2014 - 2015

The State of FARM TO SCHOOL In San Diego County

March 2016

SAN DIEGO COUNTY FARM TO SCHOOL

CHIP a project of: COMMUNITY HEALTH IMPROVEMENT PARTNERS making a difference together

SAN DIEGO COUNTY CHILDHOOD OBESITY INITIATIVE
Working Together to Shape a Healthy Future
Facilitated by Community Health Improvement Partners

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I. EXECUTIVE SUMMARY

Farm to School (F2S) is a thriving movement in San Diego County.

Defined as the combination of school gardens, food-based education, and local foods procurement in a school setting, F2S has rapidly grown across the nation. In Southern California, the San Diego County Farm to School Taskforce (F2ST) has been a leader in the coordinated, regional growth in F2S throughout the county since the F2ST's inception in 2010.

F2S is receiving increased recognition as an innovative set of strategies to improve academic achievement, child nutrition, and holistic child development. The local foods procurement component of F2S is one aspect of a larger good food movement. Like increasing evidence for the benefits of F2S, research is also mounting that shows the positive impacts of local foods on our health, local economies, and the environment. This is particularly relevant for San Diego County which has the more small farms than any other U.S. county, is a national leader in organic agriculture, and whose 2014 agricultural economy valued at $1.8 billion ranked 11th largest of any county in the nation.

This third annual *State of Farm to School in San Diego County* report provides a comprehensive analysis of San Diego County school districts' 2014-2015 F2S activities. The results show that 33 districts in the County (85% of respondents) conduct some type of F2S activities. These districts report an astounding $6.9 million in local and regional food purchases in 2014-2015, or 9.5% of all school food spending, which is a 120% increase since last year. In other respects F2S is quickly becoming the norm rather than the exception. For example, there are over 214 gardens at 24 districts in the County, 27 districts buy local food (13 of which have a direct purchasing relationship with a local grower), over 20 districts conduct F2S in the cafeteria, and 10 conduct F2S in the classroom. However, challenges to F2S such as high prices, a lack of market information, food safety issues and more persist. The work of the Farm to School Taskforce is far from over.

This report also raises the analytical bar for F2S assessments in several respects. First, by comparing F2ST school district members to non-members, the report finds that the F2ST member districts account for 85% of all meals served in the County and 90% of school gardens. Members are also significantly more likely to conduct F2S activities, a greater range of F2S activities, and spend a higher portion of their food budget on local foods without significantly higher per meal food costs. This evidence suggests that the F2ST could be a national model for how to support and guide the growth of F2S as a region. The report also examines regional growth in F2S over time, showing dramatic increases over the past three years in school gardens, F2S in the classroom and cafeteria, and local food spending. Finally, the report introduces a proposed new metric for the F2S research community: The Farm to School index. Taken as a whole, this report is perhaps the most recent and comprehensive regional analysis of F2S in the nation with valuable information for F2S practitioners, stakeholders, policymakers, and researchers.

Recommendations are provided at the end of the report for growers, distributors, school districts, and the F2ST. Recommendations include continuing to standardize language and knowledge among farm to school stakeholders, integrate local procurement into contract bid solicitations, strengthen business practices that support farm to school, and to establish partnerships with farms and community organizations that can help school districts grow their farm to school programs. These recommendations will inform the strategies and activities of the F2ST over the coming year.

II. SAN DIEGO COUNTY FARM TO SCHOOL TASKFORCE

The mission of the San Diego County Farm to School Taskforce (F2ST) is to increase consumption of local, healthful, seasonal foods and to improve food literacy within schools.

The F2ST started in 2010 as a subcommittee of the **San Diego County Childhood Obesity Initiative's (COI) Schools and After-School Domain.** The COI is a 10-year Collective Impact initiative to reduce and prevent childhood obesity in San Diego County through policy, systems, and environmental change. **Community Health Improvement Partners (CHIP)** serves as the "backbone organization" that facilitates both the COI and the F2ST.

In 2015, the F2ST had 37 members consisting of 22 school districts, eight local food and farm businesses, and seven community partners. F2ST members are defined as any entity that participates in three or more of the F2ST's key activities or meetings per year. Beyond those qualifying for membership, overall the **F2ST engaged nearly 200 different entities in 2015** including over 40 school districts, nearly 100 local farms and food businesses, and dozens of community partners.

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2015 Farm to School Taskforce Members

SCHOOL DISTRICTS

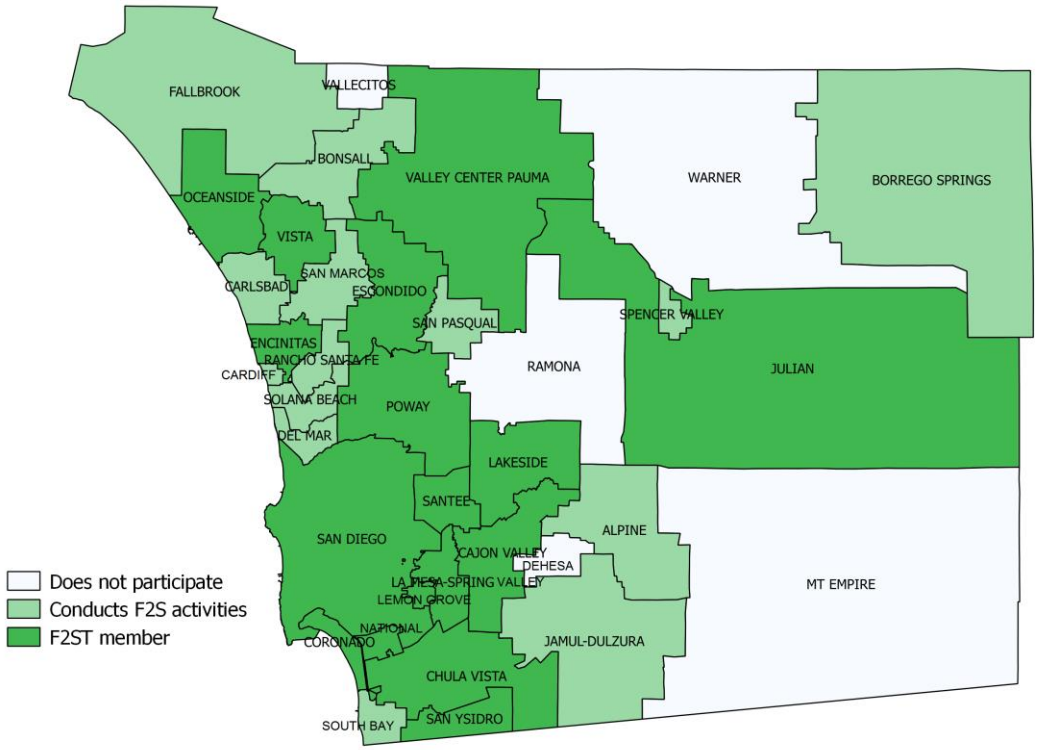
Cajon Valley Union School District
Chula Vista Elementary District
Coronado Unified School District
Encinitas Union School District
Escondido Union High School District
Escondido Union School District
Grossmont Union High School District
Julian Union High School District &
Julian Union School District
La Mesa-Spring Valley School District
Lakeside Union School District
Lemon Grove School District
National School District
Oceanside Unified School District
Poway Unified School District
San Diego Unified School District
San Dieguito Union High School District
San Ysidro School District
Santee School District
Sweetwater Union High School District
Valley Center-Pauma Unified District
Vista Unified School District

FARMS, DISTRIBUTORS, & FOOD BUSINESSES

American Produce Distributors
Apple of the Tropics
Rancho J'Balie
San Diego Soy Dairy
Solutions for Change Farms
Stehly's Farm
Sunrise Produce
Whole Foods

COMMUNITY PARTNERS

Alchemy San Diego
County of San Diego
Dairy Council of San Diego
San Diego County Farm Bureau
San Diego Food Systems Alliance
UCSD Health Systems
UCSD, Center for Community Health



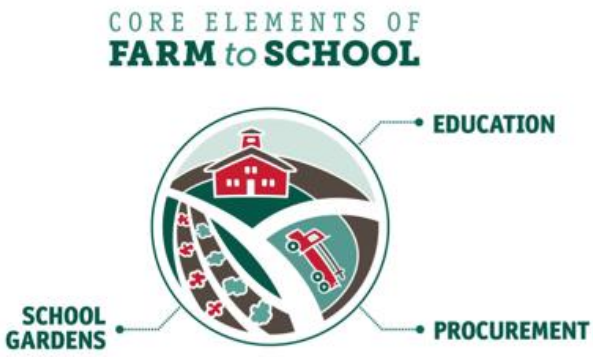
III. METHODOLOGY

In the Fall of 2015, CHIP and the F2ST conducted their third annual *State of Farm to School in San Diego County* survey. All data collected is for the 2014-2015 school year.

CHIP also made a concerted effort to incorporate related data collection needs of key partners in the region (i.e. San Diego Food Systems Alliance, UCSD Center for Community Health, Center for Ecoliteracy). The survey was distributed in November, 2015 to key F2S contacts in all 42 San Diego County school districts and closed in February, 2016. A total of 40 districts responded, a response rate of 95%. The two non-respondent districts are very small (representing less than 2% of total County students). Thus the results represent the activities of districts that include over 98% of all students in the County. Data generated by CHIP was merged with other publicly available data sets on school meal participation rates, free and reduced-price meal eligibility, etc. The survey tool is not included in this report but is available upon request.

IV. BENEFITS OF FARM TO SCHOOL

Farm to school (F2S) is defined as the combination of school gardens, food-based education, and local foods procurement in a school setting.[1]



According to USDA's most recent Farm to School Census results, 5,254 school districts operating 42,587 schools engaged in F2S activities and spent a cumulative $600 million on local foods in the 2013-2014 school year.[2] These figures demonstrate that F2S is now a formidable movement in schools across America.

The context for the rapid growth of F2S across the country cannot be ignored. While leveling off in recent years, **childhood obesity continues to be a national epidemic**. As of 2012 a third of children (ages 2-19) were overweight or obese, 17% of which were obese.[3] Obese youth are more likely to have risk factors for cardiovascular disease and prediabetes. **Obese children are more likely to become obese adults, and are therefore at greater risk for heart disease, type 2 diabetes, stroke, and several types of cancer**.[4] Changes in the food system driving an increase in obesity have a complex relationship to other issues related to the food system like **food insecurity** and **climate change**.[5,6] While more research is needed, it is clear that for the past 50 years the food system's shift toward increasingly processed, calorie-dense, but nutritionally devoid foods has not served the health of our communities nor the environment. These issues can—and must—be tackled together. **F2S is part of the solution**. In San Diego County and across the country, F2S program have emerged in concert with a national food movement that is finding creative ways to reconnect with our food and re-shape a food system that better serves our health, local economies, and the environment.

When combined, F2S programs produce a range of inter-related health, educational, environmental, and economic benefits. For example, garden-based education has shown to increase academic achievement in science, math, language arts, writing, and social studies while also increasing children's excitement for learning.[7] [8] Multiple studies also demonstrate the **positive effects of garden-based education on child nutrition** indicators including increased fruit and vegetable consumption, willingness to try new foods, food preferences, nutrition knowledge, dietary behavior at home, and likelihood of cooking.[9,10] Research also shows garden-based education to have a positive impact on **self-esteem, sense of belonging, and overall life skills, as well as a decrease in disruptive behavior disorders.**[11] [12] [13] While more research is certainly needed, taken together the result is clear: **School gardens are a highly effective strategy with important impacts on academic achievement, nutrition, and holistic child development.**

While a thorough review of food-based education is not undertaken here, note that school gardens are just one of many settings in which F2S programs are creatively engaging students across the country. These strategies range from taste tests, to classroom curricula, to farm visits, to local foods on the salad bar and in school meals, and more. Research is continually emerging on the beneficial results of these diverse F2S nutrition education strategies.

Lastly, F2S programs may also have other important impacts on the district such as **increased participation in school meal programs.**[14] This brings much-needed revenue to the district while also increasing the chances that a student eats a healthy, balanced meal rather than unhealthy competitive foods, or perhaps nothing at all. Given the F2ST's emphasis on local food procurement and the nuance of this issue, the benefits of local and regional food systems are detailed separately below.

V. BENEFITS OF LOCAL & REGIONAL FOOD SYSTEMS

F2S is part of a larger good food movement, one aspect of which is supporting local and regional food systems.

USDA recently estimated the U.S. market for local foods to be $6.1 billion in 2012,[15] up from $4.8 billion in 2008,[16] and numerous studies have demonstrated consumers' increased willingness-to-pay for local foods.[17] The market for local foods is no longer a niche trend, it is an emerging market driven by consumers' growing awareness of the impact their food choices have on their health, the economy, and the environment.

The benefits of local food are multi-faceted. **Freshness and taste** are two long-standing reasons cited by consumers for buying local foods.[18] Evidence suggests that **fresher may also mean more nutritious.** Food sold locally is often harvested at peak ripeness and sold within 24 hours, which for many fruits and vegetables equates to more nutrients. [19] Conversely, food harvested for long-haul supply chains is first and foremost bred for yield rather than nutrition, is often harvested prior to peak ripeness, and may be damaged and nutritionally degraded during harvest, transport, and/or storage, all of which contributes to nutrient loss on conventional food's long journey prior to consumption.[20]

An important point is that the benefits of local/regional food go beyond the concept of "food miles." The argument continues to persist that minimizing the distance a particular food item travels from farm to plate results in an environmental benefit due to reduced transportation distance and, therefore, reduced carbon emissions. However, the notion of "food miles" has proven to be not the most useful metric, as it ignores the energy-efficiencies brought by economies of scale in the transportation methods of conventional food supply chains.[21] Furthermore, transportation only accounts for 11% of the food system's carbon footprint.[22] Much more important to the story is how food is grown, by whom, and the associated environmental, economic, and social impacts.

Many of **the benefits of local food systems are due to the size and production practices of farms that sell through local food supply chains, also known as *direct-to-consumer* and *intermediated* market channels.** These differences are important because, among other reasons, over 80% of all carbon emissions in the average U.S. household's carbon footprint for food consumption result from food's production phase.[23] Direct-to-consumer (DTC) sales include roadside stands, farmers markets, community supported agriculture (CSAs), etc. Intermediated sales include all *non-DTC* local sales to grocers, restaurants, regional aggregators (i.e. food hubs), and institutions.[24] While there is much variation *within* local food supply chains between DTC and intermediated market channels, they will be discussed here together as compared to conventional supply chains.

Farms with local food sales tend to be smaller (defined by USDA as grossing less than $350,000 per year).[25] **Small farms often generate higher total *output* (rather than total *yield*) through practices like multi-cropping, which make small farms potentially much more efficient** when considering the cumulative production of all farm goods and ecosystem services.[26] Compared to conventional farms, farms producing for local food supply chains provide important **environmental benefits.** They are more likely to apply manure, to produce alternative energy, and to harvest biomass for bioenergy, as well as less likely to apply pesticides and herbicides.[27] Within greenhouse producers, **those selling in DTC supply chains use 5 to 6 times less fuel per acre than conventional farms.**[28] USDA also found these farms to be more likely to use **environmentally friendly management practices** ascribed to organic production, though often not certified as organic.[29] These on-farm production practices may contribute less to climate change and, along with aforementioned practices like multi-cropping and supporting a greater range of genetic diversity, have the potential to make these farms more **climate resilient**.[30] Also, just over **half (51%) of all farms with local food sales are fruit, vegetable, and nut growers**,[31] a stark contrast to a food system awash in commodity crops produced through large-scale, industrial mono-cropping. Thus the size and related practices of farms selling through local food supply chains have important benefits for human and environmental health.

Local food purchases also have positive economic impacts. First, **more of the consumer's food dollar stays with the grower when foods are purchased through local food supply chains,** especially DTC market channels. According to USDA, only $0.17 of the average food dollar stays with the farmer and $0.83 accrues to other actors in the food supply chain.[32] At farmers markets, these figures are reversed, with often over $0.80 of every dollar of a local food sale staying with the farmer.[33] **Local food purchases also generate additional economic activity** in the form of direct effects (i.e. increased sales by food and farm businesses), indirect effects (i.e. inter-industry transactions relating to direct effects), and induced effects (changes in local spending resulting from direct and induced effects). While the additional economic benefit of local food, often referenced as the "multiplier effect," varies depending on the given product(s) and community, numerous local economic development studies show multiplier effects for local food ranging from 1.3 to 2.6,[34] meaning that **every dollar spent on local foods generates an additional $0.30-$1.60 in local economic activity.** These studies are far from comprehensive or definitive and more

research is needed on, for example, to what extent local food purchases simply replace purchases elsewhere in the economy. Caveats aside, research points to tangible economic benefits of supporting local and regional food systems.

These beneficial aspects of local food are all the more salient in **San Diego County, which has more small farms in the country[35] and is a national leader in organic agriculture, with over 350 certified organic farms.**[36] Unlike many areas of the country, it is much more clear that buying local in San Diego County equates to an increased likelihood of buying organic and supporting small farms. With a total value of $1.8 billion in 2014, $543 million of which consists of fruits, vegetables, and nuts, **San Diego County has the 11th largest agricultural economy of any U.S. county.**[37] San Diego County has a year-round agricultural bounty that the F2S and broader good food movements have the opportunity to put to work in a way that benefits people's health, the local economy, and the environment. For these numerous and diverse reasons, the **F2ST strongly encourages San Diego County school districts to purchase more local foods and to grow their F2S programs.**


1 small bay leaf
1 zucchini
1 red bell pepp
4 tomatoes

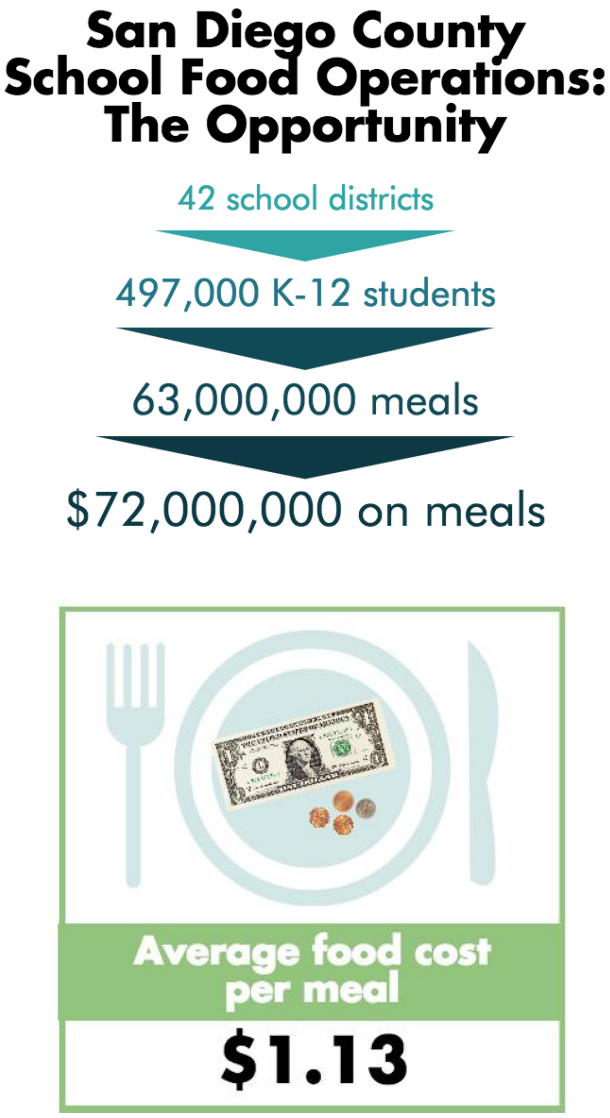
VI. FINDINGS

San Diego County School Food Operations

School districts' Child Nutrition Departments are critical partners in achieving farm to school success. In addition to sourcing, preparing, and serving millions of meals per year to students across San Diego County, they also lead substantial cafeteria-based nutrition education and are increasingly involved in F2S collaboration with school gardens, classroom-based nutrition education, farms, and other community partners. Therefore, growing a successful F2S program—and especially any effort to procure locally grown food— requires a thorough understanding of school food operations. This includes the regulations governing school food, school food expenditures, meal participation rates, district infrastructure limitations, menu planning, the competitive bidding process, distribution logistics, supply chain partners, and more.

Food Purchasing & Meal Participation

In the 2014-2015 school year, **San Diego County's 42 school districts spent $72,000,000 to serve over 63,000,000 meals to the County's 497,000 K-12 public school students.** Roughly 15% ($12,000,000) of districts' total food costs are spent on fruits and vegetables. Districts spent a total of $481,000 through the DOD Fresh Program and $3,225,000 through the USDA Foods Program.



On an average day, 53% of K-12 students in the County eat a school lunch.[i] **Including breakfast, lunch, snack and supper, San Diego County schools serve 344,000 meals per day.** Each district varies greatly, with some serving lunch to fewer than 10% of students and some serving almost 90%. This rate is dependent on several factors, including the percentage of students eligible for free and reduced-price meals (FRPM), student age, school food quality, meal program marketing, and more. In the 2014-2015 school year, **253,000 (or 51%) of San Diego County's students were eligible for free and reduced-price meals.** School breakfast is an increasingly important aspect of school food operations, with San Diego County districts increasing their

[i] Calculated by dividing total average daily lunches served by average daily attendance. All data used is publicly available through CA Dept. of Education (CDE).

number of breakfasts served by 3.5% since 2013-14, and 11% higher than 2012-2013, now serving an average of 112,500 breakfasts per day.

Yet many students continue to be left out. A "school meal gap" can be calculated using the total number of meals served per day and FRPM eligibility rates. Our analysis found that in 2014-2015, 18 districts served fewer lunches total (paid and FRPM combined) than the total number of FRPM for which they were eligible to receive reimbursement. The total County-wide gap for lunch in these 18 districts is over 3.5 million meals per year. **If every student were to eat lunch at school daily, San Diego County school districts could serve an additional 36 million lunches per year.**[ii] These gaps represent a substantial lost revenue opportunity for federal funds as well as a missed opportunity to bring healthy, balanced, and increasingly freshly prepared meals to students, many of whom may instead be eating unhealthful competitive foods, or perhaps nothing at all. Note that *why* some districts serve relatively fewer meals than others is a combination of many factors and that a lower participation rate does not make one school food operation worse than another.

To serve their collective 344,467 meals per day, San Diego County's **42 school districts spend an average of just $1.13 per meal on food costs, only $0.21 of which is spent on fruits and vegetables.** These figures only account for food costs, which make up about 45% of total school food service costs. The remaining 55% is used to pay for labor, infrastructure, supplies, contracting, and other indirect expenses.[38] **The financial reality of roughly $1 per plate continues to be one of the primary limitations** in bringing more fresh, healthy, local, sustainable food to K-12 schools in San Diego County.

Infrastructure & Menu Planning

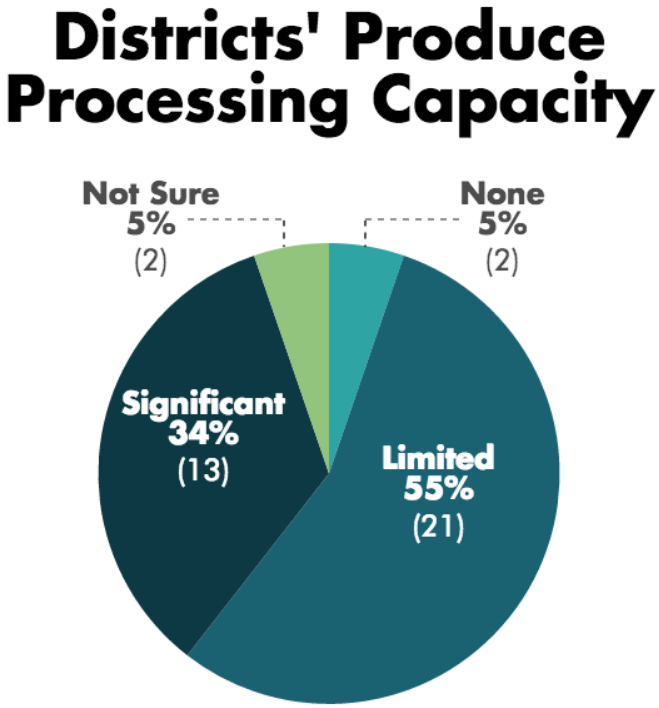
The infrastructure and logistics of these districts' school food operations are as varied as the districts they serve, ranging from heat-and-service models to full scratch cooking. **Districts have between 0 and 28 production kitchens each.** Eleven districts have no satellite kitchens, nine have one, 16 districts have between two and 23, and (as in many respects) San Diego Unified is an outlier with 160 satellite kitchens. **San Diego County school districts report a total of 498 schools with salad bars, or 70% of all K-12 schools in responding districts.**

The lack of sufficient infrastructure continues to limit school districts' capacity to purchase, process, and serve more fresh local foods and to freshly prepare meals. **Over half of San Diego County districts have limited to no capacity for processing fresh produce.** Only **13 districts report significant produce processing capacity** (i.e. the ability to wash, cut, freeze, preserve, etc.). **More districts (22, or 56% of respondents) report significant or extensive ability to freshly prepare meals but 15 districts have limited or no capacity to do so.** In lieu of sufficient infrastructure, school food operations will continue to rely on supply chain partners such as food processors and manufacturers. Any community interested in bringing more local food or freshly prepared meals to

[ii] 'Meal gap' figures calculated using data on FRPM-eligibility, average daily attendance, and total meals served. All data is publicly available through CDE.

their students should know their district's food service infrastructure limitations and take active steps to find creative solutions.

School districts' menus require careful planning in advance in order to meet strict child nutrition regulations with Child Nutrition Departments' limited budgets. Roughly half of San Diego County school districts plan their menus monthly, a fifth do seasonal menu planning, a handful plan their menus only 2-3 times per year, and there are several other models. Any **efforts to feature local foods in school meals should have a detailed understanding of the district's menu planning process.**



Distribution

Three produce distributors continue to serve 70% of all San Diego County districts, which account for 90% of all K-12 meals served in the County. These three companies—Sunrise Produce, American Produce Distributors, and Diamond Jack Produce—are crucial partners in districts' efforts to source more local, sustainable fruits and vegetables. The consolidation of the distribution supply chain presents both opportunities and challenges for F2S in San Diego County.

These companies took some commendable actions to help grow F2S in 2015. Sunrise Produce and American Produce actively participate in the Farm to School Taskforce, Sunrise stepped up as a sponsor for the 2015 *Let's Go Local!* Produce Showcase, and American participated in several of their client districts' 2015 F2S planning efforts. **Over 20 districts report working with their distributors to source local/regional produce**, which highlights the critical role distributors play in the procurement aspect of farm to school. We **encourage these companies to continue working with their clients to help bring more local, sustainable foods to schools across the County.** The **F2ST also challenges them to strengthen practices such as transparent source-identification** labeling of product by the F2ST's three-tiered definition of local food (see next section for definition).

While recognizing and valuing the role of distributors in F2S success, CHIP continues to promote direct purchasing relationships between school districts and local farms. Growers and producers interested in selling to school districts should know how districts prefer to be contacted: **15% of districts prefer to be contacted by growers directly, 45% can be contacted directly or through their distributor, and 37% prefer to be contacted through their distributor.** Specific contact information and preferences for each district will be made available in CHIP's annual Farm to School District Profiles.

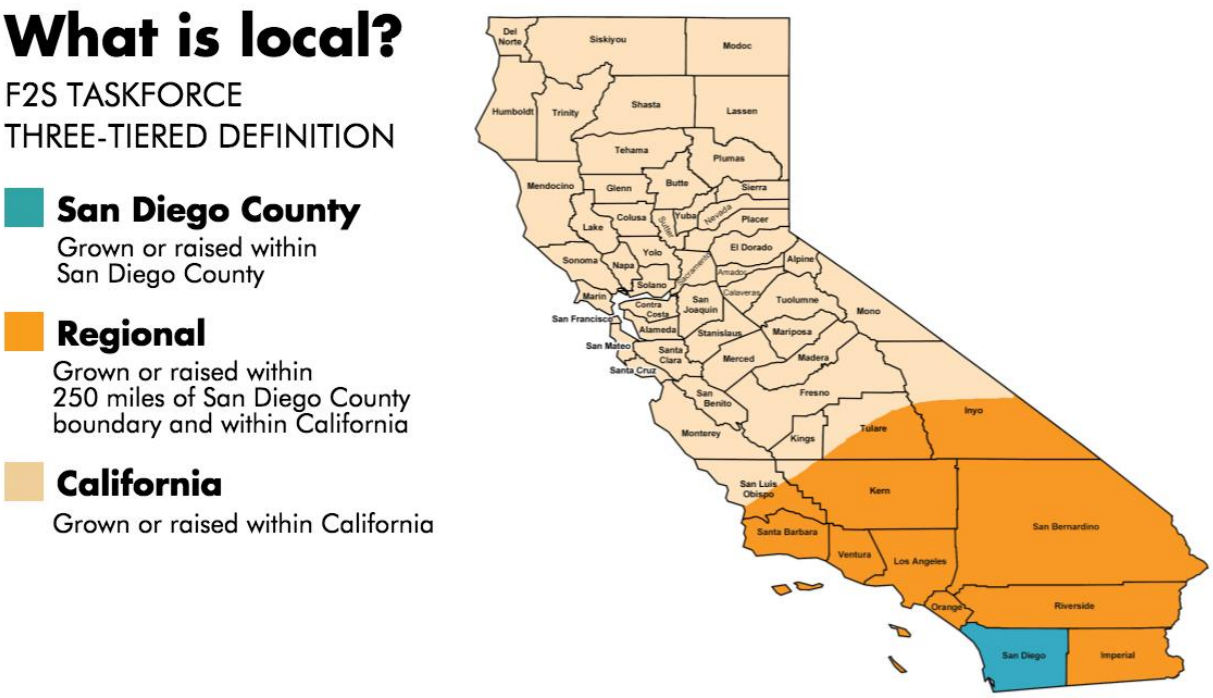
Knowing districts' delivery needs is also crucial for local food producers interested in selling directly to school districts. **Two-thirds of districts have only one drop site**, and the remaining 14 districts have between two and 24 drop sites. While not a universal rule, larger districts will generally have more drop sites, which can make delivery logistics for a small and medium-sized producer more costly and time-intensive.

Defining Local Foods

The San Diego County Farm to School Taskforce (F2ST) has adopted a three-tiered definition of "local" as food grown, raised, or produced:

- **In San Diego County (Tier 1).**
- **Within 250 miles of San Diego County (Tier 2).**
- **In California (Tier 3).**

The definition and the F2ST's activities are designed to prioritize food grown in San Diego County (Tier 1) but incorporate aspects of other common definitions of "local" (i.e. within a certain mile radius, state level, etc.) and allow for a greater volume and range of products at competitive prices to be considered in districts' efforts to source local.



Sixteen F2ST members report having adopted the F2ST's definition of local food and three report having adopted a comparable definition. An additional eight report they have not adopted a definition of local but report purchasing what they would consider to be local food (i.e. food direct from a local farm, sourcing local/regional product for a Harvest of the Month program). The number of districts that report having a definition of "local" is actually down slightly from last year. A high rate of turnover in school food leadership highlights the need for continual engagement, education, capacity building, and adoption of key definitions in district policy.

Local Foods Purchasing

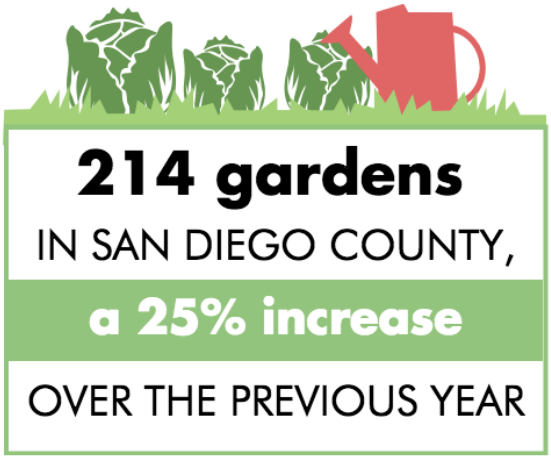
In the 2014-2015 school year, San Diego County school districts spent a total of $6,900,000 on local and regional foods as defined by the F2ST or by comparable definitions. **This $6.9 million is equivalent to 9.5% of all school food purchases. This is a 120% increase, or more than a doubling, of the total local foods purchasing reported in 2013-2014.**

This is likely a conservative estimate of local and regional foods purchases, as not all districts were able to track or report a figure. **Twenty-seven districts report purchasing local foods in 2014-2015**, only 22 of which could report a figure for local food purchases. The increase in reported local food purchasing is at least in part due to more districts being able to track and report these purchases, which is an important outcome in itself. An additional nine were unsure of whether they purchased local foods in 2014-2015, which highlights continued difficulties in tracking and lack of transparency in the supply chain.

While most of districts' produce needs continue to be provided by distributors, **roughly a third (13 districts) have a direct purchasing relationship with a farmer.** Several districts buy direct from multiple farms. A handful of farms specialize in selling to school districts and other institutional buyers, as **these 13 districts purchased directly from a reported total of just nine farms in the region.**

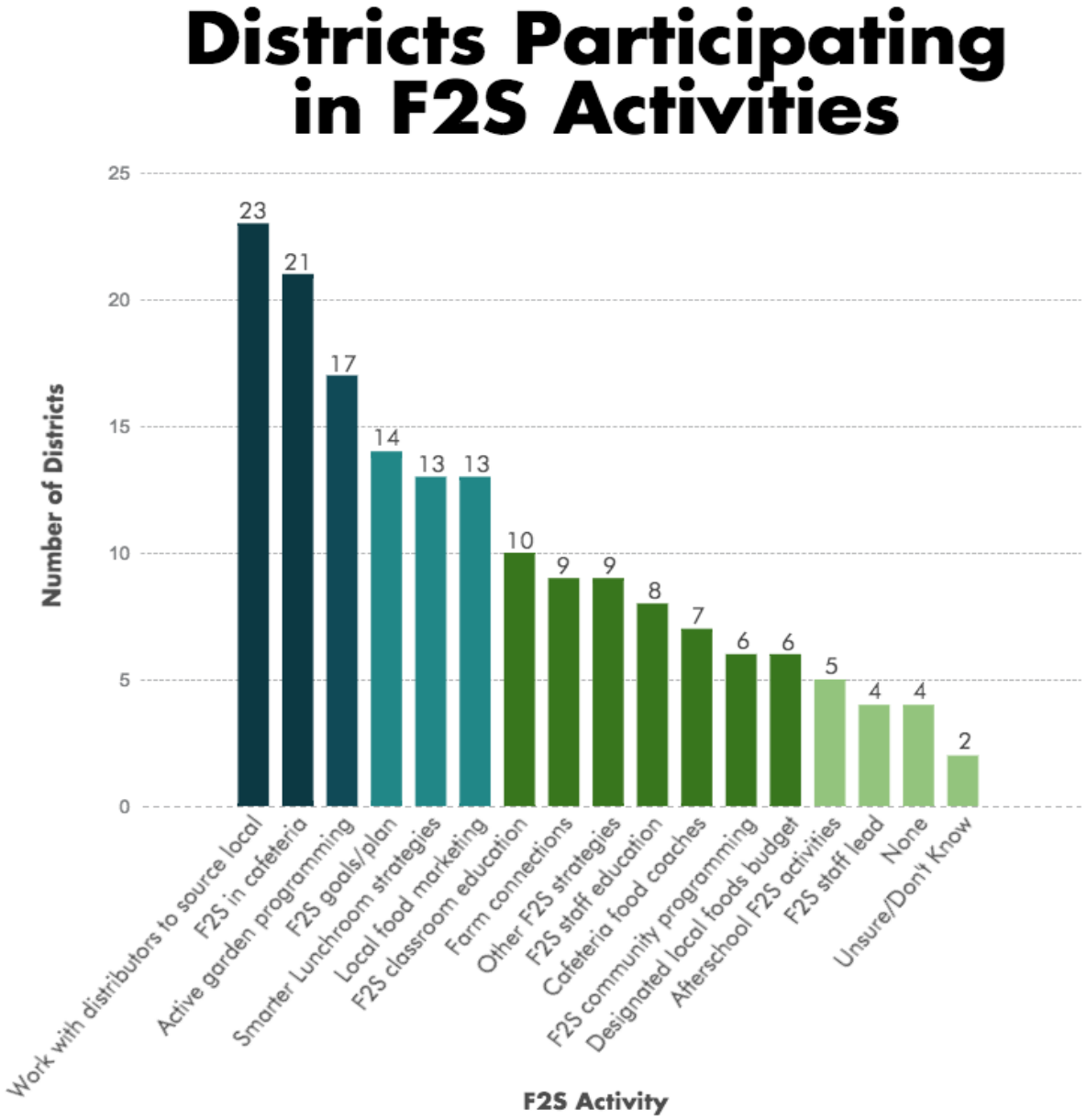
Farm to School Programming

A total of 33 districts (85% of respondents) conduct some type of F2S activities. The top F2S activities in San Diego County continue to be focused on local foods procurement and bringing nutrition education to the cafeteria.



The top F2S activities in the County in 2014-2015 were as follows:

- **23 districts worked with their distributor to source local foods.**
- **21 conducted nutrition education into the cafeteria.**
- **16 districts conduct active garden programming.**
- **14 have F2S goals and/or a plan for the district.**
- **13 market local foods in some way.**
- **13 utilize "Smarter Lunchrooms" principles in the cafeteria.[iii]**
- **10 districts conduct F2S activities in the classroom.**



[iii] The Smarter Lunchrooms Movement uses principals of behavioral economics and evidence-based practices to promote healthful eating. Learn more at http://smarterlunchrooms.org.

A number of other F2S activities are used across the County, though less frequently including F2S staff education (9 districts), cafeteria food coached (7), community programming (6), designated local foods budget (6), and after-school F2S activities. Overall, these activities highlight the diversity of F2S activities within school districts across San Diego County, as well as opportunities for growth.

Shared Local Foods Procurement Initiatives

An important part of the F2ST's work has been to increase participation in shared local foods procurement initiatives, namely, **Harvest of the Month (HOTM)** and, more recently, **California Thursdays.®**

HOTM is an initiative of the California Department of Public Health that features nutrition education tools and resources to support healthy lifestyle habits. In schools, HOTM is a two-tiered program connecting the cafeteria to the classroom for San Diego County students. At the cafeteria tier, school districts procure (locally, if possible) and promote a featured seasonal HOTM fruit and vegetable on their salad bars every month using a shared HOTM calendar. In the classroom tier, HOTM in the classroom engages students through curriculum-based experimental learning where they taste test the produce in their classrooms and learn about farming families, harvesting, and food production. The formal HOTM program reaches over 5,000 San Diego County students.

The implementation of HOTM throughout the San Diego County is directly managed by **University of California San Diego's Center for Community Health, a long-time F2ST member that has been critical to F2S success in the region.** Through an innovative and collaborative partnership, UCSD leads the direct implementation of HOTM and CHIP supports districts' HOTM local food procurement needs and provides an ongoing platform for regional collaboration through the F2ST.

In 2014-2015, the *State of F2S* survey found that while **11 districts implement HOTM formally with support from UCSD, an additional nine implement aspects of the program informally without support from UCSD in a way that works for their district. Furthermore, five districts are interested in expanding their HOTM program and seven non-participants would like to start one.** This additional participation, almost double the number that are receiving formal support, could be thought of as a "positive externality" of collaborative, regional F2S efforts. Working individually in silos, HOTM may only have been implemented to the extent that there were adequate resources for direct support for formal implementation. Instead, the region has been able to grow the program in schools to a much greater extent through collaboration.

In 2014-2015, **five San Diego County school districts participated in the Center for Ecoliteracy's (CEL) new and exciting California Thursdays® program.** Participating districts commit to serving a freshly-prepared, California-sourced meal on Thursdays (once a month in year 1 and once per week in Year 2) and receive support from CEL including school food service staff training, scaled recipes, curriculum resources, marketing and communications support, and access to a collaborative, statewide network of school food innovators. Four out of five California Thursdays® participants in 2014-2015 were also F2ST members. Later, **in Fall of 2015, CEL partnered with CHIP and the F2ST to conduct an intensive recruitment and subsequent rollout of the program to a total of 12 districts that serve 60% of all K-12 students in the County.** This partnership and its impact will be detailed in the 2016 *State of Farm to School in San Diego County* report.

Needs

School districts have identified specific needs in order to purchase more healthy, fresh, local foods.
The top five needs identified were:

1. **Competitive pricing.**
2. **Single ordering method for ordering local product.**
3. **Better information on availability of local foods.**
4. **Food safety assurances.**
5. **Availability of lightly processed products.**

These top five needs underscore the F2ST and CHIP's ongoing work to grow F2S in the County, much of which directly addresses these needs. For example, CHIP's annual **Crop Availability Chart**[iv] seeks to provide schools and other institutional buyers high-quality information on the availability of local produce, and events like the ***Let's Go Local!* Produce Showcase** provide the opportunity for growers and buyers to meet face-to-face. Also, CHIP's annual **Farm-to-Institution 101 workshop** guides local growers through the food safety and many other requirements needed to sell to institutions. CHIP's forthcoming **Good Food Rebate Program** (GFRP), which will be launched in 2016, directly takes on the issue of cost, which has been identified by school districts as the top barrier to sourcing more local foods multiple years in a row. In these and many other respects, **CHIP and the F2ST are using data-drive strategies to reduce the numerous barriers involved in achieving farm to school success.**

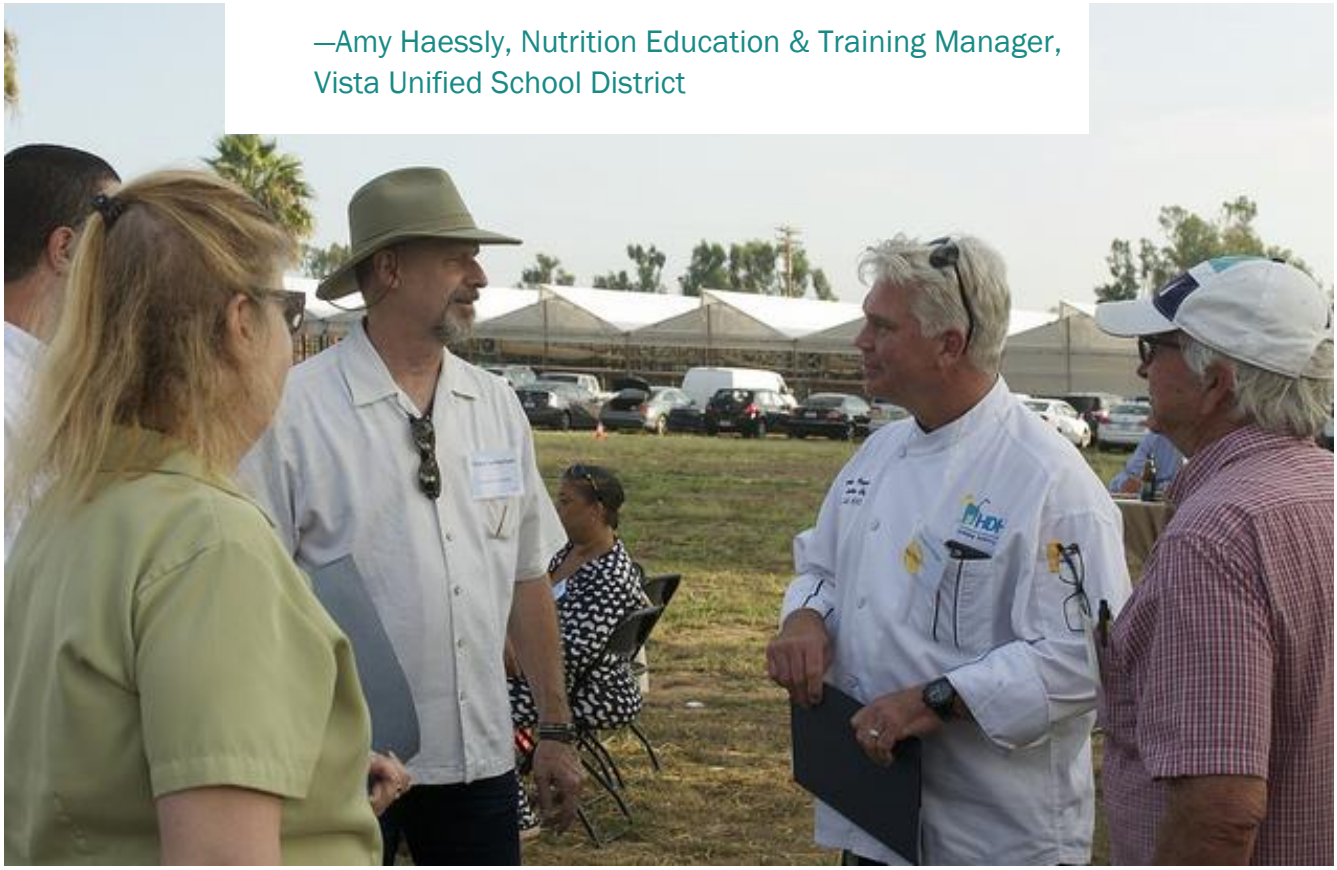
Food Waste Reduction & Recovery

Several efforts on food waste reduction and recovery are well underway throughout San Diego County, thus several questions on this topic were included in this year's *State of F2S* survey. Currently, **only 7 districts donate any unserved food.** Regarding districts' preparation for AB1826, a statewide bill that requires the diversion of organic waste from landfills, **only 9 districts have a plan for AB1826, 8 have no plan, and 16 are unsure.** This evidence suggests that a substantial amount of districts will need support in 2016 and beyond to comply with this mandate. Districts agree, as **23 report wanting more information** regarding AB1826 and food waste reduction and recovery efforts generally.

[iv] CHIP's 2015-2016 Crop Availability chart shows comprehensive projected crop availability for 75 crops for over 50 San Diego County and Southern California growers, and is available at: http://ourcommunityourkids.org/media/140367/2015%20full%20grower%20engagement%20report_final.pdf

The Farm to School Taskforce has been instrumental in the growth of Farm to School activities in our district. We would not have expanded as much as we have without their support and resources."

—Amy Haessly, Nutrition Education & Training Manager, Vista Unified School District



VII. ADVANCED ANALYSIS

Farm to School Taskforce School District Members vs. Non-Members

Additional analysis demonstrates that the **districts involved in the F2ST stand out as impactful F2S leaders in the region.** First, F2ST member districts vary from non-members in important ways that highlight the ability of the F2ST to shift the norm of school food operations and grow F2S throughout the region. First and foremost, **F2ST districts are substantially larger than nonmembers by enrollment.**[v] **F2ST district members also serve a more diverse student population,** [vi] including a significantly larger percentage of Hispanic, Filipino, Pacific Islander, and African-American students.

F2ST districts' size is an important factor in their ability to grow F2S in the region, shift the school food supply chain, and create a healthier generation of youth. **F2ST members account for 85% of all school meals served in 2014-2015, serving over 300,000 meals per day.** While members have roughly as many gardens per school as non-member districts, by nature of their size **F2ST members collectively operate over 90% of school gardens in the County.** By aligning language, efforts, and activities, these districts can make a substantial impact.

Beyond just being larger, **Taskforce members have more active F2S programs. F2ST members are statistically significantly more likely than nonmembers to:**

- **Conduct F2S activities.**
- **Participate in a greater range of F2S activities, conducting an average of more than twice as many different F2S activities.**
- **Purchase any local foods.**
- **Spend a higher percentage of their overall budget on local foods.**
- **Participate in shared procurement initiatives like Harvest of the Month and California Thursdays.** [vii]

F2ST member districts achieve all this *without significantly higher average per meal food costs.*

To what degree this success can be attributed to the F2ST's collective efforts versus independent district motivations is not easy to prove. However, when asked whether the F2ST has been a useful group, **90% of members said the F2ST has been a somewhat or very useful group.** The evidence is clear: The F2ST is an important, impactful, high-performing group of school districts leading the region's F2S movement.

[v] Statistically significant at the P<.05 level.
[vi] p<.10, as measured by total percentage of racial/ethnic minorities in the district. Each sub-category mentioned is also independently statistically significant at p<.10.
[vii] All bulleted statements in this section statistically significant at the p<.05 level.

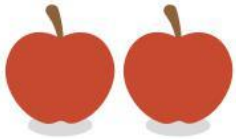
Farm to School Taskforce School District Members

Characteristics

22 school districts participating

Serve **85%** of all school meals served in San Diego County

Larger and more diverse than non-member districts



No different than non-members in terms of percentage of students eligible for free and reduced-price meals or per meal food costs

F2S Activities

Represent **95%** of all districts' local and regional food purchases

Spend a **higher portion** of their food budgets on local food without significantly higher per meal food costs

Operate **90%** of school gardens in San Diego County

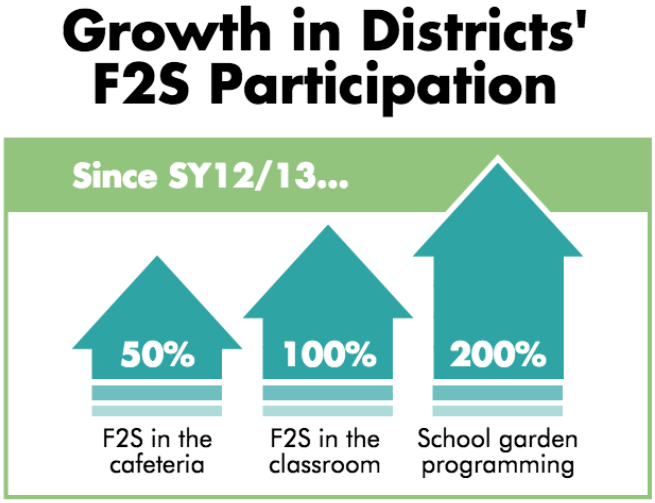
More active in F2S activities, averaging more than twice as many activities as non-members

Multi-year Growth of Farm to School in San Diego County

The F2ST has collaborated for five years to grow F2S across the County. Three years of data collected for the annual *State of Farm to School in San Diego County* reports allows for a unique multi-year analysis of the growth of F2S in the County. This analysis finds that **over the past three years, F2S has grown monumentally in the region.** Between 2013 to 2015:

- **Districts reporting any F2S activities grew from 14 to 33.**
- **The number of districts including support for F2S and/or geographic preference in their produce bids increased from 6 to 14. An additional 13 districts have not, but are interested in doing so.**
- **F2S in the cafeteria grew from 15 to 21 districts.**
- **F2S classroom education grew from 4 to 10 districts.**
- **Garden programming grew from 6 to 17 districts.**
- **Districts with F2S goals and plans grew from 6 to 14.**

Analysis also showed that the **average number of F2S activities per district increased significantly between the 2013-2014 and 2014-2015 school years** (from 1.6 to 2.5 average F2S activities, respectively).[viii] Over 50% growth of F2S in the cafeteria, a doubling of F2S in the classroom, and a tripling of districts with garden programming shows impressive growth in diverse types of F2S activities across San Diego County since 2013.



[viii] p<.05

Researchers' Corner: Introducing the F2S Index

CHIP has developed and proposes a new metric for understanding and modeling the robustness of F2S programs: **The Farm to School Index (F2SI).** This measure is needed because existing academic research to date uses relatively simple binary or continuous dependent variables as measures of F2S activity. While these measures are advances in more rigorous empirical modeling, they neglect the nuance and diversity of F2S programs.

The F2SI is an approach that combines measures on each of the three components of F2S (school gardens, food-based educational activities, and local foods procurement) as measured by the following indicators:

- **The percentage of schools in a district with school gardens.**
- **The percentage of food-based educational activities in use by a district out of a given total (in this case 9 activities are identified).**
- **The percentage of a district's total food budget spent on local foods relative to a benchmark goal (in this case the benchmark is 25%).**

The result is one concise metric on a 0 to 1 scale that summarizes the intensity and balance of districts' F2S programs. For detailed information on the rationale and design of the F2SI, see the Appendix.

An initial analysis was conducted that, first, calculated F2SI scores for San Diego County school districts and, second, investigated what district characteristics are associated with a higher F2SI. The distribution of F2SI scores shows that **San Diego County school districts' F2SI scores cluster near zero, between 0.2-0.4, and several high achievers have scores upwards of 0.8.** An initial multivariate regression was also run examining the relationship between F2SI and district size (by enrollment), percentage of students eligible for free and reduced price meals, urbanicity, and whether the district is a F2ST member. Interestingly, **only district size and F2ST membership are significant predictors and both have a positive relationship with F2SI.** Notably, being a F2ST member is associated with a 0.12 higher F2SI, which is almost half the total average F2SI of 0.25.

This latter result is striking suggesting that, **controlling for several other relevant factors, participating in a regional collaborative, the underlying motivation to do so, or a combination thereof are significant and substantial predictors of a robust F2S program.** A final note that this methodology of looking at measures of entities' activities and impacts, controlling for relevant factors, and including a binary variable for their participation in collective impact efforts may prove to be a useful model for other collaboratives that struggle to understand or demonstrate their impact.

See the Appendix for F2SI rationale, design, analysis and regression results.

VIII. RECOMMENDATIONS

Based on these results and the current state of F2S in San Diego County, CHIP recommends the following:

RECOMMENDATIONS FOR GROWERS

1. Take advantage of opportunities to expand your knowledge on the institutional market and whether your farm is a good fit for this market. A partnership with an institution can streamline your sales to one regular (seasonal or year-round) buyer, fetch a fair price for your products, and be an excellent marketing opportunity for your farm.
2. Ensure that you understand institutional buyers' language, purchasing process, and needs, and that you have a plan to meet those needs. CHIP's provides annual Farm to Institution 101 trainings covering these topics.

RECOMMENDATIONS FOR DISTRIBUTORS

1. School districts' demand for local foods is here to stay and will only increase over time. Geographic preference in competitive produce bids will soon be the norm rather than the exception. Strengthen your business practices with regard to local sourcing and source identification to increase your competitiveness with these clients.

RECOMMENDATIONS FOR SCHOOL DISTRICTS

1. Participate in the Farm to School Taskforce. The group has a great deal of experience in making F2S happen as well as streamlined access to knowledge, resources, community partners, and relationships with food and farm businesses that can be mobilized to help you grow your F2S program.
2. Participate in shared procurement initiatives including Harvest of the Month and California Thursdays. These initiatives are designed to merge nutrition education and local foods procurement, which benefits both student well-being and local farmers' livelihoods.
3. Identify community partners with "turn-key" F2S solutions. There are an increasing number of organizations and initiatives specializing in school gardens, hand-on cooking and nutrition education, farms willing to develop partnerships involving purchasing, farm visits, and classrooms presentations. You don't need to start from scratch.

RECOMMENDATIONS FOR THE FARM TO SCHOOL TASKFORCE

1. Continue to strengthen common language and shared activities. Constant re-engagement on regional priorities such as adopting common definitions is necessary.
2. Support districts to incorporate geographic preference into their competitive bid language as a way to make sustainable policy changes at the district level. To this end, CHIP will offer 'contract clinics' in 2016 to provide one-on-one support to districts interested in making these changes. Supporting districts to incorporate support for F2S in their district wellness policy is another policy change that will support the long-term sustainability of F2S.
3. Develop ways to directly address cost barriers to purchasing more healthy, local, fresh, and sustainably produced foods, as this has been cited as the number one barrier to increased local foods purchasing multiple years in a row.
4. Focus on school garden sustainability. There are over 200 school gardens in the County but garden sustainability is cited as a frequent challenge. Work with fellow community partners to develop innovative approaches to ensuring garden sustainability.

We've got a saying at Solutions, "Connect, Trust, Act." If you don't connect with someone you can't trust them and if you don't trust someone you're not going to act on anything with them, and you definitely aren't going to buy your food from them.

These grower/buyer relationships are built upon trust and it's events like the [2015 *Let's Go Local!* Produce Showcase] that allow those relationships and trust to develop.

I know we're all busy as farmers, as distributors, as growers and we all have plenty to do and it may seem like a stretch to take time out of your day to come to events like this and just talk to people, but I would say that this might be the most productive day you have at your farm all year. These sorts of relationships are what will make your farm really sustainable and help our community grow."

—Kevin Gorham, Aquaponic Specialist, Solutions for Change Farm

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X. APPENDIX

The Farm to School Index: Rationale and Design

INTRODUCTION

The research community is only beginning to conduct rigorous empirical analysis to understand key drivers of F2S. Two recent studies stand out, both of which were recently presented at the 2015 American Applied and Agricultural Economics (AAEA) conference. The involvement of this research community signals the beginning of what is sure to be deeper quantitative inquiry into F2S.

Botkins and Roe utilized data from USDA's national Farm to School Census to investigate what characteristics of school districts and their surrounding communities are associated with any F2S activities as well as intensity of F2S activities. Their analysis found that a number of factors significantly influence F2S participation at the school level including the supply of local food, school size, percent of students on free or reduced cost meals, federal reimbursements for the cafeteria programs, total school system expenditures, food cost, cafeteria sales, county population, race composition and urbanicity. Their analysis uses a binary variable to examine overall F2S participation and a continuous variable investigating intensity of F2S activities.[1] Johnson *et al*. also use a binary definition of F2S participation to first investigate the characteristics associated with F2S participation and, second, to determine whether F2S participation affected students' perception of healthful foods and self-reported consumption of specific healthful food items.[2]

WHY A F2S INDEX?

While these quantitative analyses of F2S activity have laid an exciting groundwork for better understanding what factors influence F2S participation, they have thus far relied on either a simple binary definition (i.e. 0 or 1) of F2S participation or a continuous scale (i.e. 0 to 10) based on how many F2S activities a school/district reports conducting. These dependent variables create overly simplistic categories that are unable to account for the great nuance and diversity of F2S models.

Notably, the existing definitions do not account for *balance* in F2S programs. For example, on the continuous scale a district may be defined as having intensive F2S programming score if it is engaged in many nutrition-related activities but has no school gardens, garden-based programming, and procures no food from local growers and producers. A more useful metric would be one that integrates measures of participation, intensity of programming, and balance between F2S components.

PROPOSED F2S INDEX

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[1] Botkins, E., Roe, B. (2015). Understanding Participation in the USDA's Farm to School Program: Results Integrating Information from the Farm to School Census and the Census of Agriculture. *Selected paper presented at 2015 the Agricultural and Applied Economics (AAEA) & Western Agricultural Economics Association's (WAEA) Joint Annual Meeting, July 26-28, San Francisco, California*. Accessed at http://ageconsearch.umn.edu/handle/206229 in March 2016.

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Much like the Human Development Index is a combined measure of economic, health, and education outcomes that aggregate to a quality of life measurement for a population, we propose a combined measure of the three main components of farm to school (school gardens, procurement of local foods, and nutrition education) that aggregate to a measure of overall farm to school activity for any given school district. The benefit of this index is that it would incorporate multiple measures of F2S activity into one metric and, furthermore, would account for balance between core F2S components. The index would generally be structured as follows:

$$F2SI = \frac{(G+P+E)}{3}, \text{ where}$$

- *G* is a 0 to 1 ratio measuring the prevalence of school gardens in a district
- *P* is a 0 to 1 ratio measuring the intensity of a district's local foods procurement
- *E* is a 0 to 1 ratio measure of F2S educational programming in a district

Metrics to include as proxies for each F2SI component include the percent of schools in the district with gardens, the amount of local food procured relative to a purchasing goal/benchmark, and the range of nutrition education activities conducted. In the case of the procurement measure, it is unrealistic for districts (particularly very large districts) to procure 100% locally. In our dataset, the maximum percentage of a district's budget spent on local/regional food is roughly 25%, thus this is set as the benchmark for potential local foods purchasing. So, more specifically, the measure would be calculated as follows:

$$F2SI = \frac{\left[\left(\frac{G_o}{G_p}\right)+\left(\frac{P_o}{P_p}\right)+\left(\frac{E_o}{E_p}\right)\right]}{3}, \text{ where}$$

- G_o is the observed number of gardens in the district
- G_p is the number of potential number of schools with gardens in the district
- P_o is the observed percent of the annual food budget spent on local food
- P_p is the benchmarked percent of the annual food budget spent on local food
- E_o is the observed number of different educational F2S activities
- E_p is the potential number of different educational F2S activities

In this proposed pilot of the index, 9 F2S activities on the *State of F2S* survey were identified as F2S nutrition education activities (which roughly correlate to USDA F2S Census questions) and thus E_p=9. Since P_p is 25% the formula reduces to:

$$F2SI = \frac{\left[\left(\frac{G_o}{G_p}\right) + \left(\frac{P_o}{.25}\right) + \left(\frac{E_o}{9}\right)\right]}{3}$$

BENEFITS AND DEAWBACKS OF A F2S INDEX

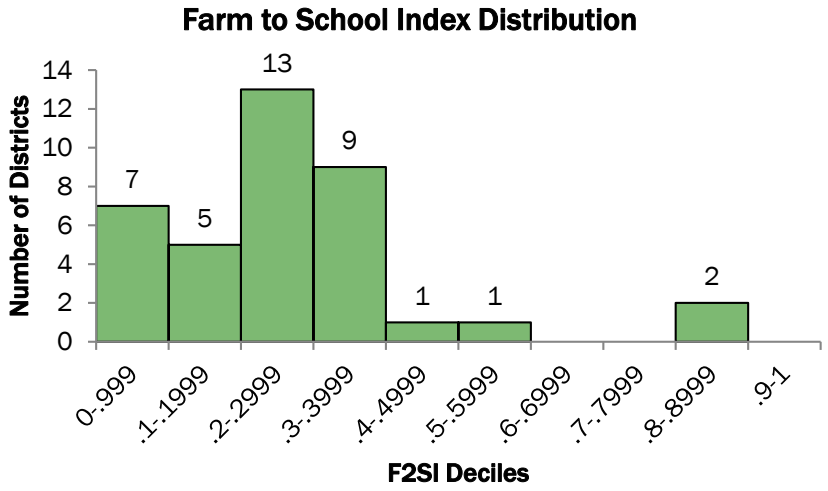
The F2SI proposed above is one approach to creating a concise metric that shows the extent, intensity, and balance of key F2S activities in a district. While the F2SI may be somewhat abstract to the lay reader, this abstraction may be a benefit at the level of nuanced research investigating the drivers of F2S. Also, the component scores are easy to understand and to calculate given the underlying data. By looking at component scores one can see where a district is most intensively engaged in F2S. Component scores could also be investigated to see, for example, whether the characteristics of school districts with a high prevalence of school gardens differ systematically from schools that procure a high percentage of local foods. Overall, this metric has the potential to refine the way the research community understands what

constitutes an active F2S program, what drives the development of F2S, and if/how these programs lead to improved health and well-being for schoolchildren.

On the other hand, indices used to measure the complexities of individuals, institutions, nations, etc. have their own shortcomings that have been thoroughly detailed elsewhere. The three measures could be thought of as proxy variables at best for what are much more complex dynamics in a district's F2S program. Plenty of nuance would still be lost using this approach and should be paired with qualitative inquiry. Furthermore, the assumption provides an equal weight to each of the F2S components, which is an assumption that may not hold for F2S practitioners that may value some activities more than others. A final note is that a geometric mean may, in theory, be preferable to an arithmetic mean, but the fact that many districts have a zero or missing value for one or more component scores would complicate the computation of an F2SI using geometric means, thus an arithmetic mean is proposed.

AN INITIAL ANALYSIS USING THE F2SI

An initial analysis of San Diego County school districts' F2SI scores shows a distribution with clusters near zero, a majority of F2SI scores between 0.2-0.4, and several high achievers. See below for a histogram.



Districts have a mean F2SI of .249 with component means of .241 for local foods procurement, .362 for nutrition education, and .297 for school gardens. Another way of interpreting this is that, on average, districts spend roughly 5% of their total food budgets on local food, participate in an average of 3 out of 9 different types of F2S nutrition education activities, and about 1 in 3 schools in the district have gardens. Several districts had an F2SI of 0 whereas two districts have an F2SI of over 0.8, demonstrating an extremely intensive and well-balanced F2S program.

The F2SI could allow for a fresh approach to statistical modeling that investigates what school district characteristics are associated with a robust F2S program. An initial multivariate linear regression was run to test the impact of district size (by enrollment), percent of students eligible for free and reduced price meals, the percentage of racial/ethnic minority students in the district, urbanicity, and whether the district participates in the F2ST. This regression has a small sample (n=32 districts), utilizes self-reported data, is a cross-sectional analysis, and does not account for multicollinearity (i.e. between F2ST participation and district size, or potential endogeneity. Therefore, any result should be interpreted cautiously. See below for results of this preliminary regression.

	Coefficient Estimate	Standard Error	P-value
Intercept	0.3388	0.0931	0.0010
Enrollment (per 1000)	0.0036	0.0013	0.0152**
%FRPM	-0.0010	0.0021	0.6569
%Minority	-0.0018	0.0024	0.4621
Urban/Suburban	-0.0631	0.0682	0.3619
F2ST Member	0.1168	0.0605	0.0626*

**p<.05, *p<.10

Multiple R-squared	.3606
Adjusted R-squared	.2607
F-statistic (p-value)	3.609 (.011)

The table above indicates that the only two variables that show a statistically significant relationship with F2SI are enrollment per thousand students and F2ST membership.[3] Both variables have a positive relationship with F2SI. The importance of district size in this model matches the same finding in other aforementioned research on F2S using binary and continuous dependent variables. Interpreted at the mean, the model suggests that, all else constant, the marginal impact of having an additional 1000 students in the district is associated with a .003 increase in F2SI and, all else constant, being an F2ST member is associated with a .12 increase in F2SI.

This latter result is striking suggesting that, controlling for several factors, participating in a regional collaborative, the underlying motivation to do so, or a combination thereof are significant and substantial predictors of a robust F2S program. A final note that this methodology of looking at measures of entities activities and impacts, controlling for relevant factors, and including a binary variable for their participation in Collective Impact efforts may prove to be a useful model for other collaboratives that struggle to understand or demonstrate their impact.

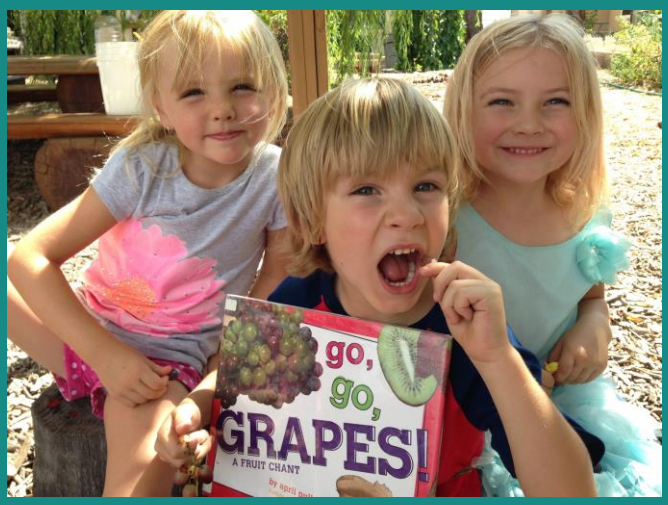
CONCLUSION

We propose this metric to the F2S research community as a way of better capturing the nuance of F2S programs while also providing a metric that could be useful in robust quantitative modeling. We invite feedback on its potential usefulness and are open to any recommended changes. While CHIP has modest internal research capacity, we are a small community-based nonprofit that would greatly benefit from engagement with the community of professional researchers to advance these ideas. Once feedback is gathered, CHIP will pilot its use in analyses with larger datasets (i.e. state, national, etc.) as they become available.

[3] Enrollment per thousand students is statistically significant at the p<.05 level and F2ST membership is significant at the p<.10 level.

OUR VISION

San Diego County school children enjoy healthy foods that maximize seasonal and local products that bolster student achievement and wellness.



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