitals, as recognized by the World Health Organization and UNICEF, are hospitals that provide an optimal level of care including information, skills, and support for infant

feeding, thus helping to ensure that more mothers are empowered to initiate and continue breastfeeding. As of September 2010 there were 100 Baby-Friendly Hospitals in the nation.

Trends: Currently, there are only two Baby-Friendly Hospitals in San Diego County - Scripps Medical Center in Encinitas and University of California, San Diego in San Diego - accounting for 11 percent of total hospitals with maternity and delivery services. Unfortunately, the Baby-Friendly certification often results in increased costs for hospitals for formula and other feeding materials that were previously provided for free by formula companies. Such costs make the certification more challenging for many hospitals irrespective of the quality of breastfeeding services they provide.

Goal 1.5: San Diego County Has Local, Accessible, Adequate Food Supplies for Emergency Preparedness

San Diego County with its arid climate, active fault lines, and proximity to the Pacific Ocean must be prepared for a variety of emergency situations. Bioterrorism and contamination of food supplies are also areas of concern for emergency preparedness and the food system in particular. A successful emergency plan should be designed to connect urban and rural residents to immediate food and water supplies in the event of natural or man-made disaster. At the same time, a strong local food system, in conjunction with prepared community partners, can help to ensure that storage, transportation, and distribution mechanisms are in place to meet these challenges, if, and when, they arise.

Indicator 1.5a: Units of Food and Water Available for Emergency Preparedness

Background: While local, state and federal government is given the responsibility of preparing and responding to a regional disaster or emergency, including the provision of food and water, the private sector ultimately controls most of the region's critical infrastructure, employment base and vital supply of goods and services. In fact, many nationwide resource retailers have a greater response capability than our governments. In an effort to facilitate partnerships between governments and the private sector for enhanced emergency preparedness, the County of San Diego Office of Emergency Services formally established the ReadySanDiego Business Alliance in 2009, while local emergency management agencies, such as the San Diego-Imperial County Red Cross, have implemented an effective public-private partnership which will be instrumental in addressing both food/water procurement and distribution during a regional disaster or emergency.

Photo courtesy of Ashley Colpaart

Trends: The County of San Diego does not stockpile food and water, but rather relies on partnerships, both private and public, to meet its needs in the event of emergency. The ReadySanDiego Business Alliance, including multiple large retailers, is the first entity to which the County would turn for provision of food and water if the event was catastrophic and those commodities were not readily available in local stores. Subsequently, in the event that supplies provided by the Alliance prove insufficient or inaccessible, assistance would

be sought from the state and federal government in procuring commodities necessary to meet the need of impacted residents.

Other entities, such as the American Red Cross San Diego County has approximately 98,000 units of water and 42,000 units of food stored at two sites in the county. Two hundred emergency food provision boxes containing enough food for a family of four for three days are soon to be available at four locations throughout the county with 2000 additional boxes ready for preparation in the event of disaster. Additionally, four stocked canteen vehicles are available to distribute food and water should the need arise. Two more un-stocked canteen vehicles are located in the Imperial Valley where temperatures preclude the storage of food therein.

These limited units of food and water may later be supplemented by the release of approximately two million pounds of USDA food commodities stored at the San Diego Food Bank.

Indicator 1.5b: Transportation Partners for Emergency Preparedness

Background: Beyond the number of units of food and water available either by way of stockpile or private partners, ensuring that those units are efficiently distributed in the event of emergency is a major consideration for optimal preparedness. With a lengthy coastline and international border, as well as vulnerability to fires and earthquakes, distribution systems in San Diego County must be adaptable both to the type of emergency as well as the locational logistics. The County's Emergency Operation Center (EOC) is responsible for managing and prioritizing needs within this unique and challenging environment, and ultimately for coordinating deliveries. The ReadySanDiego Business Alliance, including large retailers and others with significant shipping and distribution capacities, will also play a critical role integrating, transporting and distributing these resources during an event.

Trends: The impact to critical infrastructure including utilities, highways, roads, bridges is largely variable depending on the scope and scale of the disaster. Infrastructure is frequently either damaged or destroyed, which may impact the logistical distribution of supplies, such as food and water. One system which promotes strategic planning is the activation and operation of drive-through Point of Distribution (POD) sites. A POD is a non-medical, alternative method of mass distribution of ice, water, food, tarps or other commodities to County residents in the event of a widespread disaster. PODs would continue to function until the infrastructure of the community recovers to the point where the community is able to function independently. The County of San Diego is further developing this operational tool which in the future may be incorporated into disaster recovery planning activities such as exercises, drills, and training. Regional Staging Areas would also be established throughout the County to continually stock the PODS.

Additionally, the development of a multi-agency feeding plan by the American Red Cross San Diego and others will further facilitate communication in the event of an emergency and aid in the deployment of the most appropriate transportation resources for the circumstance. Currently, the San Diego-Imperial County Red Cross has one box truck, six canteen vehicles and one National Emergency Response Vehicle (ERV).

Vision 2: Agricultural Stewardship of San Diego County's Environmental Resource Base

National Trends

Photo courtesy of Ashely Colpaart

Between 2002 and 2007, more than 7.5 million acres of rural land in the United States was converted to development or other urban uses. Of that land, 4 million acres was agricultural land.[52] Though this rate of conversion has slowed somewhat from the previous decade – 23 million acres of farmland converted between 1982 and 2007 – it nevertheless poses significant risks to our natural resource base and the security of our food system.[53]

Much of this farmland conversion can be attributed to the increased value of land for development. Despite a relatively efficient and productive agricultural sector, small farms struggle to compete with a more consolidated and industrialized agricultural base. As agricultural inputs have risen in price, and competition from lower cost foreign imports has increased, the agricultural sector has experienced a reduction in crop diversity and a dramatic decline in market share for the small family farm.

Efficient and responsible water use is another important consideration for the continued viability of food systems across the nation. Currently, agriculture accounts for more than 80 percent of U.S. consumptive water use, the vast majority deriving from ground and surface water sources.[54] Depletion of area water sources and contaminated run-off both have the potential to adversely impact human and environmental health.

Organic production, in which chemical and synthetic crop applications are limited and methods such as compost application help to enhance water-holding capacity, has grown significantly over the last decade. Total acres of organic production have increased by more than 450 percent from 562,486 acres in 2002 to 2,577,418 acres in 2007, even as total agricultural acres have declined.

Yard waste and food residue make up nearly 26 percent of the U.S. waste stream, and when combined with organic residues from agriculture and landscaping, constitute a resource of tremendous potential value.[55] Finished compost can be used by home gardeners as well as famers to nourish plants, improve soil tilth and water holding capacity, while simultaneously diverting waste from landfills.

Beyond land-based agriculture, seafood is an important food source for Americans, and one that

52 Dempsey, J. (2010). 2007 National Resources Inventory: Changes in Land Cover/Use. FIC Fact Sheet and Technical Memo. Northampton, MA, Farmland Information Center: 4.MA</pub-location><publisher>Farmland Information Center</publisher><urls><related-urls><url>www.farmlandinfo.org/farmland_preservation_literature/?RequestTimeout=999</url></related-urls></urls></record></Cite></EndNote>

53 Ibid.MA</pub-location><publisher>Farmland Information Center</publisher><urls><related-urls><url>www.farmlandinfo.org/farmland_preservation_literature/?RequestTimeout=999</url></related-urls></urls></record></Cite></EndNote>

54 USDA, E. R. S. (2004). Irrigation and Water Use. Briefing Rooms, USDA.

55 Environmental Protection Agency, U. (2010). "Reduce, Reuse, Recycle - Composting." Wastes - Resource Conservation Retrieved August 6, 2010, from www.epa.gov/epawaste/conserve/rrr/composting/index.htm.

also requires careful management for continued sustainability. Across much of the nation, overfishing combined with environmental stress has led to increased regulation and a decline in the fishing industry, manifesting both in reduced employment and diminished catch.[56]

Photo courtesy of Susan Ellsworth

San Diego County Trends

Many of the aforementioned national trends also manifest at the county level. In particular, data on agricultural land conversion, crop diversity, fish landings and water quality demonstrate that a variety of pressures are adversely impacting the future viability of a diversified local food economy. The cost of agricultural production, linked both to the cost of water and land, is a primary contributor to a shift away from food crop production to higher value nursery crops which do not contribute to increased food security in the county.

In some cases, however, as with organic acreage, urban water consumption and expenditures on fossil fuel intensive commercial fertilizers, San Diego County appears to be a leader, both on a state and national level. Trends in these areas demonstrate the unique nature of agriculture within this county as well as the ability of communities to adapt to resource scarcity in a manner that stands to benefit the livelihoods of both growers and consumers.

The goals and indicators that follow paint a picture of how well current food production practices in San Diego County support and preserve the natural resource base on which such practices are based.

Goal 2.1: San Diego County Increases its Working Lands for Urban and Rural Food Production

San Diego County's distinct climate sets it apart from nearly every other county in the nation. With the ability to grow food year-round, San Diego County has the capacity to successfully market its fresh, local food to a large and growing population. However, a number of challenges will have to be overcome to ensure ongoing access to land for food production both in urban and rural communities. The region's coastal location often increases land costs, while land regulations and the price of water place additional pressures on the livelihood of farmers. At the same time, the increasing average age of farmers and encroaching development threaten San Diego County's rich farming tradition.

In some urban areas, excessively complex or bureaucratic land use policies and planning procedures have unintentionally created barriers to community garden establishment. City and county policies are needed to ensure urban and rural communities have continued access to land for agricultural use while capitalizing on the county's largely ideal growing conditions.

Indicator 2.1a: Number of Farms and Size of Farm Operations

Background: Despite a precipitous decline in total agricultural acres, the number of farm operations across the nation has remained relatively constant; fluctuating from 2.26 million in 1978 to 2.2

56 Seafood WATCH. (2010). "Wild Seafood Issue: Overfishing, Are We Too Good at Catching Fish?" Retrieved November 9, 2010, from http://www.montereybayaquarium.org/cr/cr_seafoodwatch/issues/wildseafood_overfishing.aspx.

million in 2007, a decline of 2.6 percent. The number of farms in California has also declined a bit more significantly ranging from 73,194 in 1978 to 81,033 in 2007. Nevertheless, these figures do not capture important changes in farm scale. Since 1978, the number of very large operations (1000-9,999 acres) has risen significantly as has the number of operations of less than 50 acres, with those in the middle generally declining in number. Given that about 2 percent of total farmland is in the under 50 acre category, this means that the majority of our farm products increasingly come from very large farms.[57]

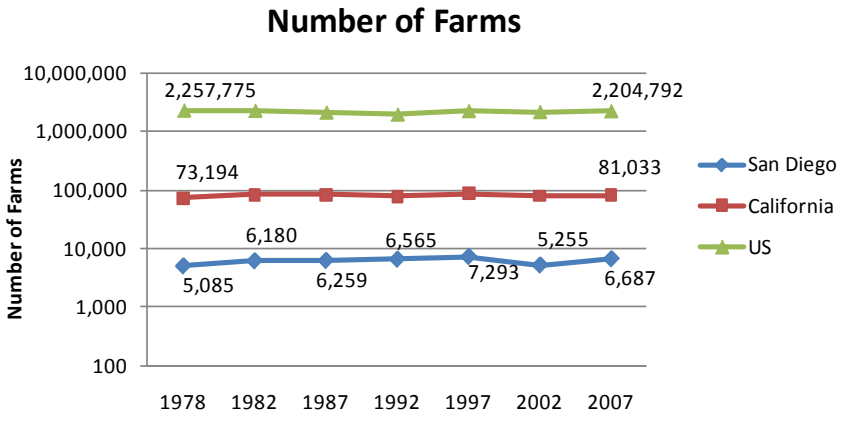


Figure 2.1 Source: United States Department of Agriculture, NASS Census of Agriculture, Summary Highlights.
Notes: All farm operations, not just food crops. Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

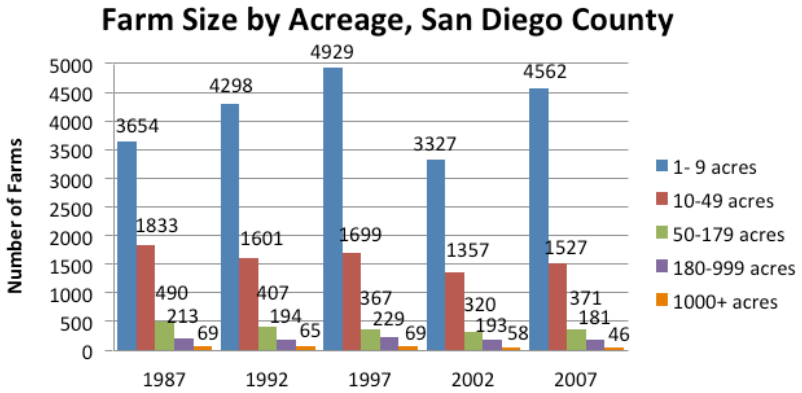


Figure 2.2 Source: United States Department of Agriculture, NASS Census of Agriculture, Farms, Land in Farms, Value of Land and Buildings, and Land Use
Notes: Data collection changed in 1997 at which time it began adjusting for coverage.
All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: The number of farms in San Diego County has increased by 31.5 percent, from 5,085 in 1978 to 6,687 in 2007, by comparison to an 11 percent increase in California (see Figure 2.1). This growth is entirely attributable to an increase in the number of farms between 1 and 9 acres, (see Figure 2.2) making San Diego the number one county in California with regards to the number of small farms.

57 Key, N. and M. Roberts (2007). Measures of Trends in Farm Size Tell Differing Stories. Amber Waves, USDA, ERS.

However, not all of these small farms contribute directly to food security given ongoing growth in the number of nursery crop operations which are included within the farm designation. Such operations do not require the same acreage-to-crop ratio as most food crops and are often small by comparison to a food farm with similar revenue. At the same time, growth in farms of less than 10 acres may also be attributable to an increase in the number of part-time farms where the owners rely on off-farm employment for income – see Figure 2.2.[58]

The number of farms within all other size categories declined over the period. Very large farms, those with 1000 acres or more, declined by 33 percent from 69 in 1987 to 46 in 2007. This trend away from large farm operations runs counter to national trends and is a reflection of the price of water and land, which makes production of low value commodity crops or livestock difficult in San Diego County. Small, diversified and organic operations which rely more heavily on direct sales, as well as nursery operations producing high value ornamental crops, have proven more successful in the face of rising water costs. Hilly terrain as well as historically small parcel sizes have also contributed to the trend towards small farms in the county.

Indicator 2.1b: Farm Income

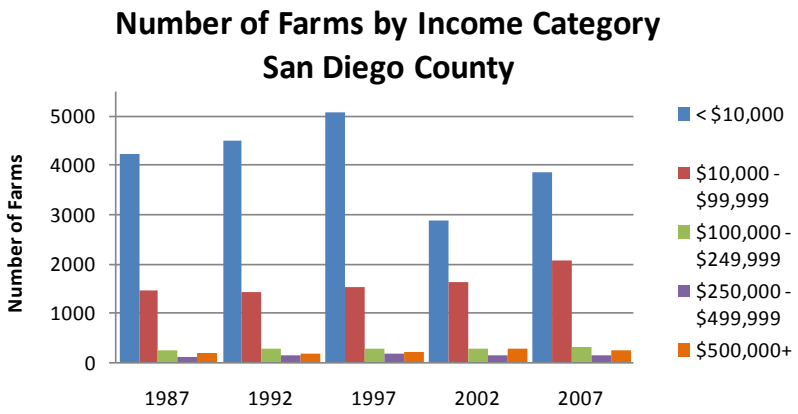


Figure 2.3 Source: United States Department of Agriculture, NASS Census of Agriculture, Market Value of Agricultural Products Sold Including Direct Sales
Notes: Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: Between the data years of 1987 and 2007, the number of farms within all income categories grew, with the exception of farms generating less than $10,000 a year in sales. Farms with more than $500,000 in sales, the highest income category, grew by 37 percent, from 191 to 262, as seen in Figure 2.3, while those with $250,000 to $499,999 and those with $100,000 to $249,999 also grew significantly. From 1987 to 2007, the number of farms within the highest three income categories increased their representation relative to all farms, growing from 9 to 11 percent. Despite a 42 percent increase in the number farms earning between $10,000 and $100,000 annually, the total number of farms in the two lowest income categories has declined as a percent of total farms.

58 Environmental Protection Agency, U. S. (2009). "Ag 101: Demographics." Retrieved August 23, 2010, from http://www.epa.gov/agriculture/ag101/demographics.html.

Indicator 2.1c: Total Crop Acreage and Percent of Acreage Dedicated to Food Production

Background: The price of water in San Diego County has climbed steadily for the last 25 years and now sits at approximately $922 per acre-foot[59]. When compared with crop commodity prices that have remained fairly level, the increased cost of water means that farmers are spending increasingly more for a steady gross return. In some cases, when the burden of water cost is too great, farmers may temporarily or completely abandon production, sometimes selling land for development or other non-agricultural uses. For those who remain in agriculture, there has been a significant move away from lower value food crops towards the ornamental crop sector, in which the rate of return is high enough to offset the cost of water.

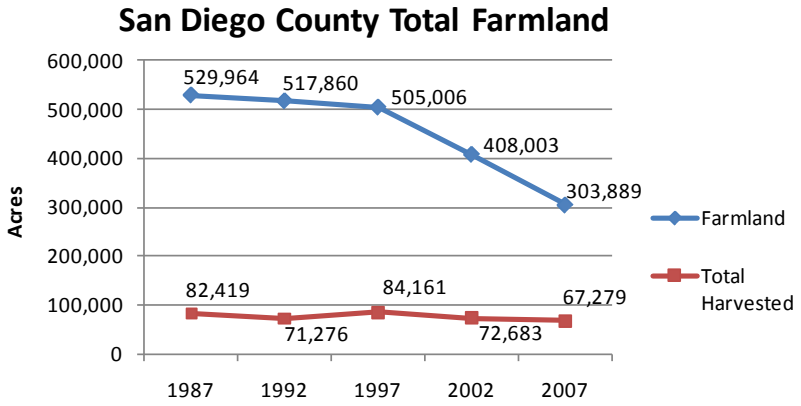


Figure 2.4 Source: United States Department of Agriculture, NASS Census of Agriculture, Land in Farms: Farms, Land in Farms, Value of Land and Buildings, and Land Use; Harvested Cropland.

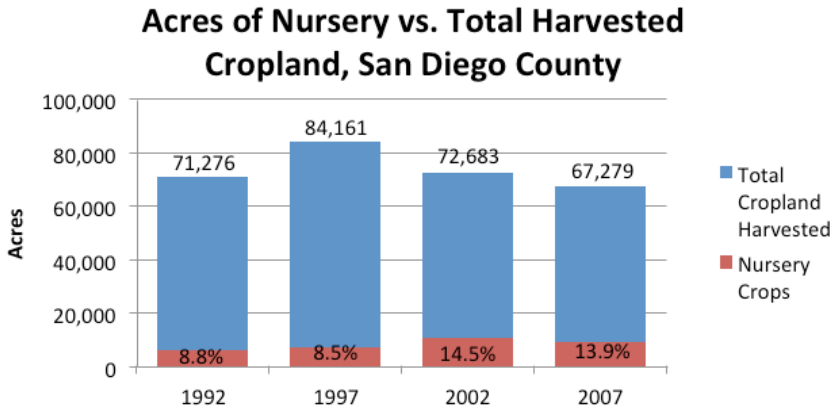


Figure 2.5 Source: United States Department of Agriculture, NASS Census of Agriculture, Nursery, Greenhouse, Floriculture, Sod, Mushrooms, Vegetable Seeds, and Propagative Materials Grown for Sale
Notes: Harvested Cropland includes land from which crops were harvested including hay, short-rotation woody crops, orchard land, citrus groves, Christmas trees, vineyards, nurseries and greenhouses. Nursery Cropland includes crops grown in open air as well as under glass, also includes floriculture crops and nursery stock.

59 $922 per acre foot is the approximate Municipal and Industrial (M&I) water rate for 2010, which includes all relevant fees. Water for agricultural use has historically been made available at a reduced rate by way of a special Metropolitan Water District Program called the Interim Agricultural Water Rate Program. However, because the program is scheduled for complete phase out by December 31, 2012, the dollar per acre foot discount is set to decrease each year between 2009 and 2012 until the agricultural rate reaches parity with the M&I rate. In an effort to transition to this increased cost, many farmers are moving to full M&I rate in advance of full phase out.

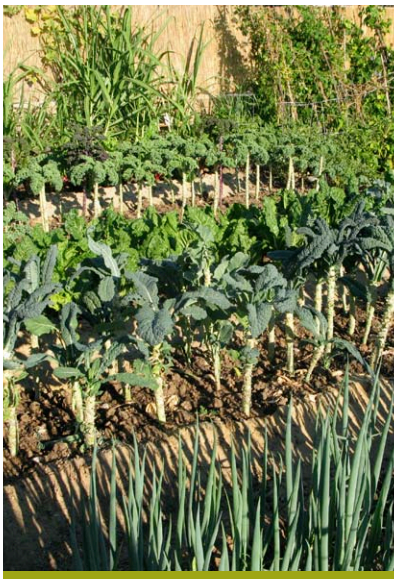


Photo courtesy of Susan Ellsworth

New Roots Community Farm

New Roots Community Farm is a large community garden located in the City of San Diego's diverse City Heights neighborhood. The garden, founded by the International Rescue Committee in 2009, has 89 plots of various sizes where long time residents as well as new members of the community such as Latino immigrants and Somali-Bantu, Cambodian and Hmong refugees, grow a wide variety of crops. Refugee participants that demonstrate interest in growing food commercially, and are successful with their plot, have the option of participating in a new farmer incubation program currently located at the Tierra Miguel Farm located in the county's Pauma Valley.

Trends: The amount of farmland in San Diego County has decreased over the last twenty years (see Figure 2.4) from nearly 530,000 acres in 1987 to 304,000 acres in 2007. This 43 percent decrease is largely attributable to the rising cost of water, compounded in some cases, by development pressure. Within farmland, the amount of land from which crops are actually harvested (see Figure 2.5) has also declined during this period, despite an uptick in 1997.

By contrast, ornamental and nursery crops have seen significant growth as measured by the percent of total harvested cropland they constitute, increasing from 8.8 percent to 13.9 percent between 1992 and 2007. This growth is due in large part to the larger return that nursery and floriculture crops enjoy by comparison to other agricultural commodities, thus reducing the impact of water costs on gross return. However, because nursery crops require less acreage than most other commodity crops the dramatic growth in this industry is not entirely evident in acreage figures, but rather in the percent of total agricultural revenue they constitute, as seen in Figure 2.6. As water prices continue to rise, it is likely that the nursery crop sector will continue its trend towards dominance of the agricultural sector.

Indicator 2.1d: Farm Revenue by Crop Variety

Background: Though corn, soy and wheat dominate crop production and farm revenue across much of the U.S., the unique combination of climate, topography, land value and water cost in San Diego County means that these crops are not produced in commodity form. Instead, higher value, warm weather food crops like citrus and avocado make up more than half of irrigated food crop land in the county.

Photo courtesy of Susan Ellsworth

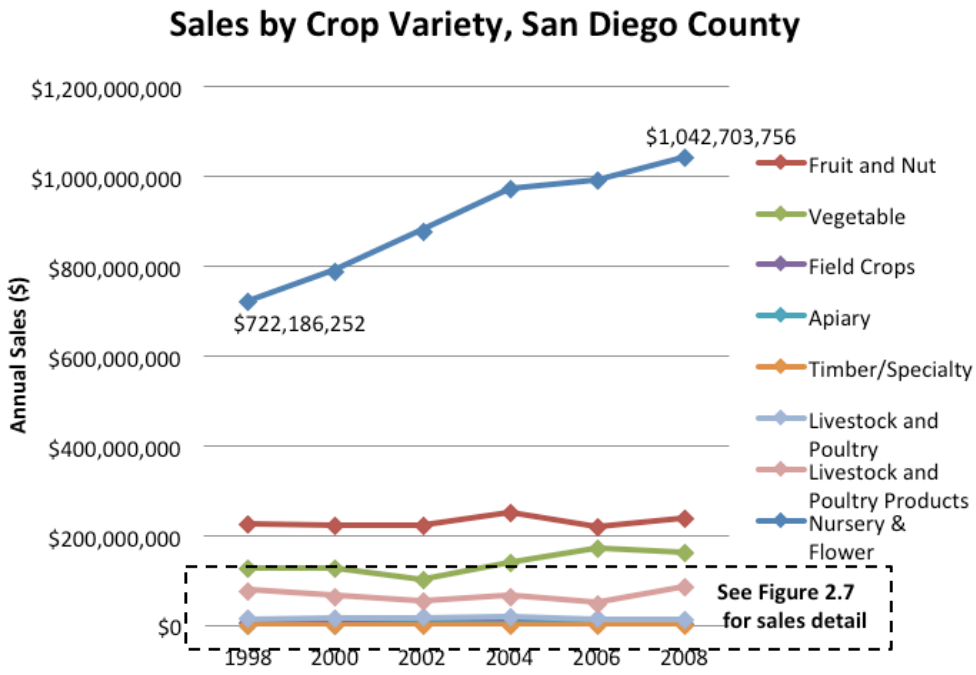


Figure 2.6 Source: County of San Diego Agriculture Weights and Measures, Crop Report
Notes: See inset Figure 2.7 for detail on crops in box

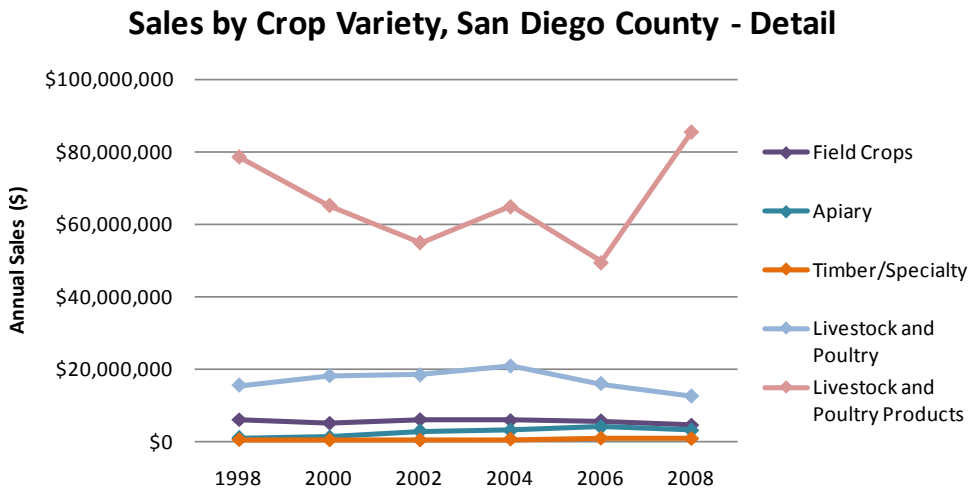


Figure 2.7 Source: County of San Diego Agriculture Weights and Measures, Crop Report
Notes: Zoom in on above map

Trends: Fruit and nut crops, primarily avocado and citrus, generate the most revenue of all food crops in San Diego County making up 15 percent of total crop revenue (Figure 2.6). By comparison, nursery crops generate nearly twice as much revenue as all food crops combined. Because of its significantly higher value, the rising cost of water has a comparatively smaller impact on net income within this agricultural sector, resulting in its steady and significant revenue growth since 1998. Despite a downturn in the mid-1990s, vegetable and livestock product revenue have also increased, due in large part to rising direct sales. All remaining crop categories, including apiary, field crops, livestock and poultry, and timber or specialty crops have remained constant or declined slightly.

Compounding the affect of rising water costs on some of San Diego's major crops, is the increased importation of food crops from abroad, where water is more plentiful and labor is often cheaper. In particular, as of 2010, sales of avocados imported from Mexico and Chile exceeded those of avocados grown in San Diego County by nearly a factor of ten.[60]

Indicator 2.1e: Organic Acreage

Photo courtesy of Susan Ellsworth

Background: Across the nation, interest in organic production methods is on the rise as awareness grows as to the impacts of chemical pesticides and fertilizers. Between 1990 and 2002, the number of certified organic acres in the nation doubled, while organic livestock sectors grew at an even faster rate.[61] Currently, California has the greatest number of certified organic acres of any state at 430,000 acres, the majority of which is used for vegetable or fruit production.[62]

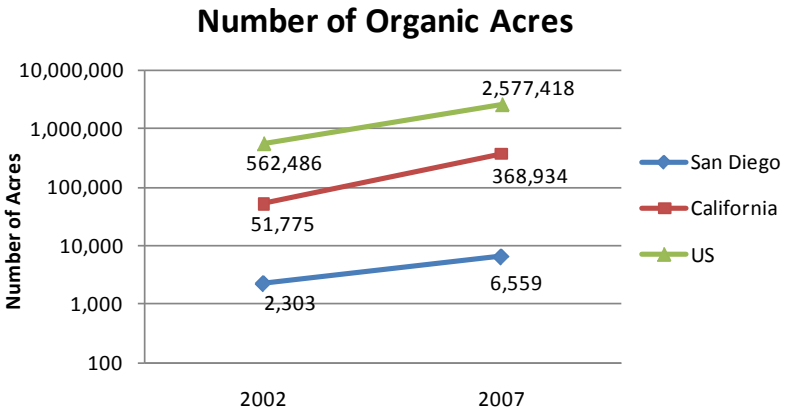


Figure 2.8 Source: United States Department of Agriculture, NASS Census of Agriculture
Notes: Data collection changed in 1997 at which time it began adjusting for coverage.
All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

60 Rowe, J. (2010) "Agriculture: Foreign avocados take over America's big guacamole day." North County Times.
61 Economic Research Service, U. (2010, March 30, 2010). "Organic Production." Data Sets Retrieved August 11, 2010, from http://www.ers.usda.gov/Data/Organic/.
62 Ibid.

Trends: With 317 certified organic producers growing more than 140 different crops, San Diego County has the largest number of certified producers of any county in the nation.[63] As shown in Figure 2.7 the total number of organic acres in the county has grown from 2,303 in 2002 to 6,559 in 2007. Though this rate of growth appears slightly less significant than for the state or nation, this is attributable to the fact that much of San Diego's conversion to organic crops occurred in years prior to the first USDA data collection.

Indicator 2.1f: Number of Community Gardens

Background: Community gardens, though rarely providing for all of the produce needs of an individual or family, can serve as an important supplement to store bought fruits and vegetables. Particularly in urban areas, where many households have no outdoor growing space and limited access to affordable fresh fruits and vegetables, community gardens have an important role to play in augmenting food security. At the same time, community gardens afford urban residents a means of remaining connected with the seasons and the practical limitations of the local growing conditions, which are also important considerations for a thriving local food economy. Interest in and support for community gardens and urban agriculture in San Diego County has increased dramatically over the last decade from 17 gardens in 2003 to 27 in 2010, with six new garden projects in the planning stages for 2011.

For more information on community gardens in San Diego County see page indicator 1.3c.

Photo courtesy of Susan Ellsworth

Goal 2.2: San Diego County Improves its Waterways as Healthful, Sustainable Food Sources for San Diego County Residents

The commercial fishing industry has a long history in San Diego County. As recently as the late 1970s, San Diego was considered the tuna capital of the world and fishing was a major economic engine (Schoell 1999). Today, California boasts some of the toughest environmental laws in the world related to commercial fishing. While these regulations have halted some of the region's fishing production, it has opened the door to new markets highlighting sustainably caught fish. A 2007 Respon-

63 County of San Diego. (2010). "Organic Farming." Retrieved August 11, 2010, from http://www.co.san-diego.ca.us/awm/organic.html.

sive Management report indicates that a large and growing number of Californians would be interested in purchasing sustainably and locally caught seafood if made aware that California has more stringent conservation laws than many other places.[64] The U.S. imported $13.5 billion in seafood in 2007, much of which is from countries with fewer regulations in place to ensure responsible fishing practices.[65]

Photo courtesy of Susan Ellsworth

Indicator 2.2a: Commercial Fish Landings by Weight and Value

Background: After centuries of relatively un-fettered access, the U.S. instituted its first major fisheries management plan in 1976, the Magnuson-Stevens Fishery Conservation and Management Act. This Act, initially passed as a means of regulating foreign fishing vessels off U.S. coastlines, has since become the primary mechanism for managing overfished populations by way of catch limits, reduced days at sea, shortened seasons and bycatch regulations. Such regulations have succeeded in limiting competition from foreign vessels in domestic waters, yet have limited capacity to manage continued overfishing in international waters or other environmental factors affecting fish populations.

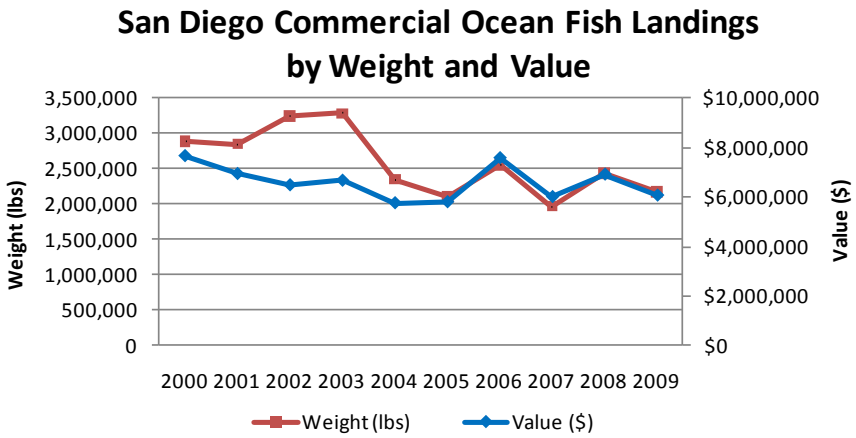


Figure 2.9 Source: California Department of Fish and Game, California Commercial Landings
Notes: San Diego Area Port Totals including all ports at which landings were measured

Trends: Pollution, much of it resulting from urban run-off, as well as regulatory measures, historical overfishing and international competition have taken their toll on the once vibrant fishing industry in and around San Diego County.[66] In particular, measures eliminating use of the purse seine net for tuna fishing, in light of high dolphin mortality, as well as the closure of canning facilities along the coast, have led to a decline in catch both by weight and value. Currently, urchin makes up a significant pro-

64 Responsive Management (2007). California Residents' Opinions and Attitudes Toward Coastal Fisheries and their Management. Harrisonburg, VA, Responsive Management.
65 Unified Port of San Diego. (2010). "Commercial Fishing Facts." Retrieved November 9, 2010, from http://www.portofsandiego.org/about-us.html.
66 Schoell, M. (1999). "The Marine Mammal Protection Act and its Role in the Decline of San Diego's Tuna Fishing Industry." The Journal of San Diego History **45**(1).

portion of total catch, as well as shark, halibut, crab, lobster and spot prawn. Additionally, the "live fish" market, catering primarily to sushi restaurants, appears to be an emerging market for species such as sablefish, sheephead, lobster, spot prawn and crab.[67] As measured by total weight, landings have declined by approximately 450 thousand pounds over the last decade from 2.9 million pounds per year in 2000 to 2.4 million pounds in 2008 with a number of significant fluctuations in intervening years (see Figure 2.10). The value of these landings, as measured in total dollars, has followed a similar trend, ending in 2008 about $744,991 lower than in 2000.

	2006	2008
Waterbodies with some pollution	114	268
Polluted waterbodies requiring TMDL	99	157
Waterbodies with TMDLs adopted	3	7

Figure 2.10 Source: San Diego Regional Water Quality Control Board

Indicator 2.2b: Number of Polluted Waterways and Relevant Clean-up Plans

Background: From its dramatic coastlines to towering waterfalls and crystal clear lakes, California is home to some of the most spectacular water resources in the nation. However, rapid development, a large agricultural base and other human activities place these resources and the creatures that live in and around them at risk of contamination. The Federal Clean Water Act Section 305b requires each state to provide a biennial water quality update along with a list of all contaminated waterbodies. For those waterbodies which do not meet water quality standards, a plan for improving water quality, referred to as a Total Maximum Daily Load (TMDL), must be put in place.

Trends: 2006 was the first year for which an accounting of water quality was undertaken in the county resulting in the classification of 99 waterbodies as impaired. In 2008, a second

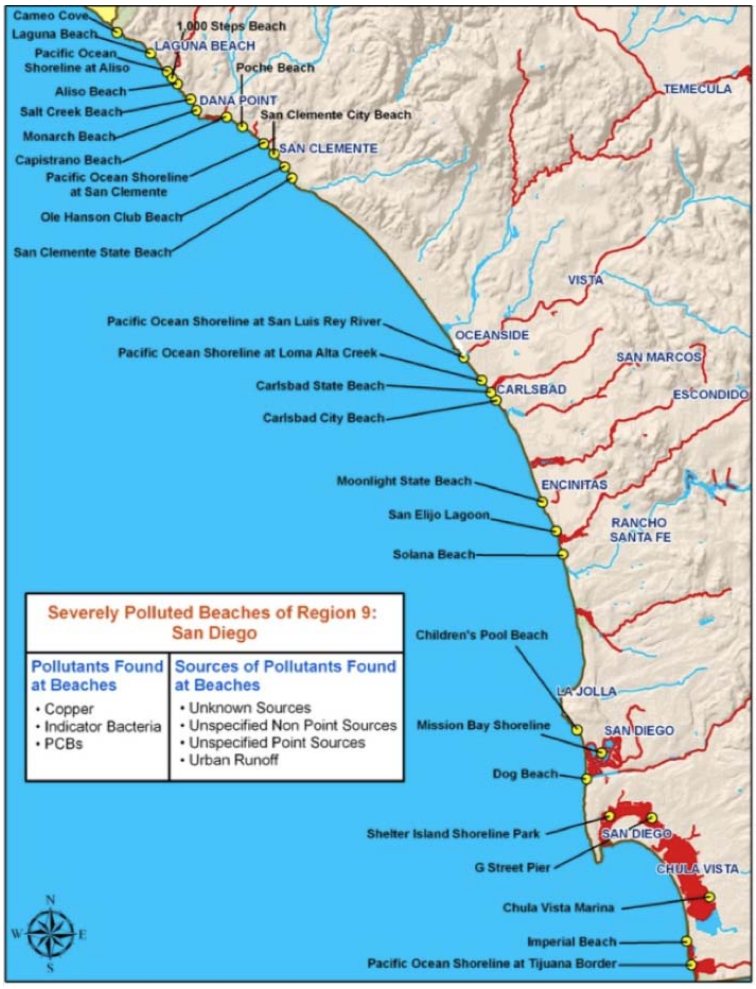


Figure 2.11: San Diego County Impaired Waterways, San Diego Coastkeeper

67 Lisa Wise Consulting, I. (2009). Port of San Diego: Commercial Fisheries Revitalization Plan, Background and Existing Conditions. San Luis Obispo, Coastal Conservancy, Unified Port of San Diego.

assessment was undertaken, this time showing a significant increase in the number of impaired waterbodies. While this dramatic looking jump can be taken to indicate an overall decline in water quality, it is also attributable to increased monitoring. The overall state of water quality is linked to a variety of sources including industrial and military pollution, agriculture, sewage and run-off.

In fact, many public storm drains in San Diego link directly to the sea without any pre-treatment, making urban run-off one of the greatest threats to water quality in the county. In particular, there is concern regarding consumption of seafood contaminated by mercury, arsenic, and PCBs, all of which are routinely found in coastal waters and later show up in the flesh of fish consumed by humans. Water bodies are only counted once each in determining the "number of water bodies with some pollution," though many of these segments contain more than one pollutant. When the number of pollutants in each water body is tallied, the total of impairments rises to 1570.

In an effort to address these issues of water quality, the San Diego Regional Water Quality Control Board is responsible for developing and implementing a restoration plan for each impairment. These plans, referred to as Total Maximum Daily Loads (TMDLs), depend on sophisticated research and monitoring, and are costly and time intensive to implement. As a result, only seven TMDLs are currently in place in the county up from three in 2006. As such, much work remains to be done to ensure clean water for habitat, fishing and recreating exists in the county.

Goal 2.3 San Diego County Food Producers and Processors Employ Practices that Support Animal Welfare

In 2008, sales of livestock, poultry and related products accounted for $95.1 million in agricultural sales in San Diego County. The sector constitutes six percent of total sales in the county.

This relatively small fraction of local agriculture, despite having dropped from nine percent in 1995 to less than two percent in 2005, has been on the rise in recent years. Some of this recovery may be attributable to increasing interest among consumers in local sourcing and the husbandry practices of their meat sources.

The national market share for livestock and poultry raised on organic food supplies or pasture is also increasing at a rapid rate with the Organic Trade Association reporting a 151 percent increase in sales of organic meat and poultry products between 1999 and 2000 alone, with sales of organic milk reaching 1.3 billion in 2007. In addition, organic milk now accounts for 2.7 percent of U.S. market sales for milk.

At the same time, passage of California's Proposition 2 requires that all swine, veal and egg producers be in compliance with new animal husbandry regulations by January 1, 2015. In fulfillment of the state law and customer demand, San Diego County has an opportunity to take advantage of its number one rank in the nation for small and organic farms, while supporting its farmers in practices that promote the health and welfare of animals and humans.

Indicator 2.3a: Number of Animal Producers and Scale of Operation

Background: San Diego's traditionally smaller farm parcels and hilly terrain has made it difficult for livestock producers to compete with increasingly large and consolidated operations both in California's Central Valley and throughout the Midwest. Once a major dairy producer, San Diego lost many of these smaller operations, which happened to be located within river valleys, following implementation of the Clean Water Act in 1972. Additionally, urban encroachment and economies of scale have made it more difficult for small-scale producers to compete.

Conversely, increased demand for local and organic meat products may be responsible for a slight increase in the number of animal and animal product operations within nearly all sectors. Yet as federal

or state certified processing facilities remain scarce, particularly for livestock, the ability to cultivate animal products for local or direct sale remains severely limited. For nearly 20 years, San Diego County has had no USDA certified slaughter facilities, requiring beef cattle producers to travel at least two counties north to Los Angeles for slaughter, and hog producers to travel to San Luis Obispo County.

Though pork slaughter facilities exist in Riverside County, the operation manages such volume that it cannot guarantee the return of a specific animal. Egg producers, which do not necessitate certified slaughter facilities, have experienced greater economic success as evidenced by their return to San Diego County's top 10 commodity list in 2008.

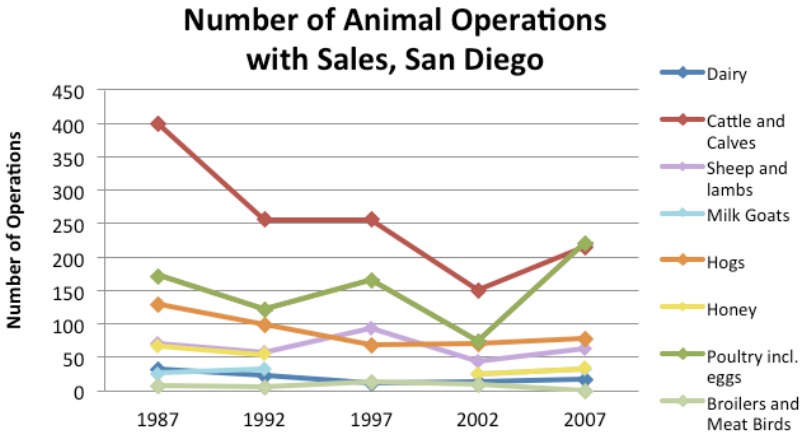


Figure 2.12 Source: United States Department of Agriculture, NASS Census of Agriculture, Cattle and Calves, Hogs and Pigs, Poultry, Sheep and Lambs, Milk Goats, Colonies of Bees and Honey Collected, Aquaculture Sold
Notes: Operations with sales. Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

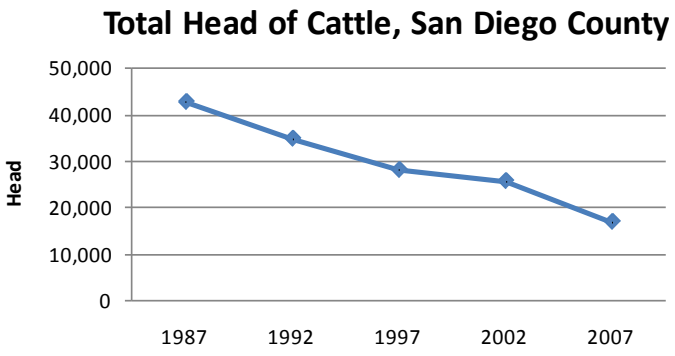


Figure 2.13 Source: United States Department of Agriculture, NASS Census of Agriculture, Cattle and Calves
Notes: Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

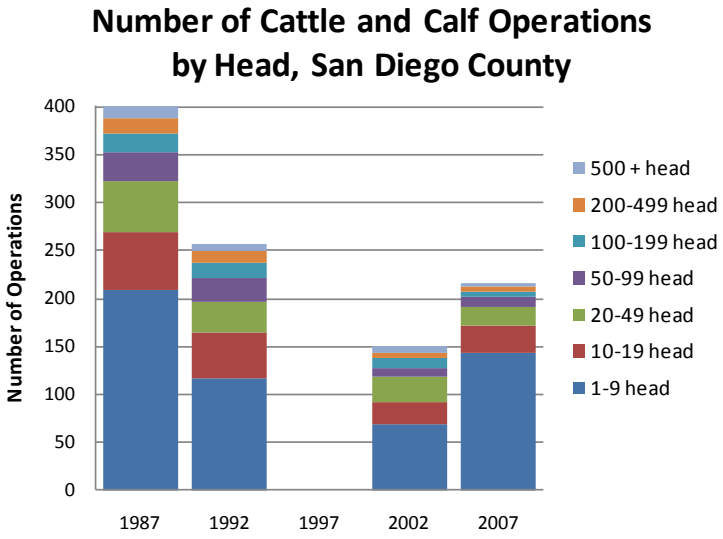


Figure 2.14 Source: United States Department of Agriculture, NASS Census of Agriculture, Cattle and Calves.
Notes: Operations with Sales. Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

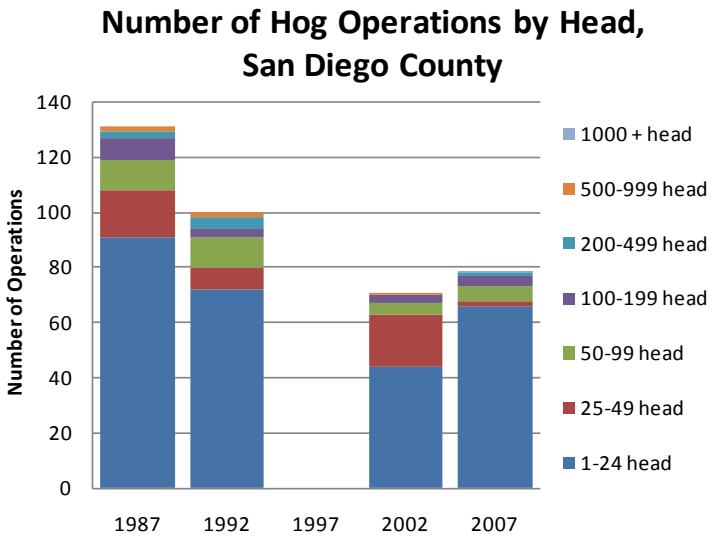


Figure 2.15 Source: United States Department of Agriculture, NASS Census of Agriculture, Hogs and Pigs
Notes: Operations with Sales. Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: Despite the erosion of conventional animal production in San Diego County over the last 20 years, increased interest in local, organic foods has helped to foster some limited growth in smaller-scale production. This trend can be seen particularly in the cattle industry (See figures 2.13-2.15), where after a precipitous decline from 1987 to 2002, the number of operations has again begun to climb. Of these operations, nearly 70 percent had less than ten head of cattle in 2007 as compared to approximately 45 percent in 2002. Similarly, in the hog industry (Figure 2.15), the overall number of producers dropped 48 percent from 1987 to 1997 but began a small rebound thereafter with growth

particularly amongst producers with less than 24 head. Nevertheless, this growing body of small-scale animal producers faces many regulatory and logistical hurdles in the slaughter and processing of their product for local consumption.

Indicator 2.3b: Number of Organic Animal Producers

Background: Organic livestock standards as outlined by the National Organic Program include specific requirements about livestock feed, healthcare and living conditions which are intended to ensure that animals are raised humanely and in a way that takes into account their natural behavior. It also requires that animals be processed in a federal or state certified processing plant in order to be sold as organic. However, with no organic certified processing facility within San Diego County, the cost to transport livestock to slaughter is prohibitive, particularly for the small producer. When combined with the cost of certification, which varies on a sliding scale according to gross farm sales, organic meat production is not yet a viable option for the majority of San Diego animal producers.

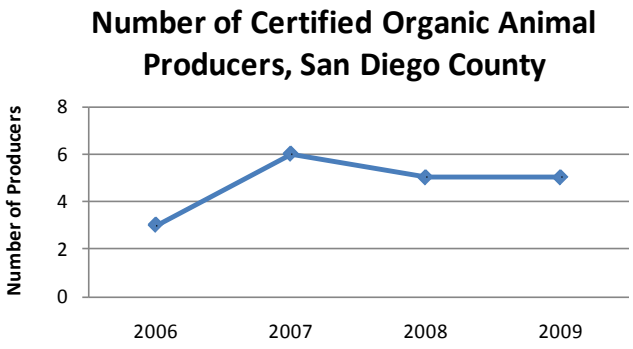


Figure 2.16 Source: San Diego County Agriculture Weights and Measures
Notes: Data available upon request; not available prior to 2006

Trends: Currently there are only five certified organic animal producers in the county, up from three in 2006. Only three of the five producers have livestock, which unlike poultry, require certified processing. With the nearest state or federal processing facility located five counties away for hogs and two counties away for cattle, the inability to locally process beef cattle, hogs, lamb or goat, is likely one of the factors preventing growth in this area of the food system.

Photo courtesy of Susan Ellsworth

Getting Local at the Linkery

While the number of restaurants featuring local fruits and vegetables in their menu offerings has increased somewhat over the last couple of years, local meats have remained hard to come by. The scarcity of local meat products is not for lack of demand, but rather lack of USDA certified slaughter and processing facilities within the county. Yet, The Linkery, with its self-described "farm-driven" cuisine, has devoted considerable time to tracking down what locally and humanely raised meat products it can from within the county. When local products are not available, owner, Jay Porter, or sausage-maker, Michael McGuan, locate the next best, closest option. With a new menu each day identifying the source of nearly all local ingredients, The Linkery serves as a direct connection between consumers and local farmers, while raising awareness about and interest in the local food economy.

For more information on The Linkery, visit www.thelinkery.com

Indicator 2.3c: Number of Animal Operations with a Third-Party Certification Ensuring Humane Treatment

Photo courtesy of Anchi Mei

Background: Citing concerns that organic certification doesn't hold producers to a high enough standard of humane treatment, several alternative third-party certifications have been developed in recent years by private or non-profit organizations. *Certified Humane Raised and Handled* and *Animal Welfare Approved* are two nation-wide programs with more rigorous standards designed to meet the demand of concerned consumers.

Though third-party certifications such as *Certified Humane* and *Animal Welfare Approved* may address loopholes in the National Organic Program's standards that fail to guarantee humane treatment, the proliferation of certifications have the potential to contribute to consumer confusion. Particularly when combined with other labels such as "grass-fed," "free-range" and "antibiotic-free," the individual merits of each criterion may blur.

Trends: As of August 2010 there were no *Certified Humane Raised and Handled* operations in San Diego County and only two *Animal Welfare Approved* operations. Application, inspection, and certification fees, as in the case of *Certified Humane,* as well as an absence of certifiable slaughter operations required by both, may be the primary reason for such low participation rates.

Goal 2.4: San Diego County Prioritizes Food Production in its Allocation of Available Water Resources

San Diego County's semi-arid climate and limited natural water supplies make water one of the area's most precious commodities. The San Diego County Water Authority imports nearly 80 percent of its water supply to meet the demands of a $174 billion economy and 3.2 million residents.

This requires that the water supply be shared among residents, business and industry, and agriculture. Recycled water programs are being explored and implemented at golf courses, school athletic fields, freeway medians, and other industrial settings to ease water usage; however, additional "new water" resources, including conservation, recycling, desalination, and indirect potable reuse require further exploration both for domestic and agricultural use.

Indicator 2.4a: Total Water Use

Background: As San Diego County has grown, so too has the cost of meeting its growing water needs. Currently, nearly 80 percent of the water used in San Diego County is imported, primarily by way of the Metropolitan Water District (MWD), and transferred to 24 member agencies throughout the county, who in turn, distribute it to consumers.

As a result, the availability and cost of water depends largely on the MWD and allocation from its sources, namely Northern California's Bay-Delta and the Colorado River. Until 1999, rates increased approximately 2 percent annually, however in 2000 these increases nearly doubled following an 18 percent rate hike announced in July of 2009.

When combined with significant cuts in supply due in large part to the listing of Delta Smelt as endangered, as well as the phasing out of a discounted rate for agricultural water, the cost of growing many food crops in San Diego County, particularly citrus and avocado, has forced many farmers out of business. At the same time, the County Water Authority has placed more emphasis on local water supply projects including recycled water and desalination, though more work remains before either of these sources are viable solutions to the county's agricultural water needs.

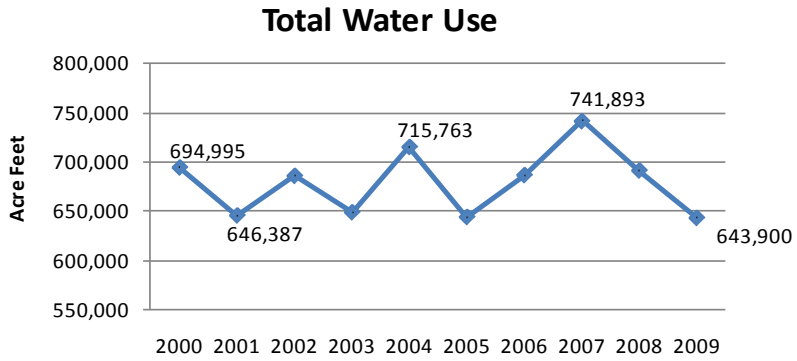


Figure 2.17 Source: San Diego County Water Authority, Annual Report
Notes: Includes M&I, agricultural, and locally produced (i.e. groundwater/recycled).
See notes accompanying Figure 21 for more detail.

Trends: Total water use in the county, including municipal and industrial (M&I), agricultural and locally produced water (i.e. groundwater, desalination), has historically fluctuated in accordance with wet and dry years. However, new mandatory cuts in water as supplied by the MWD, combined with continued rate increases for M&I water have resulted in a significant decline in total water use between 2007's record consumption and 2009, when water consumption reached its lowest level in ten years. The continued phase out of a MWD program which provides agricultural water at a reduced rate to San Diego farmers, also contributed to the overall decline in water use over the last three years.

Additional rate hikes and reduced deliveries from the MWD, as laid out in 2009, have prompted even greater efforts toward increased efficiency and the development of alternative and local sources, including plans by the San Diego County Water Authority to meet 10 percent of total water requirements through desalination by 2020.

As of August 2010, water use for the first eight months of the year was already down 5.2 percent from use over the same period in 2009.

Indicator 2.4b: Urban, Agricultural, and Recycled Water Use

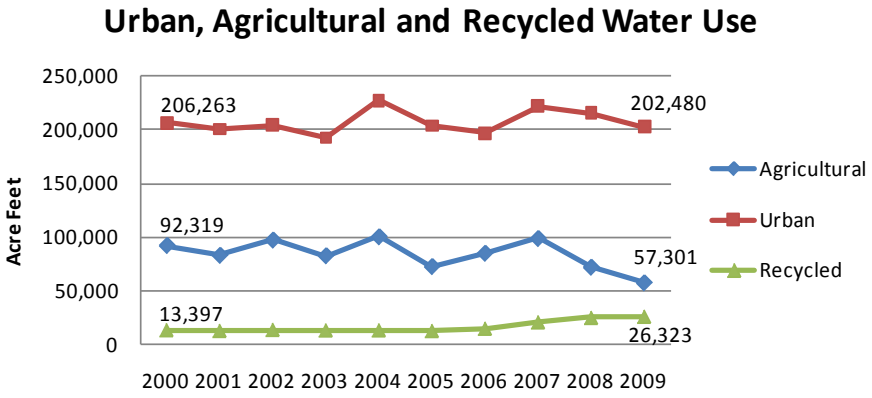


Figure 2.18 Source: San Diego County Water Authority, Annual Report
Notes: "Agricultural" water is water purchased at the discounted "agricultural" rate granted by the MWD. As the discount is phased out, more farmers purchase water at the M&I rate. As such, the M&I use rate will increasingly include agricultural applications, while the current figure for "agricultural" water use underestimates the total volume of water applied to crops. "Urban" water refers to M&I water supplied to the City of San Diego and does not include groundwater or M&I supplied to the rest of the county, which accounts for the larger total water use figures above.

Trends: Agricultural water use has remained fairly constant over the past decade at or around 100,000 acre feet per year until 2008 when mandatory cuts in supply combined with the phase out of the MWD's discounted rate program for agricultural users depressed consumption to approximately 57,000 acre feet (See figure 2.18). The rising cost of water is the most significant factor affecting the livelihood of farmers in San Diego County, where, despite highly efficient water application methods, operations with significant water requirements have begun to go out of business. As a result, nursery crops, for which water costs make up approximately 3-5 percent of total inputs, versus citrus or avocado for which water costs make up 50-60 percent, have rapidly become the dominant industry in the County. Additionally, in light of the phase out of the discounted agricultural rate, a growing number of farmers have begun to transition to M&I water at $922 an acre foot versus the discounted rate of $699 an acre foot.

Photo courtesy of Susan Ellsworth

Urban water use, for which we use the M&I water use data for the City of San Diego, has remained relatively level despite rising costs, population growth, and increasing use by farmers in lieu of subsidized "ag" water. This is attributable to a variety of factors including a citywide conservation campaign, efficiency improvements in buildings and landscaping, and finally, mandatory cutbacks. Urban water use in San Diego County has decreased from 185 gallons per capita per day in 2007 to 164 in 2009.

Nevertheless, residential use makes up about 60 percent of total water use as compared to 10.2 percent for agriculture and 14.2 percent for commercial and industrial uses.

Across the nation, by comparison, agricultural water use is much higher, at approximately 80 percent. Recycled water use has approximately doubled in the last ten years but still makes up only a small fraction of available water. Most recycled water is produced in lower-lying urban areas, making it difficult to transport to higher elevation inland locations where much of the county's agriculture takes place. Additionally, its higher salinity makes it unsuitable for many agricultural applications.

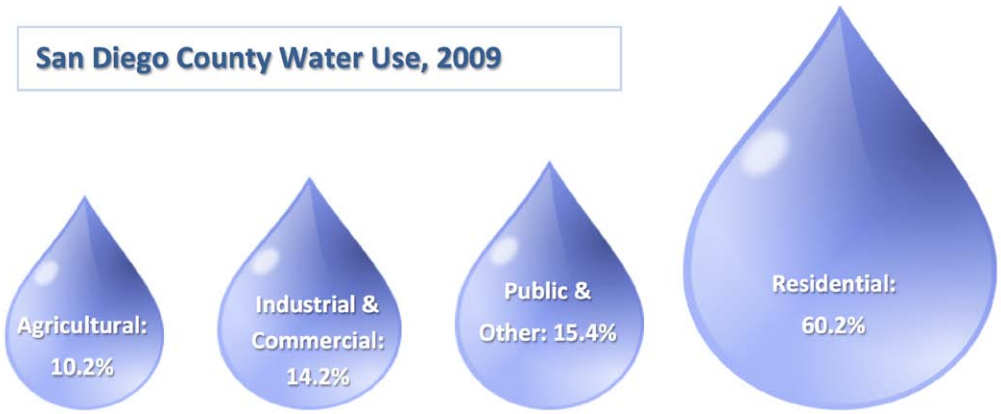


Figure 2.19: San Diego County Water Authority 2009 Annual Report

Goal 2.5: San Diego County Recycles its Organic Wastes Locally and Makes Compost Available for Local Food Production

The Environmental Protection Agency reported that Americans generated 249.6 million tons of municipal waste in 2008. More than two-thirds of this garbage is an assortment of organic materials—yard trimmings, paper and cardboard, wood, and food scraps.[68] Food waste in particular, the majority of which still finds its way into landfills, increased by 14.5 percent between 1990 and 2000 and another 10 percent by 2007 (Canning, Charles et al. 2010). The breakdown of food waste and other green matter in landfills generates methane, a greenhouse gas 21 times more potent than carbon dioxide in contributing to global warming. In the United States, landfills account for the largest human-related contribution to methane gas emissions— 34 percent.[69] With new state mandates requiring a reduction of greenhouse gases (GHG) to 1990 levels by 2020, local governments are actively working to identify methods for rolling back their contribution to climate change. The recycling of organic

68 Environmental Protection Agency, U. S. (2010, March 24, 2010). "Organic Materials." Wastes - Resource Conservation - Common Wastes & Organic Materials Retrieved August 10, 2010, from http://www.epa.gov/epawaste/conserve/materials/organics/index.htm.
69 Environmental Protection Agency, U. S. (2010, August 24, 2010). "Basic Information About Food Waste." Wastes - Resource Conservation - Common Wastes & Materials - Organic Materials Retrieved September 29, 2010, from http://www.epa.gov/epawaste/conserve/materials/organics/food/fd-basic.htm.

waste, particularly from food sources, has the potential to significantly diminish GHG emissions while providing local farms and gardens with an inexpensive nutrient source for soil improvement.[70] Community-based composting initiatives are already in operation in Sonoma and Santa Cruz County, California as well as King County, Washington and the City of Los Angeles, California.

Indicator 2.5a: Percent of Green Wastes Recycled; Access to Finished Compost or Woodchips

Photo courtesy of Susan Ellsworth

"If we composted all the biomass in San Diego County where would it go? If it goes into agriculture, there is sufficient agricultural land, primarily in citrus and avocado that could take compost forever, on a sustainable basis."

– Wayne Williams, Program Coordinator Solid Waste Planning and Recycling Section, Department of Public Works, County of San Diego.

Background: According to the 1999-2000 Waste Composition Study undertaken for the City of San Diego, food makes up the third largest form or residential waste, which, when combined with organic yard waste, makes up 27.3 percent of the total waste stream for the County's largest metropolis.[71] Most county jurisdictions require that residential green waste be recycled in an effort to comply with state laws requiring the diversion of 50 percent of solid waste from landfills, but nevertheless, more than 83,000 tons of food is wasted in San Diego County households each year.[72]

Currently, the largest compost facility in the county with the ability to turn organic waste into useable compost is the City of San Diego's Miramar Greenery Recycling facility, located at the Miramar Landfill. While a handful of other private compost facilities exist in the county, none operate on the scale of Miramar with the ability to process 690 tons of green waste each day. Miramar is also the only facility in the county and one of twelve across the state, currently composting food waste, which carries with it a unique set of collection, health and management challenges. However, given that demand for

70 Environmental Protection Agency, U. S. (2008, October 7, 2008). "Environmental Benefits." Wastes - Resource Conservation - Reduce, Reuse, Recycle - Composting Retrieved August 2, 2010, from http://www.epa.gov/epawaste/conserve/rrr/composting/benefits.htm.
71 Cascadia Consulting Group, I., I. Sky Valley Associates, et al. (2000). Waste Composition Study 1999-2000. San Diego, City of San Diego Environmental Services Department: 136.
72 Ibid.

compost currently outstrips the availability of source separated organic waste, food waste stands as the most significant untapped resource for increased compost production.

In a region where the cost of water is one of the most significant barriers to a thriving local food system, the ability of compost to enhance the water holding capacity of soil, sometimes up to 50 percent, has tremendous potential. Additionally, fungus present in compost is one of the best methods for combating Phytophthora root rot, a major disease affecting avocado plants. Similarly, as the prevalence of lawns decreases due to increased awareness of water scarcity, demand for woodchips, either as groundcover or in garden beds is also on the rise.

As of October 2010, there were ten composting and mulching facilities in San Diego County, with processing capacities ranging from 40 tons per day at the Enniss Facility, to 690 tons per day at Miramar Landfill's Greenery Facility.

The rate of compost generated at the Miramar facility, the largest in the county, as well as the composition of its organic waste, stands as the best available proxy for overall compost production and use in the county.

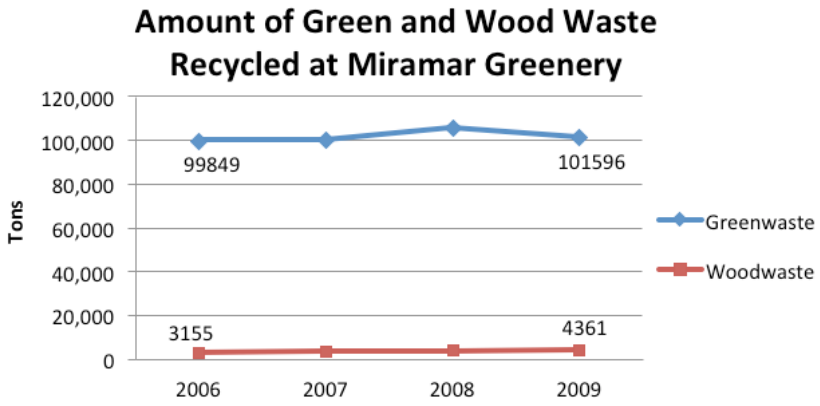


Figure 2.20 Source: City of San Diego Environmental Services Department

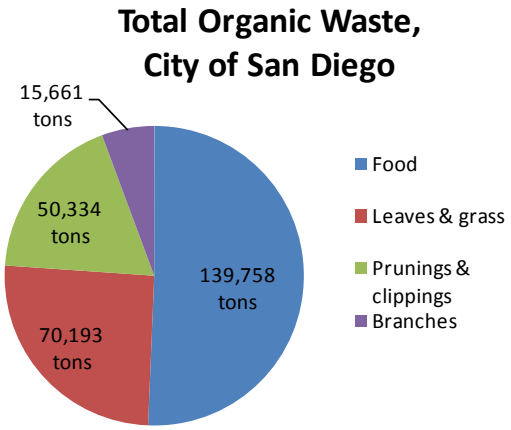


Figure 2.21 Source: City of San Diego Environmental Services Department, 1999-2000 Waste Composition Study

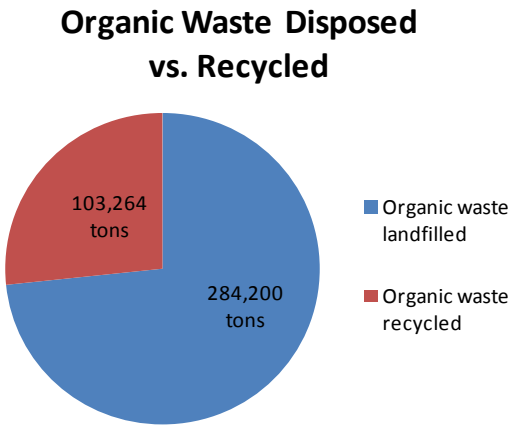


Figure 2.22 Source: City of San Diego Environmental Services Department, 1999- 2000 Waste Composition Study
Notes: "Organic waste landfilled" is derived from the application of 1999/2000 waste composition percentages (20.3% organic) to the 2010 total waste figure for the City of San Diego. "Organic waste recycled" is derived from Miramar 2010 data.

Indicator 2.5b: Commercial Sales or Donations of Compost and Mulch

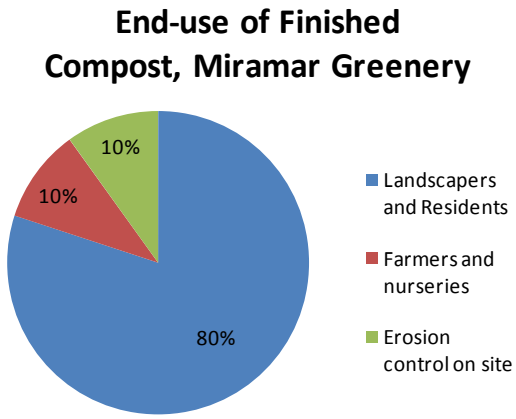


Figure 2.23 Source: City of San Diego Environmental Services Department
Notes: Data not publically available

Trends: According to waste management representatives both within the County and the City of San Diego, demand for finished compost far outstrips the amount of organic waste making its way to compost facilities. Demand derives primarily from landscapers, followed by farmers and then homeowners and public works projects. Recognizing its value for enhanced soil composition and water retention, many more farmers have expressed interest in using compost, however are unable to pay the present cost charged by most private compost manufacturers.

Despite this growing demand, the amount of organics recycled at the Miramar Greenery over the last four years, which serves as the best proxy for unavailable countywide data, has remained fairly constant at approximately 100,000 tons per year, with 100 percent of source-separated green waste arriving at the facility converted into compost. Source separated green wastes are those organic wastes,

generally wood and yard waste, that are separated from other household waste prior to pick up. With the exception of a pilot food composting program underway at Miramar, all organic household waste other than wood or yard waste, is currently sent to the landfill.

Of those wastes that are recycled, 90 percent of the finished product is used off site, either by landscapers, nurseries or to a lesser extent, farmers. The remaining ten percent is used for slope stabilization and erosion control on the landfill itself. The stability of these numbers over time is largely attributable to the availability of source-separated green wastes and the cheaper price to dispose of greenery as Alternative Daily Cover at other facilities. However, in an effort to increase the amount of organic material available for compost, while diverting a greater percent of green wastes from the landfill, Miramar plans to expand its food-waste composting program, which currently serves a handful of large vendors in the County. Currently, 16.3 percent of waste disposed of in landfills is organic waste suitable for recycling, equaling approximately 284,200 tons annually.

Figure 2.24 Source: County of San Diego, Department of Public Works Solid Waste Planning and Recycling (2008

An increase in the number and capacity of compost facilities across the county is needed both to meet demand and ensure that as much organic material as possible is diverted out of landfills. In addition to expansion, decentralizing compost facilities such that each city or jurisdiction has its own operation is also an idea under discussion. Given that transportation of composted material is another obstacle to utilization, distributed facilities would help to better meet the needs of small scale and residential consumers without access to trucks or haulers. However, county laws that characterize composting as an industrial rather than agricultural activity have made establishing new facilities very difficult, as has opposition from communities located adjacent to potential new facilities.

Goal 2.6: San Diego County Reduces Food System-related Greenhouse Gas Emissions Through its Food System

Leading researchers estimate that 19 percent of total energy use in the U.S. is attributable to the systems that produce, process, distribute, consume, and dispose of our food.[73] Given that 85 percent

73 Pimentel, D., S. Williamson, et al. (2008). "Reducing Energy Inputs in the US Food System." Human Ecology **36**(4): 459-471.

of that energy is derived from greenhouse gas (GHG) intensive fossil fuels, our food system is one of the major contributors to global climate change. While research differs on the impact that eating locally may have on reducing our carbon footprint, it is generally agreed that certain farming practices, transportation methods, as well as processing and methods of consumption contribute more to GHG emissions than others. According to researchers at Carnegie Mellon University, 83 percent of emissions in the food system occur before food leaves the location of original production.[74] Transportation of food crops from farm to table is also being scrupulously studied and is thought to contribute up to 11 percent of the food systems' emissions.[75] By promoting sustainable farming practices that limit fossil fuel intensive practices and inputs, San Diego County can lead the way in leveraging the capacity of local agriculture to support a healthy environment.

Indicator 2.6a: Fossil Fuel Expenditures

Background: The burning of fossil fuel, including petroleum, natural gas and coal, is one the primary contributors to global warming in the U.S. and around the world. Modern agriculture and its corollary distribution mechanisms have come to rely heavily on these fuels, thus contributing significantly to global greenhouse gases (GHGs). However, beyond the often-discussed concept of "food miles", farm equipment, irrigation, refrigeration, greenhouses, and most notably, animal waste management and the use of synthetic fertilizers, are responsible for much of the GHG burden within agriculture. In fact the use of nitrogen based fertilizers makes up nearly 75 percent of national nitrous oxide emissions, a potent greenhouse gas, while livestock management, including waste, makes up nearly a third of total methane emissions.[76] Nevertheless, the type of commodity under production as well as the method of cultivation plays a major role in the degree to which agriculture contributes to global warming. In San Diego County, where development is one of the primary alternative uses for farmland, perennial cropland, and ecologically managed annual cropland can provide valuable carbon sequestration when compared to energy consuming residential or commercial uses.

Photo courtesy of Susan Ellsworth

74 Weber, C. and S. Matthews (2008). "Food-Miles and the Relative Climate Impacts of Food Choices in the United States." Environmental Science and Technology **42**(10): 3508-3513.
75 Ibid.
76 Energy Information Administration, U. S. (2009). Nitrous Oxide/Methane Report Emissions of Greenhouse Gases Report, Energy Information Administration, Department of Energy.

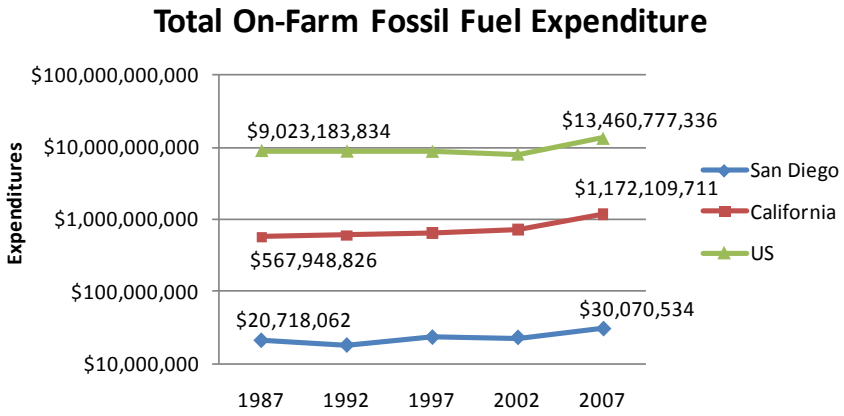


Figure 2.25 Source: United States Department of Agriculture, NASS, Census of Agriculture, Farm Production Expenses
Notes: All data adjusted to 2010 dollars.[77] Data collection methods changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

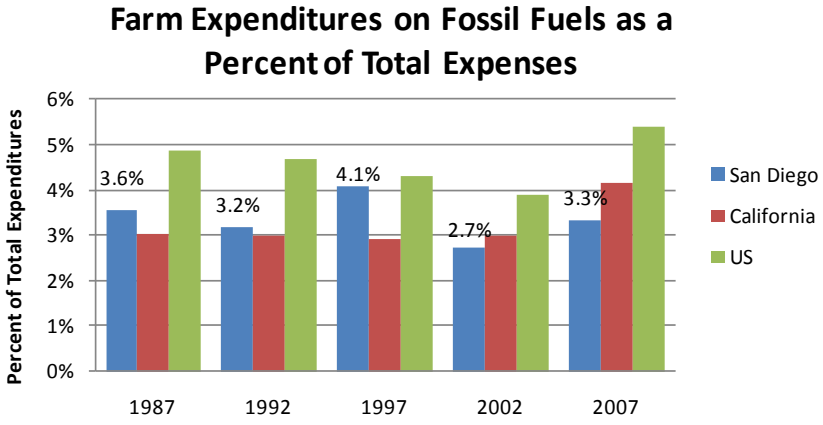


Figure 2.26 Source: United States Department of Agriculture, NASS, Census of Agriculture, Farm Production Expenses
Notes: Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: Total on-farm fossil fuel use in San Diego County, as measured in expenditures, has risen only slightly over the last twenty years from $21 million to $30 million. However, viewed as a percentage of total farm expenditures, fossil fuel purchases declined during the same period, from 3.6 percent to 3.3 percent as compared to California and the Nation, which both experienced growth in this area.

It is important in interpreting these trends, to understand that these figures capture only expenditures for fossil fuels used directly on the farm through activities related to crop production. It does not take into account upstream fossil fuels embodied in goods such as animal feed, synthetic fertilizer, or the transportation of inputs to the farm, or downstream fossil fuels once the product has changed hands.

77 Characterized as "gasoline, fuels, and oils" after 2002 and as "petroleum products" before 2002. 1997 value represents adjusted value according to USDA update. 2002 data is derived from sampling, whereas 2007 data is actual complete gathered data

Though no data is readily available as to the specific end-use of these fossil fuel purchases in San Diego County, it is likely that most is attributable to tractor and other farm vehicle use such as for the transportation of equipment and crops, aerial pesticide applications and non-electric irrigation pumping. In light of its significant perennial fruit and nut crop base as well as nursery crops, fossil fuel use for cultivating soil is less substantial in the county, by comparison to other regions where annual crops require more frequent plowing, tillage, seeding and mechanical harvest. Similarly, its warmer temperatures also reduce costs for non-electric greenhouse heating during the cooler winter months as compared to many colder regions.

Percent expenditures across the nation, which take into account these more fossil fuel intensive cultivation and harvest practices, as well as diesel powered crop drying, refrigeration for dairy and other animal products, as well as non-electric greenhouse heating, increased from 4.9 percent in 1987 to 5.4 percent in 2007. In California, fossil fuel expenditures as a percent of total expenditures, though lower than for the nation, experienced a more significant increase from 3 percent in 1987 to 4.2 percent in 2007, again due to factors such as major crops and temperature.

Indicator 2.6b: Commercial Fertilizer Expenditures

Background: A tremendous amount of energy is bound up in the production and application of synthetic fertilizers such as urea and ammonium nitrate, which have become central to farming practices across the nation. Such fertilizers, which supply readily available nitrogen as well as other nutrients to food crops, depend on fossil fuels both in their production as well as their transportation to the point of application. More significantly, the rate at which the nitrogen is made available in the field results in greenhouse gas emissions in the form of nitrous oxide. By comparison, organic fertilizers, particularly compost or cover crops, have less readily available nitrogen resulting in far fewer nitrous oxide emissions. Compost, in particular, provides other benefits to the soil including improved soil tilth, water holding capacity and a greater diversity of plant nutrients without the same risk of leaching into groundwater.

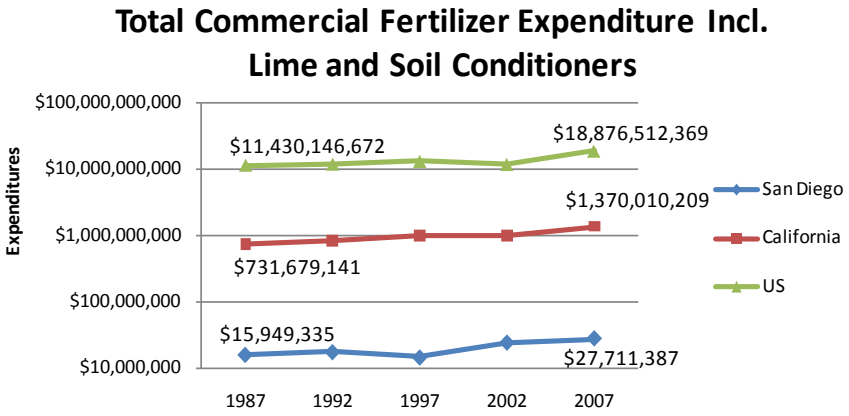


Figure 2.27 Source: United States Department of Agriculture, NASS, Census of Agriculture, Farm Production Expenses
Notes: All data adjusted to 2010 dollars. Includes organic fertilizer. Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data. Data table listed as "commercial fertilizer" prior to 1997 and as "

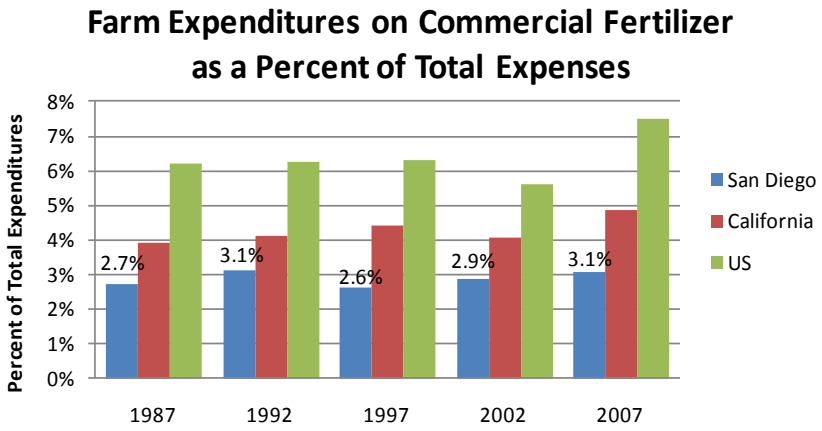


Figure 2.28 Source: United States Department of Agriculture, NASS, Census of Agriculture, Farm Production Expenses
Notes: Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: Total expenditures on commercial fertilizer in San Diego County increased markedly during the 20 years from 1987 to 2007 from nearly 16 million dollars to nearly 28 million. Expenditures also increased as a percent of total farm expenses from 2.7 percent to 3.1 percent. Given that the data includes purchases of organic fertilizers including lime and soil conditioners, in addition to petroleum based fertilizers, the figure is not an exact proxy for fossil fuel use in the food system particularly in a county with so many organic farms. Nevertheless, the figures do not include compost, and as such demonstrate an overall trend in fertilizer use, the majority of which is comprised by greenhouse gas intensive synthetic fertilizers.

Additionally, few farm operations in the county produce their own compost, meaning that the majority of compost used on farms is purchased from private compost manufacturers. The combination of significant travel distances given that most compost facilities are located near the coast, the bulk of material to be moved, and product cost, have resulted in relatively low rates of compost use despite a myriad of potential benefits both to the environment and the grower.

Vision 3: Thriving Communities and Sustainable Economic Growth

National Trends

Our nation's food system is a complex web of production, transportation, processing and distribution mechanisms all of which offer opportunities for economic growth and employment. Nevertheless, as the industrial base of our nation continues to erode, low-paying service sector jobs, many of them within the food system, are increasingly taking their place. In 2009, the annual mean wage for food preparation and serving occupations (including fast food), the third largest private sector occupation in the nation, was $17,190 which is below the federal poverty guideline for a family of three ($18,310).[78] The mean for waiters and waitresses, the fifth largest occupation, was $20,380. Occupations in farming, fishing and forestry, by comparison, have the lowest percent of total employment of all major occupational groups at less than 1 percent, as well as one of the lowest mean hourly wages, at $11.53 an hour ($23,990 annually).[79] At the same time, the average age of farmers (principal operators) is on the rise, suggesting further decline in employment figures in the future

By comparison, temporary farmworkers, of which there are more than 700,000 currently in the state of California, earn a median annual income of $7,500-$9,999,[80] despite providing 85 percent of the labor required for the state's agricultural output.[81]

Within the largest segments of the food sector, including food preparation and serving at both full service and limited service establishments, turnover can run as high as 200 percent a year with employees often relying on tips to supplement the lowest wages allowable by law. Health and retirement benefits for workers in this sector are rare as is union representation resulting in an unstable form of livelihood for a growing portion of U.S. workers.

San Diego County Trends

Increasing procurement of locally produced food products is one avenue for supporting the local food economy and growing employment within the food system. Currently, interest in local sourcing, both within households and institutions such as schools, is on the rise. Venues facilitating this connection, such as farmers' markets and Community Supported Agriculture programs (CSAs) continue to increase in number or scale, while infrastructure and sourcing relationships required to connect local farmers to large-scale customers are in the process of development, with the first district-wide farm-to-school program beginning in 2010.

Nevertheless, an increase in direct sales throughout the county has not proved sufficient to draw many new farmers in the industry. Though the number of farm operations has increased somewhat, many of the operators of these new farms are not full time farmers, supplementing their farm income with a second occupation or growing crops for personal consumption. As a growing percentage of farm labor is undertaken by temporary or contract labor, the number of paid farmworkers in the county is more than twice that of principal farmers at 21,114 as of the last data year in 2007. The majority of these workers are foreign born, often undocumented migrants from Mexico or other Latin American countries.[82]

78 Source: "Occupational Employment and Wages By Ownership", May 2009, BLS News Release, Table 1: Largest occupations in the private sector, May 2009. Retrieved from http://www.bls.gov/oes/#highlights.
79 Source: "Occupational Employment and Wages", May 2009, BLS News Release, Table 1: National employment and wage data from the Occupational Employment Statistics survey by occupation, May 2009. Retrieved from http://www.bls.gov/oes/#highlights.
80 National Latino Research Center (2010). Food Needs: A Rural and Farmworker Community Snapshot. San Marcos, California State University, San Marcos.
81 Villarejo, D., D. Lighthall, et al. (2000). Suffering in Silence: A Report on the Health of California's Agricultural Workers. Davis, California Institute for Rural Studies.
82 Ibid.

On the other hand, an increasingly high percentage of new farm operators are non-white, with the majority identifying as Hispanic and Latino. The number of new entries into fishing has also declined, though much more precipitously, due in large part to increased regulation within the industry as well as competition from abroad.

Wages within fishing and farming reflect the challenges faced by both industries. For fishing, what few fishermen and fishing related workers remain in San Diego County, earn approximately $40,026 a year, reflecting the increased value of domestically caught fish as a result of heightened regulations and growing consumer awareness.[83] By comparison, the average farmer earns only $28,000 a year, up from $26,000 just nine years ago. Food service workers, however, despite a steep increase in the overall number of jobs, earn the least of all food system sectors, at approximately $17,500 a year or $9.50 an hour. Both temporary farmworkers and those employed in food service, which make up the majority of food system employment, tend to be under-compensated while working in unstable and often physically labor intensive environments that rarely offer benefits such as health insurance or retirement savings.

Goal 3.1: Local and Regional Procurement and Sale of Food Grown in San Diego County Increases

Studies across the country have identified the impact that local foods can have on local economies. A recent study on New York City's food retail environment revealed more than $741 million in demand for local produce, meat, dairy, poultry, and eggs,[84] while a shift in 20 percent of consumers' preferences to local foods in Seattle would result in an annual $500 million economic boost for King County.[85] The adoption of local food procurement practices and sourcing can have a significant impact on a community's bottom-line as evidenced by a 2009 Civic Economics report which found that independent businesses are not only more reliable, but generate twice the local economic impact of big-box retailers.

Photo courtesy of Sadie Sponsler

Indicator 3.1a: Number of Farm to School Programs

Farm to school programming, as described in Indicator 1.2d is one of the most significant avenues for increasing local procurement and sale of food within San Diego County. In a county with 42 school districts encompassing 747 schools and 496,702 students, direct sourcing could provide fresh, less processed foods to school children while supporting local farmers and economies.

For more information on farm to school programming in San Diego County, see indicator 1.2d.

83 Lisa Wise Consulting, I. (2009). Port of San Diego: Commercial Fisheries Revitalization Plan, Background and Existing Conditions. San Luis Obispo, Coastal Conservancy, Unified Port of San Diego.
84 Markey Ventures, Inc. (2005) "A Study on Development of New York City Wholesale Farmers' Markets." Executive Summary: 8
85 Sontag, V. (2008). Why Local Linkages Matter: Findings from the Local Food Economy Study. Seattle, Sustainable Seattle.

Photo courtesy of Anchi Mei

Indicator 3.1b: Number of Farmers' Markets and Number of Certified Vendors

Farmers' markets provide an increasingly robust avenue for local fruit, vegetable and animal product sales within San Diego County. Not only do they allow farmers to sell their products at a self-determined price, they also facilitate valuable connections between consumers and growers, which in some cases generate new sales avenues beyond the farmers' market itself. The number of markets has increased substantially over the last ten years in the face of growing demand, however, the number of farmers certified to sell at these markets has not kept pace. As such, a relatively stable number of farmers find themselves spread between an increasing number of markets, some of which have not yet established a robust consumer base.

For more information on farmers' markets in San Diego County, see indicator 1.1b.

Indicator 3.1c: Direct Farm Sales

Direct farm sales, such as those that take place within Community Supported Agriculture Programs (CSAs), farmers' markets, or at u-pick operations or farm stands, are sales of agricultural products by producers directly to consumers. Such sales help to expose consumers to a greater diversity of food crops while simultaneously providing insight into the practices involved in production. Often, sales of food products directly to consumers help to create customer loyalty on which many producers, particularly smaller scale producers, depend. Throughout San Diego County, direct sales, though still a small percentage of overall sales (1.1 percent), have grown significantly over the last ten years and are nearly twice that of California.

For more information on direct farm sales in San Diego County, see indicator 1.1c.

Indicator 3.1d: Number of Community Supported Agriculture Programs

Community Supported Agriculture Programs (CSAs) are another direct marketing mechanism, whereby consumers purchase a share of a farmer's yield, which is then distributed or picked up at a central location, on a regular basis throughout the season. CSAs are considered to be of mutual benefit to the producer and consumer in that the share is purchased in advance of product distribution thus helping to spread risk more equally between the producer and consumer. Additionally, CSA's serve as one of the most successful methods for increasing access to locally grown foods while circumventing larger traditional produce distributors which generally do not cater to the small grower. The consumer enjoys the taste and health benefits of fresh, local produce while developing a deeper understanding of seasonality and a range of products he or she might not otherwise have exposure to. Within San Diego

County, as well as the rest of the U.S., interest in CSAs and thereby the number of farms offering these programs has increased substantially. In San Diego, the 14 CSAs currently in operation are generally fully subscribed, however, as a growing number of farms pursue this model, it is possible that demand for CSA shares may fall.

For more information on CSAs in San Diego County, see indicator 1.1d.

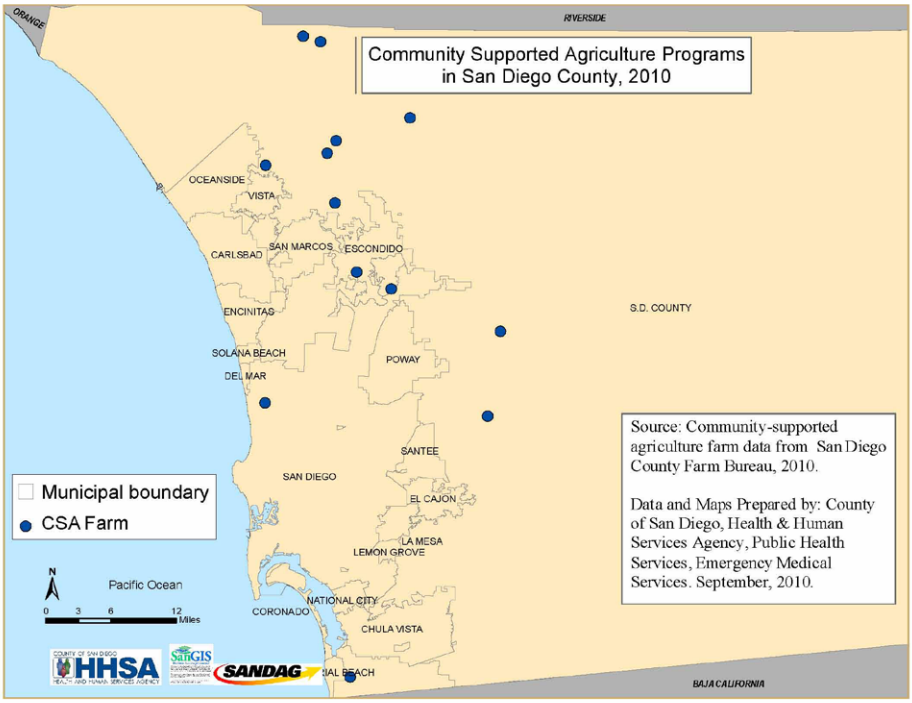


Figure 3.1 San Diego County Community Supported Agriculture Programs, 2010

Goal 3.2: Fishing, Farming, and Ranching Increases for Diverse Groups in San Diego County

San Diego County lands and waters have played an important role in the economic livelihood of residents for decades. As recently as 1980, San Diego County boasted one of the world's largest tuna fleets, while its numerous microclimates and abundant sun has made it one of the nation's leading producers of specialty crops such as citrus and avocado.[86] Yet in 2002, the average San Diego farmer was 60 years of age, suggesting a lack of interest in agriculture among the next generation of San Diegan's, while the once vibrant fishing community has dwindled to a fraction of its size just 30 years ago. If food production within San Diego County hopes to once again provide a viable livelihood while meeting the needs of its growing and diverse population, resources must be devoted to supporting farmers, ranchers and fishermen and women in transitioning to a new landscape of food production; one in which resources are scarce and competition increasingly consolidated. Additionally, the agrarian knowledge and skills of new immigrants and refugees— farming's fastest growing population—could be leveraged to create viable jobs and enhance San Diego County's rich farming tradition.

86 Schoell, M. (1999). "The Marine Mammal Protection Act and its Role in the Decline of San Diego's Tuna Fishing Industry." The Journal of San Diego History **45**(1).

Indicator 3.2a: Number of Farms and Size of Farm Operation

Since 1978, the number of farms in San Diego County has increased by 31.5 percent, with the majority of growth taking place in farms of less than 50 acres. Nevertheless, in the context of rising water costs, many of these operations are not producing food crops, but rather high value nursery crops for export around the county. Within food and animal production sectors, an increasing number of farmers report supplementing their on-farm income with that of off-farm employment.

For more information on the number of farm operations within San Diego County, see indicator 2.1a.

Indicator 3.2b: Tenure on Present Farm

Background: As the average age of farmers across the nation continues to rise, the need for new farmers to maintain our domestic agricultural base has become an issue of growing national recognition. In fact, it is estimated that half of our current farming population will retire within the next decade.[87] Nevertheless, in an increasingly consolidated industry, where farmers have come to rely on costly external inputs, such as fertilizer, pesticide, machinery and even seeds, succeeding as a new or small farmer can be difficult. These challenges are compounded by markets that demand high volumes and consistency while also requiring liability insurance to secure against food safety concerns. Defined by the USDA as a farmer with less than ten years of experience, a beginning farmer also faces particular challenges with regard to lack of available land to lease or buy.[88] Across the nation, beginning farmers, who tend to be younger and more ethnically diverse than established farmers, have the potential to help ensure the longevity of our agricultural system in the face of a changing environmental and economic landscape. In the absence of data quantifying the number of new or beginning farmers, the measure of years spent on a given farm is used here as a proxy.

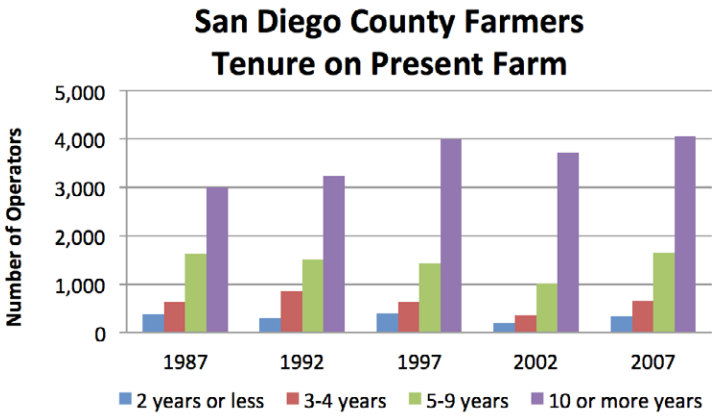


Figure 3.2 Source: United States Department of Agriculture, NASS, Census of Agriculture, Tenure, Number of Operators, Type of Organization, and Principal Operator Characteristics
Notes: Asked only of principal operators. 10 years or less is considered a beginning farmer by the USDA. Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

87 USDA. (2009, Sept. 2009). "Farms and Community: Beggining/New Farmers." Retrieved August 24, 2009, from http://afsic.nal.usda.gov/nal_display/index.php?info_center=2&tax_level=2&tax_subject=301&topic_id=1442.
88 Ahearn, M. and D. Newton (2009). Beginning Farmers and Ranchers, U.S. Department of Agriculture, Economic Research Service.

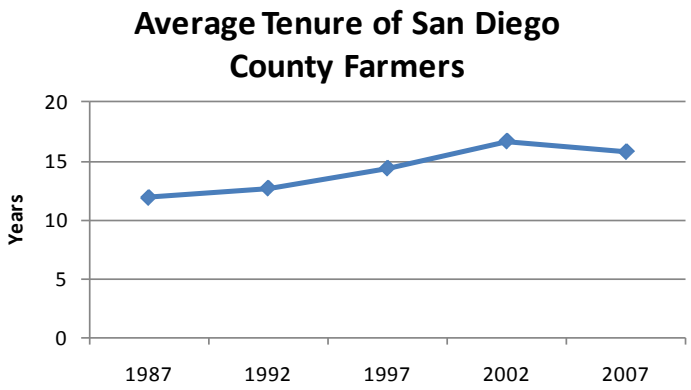


Figure 3.3 Source: United States Department of Agriculture, NASS, Census of Agriculture, Tenure, Number of Operators, Type of Organization, and Principal Operator Characteristics
Notes: Asked only of principal operators. Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: Within San Diego County, the average number of years spent by the principal operator on his or her current farm was 15.8 in 2007, up from 11.9 just twenty years ago (see figure 3.3). Though the number of beginning farmers, those with less than ten years of experience on their current operation, has remained relatively stable overall for the last twenty years, the number of farmers with more than ten years of experience has grown significantly, from less than 3,000 in 1987 to slightly more than 4,000 in 2007 (figure 3.2). This growth indicates farmers are remaining on their farms for longer and may also signify that new entries into farming are not doing so as a first career, but rather, as a lifestyle change mid-career. As of 2007, 61 percent of San Diego farmers reported an occupation other than farming as their primary source of income. These trends, while similar to those seen across the nation, are somewhat accentuated by the challenging agricultural conditions in the county.

Data on farm tenure in San Diego County is available only for principal farmer and not hired or seasonal farmworkers. For hired farm labor, the duration of stay on a particular farm is measured in terms of days per season and divided between workers spending less than 150 days on a given farm or workers who spend more than 150. Within San Diego County, the number of farmworkers within each category are roughly equal, with approximately 11,000 spending more than 150 days on a particular farm and 10,000 spending less than 150 days.[89]

Indicator 3.2c: Average Age of Farmers

Background: The number of farms in the U.S. peaked in 1935 at approximately 6.8 million operations and has declined steadily in the intervening years to 2.2 million in 2007. Nevertheless, increased farm mechanization and consolidation has allowed this declining number of operations to continue to meet the demands of a growing population, all with fewer and fewer farmers.[90] As a result of this consolidation, an increasingly older population owns or operates many of our nation's farm operations, while poor income prospects for new or small farmers continues to act as a disincentive for the younger generation to participate in agriculture. With the majority of farmers in the U.S. now over the age of 57, up from 39 in 1945, the stability of our domestic agricultural base is increasingly placed into question.

89 United States Department of Agriculture, NASS, Census of Agriculture. Table 7: Hired Labor
90 Environmental Protection Agency, U. S. (2009). "Ag 101: Demographics." Retrieved August 23, 2010, from http://www.epa.gov/agriculture/ag101/demographics.html.

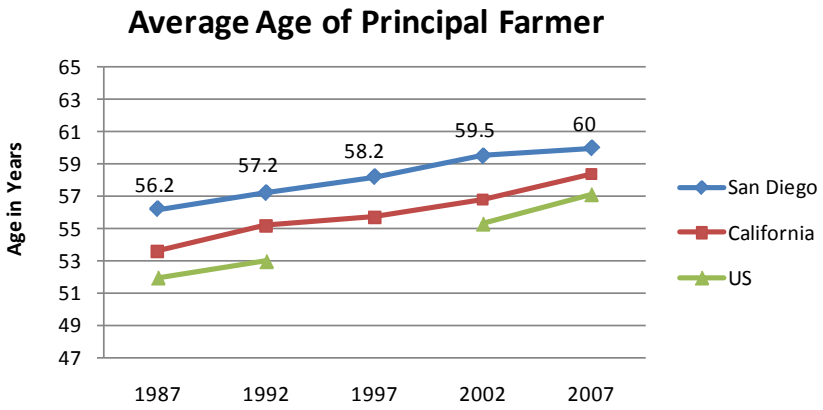


Figure 3.4 Source: United States Department of Agriculture, NASS, Census of Agriculture, Table 40: Tenure, Number of Operators, Type of Organization, and Principal Operator Characteristics Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: The average age of farmers in San Diego County in 2007 was 60 years (see figure 3.4); nearly 3 years older than for the nation as a whole and one and a half years older than for California. This figure has increased by approximately one year for each Census period (five years) demonstrating that despite some increase in the number of farm operations in the county, new farmers are not significantly younger than existing farmers. As within the nation, this trend is largely attributable to the perception that farming is difficult and often not financially rewarding. Particularly in San Diego County, where the cost of water and value of land places even greater monetary challenges on farm operations, young people may be less likely to consider it as a vocation. The implications of an aging agricultural base are increased food insecurity as fewer and fewer young people know how to farm, as well as increased conversion of farmland into non-agricultural uses.

Indicator 3.2d: Number of Farms by Race of Principal Farmer

Background: The history of racial, ethnic and gender diversity within agriculture is complex and changing. Native Americans, thought to have been cultivating crops in the U.S. for more than 4000 years,[91] now make up less than 2 percent of total farmers, while black operated farms, which once made up 14 percent of farms, now constitute less than 1.5 percent.[92] As of the last Census of Agriculture, approximately 1.8 million out of 2.2 million farms in the U.S., or 82 percent, identified a white male as principal farmer.

Nevertheless, the number and percent of farms operated by all racial groups (American Indian, Black, Asian and Hispanic) increased between 2002 and 2007, as did the number and percent of woman run operations.[93] In fact, the increase in non-white farmers exceeded that of white operators in the most recent census, indicating a small increase in the overall diversity of farm management and ownership. Such diversity is linked to diversity in cultivation techniques, and crops, particularly in the case of immigrant farmers who bring different skill sets that may complement and enhance the techniques of established farmers.[94]

91 Boyer, P., C. Clark, et al. (2009). The Enduring Vision: A History of the American People to 1877. Boston, Wadsworth, CENGAGE Learning.
92 U.S. Department of Agriculture, N. A. S. S. (2007). 2007 Census of Agriculture: Demographics, USDA.
93 Ibid.
94 USDA. (2009, Sept. 2009). "Farms and Community: Beggining/New Farmers." Retrieved August 24, 2009, from http://afsic.nal.usda.gov/nal_display/index.php?info_center=2&tax_level=2&tax_subject=301&topic_id=1442.

Data on the race of farm operators does not take in account the race of hired farmworkers, of which there were 21,144 in San Diego County as of the 2007. 417 farms reported hiring migrant labor, many of which are from Mexico or Latin America.[95]

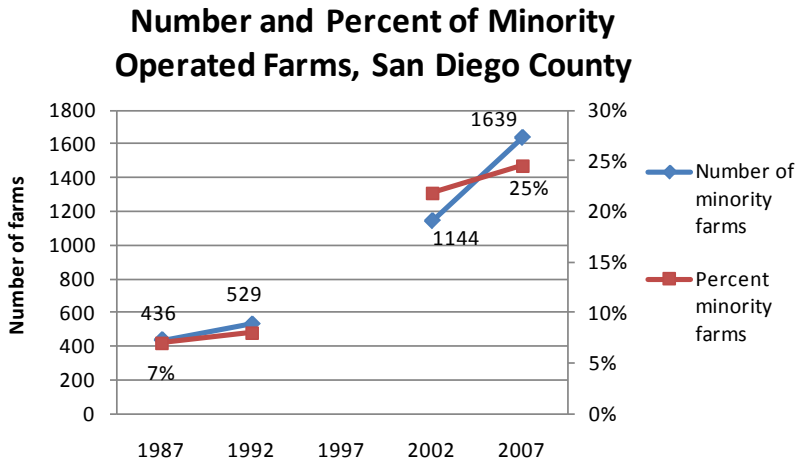


Figure 3.5 Source: United States Department of Agriculture, NASS, Census of Agriculture. Spanish, Hispanic, or Latino Operators; American Indian or Alaska Native Operators; Asian Operators; Black or African American Operators; Native Hawaiian or Other Pacific Islander Operations. Notes: Operators Reporting More Than One Race not included due to incomplete historical data. Data collection changed in 1997 at which time it began adjusting for coverage. All prior data is not adjusted for coverage and therefore not recommended for comparison with adjusted data.

Trends: Both the number and percent of minority farms has increased significantly in San Diego County over the last 20 years, moving from 7 percent (approximately 436 farms) to 24 percent (1595 farms) of total farm operations. Growth has occurred across all racial categories, but most markedly in the case of Hispanic or Latino farms where the number of farms has increased by nearly 500 percent (235 farms to 1,090) during the same period. Black operated farms increased from 9 to 24 farms, while Asian operated farms increased in number from 156 to 338. Growth in the number of American Indian farms must be understood in the context of new census procedures whereby differentiation between farms on each reservation was taken into account for the first time in 2007. As such, the dramatic increase from 36 in 1987 to 143 in 2007 is partially attributable to better accounting.

Similarly, concern amongst undocumented farm operators about responding to the census might have resulted in an undercount of Hispanic and other minority run operations.

Indicator 3.2e: Number of Fishing Operations, Employment and Income

Background: Employment in the fishing industry has declined around the nation as regulations intended to ensure the continued viability of fisheries have resulted in lower catch quotas, reduced days at sea and regulations as to method of capture. Currently, about 47,000 individuals are employed in the fishing industry, compared to 951,000 in crop production and 861,000 in animal production.[96] Though growth in aquaculture, the farming of fish or shellfish, may contribute some new jobs within the fishing industry as a whole, coastal pollution, overfishing, and regulation are expected to cause

95 United States Department of Agriculture, NASS, Census of Agriculture. Table 7: Hired Labor
96 U.S. Department of Labor, B. o. L. S. (2010, December 17, 2009). "Career Guide to Industries, 2010-2011 Edition: Agriculture, Forestry, and Fishing." Retrieved August 25, 2010, from http://www.bls.gov/oco/cg/cgs001.htm.

Photo courtesy of Susan Ellsworth

continued decline in the number of individuals employed in this sector.[97]

In 1980, San Diego boasted more than one hundred tuna fishing vessels and several tuna canneries, directly and indirectly employing more than a thousand San Diego residents from a wide range of cultural backgrounds.[98] Rockfish, urchin, lobster and other species also contributed to the industries' viability, though not as significantly as tuna. However, growing awareness of the environmental implications of overfishing, by-catch and pollution on the future of fish stocks led to the implementation of new stringent federal regulations. In particular, the elimination of the purse-seine net for harvesting tuna in light of its tendency to capture and kill dolphins resulted in a major contraction within the tuna fishing industry. Adding to the economic hardship of fishermen and women, competition from much less regulated international fisherman further undercut the San Diego tuna industry resulting in the closure of all canning facilities by 1985.

97 1bid.
98 Lisa Wise Consulting, I. (2009). Port of San Diego: Commercial Fisheries Revitalization Plan, Background and Existing Conditions. San Luis Obispo, Coastal Conservancy, Unified Port of San Diego.

Tuna Harbor

Tuna Harbor is located within the Unified Port of San Diego at the foot of G and Tuna Lane in downtown San Diego. Named for the city's commercial tuna fleet once considered to be the largest in the world, Tuna Harbor is no longer a bustling fishing hub. While a few fishing vessels remain docked here, stringent fishing regulations, aimed at addressing the impacts of historical overfishing, combined with pollution and international competition have taken their toll on the industry. What fishermen and woman do remain, land everything from tuna to spiny lobster, halibut, spot prawn and sheephead, both for sale to local buyers as well as for export to other parts of the county and the world. Discussions about the reinvigoration of the Harbor, by way of a farmers' market have met with support from the fishing community who also cite the need for improved dockside amenities to help the ailing industry. Nevertheless, such plans are currently stalled, leaving the harbor as a quiet remnant of a different era. For more information on the history of Tuna Harbor, visit: www.sandiegohistory.org/journal/99winter/tuna.htm

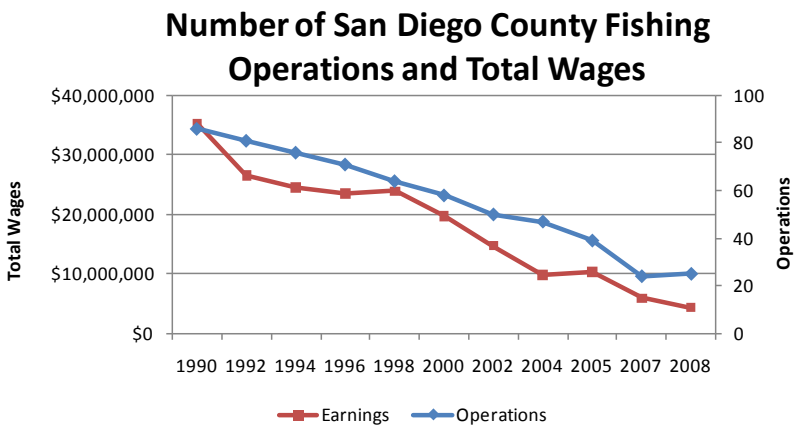


Figure 3.6 Source: California Employment Development Department, Quarterly Census of Employment and Wages
Notes: Data adjusted to 2010 dollars

Trends: The number of fishing operations based out of San Diego County has declined precipitously over the last twenty years from 86 in 1990 to only 25 in 2008 (see Figure 3.6). The number of individuals employed declined by 75 percent between 1998 and 2008 alone. Similarly total wages have also plummeted from nearly $35 million in 1990 to less than $5 million in 2008. At present, the average San Diego fisherman or woman earns only $40,026 a year, approximately $6,000 less than the average worker in the county.[99]

Nevertheless, growing interest in shellfish as well as finfish aquaculture, wherein a given species is cultivated in a controlled marine environment for later harvest, may result in some limited job growth in the coming years. At present, San Diego County has one shellfish farm, raising mussels, oysters, clams and abalone and one finfish hatchery working to rebuild white sea bass stocks. Plans for a large commercial finfish farm off the coast of San Diego are also nearing completion. Though shellfish aquaculture is a well-established practice and thought to be quite sustainable, finfish aquaculture is still new and runs the risk of further polluting coastal waters while requiring large amounts of fish feed.

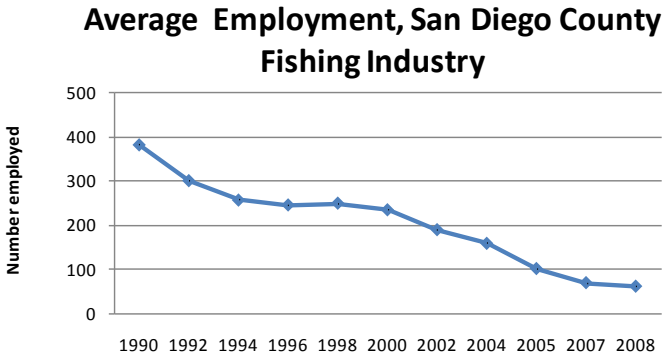


Figure 3.7 Source: California Employment Development Department, Quarterly Census of Employment and Wages

99 Ibid.

Goal 3.3: The San Diego County Food System (Production, Distribution, Processing, Disposal) Provides Safe, Fair, Meaningful Work.

San Diegans spend approximately $14.1 billion a year on food, and nearly half of those dollars in fast food chains. The prevalence of inexpensive, unhealthy foods in many communities is related to the type of jobs, wages, and working conditions that are increasingly prevalent in the food sector. By contrast, a growing local food market, characterized by more direct producer to consumer relationships allows consumers, producers and businesses an opportunity to help shape the food system while reconnecting consumers with those who grow their food. As many agencies require standards on production practices for the food they source, they have the opportunity to shape policies that prioritize fair work practices and competitive wages. Setting new goals and standards for our food system stands to benefits not only the economy, but the health and well being of the community.

Indicator 3.3a: Total Number of Food System Jobs and Food System Jobs as a Percent of Total Jobs

Background: Services are the fastest growing sector within the U.S. economy with service-sector employment now making up more than three fourths of total jobs.[100] However, by comparison to manufacturing, service workers earn on average lower wages with fewer benefits while experiencing higher rates of part-time or seasonal employment.[101] Of all major occupational groups, the food preparation and serving sector is the third largest, by comparison to fishing, farming and ranching, which makes up less than one percent of total employment across the nation.[102]

Currently, no specific data category exists for "food system related jobs" within the major data classification systems (NAICS, SIC) utilized by Federal statistical agencies. Instead, food system job categories (food service and drinking places, alcoholic beverage wholesalers etc.) are spread throughout and among other data categories, meaning that data on total food system jobs or wages must be independently compiled. Because there is no formal definition as to what constitutes a food system job, this report includes those jobs that most directly relate to production, distribution and consumption activities within the food system.

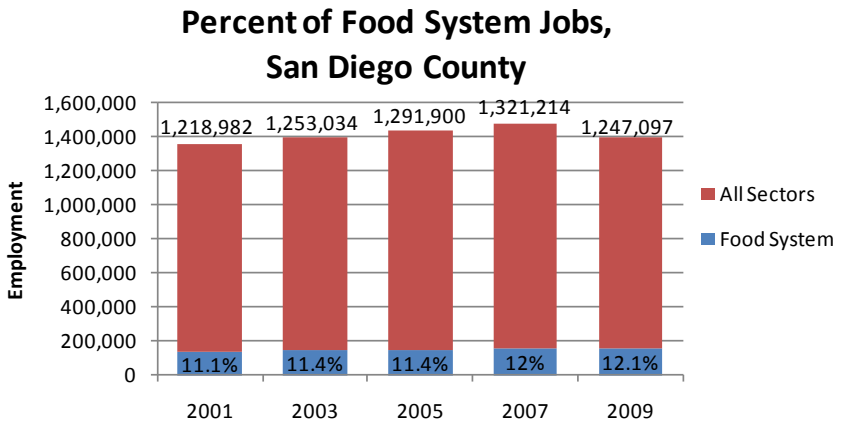


Figure 3.8 Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

100 Schmitt, J. (2009). Unions and Upward Mobility for Service-Sector Workers. Washington, D.C., Center for Economic and Policy Research.
101 Nelson, J. (1994). "Work and Benefits: The Multiple Problems of Service Sector Employment." Social Problems **41**(2): 240-256.
102 Bureau of Labor Statistics (2010). Occupational Employment Statistics Highlights, U.S. Department of Labor.

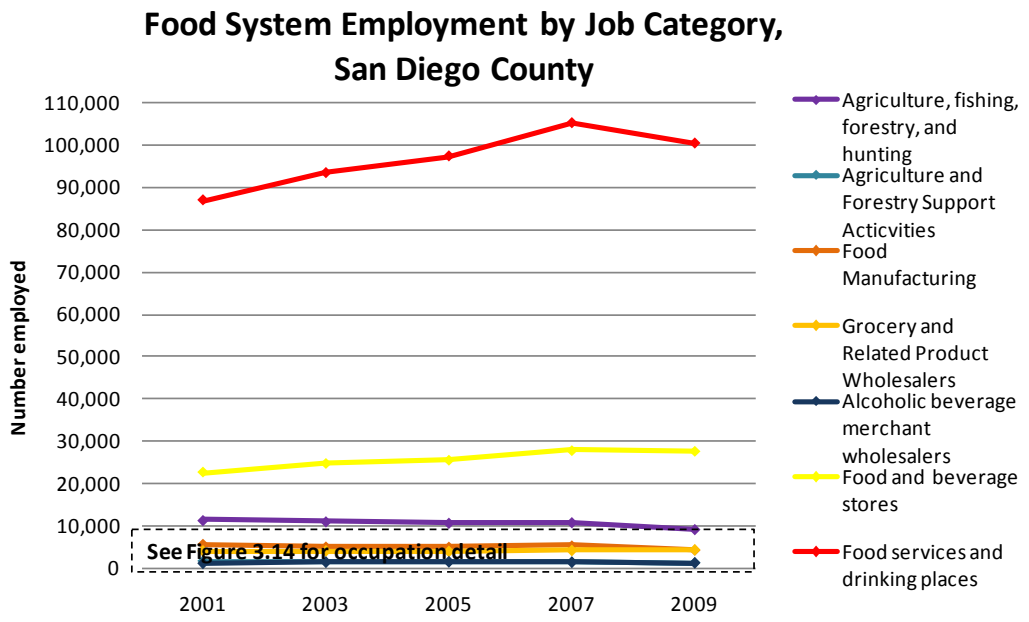


Figure 3.9 Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

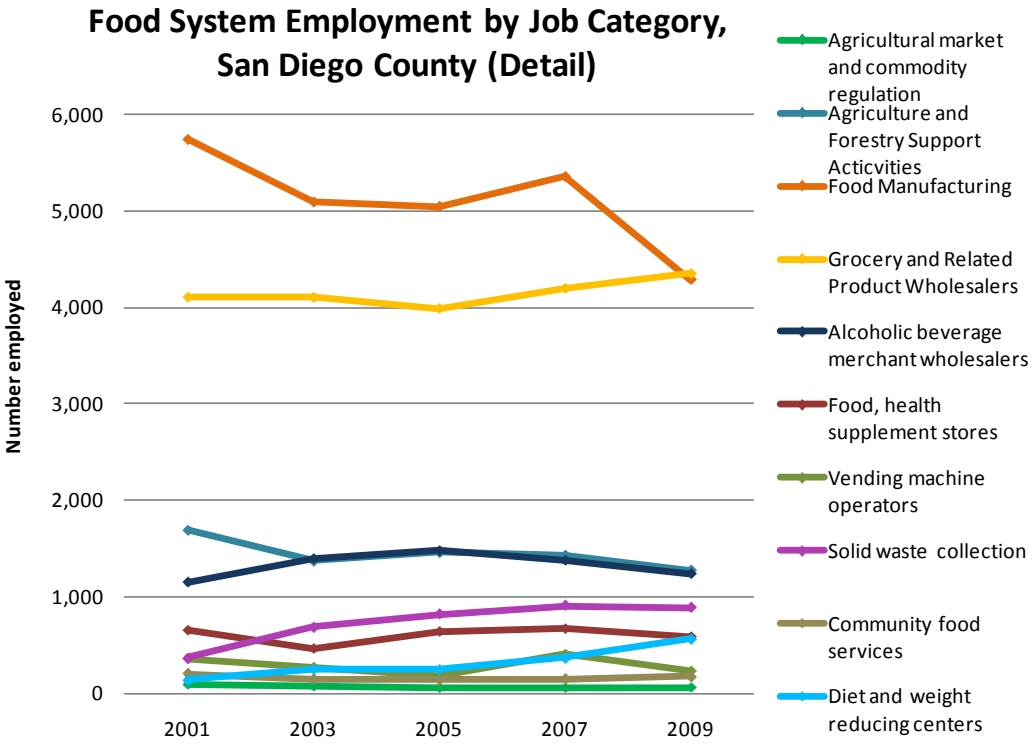


Figure 3.10 Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Trends: San Diego County food system jobs, which include the full range of production, transportation, serving and disposal activities, employ approximately 151,000 individuals, making up 12.1 percent of total employment (see Figure 3.8). The total number of jobs in this sector grew by 11.5 percent between 2001 and 2009. In particular, food services and drinking places, as classified by the Bureau of Labor Statistics, make up more than 66 percent of jobs within the food system overall (see Figure 3.9) within which limited service and full service establishments make up a roughly equal proportion. Though this sector grew at the fastest rate of all job categories until 2007, contraction between 2007 and 2009 resulted in an overall growth rate of 15.5 percent over the nine-year period.

The next largest sector, with 27,710 employees, is food and beverage stores which grew by 23 percent to make up 18 percent of total food system jobs. Agriculture, fishing, forestry and hunting makes up the third largest job sub-sector with 9,283 jobs of which agriculture makes up two-thirds. Jobs within this sector declined by 18.5 percent over the nine-year time period with contraction occurring within all areas except animal production. The decline in this sector demonstrates the impact of high land and water prices and suggests that the apparent increase in the number of farms in the county may be attributable to an increase in part-time or lifestyle farms where agriculture is not the primary means of income.

The fastest growing sector was diet and weight reducing centers, which increased more than 300 percent to 562 jobs in 2009. The next fastest growing sector was solid waste collection, which grew 141 percent from 202 jobs in 2001 to 886 jobs in 2009.

Indicator 3.3b: Inflation Adjusted Hourly Wages over Time Within the Food System

Background: Food preparation and serving jobs, which are the third most prevalent across the nation, have the lowest mean hourly wages of any sector at approximately $10 an hour.[103] Such positions, which are frequently located within limited service (fast-food) establishments or full service restaurants, generally require little educational preparation and offer few opportunities for advancement. A higher percentage of workers are part-time in this sector than any other, and few of these workers enjoy healthcare or retirement benefits. Nevertheless, this industry is anticipated to grow over the next ten years as the service sector economy continues to expand.[104]

Farming, fishing and forestry, by comparison, is the smallest of the major occupational groups, making up less than one percent of total employment across the nation with the second lowest mean hourly wage of $11.53 an hour.[105] Much of the work in this sector is seasonal, meaning that during the on-season, working hours tend to exceed 40 hours a week. Despite a strenuous work environment often characterized by exposure to agricultural chemicals or operation of heavy machinery, workers, particularly migrant workers, are less likely to receive benefits than workers in many other sectors.

103 Ibid.
104 Bureau of Labor Statistics, U. S. D. o. L. (2010-11, December 17, 2009). "Food and Beverage Serving and Related Workers." Occupational Outlook Handbook, 2010-11 Edition Retrieved July 2, 2010, from http://www.bls.gov/oco/ocos162.htm.
105 Bureau of Labor Statistics (2010). Occupational Employment Statistics Highlights, U.S. Department of Labor.

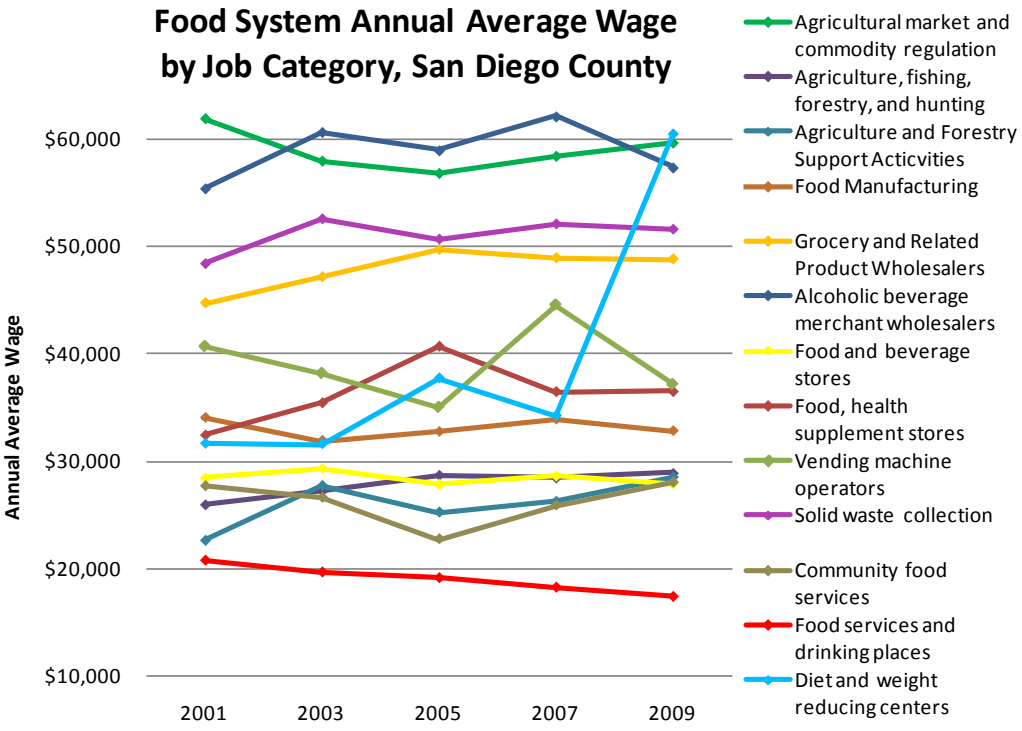


Figure 3.11 Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.
Notes: Adjusted for 2010 dollars.

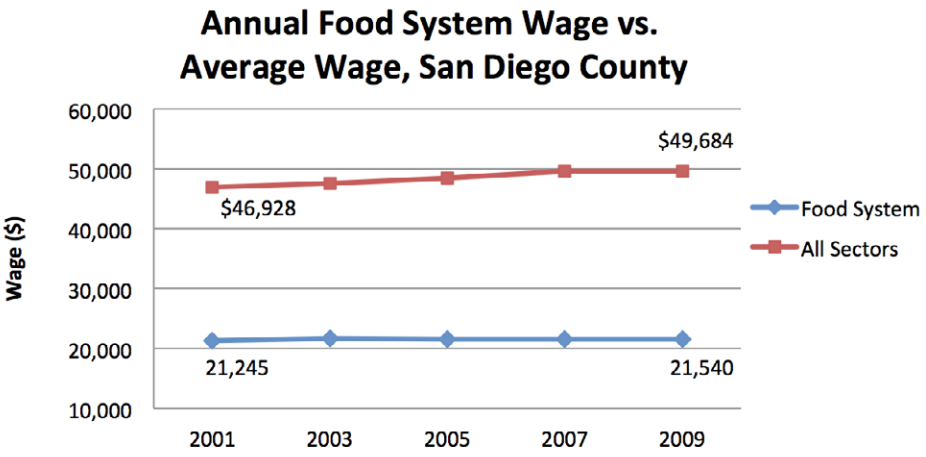


Figure 3.12 Source: Bureau of Labor Statistics, Occupational Employment Statistics.
Notes: Adjusted for 2010 dollars.

Trends: Wages within the food services and drinking places sub-sector in San Diego County were not only the lowest of all sub-sectors within the food system at $17,412 per year in 2009, but also experienced the greatest overall decline between 2001 and 2009 (see Figure 3.11)[106]. By contrast, diet and weight reducing centers, which experienced the greatest expansion in number of employees over the time period, also experienced the greatest increase in annual salary putting them at the highest annual wage of all sub-sectors within the food system ($60,430/year). Agriculture, forestry and fishing related jobs, despite declining in number during the time period, enjoyed the second most robust increase in annual pay from just under $25,913 per year in 2001 to $28,915 in 2009. Nevertheless, pay within this sub-sector is still lower than the majority of other sectors.

The highest paying jobs within the San Diego County food system after diet and weight reducing centers are located within the following sub-sectors: agricultural market and commodity regulation ($59,589/year), alcoholic beverage merchant wholesalers ($57,349/year) and solid waste collection ($51,573/year). Despite relatively high wages in a few small sub-sectors of the food system, the majority of jobs are low paying with few benefits and little stability. Food production jobs, by comparison, are on the decline despite some limited improvement in annual wages.

Food system jobs overall have experienced a decline in annual wages likely tied to the decline of wages within its largest sub-sector, food services and drinking places. The current weighted annual average wage within the food system of $21,540 is less than half that of the average wage across all sectors, of $49,240, and 100 percent of federal poverty level for a family of four.

106 All salary figures in this section are adjusted for 2010 dollars.

Conclusions and Observations: San Diego County Food System Assessment

This report has highlighted significant trends in the health and well being of people in San Diego communities, the stewardship of natural and agricultural resources in the county and the economic and livelihood issues faced by San Diegans involved in the food system. Here, the authors summarize some of the significant findings and draw connections within and between sectors of the food system. Opportunities for future action are listed at the conclusion of each summary section below. Stakeholder recommendations are listed in the following section, as compiled by the San Diego Food System Working Group and Technical Advisory Committee.

Vision 1: Better Health and Well-being of San Diego County Residents

In an effort to understand progress towards this vision, we have examined trends in the areas of food access, food consumption and human health among San Diego residents. One of the most important steps to maintaining nutritional health is ensuring access to a variety of whole, minimally processed foods at prices everyone can afford. The extent to which people in San Diego have access to healthful food (through market and non-market sources including emergency food) and how close these food venues are to regional farms and/or gardens has improved over time and in comparison to statewide averages. However, lower income communities continue to face barriers accessing healthful food due to higher costs and a lack of venues in which to obtain these foods in proximate neighborhoods.

Food consumption trends are not as positive. Fruit and vegetable consumption (a proxy for healthful diets), has decreased considerably for teens for whom less than one in four consumes the recommended five or more fruits and vegetables a day. It is instructive to note that the percentage of youth who consume two or more sugary drinks per day has declined dramatically, presumably due to two policy changes that eliminated soda sales in elementary and high schools in 2003 and 2005, respectively. Rates of diet-related diseases (diabetes) and childhood fitness/BMI, although better than statewide averages, are still far worse than goals set by the "Healthy People 2010" report and have remained relatively unchanged over the last decade.[107]

These trends suggest several opportunities:

- The San Diego food system should continue to maintain or increase venues for all people and particularly low-income communities to obtain healthful foods through market and emergency sources. Trends are going in the right direction and should be maintained through public and private partnerships.
- Despite improvements in food access, other factors (advertising and education, for example) may also be influencing consumption of healthful foods. Policies limiting access to unhealthful foods such as sodas can be very effective in limiting consumption. Programs and policies to increase information and change attitudes and eating behavior about healthful foods should be encouraged.
- Changing trends in health outcomes is difficult and takes years. Continued monitoring and reporting of both these trends and those in food access and consumption is important.

107 (San Diego Health and Human Services Agency, 2009)

Vision 2: Agricultural Stewardship of San Diego County's Environmental Resource Base

The most critical challenges and opportunities regarding stewardship within San Diego County's food system revolve around one main fact: water is becoming an increasingly limited and expensive input for food production. Today, the rising cost of San Diego's imported water is the most significant factor affecting farmers. Agricultural water use remained relatively constant at about 100,000 acre feet per year until 2008 when mandatory cuts in supply went into effect and the Metropolitan Water District's discounted rate program for agriculture began to be phased out. Today, water rates are approaching $1,000/acre foot. This trend, in combination with increased urbanization and consolidation within certain sectors of agriculture, has driven the following changes in San Diego's food production:

Changing Rural Landscapes and a Shift Toward High Value Crops

Although the total number of farms in San Diego has increased over the last 20 years, the county has experienced a decline in mid-scale and large farms (by acreage) in favor of smaller operations. Many of these new smaller farms are high value nursery crop operations or small farms relying on direct sales. For nursery crops, water costs are a much smaller percentage of overall input costs as compared to food crops, including San Diego's hallmark high value crops, such as citrus and avocado, which are increasingly faced with stumping or abandonment. At present, total annual revenue for nursery crops is twice that of all food crops (including citrus and avocados), combined. Growth in the number of very small farms across the county may also demonstrate an increase in the number of ranchettes, where agriculture is not a primary source of income for the landowner. In sum, agricultural acreage and use of this acreage for food production has declined significantly due to the rising cost of water and residential development.

A Decline in Animal Agriculture and Limited Use of Animal Welfare Marketing Mechanisms

In addition to water limitations, consolidation in the animal industry, lack of processing facilities and urban encroachment have significantly impacted animal agriculture in San Diego County, resulting in a decline in both overall sales and the number of animal operations in all sub-sectors. Notable, however, is growth in the number of small and very small operations particularly within hogs and cattle. Despite growing consumer interest in local and humanely raised animal products, few producers utilize labels advertising humanely raised products. This is due, in large part, to a lack of supporting infrastructure, such as slaughter and cut and wrap that meet the standards of these labels. The number of certified organic producers has increased, however still totals only five in the county (up from three in 2006).

Fewer Fish from San Diego Waters

Use of the ocean as a food producing resource has also declined over the last few decades. Regulatory measures, pollution, overfishing, and international competition have reduced the number of fishing operations and total employment within San Diego's commercial fisheries resulting in a 25 percent decrease in fish landings by weight in the last decade.

Although limited water has created many challenges for agriculture, it has also contributed to creative opportunities. Growing interest in local, regional, sustainable food and a resilient food system by a growing urban population is evident in the following trends:

Growing Demand for and Production of Compost; Improvements in Water Conservation

San Diego's Miramar Greenery composting facility, the largest in the county, converts more than 100,000 tons of green waste to compost each year. Demand for the compost, with its ability to increase the water holding capacity of soil while providing beneficial nutrients, currently outstrips supply. This fact, combined with the environmental benefits of diverting green waste from landfills, has led to a planned expansion of Miramar's trial food waste composting program, which currently serves several large vendors in the county. Nevertheless, obstacles related to the citing of additional facilities and cost of transportation for composted material still needs to be addressed as a means of ensuring increased access by farmers to this valuable input. Both urban residents and farmers have taken significant steps to reduce overall water consumption, leading to lower total use figures in both categories from 2000 to 2010. Recycled water doubled over the same time period but is still only a very small fraction of total available water and is not readily available to farmers.

High Rates of Organic Production

San Diego currently has the largest number of certified organic producers of any county in the nation with the number of organic acres still on the rise.

Increased Interest in Urban Food Production

Urban consumers are increasingly interested in growing their own food as seen by a more than 50 percent increase in the number of community farms and gardens since 2003.

These trends suggest several opportunities for San Diego County farmers and consumers:

- An increase in high value crops and select animal products might allow San Diego farmers to make further use of marketing values such as "local," and "organic." Exploring a variety of certification or local labeling systems might be useful.
- Local policies to promote sustainable, urban agriculture to encourage more urban food production could help educate and engage more people about the importance of agriculture in general and provide nutritious and affordable food for lower income communities.
- Local policies to facilitate generation and use of composted food waste in decentralized composting facilities could improve recycling of materials and make better use of scarce water resources.

Vision 3: Thriving Communities and Sustainable Economic Growth

The third section of the report examines the nature of sustainable economic growth in the food system through three primary perspectives, including the age and race of farmers, the number of jobs in agriculture, fishing and other sub-sectors of the food system, and the degree to which these jobs provide meaningful and fair livelihoods for San Diego County residents.

Diversity in food and agriculture has several faces (age, ethnicity, race, gender). San Diego's farming sector is aging and at a faster rate than the rest of the state. The average age of a San Diego farmer is now 60 years. The number of farmers who have been in the business for more than ten years has increased while the number of farmers with less than ten years of experience has remained constant. The number with less than two years has decreased slightly, suggesting that new entries have probably decreased as well. Ethnic diversity in farming, however, has increased significantly over the last 20 years, with a most notable increase in the number of Hispanic/Latino farmers. Today almost a quarter of all farmers in San Diego County are ethnic minority farmers.

Food system employment in San Diego County makes up about 12 percent of total employment (151,000 jobs). The total number of jobs grew about 11 percent in the last nine years, but annual wages overall have declined, mostly due to the largest and growing sub-sector—food services and drinking places. Almost two thirds of jobs in the San Diego food system fall within this sub-sector as defined by the Bureau of Labor Statistics, which grew by 15.5 percent between 2001 and 2009. Wages in this sub-sector were the lowest of all, however ($17,400 per year in 2009) and experienced the greatest overall decline.

Agriculture, fishing and forestry, by comparison, despite an 18.5 percent decline in total employment, experienced a modest increase in annual wages from $25,000 per year in 2001 to $29,000 per year in 2009. Currently, agriculture, fishing and forestry is the third largest job category in the food system with agriculture making up about two thirds of employment therein. Employment within the fishing sub-sector continued to experience ongoing and dramatic declines.

The fastest growing job sector in the food system was diet and weight reducing centers, increasing more than 300 percent (to 560 jobs) in nine years. Wages in this sector were also the highest at approximately $60,000/year. The second fastest growing sector was solid waste collection with wages at almost $52,000/year.

These trends suggest several opportunities for an increasingly fair and vibrant local food system:

- Due to San Diego County's increasing urbanization and growing consumer demand for regional food, San Diego businesses and policies might invest in more infrastructure and marketing to support small and mid-scale urban agriculture and agriculture at the urban fringe, helping to create new and recognized "values-based" food production, processing and distribution opportunities.

- Making connections between urban edge agriculture and food service establishments that source regionally while linking to green jobs in the recycling/composting sector could provide valuable urban-rural connections in the economy.

- With the increasing ethnic and racial diversity in San Diego's agriculture, food system policies and educational institutions might focus on providing opportunities for cross-cultural skill sharing, while also increasing technical assistance for new or beginning farmers.

Stakeholder Recommendations

The following stakeholder recommendations are excerpted from a larger report titled *Realizing a Sustainable Food System for All: An Action Plan for San Diego,* and are considered up to date as of November 15, 2010. The recommendations were compiled by the San Diego Food System Working Group and Technical Advisory Committee in parallel to the generation of this assessment. The complete document can be found at www.SanDiegoFoodSystem.com

These strategies are intended to provide a strong foundation for future actions to strengthen the local food system while offering triple bottom-line benefits to the San Diego County community.

Overarching Recommendations

- **Institute a Food System Council to act as the countywide, coordinating body for fostering collaboration, recommendations, and actions that contribute to a healthy, sustainable, and gainful local food system.**
- **Create a Food Commissioner position that works in coordination with the County of San Diego Health and Human Services Agency and Land Use and Environment Group to assure that healthy, local foods are available to all.**
- **Develop and finance infrastructure through public and private means that supports the aggregation, processing, distribution, and wholesale of local produce and protein sources.**

Goal 1.1 Stakeholder Recommendations: *San Diego County Residents Know Where Their Food Comes From, How It Is Grown and Who Grows It*

- **Increase public knowledge about food and food systems (i.e. from production to disposal):**
  - ✓ Schools adopt a food and agriculture curriculum that includes experiential learning opportunities (e.g., garden-based education, farm tours, etc.).
  - ✓ Media outlets cover food from a systems approach recognizing its economic, health, and environmental impacts.
  - ✓ Nutrition education campaigns recognize the role of sustainable, regional food systems in healthy eating.
- **Support the development and operation of publically and privately run backyard, community, and school garden training programs.**
- **Develop promotional campaigns supporting the purchase of San Diego County-grown products:**
  - ✓ Labels are used recognizing San Diego County grown and raised foods.
  - ✓ Awareness campaign promotes participation in Community Supported Agriculture (CSA) and sales at local farmers' markets.
- **Increase meaningful engagement of low-income communities in food systems planning dialogue.**
  - ✓ Increase the number of community groups within food systems planning, implementation and decision-making processes.

- ✓ Provide appropriate language translation and interpretation of reports, meeting materials and format.
- ✓ Use culturally appropriate language and terminology in discussion of food system issues that reflects the diverse communities of San Diego County.

Goal 1.2 Stakeholder Recommendations: *San Diego County Residents, From Infants to Seniors, Consume More Healthful Foods*

- **Adopt policies that improve the nutritional value of meals and snacks served at childcare, school, senior, healthcare, military and other highly-utilized facilities:**
  - ✓ Menu offerings and nutritional requirements are consistent with current scientific evidence showing that plant foods promote good health and help individuals maintain a healthy weight.
- **Commodities programs provide foods that support optimal health and nutrition, including plant-based alternative protein products, nondairy milk substitutes, and hormone-free meats.**
  - ✓ USDA provides training materials regarding nutritional benefits and preparation of new foods introduced to promote optimal health.
  - ✓ Government-sponsored nutrition programs incentivize the promotion of plant-based entrees to students.
  - ✓ Resources are provided for programs that teach food service workers, parents, and children about healthy eating and promote good dietary habits, including healthy cooking classes.
  - ✓ Resources are provided that encourage institutions to serve meals made from scratch.
- **Give preference to local foods at a price point that is affordable for institutions and profitable for local farmers.**
- **Encourage Congress to increase funding earmarked for the purchase of fresh, local fruits and vegetables.**
- **Increase access to free, clean drinking water in schools and public facilities.**
- **Decrease the availability of unhealthy foods and beverages through regulatory and agency policies:**
  - ✓ Sugar- sweetened beverages and sports drinks are restricted in schools, public facilities, and healthcare institutions serving children.
  - ✓ Fast-food establishments are limited (or banned) around public schools and youth attractors (e.g. parks, malls, arcades).

Goal 1.3 Stakeholder Recommendations: *All San Diego County Residents Have Access to Affordable, Healthful, Culturally Desirable Foods at all Times*

- **Encourage all eligible institutions and public schools to participate in federally funded meal and snack programs, including the School Breakfast and National School Lunch Programs.**
- **Encourage a simplified food stamp application process.**

- **Ensure a fair proportion of fresh and healthy food access points (proportional to population) in all communities through:**
    - ✓ Regulatory policies and development incentives that encourage the establishment of fresh food outlets and grocery stores.
    - ✓ Farmers' markets and Community Supported Agriculture (CSA) programs located in underserved communities.
    - ✓ Increased acceptance of Supplemental Nutrition Assistance Program (SNAP), Women, Infants, and Children (WIC), and Farmers' Market Nutrition Program (FMNP) at farmers' markets and Community Supported Agriculture (CSA) programs.
- **Increase purchasing power of families to attain healthful foods:**
    - ✓ Partner with the County of San Diego to implement and strengthen activities related to the Nutrition Security Plan (e.g., SNAP outreach and enrollment).
    - ✓ Partner with WIC offices to increase redemption of WIC vouchers at farmers' markets.
    - ✓ Partner with the County of San Diego and other public and private partners to increase the number of farmers' markets offering dollar match programs, like Fresh Fund, targeted towards SNAP, WIC, and Social Security Income (SSI) recipients.
    - ✓ Encourage food banks/pantries to offer food distribution hours more conducive to the schedules of the working poor.
- **Partner with transportation and planning authorities to ensure safe routes to healthy food outlets, particularly among those living in rural communities and food deserts.**
- **Increase mobile food access points and supplemental food assistance for North County residents.**
- **Improve accessibility, nutrition and amount of culturally appropriate food given by food banks.**
    - ✓ Ensure food is culturally appropriate for the community receiving donated food.
    - ✓ Ensure that food bank regulations allow all residents who need supplemental food assistance to receive foods, even if they receive other government assistance.

Goal 1.4 Stakeholder Recommendations: *Initiation and Duration of Breastfeeding, the Healthiest First Food, Increases in San Diego County*

- **Increase public awareness on the benefits of breastfeeding:**
    - ✓ Food system discussions include breastfeeding, the "first food."
    - ✓ Medical providers and offices deliver consistent breastfeeding messages in prenatal and postpartum follow-up visits.
- **Create environments that support breastfeeding during the critical first six months of life:**
    - ✓ Encourage worksites to adopt lactation policies that accommodate breastfeeding employees.
    - ✓ Encourage hospitals to adopt baby-friendly policies and practices.

Goal 1.5 Stakeholder Recommendations: *San Diego County Has Local, Accessible, Adequate Food Supplies for Emergency Preparedness*

- **Adopt a multi-agency feeding plan coordinated and supported by the county that limits duplication of efforts and maximizes available resources for a timely and efficient feeding response.**
- **Establish mini-warehouse hubs throughout the county that have a regular stock of non-perishables.**
- **Ensure transportation plans are in place to account for different emergency contingencies (earthquake, fire, etc.)**
- **Ensure local community-based organizations currently involved in Supplemental Nutrition Assistance Program (SNAP) outreach are trained and positioned to implement the Disaster SNAP.**
- **Allocate space in all neighborhoods for food production.**

Goal 2.1 Stakeholder Recommendations: *San Diego County Increases its Working Lands for Urban and Rural Food Production*

- **Determine the economic and production capacity of the regional foodshed, including a survey of urban and agricultural lands and processing, retail, distribution, storage and waste infrastructure**
- **Allow agriculture by right in all appropriate zoning classifications**
- **Cities and unincorporated communities should establish policies and practices that promote diverse food production:**
    - ✓ Establish policies that encourage the development of new community gardens, particularly in low-income communities.
    - ✓ Identify and facilitate the use of available land for community gardens.
    - ✓ Plant edible landscaping in public green spaces.
    - ✓ Allow residents to operate small-scale food production in homes and neighborhoods.
    - ✓ Allow for urban farming— chicken coops, fish farms, beekeeping, small animal husbandry.
- **Protect the food producing capacity in San Diego County by creating policies and incentives that promote:**
    - ✓ No net loss in productive agricultural land.
    - ✓ Food producing capacity proportional to population growth.
    - ✓ Community stewardship through strategies like local water price differentials, protection from invasive species, and property tax strategies.

Goal 2.2 Stakeholder Recommendations: *San Diego Improves its Waterways as Healthful, Sustainable Food Sources for San Diego County Residents*

- Protect water sources from pollution
- Analyze fisheries and aquaculture in San Diego County to assess environmental, economic, and social impacts

Goal 2.3 Stakeholder Recommendations: *San Diego County Food Producers and Processors Employ Practices that Support Animal Welfare*

- Support a small producer exemption for the on-farm slaughter and wholesale of cattle, goats, pigs, sheep and other animals similar to the existing exemption for chicken and rabbits.
- Support successful transition of producers into Proposition 2 compliance without closures or early retirements.
- Support farmers who seek certification programs to inform the public about animal production practices in San Diego County, such as "Animal Welfare Approved," etc.

Goal 2.4 Stakeholder Recommendations: *San Diego County Prioritizes Food Production in its Allocation of Available Water Resources*

- Support local water agencies and San Diego County Water Authority goals for water use and supply.
- Explore and develop new local water supplies (e.g. recycled water, brine water recovery, desalination, grey water).
- Promote residential water conservation.
- Develop water pricing strategies that incentivize home, community garden and commercial food production.
- Create a community supported water program that allows residents to subsidize water usage in local agriculture for food production

Goal 2.5 Stakeholder Recommendations: *San Diego County Recycles its Organic Wastes Locally and Makes Compost Available for Local Food Production*

- Adopt regulations at city, county, and state levels that prohibit the use of compostable green waste (i.e. alternative daily cover) in landfills.
- Establish a county green waste recycling and/or BioChar program and facility that designates compost specifically for local food production.
- Increase the collection of food waste from food banks, food pantries, restaurants, schools, and supermarkets and distribution to urban and rural farms for composting and the improvement of soil quality.

Goal 2.6 Stakeholder Recommendations: *San Diego County Reduces Food System-related Greenhouse Gas Emissions Through its Food System*

- **Support existing strategies that sequester carbon on-farm.**
- **Support food production and retail facilities in adopting renewable-energy sources and reducing petroleum dependence:**
  - ✓ Create a local fund to provide no- interest loans or tax credits to food producers and retailers for the purchase of energy saving/producing technologies.
  - ✓ Establish an integrated distribution network (i.e. backhauling product) that reduces food miles.
  - ✓ Limit (or ban) the use of Styrofoam, plastic bags, and plastic water bottles in public- and private- facilities.
- **Monitor and identify the local food systems ability to reduce GHG emissions:**
  - ✓ Assess the capacity of San Diego County farm / ranch land to sequester carbon.
  - ✓ Encourage the Air Pollution Control District and Department of Agriculture to develop a metric for the quantification of GHG emissions produced through the local food system and assess the carbon footprint of local farms and ranches using standard tools (cool farm or disaggregated greenhouse gas emission).

Goal 3.1 Stakeholder Recommendations: *Local and Regional Procurement and Sale of Food Grown in San Diego County Increases*

- **Partner with the San Diego Regional Economic Development Corporation to create an economic development plan for local food production and sale.**
- **Promote and support regional agriculture by connecting rural farms to urban consumers:**
  - ✓ Network existing and develop new infrastructure to support the accessibility of local foods, including aggregation, processing, and distribution facilities for local produce and meat.
  - ✓ Encourage and provide resources for the sourcing of local foods in institutions, healthcare systems, military facilities, restaurants, and fresh food outlets.
  - ✓ Ensure that the local, state and federal food purchasing process allows local foods to be sourced as easily and accessibly as nonlocal foods.
  - ✓ Adopt local food procurement goals and policies for all county and city agencies.
  - ✓ Build a network of growers and local businesses able and willing to source local products.
  - ✓ Encourage farmers' markets to provide preferential treatment to San Diego County growers through tiered-stall fees.
  - ✓ Create incentives and financing strategies that balance fair prices for local growers and competitive price points desired by local businesses.
- **Encourage schools to harvest and procure foods from on-site gardens.**
- **Partner with researchers to study food system policies and their community impact.**
- **Increase economic incentives for local food businesses:**
  - ✓ Reduce the cost of liability insurance for small- and mid-sized farmers sourcing to local institutions and retail outlets.

  - ✓ Promote public and private investment in affordable and accessible processing and distribution facilities and commercial kitchens
  - ✓ Leverage existing funding sources (e.g., Empowerment Zones, Healthy Food Financing Initiative) and tax incentives to support local food production, sourcing, and job development.
  - ✓ Provide fast-tracked permitting for businesses sourcing local foods, including sidewalk vendors and grocery stores.
  - ✓ Provide umbrella liability coverage for farmers' market vendors in low-income areas.

- **Promote local, state, and federal food policy development that allows food services and establishments to (purchase, identify, and) source local foods as easily as nonlocal foods**
- **Adopt policies and practices that ensure low-income communities can fully participate and sustain involvement in local, healthy food activities and business.**
- **Increase amount of local foods used as ingredients in packaged and processed foods.**
- **Track and quantify the potential and current economic benefit of the local food system.**
- **Redirect commodity subsidies to local food production and procurement.**
- **Increase economic incentives for small-scale urban farmers and gardeners.**
  - ✓ Perform feasibility analysis and educational outreach for backyard gardeners and urban growers to illustrate the benefits of urban gardening and farming.

Goal 3.2 Stakeholder Recommendations: *Fishing, Farming, and Ranching Increases for Diverse Groups in San Diego*

- **Increase production and processing of culturally desirable crops and livestock.**
- **Provide incentives for new farmers and ranchers committed to working in the San Diego agriculture and livestock industry.**
- **Engage youth as future farmers.**
- **Assess barriers to entry for, and offer technical assistance to new farmers and ranchers from disadvantaged backgrounds.**
- **Create affordable pathways for urban farmers in low-income communities to sell locally grown food within their communities, e.g. reduce cost of Certified Producer certificate for low-income farmers.**
- **Dedicate resources to strengthen farmer / ranching training programs in San Diego County, particularly in creating courses and curricula targeting aspiring, new, minority, immigrant, and refugee farmers.**
- **Transfer development rights and purchase of development rights programs established to steward farmland.**
- **Create a wide range of opportunities for San Diego residents to become interested in farming as a potential form of livelihood through the development of more community farms in urban areas.**
- **Partner with the Port of San Diego to support new opportunities and markets for locally caught fish**

- Create facilities to support the processing of wholesale local meats.
- Assess the economic impact of pests and opportunities for shifting crops to those not impacted.

Goal 3.3 Stakeholder Recommendations: *The San Diego Food System (Production, Distribution, Processing, Disposal) Provides Safe, Fair, Meaningful Work*

- Adopt standards that require food production, sourcing, and retail businesses receiving government subsidies to establish and abide by fair wage and job standards for all employees.
- Establish incentives and financing strategies that balance fair prices for local growers with competitive price points for local food retail and outlets.
- Create models for collective bargaining structures that ensure fair wages and job standards in all sectors of the food system.

Appendix

Appendix A

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Appendix B

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Appendix C

Community Forum Organizations

The following organizations participated in a community forum in conjunction with representatives of the San Diego County Food System Working Group to help inform the development of recommendations for its report *Realizing a Sustainable Food System for All: An Action Plan for San Diego*.

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Appendix D

Report Interviews

The following interviews were undertaken with experts within San Diego County. Those in which quotes or data were directly utilized are included in the Works Cited.

Interviewee	Affiliation	Area of Food System	Report Goal
Eric Larson	Executive Director, Farm Bureau	Agriculture, water use	1.1, 2.1, 2.3, 2.4, 2.6, 3.1, 3.2
Naomi Butler	Public Health Nutrition Manager County of San Diego Public Health Services	Nutrition, breastfeeding	1.2, 1.3, 1.4
JuliAnna Arnett	Food Policy Manager, San Diego County Childhood Obesity Initiative	Child nutrition, food policy	1.2, 1.3
Maureen Polimadei	Anti Hunger Network Manager, San Diego Hunger Coalition	Food banks, emergency management	1.2, 1.5
Jonathan Reinbold	Executive Director Tierra Miguel Foundation	Farm to school, agriculture	1.2, 2.3, 2.6, 3.1
Diana Bergman	Education Coordinator Resource Conservation District	School gardens	1.1
Mindy Swanson	Farm to Institution Program Manager, Center for Food and Justice	Farm to school	1.2, 3.1
Stan Miller	Executive Director North County Community Services	Food banks and produce	1.2
Julia Dashe	Co-founder and Board Member San Diego Sustainable Roots	Community gardens, urban agriculture	1.2, 1.3, 2.1
Michael McGuan	General Manager and Lead Curer The Linkery	Animal products, sourcing and sustainable producers	2.3
Arcela Nunez Alvarez	Research Director National Latino Research Center Cal State San Marcos	Migrant farm communities	3.2, 3.3

Interviewee	Affiliation	Area of Food System	Report Goal
Wayne Williams	Program Coordinator Solid Waste Planning and Recycling Section, Department of Public Works	Compost, waste management	2.5
Nancy Wight	Attending Neonatologist Sharp Mary Birch Hospital for Women Medical Director Sharp HealthCare Lactation Service	Breastfeeding	1.4
Kathy Garcia	Principal WRT / Wallace Roberts & Todd, Inc.	Water, landuse	2.1, 2.4
Keith Lewinger	General Manager Fallbrook Public Utilities District	Water use	2.4
Jen Kovesces	Staff Scientist San Diego Coastkeeper	Water quality	2.2
Christine Edwards	Health Policy Consulting Group	Obesity, diabetes	1.2
Deidre Browner	Biostatistician Epidemiology and Immunization Services, DHS	CHIS	1.2
Dan Silver	Executive Director Endangered Habitats League	Environment, landuse	2.1, 2.4
Norman Abell	Co-Owner,Carlsbad Aquafarm	Aquaculture, fishing	2.2, 3.2

Appendix E

Data Advisors

The following list of individuals provided invaluable guidance in tracking down data and making sure the story was told right. Without their knowledge and patience, this report would not have been possible.

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Mallory Cochrane	International Rescue Committee
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Renee Robertson	Miramar Greenery of the City of San Diego
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Wayne Williams	Department of Public Works, County of San Diego
Julie Young	UC Davis
Vanessa Zajfen	San Diego Unified School District

Appendix F

San Diego County Food System: Breakdown of Goals, Desired and Final Indicators

This chart is intended to capture not only the structure of the report, but also to provide insight into the process of indicator selection during the preliminary stages of the report's conceptualization. A "desired indicator" is one which was first selected by the Food System Working Group as an ideal measure of progress in a particular area. The "final indicator" reflects the closest possible proxy in the event that data was not available as requested.

Vision	Desired Indicator	Data Status	Final Indicator
Vision 1: Better Health and Well-being of San Diego County Residents			
Goal 1.1 San Diego County residents know where their food comes from, how it grows, and who grows it.			
	Number of SD producers that use the San Diego label	Data Available as Requested	The Number of San Diego Producers Who Use a San Diego Grown Label
	Farmer's market sales	Data Not Available	Number of Farmers Markets and Number of Certified Vendors
	CSAs delivering in county	Data Available as Requested	Number of Community Supported Agriculture (CSA) Programs
	Number of school gardens	Data Available as Requested	Number of School Gardens
			Number of Farms with Direct Sales and Direct Sales as a Percent of Total Sales
Goal 1.2 San Diego County Residents, From Infants to Seniors, Consume More Healthful Foods			
	Number of new cases of childhood diabetes	Data Not Available	Percent of Type II Diabetes Diagnosis
			Obesity and Overweight in School Age Children
	Fruit and vegetable consumption	Data Available as Requested	Food Choice; Fruits and Vegetable Consumption and Sugary Drinks
	Number of school and senior meal programs that include plant-based (vegetarian) options	Data Not Available – Use of Proxy Data	Number of Farm to School Programs
			Amount of Local Produce Distributed by Food Banks

Vision	Desired Indicator	Data Status	Final Indicator
Goal 1.3 All San Diego County Residents Have Access to Affordable, Healthful, Culturally Desirable Foods at all Times			
	Prevalence of food insecurity by household	Data Not Available by Household	Level of Food Security
	Redemption of WIC/Food Stamps/SNAP at farmer's markets	Data Available as Requested; Data Available Upon Request	Number of Farmers' Markets Accepting Food Stamps (SNAP) and WIC; Redemption of SNAP and WIC at Farmers' Markets
	Number of community garden plots by census tract	Incomplete Data on Plot Numbers	Number of Community Gardens
Goal 1.4 Initiation and Duration of Breastfeeding, the Healthiest First Food, Increases in San Diego County			
	Increase in number of women who breastfeed	Data Available as Requested	Percent of Women Who Breastfeed Including Any and Exclusive Breastfeeding
	Length of time women breastfeed	Data Not Available as Phrased – Proxy Data Used	Child's Age When Stopped Breastfeeding
	Number of baby-friendly hospitals	Data Available as Requested	Number and Percent of Baby-Friendly Hospitals
Goal 1.5: San Diego Has Local, Accessible, Adequate Food Supplies for Emergency Preparedness			
	Units of food and water for stored emergency preparedness	Data Available Upon Request	Units of Food and Water Available for Emergency Preparedness
	Transportation partners	Data Available Upon Request	Transportation Partners for Emergency Preparedness
Vision 2: Agricultural Stewardship of San Diego County's Environmental Resource Base			
Goal 2.1 San Diego County Increases its Working Lands for Urban and Rural Food Production			
	Total number of food farms	Data Not Available as Phrased	Number and Size of Farm Operations
			Farm Income
	Acreage dedicated to food production	Data Available as Requested	Total Crop Acreage and Percent of Acreage Dedicated to Food Production
			Organic Acreage
			Farm Revenue by Crop Variety
			Number of Community Gardens
	Ratio of acreage of food production land to population		

Vision	Desired Indicator	Data Status	Final Indicator
Goal 2.2 San Diego Improves its Waterways as Healthful, Sustainable Food Sources for San Diego County Residents			
	Commercial Fish Landings by Weight and Value	Data Available as Requested	Commercial Fish Landings by Weight and Value
	Number of Polluted Waterways and Relevant Clean-up Plans	Data Available as Requested	Number of Polluted Waterways and Relevant Clean-up Plans
Goal 2.3 San Diego County Food Producers and Processors Employ Practices that Support Animal Welfare			
	Number of animal producers	Data Available as Requested	Number of Animal Producers and Scale of Operation
		Number of Organic Animal Producers	
		Number of Operations with a Third-Party Certification Ensuring Humane Treatment of Livestock	
	Rate of illness in flocks and herds	Data Not Publically Available	
	Animal disease outbreaks	Data Not Publically Available	
Goal 2.4: San Diego County Prioritizes Food Production in Allocation of Available Water Resources			
	Urban per capita water use	Data Not Available as Phrased – Proxy Data Used	Urban, Agricultural, and Recycled Water Use
	Percent of water consumed that is created locally (desalination/reclaimed etc.)	Data Available as Requested – See Recycled Water Above	
			Total Water Use
Goal 2.5: San Diego County Recycles its Organic Wastes Locally and Makes Compost Available for Local Food Production			
	Percent of green wastes recycled/composted	Data Not Available at County Level – Proxy Data Used	Percent of Green Wastes Recycled; Access to Finished Compost or Woodchips
	Percent of composted green waste used off site (instead of as alternative daily cover)	Data Not Available at County Level – Proxy Data Used	
	Commercial sales/donations of compost	Data Not Available at County Level – Proxy Data Used	Commercial Sales or Donations of Compost and Mulch from Miramar

Vision	Desired Indicator	Data Status	Final Indicator
Goal 2.6: San Diego County Reduces Food System-related Greenhouse Gas Emissions Through its Food System			
Farm expenditures on chemical fertilizer as a percent of total farm expenses	Fossil fuel use on farms	Data Available as Requested	Fossil Fuel Expenditures
	Data Available as Requested	Commercial Fertilizer Expenditures	

Vision 3: Thriving Communities and Sustainable Economic Growth

Goal 3.1: Local and Regional Procurement/Sale of Food Grown in San Diego County Increases			
	Percent of food dollars spent by government on local food	Data Not Available	
	Number of farm-to-institution programs	Data Not Available – Proxy Data Used	Number of Farm to School Programs
	Percent of food produced in county stays in county	Data Not Available – Proxy Data Used	Number of Farmers' Markets and Number of Certified Vendors
			Direct Farm Sales
			Number of Community Supported Agriculture Programs:
Goal 3.2: Fishing, Farming, and Ranching Increases for Diverse Groups in San Diego			
			Number of Farms and Size of Farm Operation
	Number of new entries in farming	Data Not Available – Proxy Data Used	Number of Years on Present Farm
	Average age of farmers, ranchers, fishermen in San Diego county	Data Partially Available	Average Age of Farmers
	Number of farms, ranches and fishing operations owned by minority/socially-disadvantaged producers	Data Partially Available	Number of Farms by Race of Principal Farmer
			Number of Fishing Operations, Employment and Income
Goal 3.3: The San Diego Food System (Production, Distribution, Processing, Disposal) Provides Safe, Fair, Meaningful Work.			
	Number of food system jobs; % of all jobs in county that are food system-related	Data Available as Requested	Total Number of Food System Jobs and Food System Jobs as a Percent of Total Jobs
	Inflation adjusted hourly wages over time by ethnicity	Data Available as Requested	Inflation Adjusted Hourly Wages over Time Within the Food System

Appendix G

Data limitations

Much of the analysis contained within this report is based upon data gathered by federal and state entities and is highly regarded for its methodology and data quality. Nevertheless, all methods have limitations, which are important to understand in interpreting data as accurately as possible. What follows is a list of some major data sources utilized within this report and accompanying methodological considerations. In some cases an explanation has been included as to the derivation of the data used within the report.

United States Department of Agriculture, NASS, Census of Agriculture: The agricultural census is a survey undertaken every five years intended to generate a complete count of all farms and ranches and the people who operate them. Forms are mailed out or may be answered online and as with the general census, responses are required by law. The methodology for this survey changed significantly in 2002 when the National Agricultural Statistics Service began "adjusting for coverage," a process aimed at determining the completeness of the list of surveyed farms and then adjusting the compiled data to account for lack of completeness. This adjustment means that data prior to 2002, with the exception of 1997, which was retroactively adjusted, does not reflect a universal coverage adjustment and therefore is slightly less accurate.

California Health Interview Survey (CHIS), UCLA Center for Health Policy Research: The California Health Interview Survey is the largest state survey in the nation and covers issues related to health and health behaviors in all 58 counties. Interviewees are randomly selected and statistical adjustments are made to ensure that the survey accurately reflects the California adult population. However, because CHIS is a phone survey, certain limitations which accompany this form of interview should be understood. First, only individuals with phones are eligible for interview and the ultimate accuracy of the survey depends on precise and honest estimation or recollection of behaviors (i.e. number of fruits and vegetables eaten yesterday, weight etc.).

State and Regional Water Quality Control Board, Water Quality Assessment: The Federal Clean Water Act (CWA) mandates that each state take primary responsibility for the monitoring and improvement of surface water within its jurisdiction. In California, this means that Regional Water Quality Control Boards are required to generate a list of impaired waterways, every two years, as well as a plan for the remediation of the impairment which is later reported to the US EPA. The generation of this list, known as a 303d list for the section within the CWA, requires evaluation of all surface water bodies within a given region. However, in the case of California, where some Regional Boards did not have adequate personnel to monitor all waterways in the initial years of implementation, the data gathered demonstrates not only an evolution in the number and scope of polluted waterways, but also an increase in the number of waterways monitored. Particularly for San Diego County, the sharp increase in the number of impaired waterways must be understood in the context of significantly increased monitoring.

Appendix H

Foodshed Assessment Resource List (By State, City, County)

National

- Anderson, Molly, Proj. Manager. Charting Growth: Sustainable Food Indicators. Wallace Foundation. (2009)
    - www.wallacecenter.org/our-work/current-initiatives/sustainable-food-indicators

California

- Brady, Eileen, Proj. Manager. The New Mainstream: A Sustainable Food Agenda for California. The Vivid Picture Project, A Project of Eco-Trust
    - Feenstra, Gail et al. Proposed Indicators for Sustainable Food Systems as part of the Vivid Picture Project (2005)
    - www.vividpicture.net/documents/16_Proposed_Indicators.pdf

San Francisco

- Thompson, Edward Jr., Alethea Harper, Sibella Kraus. Think Globally, Eat Locally: San Francisco Foodshed Assessment. (2008)
    - www.farmland.org/programs/states/ca/Feature%20Stories/documents/ThinkGloballyEatLocally-FinalReport8-23-08.pdf

- Jones, Paula, Fernando Ona et al. 2005 San Francisco Collaborative Food System Assessment. (2005)
    - www.sffoodsystems.org/pdf/FSA-online.pdf

Oakland

- Unger, Serena, Heather Wooten. A Food Systems Assessment for Oakland, CA: Toward a Sustainable Food Plan. (2006)
    - http://oaklandfoodsystem.pbworks.com/f/Oakland%20FSA_6.13.pdf

LA

- Ashman, Linda, Jamie de la Vega, Marc Dohan et al. Seeds of Change: Strategies for Food Security for the Inner City. (1993)
    - www.foodsecurity.org/pub/Seeds_of_Change.pdf

Alameda County

- Cozad, Shauna, Gail Feenstra, Shawn King et al. Alameda County Foodshed Report. (2002)
    - www.sarep.ucdavis.edu/CDPP/Report/alamedareport.pdf

Stanislaus County

- Anderson, Jamie, Gail Feenstra, Shawn King. Stanislaus County Food System Project. (2002)

Placer County

- King, Shawn, Gail Feenstra. Placer County Foodshed Report. (2001)
    - www.sarep.ucdavis.edu/CDPP/Report/placerreport.pdf

Iowa

Audubon County

- Gradwell, Shelly, Matt Russell, Wendy VanDyke Evans. Audubon County Food System Atlas. (2002)
    - www.leopold.iastate.edu/pubs/other/files/AudubonCountyFoodSystemAtlas.pdf

Johnson County

- Gradwell, Shelly, Matt Russell, Wendy VanDyke Evans. Johnson County Food Systems Atlas. (2002)
    - www.leopold.iastate.edu/pubs/other/files/JohnsonCountyFoodSystemAtlas.pdf

Montana

Missoula

- Hassanein, Neva, Maxine Jacobson. Our Foodshed in Focus: Missoula County Food and Agriculture by the Numbers. University of Montana, (2004)
    - www.umt.edu/cfa/indicator.htm

- Hassanein, Neva, Maxine Jacobson. Food Matters: Missoula County Community Food Assessment. University of Montana, (2004)
    - http://www.umt.edu/cfa/research.htm

Oregon

Benton County

- Rosenberger, Nancy, Leslie Richards, Liv Nevin Gifford et al. From Our Own Soil: A Community Food Assessment, Benton County, Oregon, and Its Foodshed. (2006)
    - www.emoregon.org/pdfs/CorvallisFoodAssessmentReport-logo.pdf

Lane County

- Lane County Community Food Security Assessment. Lane County Food Policy Council (2006)

Oregon/Washington

- Martin, Sheila, Meg Merrick, Tia Henderson et al. Planting Prosperity and Harvesting Health: Trade-offs and Sustainability in the Oregon-Washington Regional Food System. Dillon, Tracy, ed. (2008)
    - www.pdx.edu/sites/www.pdx.edu.ims/files/media_assets/ims_foodsystemsfinalreport.pdf

Wisconsin

- Allan, Majid, Greg Baker, Terese Berceau et al. Fertile Ground: Planning for the Madison/Dane County Food System. (1997)

Foodshed Assessment Resources:

- Whole Measures for Community Food Systems: Values-Based Planning and Evaluation. Community Food Security Coalition. (2009).
    - http://www.foodsecurity.org/pub/WholeMeasuresCFS-web.pdf
- King County, WA Food Assessment Page: http://king.wsu.edu/foodandfarms/KCFFICommunityAssessment.html
- Community Food Security Coalition:
    - http://www.foodsecurity.org/cfa_survey.html
- Pothukuchi, Kami, Hugh Joseph, Hannah Burton, Andy Fisher. What's Cooking in Your Food System? A Guide to Community Food Assessment. Kai Siedenburg, Kami Pothukuchi Ed. (2002)
    - http://www.foodsecurity.org/pub/whats_cooking.pdf

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California Health Interview Survey. (2007). "Food security (ability to afford enough food)." Retrieved November 9, 2010, from http://www.chis.ucla.edu/main/DQ3/output.asp?_rn=0.8378565.

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