



Working Papers

Moving Solano Forward—Phase II

Task 3: Cluster Analysis

Task 3.4: Linking Traded Sectors to Workforce

September 2016

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Moving Solano Forward - Phase II

Task 3: Cluster Analysis

Task 3.4: Linking Traded Sector to Workforce

MSF II Task 3: Cluster Analysis

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Task 3: Cluster Analysis

Task 3.4 Linking Traded Sectors to Workforce

INTRODUCTION

As part of Task 3, Cluster Analysis, Sub-task 3.4 looks at the occupational needs of the traded-sector target industries for Solano County, workforce dynamics and commute patterns.

All of these factors have implications as to the path forward in addressing workforce availability and skill set requirements for growing these industry sectors.

This analysis looks at the existing workforce in Solano County, workforce commute patterns and occupation quotients. Because of workforce mobility of the region, Solano County has a laborshed of 2.8 million.

SOLANO COUNTY TRADED-SECTOR CLUSTERS

The following traded-sector clusters are the focus of Moving Solano Forward Phase II:

- Advanced Materials
- Biotech & Biomedical
- Food & Beverage
- Logistics

These traded-sector industries drive the Solano County economy producing Solano's Gross Regional Product and creating the highest ripple impact on the economy.

Secondary focus is on key supply chain industries supporting the Traded-Sector and other sectors driving the economy.

Table 1: Solano County Traded-Sector

	Employees	Business	Output (Billions)	Location Quotient	Project Annual Growth
Advanced Materials	6,947	210	\$5.61 B	2.33	2.9%
Food & Beverage	2,746	65	\$1.54 B	2.10	2.3%
BioTech & BioMed	2,206	73	\$2.43 B	1.50	2.6%
Logistics	2,631	73	\$1.47 B	2.12	5.6%
Travis AFB	2,450	--	\$1.69 B	--	--

Source: 2016 3rd Quarter, Census of Employment & Wages, QCEW, ES-202 data, Economic Forensics & Analysis

KEY FINDINGS

The number of inbound and outbound commuters, result in several implications as they relate to workforce and the economy itself as described below:

1.0 Inbound Commuters as of 2014:

- ❖ Inbound commuters fill jobs mainly in healthcare, retail, accommodation and food services, which is 41.2 percent of inbound commuters.
- ❖ Napa, Sacramento, Yolo, and Contra Costa counties are where 70.3 percent of inbound commuters live.
- ❖ 48.6 percent of inbound commuters are Caucasian; 27.7 percent are Hispanic.
- ❖ Over 36 percent of inbound commuters have at least a bachelor's degree, and 15.6 percent have an advanced degree.
- ❖ Sales and office/administrative positions are over 27 percent of inbound commuting, where management jobs are 8.2 percent. Inbound commuters make a range of annual, median wages from \$15,203 per year to \$90,358 as of 2014.

2.0 Outbound Commuters as of 2014:

- ❖ Outbound commuters fill jobs in construction, manufacturing, health care, and government.
- ❖ These four industries employ 50.3 percent of outbound commuters.
- ❖ Alameda, Contra Costa, San Francisco, and Napa counties are where 66 percent of Solano County's outbound commuters work.

- ❖ 39.6 percent of outbound commuters are Caucasian; 14.1 percent are African-American.
- ❖ 8.7 percent of outbound commuters have at least a bachelor's degree, and 7.5 percent have an advanced degree.
- ❖ Sales and office/administrative positions are just under 18 percent of outbound; management jobs are 11.3 percent and healthcare practitioner occupations are 9.5 percent.
- ❖ Outbound commuters make a range of annual, median wages from \$15,550 per year to \$119,460.

Residential Workers as of 2014

- ❖ Residents fill local jobs in construction, manufacturing, healthcare, and government; 45 percent of those that work and live in Solano County.
- ❖ 44.4 percent of residential workers are Caucasian; 24.8 percent are Hispanic.
- ❖ 22.7 percent of residential workers have at least a bachelor's degree, and 6.9 percent have an advanced degree.
- ❖ Sales and office/administrative positions are over 22.8 percent of residential worker occupations, where management jobs are approximately 10 percent.
- ❖ Labor Force Participation Rate is an indicator of local population employed, not necessarily with local employers. Solano County's participation rate 2015 was 72.4%, up from 2014 but still nearly 5 points below high in 2009 of 77.2% and much higher than the California average of 61.9%

- ❖ The Participation Rate is a good indicator of those generating income from employment. As the local population ages or if birth rates locally rise, the participation rate would be expected to fall. The mirror image of this rate is the dependency ratio. If the population of those working falls, the percentage of the population that is “dependent” on the work and taxes of the rest of the population rises. Also when unemployment rises, the Participation Rate falls.
- ❖ Residential workers make a range of annual, median wages from \$19,727 per year to \$85,448.

Summary

Solano County has historically been a residential area that has more outbound commuting than inbound, and loses local residents as a potential workforce due to this commute pattern. Figures 1 through 5 data are important in three ways for policy makers:

- ❖ The data shows most of Solano County’s residents go to the greater Bay Area for work, or stay home versus going east or north or south.
- ❖ The data shows that the Bay Area employment size and mix attracts Solano County residents such that Bay Area businesses looking to move may be targets for attraction and expansion activities through economic development.
- ❖ If driven by higher wages outside Solano County, outbound commuters that come home each night do help support local businesses through higher incomes.

Workforce & Commuter Implications

Cities, the county of Solano and Solano EDC can use the data in the following ways and for the following reasons:

- ❖ Outbound commuters show that Solano County residents are part of the regional laborshed, helping to create a workforce that meets traded sector needs, and jobs that are in demand at the regional level.
- ❖ Solano County has historically been a regional commute shed, the proportions since 2002 have been about the same for inbound and outbound commuting.
- ❖ Solano County needs to promote a “shared workforce” for two reasons:
 1. The workers that leave Solano County daily are in occupations that could be hired locally through attracting and expanding traded sectors; and
 2. Inbound commuting shows that Solano County has jobs attractive to educated workers across various industries.
- ❖ Wage differences likely explain why there is more outbound commuting, as Solano County wages have trailed behind the Bay Area overall.
- ❖ In promotions for new and expanding businesses, the labor data suggests major opportunities in finding local labor.

- ❖ As younger workers come into the local workforce, waterfront living and working local is attractive, which then provides an expanding talent pool for Solano County employers.
- ❖ Education and workforce development play a role in expanding this pool and maintaining it for the region.

Recommendations - Actions to Take

- ❖ The large amount of outbound commuting suggests an opportunity for local businesses concerned about talent shortages; but that opportunity may necessitate higher wages, and the wage profiles suggest that Solano County employers are lower-wage businesses, hence outbound is heavy.
- ❖ The proposed consortium of Solano County training entities should address specific, occupational training and education for traded-sector high demand skill sets and also for demand occupations for supply chain industries. Solano Industry Groups and Industry Sector Partnerships should collaboratively:
 - Engage employer groups in discussing the dynamics of the mobile workforce and challenges of wage differentials.
 - Discuss further occupational needs by traded-sector and how to begin to address those occupational needs with education and training.
 - Task 3.2 Business Survey indicates the hard-to-fill occupations for the Traded Sector that should be addressed:
 - Hard to Fill Occupations
 - ◆ Production
 - ◆ Engineering
 - ◆ Computer & Mathematical
 - Specific occupations included:
 - ◆ Software Engineers
 - ◆ Maintenance Technicians
 - ◆ Machinists
 - ◆ Laborers
 - ◆ Industrial Production
- ❖ Pathway Initiatives and Career Technical Education are on-going initiatives with substantial investment from the state with K-12 and post-secondary education. Industry's voice should be heard in those planning sessions for local education and training to help build the future pipeline of workers.

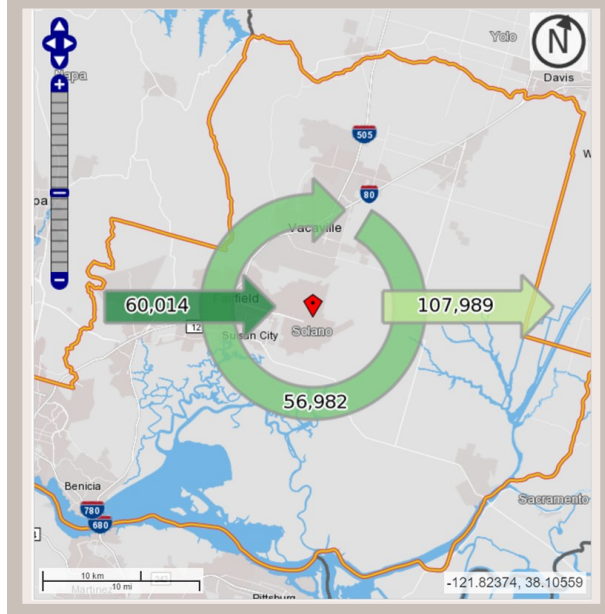
LABORSHED AND WORKFORCE CONSIDERATIONS

This task report is about the regional aspects of Solano County's labor market as a way to consider four major issues:

1. What industries employ in-bound commuters for Solano County?
2. What industries attract out-bound commuting from Solano County?
3. What occupations are moving to and from Solano County?
4. What challenges are presented by the data on laborshed?

Local labor markets are shared by multiple areas at once, and thus these areas are in competition with each other over available workers. The importance of laborshed is its characteristics and implications for education, workforce development, and economic development. Solano EDC can act as a partner in this strategic area, but needs workforce development and other organizations to help for training and preparing for employer needs.

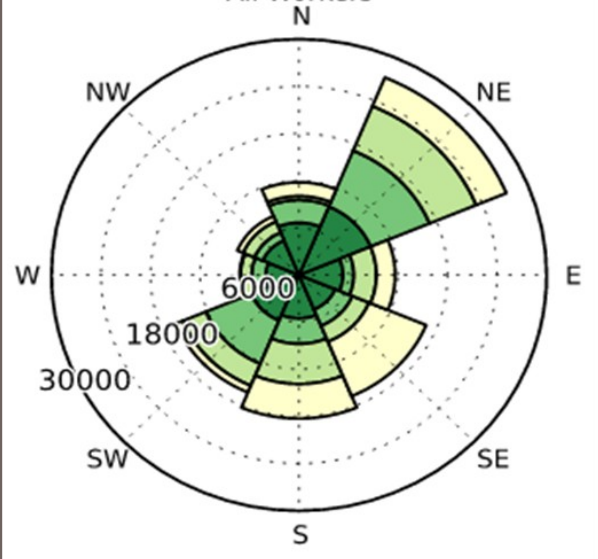
2014 COMMUTER FLOWS FOR SOLANO COUNTY



Inflow/Outflow Report - Solano County

	Emp.	Bus.
In-Area Labor Force	2014	
Living in the Selection Area	164,971	100.0%
Living and Employed in the Selection Area	56,982	34.5%
Living in the Selection Area but Employed Outside	207,989	65.5%
Outflow	2014	
External Jobs Filled by Residents	107,989	100.0%
Workers in the "Goods Producing" Industry Class	16,630	15.4%
Workers in the "Trade, Transportation, and Utilities" Industry Class	22,943	21.2%
Workers in the "All Other Services" Industry Class	68,416	63.4%
Inflow	2014	
Internal Jobs Filled by Outside Workers	60,014	100.0%

Job Counts by Distance/Direction in 2014 All Workers



2014 Commuter Flows for Solano County Prepared by Economic Forensics & Analytics

Source: Longitudinal Employment and Housing Dynamics data (onthemap.ces.census.gov)

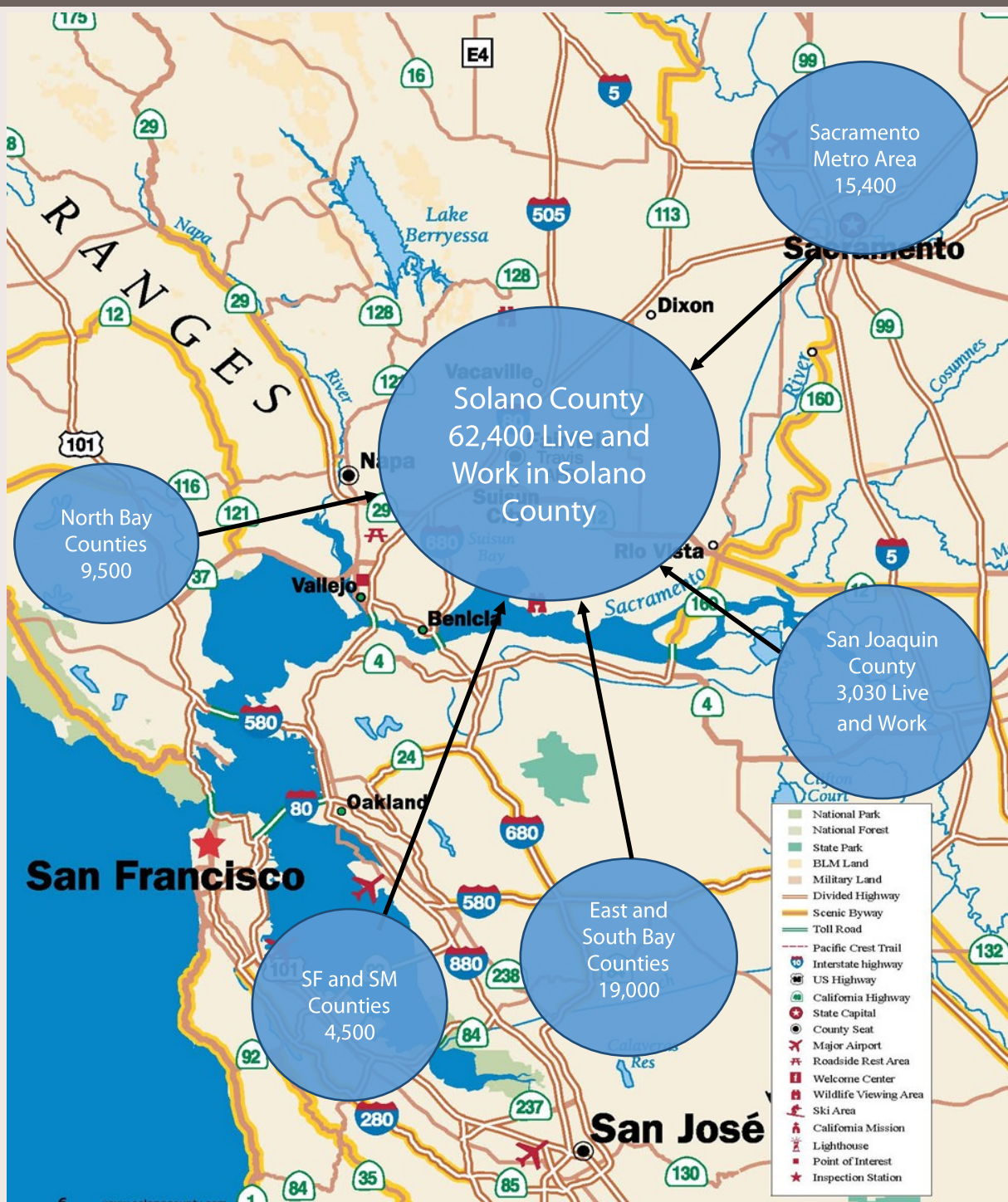
A political challenge for city councils and county supervisors is balancing a call for local residents to also be local workers and the regional labor-market realities. In rural areas, local residents being local workers is more manageable based on remoteness than being in the middle of a “mega region” that has over 8 million people in the greater Bay Area and possibly as many as 12 million people counting Sacramento’s metro area. Commuting workers links the sub-regions and provide more choice for local employers.

Figures 1 through 5 tell a story about geographic laborshed, which point to three major characteristics policy makers should watch:

1. Solano County sends out almost twice the number of workers that both live and work in Solano County.
2. The major concentration of outbound commuters is toward major metropolitan cities, but also includes a mix of smaller places close to Solano County’s population areas.
3. Solano County has been a net outbound commuter county for over a decade, and anecdotally for decades.

Solano County needs to monitor its commute data in terms of worker movements throughout its “laborshed” (the sum of its working residents, inbound and outbound commuters). The data suggest that Solano County has brain flight to the greater Bay Area, and must attract bachelor’s degree holders (“high-skill” workers) to come from other places to work in jobs that demand that level of education, as well as entry-level wage jobs. Inbound commuters fill jobs mainly in health care, retail, accommodation and food services. Solano residents that leave the county daily for work (outbound commuters) fill jobs in construction, manufacturing, health care, and government.

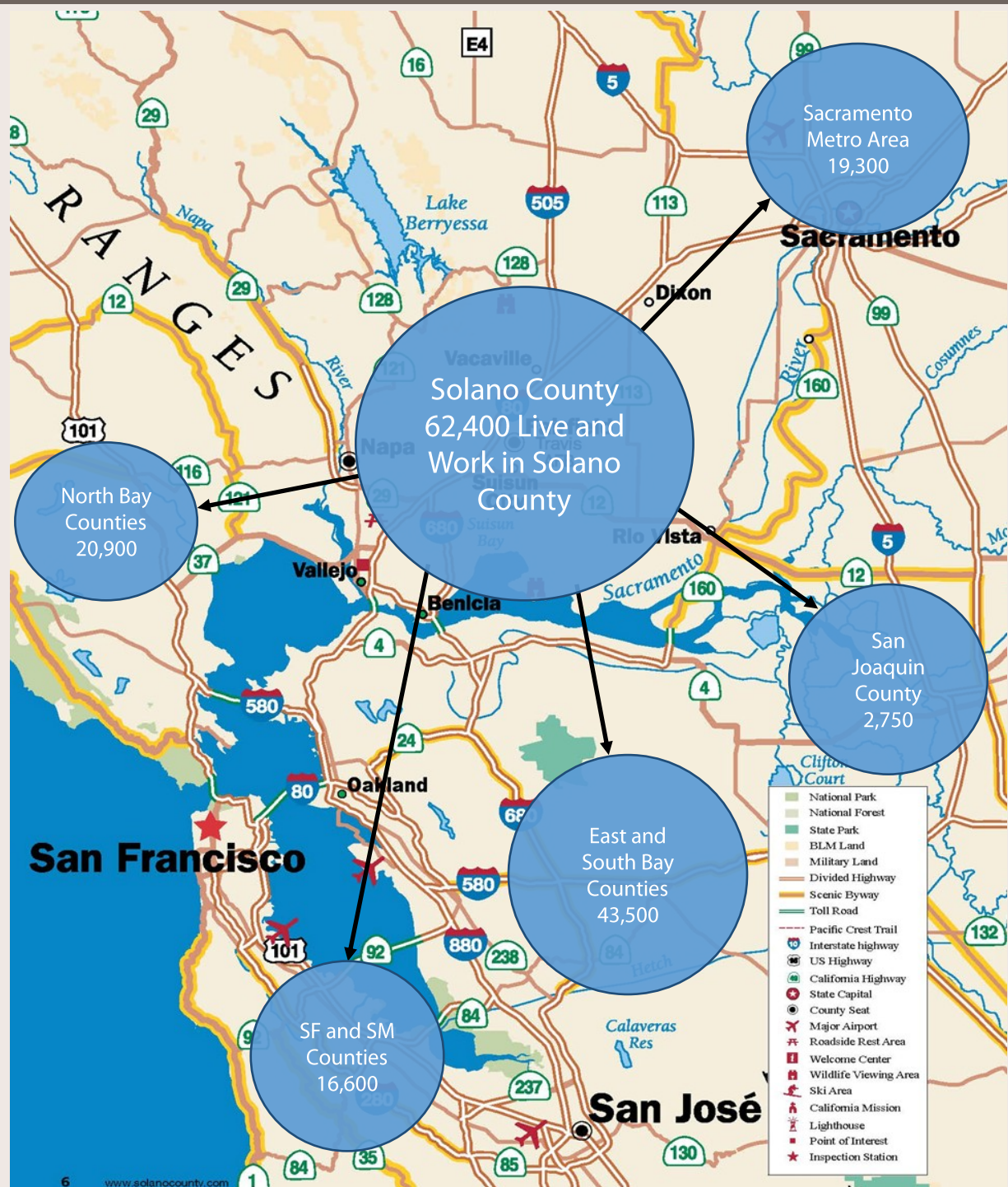
FIGURE 1: LABORSHED, SOLANO INBOUND COMMUTING / LIVE AND WORK IN SOLANO COUNTY



Prepared by Economic Forensics & Analytics

Source Longitudinal Employment and Housing Dynamics data (onthemap.ces.census.gov)

FIGURE 2: LABORSHED, SOLANO OUTBOUND COMMUTING / LIVE AND WORK IN SOLANO COUNTY



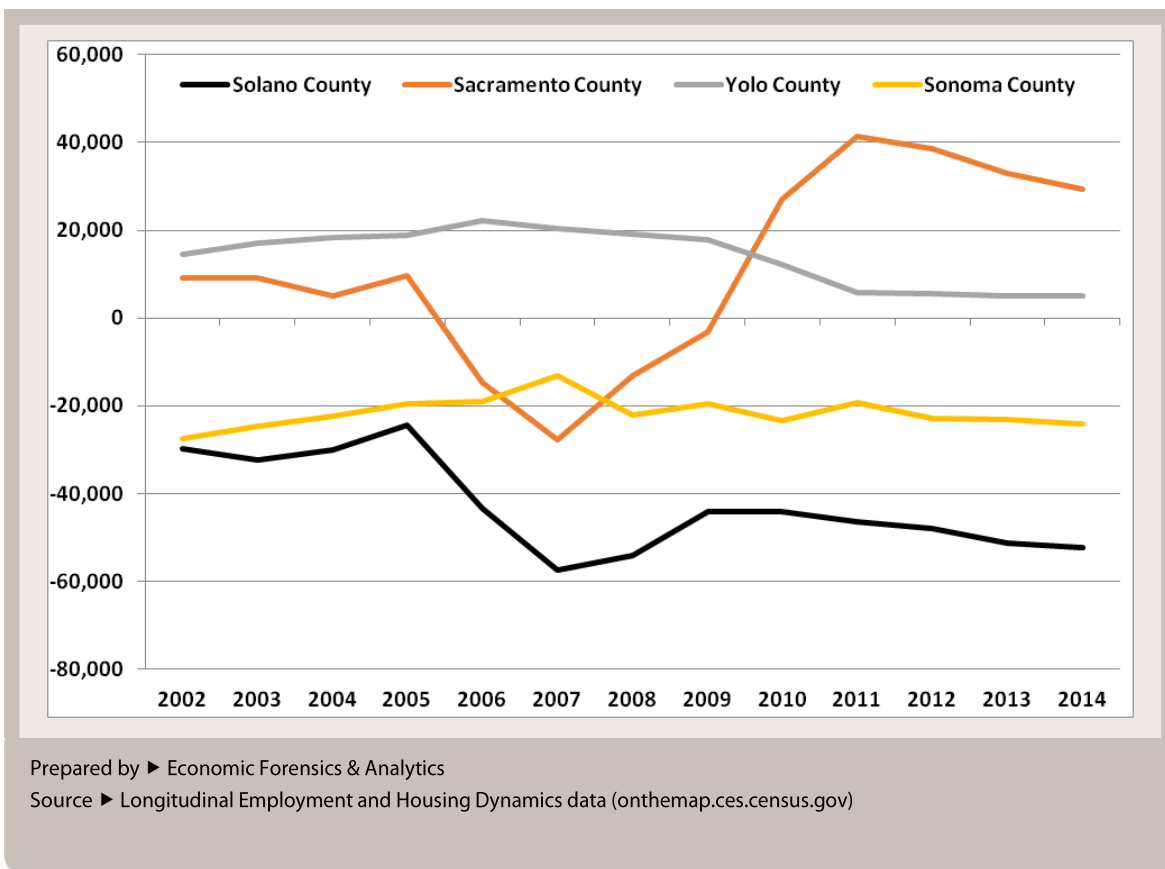
Prepared by ► Economic Forensics & Analytics

Source ► Longitudinal Employment and Housing Dynamics data (onthemap.ces.census.gov)

Figure 3 shows that Solano County is a net outbound commuter county (negative numbers represent more outbound than inbound) and has been that way since at least 2002. Sonoma County's data is shown here because its laborshed size and geography (where people go to work) and mix of local industries is similar to Solano. Sacramento has grown as a jobs center for its region and attracts more workers than those residents that go elsewhere to work, classic for a jobs hub in a regional area that is more rural otherwise.

Because of Solano County's location, incentives for outbound commuting are apparent; housing prices are relatively lower in Solano County than surrounding areas (Figure A-6 in the Appendix) and wages are historically higher to the west as well as the job possibilities (Figure 8). In June 2016, the core Bay Area counties of San Francisco, San Mateo, Alameda, Contra Costa, and Santa Clara employed over 3.2 million people. Solano County employs just over 137,000.

Figure 3: Commute Patterns, Net Commuter, 2014



Notice both Yolo and Sacramento counties are historically net-inbound commuter counties (Figure 3). Local job opportunities are also important; laborshed is a function of local jobs and the ability of local employers to provide incentives for workers to remain local. Given its proximity to the Bay Area (as a major competitor), laborshed competition is a major economic development and workforce challenge for the foreseeable future.

This is an opportunity for economic development. Solano County and its employers need to watch regional jobs growth and the worker skill base in Solano County's laborshed as a way of monitoring what employees are available, and what workforce development programs can service local employers to reduce job search times and match proximate, skilled employees to local jobs. This also helps to reduce wage ascension as the costs of getting to and from work are less of a factor.

These trends should be thought of as medium-term, tending not to change quickly. The trends do change in the long-term depending on demographic and economic development regionally. Figures 4 and 5 show where residents work (Figure 4) and also where those that work inside Solano County live (Figure 5). Appendix Figure A-4 also some related, broader themes: approximately 66 percent of outbound workers are going to San Francisco, Contra Costa, Napa, and Alameda counties; approximately 70 percent of inbound workers come from Contra Costa, Napa, Yolo, and Sacramento counties. Contra Costa and Napa are counties that have deep ties to Solano County in terms of workforce, and should: they are adjacent and share residents as workers.

Figure 4: Where Solano County Resident Workers Work, Main Cities, 2009 - 2014

City	2014		2013		2012		2011		2010		2009	
Other	56,294	31.3%	53,856	30.8%	50,488	29.9%	50,808	30.3%	51,647	31.1%	50,383	31.2%
Solano County	62,431	34.8%	60,915	34.9%	59,567	35.3%	59,964	35.8%	59,782	35.9%	59,348	36.7%
San Francisco	11,355	6.3%	11,076	6.3%	11,171	6.6%	10,693	6.4%	10,506	6.3%	10,034	6.2%
Sacramento	6,635	3.7%	6,460	3.7%	6,559	3.9%	6,418	3.8%	6,057	3.6%	4,043	2.5%
Oakland	5,669	3.2%	5,762	3.3%	5,427	3.2%	5,598	3.3%	5,551	3.3%	4,572	2.8%
Napa	5,289	2.9%	4,975	2.8%	4,741	2.8%	4,424	2.6%	4,609	2.8%	4,612	2.9%
Concord	3,818	2.1%	3,994	2.3%	3,904	2.3%	3,692	2.2%	3,354	2.0%	3,677	2.3%
Walnut Creek	2,893	1.6%	3,114	1.8%	3,036	1.8%	2,916	1.7%	2,877	1.7%	2,895	1.8%
San Jose	2,766	1.5%	2,589	1.5%	2,621	1.6%	2,508	1.5%	2,376	1.4%	2,438	1.5%
Richmond	2,716	1.5%	2,640	1.5%	2,449	1.5%	2,497	1.5%	2,490	1.5%	2,395	1.5%
Martinez	2,602	1.4%	2,698	1.5%	2,715	1.6%	2,732	1.6%	2,695	1.6%	2,777	1.7%
Davis	2,025	1.1%	2,055	1.2%	2,007	1.2%	2,045	1.2%	1,029	0.6%	987	0.6%
Berkeley	1,807	1.0%	1,831	1.0%	1,712	1.0%	1,411	0.8%	1,586	1.0%	1,957	1.2%
San Rafael	1,751	1.0%	1,712	1.0%	1,703	1.0%	1,563	0.9%	1,573	0.9%	1,454	0.9%
San Ramon	1,406	0.8%	1,378	0.8%	1,367	0.8%	1,449	0.9%	1,499	0.9%	1,470	0.9%
Santa Rosa	1,390	0.8%	1,335	0.8%	1,305	0.8%	1,258	0.8%	1,269	0.8%	1,213	0.8%
Stockton	1,364	0.8%	1,501	0.9%	1,420	0.8%	1,358	0.8%	1,153	0.7%	1,180	0.7%
Roseville	1,360	0.8%	1,309	0.7%	1,261	0.7%	1,220	0.7%	1,119	0.7%	1,179	0.7%
Novato	1,315	0.7%	1,329	0.8%	1,313	0.8%	1,301	0.8%	1,173	0.7%	1,204	0.7%
American Canyon	1,232	0.7%	1,098	0.6%	1,089	0.6%	982	0.6%	843	0.5%	779	0.5%
South San Francisco	1,230	0.7%	1,161	0.7%	1,102	0.7%	1,023	0.6%	1,159	0.7%	1,187	0.7%
Pleasant Hill	1,146	0.6%	1,013	0.6%	1,022	0.6%	1,071	0.6%	1,087	0.7%	1,099	0.7%
San Leandro	1,104	0.6%	886	0.5%	820	0.5%	795	0.5%	896	0.5%	818	0.5%
Totals Workers that Live in Solano	179,598	100%	174,687	100%	168,799	100%	167,726	100%	166,330	100%	161,701	100%

Source: Longitudinal Employment and Housing Dynamics data (onthemap.ces.census.gov)

Figure 5: Where Solano County Workers Live, Main Cities, 2009-14

City	2014		2013		2012		2011		2010		2009	
Other	38,677	30.4%	36,873	29.9%	35,994	29.8%	36,119	29.8%	38,012	31.1%	34,991	29.7%
Solano County	62,431	49.1%	60,915	49.4%	59,567	49.3%	59,964	49.5%	59,782	48.9%	59,348	50.4%
Sacramento	2,733	2.1%	2,756	2.2%	2,674	2.2%	2,653	2.2%	2,582	2.1%	2,220	1.9%
San Francisco	2,329	1.8%	2,135	1.7%	2,140	1.8%	2,206	1.8%	2,100	1.7%	2,142	1.8%
Napa	2,269	1.8%	2,178	1.8%	2,193	1.8%	2,233	1.8%	2,233	1.8%	2,208	1.9%
American Canyon	1,668	1.3%	1,623	1.3%	1,570	1.3%	1,405	1.2%	1,332	1.1%	1,170	1.0%
San Jose	1,650	1.3%	1,982	1.6%	1,973	1.6%	1,970	1.6%	1,782	1.5%	1,805	1.5%
Woodland	1,458	1.1%	1,362	1.1%	1,300	1.1%	1,270	1.0%	1,350	1.1%	1,365	1.2%
Concord	1,405	1.1%	1,337	1.1%	1,355	1.1%	1,334	1.1%	1,364	1.1%	1,322	1.1%
Davis	1,313	1.0%	1,319	1.1%	1,320	1.1%	1,371	1.1%	1,333	1.1%	1,629	1.4%
Oakland	1,306	1.0%	1,311	1.1%	1,373	1.1%	1,175	1.0%	1,341	1.1%	1,208	1.0%
Stockton	1,273	1.0%	1,307	1.1%	1,164	1.0%	1,219	1.0%	1,220	1.0%	1,147	1.0%
Santa Rosa	1,147	0.9%	1,110	0.9%	1,038	0.9%	1,109	0.9%	922	0.8%	890	0.8%
Antioch	1,119	0.9%	1,060	0.9%	1,115	0.9%	1,087	0.9%	1,070	0.9%	963	0.8%
Elk Grove	1,078	0.8%	1,098	0.9%	1,103	0.9%	1,040	0.9%	711	0.6%	571	0.5%
Richmond	911	0.7%	823	0.7%	874	0.7%	832	0.7%	796	0.7%	770	0.7%
West Sacramento	789	0.6%	716	0.6%	798	0.7%	792	0.7%	651	0.5%	519	0.4%
Pittsburg	663	0.5%	611	0.5%	636	0.5%	655	0.5%	580	0.5%	547	0.5%
Martinez	660	0.5%	580	0.5%	592	0.5%	558	0.5%	692	0.6%	671	0.6%
Winters	631	0.5%	613	0.5%	511	0.4%	565	0.5%	586	0.5%	630	0.5%
Fremont	623	0.5%	586	0.5%	593	0.5%	585	0.5%	695	0.6%	587	0.5%
Hayward	550	0.4%	547	0.4%	509	0.4%	527	0.4%	506	0.4%	478	0.4%
Roseville	534	0.4%	514	0.4%	505	0.4%	548	0.5%	536	0.4%	468	0.4%
Total Workers at Solano Employers	127,217	100%	123,356	100%	120,897	100%	121,217	100%	122,176	100%	117,649	100%

Source: Longitudinal Employment and Housing Dynamics data (onthemap.ces.census.gov)

Industry and Occupation Mix of Solano County's Laborshed

Workforce development challenges come in many shapes and sizes. One is the attraction of local residents, where county government provides support to both transitional services and K-12 education, and then may have residential “brain flight” as a result of better economic opportunities in other places regionally. Commuting plays a part in this, as does the cost of local housing. Figure 6 shows the most recent data on what major industries tend to attract Solano’s residents, and also what Solano employers attract from both inside and outside the county. Notice that while 16.2 percent of the workers that both live in Solano County and work in healthcare within Solano County, 14.9 percent of outbound commuters also work in healthcare and social assistance. The difference between occupations and industries is a subtle difference, but important for workforce and economic development. In Figure 7 are the occupations that comprise inbound commuters. The occupations of Solano residents are predominantly services and healthcare.

**Figure 6: Industry Mix and Commuting, Laborshed
% of Total Worked by Category, NAICS 2 Industries , 2014**

Industry (NAICS 2)	Live and Work in Solano County	Outbound Commuters	Inbound Commuters
Total Workers in Each Commute Category	62,431	117,167	64,786
Percent of total workers			
Ag	1.5%	1.8%	1.2%
Mining	0.4%	0.2%	0.0%
Utilities	2.2%	1.4%	0.9%
Construction	9.5%	11.4%	5.0%
Manufacturing	10.8%	12.5%	8.2%
Wholesale Trade	3.1%	3.6%	2.1%
Retail Trade	8.3%	8.9%	14.3%
Transportation and Warehousing	7.0%	4.5%	2.8%
Information	2.4%	1.8%	1.6%
Finance and Insurance	4.2%	2.3%	4.2%
Real Estate and Rental and Leasing	1.1%	1.5%	2.5%
Professional, Scientific, and Technical Services	5.6%	4.7%	3.9%
Admin Support and Waste Management	5.1%	3.2%	3.8%
Educational Services	5.1%	6.8%	7.7%
Health Care and Social Assistance	16.2%	14.9%	16.3%
Arts, Entertainment, and Recreation	1.8%	1.6%	3.1%
Accommodation and Food Services	3.4%	4.3%	10.6%
Other Services (except Public Administration)	3.8%	3.1%	3.5%
Public Administration	8.5%	11.5%	8.3%

Source: Longitudinal Employment and Housing Dynamics data (onthemap.ces.census.gov)

The occupational data in Figure 7 speaks to the skills of workers and what types of jobs they do, regardless of the industry that pays them. Production and logistics jobs are relatively even across all commuters, where management is more heavy on residential workers and outbound commuters. Appendix Figure A-3 illustrates how wage/salary differentials may drive these commute patterns.

Using Figures 6 and 7 for economic or workforce development needs an explanation. In Figure 6, healthcare and social assistance is relatively even as to the number of outbound commuters versus the combined number of residential workers and inbound commuters (those that work in Solano County overall). Notice that manufacturing employers lean more toward outbound commuting than local workers. Most of the economic development effort is on manufacturing businesses (biotech & biomedical, advanced materials, and food and beverage manufacturing), while healthcare is a classic industry in Solano County, but both struggle to retain local workers.

Figure 7: Occupational Distribution - Share of Totals (%)

Occupational Categories	Live and Work in Solano County	Outbound Commuters	Inbound Commuters
Total Workers in Each Commute Category	62,431	117,167	64,786
Percent of total workers			
Management	10.0%	11.3%	8.2%
Business and Financial Operations	6.5%	4.9%	3.8%
Computer and mathematical	2.8%	2.9%	1.3%
Architecture and Engineering	2.0%	1.6%	0.8%
Life, Physical, and Social Science	1.2%	1.7%	0.7%
Community and Social Service	1.8%	2.5%	2.0%
Legal	0.8%	1.0%	0.9%
Education and Training	2.7%	4.8%	5.2%
Arts, Design, Entertainment, Sports, and Media	1.2%	1.7%	1.2%
Healthcare Practitioners and Technical	7.7%	9.5%	6.2%
Healthcare Support	2.7%	1.8%	3.2%
Protective Service	3.2%	3.4%	3.1%
Food Preparation and Serving Related	2.5%	3.0%	7.4%
Building/Grounds Cleaning and Maintenance	2.4%	2.1%	3.8%
Personal Care and Service	3.1%	2.1%	5.8%
Sales and Related	7.2%	8.2%	12.8%
Office and Administrative Support	14.6%	10.0%	15.4%
Farming, Fishing, and Forestry	1.3%	1.3%	0.8%
Construction and Extraction	8.2%	7.8%	4.1%
Installation, Maintenance, and Repair	5.2%	5.6%	2.5%
Production/Manufacturing	6.0%	5.2%	5.6%
Transportation and Material Moving	6.9%	7.6%	5.2%

Source: American Community Survey, 2014 (factfinder.census.gov)

Figure 7's data shows how commuting takes place for types of jobs. Many management positions attract Solano residents, as do healthcare practitioner jobs (medical doctors and registered nurses, e.g.). But there are also jobs in Solano County. Office and administrative jobs may take less formal training, but show a heavy inbound and outbound commute.

Data released in June 2016 on wages in Solano County suggest that Solano County employees are paid less than those working in the Bay Area, but more than in Sacramento on average. Figure 8 shows the median wages (Figure A-5 provides more wage data for more occupations across Solano County's region) for selected counties and metropolitan statistical areas as a way to show current wage differentials. Because of laborshed, wages are determined regionally by commuting workers being mobile between employers that pay for their skills (occupations) and where potential employers reside.

Figure 8: Wage Differentials for Occupations, 2016 Q1, California EDD

Occupational Category	Solano County	CA	Napa County	San Francisco	Sac MSA	Santa Clara	Marin County
Total all	\$19.24	\$19.49	\$18.35	\$26.81	\$20.29	\$28.83	\$22.94
Management	\$47.20	\$54.33	\$49.02	\$69.46	\$48.45	\$76.63	\$59.03
Business and Financial Operations	\$34.31	\$35.92	\$34.79	\$43.13	\$32.60	\$45.10	\$42.38
Computer and Mathematical	\$41.01	\$48.21	\$37.42	\$53.56	\$40.22	\$61.28	\$52.64
Architecture and Engineering	\$41.79	\$45.20	\$39.29	\$48.41	\$45.01	\$54.96	\$36.28
Life, Physical, and Social Science	\$40.09	\$36.26	\$39.24	\$45.95	\$35.56	\$38.74	\$36.40
Community and Social Services	\$24.53	\$23.13	\$25.13	\$23.54	\$22.07	\$24.12	\$21.60
Legal	\$44.85	\$49.58	\$37.31	\$62.73	\$47.65	\$66.64	N/A
Education, Training, and Library	\$25.32	\$25.83	\$25.16	\$27.50	\$23.55	\$28.41	\$28.72
Arts, Design, Entertainment, Sports, and Media	\$19.33	\$27.30	\$23.15	\$32.34	\$22.41	\$30.59	\$28.68
Healthcare Practitioners and Technical	\$50.82	\$41.12	\$43.40	\$53.98	\$47.62	\$51.57	\$45.45
Healthcare Support	\$16.88	\$15.87	\$16.93	\$18.71	\$17.29	\$18.37	\$18.81
Protective Service	\$37.20	\$20.62	\$19.70	\$21.13	\$18.79	\$19.20	\$37.17
Food Preparation and Serving-Related	\$10.34	\$10.70	\$12.06	\$12.68	\$10.19	\$11.46	\$12.16
Building/Grounds Cleaning and Maintenance	\$13.90	\$12.95	\$13.33	\$15.00	\$13.09	\$13.08	\$15.46
Personal Care and Service	\$10.46	\$11.42	\$11.81	\$14.13	\$10.79	\$12.34	\$14.74
Sales and Related	\$11.96	\$13.81	\$16.26	\$18.32	\$13.41	\$17.19	\$17.91
Office and Administrative Support	\$18.57	\$18.17	\$18.50	\$22.48	\$18.49	\$21.89	\$21.56
Farming, Fishing, and Forestry	\$9.79	\$9.67	\$12.40	\$14.84	\$10.14	\$10.58	\$16.63
Construction and Extraction	\$26.67	\$25.00	\$27.03	\$31.14	\$24.39	\$28.44	\$29.74
Installation, Maintenance, and Repair	\$23.81	\$22.84	\$23.74	\$28.77	\$22.61	\$26.19	\$27.00
Production	\$16.81	\$14.70	\$18.32	\$18.12	\$15.85	\$17.65	\$17.75
Transportation and Material Moving	\$14.47	\$14.47	\$14.54	\$17.17	\$15.25	\$15.49	\$18.64

Source: California EDD (<http://www.labormarketinfo.edd.ca.gov/data/oes-employment-and-wages.html#OES>) (N/A = not available)

The wage differentials show some interesting traits of the regional labor market. Notice that healthcare practitioner wages are relatively high at the median (equivalent of \$101,640 per 2,000-hour work year). This level is higher than most of the regional counties, but Santa Clara and San Francisco counties are higher. Police and fire at \$37.20 per hour at the median for base salary is also another regional leader. Construction and nonprofit wages are also relatively high. Otherwise, wages are higher elsewhere, specifically in the Bay Area.

Not only are the types of occupations and industries that are part of Solano County's laborshed essential, but the ethnicity and education levels may also be important. Figure 9 expands the demography of those working and living in Solano County and also the net commuters (both inbound and outbound). Such data and updating can help inform workforce development about language and cultural aspects of their programs, as well as help planning efforts when trends are examined.

Part of occupational definitions in the education level of the worker, Figure 9 provides data showing the educational level of inbound, outbound and residential workers by race.

In Figure 9, 36.2 percent of the inbound workers have at least a bachelor's degree, while only 28.7 percent of the outbound workers do.

The Sacramento MSA includes Sacramento, Yolo, Placer and El Dorado counties. This is a broad geography, stretching from UC Davis to South Lake Tahoe, with the City of Sacramento as the jobs hub. Generally, the city of Sacramento will be the dominant force in these wages short of agricultural labor markets.

Figure 9: Percentage of Workers by Education by Race/Ethnicity, 2014, and Commute Pattern

Work in Solano County and Live Elsewhere (Inbound)					
	Total	White	AA	Hispanic	Other
Not a High School Graduate	9.6%	2.4	6.5%	27.1%	2.9%
High School Graduate	21.1%	19.5	14.4%	26.9%	18.9%
Some College or Associate's Degree	33.1%	33.1	47.0%	29.9%	33.2%
Bachelor's Degree	20.6%	26.6	16.7%	9.0%	23.6%
Advanced Degree	15.6%	18.4	15.4%	7.1%	21.4%
Race Shares	100%	48.6%	5.9%	27.7%	17.7%
Work Elsewhere and Live in Solano County (Outbound)					
	Total	White	AA	Hispanic	Other
Not a High School Graduate	8.0%	2.9	3.2%	25.0%	2.9%
High School Graduate	21.9%	20.2	18.5%	30.5%	18.3%
Some College or Associate's Degree	41.4%	45.6	51.1%	31.0%	38.7%
Bachelor's Degree	21.2%	21.4	18.6%	10.1%	33.3%
Advanced Degree	7.5%	9.9	8.6%	3.4%	6.8%
Race Shares	100%	39.6	14.1%	22.9%	23.4%
Live and Work in Solano County					
	Total	White	AA	Hispanic	Other
Not a High School Graduate	11.5%	5.4	5.5%	28.6%	6.9%
High School Graduate	23.1%	22.2	23.8%	29.4%	17.4%
Some College or Associate's Degree	42.7%	46.0	53.2%	33.1%	42.3%
Bachelor's Degree	15.8%	17.2	11.8%	6.1%	26.1%
Advanced Degree	6.9%	9.2	5.7%	2.8%	7.3%
Race Shares	100%	44.4	9.7%	24.8%	21.1%

Source: American Community Survey, 2014 (<http://factfinder.census.gov>); Data prepared by Marin Economic Consulting

This suggests that Solano County does a good job finding regional workers for industries demanding higher education levels, and exports residential workers that have marginally lower education but perhaps higher wage jobs based on skills (construction and manufacturing). There are more inbound Hispanic workers than outbound, and more African-American workers outbound than inbound; both races are behind Caucasian counterparts in terms of average education level.

Figure 10: Median Age of Workers by Where they Work and Education Level

Education	Live and Work in Solano County	Outbound Commuters	Inbound Commuters
Not a High School Graduate	41.2	38.4	35.6
High School Graduate	41.4	39.2	37.8
Some College or Associate's Degree	42.4	40.9	38.9
Bachelor's Degree	43.6	43.4	44.1
Advanced Degree	48.1	46.2	47.4
All Education Levels	42.8	41.6	39.7

Source: American Community Survey, 2014 (<http://factfinder.census.gov>); Data prepared by Marin Economic Consulting

The age characteristics of Solano County's laborshed are also interesting. Notice in Figure 10 that the median age of inbound workers, regardless of education, is lower than outbound and residential until the bachelor's degree, which is suddenly higher. Because age and experience tend to be correlated, as older Solano County residents leave for work, similar experienced workers may be needed in the jobs left behind.

Traded Sectors

Solano County has declared traded sectors that serve as targets for business retention, expansion and attraction activities (BREA): biotech/biomedical, advanced materials, and food and beverage manufacturing. Each of these sectors has specific occupations that define workers sought by the typical employer, and also share occupations.

Advanced Materials	BioTech & BioMedical	Food and Beverage
<ul style="list-style-type: none"> ❖ Life Scientists ❖ Physical Scientists ❖ Chemists and Materials Scientists ❖ Hazardous Materials Removal Workers ❖ Septic Tank Servicers and Sewer Pipe Cleaners ❖ Construction Trades Workers ❖ Laborers and Material Movers, Hand ❖ Driver/Sales Workers and Truck Drivers ❖ Laborers and Freight, Stock, and Material Movers, Hand ❖ Heavy and Tractor-Trailer Truck Drivers ❖ First-Line Supervisors of Construction Trades/Extraction Workers ❖ General and Operations Managers 	<ul style="list-style-type: none"> ❖ Packaging and Filling Machine Operators and Tenders ❖ Business Operations Specialists ❖ Life Scientists ❖ Physical Scientists ❖ Chemists and Materials Scientists ❖ Welding, Soldering, and Brazing Workers ❖ Welders, Cutters, Solderers, and Brazers ❖ Assemblers and Fabricators ❖ Miscellaneous Assemblers and Fabricators ❖ Machine Tool Cutting Setters, Operators, and Tenders, Metal/Plastic ❖ First-Line Supervisors of Production and Operating Workers ❖ Industrial Machinery Installation, Repair, and Maintenance Workers 	<ul style="list-style-type: none"> ❖ Packaging and Filling Machine Operators and Tenders ❖ Laborers and Material Movers, By Hand ❖ Food Batchmakers ❖ Industrial Truck and Tractor Operators ❖ Laborers and Freight, Stock, and Material Movers, Hand ❖ Industrial Machinery Installation, Repair, and Maintenance ❖ Material Recording, Scheduling, Dispatching, and Distributing ❖ Helpers-Production Workers

Shared occupations across industries include office and administrative workers, transportation workers, life and physical scientists, and sales and related occupations. What is important about sharing occupations is that the workers have mobility between jobs that may be in different industry sectors but is basically the same “job”. For example, a salesperson may move from a biomedical manufacturer to a food and beverage company as a representative selling products around the world. Scientists may be less mobile from one company to another based on their scientific specialty being tied to one type of life-science business.

A lack of labor supply to match local jobs can lead to increase local wages in ways that do not reflect the local cost of living. As commute costs are low (as of 2016 in terms of fuel prices), the incentive to commute remains high, both outbound and inbound. The mix of industries is also a factor in retaining local residents as workers. Regionality is a key part of understanding laborshed. Solano County is bookended with two large labor and population markets (greater Bay Area and Sacramento's MSA).



APPENDIX

APPENDIX

- A. Figure A-1: Occupations for Solano County Residents, 2010-2014 Average
- B. Figure A-2: Occupations for Solano County Residents, 2005-2009 Average
- C. Figure A-3: Earnings by Occupation, 2015
- D. Figure A-4: Counties Where Solano County Residents Work, 2014
- E. Figure A-5: 25% and 75% Wages, Selected Counties, 2016 Q1, Dollars/Hour
- F. Figure A-6: Median Home Prices, Single Family Homes, 2002-2016, Current Dollars

**Figure A-1: Occupations for Solano County Residents, 2010-2014
Average**

Occupation	Total Workers	Male	Female	Median Annual Earnings	MAE Male	MAE Female
Civilian employed population 16 years and over	183,876	51.0%	49.0%	\$38,799	\$43,308	\$33,337
Management, business, and financial	25,626	47.7%	52.3%	61,355	72,976	56,503
Computer, engineering, and science	7,980	68.3%	31.7%	74,980	82,694	63,225
Healthcare support	5,189	17.4%	82.6%	27,842	25,949	28,184
Protective service	6,262	81.1%	18.9%	62,438	65,292	56,858
Food preparation and serving related	9,628	44.2%	55.8%	15,150	18,229	12,724
Building and grounds cleaning and maintenance	6,938	64.7%	35.3%	22,398	26,118	17,238
Personal care and service	8,191	23.2%	76.8%	14,628	15,617	14,367
Sales and related	19,558	45.2%	54.8%	21,275	32,030	15,590
Office and administrative support	27,662	28.9%	71.1%	36,124	35,071	36,307
Farming, fishing, and forestry	1,649	77.4%	22.6%	19,037	19,319	16,307
Construction and extraction	9,848	98.3%	1.7%	43,816	44,209	26,219
Installation, maintenance, and repair	6,261	96.2%	3.8%	50,254	50,120	56,406
Production	10,435	76.3%	23.7%	39,489	47,131	25,288
Transportation	6,579	84.1%	15.9%	40,845	41,761	32,891
Material moving	4,955	76.4%	23.6%	22,983	23,843	20,181
Management, professional, and related	59,377	43.3%	56.7%	59,800	69,641	51,153
Service	32,880	47.4%	52.6%	20,526	27,252	16,269
Sales and office	49,274	37.5%	62.5%	31,069	38,088	28,507
Farming, fishing, and forestry	1,207	89.0%	11.0%	17,352	18,708	12,614
Construction, extraction, maintenance, and repair	20,392	97.9%	2.1%	45,293	45,052	60,250
Production, transportation, and material moving	19,545	78.8%	21.2%	34,197	38,712	22,299

Source: American Community Survey (<http://factfinder.census.gov>); Data prepared by Marin Economic Consulting

**Figure A-2: Occupations for Solano County Residents, 2005-2009
Average**

Occupation	Total Workers	Male	Female	Median Annual Earnings	MAE Male	MAE Female
Civilian employed population 16 years & over	182,675	52.7%	47.3%	\$38,557	\$44,874	\$32,117
Management, business, and financial	24,759	48.4%	51.6%	63,241	75,548	54,095
Computer, engineering, and science	6,909	75.4%	24.6%	73,272	78,200	58,814
Healthcare support	4,853	19.8%	80.2%	27,582	30,840	26,986
Protective service	5,790	77.8%	22.2%	72,612	74,455	58,868
Food preparation and serving related	8,434	43.8%	56.2%	11,590	12,372	10,714
Building and grounds cleaning and	7,359	71.7%	28.3%	20,889	25,251	13,927
Personal care and service	6,444	17.9%	82.1%	13,482	22,118	12,337
Sales and related	20,443	49.3%	50.7%	26,125	33,733	21,261
Office and administrative support	28,831	29.1%	70.9%	32,965	40,687	31,136
Farming, fishing, and forestry	1,207	89.0%	11.0%	17,352	18,708	12,614
Construction and extraction	12,871	98.0%	2.0%	43,292	42,964	60,461
Installation, maintenance, and repair	7,521	97.7%	2.3%	49,623	49,627	44,940
Production	9,060	74.9%	25.1%	38,341	42,662	24,915
Transportation	5,954	87.0%	13.0%	47,480	54,141	29,395
Material moving	4,531	81.8%	18.2%	30,276	31,470	23,406
Management, professional, and related	59,377	43.3%	56.7%	59,800	69,641	51,153
Service	32,880	47.4%	52.6%	20,526	27,252	16,269
Sales and office	49,274	37.5%	62.5%	31,069	38,088	28,507
Farming, fishing, and forestry	1,207	89.0%	11.0%	17,352	18,708	12,614
Construction, extraction, maintenance, and	20,392	97.9%	2.1%	45,293	45,052	60,250
Production, transportation, and material	19,545	78.8%	21.2%	34,197	38,712	22,299

Source: American Community Survey (<http://factfinder.census.gov>). MAE = Median Annual Earnings, wages and salaries; Data prepared by Marin Economic Consulting

Figure A-3: Earnings by Occupation, 2015

Occupation	Live and Work	Work Outside Live Inside	Live Outside Work Inside
Management	\$85,448	\$93,096	\$66,235
Business and Financial Operations	65,944	84,456	52,311
Computer and mathematical occupations	83,951	78,254	68,512
Architecture and Engineering	84,905	92,325	80,295
Life, Physical, and Social Science	73,639	73,308	66,533
Community and Social Service	52,764	69,318	47,691
Legal	76,074	102,496	81,281
Education, Training, and Library	55,397	49,555	40,279
Arts, Design, Entertainment, Sports, and Media	66,201	33,970	39,708
Healthcare Practitioners and Technical Occupations	68,237	119,460	90,358
Healthcare Support	33,440	38,205	28,373
Protective Service	70,416	71,236	55,825
Food Preparation and Serving Related	23,483	15,550	15,203
Building and Grounds Cleaning and Maintenance	24,789	33,101	27,043
Personal Care and Service	22,523	39,190	18,154
Sales and Related	49,415	48,830	25,885
Office and Administrative Support	42,270	38,813	32,642
Farming, Fishing, and Forestry	19,727	16,937	21,947
Construction and Extraction	50,423	42,253	40,201
Installation, Maintenance, and Repair	56,664	39,646	49,021
Production	52,673	43,417	41,794
Transportation and Material Moving	46,167	43,427	29,620

Source: American Community Survey (<http://factfinder.census.gov>); Data prepared by Marin Economic Consulting

Figure A-4: Counties Where Solano County Residents Work, 2014

County Location	Work Outside Solano Live in Solano	%	Work Inside Solano Live Elsewhere	%
Alameda		13.3%		4.9%
Contra Costa		27.5%		21.2%
Marin		7.1%		1.9%
Napa		14.4%		14.6%
Sacramento		6.7%		18.1%
San Francisco		6.3%		1.8%
San Mateo		4.0%		1.1%
Santa Clara		2.4%		0.9%
Sonoma		3.5%		3.2%
Yolo		6.8%		16.4%
Other		8.0%		15.9%
Source: American Community Survey (http://factfinder.census.gov) and Marin Economic Consulting				

Figure A-5: 25% and 75% Wages, Selected Counties, 2016 Q1, \$/Hour

	Solano		Alameda		Napa		Sacramento		San Francisco	
Wages by Percentile	25%	75%	25%	75%	25%	75%	25%	75%	25%	75%
Management	\$32.17	\$66.64	\$39.34	\$83.22	\$33.82	\$71.67	\$32.28	\$66.57	\$46.35	--
General and Operations Managers	\$32.06	\$63.94	\$38.83	\$87.47	\$35.03	\$74.01	\$32.45	\$68.02	\$41.08	--
Marketing Managers	\$42.19	\$87.66	\$60.34		\$49.81	\$84.52	\$33.03	\$76.21	\$66.76	--
Sales Managers	\$22.41	\$53.57	\$42.66		\$41.98	>\$90.00	\$28.83	\$71.37	\$46.12	--
Administrative Services Managers	\$40.32	\$62.85	\$33.99	\$60.59	\$30.61	\$54.33	\$31.31	\$52.19	\$36.20	\$69.10
Computer and Information Systems Managers	\$37.57	\$66.87	\$58.38	>\$90.00	\$42.87	\$73.72	\$51.01	\$72.37	\$69.01	--
Industrial Production Managers	\$37.56	\$56.79	\$35.59	\$70.24	--	--	\$34.74	\$62.43	\$47.31	\$80.23
Other	\$44.49	\$71.54	\$50.45	\$84.27	\$38.29	\$73.44	\$25.91	\$62.86	\$52.66	\$83.39
Business and Financial Operations	\$26.86	\$45.89	\$29.03	\$52.45	\$26.67	\$47.02	\$25.86	\$40.75	\$32.00	\$59.31
Human Resources Specialists	\$26.77	\$44.20	\$27.63	\$49.08	\$27.77	\$43.64	\$25.16	\$41.99	\$31.31	\$52.25
Management Analysts	\$28.82	\$50.58	\$32.08	\$58.03	\$27.19	\$55.03	\$27.11	\$34.17	\$37.01	\$73.51
Market Research Analysts/Specialists	\$22.84	\$39.40	\$27.76	\$58.96	\$24.59	\$44.55	\$22.02	\$43.97	\$29.81	\$59.65
Other	\$28.19	\$49.06	\$29.20	\$54.44	\$23.75	\$43.62	\$27.21	\$44.99	\$33.26	\$58.01
Computer and Mathematical	\$31.93	\$51.96	\$36.02	\$64.68	\$27.55	\$51.87	\$33.16	\$48.49	\$40.51	\$67.76
Computer Systems Analysts	\$36.66	\$46.42	\$34.37	\$56.80	\$30.84	\$45.36	\$33.90	\$44.21	\$43.20	\$67.13
Computer Programmers	\$40.21	\$57.22	\$32.35	\$60.05	--	--	\$34.56	\$44.21	\$40.07	\$67.57
Database Administrators	\$37.57	\$57.17	\$32.71	\$58.73	\$31.03	\$68.00	\$29.57	\$50.47	\$38.74	\$66.01
Network and Computer Systems Administrators	\$31.81	\$49.85	\$40.73	\$61.60	\$31.44	\$47.14	\$30.61	\$48.61	\$39.08	\$64.08
Other	\$23.67	\$53.02	\$38.32	\$65.73	\$19.35	\$56.97	\$27.93	\$50.41	\$38.71	\$63.93
Engineering	--	--	--	--	--	--	--	--	--	--
Industrial Engineers	\$36.58	\$59.63	\$36.84	\$58.83	\$35.38	\$57.56	\$34.62	\$55.37	\$41.59	\$61.73
Mechanical Engineers	\$34.88	\$54.00	\$39.84	\$59.62	\$29.94	\$49.81	\$35.13	\$55.78	\$37.17	\$63.57
Mechanical Drafters	\$23.02	\$35.12	\$21.44	\$39.89	--	--	\$21.21	\$34.40	\$26.42	\$42.06
Civil Engineering Technicians	\$27.28	\$44.39	\$26.61	\$36.94	\$28.05	\$47.90	\$25.90	\$37.21	\$25.45	\$30.31
Other	\$38.09	\$66.45	\$42.22	\$70.76	\$39.34	\$46.74	\$41.17	\$60.39	\$43.28	\$73.94
Life, Physical, and Social Science	\$25.90	\$54.71	\$28.13	\$55.55	\$24.50	\$53.69	\$25.27	\$47.07	\$32.61	\$59.43
Food Scientists and Technologists	\$21.49	\$48.29	\$24.67	\$47.19	\$26.97	\$47.96	\$22.24	\$36.84	\$31.69	\$57.47
Soil and Plant Scientists	--	--	\$33.08	\$39.80	\$21.76	\$44.50	\$27.54	\$47.75	--	--
Environmental Scientist, Including Health	\$33.06	\$45.26	\$32.06	\$57.60	\$34.05	\$46.16	\$30.19	\$48.16	\$33.33	\$61.85
Agricultural and Food Science Technicians	--	--	\$17.37	\$28.93	\$20.52	\$25.52	\$16.77	\$24.18	--	--
Biological Technicians	\$18.45	\$40.81	\$20.48	\$36.22	--	--	\$15.70	\$23.22	\$27.14	\$42.92
Other	\$16.57	\$24.97	\$16.52	\$33.85	--	--	\$18.75	\$34.04	\$15.15	\$32.75

Figure A-5 (Continued)

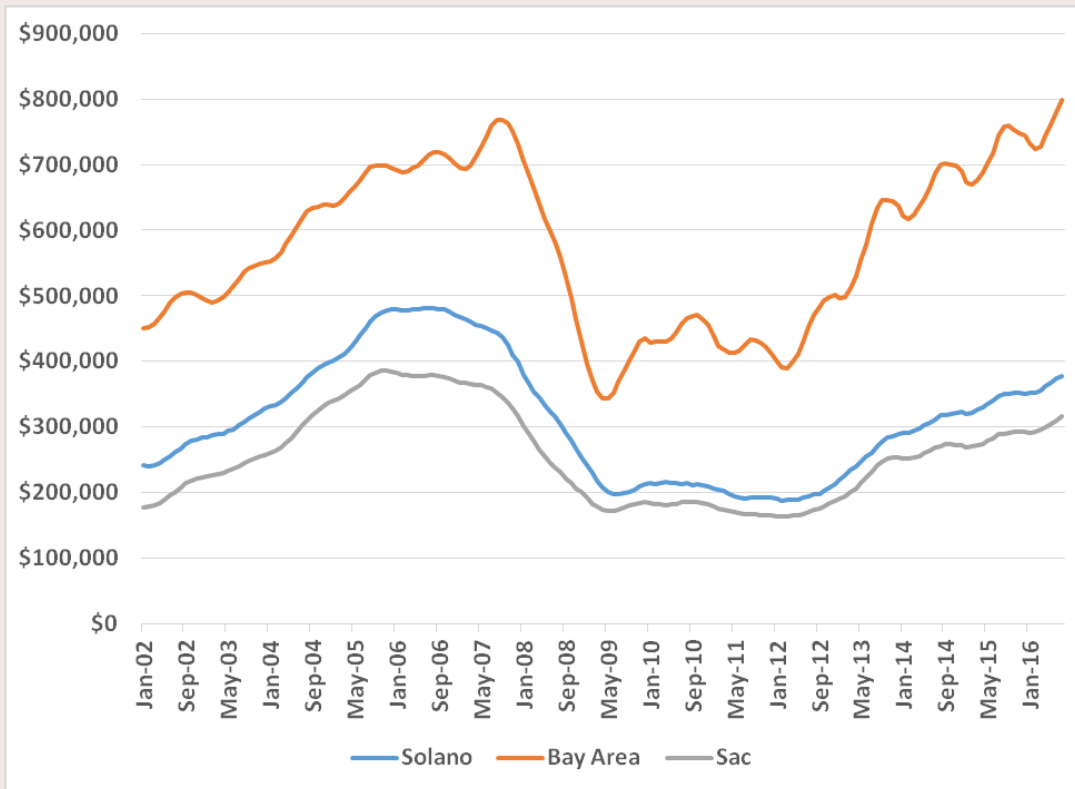
	Solano		Alameda		Napa		Sacramento		San Francisco	
Wages by Percentile	25%	75%	25%	75%	25%	75%	25%	75%	25%	75%
Office and Administrative Support	\$13.26	\$24.54	\$15.01	\$27.23	\$13.88	\$24.37	\$13.73	\$23.72	\$16.60	\$29.17
Bookkeeping, Accounting, and Auditing Clerks	\$16.19	\$25.60	\$18.60	\$28.04	\$18.99	\$28.07	\$16.35	\$24.39	\$19.78	\$30.00
Customer Service Representatives	\$15.81	\$23.37	\$16.54	\$25.76	\$13.99	\$23.48	\$13.67	\$23.21	\$17.63	\$29.04
Production, Planning, and Expediting Clerks	\$17.25	\$31.23	\$21.34	\$31.75	\$20.25	\$29.54	\$18.53	\$28.53	\$23.13	\$35.54
Shipping, Receiving, and Traffic Clerks	\$13.32	\$24.84	\$13.78	\$21.35	\$16.38	\$22.97	\$11.82	\$18.88	\$15.37	\$23.11
Other	\$9.60	\$14.82	\$10.61	\$23.32	\$10.63	\$16.79	\$9.56	\$13.99	\$11.63	\$21.92
Farming, Fishing, and Forestry	\$9.43	\$11.77	\$9.66	\$17.90	\$10.78	\$14.76	\$9.44	\$12.02	\$11.49	\$18.66
Graders and Sorters, Agricultural Products	--	--	--	--	--	--	\$12.88	\$16.08	--	--
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	\$9.40	\$10.89	\$9.55	\$15.74	\$10.67	\$14.21	\$9.44	\$11.17	\$11.42	\$14.72
Production	\$12.14	\$24.92	\$12.60	\$25.25	\$13.34	\$23.85	\$12.04	\$22.89	\$12.61	\$26.23
First-Line Supervisors, Production and Operating	\$24.14	\$36.32	\$21.72	\$43.23	\$26.06	\$42.98	\$20.64	\$36.23	\$23.72	\$48.19
Structural Metal Fabricators and Fitters	--	--	\$16.96	\$24.50	--	--	\$15.09	\$27.20	--	--
Team Assemblers	\$11.25	\$19.53	\$12.24	\$25.88	\$15.66	\$32.92	\$11.49	\$17.18	\$12.95	\$20.68
Computer-Controlled Machine Tool Operators	\$17.15	\$25.69	\$15.06	\$26.99	--	--	\$15.46	\$22.77	\$17.94	\$26.58
Machinists	\$34.30	\$46.22	\$18.90	\$33.47	\$12.14	\$28.75	\$18.82	\$31.74	\$16.92	\$39.24
Welders, Cutters, Solderers, and Brazers	\$15.75	\$27.87	\$17.51	\$28.73	\$20.18	\$23.47	\$16.43	\$29.28	\$21.42	\$43.77
Coating, Painting, and Spraying Machine Setters	\$12.72	\$19.18	\$15.98	\$32.50	--	--	\$13.87	\$22.03	\$14.52	\$26.85
Transportation and Material Moving	\$10.44	\$21.75	\$12.28	\$26.01	\$10.96	\$19.69	\$10.99	\$21.53	\$12.77	\$24.44
First-Line Supervisors of Helpers, Laborers	\$15.66	\$28.95	\$20.09	\$37.41	\$18.18	\$32.48	\$17.67	\$27.68	\$20.26	\$30.35
First-Line Supervisors of Transportation	\$18.55	\$37.68	\$23.39	\$39.51	\$18.98	\$31.11	\$21.07	\$35.87	\$24.61	\$40.68
Laborers and Freight, Stock, and Material Movers	\$10.30	\$16.47	\$11.16	\$19.45	\$10.74	\$16.63	\$10.10	\$17.40	\$11.84	\$17.36
Other	\$9.47	\$11.91	\$9.57	\$13.22	\$9.82	\$13.60	\$9.62	\$17.03	\$10.25	\$14.89

Figure A-5 (Continued)

	Solano		Alameda		Napa		Sacramento		San Francisco	
Wages by Percentile	25%	75%	25%	75%	25%	75%	25%	75%	25%	75%
Office and Administrative Support Occupations	\$13.26	\$24.54	\$15.01	\$27.23	\$13.88	\$24.37	\$13.73	\$23.72	\$16.60	\$29.17
Bookkeeping, Accounting, and Auditing Clerks	\$16.19	\$25.60	\$18.60	\$28.04	\$18.99	\$28.07	\$16.35	\$24.39	\$19.78	\$30.00
Customer Service Representatives	\$15.81	\$23.37	\$16.54	\$25.76	\$13.99	\$23.48	\$13.67	\$23.21	\$17.63	\$29.04
Production, Planning, and Expediting Clerks	\$17.25	\$31.23	\$21.34	\$31.75	\$20.25	\$29.54	\$18.53	\$28.53	\$23.13	\$35.54
Shipping, Receiving, and Traffic Clerks	\$13.32	\$24.84	\$13.78	\$21.35	\$16.38	\$22.97	\$11.82	\$18.88	\$15.37	\$23.11
Other	\$9.60	\$14.82	\$10.61	\$23.32	\$10.63	\$16.79	\$9.56	\$13.99	\$11.63	\$21.92
Farming, Fishing, and Forestry Occupations	\$9.43	\$11.77	\$9.66	\$17.90	\$10.78	\$14.76	\$9.44	\$12.02	\$11.49	\$18.66
Graders and Sorters, Agricultural Products	--	--	--	--	--	--	\$12.88	\$16.08	--	--
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	\$9.40	\$10.89	\$9.55	\$15.74	\$10.67	\$14.21	\$9.44	\$11.17	\$11.42	\$14.72
Production Occupations	\$12.14	\$24.92	\$12.60	\$25.25	\$13.34	\$23.85	\$12.04	\$22.89	\$12.61	\$26.23
First-Line Supervisors, Production and Operating	\$24.14	\$36.32	\$21.72	\$43.23	\$26.06	\$42.98	\$20.64	\$36.23	\$23.72	\$48.19
Structural Metal Fabricators and Fitters	--	--	\$16.96	\$24.50	--	--	\$15.09	\$27.20	--	--
Team Assemblers	\$11.25	\$19.53	\$12.24	\$25.88	\$15.66	\$32.92	\$11.49	\$17.18	\$12.95	\$20.68
Computer-Controlled Machine Tool Operators	\$17.15	\$25.69	\$15.06	\$26.99	--	--	\$15.46	\$22.77	\$17.94	\$26.58
Machinists	\$34.30	\$46.22	\$18.90	\$33.47	\$12.14	\$28.75	\$18.82	\$31.74	\$16.92	\$39.24
Welders, Cutters, Solderers, and Brazers	\$15.75	\$27.87	\$17.51	\$28.73	\$20.18	\$23.47	\$16.43	\$29.28	\$21.42	\$43.77
Coating, Painting, and Spraying Machine Setters	\$12.72	\$19.18	\$15.98	\$32.50	--	--	\$13.87	\$22.03	\$14.52	\$26.85
Transportation and Material Moving Occupations	\$10.44	\$21.75	\$12.28	\$26.01	\$10.96	\$19.69	\$10.99	\$21.53	\$12.77	\$24.44
First-Line Supervisors of Helpers, Laborers	\$15.66	\$28.95	\$20.09	\$37.41	\$18.18	\$32.48	\$17.67	\$27.68	\$20.26	\$30.35
First-Line Supervisors of Transportation	\$18.55	\$37.68	\$23.39	\$39.51	\$18.98	\$31.11	\$21.07	\$35.87	\$24.61	\$40.68
Laborers and Freight, Stock, and Material Movers	\$10.30	\$16.47	\$11.16	\$19.45	\$10.74	\$16.63	\$10.10	\$17.40	\$11.84	\$17.36
Other	\$9.47	\$11.91	\$9.57	\$13.22	\$9.82	\$13.60	\$9.62	\$17.03	\$10.25	\$14.89

Source: EDD (<http://www.labormarketinfo.edd.ca.gov/data/oes-employment-and-wages.html#OES>)

Figure A-6: Median Home Prices, Single Family Homes, 2002-2016, Current Dollars



Prepared by ► Economic Forensics & Analytics

Source ► California Association of REALTORS® (www.car.org)

The Bay Area is Alameda, Contra Costa, Santa Clara, San Mateo, and San Francisco counties