

# APPENDIX A: GROSS REGIONAL PRODUCT BY INDUSTRY IN THE EAST BAY

This appendix provides more detail on the gross regional product for each industry sector in Alameda and Contra Costa counties. Industries with higher GRP contribute greater economic output. Traded sectors, such as Manufacturing, Professional Services, and Information, produce a greater GRP per job than primarily householdserving sectors, such as "Accommodation and Food Services" or Retail Trade.

#### **FIGURE 37**

#### Jobs and Gross Regional Product by Industry and County, 2019

	JOBS		GRP (\$ Billion)	
Industry	Alameda	Contra Costa	Alameda	Contra Costa
Health Care and Social Assistance	117,058	68,090	\$11.86	\$7.39
Public Administration	120,546	50,279	\$15.94	\$5.71
Professional, Scientific, and Technical Services	88,755	32,503	\$15.86	\$5.69
Retail Trade	74,567	44,214	\$6.75	\$3.51
Accommodation and Food Services	67,580	37,431	\$3.58	\$1.83
Manufacturing	85,763	16,827	\$20.51	\$15.88
Construction	58,680	32,822	\$7.37	\$3.84
Other Services	49,336	28,787	\$2.88	\$1.60
Administrative and Waste Services	48,328	28,276	\$4.63	\$2.55
Wholesale Trade	36,813	9,587	\$8.38	\$4.09
Transportation and Warehousing	35,428	10,164	\$4.44	\$1.35
Finance and Insurance	19,884	23,012	\$7.22	\$7.93
Educational Services	22,301	11,096	\$1.31	\$0.61
Information	22,162	7,788	\$12.99	\$4.08
Arts, Entertainment, and Recreation	17,141	9,561	\$2.12	\$0.64
Management of Companies and Enterprises	16,682	8,913	\$3.59	\$1.71
Real Estate and Rental and Leasing	13,963	10,130	\$4.16	\$3.32
Total	896,325	433,777	\$134.58	\$74.72

Source: EMSI, 2021; Strategic Economics, 2021.



Source: EMSI, 2021; Strategic Economics, 2021.

# APPENDIX B: FASTEST-GROWING INDUSTRIES BY PAYROLLED BUSINESS GROWTH

This appendix describes the growth in business establishments by industry from 2014 to 2019. Business growth is one indicator of industry dynamism and entrepreneurship in the East Bay and can potentially identify promising industry subsectors for ongoing business expansion and creation. However, it is important to note that industries with rapidly growing numbers of establishments are not always the industries with the highest employment growth.

# Industry Subsectors that Added the Most New Establishments

Figure 38 shows the twenty industry subsectors that added the greatest numbers of new establishments in the East Bay between 2014 and 2019, even if they were not necessarily the fastest growing in terms of percent change in establishments. The East Bay's ongoing strength in creative technology and design was reflected by the large share of new establishments created in subsectors such as Computer Systems Design (865), Software Publishers(214), "Architecture, Engineering, and Related Services" (226), "Scientific Research and Development Services" (including biotech) (155),

**FIGURE 39** 



The chart excludes industry subsector "6241 – Individual and Family Services," which added 6,317 establishments in the East Bay. This subsector includes businesses classified as NAICS code 624120 (Services for the Elderly and Disabled), which consists almost entirely of in-home caregivers enrolled in the State's In-Home Supportive Services Program managed by the California Department of Social Services. Data for this subsector is excluded from the results because its high rates of new establishment formation actually reflect individual locations at which an in-home caregiver is working.

Source: U.S. Bureau of Labor Statistics QCEW via EMSI, 2021.

and Ecommerce within the "Electronic Shopping and Mail-Order Houses" subsector (149).

Many of the East Bay's new establishments also fell within subsectors that primarily serve the East Bay's significant residential and, secondarily, worker populations. Examples include restaurants, real estate agents, personal care, private educational services and tutoring centers, day care, health care, and recreation services. While some new establishments may be part of larger chains, these industries also typically represent opportunities for entrepreneurial activity with relatively low training barriers to starting a business, such as restaurants and nail or hair care.

Growth in construction-related establishments was bolstered both by the East Bay's existing concentration of this industry and by significant property development activity in recent years. Examples of construction-related industry subsectors that added large numbers of establishments in the East Bay included "Residential Building Construction" (426), "Building Equipment Contractors" (319), "Architecture, Engineering, and Related Services," (226), and "Building Finish Contractors" (222).

Finally, new establishments in "General Freight Trucking" (192) and "Electronic Shopping and Mail-Order Houses" (149) indicate the ongoing role of logistics and distribution in the East Bay, especially as ecommerce activity grows.

# County Comparison of New Establishment Formation

Figures 39 and 40 show the ten industry subsectors whose numbers of establishments grew most rapidly between 2014 and 2019 in Alameda County and Contra Costa County respectively. Alameda County and Contra Costa County share two industry groups that rapidly grew in number of establishments between 2014 and 2019 in both counties:

• The Computer Technology industry continued to drive rapid formation of new establishments in both Alameda and Contra Costa County: Alameda and

#### **FIGURE 40**



Note: Excludes industry subsectors with 10 or fewer establishments. Source: U.S. Bureau of Labor Statistics QCEW via EMSI, 2021. Contra Costa County shared only three industry subsectors among their respective ten fastest-growing, and all three subsectors are directly tied to the Computer Technology industry. These subsectors included Software Publishers, "Data Processing and Hosting Services," and Ecommerce activity ("Electronic Shopping and Mail-order Houses").

 Goods movement-related industry
subsectors were also among the fastestgrowing in both Alameda and Contra
Costa Counties: Collectively, several
fast-growing subsectors in the two counties represent different aspects of goods
movement activity in the East Bay. These
include General Freight Trucking in Contra Costa County and Raw Product Raw
Material Wholesalers and "Other Support
Activities for Transportation" in Alameda County. Some locations of businesses in the previously noted "Electronic Shopping and Mail-order Houses" subsector may also consist of fulfillment centers.

Alameda County's other fastest-growing industries, by number of establishments, included finance ("Other Investment Pools and Funds"), "Pharmaceutical and Medicine Manufacturing," Basic Chemical Manufacturing, and businessand technology-related education. This mix indicates the county's ongoing acceleration of its strengths in Biomedicine, Biotechnology, Business Services, and Financial Services within the overall East Bay. Contra Costa County's other fastest-growing industries, by number of establishments, were a mix of Event Promotion, State Government offices, Business Services, Outpatient Care Centers, and Food Manufacturing (including "Bakeries and Tortilla Manufacturing" and Other Food Manufacturing).

#### **FIGURE 41**



Note: Excludes industry subsectors with 10 or fewer establishments. Source: U.S. Bureau of Labor Statistics QCEW via EMSI, 2021.

#### **FIGURE 42**

#### Middle-Wage Occupations with Most Projected Openings in the East Bay, 2018 to 2028

Occupation	Total Job Openings	Median Annual Wages	Entry Level Education	On-the-Job Training
Construction Laborers	15,960	\$61,057	No formal education credential	Short-term on-the-job training
Carpenters	13,620	\$73,189	High school diploma or equivalent	Apprenticeship
Bookkeeping, Accounting, and Auditing Clerks	13,620	\$54,468	Some college, no degree	Moderate-term on-the-job training
First-Line Supervisors of Office and Administrative Support Workers	12,300	\$66,945	High school diploma or equivalent	None
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	11,060	\$72,518	High school diploma or equivalent	Moderate-term on-the-job training
Maintenance and Repair Workers, General	9,010	\$54,224	High school diploma or equivalent	Moderate-term on- the-job training
Fitness Trainers and Aerobics Instructors	6,460	\$60,733	High school diploma or equivalent	Short-term on-the-job training
Food Service Managers	5,040	\$51,451	High school diploma or equivalent	None
Automotive Service Technicians and Mechanics	5,000	\$53,276	Postsecondary non-degree award	Short-term on-the-job training
Licensed Practical and Licensed Vocational Nurses	3,950	\$67,595	Postsecondary non-degree award	None
Property, Real Estate, and Community Association Managers	3,850	\$74,400	High school diploma or equivalent	None
Production, Planning, and Expediting Clerks	3,510	\$61,703	High school diploma or equivalent	Moderate-term on-the-job training
Paralegals and Legal Assistants	3,190	\$61,552	Associate's degree	None
Graphic Designers	3,030	\$65,278	Bachelor's degree	None
Substance Abuse, Behavioral Disorder, and Mental Health Counselors	3,020	\$54,860	Bachelor's degree	None
Insurance Sales Agents	2,990	\$66,506	High school diploma or equivalent	Moderate-term on-the-job training
Machinists	2,950	\$57,633	High school diploma or equivalent	Long-term on-the-job training
Roofers	2,730	\$51,702	No formal education credential	Moderate-term on-the-job training
Securities, Commodities, and Financial Services Sales Agents	2,680	\$58,781	Bachelor's degree	Moderate-term on-the-job training
Electrical and Electronics Engineering Technicians	2,620	\$64,990	Associate's degree	None

Note: Low wage: less than \$50,000 in annual wage; Middle-wage: \$50,000 - \$75,000; High-wage: Over \$75,000. Source: California EDD, 2021; Strategic Economics, 2021.

# APPENDIX C: OCCUPATIONS TO WATCH

The data in this appendix describes occupations with a large number of projected openings in the East Bay. Figure 42 shows the fastest-growing middle-wage occupations, which are occupations with annual salaries between \$50,000 and \$75,000. This range is based on the cost of living in the East Bay, and was informed by the California HCD's area median income tables for East Bay counties in 2021. The table is organized by the number of projected new jobs from 2018 to 2028. Many of these occupations, such as Construction Laborers, Carpenters, and "First-Line Supervisors of Office and Administrative Support Workers" require only a high school diploma or less. Some occupations have "middle-skill" entry requirements, meaning they require more than a high school degree but less than a fouryear degree. This could include a post-secondary non-degree award, a two-year Associate's degree, or attending college but not earning a degree. The middle-skill, middle-wage jobs with the most openings are "Bookkeeping, Accounting, and Auditing Clerks", Automotive Service Technicians, and "Licensed Practical and Vocational Nurses."

Figure 41 shows the top posted occupations that require a four-year degree in the East Bay. This table reflects current job openings, showing openings from May to August 2021. Most unique openings are associated with Management, "Computer and Mathematical", and Healthcare Practitioners and Technical" occupations.

#### **FIGURE 43**

Top Posted Occupations that Require a Bachelor's Degree in the East Bay, May to August 2021						
Occupation	Total Postings	Unique Postings	Median Posting Duration			
Management Occupations	139,145	36,042	32 days			
Computer and Mathematical Occupations	142,206	35,635	30 days			
Healthcare Practitioners and Technical Occupations	133,239	29,748	30 days			
Sales and Related Occupations	118,778	25,877	30 days			
Transportation and Material Moving Occupations	113,782	24,584	22 days			
Office and Administrative Support Occupations	82,803	22,494	24 days			
Business and Financial Operations Occupations	73,775	18,580	30 days			
Architecture and Engineering Occupations	69,725	16,204	34 days			
Educational Instruction and Library Occupations	29,338	8,703	29 days			
Life, Physical, and Social Science Occupations	31,536	7,940	32 days			
Community and Social Service Occupations	23,137	6,407	30 days			
Arts, Design, Entertainment, Sports, and Media Occupations	16,311	4,976	28 days			
Protective Service Occupations	22,119	3,802	29 days			
Legal Occupations	7,049	2,341	31 days			

Source: EMSI, 2021; Strategic Economics, 2021.

# APPENDIX D: ABOUT EMSI DATA

EMSI is a commerical data service provider that specializes in customized geographical data on a range of economic-related metrics. Strategic Economics relied on EMSI data provided by East Bay EDA for many of the quantitative analyses in this report. EMSI data was used for analyses on industry employment, gross regional product, payrolled business growth, and current job postings for occupations that require a Bachelor's degree. EMSI relies on custom methodologies for all their data. EMSI's own methodology descriptions are quoted below. More information on the methodologies can be found here: https://kb.EMSIdata.com/methodology/

# INDUSTRY EMPLOYMENT DATA

Industry data is the backbone of EMSI's core LMI data. EMSI industry data is data about businesses, categorized by type—hospitals, oil refineries, grocery stores, etc. The Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW) dataset provides detailed employment counts and earnings information for 95% of the employed workforce in the United States, broken out by industry. The employment counts data provided by this dataset are the gold standard of employment counts throughout EMSI data. Where necessary, EMSI fills in suppressed data points in QCEW using data from the Census's County Business Patterns (CBP) dataset. More information on the extent of suppressions in QCEW and the importance of EMSI's unsuppression processes, see this article.

EMSI uses other datasets to provide data for the remaining 5% of the employed workforce not covered by QCEW. EMSI uses American Community Survey (ACS) data to provide job counts and earnings data for self-employed workers. Industry job counts and earnings data are available back to 2001.<sup>35</sup>

## Gross Regional Product Data

GRP, or Gross Regional Product, is GDP (Gross Domestic Product) calculated for a smaller region. All the same components—earnings, taxes, profits, less subsidies—must be calculated at the regional level.

EMSI's sources for GRP data include the following:

- EMSI's industry earnings data (BLS's Quarterly Census of Employment and Wages, along with multiple supplementary data sets)
- BEA Gross State Product (GSP) dataset
- EMSI's national Input-Output model
- BEA National Income and Product Accounts (NIPA)

EMSI does not use BEA's GMP (metro-level GDP) or GCP (county-level GDP) datasets. GMP does not agree with GSP, so we favor GSP; however, EMSI's final results are similar to both GSP and GMP. EMSI evaluated GCP for possible inclusion in our calculation of GRP, but decided against it due to a lack of available component detail, as well as negative client feedback regarding potentially questionable source data. For more information, see EMSI's review of BEA GCP.

EMSI's national input-output model breaks national GDP out into its components—earnings, taxes, profits, and subsidies all by 6-digit NAICS. Each component must then be modeled down to the regional level.

#### Model to State Level

The usual method of creating state-level estimates for taxes, profits, and subsidies (3 of the 4 components of GRP) is to apply national coefficients to state earnings (the fourth component), creating state estimates for the first three components. The BEA also publishes state-level component totals for each state, so EMSI uses those totals to control the state values created by applying national coefficients to state earnings. The result is more accurate state-level data that utilizes EMSI's state-level earnings data as well as the BEA's state-level component totals.

If the BEA has not yet reported GSP data for the working year, the latest available GSP data is scaled to match totals taken from BEA National Income and Product Account (NIPA) tables, which are updated quarterly.

#### Model to County Level

The final step is to move to county-level GRP data. EMSI data provides county-level earnings figures (one component of GRP), and we must calculate the other three components. They are calculated individually by creating ratios at the state level using earnings data. For instance, county-level taxes are calculated by finding the ratio of state-level taxes to state-level earnings. That ratio is then applied to county-level earnings and solves to county-level taxes. The process is repeated for each component for each 6-digit industry. The result is each of the GRP components at the county level.<sup>36</sup>

## Payrolled Business Growth Data

The Payrolled Business Growth appendix relies on Quarterly Census of Employment and Wages (QCEW) estimates, which is a quarterly count of employees, payrolled businesses, and wages covering 95 percent of U.S. jobs. This data is summarized by EMSI. The following is an excerpt from EMSI's glossary about payrolled business data.

"Also referred to as a "Payrolled Business Location", an establishment is a single physical location of some type of economic activity (a business), used for reporting purposes in government data sources. A single company may have multiple establishments. As an example, a single company with its corporate office in New York, a paper manufacturing plant in Georgia, and fifteen warehouses in various cities would comprise a total of seventeen establishments, and each establishment would be classified according to its own type of activity. In this case, three different industries would be used:

- Corporate, subsidiary, and regional managing offices
- Paper (except newsprint) mills
- General warehousing and storage<sup>37</sup>

### Job Postings Data

EMSI job postings data is gathered by scraping over 100,000 websites, including company career sites, national and local job boards, and job posting aggregators. Over 1.5 million companies are represented in EMSI data.

Job postings are assessed for likely duplicates using a machine learning algorithm, which determines whether two postings are duplicates based on text similarity, job title, company name, and location. Job postings posted more than six weeks apart will not be considered potential duplicates. Duplicate jobs openings posted in separate cities will not be deduplicated and will appear as multiple postings. Each job posting is further enriched with valueadd processes including:

- Job title and company standardization
- Skill extraction and tagging
- SOC and NAICS code determination and assignment
- Education and experience determination<sup>38</sup>

<sup>36</sup> EMSI, https://kb.EMSIdata.com/methodology/grp-methodology/

<sup>37</sup> EMSI, https://kb.EMSIdata.com/glossary/

<sup>38</sup> EMSI, https://kb.EMSIdata.com/methodology/EMSI-data-basic-overview/