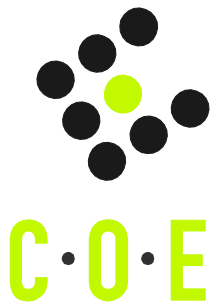


FOOD MANUFACTURING IN CALIFORNIA



2010





This report was prepared by the Northern California Center of Excellence and the Office of Economic Development at Cerritos College.

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Economic and Workforce Development Program

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Introduction

California is a leader in food production due to an abundance of fertile land, a suitable climate and an expansive infrastructure (highways, airports, & ports). These assets have positioned California as a leader in food international exports. In fact, California is the largest food exporter in the nation with 15 percent of the nation's total food manufacturing exports.¹

The purpose of this study is to assess and map the workforce and economic trends of the food manufacturing sector in California across 10 regions. This information is intended for use by the California Community College's Centers for Applied Competitive Technologies (CACT) to determine how to best serve the industry. The CACTs offer technology education, manufacturing training, and consulting services that contribute to continuous workforce and business development, and technology deployment. More information about the CACTs can be found in Appendix B.

This study provides data comparisons for the following regions:

Region²	Counties
Bay Area	Alameda, Contra Costa, Marin, Napa, San Francisco, Solano, Sonoma
Central Valley	Alpine, Amador, Amador, Calaveras, Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Mono, San Joaquin, Stanislaus, Tulare, Tuolumne
Far North	Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity
Greater Sacramento	El Dorado, Nevada, Placer, Sacramento, Sutter, Yolo, Yuba
Inland Empire	Inland Empire, Riverside, San Bernardino
Los Angeles	Los Angeles
Orange	Orange
San Diego & Imperial	Imperial, San Diego
Silicon Valley	Monterey, San Benito, San Mateo, Santa Clara, Santa Cruz
South Central	San Luis Obispo, Santa Barbara, Ventura

¹ International Trade Administration, Trade Stats Express, <http://tse.export.gov/TSE/TSEhome.aspx>.

² Regions are defined based on the California Community College Economic and Workforce Development (EWD) delineations.

Industry Overview

Industry Composition

The food manufacturing industry processes fruits and vegetables, meats, dairy products and other raw foods in a way that adds value to consumers. For example, canned or frozen veggies extend the availability of seasonal crops year-round. Processed foods that combine ingredients (such as breads, cookies, tortillas, etc.) provide consumers with a variety of choices. The primary activities of firms in the food manufacturing sector include processing, packaging and distributing. Some food manufacturing firms are involved with harvesting and/or marketing of the final product, but most partner with other organizations that specialize in these activities. The 10 major industry groups of the food manufacturing sector include:

- Animal Food Manufacturing – firms that manufacture dog, cat, and other animal food from grains, oilseed mill products, and meat products.
- Grain and Oilseed Milling – firms that mill flour, rice, and wet corn, manufacture malt and breakfast cereal, process soybean and other oilseed, and refine and blend fats and oils.
- Sugar and Confectionery Product Manufacturing – firms that process sugarcane, refine cane sugar, manufacture refined beet sugar, chocolate and nonchocolate confectionaries, and shell, roast, and grind cacao beans.
- Fruit and Vegetable Preserving and Specialty Food Manufacturing – firms that manufacture frozen fruits, vegetables, frozen fruit juices, frozen specialty foods, dried and dehydrated foods, and can fruits, vegetables and other specialty foods.
- Dairy Product Manufacturing – firms that manufacture fluid milk, creamery butter, cheese, dry, condensed, and evaporated dairy products, ice cream, and frozen desserts.
- Animal Slaughtering and Processing – firms that slaughter animal (except poultry), process or preserve meat and meat byproducts, poultry, and render meat byproducts.
- Seafood Product Preparation and Packaging – firms that can or process fresh and frozen seafood.
- Bakeries and Tortilla Manufacturing – firms that manufacture bakery products, fresh and frozen breads, frozen cakes, pastries, cookies, crackers, dry pastas, tortillas, and dough mixes from purchased flour.
- Beverage Product Manufacturing – firms that manufacture soft drinks, bottled water, and ice, beers, wine, and brandies, and distill, blend or mix liquors.
- Other Food Manufacturing – firms that manufacture roasted nuts, peanut butter, coffee, tea, flavoring syrup, mayonnaise, dressing, and other prepared sauces, spices, extracts, other snack foods, and all other miscellaneous foods.

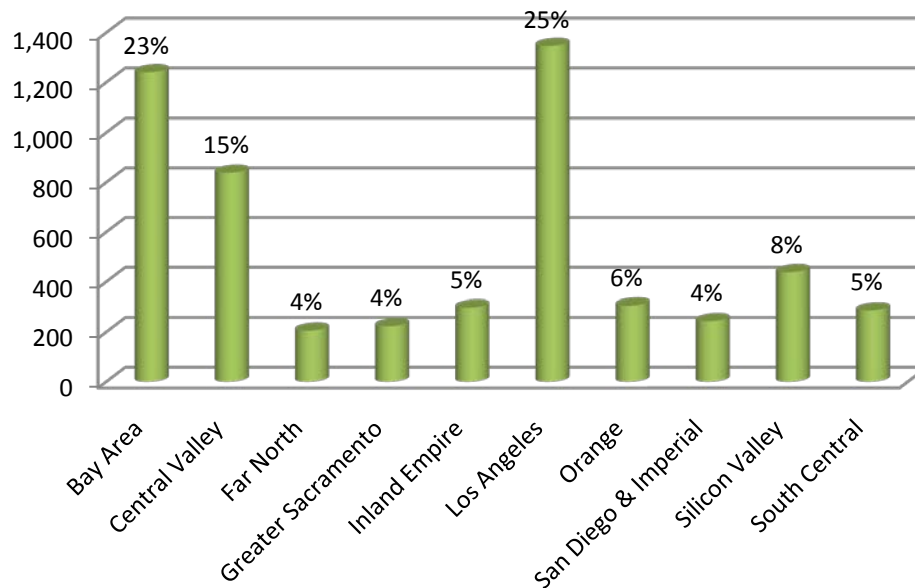
Appendix C provides the NAICS codes and industry descriptions for each major industry group in the food manufacturing sector.

As shown in Table 1, bakeries and tortilla manufacturing is the largest industry group with about 1,780 establishments and 41,000 jobs, followed by beverage product manufacturing with 1,485 businesses and 47,915 jobs. Exhibit 1 shows that of the 5,400 food manufacturing firms located in California, 25 percent are located in Los Angeles County (1,355 firms), followed by the Bay Area (1,250 firms; 23%), and the Central Valley (810 firms; 15%).

Table 1: Food Manufacturing Establishments and Jobs by Major Industry Group in California³

Industry Group	2008 Firms	% of CA 2008 Firms	2009 Jobs	% of CA 2009 Jobs
Bakeries & Tortilla Mfg.	1,776	33%	40,931	20%
Beverage Product Mfg.	1,485	27%	47,915	23%
Other Food Mfg.	549	10%	25,825	12%
Fruit & Vegetable/Specialty Foods	419	8%	36,930	18%
Animal Slaughtering & Processing	358	7%	21,139	10%
Dairy Product Mfg.	284	5%	17,200	8%
Sugar & Confectionary Product	222	4%	7,359	4%
Animal Food Mfg.	173	3%	4,777	2%
Grain and Oilseed Milling	97	2%	4,683	2%
Seafood Preparation & Packaging	56	1%	1,573	1%
<i>Total</i>	<i>5,419</i>	<i>100%</i>	<i>208,332</i>	<i>100%</i>

Exhibit 1: Food manufacturing in California by Region³



³ EMSI Complete Employment – 4th Quarter 2009.

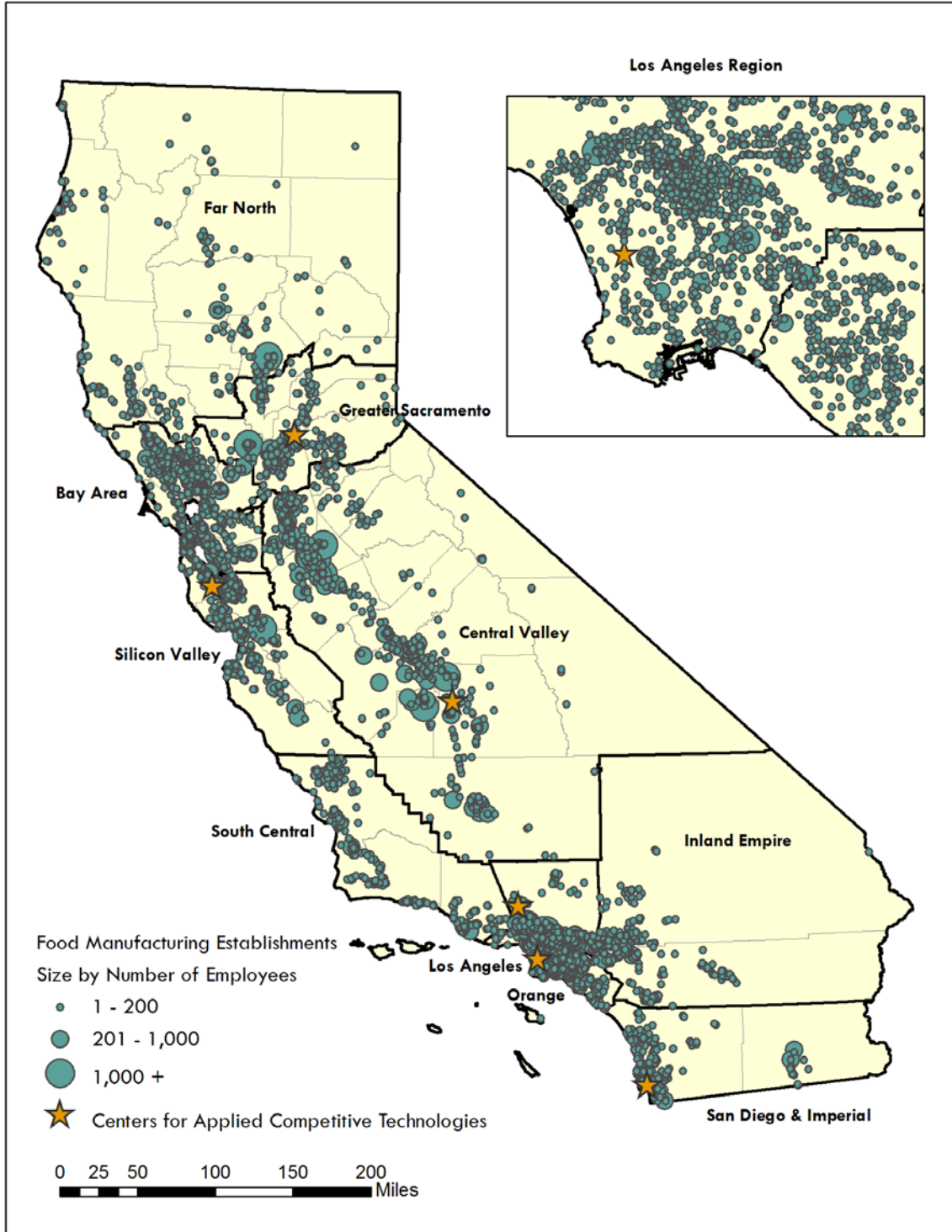
Map 1 displays the locations of food manufacturing firms in California by county. As shown, there are 39 counties that have fewer than 75 firms, nine counties that have between 75 and 150 firms, and 10 counties with more than 150 firms.

Map 1: Food Manufacturing Establishments in California by County



Map 2 displays the density of food manufacturing firms in proximity to the Centers for Applied Technologies. Sixty-three percent of all food manufacturing firms and almost 70 percent of the food manufacturing jobs are located in the Los Angeles, Bay Area and Central Valley Regions.

Map 2: Food Manufacturing Establishments in California by Region



Employment Trends

Between 2004 and 2009, the food manufacturing sector grew by five percent, adding approximately 9,400 jobs. During this five-year time period, the food manufacturing sector outperformed both the overall economy and the overall manufacturing sector.⁴

As shown in Table 2, employment in the food manufacturing sector grew in eight of the 10 regions in California. The region with the largest food manufacturing employment base, the Central Valley Region, added the most jobs with a 7.7 percent growth rate, followed by the region with the third largest employment base, the Bay Area, with a 5.5 percent growth rate. The region with the second to smallest employment base, South Central, performed well with the fastest growth rate of 31 percent for the time period.

Exhibit 2: Food manufacturing Employment in California, 2004 – 2009^{5, 8}

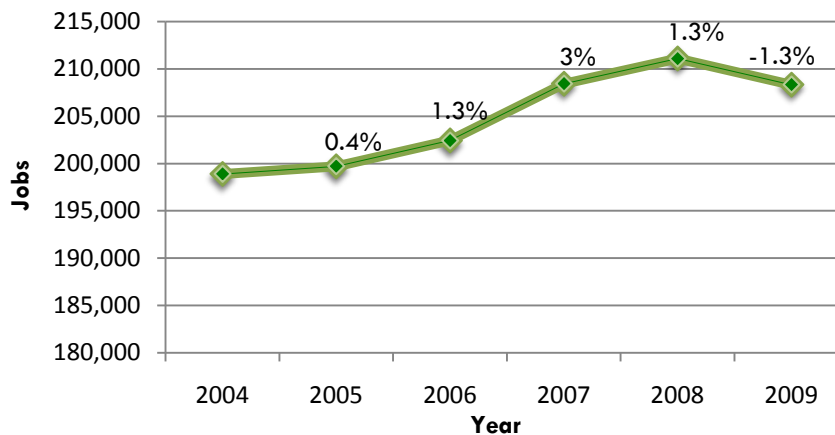


Table 2: Food Manufacturing Sector Employment by Region, 2004 - 2009⁶

Region	2004 Jobs	2009 Jobs	04-09 Job Change	% Change	2009 Jobs % of Total
Central Valley	55,528	59,784	4,256	7.7%	28.7%
Bay Area	34,472	36,384	1,912	5.5%	17.5%
Inland Empire	9,645	11,252	1,607	16.7%	5.4%
South Central	4,975	6,517	1,542	31.0%	3.1%
Far North	5,052	5,760	708	14.0%	2.8%
San Diego & Imperial	7,824	8,357	533	6.8%	4.0%
Orange	8,828	9,334	506	5.7%	4.5%
Silicon Valley	14,215	14,417	202	1.4%	6.9%
Greater Sacramento	8,496	8,381	(115)	-1.4%	4.0%
Los Angeles	49,858	48,146	(1,712)	-3.4%	23.1%
California	198,893	208,332	9,439	4.7%	100.0%

⁴ Between 2004 and 2009, California's total employment increased by two percent and the manufacturing sector declined by 16 percent. EMSI Complete Employment - 4th Quarter 2009.

⁵ The earnings per worker includes wages, salaries, profits, benefits, and all other compensation.

⁶ EMSI Complete Employment - 4th Quarter 2009.

Revenue & Wages

As shown below, the food manufacturing sector generated over \$96 billion in sales in 2009. The Los Angeles Region generated 33 percent of the total revenue, followed by the Central Valley and Bay Area with 28 and 14 percent respectively. The Bay Area provided the highest earnings per worker (EPW) in 2009, while San Diego & Imperial and the Far North Region reported the lowest EPW in that year.

Exhibit 3: Food Manufacturing Revenue and Earnings Per Worker (EPW) by Region^{7,8,9}

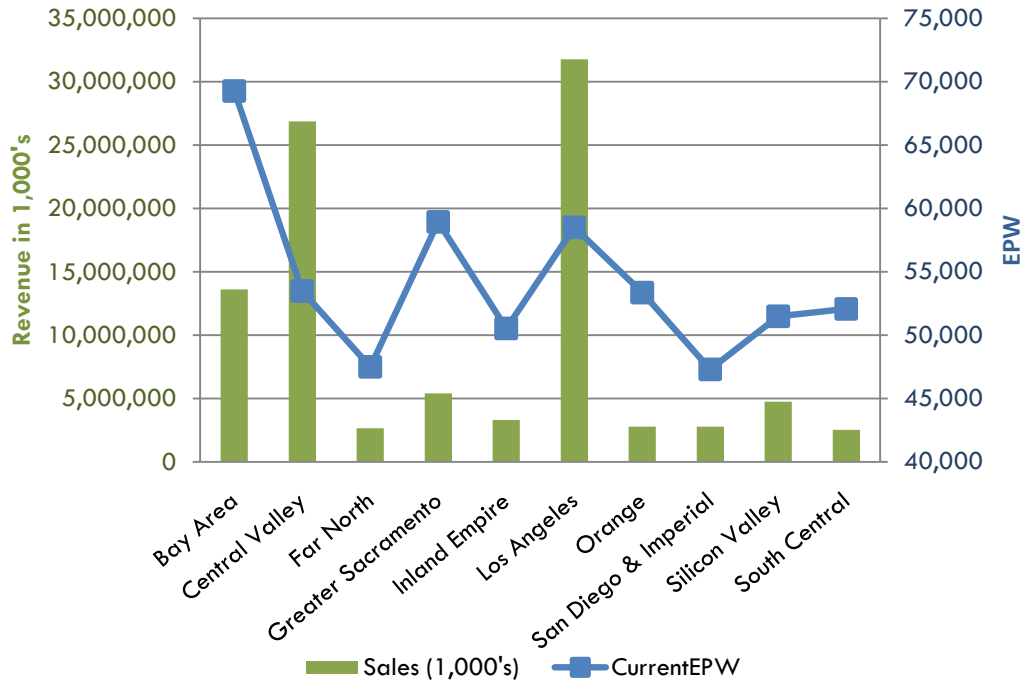


Table 3: Food Manufacturing Revenue and Earnings Per Worker (EPW) by Region^{8,9}

Region	Revenue (thousands)	Revenue % of Total	Current EPW
Los Angeles	\$31,764,402	33.0%	\$58,505
Central Valley	\$26,865,986	27.9%	\$53,488
Bay Area	\$13,606,841	14.1%	\$69,269
Greater Sacramento	\$5,387,213	5.6%	\$58,937
Silicon Valley	\$4,736,405	4.9%	\$51,486
Inland Empire	\$3,314,317	3.4%	\$50,528
Orange	\$2,763,401	2.9%	\$53,354
San Diego & Imperial	\$2,763,307	2.9%	\$47,298
Far North	\$2,638,046	2.7%	\$47,493
South Central	\$2,529,125	2.6%	\$52,063
Total	\$96,369,043	100%	\$56,860

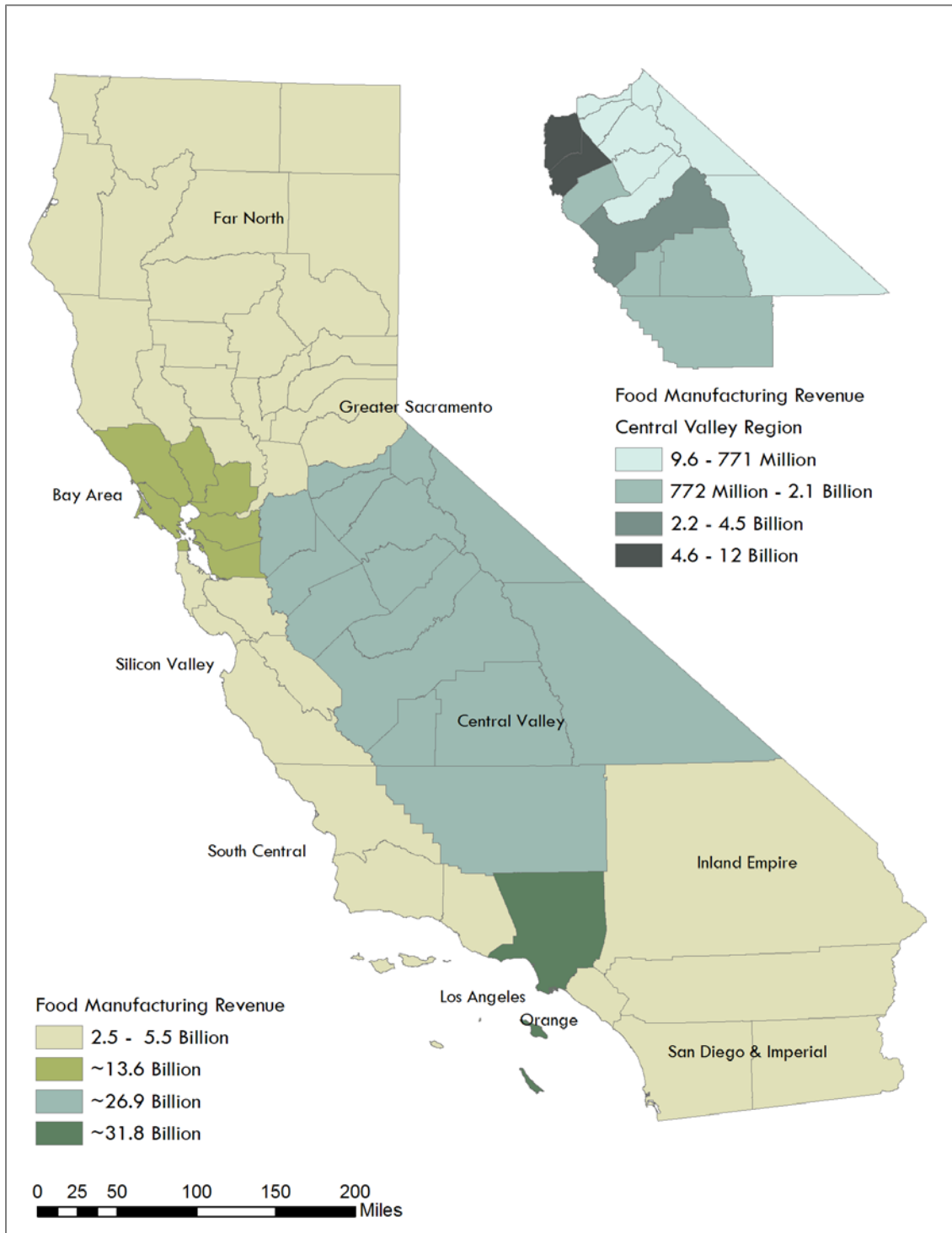
⁷ The earnings per worker includes wages, salaries, profits, benefits, and all other compensation.

⁸ EMSI Complete Employment - 4th Quarter 2009.

⁹ InfoUSA Data, January 2009.

Map 3 displays the food manufacturing sector's revenue by region. This visual representation contrasts revenue among the Southern, Central and Northern California regions. The Central Valley Region shows significant variation among counties with higher revenue in the western counties.

Map 3: Food manufacturing Revenue in California by Region



Growth Projections

In the next five years, the food manufacturing sector is expected to experience steady growth, adding about 11,700 additional jobs. As shown in Table 4, all of the regions except Orange County are expected to increase employment by 2014. The Central Valley and Bay Area regions are expected to experience the largest gains with the addition of 4,700 and 2,800 jobs respectively. Employment in Orange County is expected to decline by 1.6 percent or approximately 150 jobs.

Exhibit 4: Food Processing Manufacturing Sector Projected Employment in California, 2009-2014¹⁰

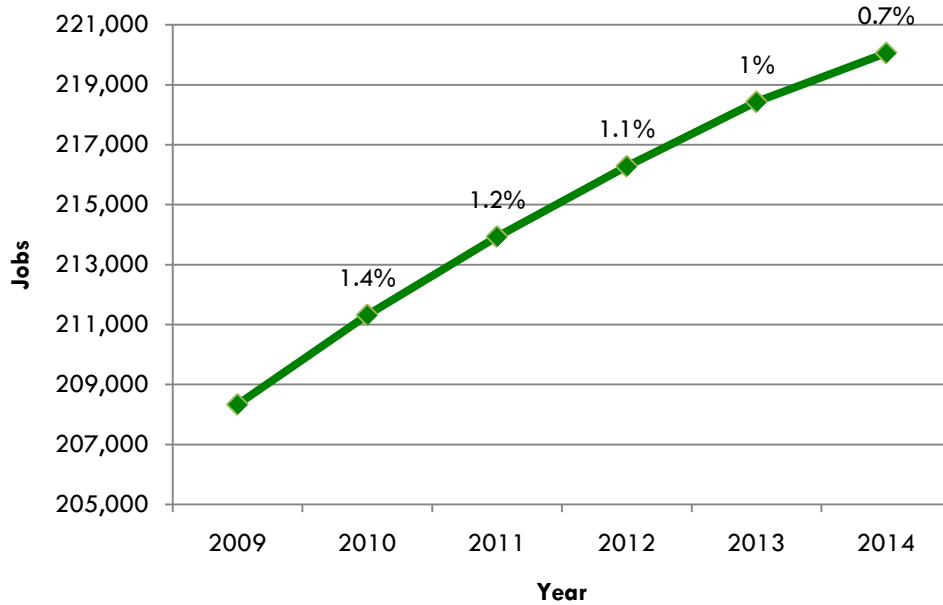


Table 4: Food Manufacturing Sector Projected Employment by Region, 2009 - 2014¹⁰

Region	2009 Jobs	2014 Jobs	Change	% Change
Central Valley	59,784	64,455	4,671	7.8%
Bay Area	36,384	39,143	2,759	7.6%
Inland Empire	11,252	12,530	1,278	11.4%
San Diego & Imperial	8,357	9,570	1,213	14.5%
South Central	6,517	7,315	798	12.2%
Los Angeles	48,146	48,607	461	1.0%
Silicon Valley	14,417	14,818	401	2.8%
Greater Sacramento	8,381	8,582	201	2.4%
Far North	5,760	5,859	99	1.7%
Orange	9,334	9,185	-149	-1.6%
California	208,332	220,064	11,732	5.6%

¹⁰ EMSI Complete Employment - 4th Quarter 2009.

Occupational Analysis

Within the food manufacturing sector, there are growing occupational areas despite the overall decline in employment. Table 5 displays the top 10 fastest-growing food manufacturing occupations in California.¹¹ Manager (all other), which includes compliance managers, supply chain managers, and logistic managers, is expected to have the most job openings in the next five years, followed by food batchmaker, and farmworker/laborer. The education level for seven of the 10 occupations is short to long-term on-the-job training, while the remaining three occupations require experience in a related field. Appendix D provides occupational profiles, including tasks, skills and abilities.

Table 5: Top 10 Fastest Growing Food Manufacturing Occupations in California^{12,13}

SOC Code	Description	2009 Jobs	2014 Jobs	Change	% Change	Median Hourly Earnings ¹⁴	Education Level
51-3092	Food batchmakers	13,551	14,729	1,178	9%	\$12.27	Short-term on-the-job training
51-3011	Bakers	9,148	9,590	442	5%	\$13.07	Long-term on-the-job training
11-9199	Managers, all other	8,115	10,722	2,607	32%	\$23.65	Work experience in a related field
51-9012	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders	5,399	6,015	616	11%	\$21.71	Moderate-term on-the-job training
51-1011	First-line supervisors/managers of production and operating workers	5,322	5,636	314	6%	\$25.38	Work experience in a related field
49-9042	Maintenance and repair workers, general	4,935	5,262	327	7%	\$17.41	Moderate-term on-the-job training
41-4012	Sales representatives, wholesale and mfg, except technical and scientific products	4,387	4,953	566	13%	\$27.77	Moderate-term on-the-job training
45-2092	Farmworkers and laborers, crop, nursery, and greenhouse	3,749	4,514	765	20%	\$8.93	Short-term on-the-job training
53-3032	Truck drivers, heavy and tractor-trailer	3,508	3,911	403	11%	\$19.40	Moderate-term on-the-job training
11-1011	Chief executives	2,037	2,557	520	26%	\$37.14	Degree plus work experience

Source: EMSI Complete Employment - 4th Quarter 2009

Between 2009 and 2014, some occupations in California's food manufacturing sector are expected to decline including packers and packagers (620 jobs lost); Weighers, measurers,

¹¹ The selection criterion for the fastest growing occupations is based on absolute job growth between 2009 and 2014.

¹² EMSI Complete Employment - 4th Quarter 2009.

¹³ Occupation estimates represent current & projected employment in the food manufacturing sector, not current & projected employment across all industries/sectors.

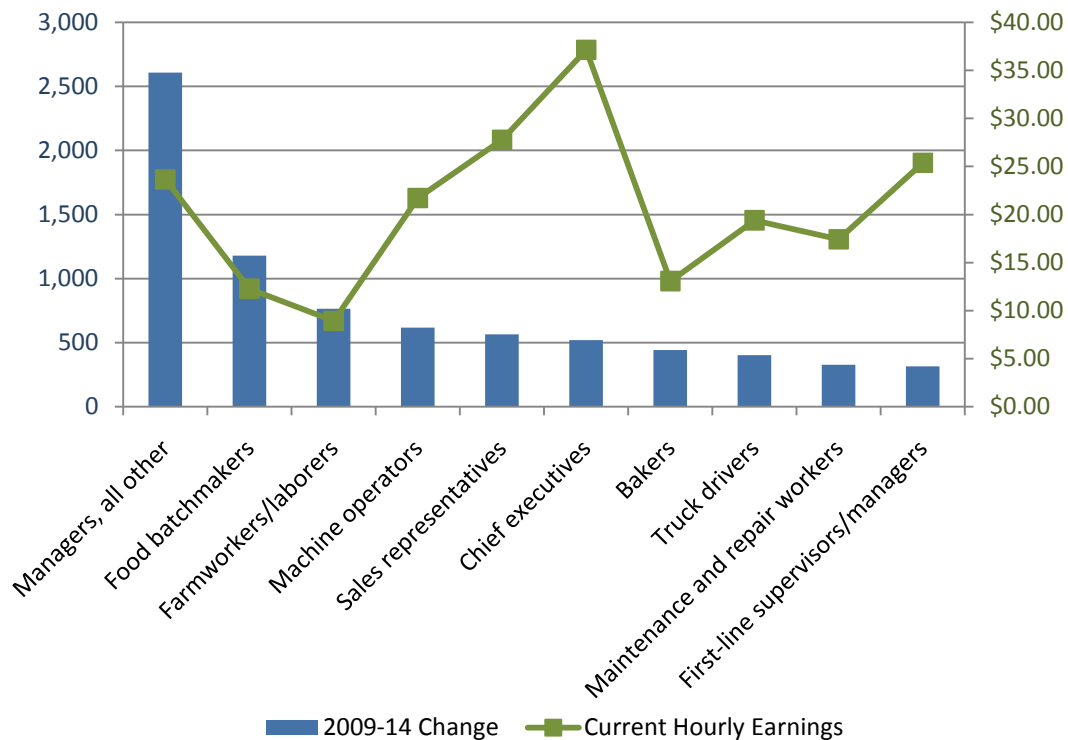
¹⁴ Median wages of a worker, excluding benefits.

checkers, and samplers, recordkeeping (100 jobs lost); and Machine feeders and offbearers (50 jobs lost).

Exhibit 5 displays the projected job openings over the next five years and median hourly earnings for the top 10 food manufacturing occupations in California. This exhibit illustrates the following:

- The manager occupation offers above average wages of \$24 per hour or approximately \$49,000 per year. In addition, the expected number of job openings is the highest among the 10 occupations.¹⁵
- The food batchmaker occupation offers only \$12 per hour/\$25,500 annually; however it is expected to have a high number of job openings over the next five years.
- The first line supervisor/manager occupation offers good wages of \$25 per hour/\$53,000 per year, but is expected to have the fewest job openings.

Exhibit 5: Job Openings & Median Hourly Earnings for the Top 10 Fastest Growing Food Manufacturing Occupations in California¹⁶



¹⁵ Average wages in California across all occupations is \$22.71 per hour.

¹⁶ EMSI Complete Employment - 4th Quarter 2009.

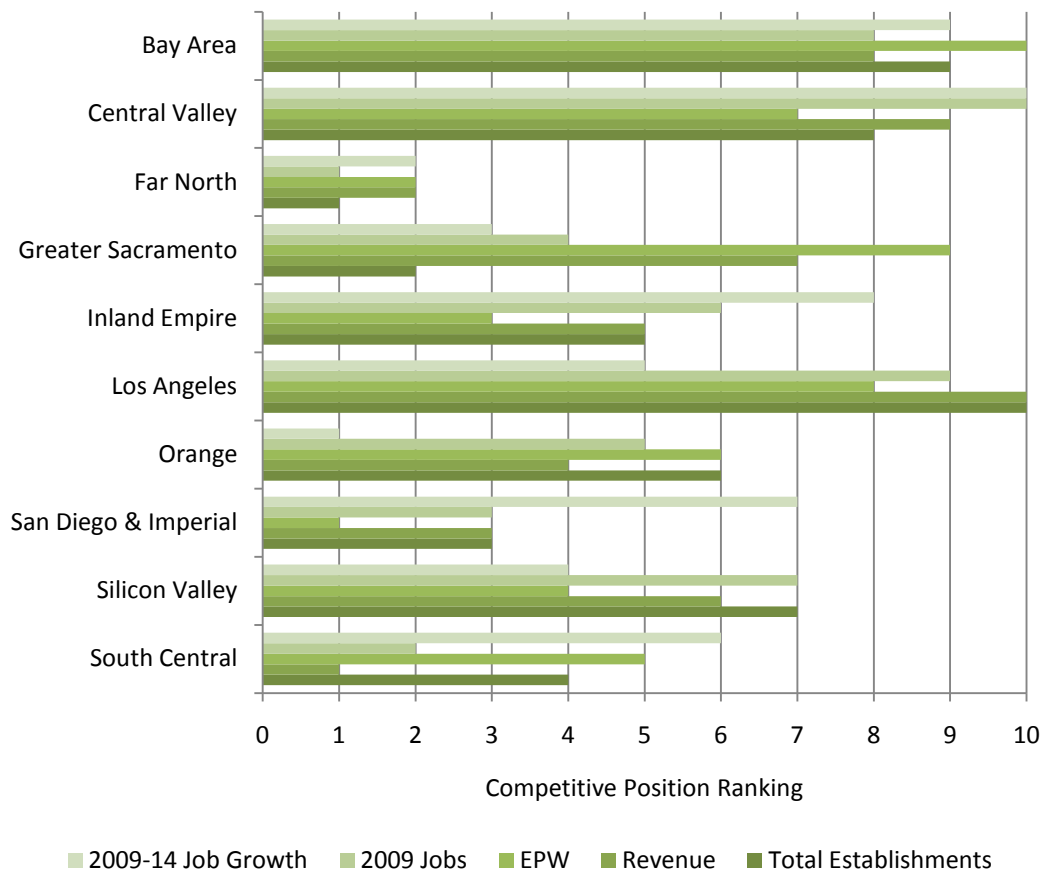
Summary

The food manufacturing sector is expected to grow steadily adding more than 11,500 jobs. Although this sector's employment took a slight dip in the last year, it remains stable for a couple of key reasons.

- Food is a necessity. While the recession has caused many Californians to rethink their budget and cut back on non-essential items, the demand for packaged foods remains relatively unscathed compared to sales in other industries.
- Demand for food exports is high. California exports more agricultural products than any other state in the nation with 12.9 percent of the nation's total ag exports.¹⁷ Production in the agriculture sector fuels growth in the food manufacturing sector as these industries are part of a highly integrated supply chain.

The following chart ranks the economic competitive position of each region based on the following factors: current jobs, five-year projected job growth, earnings per worker (EPW), revenue, and total establishments. The competitive position is ranked from one to 10, where one is the least competitive position and 10 is the most competitive position relative to the other regions in California. As shown, the food manufacturing sector in the Bay Area, Central Valley and Los Angeles Regions have outperformed the other seven regions in most categories.

Exhibit 6: Competitive Position in the Food Manufacturing Sector by Region



¹⁷ USDA, Economic Research Services, <http://www.ers.usda.gov/Data/StateExports/>

The key findings from this study include:

- Eighty-five percent of the food manufacturing sector's job growth is expected to occur in four regions: Central Valley, Bay Area, Inland Empire and San Diego & Imperial. Forty percent of the job growth is concentrated in the Central Valley Region.
- Eighty percent of this sector's revenue is generated in four regions: Los Angeles, Bay Area, Central Valley and Greater Sacramento. Nearly one-third of the total revenue is generated in the Los Angeles Region.
- Two-thirds of all food manufacturing establishments can be found in three regions: Bay Area, Los Angeles and Central Valley.
- The Bay Area provides the highest earnings per worker at about \$69,000 compared to the lowest paid earnings per worker of \$47,000 in the San Diego & Imperial Region.

References

California Energy Commission. California's Food Processing Industry Energy Efficiency Initiative: Adoption of Industrial Best Practices. Staff Report. Sacramento, 2008.

EMSI. EMSI Complete Employment - 4th Quarter 2009. July 2010
<<http://www.economicmodeling.com>>.

InfoUSA Data - January 2009. 2009. July 2010 <<http://www.infousa.com>>.

International Trade Administration. Trade Stats Express. July 2010 <<http://www.tse.export.gov>>.

U.S. Census Bureau. "North American Industry Classification System (NAICS)." 2010. US Census Bureau. 2010. <<http://www.census.gov/eos/www/naics/index.html>>.

U.S. Bureau of Labor Statistics. BLS Data. July 2010 <<http://www.bls.gov/data>>.

U.S. Bureau of Labor Statistics. "Career Guide to Industries ." 2010. BLS. 2010
<<http://www.data.bls.gov/cgi-bin/print.pl/oco/cg/cgs006.htm>>.

U.S. Department of Commerce. "Food Manufacturing NAICS 311." Industry Report. 2008.

U.S. Department of Agriculture. Economic Research Services. August 2010
< <http://www.ers.usda.gov/Data/StateExports/>>

Appendix A: About the Centers of Excellence

The Centers of Excellence (COE), in partnership with business and industry, deliver regional workforce research customized for community college and workforce system decision making and resource development. The Northern California COE is one of five regional Centers of Excellence supported by the Chancellor's Office of the California Community Colleges and is tasked with conducting environmental scanning, partnership development and technical assistance activities.

The COE's research team represents expertise in labor market analysis, labor-management partnership projects, project management, and primary research. COE staff are experienced researchers with a focus on research design, partnership development, educational and training program mapping, and identifying skill sets for emerging occupations as well as key skill sets and geospatial analysis.

The COE maintains strategic alliances with research organizations whose relationships and technical expertise enhance COE's research efforts. These alliances enable COE to access information from over 80 public databases using EMSI economic modeling software, GIS technology via the use of a customized geo-mapping software that ties industry codes (NAICS) to a private business database of over 1 million business records. The COE maintains robust partnerships with industry associations that assist in validating research findings, ensuring that the most recent industry and labor market conditions are captured.

COE studies are used to inform policy discussions, industry-wide legislative efforts, and regional workforce development strategies, as well as guide program and resource development efforts by the California Community Colleges. These reports can be accessed at www.coecc.net.

Appendix B: About the Centers for Applied Competitive Technologies

The Centers for Applied Competitive Technologies (CACT) specialize in providing workforce training and technical consultation to help businesses solve operational, personnel, and technical problems in the manufacturing environment. The CACTs offer technology education, manufacturing training, and consulting services that contribute to continuous workforce development, technology deployment and business development. Our services include:

- Customized workforce training in areas such as just-in-time production, distribution cycles, and six sigma deployment.
- Consulting services in areas such as organization assessment, quality system audits, process capability, and strategic planning.
- Technical services that provide an unbiased professional evaluation of your advanced technology processes.

The CACTS are funded primarily by the California Community College Economic and Workforce Development Program. These grant funds allow us to offer cost-effective workforce training and consultative services for California's advanced technology businesses. Our goal is to provide companies the technical expertise they need to compete successfully in changing markets and the global economy. The CACTs are conveniently located at community colleges across the state. In addition affiliate sites at other colleges are being established. To learn more about these Centers contact one of those listed below or visit www.makingitincalifornia.com.

CACT @ College of the Canyons
26455 Rockwell Canyon Rd.
Santa Clarita, CA 91355
(661) 362-3111

CACT @ San Diego City College
1414 Park Blvd., Room T-216
San Diego, CA 92101-8747
(619) 388-3730

CACT @ De Anza College
Foothill-De Anza Community College District
Professional & Workforce Development
12345 El Monte Road
Los Altos Hills, CA 94022
(650) 949-7795

CACT @ College of the Sequoias
915 S. Mooney Blvd.
Visalia, CA 93277
(559) 737-4838

CACT @ El Camino College
13430 Hawthorne Blvd.
Hawthorne, CA 90250
(310) 973-3170

CACT @ Sierra College
Roseville Gateway Center
5000 Rocklin Rd.
Rocklin, CA 95677
(916) 781-6288

Appendix C: Food Manufacturing Sector, Major Industry Groups

Major Industry Group 1: Animal Food Manufacturing

NAICS 311111 - Dog and Cat Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing dog and cat food from ingredients, such as grains, oilseed mill products, and meat products.

NAICS 311119 – Other Animal Food Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing animal food (except dog and cat) from ingredients, such as grains, oilseed mill products, and meat products.

Major Industry Group 2: Grain and Oilseed Milling

NAICS 311211 – Flour Milling

This U.S. industry comprises establishments primarily engaged in (1) milling flour or meal from grains (except rice) or vegetables and/or (2) milling flour and preparing flour mixes or doughs.

NAICS 311212 – Rice Milling

This U.S. industry comprises establishments primarily engaged in one of the following: (1) milling rice; (2) cleaning and polishing rice; or (3) milling, cleaning, and polishing rice. The establishments in this industry may package the rice they mill with other ingredients.

NAICS 311213 – Malt Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing malt from barley, rye, or other grains.

NAICS 311221 – Wet Corn Milling

This U.S. industry comprises establishments primarily engaged in wet milling corn and other vegetables (except to make ethyl alcohol). Examples of products made in these establishments are corn sweeteners, such as glucose, dextrose, and fructose; corn oil; and starches (except laundry).

NAICS 311222 – Soybean Processing

This U.S. industry comprises establishments engaged in crushing soybeans. Examples of products produced in these establishments are soybean oil, soybean cake and meal, and soybean protein isolates and concentrates.

NAICS 311223 – Other Oilseed Processing

This U.S. industry comprises establishments engaged in crushing oilseeds (except soybeans) and tree nuts, such as cottonseeds, linseeds, peanuts, and sunflower seeds.

NAICS 311225 – Fats and Oils Refining and Blending

This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing shortening and margarine from purchased fats and oils; (2) refining and/or blending vegetable, oilseed, and tree nut oils from purchased oils; and (3) blending purchased animal fats with purchased vegetable fats.

NAICS 311230 – Breakfast Cereal Manufacturing

This industry comprises establishments primarily engaged in manufacturing breakfast cereal foods.

Major Industry Group 3: Sugar & Confectionary Product Manufacturing

NAICS 311311 – Sugarcane Mills

This U.S. industry comprises establishments primarily engaged in processing sugarcane.

NAICS 311312 – Cane Sugar Refining

This U.S. industry comprises establishments primarily engaged in refining cane sugar from raw cane sugar.

NAICS 311313 – Beet Sugar Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing refined beet sugar from sugar beets.

NAICS 311320 – Chocolate and Confectionery Manufacturing from Cacao Beans

This industry comprises establishments primarily engaged in shelling, roasting, and grinding cacao beans and making chocolate cacao products and chocolate confectioneries.

NAICS 311330 – Confectionery Manufacturing from Purchased Chocolate

This industry comprises establishments primarily engaged in manufacturing chocolate confectioneries from chocolate produced elsewhere. Included in this industry are establishments primarily engaged in retailing chocolate confectionery products not for immediate consumption made on the premises from chocolate made elsewhere.

NAICS 311340 – Nonchocolate Confectionery Manufacturing

This industry comprises establishments primarily engaged in manufacturing nonchocolate confectioneries. Included in this industry are establishments primary engaged in retailing nonchocolate confectionery products not for immediate consumption made on the premises.

Major Industry Group 4: Fruit and Vegetable Preserving and Specialty Food Manufacturing

NAICS 311411 – Frozen Fruit, Juice, and Vegetable Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing frozen fruits; frozen vegetables; and frozen fruit juices, ades, drinks, cocktail mixes and concentrates.

NAICS 311412 – Frozen Specialty Food Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing frozen specialty foods (except seafood), such as frozen dinners, entrees, and side dishes; frozen pizza; frozen whipped topping; and frozen waffles, pancakes, and french toast.

NAICS 311421 – Fruit and Vegetable Canning

This U.S. industry comprises establishments primarily engaged in manufacturing canned, pickled, and brined fruits and vegetables. Examples of products made in these establishments are canned juices; canned jams and jellies; canned tomato-based sauces, such as catsup, salsa, chili, spaghetti, barbeque, and tomato paste; pickles, relishes, and sauerkraut.

NAICS 311422 – Specialty Canning

This U.S. industry comprises establishments primarily engaged in manufacturing canned specialty foods. Examples of products made in these establishments are canned baby food, canned baked beans, canned soups (except seafood), canned spaghetti, and other canned nationality foods.

NAICS 311423 – Dried and Dehydrated Food Manufacturing

This U.S. industry comprises establishments primarily engaged in (1) drying (including freeze-dried) and/or dehydrating fruits, vegetables, and soup mixes and bouillon and/or (2) drying and/or dehydrating ingredients and packaging them with other purchased ingredients, such as rice and dry pasta.

Major Industry Group 5: Dairy Product Manufacturing

NAICS 311511 – Fluid Milk Manufacturing

This U.S. industry comprises establishments primarily engaged in (1) manufacturing processed milk products, such as pasteurized milk or cream and sour cream and/or (2) manufacturing fluid milk dairy substitutes from soybeans and other nondairy substances.

NAICS 311512 – Creamery Butter Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing creamery butter from milk and/or processed milk products.

NAICS 311513 – Cheese Manufacturing

This U.S. industry comprises establishments primarily engaged in (1) manufacturing cheese products (except cottage cheese) from raw milk and/or processed milk products and/or (2) manufacturing cheese substitutes from soybean and other nondairy substances.

NAICS 311514 – Dry, Condensed, and Evaporated Dairy Product Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing dry, condensed, and evaporated milk and dairy substitute products.

NAICS 311520 – Ice Cream and Frozen Dessert Manufacturing

This industry comprises establishments primarily engaged in manufacturing ice cream, frozen yogurts, frozen ices, sherbets, frozen tofu, and other frozen desserts (except bakery products).

Major Industry Group 6: Animal Slaughtering and Processing

NAICS 311611 – Animal (except Poultry) Slaughtering

This U.S. industry comprises establishments primarily engaged in slaughtering animals (except poultry and small game). Establishments that slaughter and prepare meats are included in this industry.

NAICS 311612 Meat Processed from Carcasses

This U.S. industry comprises establishments primarily engaged in processing or preserving meat and meat byproducts (except poultry and small game) from purchased meats. This industry includes establishments primarily engaged in assembly cutting and packing of meats (i.e., boxed meats) from purchased meats.

NAICS 311613 – Rendering and Meat Byproduct Processing

This U.S. industry comprises establishments primarily engaged in rendering animal fat, bones, and meat scraps.

NAICS 311615 – Poultry Processing

This U.S. industry comprises establishments primarily engaged in (1) slaughtering poultry and small game and/or (2) preparing processed poultry and small game meat and meat byproducts.

Major Industry Group 7: Seafood Product Preparation and Packaging

NAICS 311711– Seafood Canning

This U.S. industry comprises establishments primarily engaged in (1) canning seafood (including soup) and marine fats and oils and/or (2) smoking, salting, and drying seafood. Establishments known as "floating factory ships" that are engaged in the gathering and processing of seafood into canned seafood products are included in this industry.

NAICS 311712 – Fresh and Frozen Seafood Processing

This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) eviscerating fresh fish by removing heads, fins, scales, bones, and entrails; (2) shucking and packing fresh shellfish; (3) manufacturing frozen seafood; and (4) processing fresh and frozen marine fats and oils.

Major Industry Group 8: Bakeries and Tortilla Manufacturing

NAICS 311811 – Retail Bakeries

This U.S. industry comprises establishments primarily engaged in retailing bread and other bakery products not for immediate consumption made on the premises from flour, not from prepared dough.

NAICS 311812 – Commercial Bakeries

This U.S. industry comprises establishments primarily engaged in manufacturing fresh and frozen bread and bread-type rolls and other fresh bakery (except cookies and crackers) products.

NAICS 311813 – Frozen Cakes, Pies, and Other Pastries Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing frozen bakery products (except bread), such as cakes, pies, and doughnuts.

NAICS 311821 – Cookie and Cracker Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing cookies, crackers, and other products, such as ice cream cones.

NAICS 311822 – Flour Mixes and Dough Manufacturing from Purchased Flour

This U.S. industry comprises establishments primarily engaged in manufacturing prepared flour mixes or dough mixes from flour ground elsewhere.

NAICS 311823 – Dry Pasta Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing dry pasta. The establishments in this industry may package the dry pasta they manufacture with other ingredients.

NAICS 311830 – Tortilla Manufacturing

This industry comprises establishments primarily engaged in manufacturing tortillas.

Major Industry Group 9: Beverage Product Manufacturing

NAICS 312111 – Soft Drink Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing soft drinks and artificially carbonated waters.

NAICS 312112 – Bottled Water Manufacturing

This U.S. industry comprises establishments primarily engaged in purifying and bottling water (including naturally carbonated).

NAICS 312113 – Ice Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing ice.

NAICS 312120 – Breweries

This industry comprises establishments primarily engaged in brewing beer, ale, malt liquors, and nonalcoholic beer.

NAICS 312130 – Wineries

This industry comprises establishments primarily engaged in one or more of the following: (1) growing grapes and manufacturing wine and brandies; (2) manufacturing wine and brandies from grapes and other fruits grown elsewhere; and (3) blending wines and brandies.

NAICS 312140 – Distilleries

This industry comprises establishments primarily engaged in one or more of the following: (1) distilling potable liquors (except brandies); (2) distilling and blending liquors; and (3) blending and mixing liquors and other ingredients.

Major Industry Group 10: Other Food Manufacturing

NAICS 311911 – Roasted Nuts and Peanut Butter Manufacturing

This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) salting, roasting, drying, cooking, or canning nuts; (2) processing grains or seeds into snacks; and (3) manufacturing peanut butter.

NAICS 311919 – Other Snack Food Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing snack foods (except roasted nuts and peanut butter).

NAICS 311920 – Coffee and Tea Manufacturing

This industry comprises establishments primarily engaged in one or more of the following: (1) roasting coffee; (2) manufacturing coffee and tea concentrates (including instant and freeze-dried); (3) blending tea; (4) manufacturing herbal tea; and (5) manufacturing coffee extracts, flavorings, and syrups.

NAICS 311930 – Flavoring Syrup and Concentrate Manufacturing

This industry comprises establishments primarily engaged in manufacturing flavoring syrup drink concentrates and related products for soda fountain use or for the manufacture of soft drinks.

NAICS 311941 – Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing mayonnaise, salad dressing, vinegar, mustard, horseradish, soy sauce, tarter sauce, Worcestershire sauce, and other prepared sauces (except tomato-based and gravy).

NAICS 311942 – Spice and Extract Manufacturing

This U.S. industry comprises establishments primarily engaged in (1) manufacturing spices, table salt, seasonings, flavoring extracts (except coffee and meat), and natural food colorings and/or (2) manufacturing dry mix food preparations, such as salad dressing mixes, gravy and sauce mixes, frosting mixes, and other dry mix preparations.

NAICS 311991 – Perishable Prepared Food Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing perishable prepared foods, such as salads, sandwiches, prepared meals, fresh pizza, fresh pasta, and peeled or cut vegetables.

NAICS 311999 – All Other Miscellaneous Food Manufacturing

This U.S. industry comprises establishments primarily engaged in manufacturing food (except animal food; grain and oilseed milling; sugar and confectionery products; preserved fruits, vegetables, and specialties; dairy products; meat products; seafood products; bakeries and tortillas; snack foods; coffee and tea; flavoring syrups and concentrates; seasonings and dressings; and perishable prepared food). Included in this industry are establishments primarily engaged in mixing purchased dried and/or dehydrated ingredients including those mixing purchased dried and/or dehydrated ingredients for soup mixes and bouillon.

Source: U.S. Census Bureau, North American Industry Classification System (NAICS), <http://www.census.gov/eos/www/naics/index.html>.

Appendix D: Occupation Profiles

The following nine occupations are projected to increase employment by 2014. Each occupation profile includes a description of the main tasks performed and top skill requirements.

Bakers – SOC 51-3011

Bakers mix and bake ingredients according to recipes to produce breads, rolls, cookies, cakes, pies, pastries, or other baked goods. The top skills of bakers include:

- Ability to conduct tests and inspections of products, services, or processes to evaluate quality performance.
- Ability to teach others how to do something.
- Ability to see details at close range.
- Ability to match or detect differences between colors, including shades of color and brightness.

Chief Executives – SOC 11-1011

Chief executives determine and formulate policies and provide the overall direction of companies or private and public sector organizations within the guidelines set up by a board of directors or similar governing body. They also plan, direct, or coordinate operational activities at the highest level of management with the help of subordinate executives and staff managers. The top skills of chief executives include:

- Ability to determine how money will be spent to get the work done, and account for these expenditures.
- Ability to monitor and assess performance of yourself, other individuals, or organizations to make improvements or take corrective action.
- The ability to identify complex problems and reviewing related information to develop and evaluate options and implement solutions.
- The ability to establish long-range objectives and specifying the strategies and actions to achieve them.

Farmworkers and Laborers, Crop, Nursery, and Greenhouse – SOC 45-2092

Farmworkers and laborers manually plant, cultivate, and harvest vegetables, fruits, nuts, horticultural specialties, and field crops. They use hand tools, such as shovels, trowels, hoes, tampers, pruning hooks, shears, and knives. Their duties may include tilling soil and applying fertilizers; transplanting, weeding, thinning, or pruning crops; applying pesticides; cleaning, grading, sorting, packing and loading harvested products. Their top skills include:

- Ability to repair machines or systems using the needed tools.
- Ability to control operations of equipment or systems.
- Ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
- Ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.

First-line Supervisors/Managers of Production and Operating Workers – SOC 51-1011

First-line supervisors and managers of production supervise and coordinate the activities of production and operating workers, such as inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators. Their top skills of include:

- Ability to teach others how to do something.
- Ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.
- Ability to provide information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Ability to provide guidance and direction to subordinates, including setting performance standards and monitoring performance.

Food Batchmakers – SOC 51-3092

Food batchmakers set up and operate equipment that mixes or blends ingredients used in the manufacturing of food products. They include candy makers and cheese makers. The top skills of food batchmakers include:

- Ability to watch gauges, dials, or other indicators to make sure a machine is working properly.
- Ability to control operations of equipment or systems.
- Ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions
- Ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.

Maintenance and Repair Workers, General – SOC 49-9042

Maintenance and repair workers perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of an establishment in repair. Their top skills include:

- Ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
- Ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
- Ability to perform routine maintenance on equipment and determining when and what kind of maintenance is needed.
- Ability to repairs machines or systems using the needed tools.

Packers and Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders – SOC 51-9012

Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders Set up, operate, or tend continuous flow or vat-type equipment; filter presses; shaker screens; centrifuges; condenser tubes; precipitating, fermenting, or evaporating tanks; scrubbing towers; or batch stills. These machines extract, sort, or separate liquids, gases, or solids from other materials to recover a refined product. Their top skills include:

- Ability to watch gauges, dials, or other indicators to make sure a machine is working properly.
- Ability to determine causes of operating errors and deciding what to do about it.

- Ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns.
- Ability to perform routine maintenance on equipment and determining when and what kind of maintenance is needed.

Sales Representatives, Wholesale and Manufacturing, Except technical and scientific products – SOC 51-9111

Sales representatives sell goods for wholesalers or manufacturers to businesses or groups of individuals. Work requires substantial knowledge of items sold. Their top skills include:

- Ability to convince others to buy merchandise/goods or to otherwise change their minds or actions.
- Ability to talk to others to convey information effectively.
- Ability to communicate information and ideas in speaking so others will understand..
- Ability to develop constructive and cooperative working relationships with others, and maintain them over time.

Truck Drivers, Heavy and Tractor-trailer – SOC 53-3032

Truck drivers drive a tractor-trailer combination or a truck with a capacity of at least 26,000 GVW, to transport and deliver goods, livestock, or materials in liquid, loose, or packaged form. This job requires commercial drivers' license. Their top skills include:

- Ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down.
- Ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
- Ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.
- Ability to run, maneuver, navigate, or drive vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft.

Source: O*Net; U.S. Bureau of Labor Statistics

Note: Profile for Managers, all other – SOC 11-9199 was not included because it represents a group of more specific occupations, rather than a single occupation.

Appendix E: Locating Food Manufacturing Related Degree & Certificate Programs

The California Community Colleges offer a range of instructional programs that support food manufacturing. To locate the programs use the Taxonomy of Programs (TOP) list below with the searchable data base found on the California Community College Chancellor's Office website. The URL is: https://misweb.cccco.edu/webproginv/prod/topodelist_n.cfm. Using these codes you can find which colleges have programs. For example if one puts in the TOP Code 0104.00 (Viticulture, Enology, and Wine Business) these colleges will be identified as having programs: Allan Hancock, Las Positas, Santa Rosa, and Napa Valley.

While not every program found will be oriented to food manufacturing, the following TOP codes are those most closely associated with it:

- 0101.00 Agriculture Technology and Sciences, General
- 0102.30 Dairy Science
- 0104.00 Viticulture, Enology, and Wine Business
- 0113.00 Food Processing and Related Technologies
- 0924.00 Engineering Technology
- 0945.00 Industrial Systems Technology and Maintenance
- 0954.20 Plastics/Composites
- 0956.00 Manufacturing and Industrial Technology
- 0956.30 Machine Tool Technology
- 0956.80 Industrial Quality Control