

SAN DIEGO COUNTY



MAY 2022



C · O · E

CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

COMMUNITY COLLEGES

SAN DIEGO & IMPERIAL COUNTIES

CAREER EDUCATION



California
Community
Colleges

TABLE OF CONTENTS

Executive Summary	4
Introduction	5
Part I: Analysis by NAICS Codes	7
Employment and Jobs	7
Earnings and Wages	9
Establishments or Businesses	11
Workers Age 55+ or Nearing Retirement	13
Jobs Multipliers	14
Part II: Analysis by SOC Codes	15
Employment and Jobs	15
Entry-level and Median Wages	17
Workers Age 55+ or Nearing Retirement	19
Job Concentration (Location Quotient)	20
Automation Index	21
Part III: Sector Rankings	22
Part IV: Town Hall Recommendations	26
Advanced Manufacturing	27
Advanced Transportation and Logistics	31
Agriculture, Water, and Environmental Technologies	34
Business and Entrepreneurship	36
Education and Human Development	39
Energy, Construction, and Utilities	41
Health	43
ICT and Digital Media	46
Life Sciences and Biotechnology	49
Public Safety and Government.....	52

Retail, Hospitality, and Tourism.....	54
Recommendations for All Sectors	57
Appendix A: Methodology.....	59
Appendix B: Demographics by Sector.....	65
Appendix C: Sector Definitions by NAICS Codes.....	77
Appendix D: Sector Definitions by SOC Codes.....	96

EXECUTIVE SUMMARY

The San Diego-Imperial Center of Excellence for Labor Market Research (COE) analyzed 11 industry sectors in this study to assist community colleges in San Diego County with strategic planning and program development:¹

- Advanced Manufacturing
- Advanced Transportation and Logistics
- Agriculture, Water, and Environmental Technologies
- Business and Entrepreneurship
- Education and Human Development
- Energy, Construction, and Utilities
- Health
- Retail, Hospitality, and Tourism
- Information and Communication Technologies (ICT) and Digital Media
- Life Sciences and Biotechnology
- Public Safety and Government

After examining 15 different metrics from two labor market data systems—North American Industry Classification System (NAICS) and Standard Occupational Classification (SOC)—for these 11 sectors, the San Diego-Imperial COE ranked each sector according to two different point systems:

Sector Rankings Based on Top 5 Sectors by Metric			Sector Rankings Based on Order in Metric		
Rank	Sector	Points	Rank	Sector	Points
1.	Business and Entrepreneurship	11	1.	Health	116
2.	Health	10	2.	Business and Entrepreneurship	115
3.	Education and Human Development	9	3.	Education and Human Development	102
4.	Energy, Construction, and Utilities	8	4.	Life Sciences and Biotechnology	100
4.	ICT and Digital Media	8	5.	ICT and Digital Media	98
4.	Life Sciences and Biotechnology	8	6.	Energy, Construction, and Utilities	95
5.	Public Safety and Government	6	7.	Public Safety and Government	80
6.	Retail, Hospitality, and Tourism	5	8.	Advanced Manufacturing	75
7.	Advanced Manufacturing	4	8.	Retail, Hospitality, and Tourism	75
8.	Advanced Transportation and Logistics	3	9.	Advanced Transportation and Logistics	77
8.	Agriculture, Water, and Environmental Technologies	3	10.	Agriculture, Water, and Environmental Technologies	57

This study also includes qualitative data from town hall meetings with representatives from K12 institutions, adult education, community colleges, four-year universities, community-based organizations, workforce development boards, and economic development councils. The San Diego-Imperial COE encourages the community colleges to use this study as a resource for meaningful discussions as they develop work plans for each sector. This study should **not** be the only basis for determining the region's priority sectors.

¹ cccco.edu/About-Us/Chancellors-Office/Divisions/Workforce-and-Economic-Development/Strong-Workforce-Program/Events/K12-SWP-Industry-Sector-Crosswalk. Accessed April 6, 2021.

INTRODUCTION

The San Diego-Imperial Center of Excellence for Labor Market Research (COE) analyzed regional industry sectors in this study to assist the San Diego and Imperial Counties Community Colleges with strategic planning and program development. According to the California Community Colleges Chancellor's Office (CCCCO), there are 11 key sectors in California:²

- Advanced Manufacturing
- Advanced Transportation and Logistics
- Agriculture, Water, and Environmental Technologies
- Business and Entrepreneurship
- Education and Human Development
- Energy, Construction, and Utilities
- Health
- Retail, Hospitality, and Tourism
- Information and Communication Technologies (ICT) and Digital Media
- Life Sciences and Biotechnology
- Public Safety and Government

To analyze these sectors, the San Diego-Imperial COE first had to define what they are. Depending on the research methodology, researchers can define sectors using program codes from the Taxonomy of Programs (TOP)³ or Classification of Instruction (CIP)⁴ systems, occupational codes from the Standard Occupational Classification (SOC) system⁵, or industry codes from the North American Industry Classification System (NAICS)⁶. For this study, the San Diego-Imperial COE defined and analyzed the sectors using both NAICS and SOC codes. NAICS provides labor market information (LMI) on companies and SOC provides LMI on occupations. Put differently, NAICS codes provide a “vertical” analysis of the sectors while SOC codes provide a “horizontal” analysis. As seen in Exhibit I, SOC codes or occupations are employed across companies in different industries such as manufacturing or health.

Exhibit I: “Vertical” Analysis of Sectors Using NAICS Codes vs. “Horizontal” Analysis Using SOC Codes



² [cccco.edu/About-Us/Chancellors-Office/Divisions/Workforce-and-Economic-Development/Strong-Workforce-Program/Events/K12-SWP-Industry-Sector-Crosswalk](https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Workforce-and-Economic-Development/Strong-Workforce-Program/Events/K12-SWP-Industry-Sector-Crosswalk). Accessed April 6, 2021.

³ [cccco.edu/-/media/CCCCO-Website/About-Us/Divisions/Digital-Innovation-and-Infrastructure/Research/Files/TOPmanual6200909corrected12513.pdf?la=en&hash=26CCD79E15C26BC0F48CAB37F219731E29E6CA5B](https://www.cccco.edu/-/media/CCCCO-Website/About-Us/Divisions/Digital-Innovation-and-Infrastructure/Research/Files/TOPmanual6200909corrected12513.pdf?la=en&hash=26CCD79E15C26BC0F48CAB37F219731E29E6CA5B)

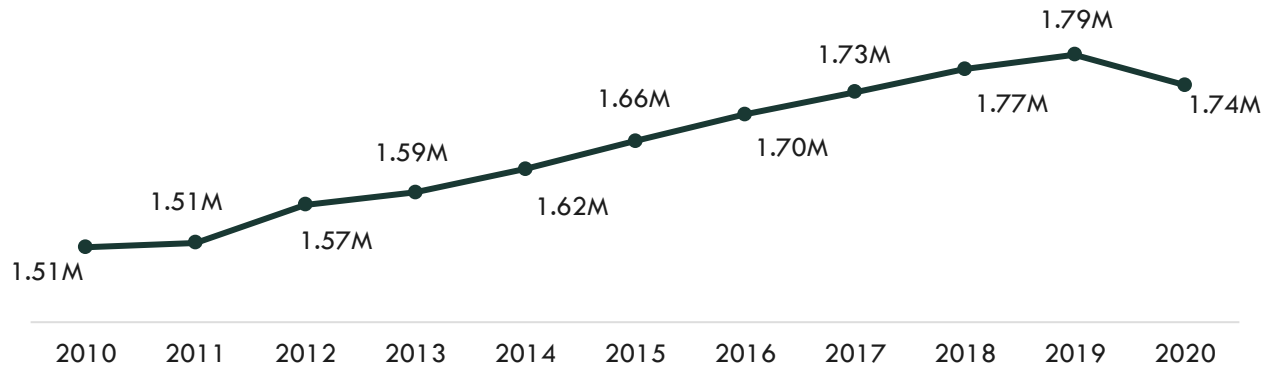
⁴ nces.ed.gov/ipeds/cipcode/Default.aspx?y=56

⁵ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc).

⁶ [census.gov/naics](https://www.census.gov/naics)

For this study, the San Diego-Imperial COE analyzed LMI between 2010 and 2020. During this period, San Diego County experienced a 16 percent job growth, with 1.51 million jobs in 2010 to 1.74 million jobs in 2020 (Exhibit II). The San Diego-Imperial COE did not use any projections data due to uncertainties in the labor market because of the COVID-19 pandemic, which began in 2020.

Exhibit II: Number of Jobs in San Diego County (2010-2020)⁷



This study is divided into three parts: Part I analyzes LMI by NAICS codes, using metrics selected by the region's community college stakeholders. Part II analyzes LMI by SOC codes, and Part III ranks the sectors based on the metrics analyzed in Parts I and II. (For more information on the methodology, see Appendix A.)

The San Diego-Imperial COE encourages the San Diego and Imperial Counties Community Colleges to use this study as a resource for meaningful discussions as they decide which sectors to prioritize as a region. This report should not be used as the sole basis for decision-making.

IMPORTANT DISCLAIMERS

All representations included in this report have been produced from secondary research and a review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

⁷ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. All NAICS codes.

PART I: ANALYSIS BY NAICS CODES

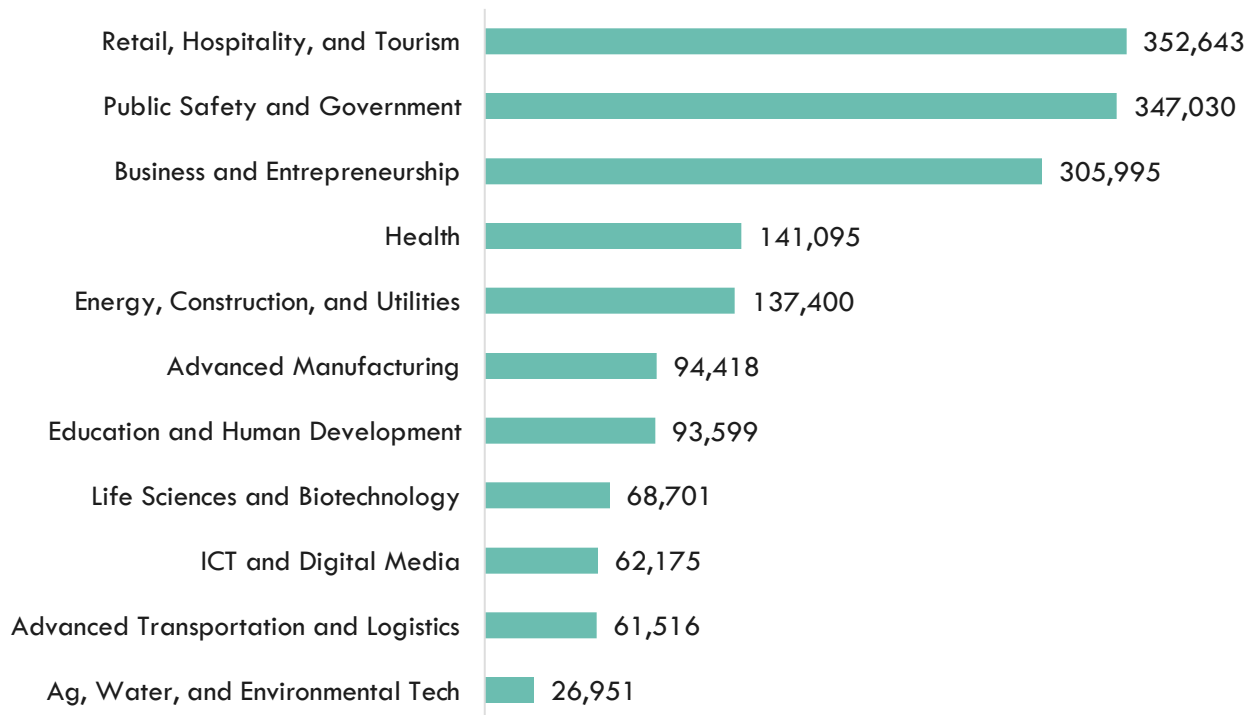
In this section, the San Diego-Imperial COE analyzed available labor market information from the North American Industry Classification (NAICS) system for the 11 sectors. Metrics available by NAICS codes include:

- # of Jobs (2020)
- % Job Change (2010-2020)
- Average Earnings by Job (2020)
- % Change in Average Earnings by Job (2010-2020)
- # of Establishments (2020)
- % Change in Establishments (2010-2020)
- % Workers Age 55+ (2020)
- Jobs Multipliers (2020)

EMPLOYMENT AND JOBS

Based on NAICS codes, the five sectors with the greatest number of jobs in 2020 were 1) Retail, Hospitality, and Tourism; 2) Public Safety and Government; 3) Business and Entrepreneurship; 4) Health; and 5) Energy, Construction, and Utilities (Exhibit 1).

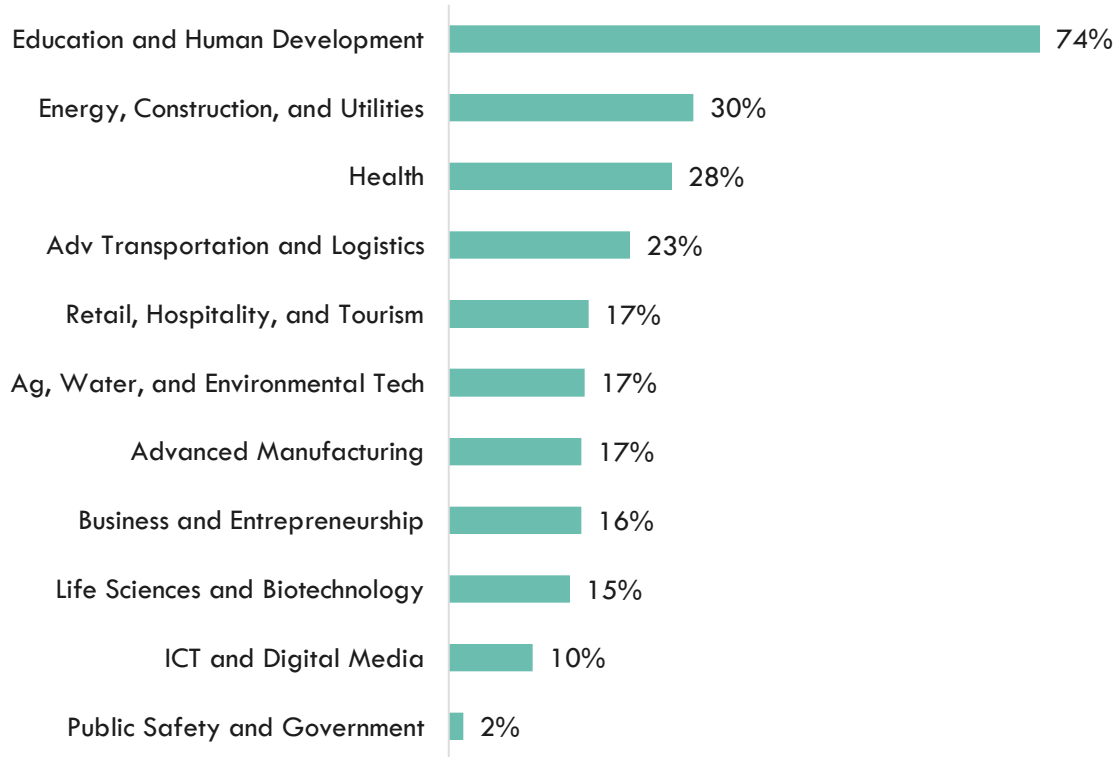
Exhibit 1: Number of Jobs by Sector in San Diego County (2020)⁸



⁸ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Industry groups (sectors) defined by NAICS codes in Appendix B.

Between 2010 and 2020, the five sectors with the most percentage job growth were 1) Education and Human Development; 2) Energy, Construction, and Utilities; 3) Health; 4) Advanced Transportation and Logistics; and 5) Retail, Hospitality, and Tourism (Exhibit 2).

Exhibit 2: Percent Change in Jobs by Sector in San Diego County (2010-2020)⁹

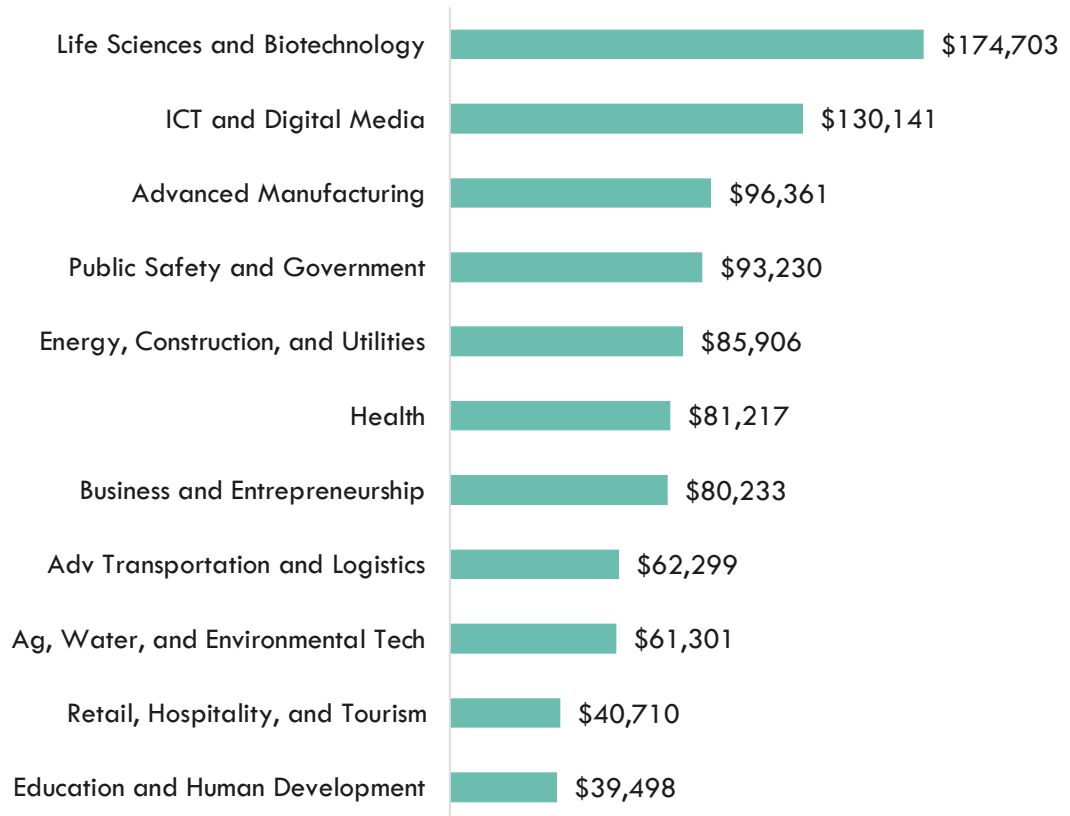


⁹ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Industry groups (sectors) defined by NAICS codes in Appendix B.

EARNINGS AND WAGES

In 2020, the top five sectors with the most average earnings by job were 1) Life Sciences and Biotechnology; 2) ICT and Digital Media; 3) Advanced Manufacturing; 4) Public Safety and Government; and 5) Energy, Construction, and Utilities (Exhibit 3).

Exhibit 3: Average Earnings by Job¹⁰ in San Diego County by Sector (2020)¹¹

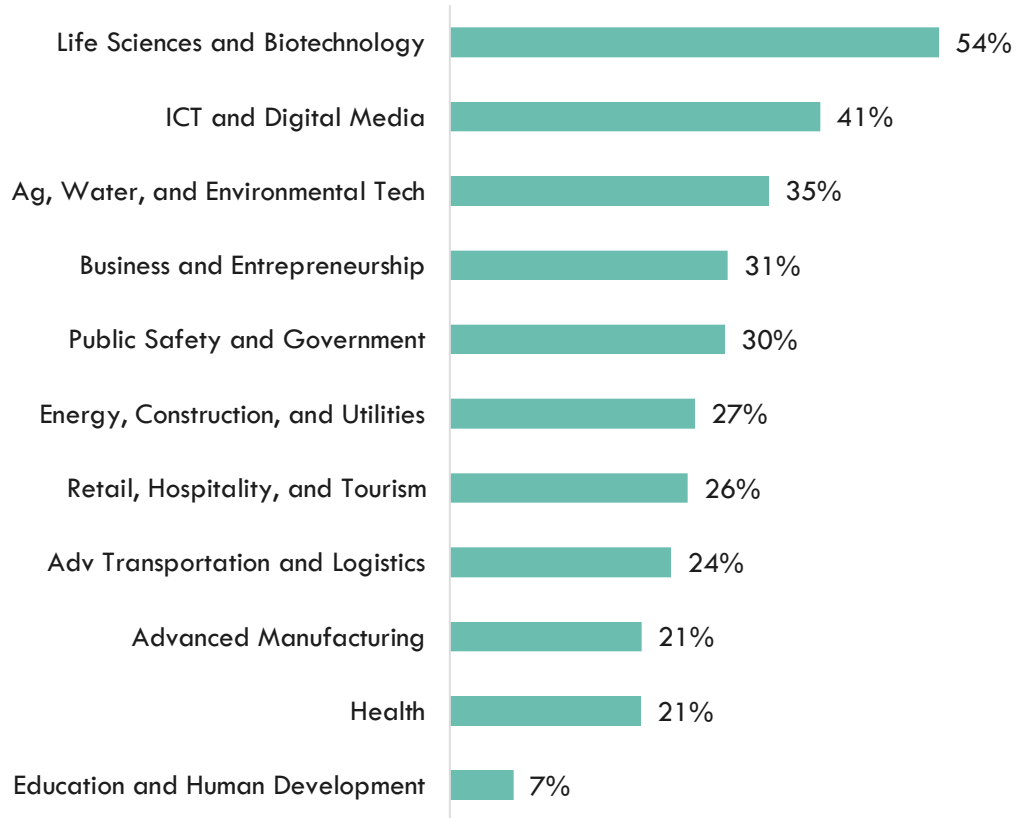


¹⁰ "Average earnings by job" is the total earnings of all NAICS in the sector (including wages, salaries, profits, benefits and other compensation), divided by the total number of jobs across the sector. EMSI 2021.01; QCEW, Non-QCEW, Self-Employed.

¹¹ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Industry groups (sectors) defined by NAICS codes in Appendix B.

Between 2010 and 2020, the top five sectors with the greatest change in average earnings by job were 1) Life Sciences and Biotechnology; 2) ICT and Digital Media; 3) Agriculture, Water, and Environmental Technologies; 4) Business and Entrepreneurship; and 5) Public Safety and Government (Exhibit 4).

Exhibit 4: Percent Change in Average Earnings by Job¹² in San Diego County by Sector (2010-2020)¹³



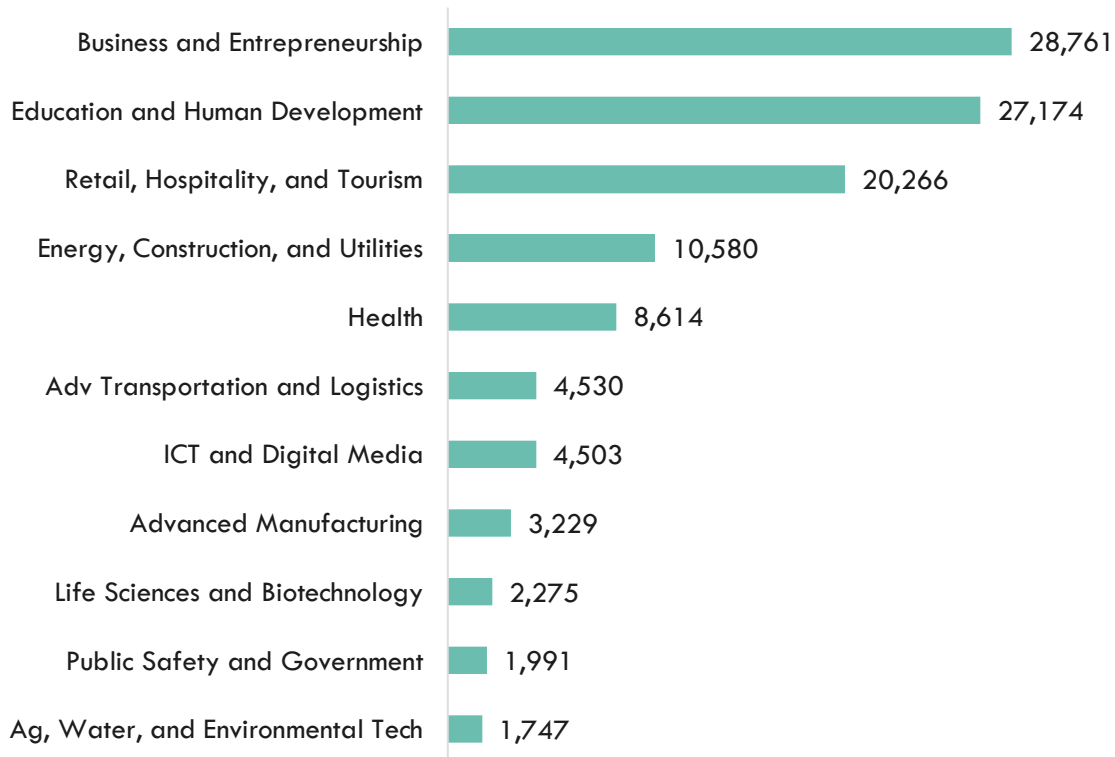
¹² "Average earnings by job" is the total earnings of all NAICS in the sector (including wages, salaries, profits, benefits and other compensation), divided by the total number of jobs across the sector. EMSI 2021.01; QCEW, Non-QCEW, Self-Employed.

¹³ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Industry groups (sectors) defined by NAICS codes in Appendix B.

ESTABLISHMENTS OR BUSINESSES

In 2020, Business and Entrepreneurship had the greatest number of establishments, with 28,761 establishments in San Diego County. An establishment is a single physical location of a business. A single company may have multiple establishments.¹⁴ Five sectors with the greatest number of establishments in San Diego County in 2020 were 1) Business and Entrepreneurship; 2) Education and Human Development; 3) Retail, Hospitality, and Tourism; 4) Energy, Construction, and Utilities; and 5) Health (Exhibit 5).

Exhibit 5: Number of Establishments by Sector in San Diego County (2020)¹⁵

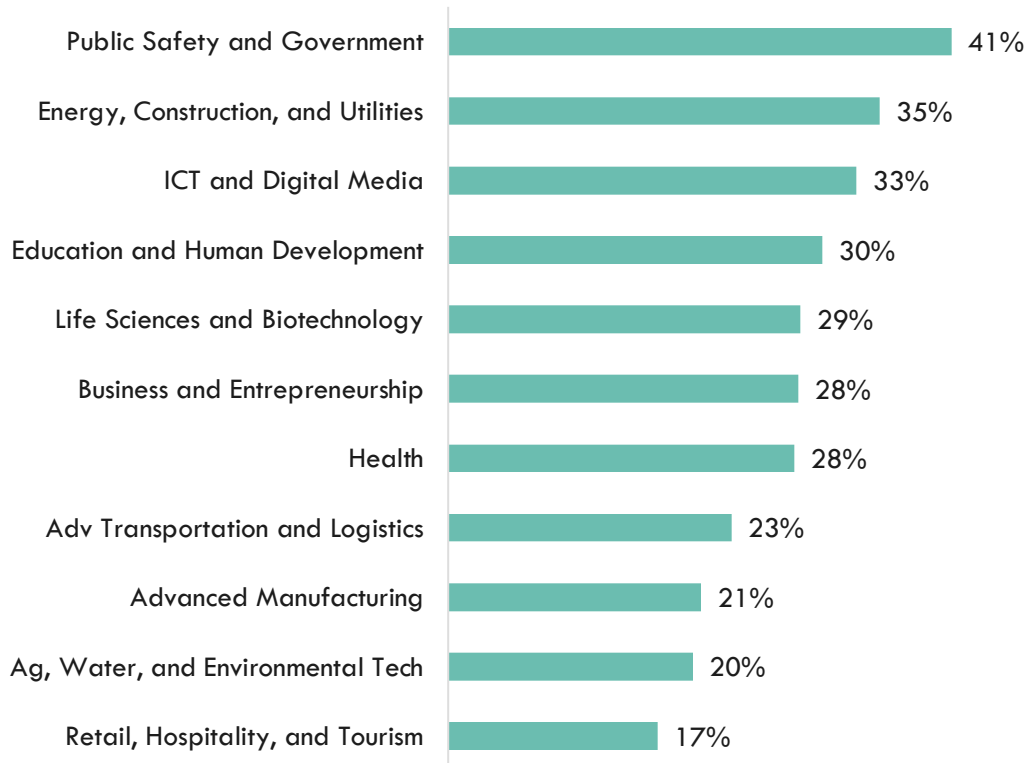


¹⁴ kb.emsidata.com/analyst/glossary/#e

¹⁵ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Industry groups (sectors) defined by NAICS codes in Appendix B.

Between 2013 and 2020, the number of Public Safety and Government establishments in San Diego County increased from 1,414 to 1,991, which was a 41 percent change. (The baseline year was changed from 2010 to 2013 due to updates in coding and tracking of companies.) Five sectors with the greatest percentage increase in number of establishments in San Diego County during this period were 1) Public Safety and Government; 2) Energy, Construction, and Utilities; 3) ICT and Digital Media; 4) Education and Human Development; and 5) Life Sciences and Biotechnology (Exhibit 6).

Exhibit 6: Percentage Change in Establishments by Sector in San Diego County (2013-2020)¹⁶

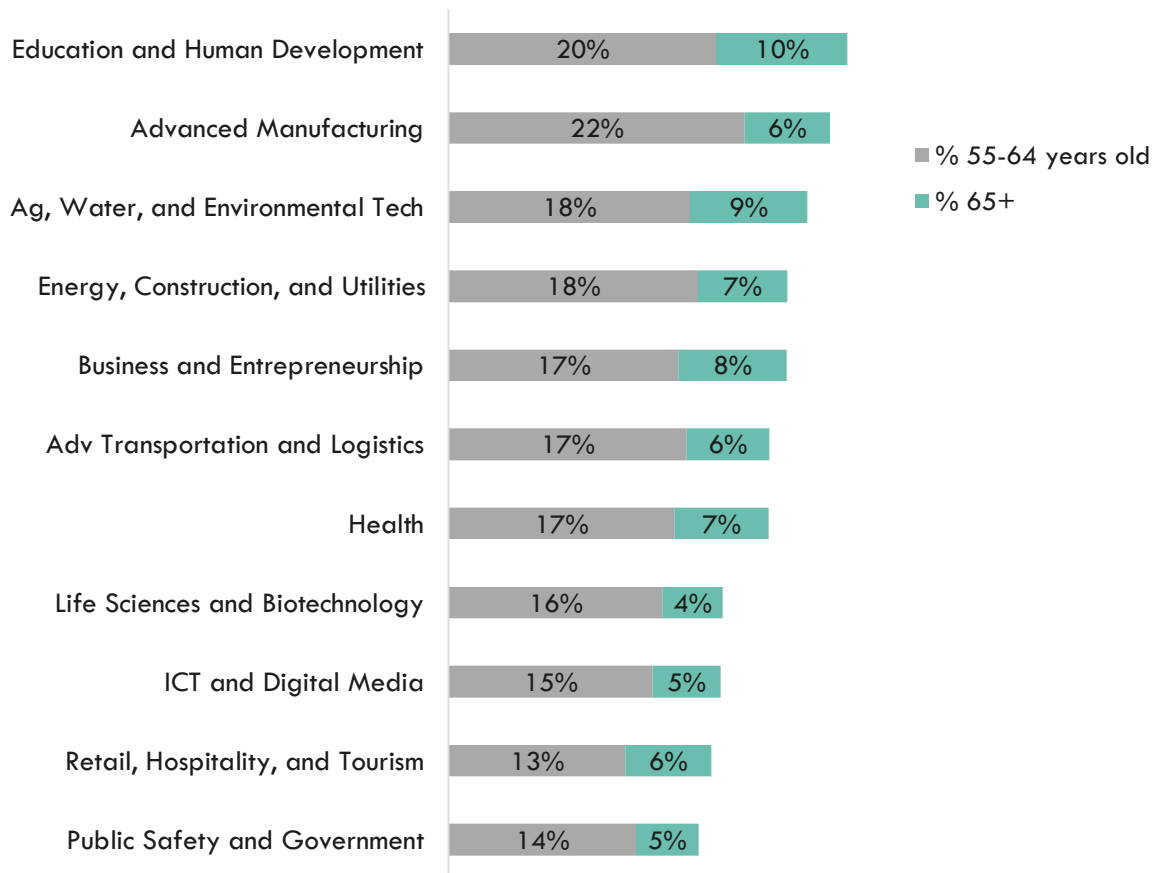


¹⁶ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Industry groups (sectors) defined by NAICS codes in Appendix B.

WORKERS AGE 55+ OR NEARING RETIREMENT

A common workforce challenge is replacing workers with years of experience who are soon to retire. Of the 93,599 workers employed in the Education and Human Development sector in 2020 (Exhibit 2), 30 percent of them were near the retirement age in 2020 (Exhibit 7). According to NAICS data, five sectors with the greatest percentage of workers age 55 and above in 2020 were 1) Education and Human Development; 2) Advanced Manufacturing; 3) Agriculture, Water, and Environmental Technologies; 4) Energy, Construction, and Utilities; and 5) Business and Entrepreneurship (Exhibit 7).

Exhibit 7: Percentage of Workers Age 55+ by Sector in San Diego County (2020)¹⁷

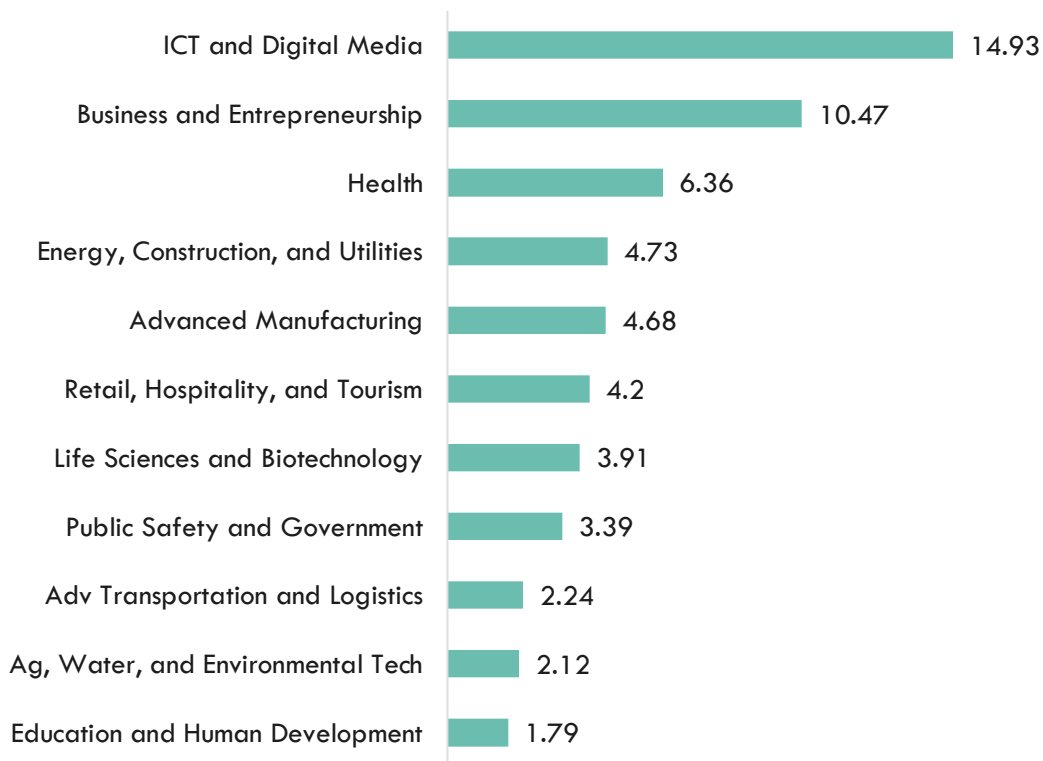


¹⁷ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Industry groups (sectors) defined by NAICS codes in Appendix B.

JOBS MULTIPLIERS

A “jobs multiplier” indicates the total jobs added to the region as a result of a single job added to the sector. This number includes the yield and the initial job addition. For example, a jobs multiplier of 1.82 is made up of the initial job added (1.0) and the further yield (0.82), which includes direct and indirect jobs.¹⁸ For example, the ICT and Digital Media sector had a jobs multiplier of 14.93, which suggests that for each job added to the region in ICT and Digital Media, 13.93 other direct and indirect jobs are generated (Exhibit 8). The five sectors with the highest jobs multipliers in San Diego County are 1) ICT and Digital Media; 2) Business and Entrepreneurship; 3) Health; 4) Energy, Construction, and Utilities; and 5) Advanced Manufacturing (Exhibit 8).

Exhibit 8: Jobs Multiplier by Sector in San Diego County¹⁹



¹⁸ EMSI 2021.01; EMSI's model, incorporating data from the Bureau of Economic Analysis (BEA).

¹⁹ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Occupational groups (sectors) defined by SOC codes in Appendix C.

PART II: ANALYSIS BY SOC CODES

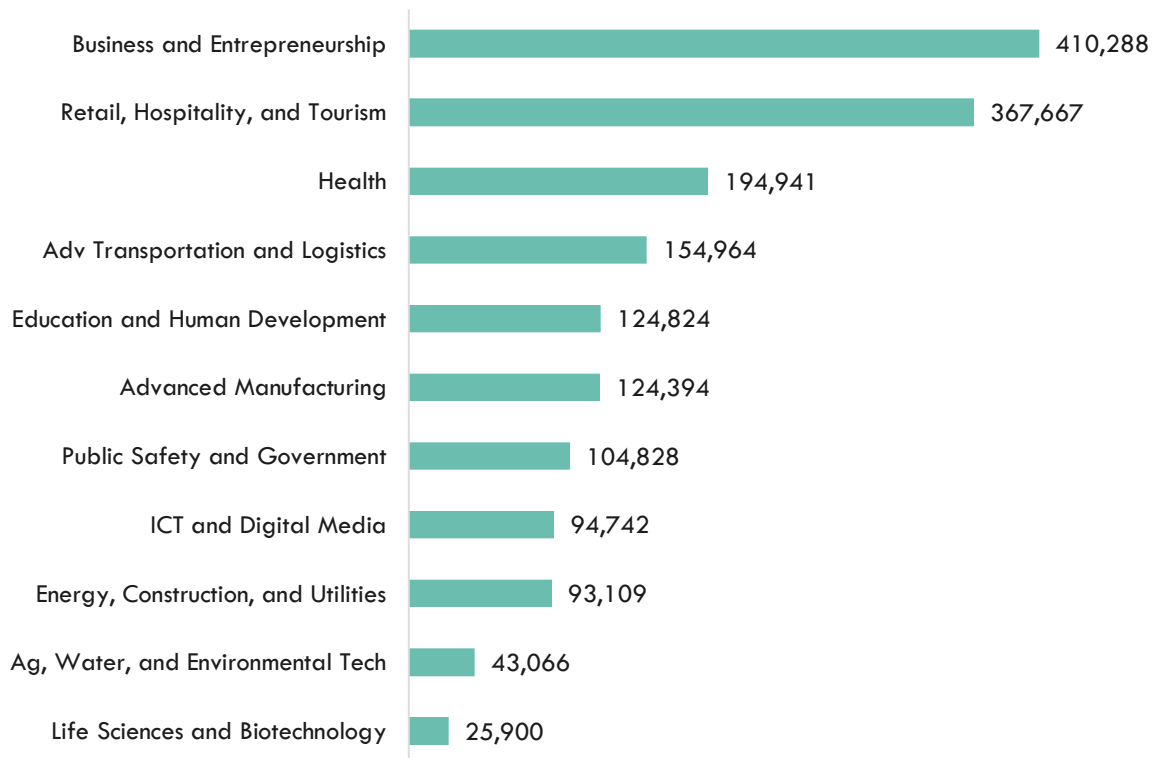
In this section, the San Diego-Imperial COE analyzed available labor market information using codes from the Standard Occupational Classification (SOC) system for the 11 sectors. Metrics available by SOC codes include:

- Average Annual Job Openings (2010-2020)
- % Job Change (2010-2020)
- Average Entry-Level Hourly Earnings (2020)
- Average Median Hourly Earnings (2020)
- % of Workers 55+ (2020)
- Location Quotient
- Average Automation Index

EMPLOYMENT AND JOBS

Based on SOC codes, the five sectors with the greatest number of jobs in 2020 were 1) Business and Entrepreneurship; 2) Retail, Hospitality, and Tourism; 3) Health; 4) Advanced Transportation and Logistics; and 5) Education and Human Development (Exhibit 9).

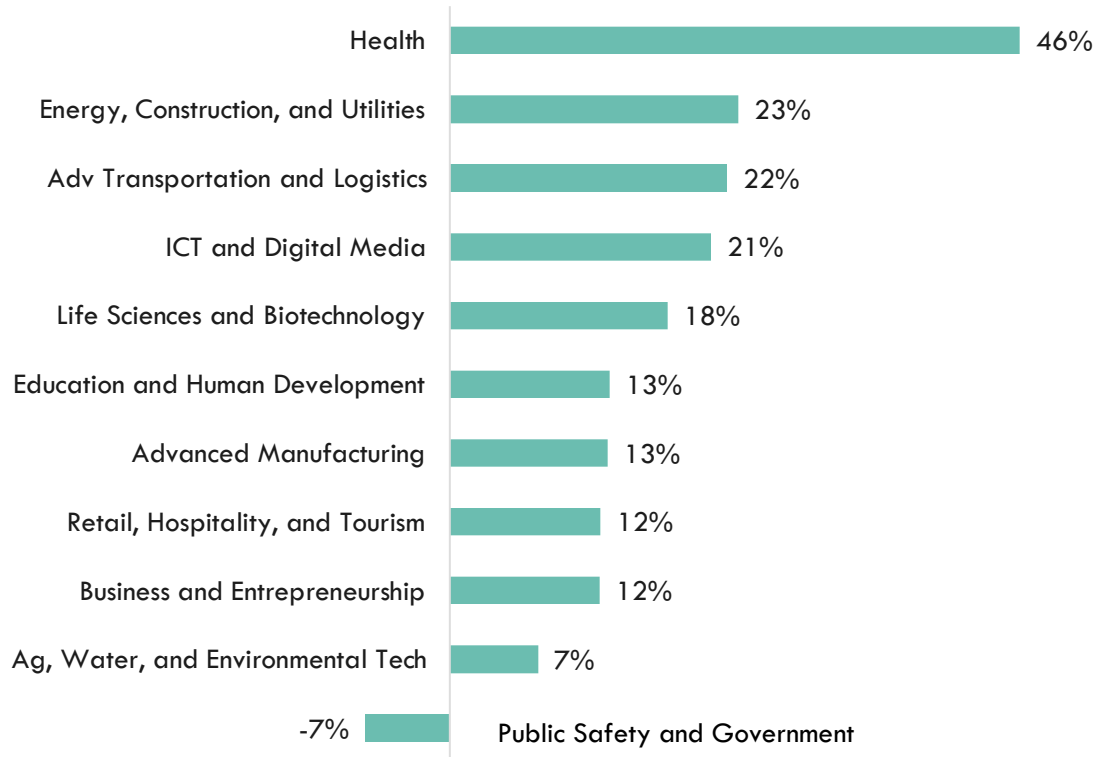
Exhibit 9: Number of Jobs by Sector in San Diego County (2020)²⁰



²⁰ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Occupational groups (sectors) defined by SOC codes in Appendix C.

Between 2010 and 2020, the five sectors with the most percentage job growth were 1) Health; 2) Energy, Construction, and Utilities; 3) Advanced Transportation and Logistics; 4) ICT and Digital Media; and 5) Life Sciences and Biotechnology (Exhibit 10).

Exhibit 10: Percentage Job Change by Sector in San Diego County (2010-2020)²¹

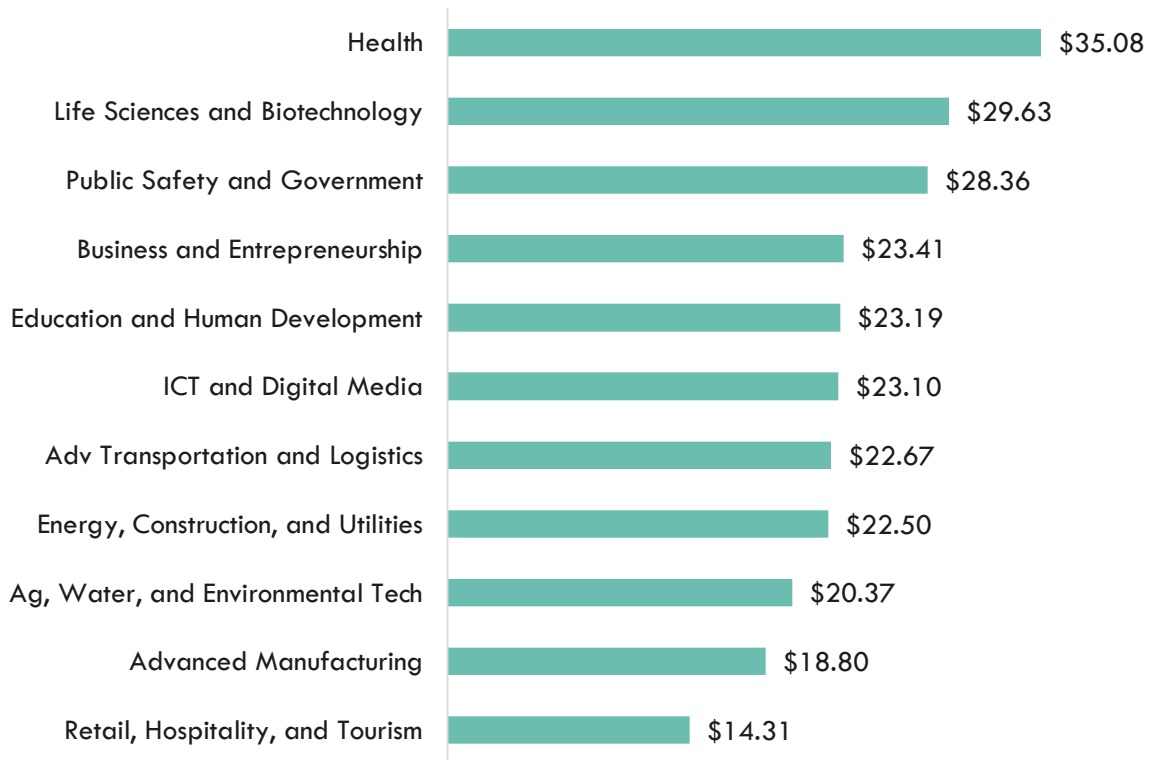


²¹ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Occupational groups (sectors) defined by SOC codes in Appendix C.

ENTRY-LEVEL AND MEDIAN WAGES

Between 2010 and 2020, the five sectors with the highest entry-level²² hourly wages were 1) Health; 2) Life Sciences and Biotechnology; 3) Public Safety and Government; 4) Business and Entrepreneurship; and 5) Education and Human Development (Exhibit 11).²³

Exhibit 11: Average Entry-Level Hourly Earnings by Sector in San Diego County (2010-2020)²⁴



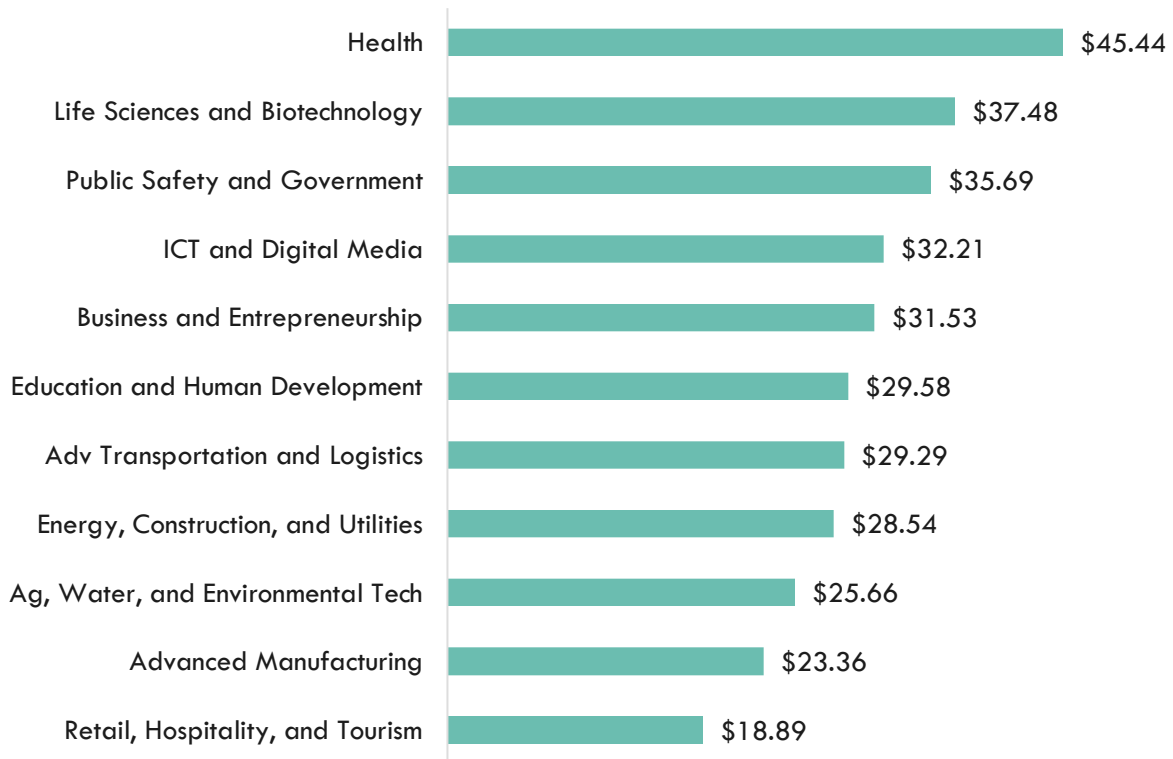
²² Entry-level wages are defined by 25th percentile earnings, with the assumption that individuals who obtain additional education (e.g., community college degrees and certificates) would make more than individuals who enter the labor market without prior work experience. Those individuals would presumably make entry-level wages at the 10th percentile.

²³ "California Family Needs Calculator (formerly the Self-Sufficiency Standard)," Insight: Center for Community Economic Development, last updated 2018. insightccd.org/2018-self-sufficiency-standard. Note: At the time of the analysis, the hourly living wage for a single adult in San Diego County was \$15.99 per hour, but since then, the self-sufficiency standard has increased to \$18.43 per hour.

²⁴ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Occupational groups (sectors) defined by SOC codes in Appendix C.

Between 2010 and 2020, the five sectors with the highest median²⁵ hourly earnings were 1) Health; 2) Life Sciences and Biotechnology; 3) Public Safety and Government; 4) ICT and Digital Media; and 5) Business and Entrepreneurship (Exhibit 12).

Exhibit 12: Average Median Hourly Earnings by Sector in San Diego County (2010-2020)²⁶



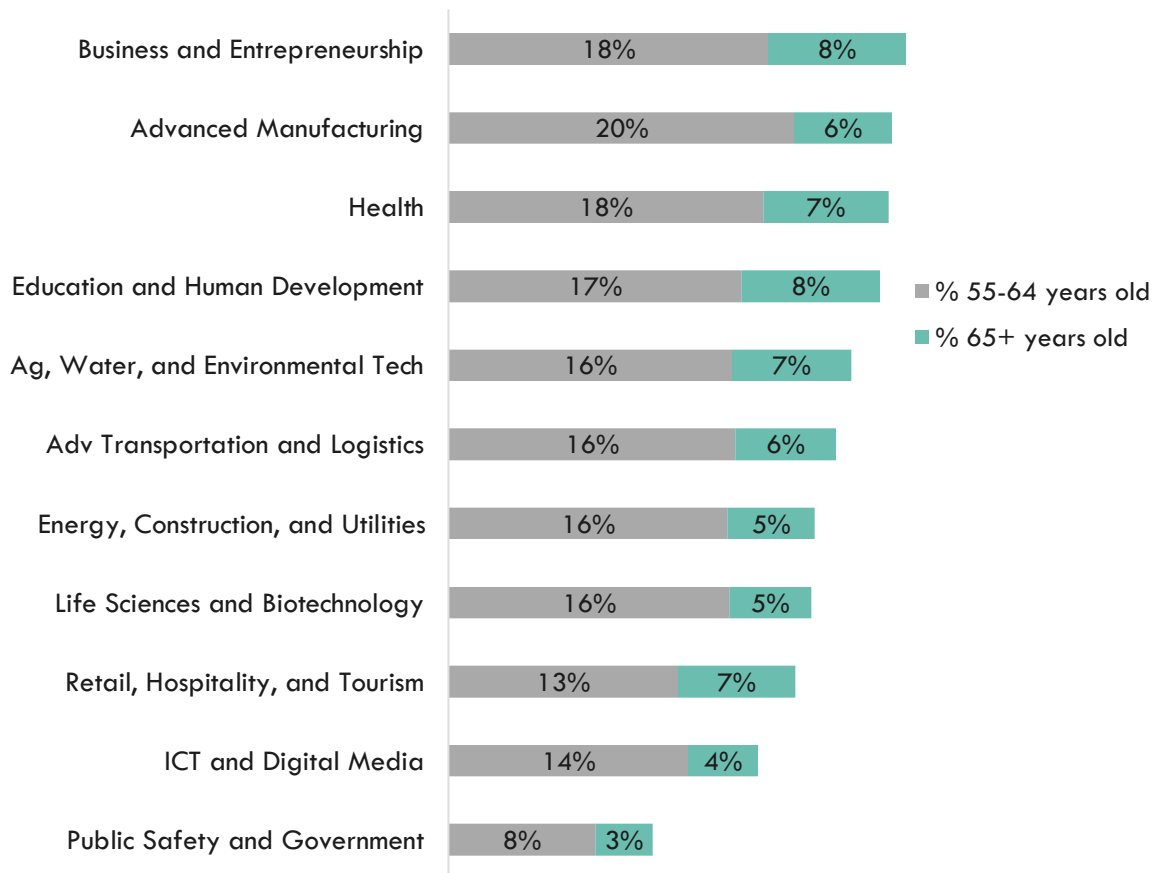
²⁵ Median hourly earnings indicate that half of workers in the occupation make more than the amount and half make less than the amount. Median hourly earnings are typically reviewed to show progression in career pathways as workers move beyond the entry-level or 25th percentile hourly earnings to the median hourly earnings.

²⁶ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Occupational groups (sectors) defined by SOC codes in Appendix C.

WORKERS AGE 55+ OR NEARING RETIREMENT

A common workforce challenge is replacing workers with years of experience who are soon to retire. Of the 410,288 workers employed in the Business and Entrepreneurship sector in 2020 (Exhibit 9), 30 percent of them were near the retirement age in 2020 (Exhibit 13). According to SOC data, five sectors with the greatest percentage of workers age 55 and above in 2020 were 1) Education and Human Development; 2) Advanced Manufacturing; 3) Health; 4) Education and Human Development; and 5) Agriculture, Water, and Environmental Technologies (Exhibit 13).

Exhibit 13: Percentage of Workers Age 55+ by Sector in San Diego County (2020)²⁷

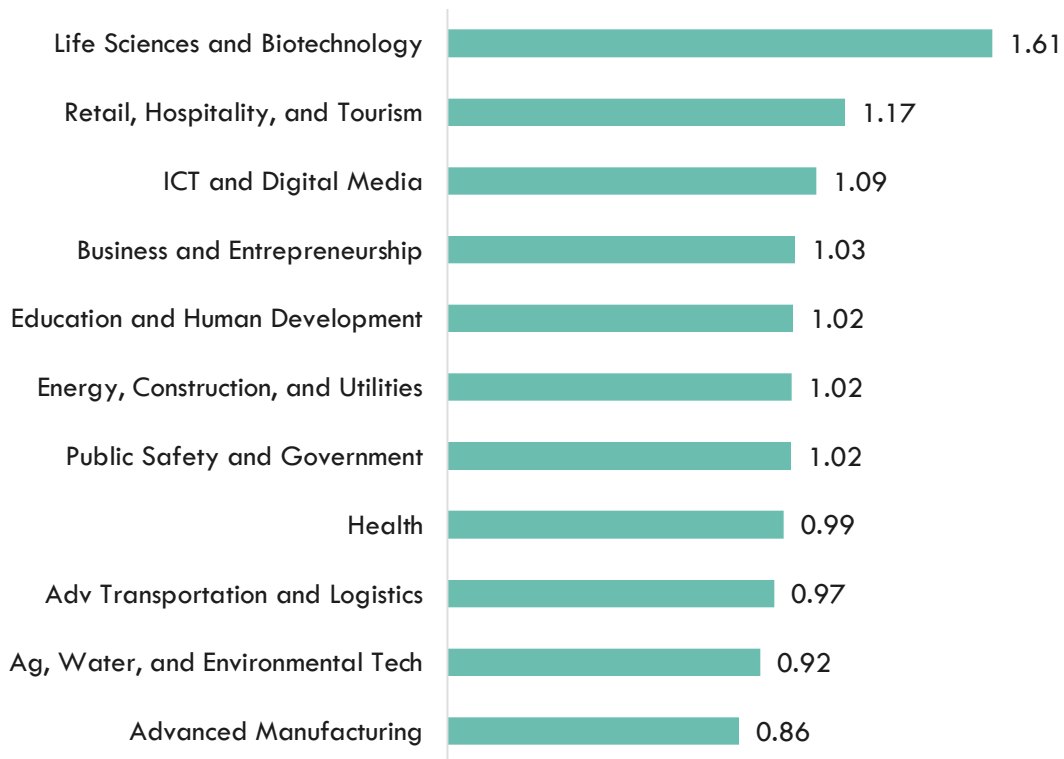


²⁷ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Occupational groups (sectors) defined by SOC codes in Appendix C.

JOB CONCENTRATION (LOCATION QUOTIENT)

“Location quotient” is one way of quantifying how concentrated a sector is in a region compared to the overall nation.²⁸ The exhibit below illustrates the concentration of jobs in San Diego County by sector, with Life Sciences and Biotechnology having the highest location quotient or LQ (Exhibit 14). The top five sectors with the highest LQ in 2020 were 1) Life Sciences and Biotechnology; 2) Retail, Hospitality, and Tourism; 3) ICT and Digital Media; 4) ICT and Digital Media; and 5) Business and Entrepreneurship (Exhibit 14).

Exhibit 14: Location Quotient by Sector in San Diego County (2020)²⁹



²⁸ economicmodeling.com/2020/02/03/understanding-location-quotient-2

²⁹ EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Occupational groups (sectors) defined by SOC codes in Appendix C.

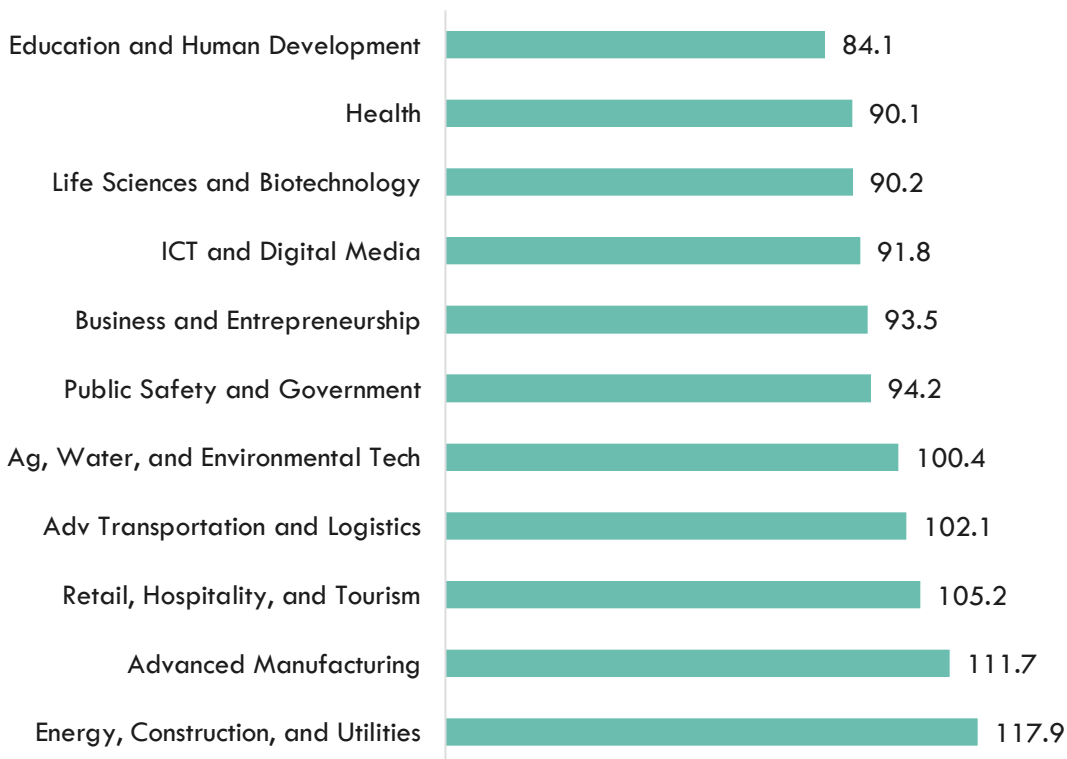
AUTOMATION INDEX

An “automation index” captures an occupation’s risk of being affected by automation using four measures:

- % of time spent on high-risk work
- % of time spent on low-risk work
- Number of high-risk jobs in compatible occupations
- Overall industry automation risk³⁰

This is a 100-based index, meaning that occupations with an automation index above 100 have an above average risk of automation, while occupations with an automation index of below 100 have a below average risk of automation.³¹ The exhibit below illustrates the average automation index by sector, starting with Education and Human Development at 84.1, suggesting that it has the greatest resilience against automation (Exhibit 15). The top five sectors with the lowest automation index in San Diego County are 1) Education and Human Development; 2) Health; 3) Life Sciences and Biotechnology; 4) ICT and Digital Media; and 5) Business and Entrepreneurship (Exhibit 15).

Exhibit 15: Average Automation Index by Sector in San Diego County³²



³⁰ kb.emsidata.com/analyst/glossary/#a

³¹ kb.emsidata.com/analyst/glossary/#a

³² EMSI 2021.01; QCEW, Non-QCEW, Self-Employed. Occupational groups (sectors) defined by SOC codes in Appendix C.

PART III: SECTOR RANKINGS

This section ranks the 11 sectors based on Exhibit 1 through Exhibit 15 in Part I and Part II of this study. The San Diego-Imperial COE used two different ranking methods. In the first method, the San Diego-Imperial COE identified the top five sectors in each metric or exhibit and assigned one point for each sector in the top five. Any sector not in the top five for that metric or exhibit received zero points. The second method, the San Diego-Imperial COE ranked sectors by assigning points based on the order in which they showed up in the exhibit. For example, if a sector was the top sector in an exhibit, then the San Diego-Imperial COE awarded it 11 points. If a sector was the second top sector in an exhibit, then the San Diego-Imperial COE awarded it 10 points, and so on.

Exhibit 16 and Exhibit 17 on the following pages provide illustrations of the first and second methods, respectively. In both exhibits, the 11 sectors can be identified with the following codes:

- Advanced Manufacturing (AM)
- Advanced Transportation and Logistics (ATL)
- Agriculture, Water, and Environmental Technologies (AWET)
- Business and Entrepreneurship (BE)
- Education and Human Development (EHD)
- Energy, Construction, and Utilities (ECU)
- Health (H)
- ICT and Digital Media (ICT)
- Life Sciences and Biotechnology (LS)
- Public Safety and Government (PS)
- Retail, Hospitality and Tourism (RHT)

Additionally, the total number of points for each sector are provided at the bottom of each exhibit.

Exhibit 16: Sector Rankings Based on Top 5 Sectors by Metric/Exhibit

Exhibit #	Metric	AM	ATL	AWET	BE	EHD	ECU	H	ICT	LS	PS	RHT
Part I: NAICS Analysis	1. # of Jobs (2020)				•		•	•			•	•
	2. % Job Change (2010-2020)		•			•	•	•				•
	3. Average Earnings by Job (2020)	•					•		•	•	•	
	4. % Change in Average Earnings by Job (2010-2020)			•	•				•	•	•	
	5. # of Establishments (2020)				•	•	•	•				•
	6. % Change in Establishments (2013-2020)					•	•		•	•	•	
	7. % Workers Age 55+ (2020)	•		•	•	•	•					
	8. Jobs Multipliers (2020)	•			•		•	•	•			
Part II: SOC Analysis	9. # of Jobs (2020)		•		•	•		•				•
	10. % Job Change (2010-2020)		•				•	•	•	•		
	11. Average Entry-Level Hourly Earnings (2020)				•	•		•		•	•	
	12. Average Median Hourly Earnings (2020)				•			•	•	•	•	
	13. % of Workers 55+ (2020)	•		•	•	•		•				
	14. Location Quotient				•	•			•	•		•
	15. Average Automation Index				•	•		•	•	•		
# Points		4	3	3	11	9	8	10	8	8	6	5

Exhibit 17: Sector Rankings Based on Order in Metric/Exhibit

Exhibit #	Metric	AM	ATL	AWET	BE	EHD	ECU	H	ICT	LS	PS	RHT
Part I: NAICS Analysis	1. # of Jobs (2020)	6	2	1	9	5	7	8	3	4	10	11
	2. % Job Change (2010-2020)	5	8	6	4	11	10	9	2	3	1	7
	3. Average Earnings by Job (2020)	9	4	3	5	1	7	6	10	11	8	2
	4. % Change in Average Earnings by Job (2010-2020)	3	4	9	8	1	6	2	10	11	7	5
	5. # of Establishments (2020)	4	6	1	11	10	8	7	5	3	2	9
	6. % Change in Establishments (2013-2020)	3	4	2	6	10	8	5	9	7	11	1
	7. % Workers Age 55+ (2020)	10	6	9	7	11	8	5	3	4	1	2
	8. Jobs Multipliers (2020)	7	3	2	10	1	8	9	11	5	4	6
Part II: SOC Analysis	9. # of Jobs (2020)	6	8	2	11	7	3	9	4	1	5	10
	10. % Job Change (2010-2020)	5	9	2	3	6	10	11	8	7	1	4
	11. Average Entry-Level Hourly Earnings (2020)	2	5	3	8	7	4	11	6	10	9	1
	12. Average Median Hourly Earnings (2020)	2	5	3	7	6	4	11	8	10	9	1
	13. % of Workers 55+ (2020)	10	6	7	11	8	5	9	2	4	1	3
	14. Location Quotient	1	3	2	8	7	6	4	9	11	5	10
	15. Average Automation Index	2	4	5	7	11	1	10	8	9	6	3
# Points		75	77	57	115	102	95	116	98	100	80	75

In summary, according to Exhibit 16, the sectors are ranked as follows:

Rank #	Sector	# Points
1.	Business and Entrepreneurship	11
2.	Health	10
3.	Education and Human Development	9
4.	Energy, Construction, and Utilities	8
4.	ICT and Digital Media	8
4.	Life Sciences and Biotechnology	8
5.	Public Safety and Government	6
6.	Retail, Hospitality, and Tourism	5
7.	Advanced Manufacturing	4
8.	Advanced Transportation and Logistics	3
8.	Agriculture, Water, and Environmental Technologies	3

According to Exhibit 17, the sectors are ranked as follows:

Rank #	Sector	# Points
1.	Health	116
2.	Business and Entrepreneurship	115
3.	Education and Human Development	102
4.	Life Sciences and Biotechnology	100
5.	ICT and Digital Media	98
6.	Energy, Construction, and Utilities	95
7.	Public Safety and Government	80
8.	Advanced Manufacturing	75
8.	Retail, Hospitality, and Tourism	75
9.	Advanced Transportation and Logistics	77
10.	Agriculture, Water, and Environmental Technologies	57

As previously mentioned, the San Diego-Imperial COE encourages the San Diego and Imperial Counties Community Colleges to use this study as a resource for meaningful discussions as they decide on which sectors to prioritize as a region. This study should not be the **only** basis for determining the region's priority sectors.

PART IV: TOWN HALL RECOMMENDATIONS

After completing the sector analysis, the San Diego-Imperial COE shared the results at virtual town hall meetings with representatives from K12 institutions, adult education, community colleges, four-year universities, community-based organizations, workforce development boards, and economic development councils. These regional stakeholders reviewed the sector analysis (parts I through III of this study) and discussed strengths, weaknesses, opportunities, and threats (SWOT) for each sector. To solicit their participation, the San Diego-Imperial COE sent a preliminary SWOT analysis with the following instructions:

“Prior to the meeting, contribute to the SWOT (strengths, weaknesses, opportunities, and threats) analysis by adding your comments to each section in the matrix. Keep in mind that *strengths* and *weaknesses* are internal factors while *opportunities* and *threats* are external factors. Consider the following questions, for example:

- **Strengths:** *What community college assets do we have to support this sector? What unique resources do we (the community colleges) have access to?*
- **Weaknesses:** *In what areas can the region’s community colleges improve? What are some of our limitations in supporting this sector?*
- **Opportunities:** *What trends exist in the sector that we can take advantage of?*
- **Threats:** *What are some challenges in the sector?*

When writing comments, please include the source of your comment and your affiliation (community college or K12) in parentheses. For example, ‘This sector has an aging workforce (Manufacturing Institute, Community College).’

When writing comments, **focus on the sector** itself, not individuals who represent the sector. Feel free to invite your department chairs, faculty members, and other colleagues who may be interested in participating in the town hall.

Everyone will have the option to asynchronously add comments to the SWOT analysis until September 30, 2021, if they cannot make it to the town hall.”

Between June and September 2021, regional stakeholders asynchronously provided feedback on the education and employment needs of each sector, referencing prior work and/or research. This section includes the discussion, key findings, and recommendations.

ADVANCED MANUFACTURING

STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector?</i> <i>What unique resources do we (the community colleges) have access to?</i>	WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve?</i> <i>What are some of our limitations in supporting this sector?</i>
<ul style="list-style-type: none"> • Employers often work with the region's colleges and community partners to increase awareness about the sector: Employers host company tours, career fairs, etc. to increase the public's interest in Advanced Manufacturing careers (San Diego Regional EDC, Community College) • State-of-the-art equipment and strong (but few) industry partnerships at some colleges (Town Hall 2021, Community College) • Skilled, open-minded, and experienced faculty from industry in some colleges (Town Hall 2021, Community College) • Some programs such as CAD/CAM have a strong presence in the region, but we need to expand further (e.g., mechatronics, maintenance, robotic welding) (Town Hall 2021, Community College) • Transferable skills: Some skills in Advanced Manufacturing are similar to those in Energy, Constructions, and Utilities (ECU) and Advanced Transportation and Logistics (e.g., pneumatics and hydraulic mechanics, electric and electronics skills, facilities maintenance). There is opportunity for cross-sector collaboration, including shared course units (Town Hall 2021, Community College) 	<ul style="list-style-type: none"> • Community college program supply meets 14% of the total labor market demand: 5,061 annual job openings vs. 688 awards. That is a supply gap of 4,373 awards (Sector Analysis 2018, Community College). • Employers hire students from programs before they complete training programs: Student outcomes (e.g., completion) data may be skewed (low) because several students get hired before completing and end up dropping out (Sector Analysis 2018, Community College). • Program growth is limited because of faculty, space, and equipment: Most programs are at capacity and are impacted, even with most programs held in the evening. Only a few facilities have enough space for machines and manufacturing equipment (Sector Analysis 2018, Community College). • Programs typically have high barriers to entry with initial and ongoing equipment and facility costs (Town Hall 2021, K12) • Apprenticeship programs and not-for-credit (fee-based) programs do not report outcomes data to the Chancellor's Office: Another reason for why student outcomes (e.g., completion) data may be skewed (low) (Sector Analysis 2018, Community College). • Third-party certificates are valued in this sector, but we do not know exactly which programs train for industry-recognized certificates and how many students actually obtain them: There is no standardized system that tracks data for third-party certifications (Sector Analysis 2018, Community College). • Other training providers contribute, but we do not partner effectively

	<p>yet: Adult Ed Consortia’s training programs might close gaps and perform crucial roles where community college program growth is restricted (Town Hall 2021, Adult Ed Consortium)</p> <ul style="list-style-type: none"> ● Marketing and understanding (internally) of programs in this sector need to be improved: It is not sufficient to have programs with new equipment. We need to create better understandings between college divisions (e.g., outreach, marketing, communications) of what manufacturing is and its career prospects for students. This goes hand in hand with public perception of manufacturing. We need to change this internally if we want results externally (Town Hall 2021, Community College) ● Enhancing faculty’s ability to effectively teach new generation and new materials/skills: There is room for improvement for faculty to engage students to maximize learning and increase student retention (Town Hall 2021, Community College) ● Faculty resource allocation within the department (Town Hall 2021, Community College)
--	--

OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i>	THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i>
<ul style="list-style-type: none"> ● Several positions are “pandemic resilient”: Overall, advanced Manufacturing companies grew during the pandemic (2020-21) but were not “recession-resilient” during the Great Recession (2007-2009) (Pandemic-Resilient Jobs 2021 and Resilient Jobs 2020, Community College) ● Regional LS-Biotechnology startup firms received over \$2 billion dollars in venture capital investments for 2020. (National Venture Capital Association, 2021) ● This sector had the fifth largest job multiplier: For every one job added to the AM sector, 3.68 other jobs are created directly or 	<ul style="list-style-type: none"> ● This sector is one of the top sectors with an aging workforce: Advanced Manufacturing ranks as number 2 with the percentage of workers 55 years and older (Sector Analysis 2021, SDWP 2014, and Manufacturing Institute, Community College) ● The sector is primarily made up of male workers (Sector Analysis 2021, Community College) ● Employers have difficulty hiring and retaining workers at entry-level positions because new hires tend to move to other companies that pay a little more (e.g., \$0.50, \$1.00). Employers are reluctant to hire and train new workers because of attrition rates (Manufacturing Institute and

indirectly. The sector ranks number one in terms of jobs multipliers (Sector Analysis 2021 and [Emsi](#), Community College)

- **Companies are interested in diversifying their workforce:** Because the sector is disproportionately represented by male and older workers, companies want to attract younger workers and female workers ([Manufacturing Institute](#), Community College)
- **There are career opportunities for every education level:** High school diploma, trade school, associate degree, bachelor's degree, graduate degrees ([sme.org](#)). This creates opportunities for dual enrollment, articulation agreements, and credit for prior learning and so on (Town Hall 2021, Community College)
- **Companies and other community organizations are starting to recognize manufacturing program and are interested in learning more about what community colleges offer,** especially now that there are challenges in hiring and retaining workers (Town Hall 2021, Community College)
- **The need for talent and innovation for high-value goods keep risk automation at bay:** Goods such as computer and electronic product manufacturing ([San Diego Regional EDC](#), [Source](#))
- **COVID-19 increased manufacturers' need for space:** 58 percent of firms expect to expand their CRE footprint in the next 12 months ([San Diego Regional EDC](#), [Source](#))

[SDWP 2014](#), Community College)

- **Public perception of the sector limits the talent pipeline:** Parents' and youth's perception of manufacturing has not caught up with the technological advancements in the sector. The sector is still perceived as dark, dangerous, and dirty and consists of only manual labor ([Sector Analysis 2018](#) and [SDWP 2014](#), CC)
- **This sector is one of the top sectors at risk of automation:** Advanced Manufacturing ranks as number 2 with the highest risk of automation per the Automation Index. Occupations with an automation index of below 100 have a below average risk of automation and those above 100 have an above average risk of automation. AM positions have a 111.7 automation index (Sector Analysis 2021 and [Emsi](#), Community College)

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- **Long-term training programs at the colleges may be shortened to focus on foundational skills:** Once students get foundational skills, firms hire and train them specific to their company's needs--oftentimes before students complete a community college program. Community college programs can work with firms to determine what those foundational skills are across manufacturing firms to ensure programs are not "overdesigned" ([Sector Analysis 2018](#), Community College)

- Market the job opportunities in Advanced Manufacturing to parents and students, focusing especially on the highly technical and well-paid careers. This shift in perspective will help expand the pipeline of skilled workers willing and eager to enter the sector ([Sector Analysis 2018](#) and [SDWP 2014](#), Town Hall 2021, Community College)
- Create awareness and debunk the myth that automation is a “bad” thing as part of the marketing campaign (Town Hall 2021, Community College)
- Develop an inventory of advisory group members: We do not know who sits on the CTE advisory groups; we do not know the makeup of employers and/or industries on the advisory groups ([Sector Analysis 2018](#), Community College)
- Create professional and technical training for faculty who are going to be teaching new skills required in manufacturing (Town Hall 2021, Community College)
- Market and create awareness of manufacturing college programs and career prospects to middle and high school teachers and staff (counselors, deans, coordinators, etc.) (Town Hall 2021, Community College)
- Incentivize cross-community resource sharing, such as equipment and possible faculty (Town Hall 2021, Community College)
- Encourage educational institutions to focus on industry certifications for students (Town Hall 2021, Community College)
- Partner intentionally with Adult Ed Consortia in the region to develop programs and talent pipelines (Town Hall 2021, Adult Ed Consortium)

ADVANCED TRANSPORTATION AND LOGISTICS

<p>STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector? What unique resources do we (the community colleges) have access to?</i></p>	<p>WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve? What are some of our limitations in supporting this sector?</i></p>
<ul style="list-style-type: none"> ● Supply chain and logistics programs are in demand: Logistics and Materials Transportation (TOP 0510.00) trains for occupations with a total labor market demand of 2,123 annual job openings, yet the region only produces 4 annual awards in this TOP code. Supply chain and logistics certificates are applicable across all industries and include a variety of fields such as project management, warehousing, purchasing, and regulatory compliance. There is enough demand that each college could offer a program that addresses each niche (Logistics and Supply Chain Management Occupations 2020 and Sector Analysis 2018, Community College) ● The region's Diesel Technology (TOP 0947.00) programs are currently meeting the needs of employers in the region: Miramar and Palomar have increased their Diesel Technology program capacity with apprenticeship programs and/or local Strong Workforce Program funds. No additional recommendations for Diesel Technology (TOP 0947.00) (Sector Analysis 2018, Community College) 	<ul style="list-style-type: none"> ● Employers hire students from programs before they complete training programs: Student outcomes (e.g., completion) data may be skewed (low) for programs because several students get hired before completing and end up dropping out (Sector Analysis 2018, Community College) ● Other training providers contribute, but we do not partner effectively yet: Adult Ed Consortia's training programs might close gaps and perform crucial roles where program growth is restricted (Town Hall 2021, Adult Ed Consortia)
<p>OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i></p>	<p>THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i></p>
<ul style="list-style-type: none"> ● This is one of the top sectors with the most percentage job growth in San Diego County: Advanced Transportation and Logistics jobs grew 22% between 2010 and 2020, which is the third-highest percentage growth of the 11 sectors (Sector Analysis 2021, Community College) ● Supply chain and logistics positions were "pandemic resilient": Employers had difficulty filling supply chain and logistics positions during 	<ul style="list-style-type: none"> ● This sector is one of the top sectors at risk of automation: Advanced Transportation and Logistics ranks as number 4 with the highest risk of automation per the Automation Index (Sector Analysis 2021 and Emsi, Community College) ● Labor market demand for pilots is small in the county, but large across the nation: There is a labor market demand of 65 annual job

the pandemic and those positions were high-wage, high-demand jobs ([Pandemic-Resilient Jobs](#), Community College)

- “Manufacturing growth has skyrocketed over the last few decades, but the industry continues to lag in growing its most important asset: its people. A spike in retirements, paired with a drop in analytical leaders entering the field, is creating demand for procurement and supply chain talent that far outpaces supply. The supply chain talent shortage is expected to leave [2.4 million positions unfilled between 2018 and 2028](#), causing a potential economic impact of \$2.5 trillion.” While some jobs indicated “BA” desired, many do not, especially in the procurement field, which spans multiple sectors and industries ([Future of Sourcing Report](#), Community College)
- Demand for supply chain talent is at an all-time high, as more and more companies have recognized how important supply chain management is to their success ([DHL](#), Community College)
- **Opportunities exist in electric and hybrid vehicles:** Employers have a high demand for EV and hybrid technology skills. Workers must become master technicians before they can train on electric and hybrid vehicles. This bottleneck will lead to increased demand for EV and hybrid technicians especially as California moves to electric vehicles only by 2035 ([Sector Analysis 2018](#), [Office of Governor Gavin Newsom 2021](#), Community College)
- California mandates are supporting rapid adoption of EV’s in both the commercial sectors and retail. Retail vehicles have a target of 2035 to go full electric. Medium duty and heavy duty have a phased-in approach starting in 2024 and go completely EV by 2045. This will require significant changes in programs over the coming years to build out the proper labs and technological expertise of instructors for a transitioning transportation sector ([Governor Newsom Announces California Will Phase Out Gasoline-Powered Cars](#), Community College)
- **Manufacturer support is increasing:** More auto manufacturers are starting to partner with local colleges and high schools due to demand for technicians. They are loaning or donating vehicles, training aids, and

openings and program supply of 29 awards for Airline Pilots, Copilots and Flight Engineers (53-2011) and Commercial Pilots (53- 2012) in San Diego County. However, analyzing job openings in the county alone does not capture the whole picture. The labor market demand for the State of California is 1,659 annual job openings, while the state only produces 107 awards ([Sector Analysis 2018](#), Community College)

- **The sector is primarily made up of male workers** (Sector Analysis 2021, Community College)
- **Positions trainable by the community colleges are listed with a minimum of a bachelor’s degree:** Employers reported that positions such as supply chain specialist or supply chain coordinators can be filled with individuals with an associate degree, however, they need the necessary third-party industry credentials ([Logistics and Supply Chain Management Occupations 2020](#), Community College)
- **Recruiting:** Difficult getting people that are interested in a career in the automotive industry into the program. Additionally, pay has not risen in relation to the demand so it is not attracting the right people (Town Hall 2021, Community College)

giving access to their online learning, training centers (for faculty), and information systems (Town Hall 2021, Community College)	
---	--

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- Market and promote the recently developed supply chain and logistics programs to increase enrollment numbers (regionalcte.org, Community College)
- There will be a need to intensively support and foster the continued development of the pending supply chain & logistics programs (new and/or revamped). There is already an industry shortage of labor (from manufacturing to warehousing) coupled with the exponential rise of ecommerce (including accelerated expectations of consumers for fast shipping) that will require colleges to execute on new programs and most likely scale to meet the need (Town Hall 2021, Community College)
- Program scaling to meet the need. Assessing and onboarding for CTE students should help with completions. Provide embedded tutors and success coaches in the classes especially in the lab environment. Lower the student to instructor ratios due to safety, lab space, and equipment (Town Hall 2021, Community College)
- Colleges should more aggressively prepare for a rapidly advancing transportation sector that will require more tech savvy technicians who are able to navigate ADAS systems, realign sensitive equipment (cameras, radar, etc.), and work on alternative fuel vehicles (light, medium, and heavy duty) and the associated infrastructure. Additionally, with the onset of IoV (internet of vehicles) as well as autonomy and connectivity, ICT will become increasingly more important to partner with on the future of transportation (Town Hall 2021, Community College)
- Incentivize cross-community resource sharing, such as equipment and possible faculty (Town Hall 2021, Community College)
- Encourage educational institutions to focus on industry certifications for students (Town Hall 2021, Community College)
- Partner intentionally with Adult Ed Consortia in the region to develop programs and talent pipelines (Town Hall 2021, Adult Ed Consortium)

AGRICULTURE, WATER, AND ENVIRONMENTAL TECHNOLOGIES

STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector?</i> <i>What unique resources do we (the community colleges) have access to?</i>	WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve?</i> <i>What are some of our limitations in supporting this sector?</i>
<ul style="list-style-type: none"> • San Diego Mesa College has a Beer Fermentation Program, which has Business/Entrepreneurship and Hospitality aspects as well ([Town Hall 2021, Statewide Director for Retail, Hospitality, and Tourism (RHT) and California Community Colleges Chancellor's Office (CCCCO)]) • MiraCosta is currently the co-Local Educational Agency (LEA) for the viticulture enology technician apprenticeship program. The Division of Apprenticeship Standards (DAS) approved the program and it was originally launched at San Diego City College [Town Hall 2021, Statewide Director for Retail, Hospitality, and Tourism (RHT) and California Community Colleges Chancellor's Office (CCCCO)] 	<ul style="list-style-type: none"> • No comments were submitted
OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i>	THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i>
<ul style="list-style-type: none"> • Approximately 1,400 water and wastewater jobs are expected to open up in San Diego County: Jobs are expected to open due to requirements in the upcoming years (San Diego Water Workers, 2020, community college) • Cleantech San Diego is a community partner with access to more than 120 businesses in agriculture, water, and environmental technologies: With electric vehicles, smart cities, clean energy, etc. growing in priority, employers want to grow their workforce with educational institutions (Cleantech San Diego, Community College) 	<ul style="list-style-type: none"> • This sector is one of the top sectors with an aging workforce: AWET ranks within the top 5 sectors with the percentage of workers 55 years and older (Sector Analysis 2021, SDWP 2014, and Manufacturing Institute, Community College) • This sector has very few jobs in San Diego County: It ranks at the bottom in terms of the number of jobs by industry and percentage job growth • The sector is primarily made up of male workers (Sector Analysis 2021, Community College)

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- **No comments were submitted**

BUSINESS AND ENTREPRENEURSHIP

<p>STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector? What unique resources do we (the community colleges) have access to?</i></p>	<p>WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve? What are some of our limitations in supporting this sector?</i></p>
<ul style="list-style-type: none"> • There is no shortage of Business and Entrepreneurship programs in the region: Virtually every educational institution in the county has a B&E program (Sector Analysis 2018, Community College) • Regional Entrepreneurship Advisory Committee led by Alex Waters, Director of ConnectAll at the Jacobs Center, and created by faculty from San Diego Community College District (Town Hall 2021, Community College) 	<ul style="list-style-type: none"> • Marketing and Distribution (TOP 0509.00) programs train for sales positions, which have an aggregate labor market demand of 2,775 annual job openings, but the TOP code only supplies 18 awards: Students in these programs tend to transfer to four-year institutions. It is unclear if an associate degree instead of a bachelor's degree in marketing would meet employers' demand (Sector Analysis 2018, Community College) • There is no shortage of Business and Entrepreneurship programs in the region: Business and Entrepreneurship is one of the top sectors with the most programs offered in the region. This is also a weakness because it is difficult to understand which programs lead to which jobs (Sector Analysis 2018, San Diego-Imperial Catalog, and Chancellor's Office COCI, Community College) • Other training providers contribute, but we do not partner effectively yet: Adult Ed Consortia's training programs might close gaps and perform crucial roles where program growth is restricted (Town Hall 2021, Adult Ed Consortia)
<p>OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i></p>	<p>THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i></p>
<ul style="list-style-type: none"> • 95 percent of San Diego County's companies have fewer than 50 employees: There's an opportunity to partner with smaller employers who have fewer resources for hiring workers than larger employers (SDWP Workforce Needs of Small Business 2015 and San Diego Regional EDC, Community College) 	<ul style="list-style-type: none"> • 95 percent of San Diego County's companies have fewer than 50 employees: This is also a threat because smaller employers who have fewer resources for hiring workers than larger employers may be reluctant to participate in work-based learning opportunities (Sector Analysis 2018, SDWP Workforce Needs of Small Business 2015 and

- **Record numbers of new businesses applications grew during the pandemic:** Entrepreneurship seemed to grow during the pandemic, with 442,324 new business licenses filed in 2020, a 21.7% increase from the year before ([CalMatters 2021](#), Community College)
 - **Gig workers want business development training:** Gig workers are interested in finding out 1) how to find non-traditional work or clients, 2) how to market themselves and increase sales, and 3) how to manage their personal finances. “How to manage personal finances” was one of the top three training topics that gig workers would be interested in ([Gig Economy 2019](#) and [Sector Analysis 2018](#), Community College)
 - **Gig workers would benefit from training that covers finance and legal issues related to the Gig Economy** (e.g., worker rights, wage exploitation, copyright infringement, tax implications): According to a recent letter from the U.S. Department of Labor, “gig economy workers who find jobs through online platforms are not entitled to protection under the Fair Labor Standards Act.” Interpretations of employment practices and policies for the Gig Economy are constantly changing; gig workers, especially students, should understand these implications before committing so much time in the Gig Economy and consequently dealing with legal or financial issues that may result from their gig work ([Gig Economy 2019](#), Community College)
 - **A recurring theme for gig workers who did not already have a full-time job at a company was to continue gig work until full-time, traditional employment was secured** ([Gig Economy 2019](#), Community College)
 - **The San Diego region boasts a strong, well-developed startup and entrepreneurship community focused around mentoring and local investment** (Town Hall 2021, K12)
 - **12 programs exist in the region with the term “Entrepreneurship” in the title and 13 programs that use the TOP code 0506.40* Small Business and Entrepreneurship** (Town Hall 2021, Community College)
- [San Diego Regional EDC](#), Community College)
- **Brick and mortar stores closed during the pandemic:** Several businesses closed during the pandemic, specifically retail ([Fortune 2021](#), Community College)
 - **Employers fill the labor market gap for Sales Representatives with in-house training:** Sales positions are specific to their industry; employers offer internal, on-the-job training to supplement sales skills with knowledge of a company’s products and/or services. For highly technical industries, employers require Sales Representatives to have a bachelor’s degree or prior experience in the industry ([Sector Analysis 2018](#), Community College)
 - **The majority of gig workers reported having difficulty finding enough gig work to meet income needs:** More specifically, self-employed or independent contractors had the most difficulty finding enough work. Self-employed or independent contractors primarily worked as Professional, Scientific, and Technical Services, such as consultants, interpreters, computer service providers, etc. The top two ways gig workers found gig work were through friends and family or through professional networks ([Gig Economy 2019](#), Community College)
 - **Gig workers reported that they quit gig work or considered quitting gig work because of 1) low wages and 2) concern about finding enough work to support themselves** ([Gig Economy 2019](#), Community College)
 - **Although local consumer spending has recovered to pre-pandemic levels, roughly 50% of San Diego businesses are yet to reopen.** ([San Diego Regional EDC](#))

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- Convene employers and verify if they would be interested in a sales certificate offered by the community colleges. The program would focus on general sales skills while employers' internal programs can focus on product-specific knowledge ([Sector Analysis 2018](#), Community College)
- Confirm with employers which sales and marketing positions actually require a bachelor's degree vs. an associate degree ([Sector Analysis 2018](#), Community College)
- Engage employers to change hiring behaviors, especially if positions could be filled with associate degrees; market the cost-benefit of changing job descriptions to require associate degrees before we can increase capacity in these programs ([Sector Analysis 2018](#), Community College)
- The community colleges could offer short, non-credit courses in the top topics that gig workers expressed interest in and market the training specifically to gig workers. On the other hand, instead of creating new programs, the community colleges could partner with organizations in San Diego County that already offer these types of courses and promote them to community college students who may be participating in the Gig Economy. A few survey and focus group participants mentioned that do not need training in these topics because organizations such as the San Diego Employers Association (SDEA) and Small Business Development Center (SBDC) already provide such services ([Gig Economy 2019](#), Community College)
- The community colleges should market short-term Career Education programs that lead to in-demand jobs to gig workers. Gig workers want gainful employment in a full-time position; however, they cannot stop gig work for training; they need income for living expenses. Short-term CE programs that have flexible schedules (e.g., online, hybrid programs) may benefit gig workers who spend approximately 30 hours a week in the Gig Economy ([Gig Economy 2019](#), Community College)
- Partner intentionally with Adult Ed consortia in the region (Town Hall 2021, Adult Ed Consortia)

EDUCATION AND HUMAN DEVELOPMENT

<p>STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector? What unique resources do we (the community colleges) have access to?</i></p>	<p>WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve? What are some of our limitations in supporting this sector?</i></p>
<ul style="list-style-type: none"> 86 percent of students who enroll into Education and Human Development are female (CCCCO LaunchBoard - Community College Pipeline, Community College) Every college in the region has a program for Education and Human Development (San Diego-Imperial Catalog, and Chancellor's Office COCI, Community College) 	<ul style="list-style-type: none"> While students obtain a job closely related to their field of study, only 28% of students who complete Education and Human Development programs obtain a living wage: This is less than 51% of students in Career Ed or CTE programs in general in the region (CCCCO LaunchBoard - SWP, Community College) Median annual earnings for students who complete programs in this sector are lower than Career Ed or CTE programs: \$23,838 vs. \$33,876 (CCCCO LaunchBoard - SWP, Community College)
<p>OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i></p>	<p>THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i></p>
<ul style="list-style-type: none"> This one of the sectors least likely to be at risk of automation: Education and Human Development has the lowest risk of automation per the Automation Index of all the sectors (Sector Analysis 2021 and Emsi, Community College) Education and Human Development ranked #3 in both the NAICS and SOC rankings of the 11 sectors (Sector Analysis 2021, Community College) 	<ul style="list-style-type: none"> Entry-level wages tend to be below the living wage (Career Ed Guide 2020, Sector Analysis 2018, Community College) This sector is one of the top sectors with an aging workforce: Education and Human Development ranks as number 4 out of 11 with the percentage of workers 55 years and older by SOC codes (Sector Analysis 2021, SDWP 2014, and Manufacturing Institute, Community College) Childcare costs for a family with 1 infant and 1 preschooler amount to \$2,983 per month for families (Self-Sufficiency Standard 2021, Community College) Other training providers contribute, but we do not partner effectively yet: Adult Ed Consortia's training programs might close gaps and perform crucial roles where program growth is restricted (Town Hall

	<p>2021, Adult Ed Consortia)</p> <ul style="list-style-type: none"> • Since the COVID-19 pandemic began in March 2020, 2,030 family childcare homes and 390 childcare centers closed permanently, making it harder for families to work and care for their children (Gov. Newsom's Master Plan 2020, Community College)
--	---

RECOMMENDATIONS <i>What role should the region's community colleges play in this sector?</i>	
<ul style="list-style-type: none"> • Continue to offer short term, Career Technical Education (CTE) certificate programs in child development and childcare careers (Town Hall 2021, Community College) • Partner intentionally with Adult Ed consortia in the region (Town Hall 2021, Adult Ed Consortia) 	

ENERGY, CONSTRUCTION, AND UTILITIES

STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector?</i> <i>What unique resources do we (the community colleges) have access to?</i>	WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve?</i> <i>What are some of our limitations in supporting this sector?</i>
<ul style="list-style-type: none"> ● 80% of students reported obtaining a job closely related to their field of study: This is compared to 73% of students who completed a Career Ed or CTE program in general (CCCCO LaunchBoard - Community College Pipeline, Community College) ● 70% of students obtained a living wage: This is compared to 51% of students who completed a Career Ed or CTE program in general (CCCCO LaunchBoard - Community College Pipeline, Community College) ● Apprenticeship programs have high retention and completion rates (SDWP 2014, SDWP 2016, Community College) ● Transferable skills: Some skills in ECU are similar to those in Advanced Manufacturing and Advanced Transportation and Logistics (e.g., pneumatics and hydraulics mechanics, electric and electronics skills, facilities maintenance). There is opportunity for cross-sector collaboration and shared course units (Town Hall 2021, Community College) 	<ul style="list-style-type: none"> ● Some community colleges in the region offer construction inspection and construction management programs, but the region lacks building and construction trade/skilled trade programs (Town Hall 2021, Community College) ● Limited facilities to accommodate the technology/equipment necessary to strengthen this sector (Town Hall 2021, Community College) ● The technology and equipment necessary to strengthen this sector are costly (Town Hall 2021, Community College)
OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i>	THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i>
<ul style="list-style-type: none"> ● Several positions are “pandemic resilient” (Pandemic-Resilient Jobs 2021, Community College) ● This sector had the fourth largest job multiplier: For every one job added to the ECU sector, 3.73 other jobs are created directly or indirectly. The sector ranks number one in terms of jobs multipliers (Sector Analysis 2021 and Emsi, Community College) 	<ul style="list-style-type: none"> ● This sector is one of the top sectors at risk of automation: ECU ranks as number 1 with the highest risk of automation per the Automation Index. Occupations with an automation index of below 100 have a below average risk of automation and those above 100 have an above average risk of automation. RHT positions have a 117.9 automation index (Sector Analysis 2021 and Emsi, Community College)

- **This is one of the top sectors with the most jobs in San Diego County:** ECU jobs grew 23% between 2010 and 2020, which is the second-highest percentage growth of the 11 sectors (Sector Analysis 2021, Community College)
- **Companies in the ECU sector employed more than 137,400 jobs in 2020:** This is the fifth highest ranking sector by NAICS codes (Sector Analysis 2021, Community College)
- **Of the companies in the ECU, the average earnings by job amounted to \$85,906:** This is the fifth highest ranking sector by NAICS codes (Sector Analysis 2021, Community College)
- **ECU had 10,580 establishments in 2020:** This is the fifth highest ranking sector by NAICS codes (Sector Analysis 2021, Community College)
- **The number of ECU establishments grew 35% between 2010 and 2020:** This is the second highest ranking sector by NAICS codes (Sector Analysis 2021, Community College)

- **This sector is one of the top sectors with an aging workforce:** ECU ranks as number 4 out of 11 with the percentage of workers 55 years and older by NAICS codes (Sector Analysis 2021, [SDWP 2014](#), and [Manufacturing Institute](#), Community College)
- **The sector is primarily made up of male workers** (Sector Analysis 2021, Community College)
- **Other training providers contribute, but we do not partner effectively yet:** Adult Ed Consortia's training programs might close gaps and perform crucial roles where our program growth is restricted (Town Hall 2021, Adult Ed Consortia)

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- Explore opportunities for cross-sector collaboration with Adv. Manufacturing and Adv. Transportation and Logistics as there are transferable skills (Town Hall 2021, Community College)
- Partner intentionally with Adult Ed consortia in the region (Town Hall 2021, Adult Ed Consortia)

HEALTH

STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector?</i> <i>What unique resources do we (the community colleges) have access to?</i>	WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve?</i> <i>What are some of our limitations in supporting this sector?</i>
<ul style="list-style-type: none"> ● Retention is high for this sector: Most programs follow a cohort model and students need to complete the certificate or degree in order to get the licensure (Sector Analysis 2018, Community College) ● More students find a job related to their field of study and obtain a median change in earnings higher than students from CTE programs in general in the region: However, the percentage of students who earn a living wage is lower than students who complete CTE programs in general (CCCCO LaunchBoard - SWP, Community College) ● Clear career pathways exist because this is a mature sector: There is a clear program-to-occupation match in most of the TOP codes/programs in the community college system (Sector Analysis 2018, Community College) 	<ul style="list-style-type: none"> ● Program growth is limited to lack of equipment, space, and instructors: Finding instructors is challenging due to external accreditation requirements. Regulatory agencies require individuals to meet strenuous minimum qualifications to become instructors, and programs must meet the specific teacher-to-student ratios. For example, the teacher-to-student ratio is 1:6 for Dental Assisting, making the program expensive to implement (Sector Analysis 2018, Community College) ● Lack of clinical placement opportunities is a challenge for both students and existing (incumbent) workers: The colleges have challenges with clinical placements; however, employers also have challenges in finding instructors for their own staff's continuing education (Sector Analysis 2018, Community College) ● Other training providers contribute, but we do not partner effectively yet: Adult Ed Consortia's training programs might close gaps and perform crucial roles where program growth is restricted (Town Hall 2021, Adult Ed Consortia) ● The labor market data does not separate those who are officially certified from those who only complete the program. Colleges vary in their reporting practices for Certificates of Proficiency outcomes data: Some colleges report to the state licensing board, but not to the Chancellor's Office; some colleges report awards with less than four units, but they are introductory programs and do not make a student qualified to practice in that field (Sector Analysis 2018, Community College)

OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i>	THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i>
<ul style="list-style-type: none"> ● This sector is both “pandemic resilient” and “recession-resilient” (Pandemic-Resilient Jobs 2021 and Resilient Jobs 2020, Community College) ● This sector had the third largest job multiplier: For every one job added to the Health sector, 5.36 other jobs are created directly or indirectly. The sector ranks number one in terms of jobs multipliers (Sector Analysis 2021 and Emsi, Community College) ● Available labor market information suggests that Medical Assistants have a labor surplus (i.e., oversupply of workers); however, private training providers produce a significant number of those awards and they do not provide clinical training (Sector Analysis 2018, Community College) ● This is the top sector with the most jobs in San Diego County: Health jobs grew 46% between 2010 and 2020, which is the highest percentage growth of the 11 sectors (Sector Analysis 2021, Community College) ● This sector is primarily made up of female workers: This is both an opportunity and threat--employers are interested in diversifying their workforce and ensuring that workers represent the communities that they serve (Sector Analysis 2021, Community College) ● This one of the sectors least likely to be at risk of automation: Health has the second lowest risk of automation per the Automation Index of all the sectors (Sector Analysis 2021 and Emsi, Community College) ● There are clear career pathways, with median wages at or above the living wage: While some entry-level positions don't pay living wages, there are clear opportunities to advance with living wages at the median level (Pandemic-Resilient Jobs 2021, Resilient Jobs 2020, Career Ed Guide 2020, Sector Analysis 2018, Community College) 	<ul style="list-style-type: none"> ● This sector is one of the top sectors with an aging workforce: Health ranks as number 3 with the percentage of workers 55 years and older (Sector Analysis 2021 and Emsi, Community College) ● Lack of clinical placement opportunities and new graduate openings limit the region's ability to increase the supply of Registered Nurses: Health institutions have limited space for new grad hires and job openings are typically for experienced nurses. As a result, employers hire from outside San Diego County (e.g., traveling nurses) to fill the demand for Registered Nurses with 3-5 years of experience (Sector Analysis 2018, Community College) ● This sector is primarily made up of female workers: This is both an opportunity and threat--employers are interested in diversifying their workforce and ensuring that workers represent the communities that they serve (Sector Analysis 2021, Community College) ● Some initial jobs within the health care pathway pay below living wage salaries: Home health aides, certified nursing assistants, and emergency medical technicians/paramedics typically start below self-sustaining wages (Sector Analysis 2018 and Town Hall 2021, Community College)

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- Develop a tracking mechanism to disaggregate supply data, identifying the number of completers who are actually licensed (Town Hall 2021, Community Colleges)
- Explore non-traditional training models when programs are at capacity: For example, simulation centers are used in various parts of the country to help students earn training or clinical hours. However, the region should keep in mind that simulation centers can be used for certain programs, but not others: External accrediting agencies place limitations on what percent of training could be simulated ([Sector Analysis 2018](#), Community College)
- Market the quality of community college training programs compared to private training institutions that do not provide students with clinical placements or hands-on training (e.g., medical assisting)
- Partner intentionally with Adult Ed Consortia in the region (Town Hall 2021, Adult Ed Consortia)

ICT AND DIGITAL MEDIA

STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector?</i> <i>What unique resources do we (the community colleges) have access to?</i>	WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve?</i> <i>What are some of our limitations in supporting this sector?</i>
<ul style="list-style-type: none"> • There is no shortage of ICT & Digital Media programs in the region: Virtually every educational institution in the county has an ICT & DM program (Sector Analysis 2018, Community College) 	<ul style="list-style-type: none"> • There is no shortage of ICT & Digital Media programs in the region: This is also a weakness because it is difficult to understand which programs lead to which jobs. ICT and Digital Media is one of the top sectors with the most programs offered in the region. An overwhelming number of programs can cause confusion among students who are trying to develop stackable skills (Sector Analysis 2018, San Diego-Imperial Catalog, and Chancellor's Office COCI, Community College) • Enrollment numbers are high, but completion and retention numbers are low: Students may drop out because they are unaware of the rigorous training requirements for the occupation (e.g., cybersecurity). Students may also drop out because they take one or two courses to upskill (skills-builders) and leave before completion (Sector Analysis 2018, Community College) • It is uncertain if ICT & DM programs are oversized: For the same TOP code, some programs require students to complete units than others (Sector Analysis 2018, San Diego-Imperial Catalog, and Chancellor's Office COCI, Community College) • Third-party certificates are valued in this sector, but we do not know exactly which programs train for industry-recognized certificates (e.g., Security+, A+, Network+) and how many students actually obtain them: We do not know if the curricula (training offered at the colleges) match the skills that employers need for these positions. Examination fees are costly and are oftentimes not paid by the college, but by the student, which may be a barrier to employment (Sector Analysis 2018, Community College) • Other training providers contribute, but we do not partner effectively yet: Adult Ed Consortia's training programs might close gaps and

perform crucial roles where program growth is restricted (Town Hall 2021, Adult Ed Consortia)

OPPORTUNITIES (external factors--outside of community colleges)
What trends exist in the sector that we can take advantage of?

- **This is one of the top sectors with the most percentage job growth in San Diego County:** ICT and Digital Media jobs grew 21% between 2010 and 2020, which is the fourth-highest percentage growth of the 11 sectors (Sector Analysis 2021, Community College)
- **This is one of the top sectors with the highest job concentration compared to the nation:** ICT and Digital Media had the third highest “location quotient” of the 11 sectors. “Location quotient” is a way of quantifying how concentrated a sector is in a region compared to the overall nation (Sector Analysis 2021, Community College)
- **This one of the sectors least likely to be at risk of automation:** ICT & DM has the fourth lowest risk of automation per the Automation Index of all the sectors (Sector Analysis 2021 and [Emsi](#), Community College)
- **Several positions are “pandemic resilient”** ([Pandemic-Resilient Jobs 2021](#), Community College)
- **There is a lot of opportunity for self-sufficiency in this sector:** Several positions pay living wages at the entry level ([Pandemic-Resilient Jobs 2021](#), [Resilient Jobs 2020](#), [Career Ed Guide 2020](#), Community College)
- This sector had the largest job multiplier: For every one job added to the ICT and Digital Media sector, 13.93 other jobs are created directly or indirectly. The sector ranks number one in terms of jobs multipliers (Sector Analysis 2021 and [Emsi](#), Community College)
- **Programs that address networking, cloud, and data security & analysis will be in great demand (14% - 37%) due to 5G, “smart”**

THREATS (external factors--outside of community colleges)
What are some challenges in the sector?

- **Bachelor’s degree programs generate a significant number of awards (labor supply) for ICT & DM occupations:** Employers fill supply gaps with graduates from four-year institutions ([Sector Analysis 2018](#), Community College)
- **Many high-wage careers are listed with bachelor’s degree as a minimum educational threshold** (Town Hall 2021, Community College, San Diego Workforce Partnership, and San Diego Regional EDC)
- **Private training bootcamps may erode contract education or adult education demand** (Town Hall 2021, Community College and Four-Year University)
- **Sourcing and retaining qualified workers are key challenges:** In particular, San Diego employers are struggling to fill open positions for Network and Computer Systems Administrators, Web Developers and Digital Interface Designers, and Information Security Analysts. Together, there were 2,771 job postings for these occupations between September 2016 and March 2020, yet only 192 people were hired ([San Diego Regional EDC](#))

homes/cities ([5G in IoT by Connectivity, Infrastructure, Sensors, Devices, and Things, Times of San Diego](#), K12, Community College)

- **Heavily engaged with artificial intelligence (AI) and machine learning (ML) technologies:** Roughly 50% of all San Diego County ICT firms are engaged with AI and ML, about twice the regional average for all industries. This has generated productivity gains within the industry without eliminating workers and, better yet, will generate a stream of new positions in coming years ([San Diego Regional EDC](#))
- **Cybersecurity and data analytic occupations pay above the living wage at entry-level positions** ([Cybersecurity Occupations 2021](#), Community College)
- **This sector has the most in-demand, third-party certifications and licenses requested by employers** ([Certifications & Licenses 2022](#), Community College)

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- Emphasize career pathways with intensive student support: If researchers have difficulty navigating through ICT & DM programs, then students will have difficulty as well ([Sector Analysis 2018](#), Community College)
- Explore partnerships with employers or apprenticeship programs for a sustainable way to pay for industry certification examination fees: Exams can cost up to \$500 and prevent a student from obtaining the industry certifications that employers prefer ([Sector Analysis 2018](#), Community College)
- Confirm with employers if a bachelor's degree is truly required for these occupations or if an associate degree is sufficient; if so, then market value of community college programs to employers ([Sector Analysis 2018](#), Community College)
- Analyze existing ICT & Digital Media programs to determine if they are overdesigned (i.e., programs could be shorter with fewer courses) ([Sector Analysis 2018](#), Community College) and/or consider additional "stackable" certificate programs for short-term learning (Town Hall 2021, K12, Community College)
- Refine marketing collateral [to industry] that identifies which programs prepare for specific certifications (Town Hall 2021, San Diego Regional EDC)
- Partner intentionally and create sustainable relationships with Adult Ed consortia in the region (Town Hall 2021, Adult Ed Consortia)

LIFE SCIENCES AND BIOTECHNOLOGY

<p>STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector? What unique resources do we (the community colleges) have access to?</i></p>	<p>WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve? What are some of our limitations in supporting this sector?</i></p>
<ul style="list-style-type: none"> ● A cohort, biomanufacturing bachelor's degree program exists in the region: MiraCosta College is one of only 15 California community colleges authorized to offer a bachelor's degree program (MiraCosta College, Community College) ● 12- to 15-unit Certificate of Achievement in biotechnology with lab ready skills for entry level employment in the biotechnology sector. (Miramar College, Community College) ● Life Science departments at all (6) regional districts support both CTE and major pathways (Town Hall 2021, Community College) ● Associate degree in Medical Lab Technician (MLT) training for lab ready students to work as Clinical MLTs (Miramar College, Southwestern College, Community College) ● Industry network with programs strong with companies that hire Certificate and Degree completers (Town Hall 2021, Community College) ● Community colleges have industry specific training equipment and subject matter experts from industry teaching as faculty members (Town Hall 2021, Community College) 	<ul style="list-style-type: none"> ● Large demand, small supply: Biotechnology and Biomedical Technology (TOP 043000) provides only 51 awards, but trains for four top middle-skill jobs that have an aggregated labor market demand of 1,198 annual job openings. That's a supply gap of 1,142 awards (Sector Analysis 2018, Community College) ● Enrollment numbers are low for existing programs: While there is high labor market demand, few students enroll in existing Biotechnology and Biomedical Technology (043000) programs for a number of reasons. Students are not familiar with the careers in this sector if employment and companies are not geographically close to them, for example (Sector Analysis 2018, Community College) ● Developing programs south of Interstate 8 (I-8) can be challenging: Students often who do not commute north of the I-8 are often unfamiliar with jobs in the sector. LS & Biotech jobs and employers are primarily clustered around State Route 52 (SR 52) and SR 78 (Sector Analysis 2018, Community College). <i>Update:</i> Challenge in developing programs based on need for increased local industry engagement and faculty interest. Over 100 Biotech specific partners below the I-8 (Town Hall 2021, Community College) ● Class sizes must be kept small: Access to equipment limits class size and maximum capacity is often close to or below the minimum number of students required to run a class, so risk of cancellation is high (Town Hall 2021, Community College)
<p>OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i></p>	<p>THREATS (external factors--outside of community colleges)</p>

	What are some challenges in the sector?
<ul style="list-style-type: none"> ● This is one of the top sectors with the most percentage job growth in San Diego County: LS and Biotech jobs grew 18% between 2010 and 2020, which is the fifth-highest percentage growth of the 11 sectors (Sector Analysis 2021, Community College) ● There are a small number of companies, but LS & Biotech is one of the top sectors with the highest job concentration compared to the nation: LS and Biotech had the highest “location quotient” of the 11 sectors. “Location quotient” is a way of quantifying how concentrated a sector is in a region compared to the overall nation (Sector Analysis 2021, Community College) ● This one of the sectors least likely to be at risk of automation: LS and Biotech has the third lowest risk of automation per the Automation Index of all the sectors (Sector Analysis 2021 and Emsi, Community College) ● Entry-level and median wages are high for this sector (Career Ed Guide 2020, Community College) ● Employers are interested in diversifying their workforce (Biocom Institute 2020, Community College) ● This sector is both “pandemic resilient” and “recession-resilient” (Pandemic-Resilient Jobs 2021 and Resilient Jobs 2020, Community College) ● Employers reported a need for Chemical Technology (TOP 0954.00): 0954.00 can train for three LS & Biotech college-level, high-wage, and high-demand jobs. The aggregate labor market demand for these three occupations was 123 annual job openings between 2017 and 2022 (Sector Analysis 2018, Community College) ● Growth and new opportunities in cellular and acellular food tech and agriculture: Meatless and plant-based meats, dairyless dairy, leather, silk, etc. are trending and here to stay (Town Hall 2021, Community Colleges) 	<ul style="list-style-type: none"> ● Employers are filling the gap with candidates who have bachelor’s degrees or higher: This leads to high employee turnover once an overqualified individual gets his/her “foot through the door” and move on to higher positions. Preference for bachelor’s degrees is also an opportunity for MiraCosta’s bachelor’s degree program (Town Hall 2021, Community College) ● The culture of the work environment expects employees to hold a bachelor’s or other advanced degree (Town Hall 2021, Community College) ● Lack of awareness of the biotechnology industry and career opportunities in biotech (Town Hall 2021, Community College) ● Assumption that biotech is only medical and/or a subsector of Health: LS/Biotech is lab-based and in addition to medical (medical lab technicians), also applies to food tech, food safety, environmental sciences, biofuels, and more. Placing biotech in medicine and health neglects other biotech industries and career opportunities (Town Hall 2021, Community College) ● Lack of industry knowledge of biotechnology training programs at the community college level for specific lab ready entry-level employment skills: In other words, employers are unaware of the community college programs that prepare students for their industry (Town Hall 2021, Community College) ● Talent in San Diego is competitive: A double-edged sword, decent pay and industry growth are attracting more workers to the industry, but employee retention has been difficult (San Diego Regional EDC, Source)

- **Huge growth in cell & gene therapy:** Growing demand for cell & gene therapy technicians (Town Hall 2021, Community Colleges)
- **Marketing and recruiting to passion to save the planet:** these new technologies and trends in biotech lower our dependence on animals, lower our carbon footprint, and are sustainable (Town Hall 2021, Community College)
- **Receives large amounts of venture funding:** Innovation companies are confident in the region's potential for growth ([San Diego Regional EDC](#), [Source](#))
- **Talent in San Diego is competitive:** Innovation industries' fast growth and high-paying jobs attract talent ([San Diego Regional EDC](#), [Source](#))
- **Highest job concentration (location quotient) of all regional sectors** (Sector Analysis 2021, Community College)
- **Low automation risk (Index Score= 90.2)** (Sector Analysis 2021, Community College)

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- Educate students from communities with little to no LS & Biotech firms about the career opportunities in LS & Biotech ([Sector Analysis 2018](#), Community College)
- Work with employers to change their hiring culture and promote community college programs as a solution to the cost of turnover for entry-level positions requesting bachelor's degrees or higher in online job postings ([Sector Analysis 2018](#), Community College)
- Align curricula across colleges: Biomanufacturing associate degree programs can funnel into MiraCosta's biomanufacturing bachelor's degree program. However, curricula must first align to meet the bachelor's degree program's prerequisites ([Sector Analysis 2018](#), Community College)
- Create more accelerated training in LS/Biotechnology such as 6- to 9-week programs (Town Hall 2021, Community College)
- Expand biomanufacturing bachelor's degree program cohorts to increase the number of 4-year graduates (Town Hall 2021, Community College)

PUBLIC SAFETY AND GOVERNMENT

<p>STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector?</i> <i>What unique resources do we (the community colleges) have access to?</i></p>	<p>WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve?</i> <i>What are some of our limitations in supporting this sector?</i></p>
<ul style="list-style-type: none"> • The regional community colleges have dedicated faculty members and staff as well as supportive leadership for Public Safety and Government programs (Town Hall 2021, Community College) • The region's faculty members have a willingness to expand and learn new curriculum to benefit students (Town Hall 2021, Community College) • The region provides traditional, hybrid, and online courses for the sector (Town Hall 2021, Community College) 	<ul style="list-style-type: none"> • There are restrictive unpaid internships for students in related programs (Town Hall 2021, Community College) • Like other programs, disproportionately impacted students have low retention rates (Town Hall 2021, Community College) • There is a lack of strategic marketing and outreach to attract students from traditionally underrepresented communities (Town Hall 2021, Community College)
<p>OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i></p>	<p>THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i></p>
<ul style="list-style-type: none"> • This sector is one of the top sectors with the greatest number of jobs in San Diego County: Public Safety and Government ranks as number 2 out of 11 with 347,030 jobs in the county (Sector Analysis 2021, Community College) • This sector has grown little in terms of the number of jobs in San Diego County: It ranks at the bottom in terms of percentage job growth between 2010 and 2020 (Sector Analysis 2021, Community College) • Of the companies in the Public Safety and Government, the average earnings by job amounted to \$93,230: This is the fourth highest ranking sector by NAICS codes (Sector Analysis 2021, Community College) • Average earnings per job increased 30% between 2010 and 2020: This is the fifth highest ranking sector by NAICS codes (Sector Analysis 2021, Community College) 	<ul style="list-style-type: none"> • This sector has grown little in terms of the number of jobs in San Diego County: It ranks at the bottom in terms of percentage job growth between 2010 and 2020 by NAICS codes (Sector Analysis 2021, Community College) • This sector has only 1,991 establishments in San Diego County: Public Safety and Government ranks 10 out of 11 by NAICS codes for this metric (Sector Analysis 2021, Community College) • Community perception of public safety may impact recruitment efforts and outreach to students (Town Hall 2021, Community College)

- **This sector has few establishments, but the percentage change is the highest:** Public Safety and Government establishments grew 41% between 2013 and 2020, which makes it rank number one in this metric (Sector Analysis 2021, Community College)
- **This sector does not have as much of a retiring workforce as the other sectors:** In both NAICS and SOC analyses, Public Safety and Government ranked 11 out of 11 sectors in terms of the percentage of workers age 55+ (Sector Analysis 2021, Community College)
- Employment opportunities exist at county and city governments (Town Hall 2021, Community College)

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- Develop proactive partnerships with community-based organizations as well as city and county governments to provide more work-based learning opportunities for students as well as exposure to related occupations that are not necessarily specific to government institutions (Town Hall 2021, Community College)
- Offer classes in various locations to accommodate different students, including those that have limited access to transportation (Town Hall 2021, Community College)
- Partner intentionally with Adult Ed consortia in the region (Town Hall 2021, Adult Ed Consortia)
- Provide more professional development on cultural humility for faculty and staff (Town Hall 2021, Community College)

RETAIL, HOSPITALITY, AND TOURISM

STRENGTHS (internal factors--inside regional community colleges) <i>What community college assets do we have to support this sector?</i> <i>What unique resources do we (the community colleges) have access to?</i>	WEAKNESSES (internal factors--inside regional community colleges) <i>In what areas can the region's community colleges improve?</i> <i>What are some of our limitations in supporting this sector?</i>
<ul style="list-style-type: none"> ● Retail Management Certificate (RMC) - San Diego Mesa College uses the industry-valued Retail Management Certificate to increase enrollment and engage with employers. This transfer pathway has also been solidified with Humboldt State University's bachelor's completion program in leadership studies (which helps meet Vision for Success Goals 1 and 2) [Town Hall 2021, Community College and Statewide Director for Retail, Hospitality, and Tourism (RHT)] ● Several regional community colleges have strong RHT programs, as indicated here. [Town Hall 2021, Community College and Statewide Director for Retail, Hospitality, and Tourism (RHT)] 	<ul style="list-style-type: none"> ● No comments were submitted
OPPORTUNITIES (external factors--outside of community colleges) <i>What trends exist in the sector that we can take advantage of?</i>	THREATS (external factors--outside of community colleges) <i>What are some challenges in the sector?</i>
<ul style="list-style-type: none"> ● This sector has the greatest number of jobs in San Diego County: RHT ranks as number 1 out of 11 with 352,643 jobs in the county by NAICS codes (Sector Analysis 2021, Community College) ● This sector has grown 17% in terms of jobs between 2010 and 2020: It ranks fifth by NAICS codes (Sector Analysis 2021, Community College) ● This sector has one of the lowest average earnings by job: It ranks 10 out of 11 with \$40,710 (Sector Analysis 2021, Community College) ● This is one of the top sectors with the highest job concentration compared to the nation: RHT had the second highest "location quotient" of the 11 sectors--after LS and Biotech. "Location quotient" is a way of quantifying how concentrated a sector is in a region compared to the 	<ul style="list-style-type: none"> ● This sector had few pandemic-resilient and recession-resilient jobs (Pandemic-Resilient Jobs 2021 and Resilient Jobs 2020, Community College) ● This sector is one of the top sectors at risk of automation: Advanced Manufacturing ranks as number 3 with the highest risk of automation per the Automation Index. Occupations with an automation index of below 100 have a below average risk of automation and those above 100 have an above average risk of automation. RHT positions have a 105.2 automation index (Sector Analysis 2021 and Emsi, Community College) ● Occupations in this sector tend to have low entry-level wages (Sector Analysis 2021, Community College)

overall nation (Sector Analysis 2021, Community College)

- **There are a large number of establishments, but did not have a lot of growth between 2013:** RHT ranks 3rd in terms of the number of establishments with 20,266 establishments in 2020, but ranks 11th in terms of establishment growth (Sector Analysis 2021, Community College)

- **Other training providers contribute, but we do not partner effectively yet:** Adult Ed Consortia's training programs might close gaps and perform crucial roles where our program growth is restricted (Town Hall 2021, Adult Ed Consortia)
- **By nature, jobs in this sector are volatile in response to pandemics and other economic crises** ([San Diego Regional EDC, Source](#))
- **Adjacent industries of this sector, such as aerospace, have not been as pandemic resilient:** Remote work and lockdowns have made recovery more difficult, since Aerospace relies on face-to-face interaction and travel, particularly for business travel. The revival of business travel will also likely reinvigorate Downtown's RHT sector, which is recovering, but is yet to match pre-pandemic norms. ([San Diego Regional EDC, Source](#))

RECOMMENDATIONS

What role should the region's community colleges play in this sector?

- Since several colleges in the region have programs in the sector, and the fact that tourism is such a large regional economic driver and the largest employment sector, we need to find a way to support this sector. With low entry-level wages and high turnover, it would be helpful if we could partner more with industry to discuss or establish stronger career paths and more training opportunities for their current employees. Industry seems to come to us in times of need (e.g., tight labor market). Additionally, the lasting effects of COVID-19 on the industry and what their "new normal" looks like, need to be discussed with the colleges to ensure that the training we are providing is meeting the new needs (Town Hall 2021, Community College)
- Identify potential colleges to apply for soon to be released (August 2021) CAI pre-apprenticeship and apprenticeship grants in this area [Town Hall 2021, Community College and Statewide Director for Retail, Hospitality, and Tourism (RHT)]
- Help regional colleges develop Direct Assessment to support Credit for Prior Learning and Competency Based Education efforts, which will increase the efficiency of community college training programs. This will also allow students to quickly move through training/education, be more promotable in their careers, and earn more money going forward [Town Hall 2021, Community College and Statewide Director for Retail, Hospitality, and Tourism (RHT)]
- Partner intentionally with Adult Ed consortia in the region (Town Hall 2021, Adult Ed Consortia)
- **Develop facilities management and hospitality programs together:** Adding facilities management to hospitality and or culinary arts increases the starting

salary by approximately \$20,000 [Town Hall 2021, Community College and Statewide Director for Retail, Hospitality, and Tourism (RHT)]

- **Collaborate with existing programs:** There is an opportunity to couple culinary/hospitality skills with health care (senior living and skilled nursing facilities) and institutional food service (K-12). Two regions where this was applied: Hospitality to Health (H2H) [Sacramento Region](#) (hosted at Sacramento Employment Training Agency) and [Monterey](#) [Town Hall 2021, Community College and Statewide Director for Retail, Hospitality, and Tourism (RHT)]

RECOMMENDATIONS FOR ALL SECTORS

RECOMMENDATIONS

What role should the region's community colleges play in all sectors?

- Create an inventory of CTE programs and their advisory groups to confirm that a representative sample of employers across the region are providing feedback on curriculum: We do not know who sits on the CTE advisory groups; we do not know the makeup of employers and/or industries on the advisory groups ([Sector Analysis 2018](#), Community College)
- Create an inventory of the skills and third-party credentials taught at each college across credit, noncredit, and not-for-credit (fee-based) programs ([Sector Analysis 2018](#), Community College)
 - Could be combined for short-term certificates (less than 8 weeks)
 - Are training for what employers need
 - Can be accelerated to 8 weeks or less to meet rapid industry changes
 - They would pay to send current/incumbent workers for upskilling (contracted education/continuing education)
- Develop a standardized way to track not-for-credit program outcomes at each college: If the colleges do not have a standardized method of tracking not-for-credit programs, then they will continue to not be included in the gap analysis ([Sector Analysis 2018](#), Community College)
- Create a list of fee-based, not-for-credit programs, adult education programs, apprenticeships, and nonprofit programs for all sectors: If we do not have outcomes data for these programs, then we should, at minimum, include a list of these programs in our analyses to illustrate how many programs are available ([Sector Analysis 2018](#), Community College)
- Design programs to meet the needs of underrepresented students: Instructors, counselors, and staff should be required to train for cultural competency ([Sector Analysis 2018](#), Community College)
- Provide “train-the-trainer” or “how to teach” professional development: Faculty may be industry experts but not have pedagogical training, or faculty may need a refresher on how to best teach CTE-specific subjects ([Sector Analysis 2018](#), Community College)
- Prioritize data quality and Code Alignment for our programs: If programs are coded incorrectly, then the demand and supply analysis does not show an accurate picture of labor gaps ([Sector Analysis 2018](#), Community College)
- Create marketing materials about career pathways for each audience (students, counselors, parents): The career pathways can be simple diagrams that indicate what level of training (courses, certificates, or degrees) is required for specific occupations ([Sector Analysis 2018](#), Community College)

- Develop a script for career center counselors to help them guide students: Career counselors can benefit from training on career pathways and programs across colleges in general ([Sector Analysis 2018](#), Community College)
- Create sustainable relationships with adult ed consortia in the region to fill training gaps (Town Hall 2021, Adult Ed Consortia)
- Review apprenticeship opportunities, including veteran apprenticeship programs, in all sectors (Town Hall 2021, Community College)
- Refine existing and/or develop new career pathway diagrams to help guide students and counselors across the programs offered in the region; these tools must be marketed extensively or they will never be used ([Sector Analysis 2018](#), Community College)

APPENDIX A: METHODOLOGY

The San Diego-Imperial Center of Excellence for Labor Market Research (COE) analyzed regional industry sectors in this study to assist the San Diego and Imperial Counties Community Colleges with strategic planning and program development. According to the California Community Colleges Chancellor's Office (CCCCO), there are 11 key sectors in California:³³

- Advanced Manufacturing
- Advanced Transportation and Logistics
- Agriculture, Water, and Environmental Technologies
- Business and Entrepreneurship
- Education and Human Development
- Energy, Construction, and Utilities
- Health
- Retail, Hospitality, and Tourism
- Information and Communication Technologies (ICT) and Digital Media
- Life Sciences and Biotechnology
- Public Safety and Government

To analyze these sectors, the San Diego-Imperial COE first had to define what they are. Depending on the research methodology, researchers can define sectors using program codes from the Taxonomy of Programs (TOP)³⁴ or Classification of Instruction (CIP)³⁵ systems, occupational codes from the Standard Occupational Classification (SOC) system³⁶, or industry codes from the North American Industry Classification System (NAICS)³⁷. For this study, the San Diego-Imperial COE defined and analyzed the sectors using both NAICS and SOC codes. In other words, sectors are defined as a group of industry codes or a group of occupational codes. NAICS provides labor market information (LMI) on companies and SOC provides LMI on occupations. Put differently, NAICS codes provide a “vertical” analysis of the sectors while SOC codes provide a “horizontal” analysis as seen below.

“Vertical” Analysis of Sectors Using NAICS Codes vs. “Horizontal” Analysis Using SOC Codes



³³ cccco.edu/About-Us/Chancellors-Office/Divisions/Workforce-and-Economic-Development/Strong-Workforce-Program/Events/K12-SWP-Industry-Sector-Crosswalk. Accessed April 6, 2021.

³⁴ cccco.edu/-/media/CCCCO-Website/About-Us/Divisions/Digital-Innovation-and-Infrastructure/Research/Files/TOPmanual6200909corrected12513.pdf?la=en&hash=26CCD79E15C26BC0F48CAB37F219731E29E6CA5B

³⁵ nces.ed.gov/ipeds/cipcode/Default.aspx?y=56

³⁶ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. bls.gov/soc.

³⁷ census.gov/naics

In the vertical view, researchers can analyze occupations in companies within **similar** industries. In the example above, all companies identified with a NAICS code between 31 and 33 are in the manufacturing industry. In the horizontal view, researchers can analyze occupations in companies across **different** industries. In the example above, SOC codes or occupations are employed across companies in different industries such as manufacturing or health. The San Diego-Imperial COE assigned 933 NAICS codes to each of the 11 sectors, including an *Other* category for NAICS codes that did not meet the 11 sectors' descriptions below.

Sector	Description	
Advanced Manufacturing	<ul style="list-style-type: none"> Manufacturing and Product Development Manufacturing 	<ul style="list-style-type: none"> Production Engineering Techs and Technologists
Advanced Transportation and Logistics	<ul style="list-style-type: none"> Transportation Transportation, Distribution & Logistics Transportation & Material Moving 	
Agriculture, Water, and Environmental Technologies	<ul style="list-style-type: none"> Agriculture and Natural Resources Agriculture, Food and Natural Resources Farming, Fishery, and Forestry 	
Business and Entrepreneurship	<ul style="list-style-type: none"> Business & Financial Operations Managers Business Management & Administration Local Small Businesses not in Retail, Hospitality, and Tourism 	<ul style="list-style-type: none"> Business and Finance Global Trade Finance Management Marketing, Sales, and Service Office & Administrative Support
Energy, Construction, and Utilities	<ul style="list-style-type: none"> Building and Construction Trades Energy, Environment, and Utilities Engineering and Architecture Architecture & Construction Science, Technology, Engineering & Mathematics 	<ul style="list-style-type: none"> Architecture & Engineering Construction & Extraction Installation, Maintenance & Repair Building & Grounds Cleaning Maintenance
Education and Human Development	<ul style="list-style-type: none"> Education, Child Development, & Family Services Education & Training Education, Training & Library 	
Health Care	<ul style="list-style-type: none"> Health Science and Medical Technology Health Science Life, Physical Science & Social Science 	<ul style="list-style-type: none"> Health Support Health Practitioners & Technical
Information and Communication Technologies (ICT) and Digital Media	<ul style="list-style-type: none"> Information and Communication Technologies Arts, A/V Technology & Communications Arts, Media, and Entertainment 	<ul style="list-style-type: none"> Computer & Mathematical Science Arts, Design, Entertainment, Sports, & Media Information Technology
Life Sciences and Biotechnology	<ul style="list-style-type: none"> Health Science and Medical Technology Health Science Life, Physical Science & Social Science 	<ul style="list-style-type: none"> Health Support Health Practitioners & Technical
Public Safety and Government	<ul style="list-style-type: none"> Public Services Law, Public Safety, Corrections & Security Government & Public Administration Human Services 	<ul style="list-style-type: none"> Community & Social Service Legal Protective Service Military Service
Retail, Hospitality, and Tourism	<ul style="list-style-type: none"> Fashion and Interior Design Hospitality, Tourism, and Recreation Personal Care & Service 	<ul style="list-style-type: none"> Hospitality & Tourism Food Preparation & Serving Sales

NAICS codes in the *other* category were not included in this study's analysis. Similarly, the San Diego-Imperial COE assigned 756 SOC codes to each of the 11 sectors, with an *Other* category as well. Working with the Employment Development Department (EDD) Labor Market Information Division (LMID), the San Diego-Imperial COE assigned one NAICS code and one SOC code to one sector, effectively, creating a one-to-one-match instead of a one-to-many match of codes to sectors. These NAICS and SOC definitions can be found in Appendix B and Appendix C, respectively.

After defining the sectors by NAICS and SOC codes, the San Diego-Imperial COE had to identify which metrics to analyze in this study. In the first quarter of 2020, regional community college stakeholders voted on the following metrics at the Workforce Development Council³⁸ and Regional Oversight Committee³⁹ meetings:

- # of Jobs (2020)
- % Job Change (2010-2020)
- Average Earnings by Job (2020)
- % Change in Average Earnings by Job (2010-2020)
- # of Establishments (2020)
- % Change in Establishments (2013-2020)
- % Workers Age 55+ (2020)
- Jobs Multipliers (2020)
- Average Entry-Level Hourly Earnings (2020)
- Average Median Hourly Earnings (2020)
- Location Quotient
- Average Automation Index

Using these metrics, the San Diego-Imperial COE analyzed available LMI between 2010 and 2020, except for one metric, *% change in establishments (2013-2010)*. The baseline year was changed from 2010 to 2013 due to updates in coding and tracking of companies. Using 2010 as the baseline would make certain sector changes appear greater than they actually were. For this study, the San Diego-Imperial COE did not use any projections data due to the uncertainties in the labor market because of the COVID-19 pandemic, which began in 2020. Additionally, the San Diego-Imperial COE did not conduct any primary research for this study.

The San Diego-Imperial COE used EMSI as the primary data source for this study and relied heavily on the software program's industry and occupational tables. Definitions for each metric are provided on the following pages. The San Diego-Imperial adopted the definitions below directly from EMSI and made only minor modifications to their descriptions.⁴⁰

³⁸ myworkforceconnection.org/resources/march-12-2021-workforce-development-council-meeting

³⁹ myworkforceconnection.org/resources/march-10-2021-regional-oversight-committee

⁴⁰ kb.emsidata.com/analyst/glossary

Metric	Description
# of Jobs (2020)	<p>Job counts (e.g., 2020 Jobs) are based on the most recent four quarters of data available from the U.S. Bureau of Labor Statistics.</p> <p>Data Source: U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW)</p>
% Job Change (2010-2020)	<p>The total number of jobs changed during a period of time. The San Diego-Imperial COE compared job counts between 2010 and 2020 are compared for this metric. The percentage change indicates whether occupations in a given sector grew or declined in a specific period.</p>
Average Earnings by Job (2020)	<p>The total pre-tax industry earnings for a region divided by number of jobs in the sector or industry. Includes wages, salaries, supplements (additional employee benefits), and proprietor income.</p> <p>Total Earnings is one of the four components of Gross Regional Product (GRP). The other elements are profits/property income, taxes on production & imports, and subsidies.</p>
% Change in Average Earnings by Job (2010-2020)	<p>The San Diego-Imperial COE compared the average earnings by job in 2010 with the average earnings by job in 2020 to determine the percentage change during that period. See “Average Earnings by Job (2020)” above for the specific definition from EMSI.</p>
# of Establishments (2020)	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • Corporate, subsidiary, and regional managing offices • Paper (except newsprint) mills • General warehousing and storage <p>Data source: U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW)</p>
% Change in Establishments (2013-2020)	<p>The San Diego-Imperial COE reviewed the number of establishments in San Diego County for each sector between 2010 and 2020 and found that between 2010 and 2012, the numbers shifted significantly due to changes in coding and reporting. As a result, the San Diego-Imperial COE used 2013 as the baseline year to compare the percentage change or increase in establishments in San Diego County for a given sector. See “# of Establishments (2020)” above for the definition of an “establishment.”</p>
% Workers Age 55+ (2020)	<p>A demographic breakdown, by age, of individuals working in an occupation or industry. A common workforce challenge is replacing workers with years of experience who are soon to retire. Therefore, the San Diego-Imperial COE analyzed the percentage of workers in a given sector with workers ages 55 or older to determine which sectors had a large proportion of workers nearing retirement.</p> <p>Data source: Industry Demographics, staffing patterns, and American Community Survey. For industries, EMSI’s proprietary employment data, incorporating Census’ Quarterly Workforce Indicators and American Community Survey.</p>
Jobs Multipliers (2020)	<p>A jobs multiplier indicates how important an industry is in regional job creation. The total job yield to the region as a result of — and including — a single job added. A jobs multiplier of 3, for example, would mean that for every job created by that industry, 2 other jobs would be created in other industries (for a total of 3 jobs).</p> <p>Jobs multipliers are easily misinterpreted—jobs multipliers of 17 or higher are sometimes seen—but a high jobs multiplier for a set of one or more industries in an added-jobs scenario does not necessarily mean that attracting businesses in those industries to the region is the best of most viable option for regional economic growth.</p> <p>Jobs multipliers are primarily tied to the type of industries in the scenario—industries with a high sales/labor ratio typically have a high jobs multiplier, and vice versa. For example, a nuclear power plant might have only 20 workers, but “behind” each of those workers there are millions of dollars of equipment costs and millions of dollars of electricity being generated. Thus, if we bring 20 more nuclear power jobs into the region, it will involve a huge amount of investment flooding into the region (to build another nuclear power plant or double the size of the current one) and millions of dollars in new sales and profits.</p>

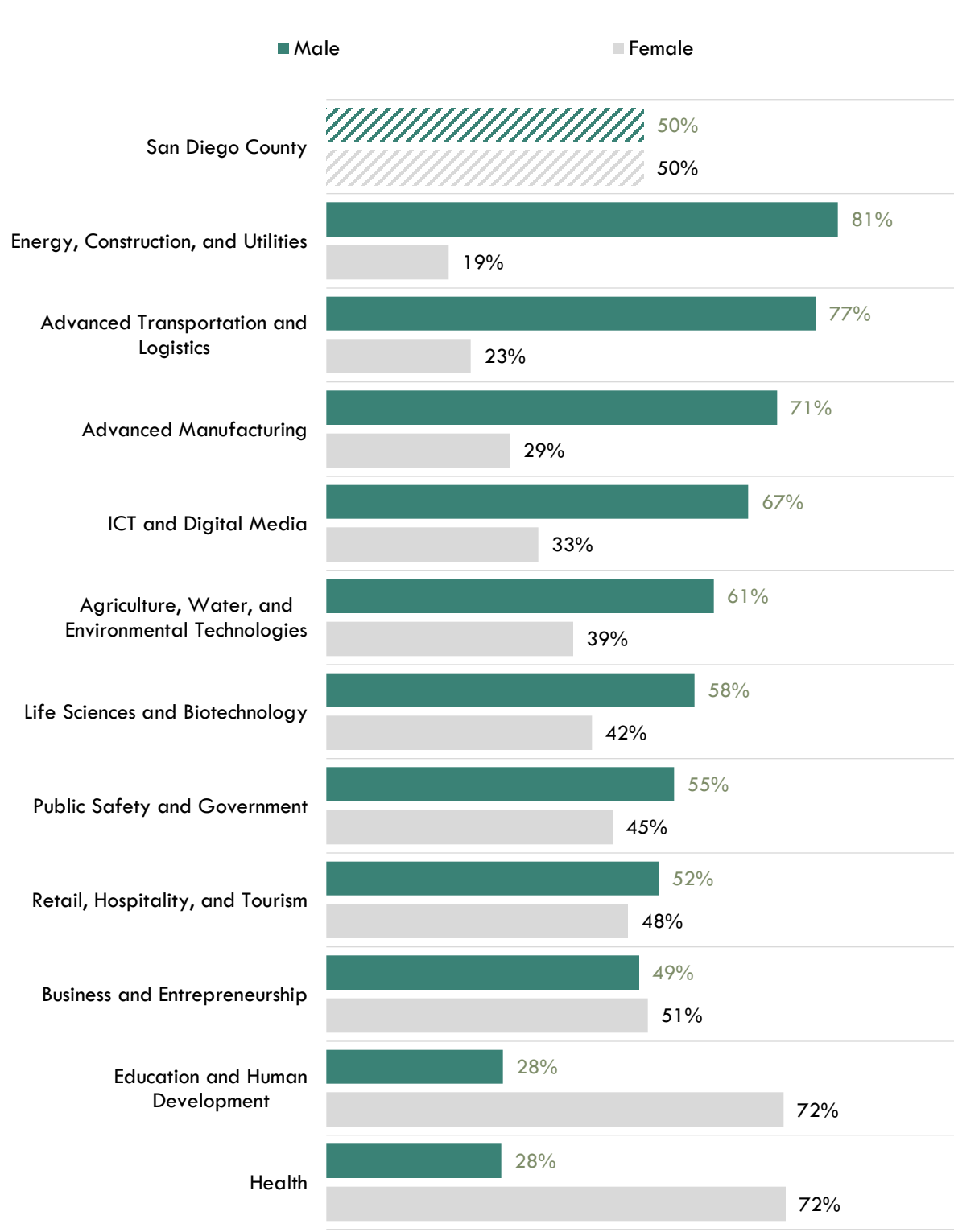
Metric	Description
Jobs Multipliers (continued from above)	<p>Some of that money would go to the employees' high salaries, some would go to local construction companies, real estate, janitorial services, etc. The overall jobs multiplier would be impressive—each new job in nuclear power might support 14 other jobs scattered throughout the rest of the economy (i.e., a jobs multiplier of 15). However, the effort it takes to attract 20 jobs in nuclear power (with all the necessary infrastructure) is substantially more than to attract 20 jobs in an industry with a lower jobs multiplier.</p> <p>EMSI does not provide job multipliers by industry (NAICS) groups. Therefore, the San Diego-Imperial COE selected all NAICS codes that defined a sector and generated an "Industry Overview" report in EMSI, which produced a jobs multiplier number.</p> <p>Data source: Emsi's model, incorporating data from the Bureau of Economic Analysis (BEA).</p>
Average Entry-Level Hourly Earnings (2020)	<p>Earnings data is collected from the employer's perspective, meaning earnings data is pre-tax (individual employees' tax withholdings will vary, so earnings are reported pre-tax). Because it is collected from the employer's perspective, earnings data is also counted by the place of the employee's work, not the employee's residence. Occupations have average hourly earnings as well as percentile earnings for five percentiles (10th, 25th, 50th (median), 75th, and 90th).</p>
Average Median Hourly Earnings (2020)	<p>Percentile earnings indicate what percent of the jobs in the occupation earn that amount or less. For example, 10th percentile earnings of \$12/hour indicate that 10% of the workers in that occupation make \$12/hour or less. Median earnings of \$15/hour would mean that half of workers in that occupation make more than \$15/hour, and half make less than \$15/hour. 10th percentile earnings are often used as a proxy for entry level wages, as they represent some of the lowest earnings in the occupation.</p> <p>25th percentile earnings are used for determining wages in entry-level positions for job seekers who have a community college education because they have some training and experience compared to those in the 10th percentile.</p> <p>Earnings are reported in terms of hourly income rather than annual income for all but a handful of occupations. For occupations with earnings reported annually, the annual earnings are divided by 2080 (number of hours in a working year) to determine hourly earnings.</p> <p>Occupation earnings include reported base rate, commissions, cost of living allowances, deadheading pay, guaranteed pay, hazard pay, incentive pay, longevity pay, over-the-road pay, piece rates, portal-to-portal rates, production bonuses, and tips.</p> <p>Occupation earnings do not include attendance bonuses, back pay, clothing, allowances, discount, draw, holiday bonus, holiday premium pay, jury duty pay, meal and lodging payments, merchandise discounts, non-production bonuses, on-call pay, overtime pay, perquisites, profit-sharing payments, relocation allowances, severance pay, shift differentials, stock bonuses, tool/equipment allowances, tuition repayment, uniform allowance, weekend premium pay, or year-end bonuses.</p> <p>Data source: U.S. Bureau of Labor Statistics Occupational Employment Statistics (OES) data set</p>
Location Quotient	<p>Another term for <i>job concentration</i> is Location Quotient (LQ). Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region "unique." For example, if the leather products manufacturing industry accounts for 10% of jobs in your area but 1% of jobs nationally, then the area's leather-producing industry has an LQ of 10. So, in your area, leather manufacturing accounts for a larger than average "share" of total jobs—the share is ten times larger than normal.</p> <p>LQ is calculated by comparing an industry's or an occupation's share of regional employment with its share of national employment. Industries with a high LQ are typically (but not always) export industries, which are important because they bring money into the region, rather than circulating local dollars around the economy (which is more typical for retail or restaurants).</p> <p>Occupations with a high LQ are important because they are generally employed by high-LQ industries and thus provide a workforce-oriented perspective of the region's economic base. Such occupations are vital for the continued prosperity of the region.</p> <p>When considering an industry's LQ, you need to also consider the number of jobs and percent change. A high LQ signals high concentration, but the concentration's impact on the regional economy depends on the number of jobs present in the economy. A positive or negative change in an industry's LQ will be much more indicative of the economy's health if the industry also employs a lot of people.</p>

Metric	Description
Average Automation Index	<p>The automation index captures an occupation's risk of being affected by automation using four measures:</p> <ul style="list-style-type: none"> • % of time spent on high-risk work • % of time spent on low-risk work • Number of high-risk jobs in compatible occupations • Overall industry automation risk <p>This methodology starts with the underlying work on task content. EMSI used estimated task time shares, derived from O*NET work activities, and regressed them for each occupation based on Frey and Osborne's published "computerization probabilities" (2013). This helps identify which tasks are positively and negatively correlated with automation risk.</p> <p>This classification is then linked with the task time shares to identify the share of each occupation's time spent in high- and low-risk work, from an automation perspective.</p> <p>Then EMSI reviewed the place of an occupation in the broader context of labor market automation risk. Using occupation compatibility scores, EMSI reviewed all similar roles (defined as having an O*NET compatibility score over 75) and found the percentage of jobs in those similar roles that are at risk of automation.</p> <p>Finally, using staffing pattern data, EMSI multiplied the share of an occupation's jobs in 3-digit NAICS industries by that industry's share of at-risk jobs to calculate the overall industry automation risk.</p> <p>EMSI then standardized all these measures and scaled the index so that 100 = the "average worker," defined as the average index across all occupations, weighted by job numbers in 2018. The index has a standard deviation of 15. Note that the share of time spent on low-risk work is a negative contributor to an occupation's index score (making the index score lower) while the other three measures are positive contributors (making the index score higher).</p> <p>Note: Automation index is unavailable for Legislators, Military, and Unclassified occupations, so they are excluded from aggregate indexes for higher-level occupations.</p>

APPENDIX B: DEMOGRAPHICS BY SECTOR

GENDER ACROSS SECTORS

Exhibit B-1: Gender - Sector vs. San Diego County Population, 2022



ADVANCED MANUFACTURING

Exhibit B-2: Age - Advanced Manufacturing vs. San Diego County Population, 2022

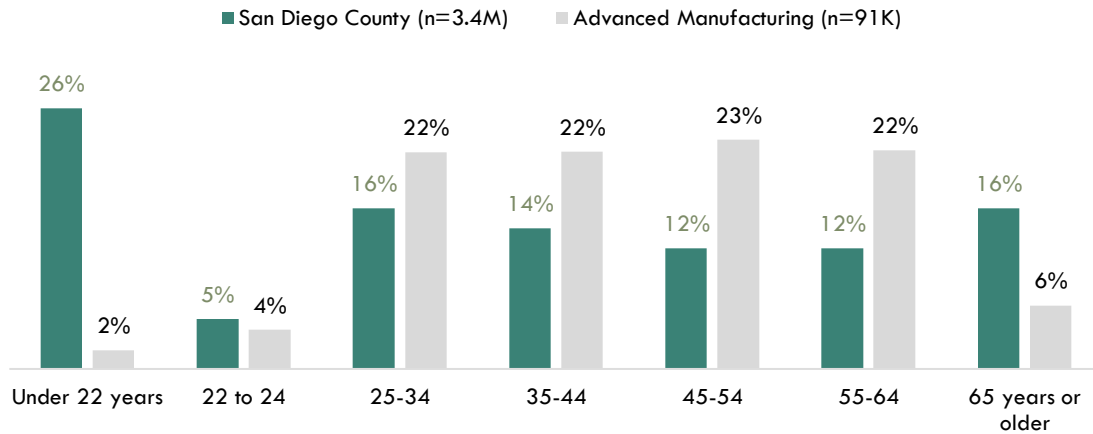
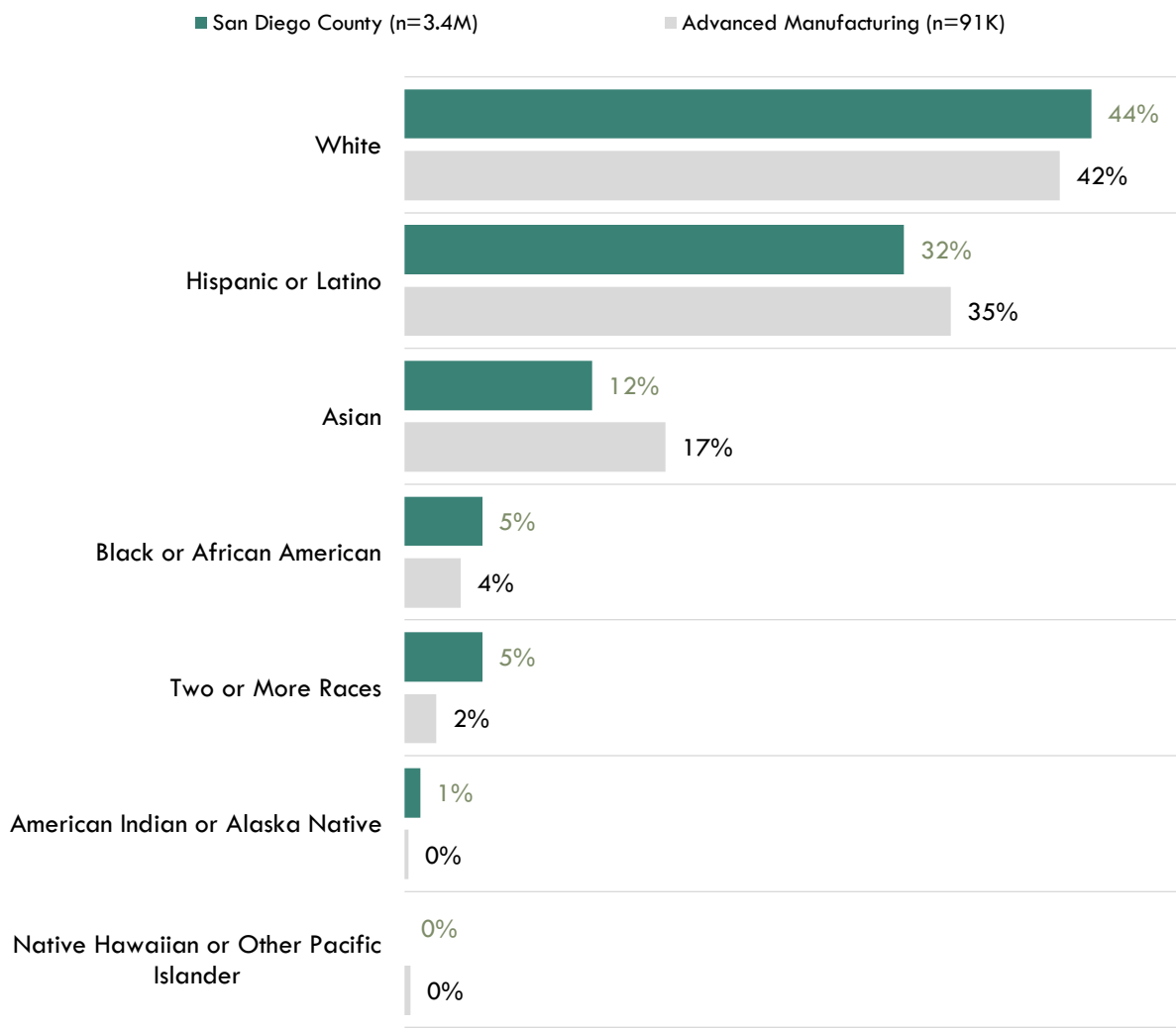


Exhibit B-2: Ethnicity/Race - Advanced Manufacturing vs. San Diego County Population, 2022



ADVANCED TRANSPORTATION AND LOGISTICS

Exhibit B-2: Age - Advanced Transportation vs. San Diego County Population, 2022

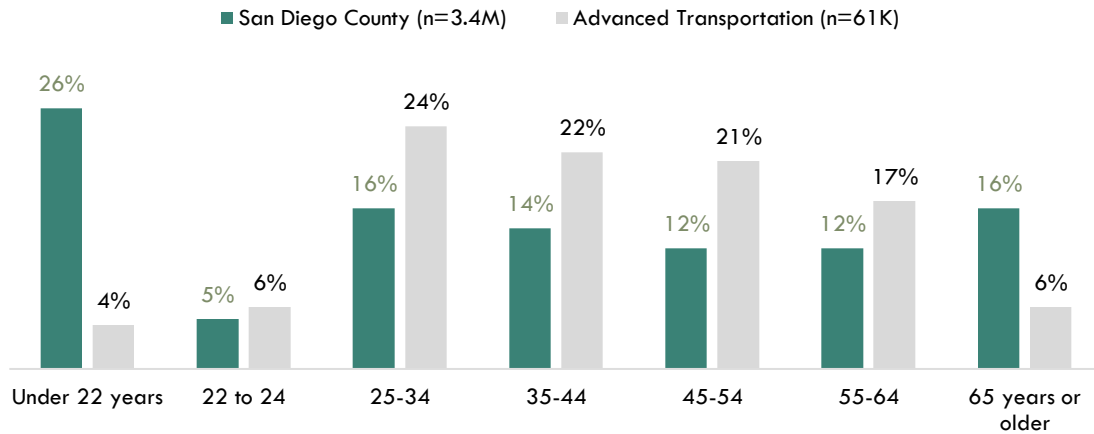
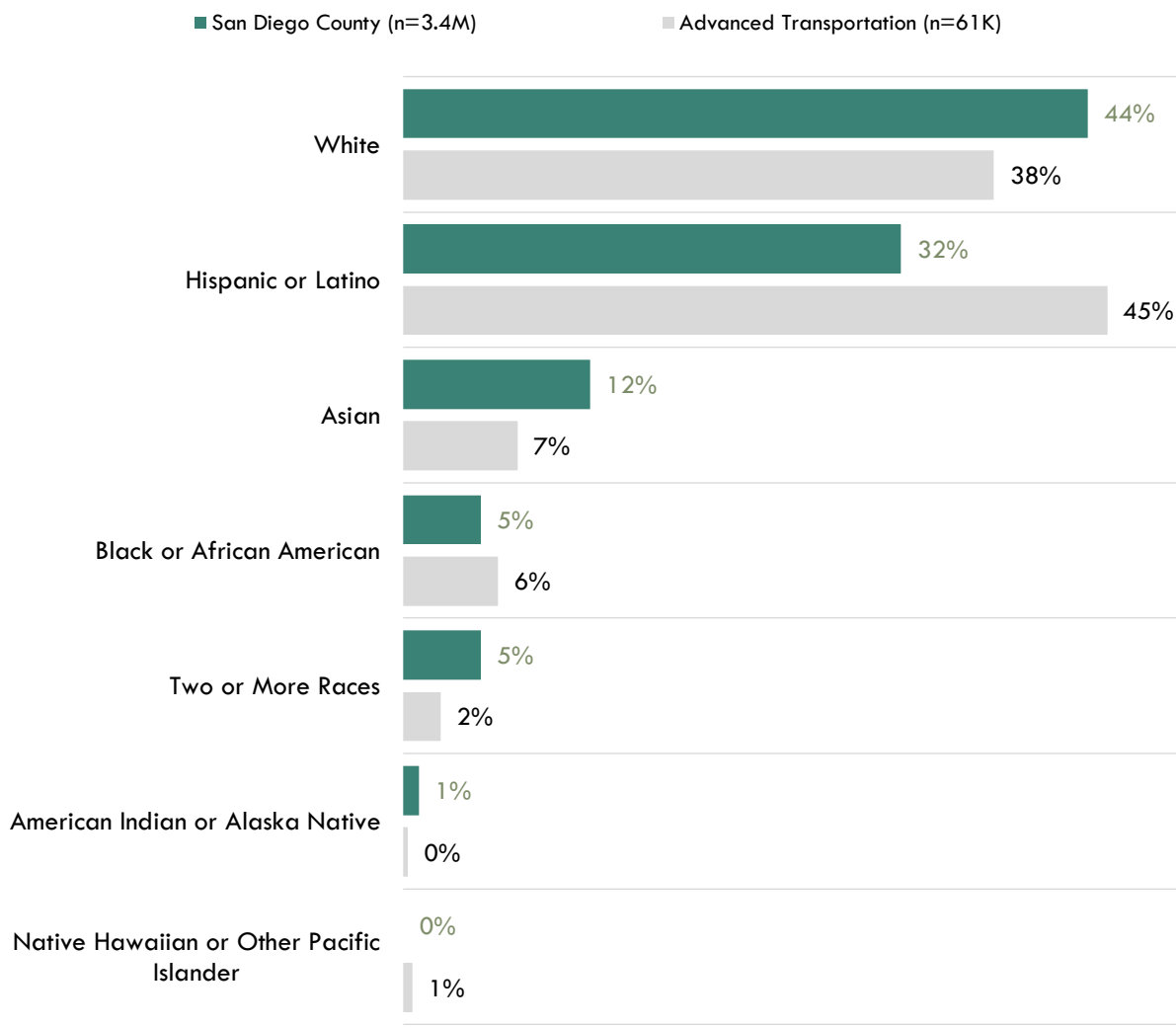


Exhibit B-2: Ethnicity/Race - Advanced Transportation vs. San Diego County Population, 2022



AGRICULTURE, WATER, AND ENVIRONMENTAL TECHNOLOGIES

Exhibit B-2: Age – Ag, Water & Env Tech vs. San Diego County Population, 2022

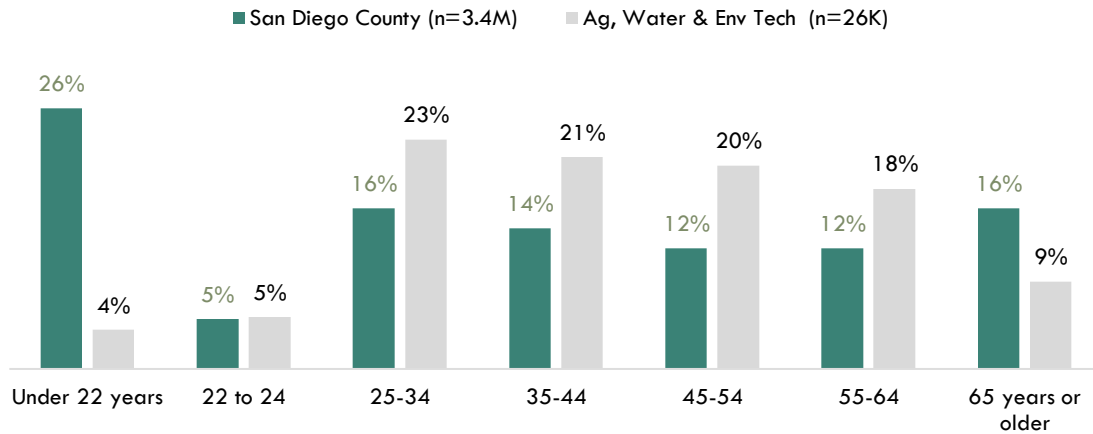
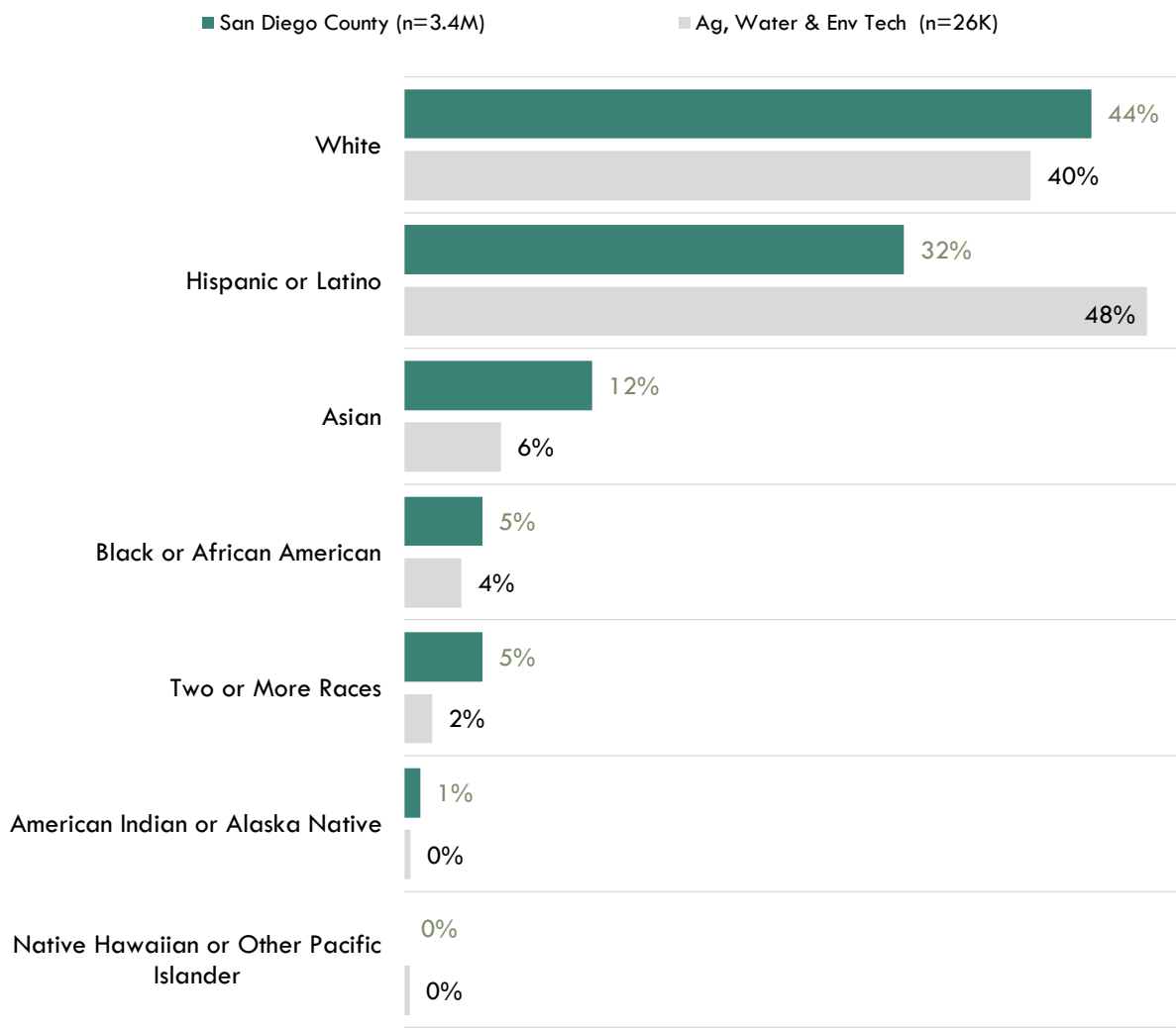


Exhibit B-2: Ethnicity/Race - Ag, Water & Env Tech vs. San Diego County Population, 2022



BUSINESS AND ENTREPRENEURSHIP

Exhibit B-2: Age - Business and Entrepreneurship vs. San Diego County Population, 2022

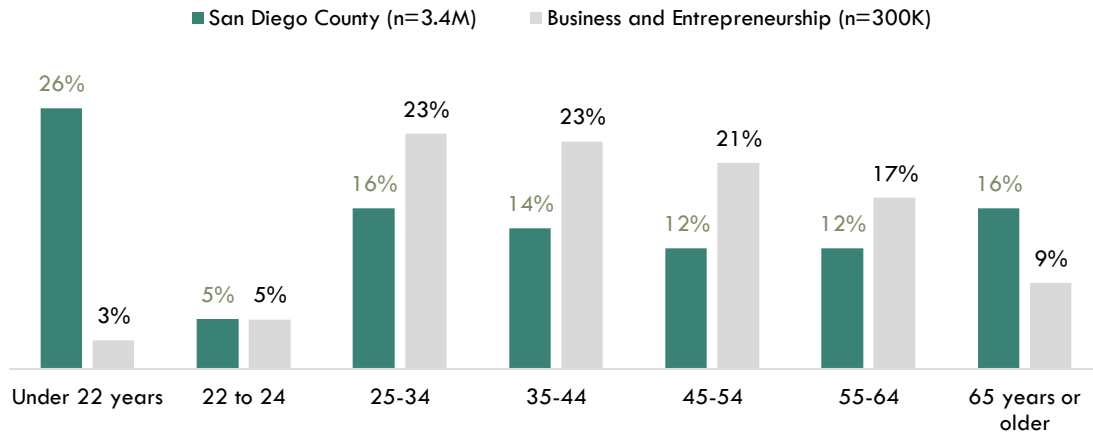
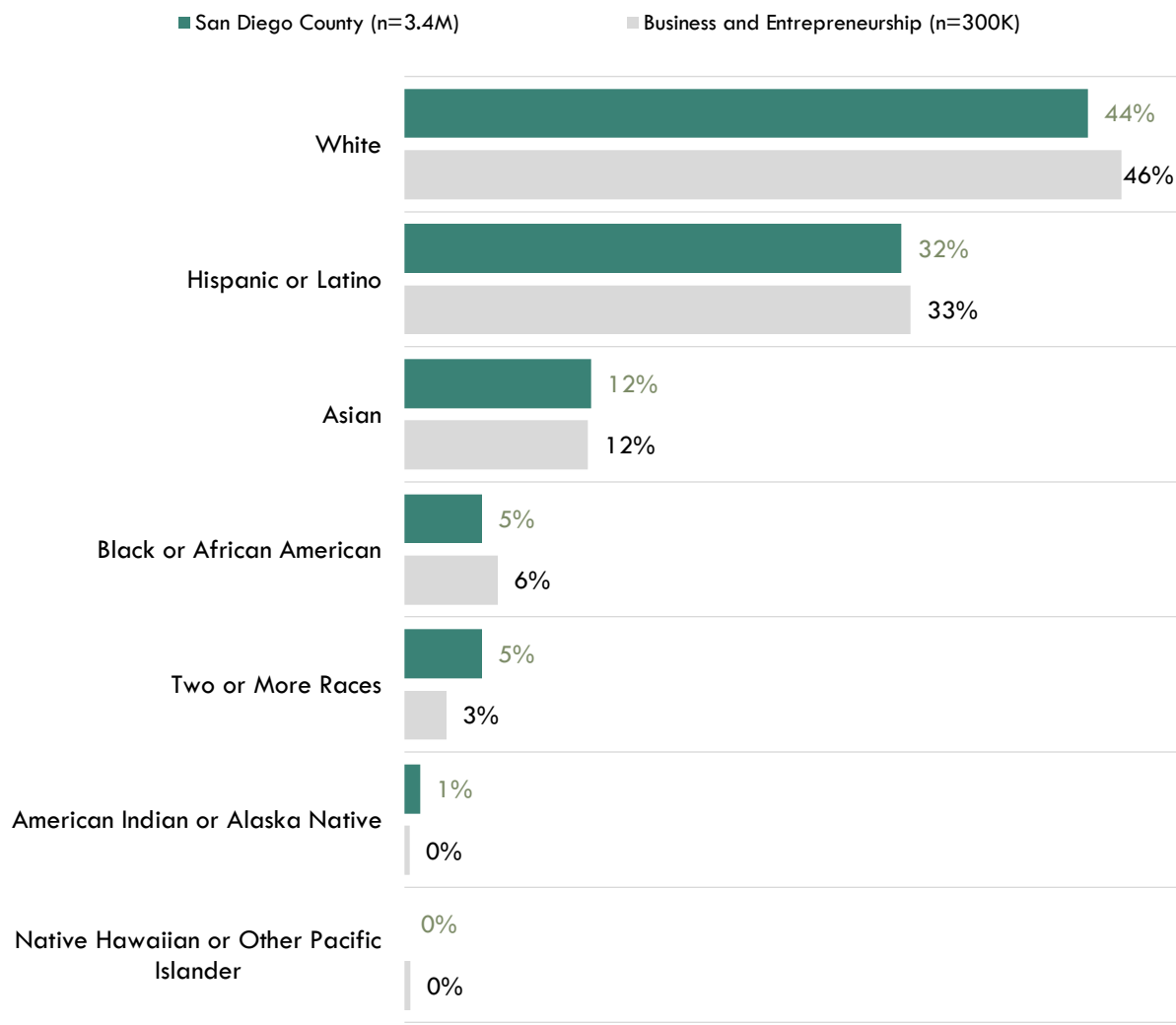


Exhibit B-2: Ethnicity/Race - Business and Entrepreneurship vs. San Diego County Population, 2022



EDUCATION AND HUMAN DEVELOPMENT

Exhibit B-2: Age - Education and Human Development vs. San Diego County Population, 2022

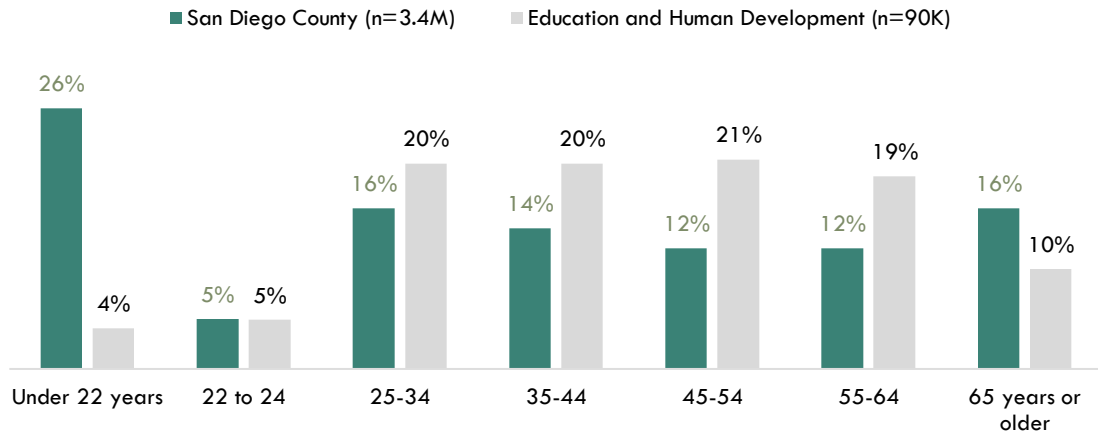
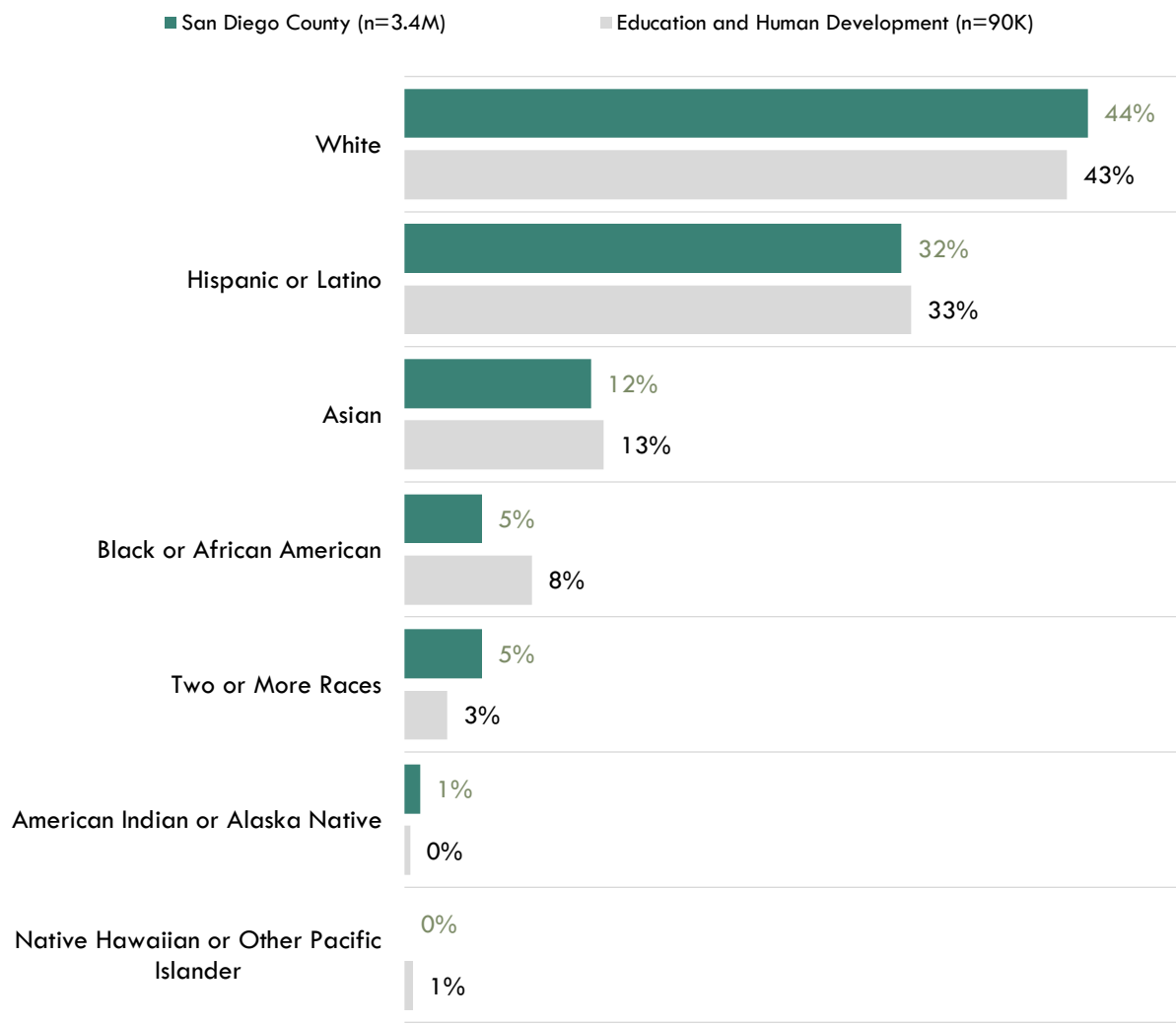


Exhibit B-2: Ethnicity/Race - Education and Human Development vs. San Diego County Population, 2022



ENERGY, CONSTRUCTION, AND UTILITIES

Exhibit B-2: Age - Energy, Construction, and Utilities vs. San Diego County Population, 2022

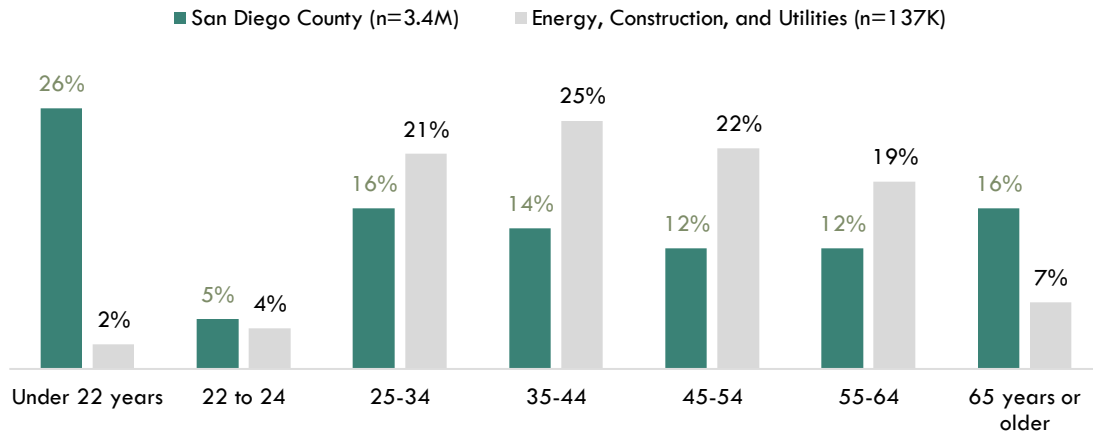
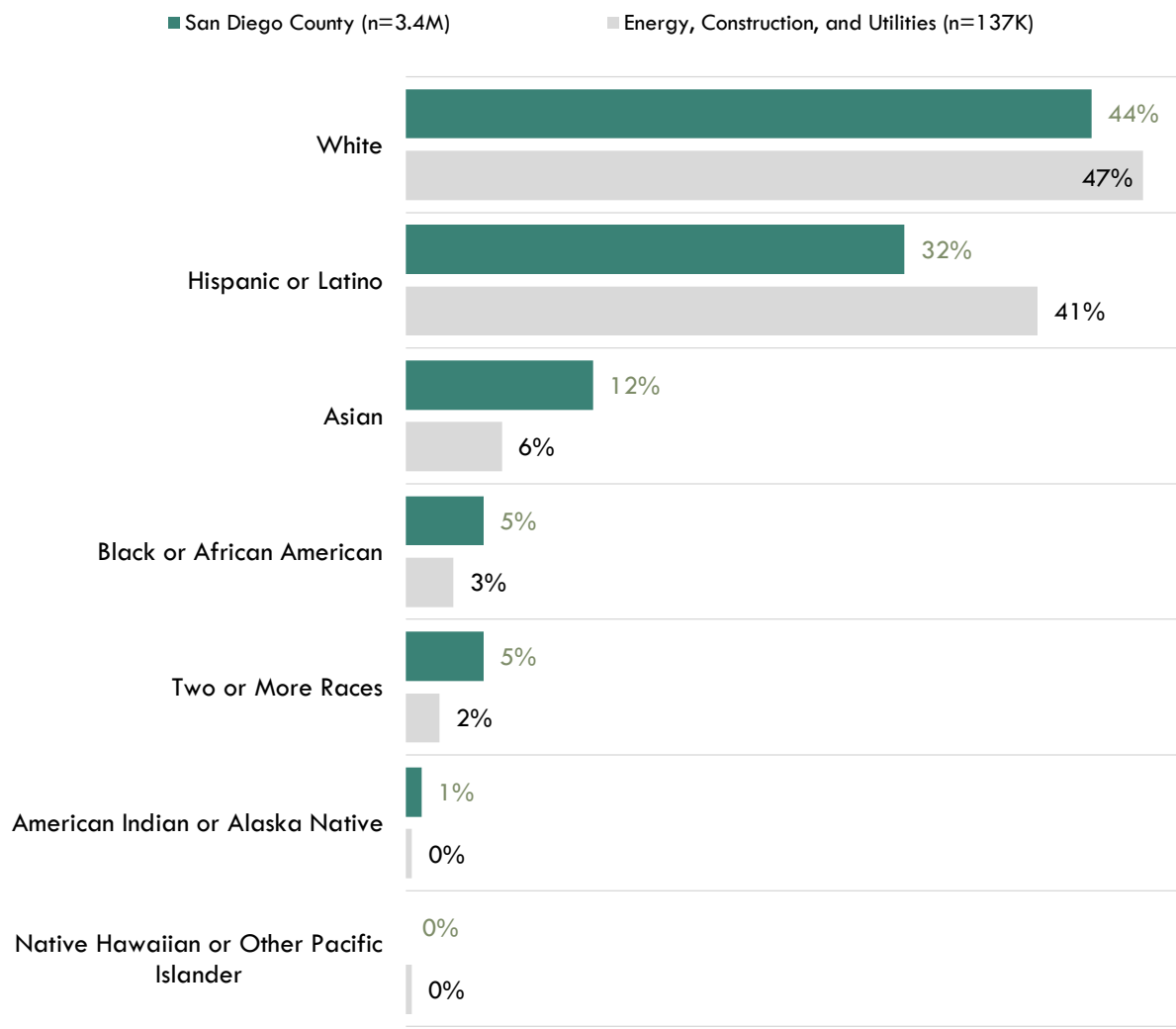


Exhibit B-2: Ethnicity/Race - Energy, Construction, and Utilities vs. San Diego County Population, 2022



HEALTH

Exhibit B-2: Age – Health vs. San Diego County Population, 2022

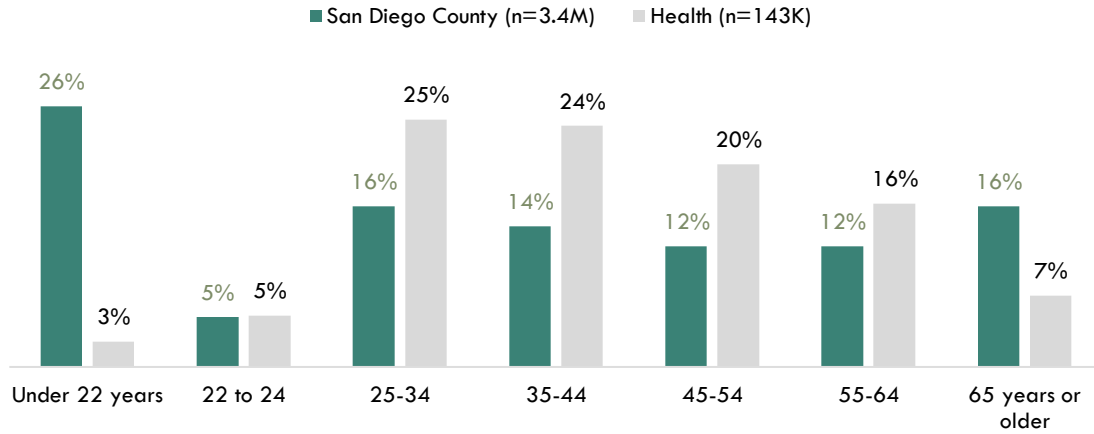
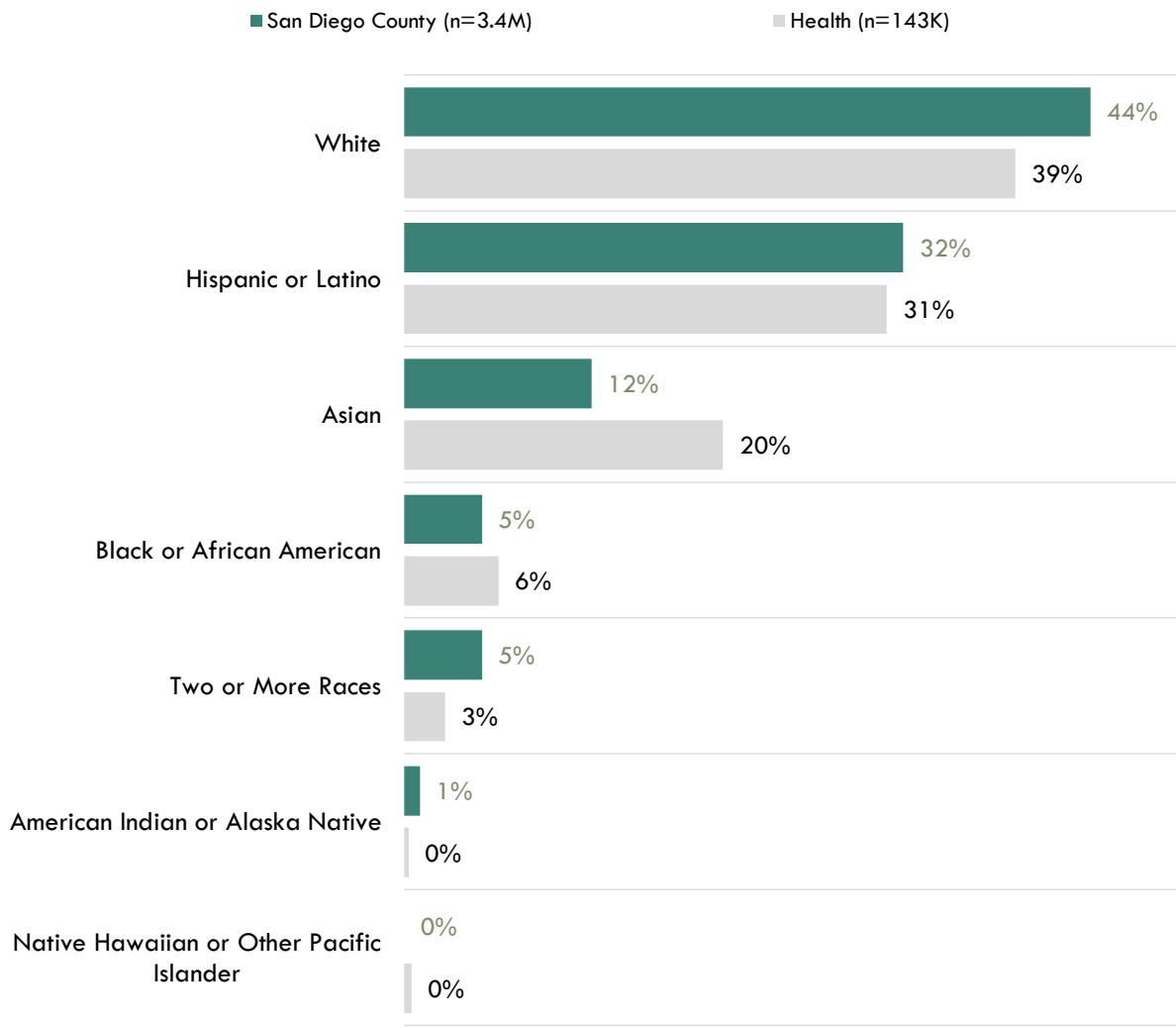


Exhibit B-2: Ethnicity/Race – Health vs. San Diego County Population, 2022



ICT AND DIGITAL MEDIA

Exhibit B-2: Age - ICT and Digital Media vs. San Diego County Population, 2022

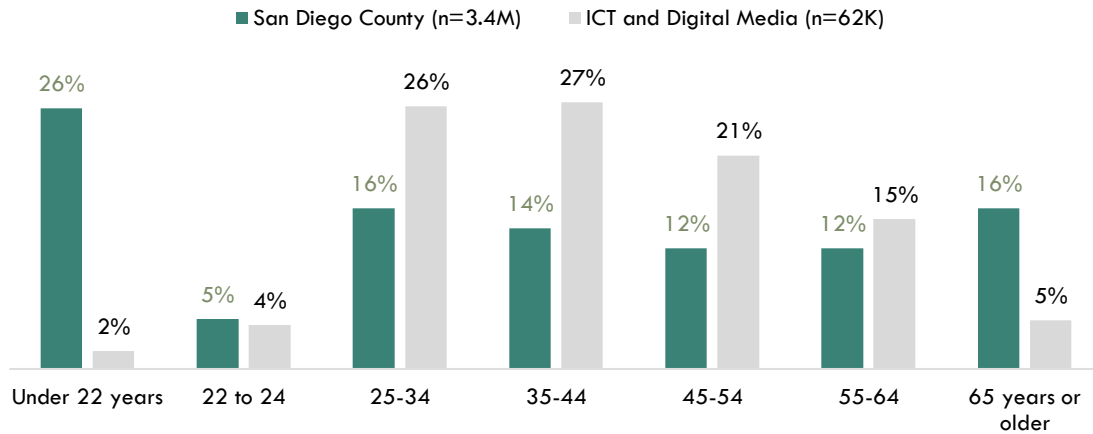
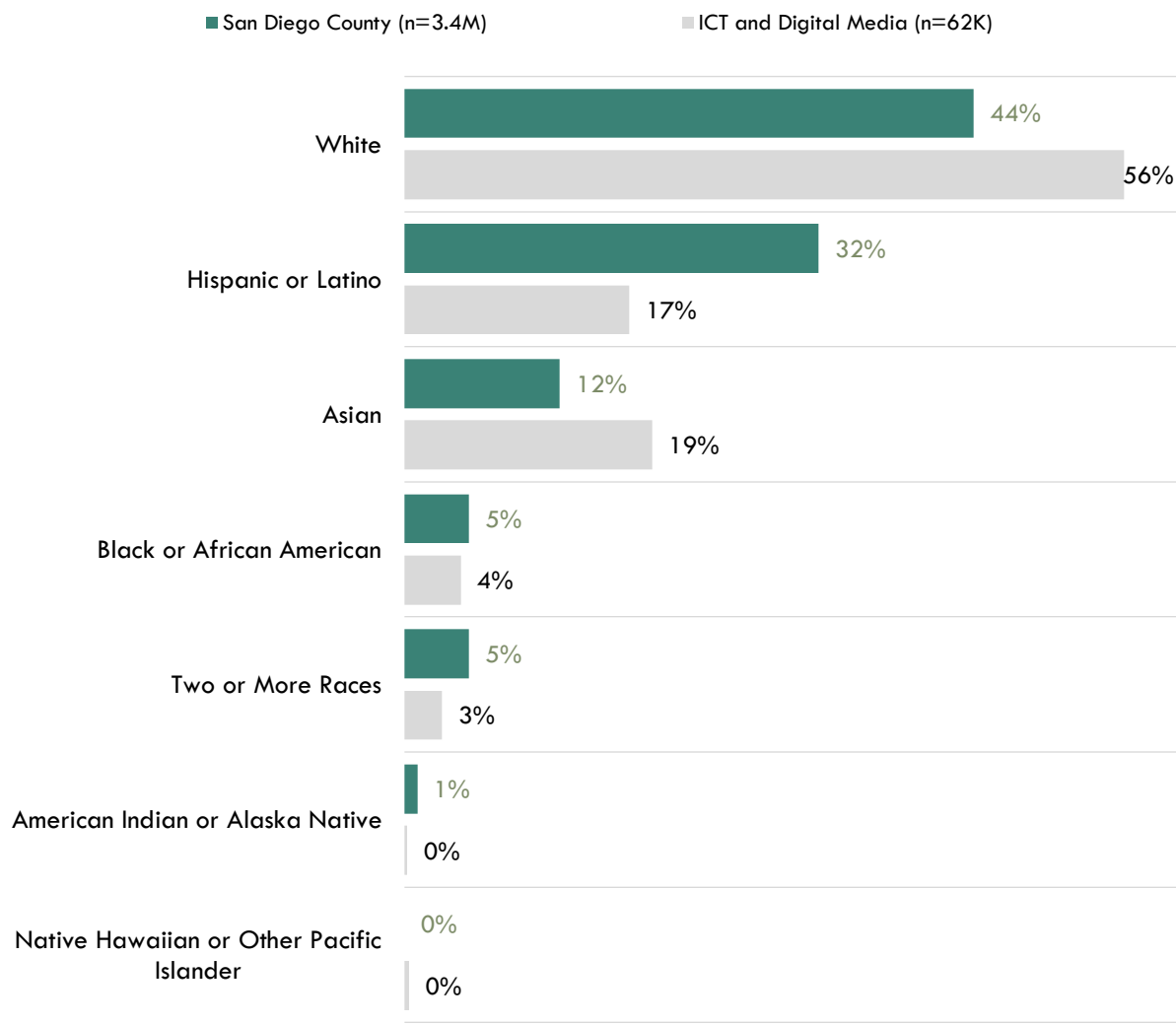


Exhibit B-2: Ethnicity/Race - ICT and Digital Media vs. San Diego County Population, 2022



LIFE SCIENCES AND BIOTECHNOLOGY

Exhibit B-2: Age - Life Sciences and Biotechnology vs. San Diego County Population, 2022

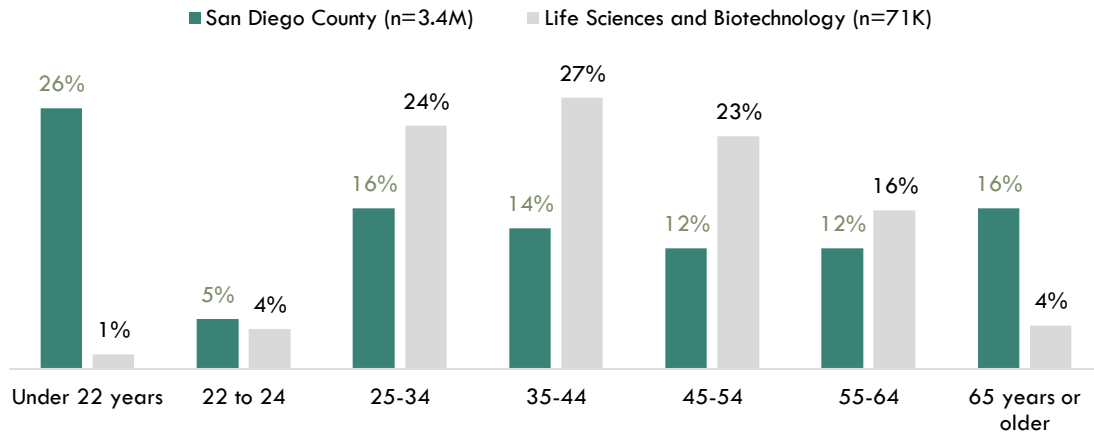
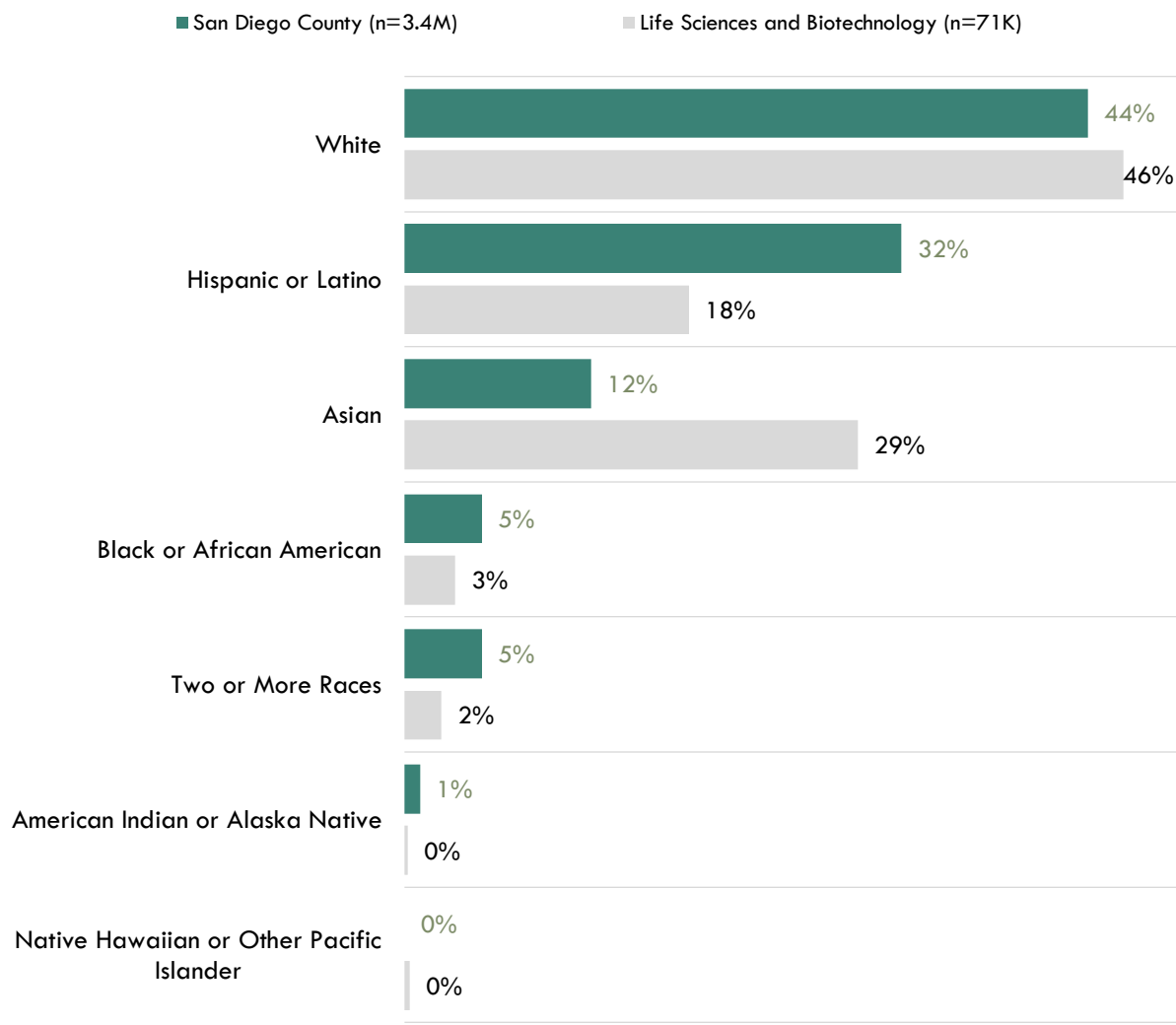


Exhibit B-2: Ethnicity/Race - Life Sciences and Biotechnology vs. San Diego County Population, 2022



PUBLIC SAFETY AND GOVERNMENT

Exhibit B-2: Age - Public Safety and Government vs. San Diego County Population, 2022

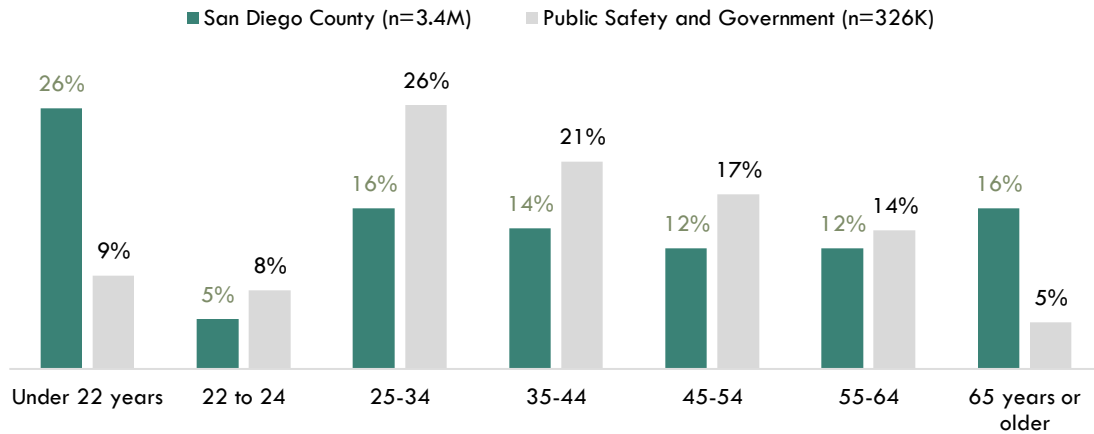
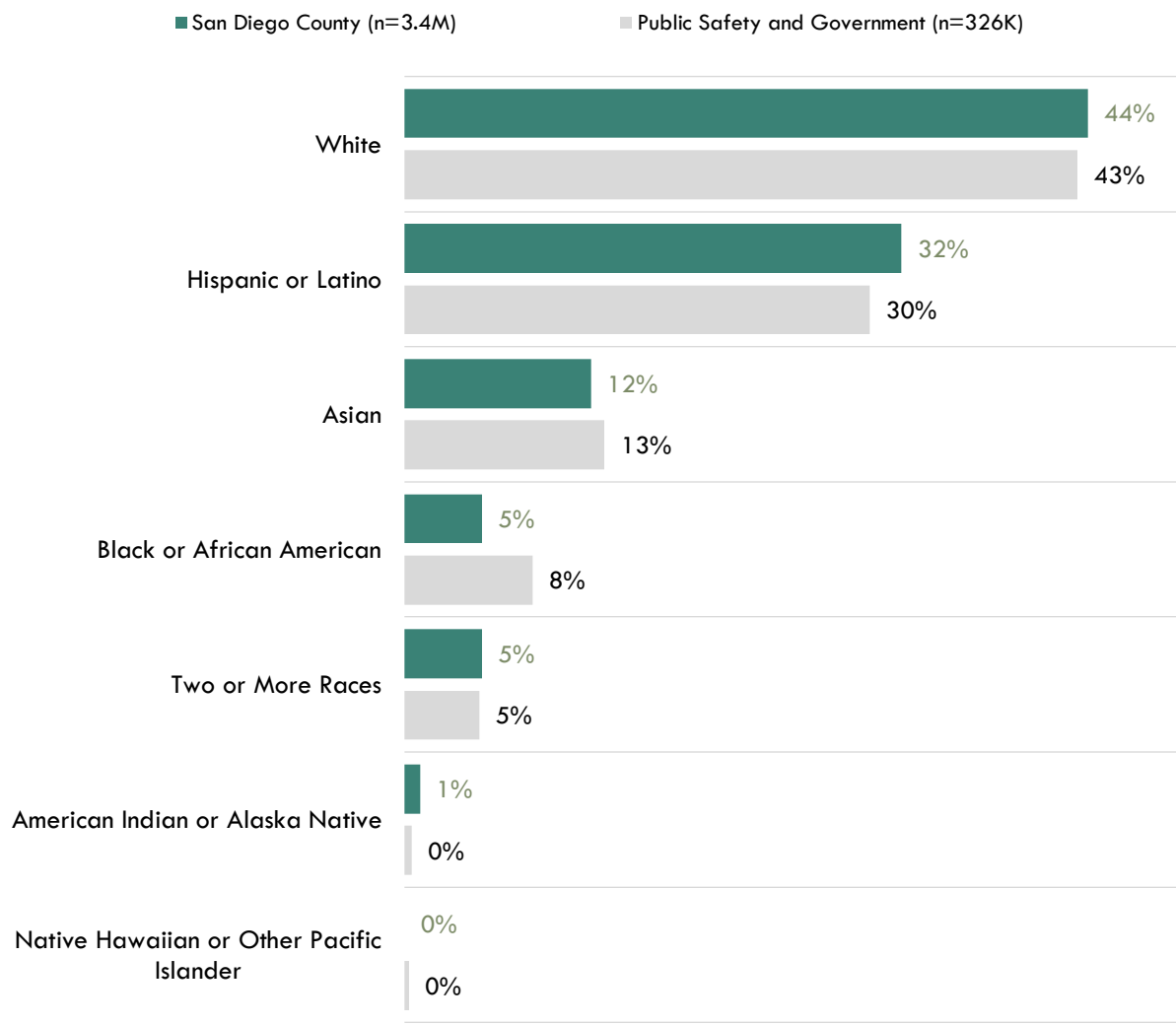


Exhibit B-2: Ethnicity/Race - Public Safety and Government vs. San Diego County Population, 2022



RETAIL, HOSPITALITY, AND TOURISM

Exhibit B-2: Age - Retail, Hospitality, and Tourism vs. San Diego County Population, 2022

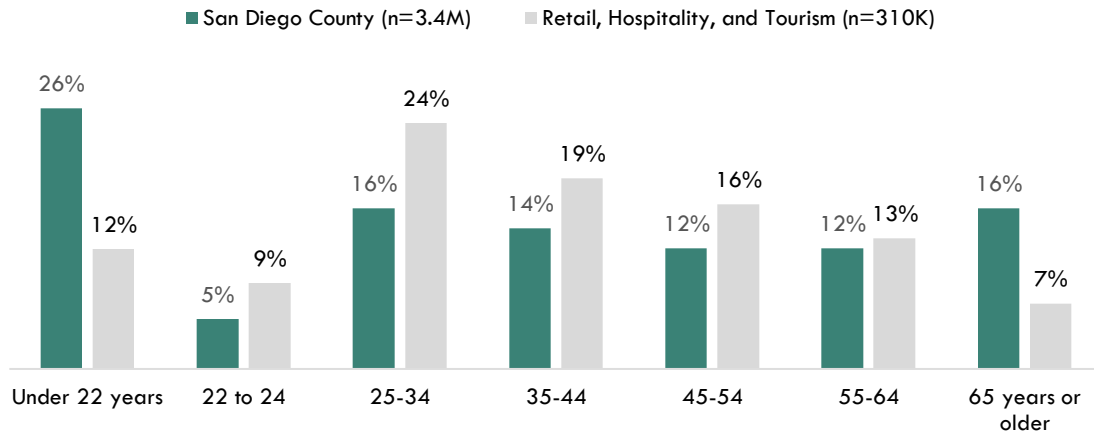
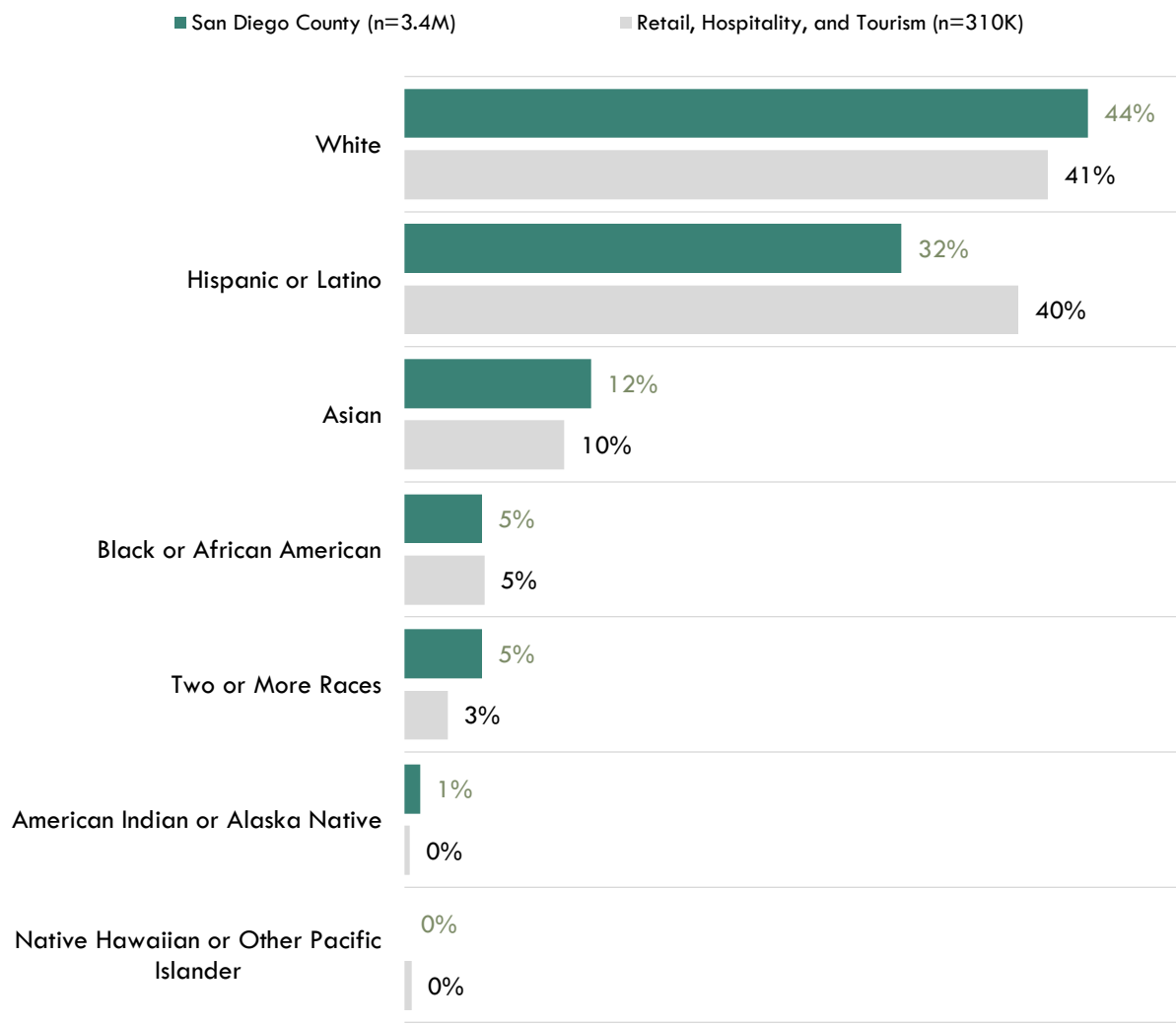


Exhibit B-2: Ethnicity/Race - Retail, Hospitality, and Tourism vs. San Diego County Population, 2022



APPENDIX C: SECTOR DEFINITIONS BY NAICS CODES

ADVANCED MANUFACTURING

NAICS Code	NAICS Title
311111	Dog and Cat Food Manufacturing
311119	Other Animal Food Manufacturing
311211	Flour Milling
311212	Rice Milling
311213	Malt Manufacturing
311225	Fats and Oils Refining and Blending
311230	Breakfast Cereal Manufacturing
311313	Beet Sugar Manufacturing
311314	Cane Sugar Manufacturing
311340	Nonchocolate Confectionery Manufacturing
311351	Chocolate and Confectionery Manufacturing from Cacao Beans
311352	Confectionery Manufacturing from Purchased Chocolate
311411	Frozen Fruit, Juice, and Vegetable Manufacturing
311412	Frozen Specialty Food Manufacturing
311421	Fruit and Vegetable Canning
311422	Specialty Canning
311423	Dried and Dehydrated Food Manufacturing
311511	Fluid Milk Manufacturing
311512	Creamery Butter Manufacturing
311513	Cheese Manufacturing
311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing
311520	Ice Cream and Frozen Dessert Manufacturing
311611	Animal (except Poultry) Slaughtering
311612	Meat Processed from Carcasses
311613	Rendering and Meat Byproduct Processing
311615	Poultry Processing
311710	Seafood Product Preparation and Packaging
311811	Retail Bakeries
311812	Commercial Bakeries
311813	Frozen Cakes, Pies, and Other Pastries Manufacturing
311821	Cookie and Cracker Manufacturing
311824	Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour
311830	Tortilla Manufacturing
311911	Roasted Nuts and Peanut Butter Manufacturing
311919	Other Snack Food Manufacturing
311920	Coffee and Tea Manufacturing
311930	Flavoring Syrup and Concentrate Manufacturing
311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing
311942	Spice and Extract Manufacturing
311991	Perishable Prepared Food Manufacturing
311999	All Other Miscellaneous Food Manufacturing
312111	Soft Drink Manufacturing
312112	Bottled Water Manufacturing
312113	Ice Manufacturing
312120	Breweries
312130	Wineries
312140	Distilleries
312230	Tobacco Manufacturing
313110	Fiber, Yarn, and Thread Mills
313210	Broadwoven Fabric Mills
313220	Narrow Fabric Mills and Schiffli Machine Embroidery

NAICS Code	NAICS Title	Advanced Manufacturing
313230	Nonwoven Fabric Mills	
313240	Knit Fabric Mills	
313310	Textile and Fabric Finishing Mills	
313320	Fabric Coating Mills	
314110	Carpet and Rug Mills	
314120	Curtain and Linen Mills	
314910	Textile Bag and Canvas Mills	
314994	Rope, Cordage, Twine, Tire Cord, and Tire Fabric Mills	
314999	All Other Miscellaneous Textile Product Mills	
315110	Hosiery and Sock Mills	
315190	Other Apparel Knitting Mills	
315210	Cut and Sew Apparel Contractors	
315220	Men's and Boys' Cut and Sew Apparel Manufacturing	
315240	Women's, Girls', and Infants' Cut and Sew Apparel Manufacturing	
315280	Other Cut and Sew Apparel Manufacturing	
315990	Apparel Accessories and Other Apparel Manufacturing	
316110	Leather and Hide Tanning and Finishing	
316210	Footwear Manufacturing	
316992	Women's Handbag and Purse Manufacturing	
316998	All Other Leather Good and Allied Product Manufacturing	
321113	Sawmills	
321114	Wood Preservation	
321211	Hardwood Veneer and Plywood Manufacturing	
321212	Softwood Veneer and Plywood Manufacturing	
321213	Engineered Wood Member (except Truss) Manufacturing	
321214	Truss Manufacturing	
321219	Reconstituted Wood Product Manufacturing	
321911	Wood Window and Door Manufacturing	
321912	Cut Stock, Resawing Lumber, and Planing	
321918	Other Millwork (including Flooring)	
321920	Wood Container and Pallet Manufacturing	
321991	Manufactured Home (Mobile Home) Manufacturing	
321992	Prefabricated Wood Building Manufacturing	
321999	All Other Miscellaneous Wood Product Manufacturing	
322110	Pulp Mills	
322121	Paper (except Newsprint) Mills	
322122	Newsprint Mills	
322130	Paperboard Mills	
322211	Corrugated and Solid Fiber Box Manufacturing	
322212	Folding Paperboard Box Manufacturing	
322219	Other Paperboard Container Manufacturing	
322220	Paper Bag and Coated and Treated Paper Manufacturing	
322230	Stationery Product Manufacturing	
322291	Sanitary Paper Product Manufacturing	
322299	All Other Converted Paper Product Manufacturing	
323111	Commercial Printing (except Screen and Books)	
323113	Commercial Screen Printing	
323117	Books Printing	
323120	Support Activities for Printing	
324110	Petroleum Refineries	
324121	Asphalt Paving Mixture and Block Manufacturing	
324122	Asphalt Shingle and Coating Materials Manufacturing	
324191	Petroleum Lubricating Oil and Grease Manufacturing	
324199	All Other Petroleum and Coal Products Manufacturing	
325110	Petrochemical Manufacturing	
325120	Industrial Gas Manufacturing	
325130	Synthetic Dye and Pigment Manufacturing	

NAICS Code	NAICS Title	Advanced Manufacturing
325180	Other Basic Inorganic Chemical Manufacturing	
325194	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	
325199	All Other Basic Organic Chemical Manufacturing	
325211	Plastics Material and Resin Manufacturing	
325212	Synthetic Rubber Manufacturing	
325510	Paint and Coating Manufacturing	
325520	Adhesive Manufacturing	
325611	Soap and Other Detergent Manufacturing	
325612	Polish and Other Sanitation Good Manufacturing	
325613	Surface Active Agent Manufacturing	
325620	Toilet Preparation Manufacturing	
325910	Printing Ink Manufacturing	
325920	Explosives Manufacturing	
325991	Custom Compounding of Purchased Resins	
325992	Photographic Film, Paper, Plate, and Chemical Manufacturing	
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	
326111	Plastics Bag and Pouch Manufacturing	
326112	Plastics Packaging Film and Sheet (including Laminated) Manufacturing	
326113	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	
326121	Unlaminated Plastics Profile Shape Manufacturing	
326122	Plastics Pipe and Pipe Fitting Manufacturing	
326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	
326140	Polystyrene Foam Product Manufacturing	
326150	Urethane and Other Foam Product (except Polystyrene) Manufacturing	
326160	Plastics Bottle Manufacturing	
326191	Plastics Plumbing Fixture Manufacturing	
326199	All Other Plastics Product Manufacturing	
326211	Tire Manufacturing (except Retreading)	
326212	Tire Retreading	
326220	Rubber and Plastics Hoses and Belting Manufacturing	
326291	Rubber Product Manufacturing for Mechanical Use	
326299	All Other Rubber Product Manufacturing	
327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing	
327120	Clay Building Material and Refractories Manufacturing	
327211	Flat Glass Manufacturing	
327212	Other Pressed and Blown Glass and Glassware Manufacturing	
327213	Glass Container Manufacturing	
327215	Glass Product Manufacturing Made of Purchased Glass	
327310	Cement Manufacturing	
327320	Ready-Mix Concrete Manufacturing	
327331	Concrete Block and Brick Manufacturing	
327332	Concrete Pipe Manufacturing	
327390	Other Concrete Product Manufacturing	
327410	Lime Manufacturing	
327420	Gypsum Product Manufacturing	
327910	Abrasive Product Manufacturing	
327991	Cut Stone and Stone Product Manufacturing	
327992	Ground or Treated Mineral and Earth Manufacturing	
327993	Mineral Wool Manufacturing	
327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	
331110	Iron and Steel Mills and Ferroalloy Manufacturing	
331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel	
331221	Rolled Steel Shape Manufacturing	
331222	Steel Wire Drawing	
331313	Alumina Refining and Primary Aluminum Production	
331314	Secondary Smelting and Alloying of Aluminum	
331315	Aluminum Sheet, Plate, and Foil Manufacturing	

NAICS Code	NAICS Title	Advanced Manufacturing
331318	Other Aluminum Rolling, Drawing, and Extruding	
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	
331420	Copper Rolling, Drawing, Extruding, and Alloying	
331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	
331511	Iron Foundries	
331512	Steel Investment Foundries	
331513	Steel Foundries (except Investment)	
331523	Nonferrous Metal Die-Casting Foundries	
331524	Aluminum Foundries (except Die-Casting)	
331529	Other Nonferrous Metal Foundries (except Die-Casting)	
332111	Iron and Steel Forging	
332112	Nonferrous Forging	
332114	Custom Roll Forming	
332117	Powder Metallurgy Part Manufacturing	
332119	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	
332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	
332216	Saw Blade and Handtool Manufacturing	
332311	Prefabricated Metal Building and Component Manufacturing	
332312	Fabricated Structural Metal Manufacturing	
332313	Plate Work Manufacturing	
332321	Metal Window and Door Manufacturing	
332322	Sheet Metal Work Manufacturing	
332323	Ornamental and Architectural Metal Work Manufacturing	
332410	Power Boiler and Heat Exchanger Manufacturing	
332420	Metal Tank (Heavy Gauge) Manufacturing	
332431	Metal Can Manufacturing	
332439	Other Metal Container Manufacturing	
332510	Hardware Manufacturing	
332613	Spring Manufacturing	
332618	Other Fabricated Wire Product Manufacturing	
332710	Machine Shops	
332721	Precision Turned Product Manufacturing	
332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	
332811	Metal Heat Treating	
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	
332911	Industrial Valve Manufacturing	
332912	Fluid Power Valve and Hose Fitting Manufacturing	
332913	Plumbing Fixture Fitting and Trim Manufacturing	
332919	Other Metal Valve and Pipe Fitting Manufacturing	
332991	Ball and Roller Bearing Manufacturing	
332992	Small Arms Ammunition Manufacturing	
332993	Ammunition (except Small Arms) Manufacturing	
332994	Small Arms, Ordnance, and Ordnance Accessories Manufacturing	
332996	Fabricated Pipe and Pipe Fitting Manufacturing	
332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	
333111	Farm Machinery and Equipment Manufacturing	
333112	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	
333120	Construction Machinery Manufacturing	
333131	Mining Machinery and Equipment Manufacturing	
333132	Oil and Gas Field Machinery and Equipment Manufacturing	
333241	Food Product Machinery Manufacturing	
333242	Semiconductor Machinery Manufacturing	
333243	Sawmill, Woodworking, and Paper Machinery Manufacturing	
333244	Printing Machinery and Equipment Manufacturing	
333249	Other Industrial Machinery Manufacturing	

NAICS Code	NAICS Title	Advanced Manufacturing
333316	Photographic and Photocopying Equipment Manufacturing	
333318	Other Commercial and Service Industry Machinery Manufacturing	
333413	Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	
333511	Industrial Mold Manufacturing	
333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	
333515	Cutting Tool and Machine Tool Accessory Manufacturing	
333517	Machine Tool Manufacturing	
333519	Rolling Mill and Other Metalworking Machinery Manufacturing	
333611	Turbine and Turbine Generator Set Units Manufacturing	
333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	
333613	Mechanical Power Transmission Equipment Manufacturing	
333618	Other Engine Equipment Manufacturing	
333912	Air and Gas Compressor Manufacturing	
333914	Measuring, Dispensing, and Other Pumping Equipment Manufacturing	
333921	Elevator and Moving Stairway Manufacturing	
333922	Conveyor and Conveying Equipment Manufacturing	
333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	
333991	Power-Driven Handtool Manufacturing	
333992	Welding and Soldering Equipment Manufacturing	
333993	Packaging Machinery Manufacturing	
333994	Industrial Process Furnace and Oven Manufacturing	
333995	Fluid Power Cylinder and Actuator Manufacturing	
333996	Fluid Power Pump and Motor Manufacturing	
333997	Scale and Balance Manufacturing	
333999	All Other Miscellaneous General Purpose Machinery Manufacturing	
334111	Electronic Computer Manufacturing	
334112	Computer Storage Device Manufacturing	
334118	Computer Terminal and Other Computer Peripheral Equipment Manufacturing	
334210	Telephone Apparatus Manufacturing	
334290	Other Communications Equipment Manufacturing	
334310	Audio and Video Equipment Manufacturing	
334412	Bare Printed Circuit Board Manufacturing	
334413	Semiconductor and Related Device Manufacturing	
334416	Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	
334417	Electronic Connector Manufacturing	
334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing	
334419	Other Electronic Component Manufacturing	
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	
334513	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	
334514	Totalizing Fluid Meter and Counting Device Manufacturing	
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals	
334519	Other Measuring and Controlling Device Manufacturing	
334613	Blank Magnetic and Optical Recording Media Manufacturing	
334614	Software and Other Prerecorded Compact Disc, Tape, and Record Reproducing	
335110	Electric Lamp Bulb and Part Manufacturing	
335121	Residential Electric Lighting Fixture Manufacturing	
335122	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	
335129	Other Lighting Equipment Manufacturing	
335210	Small Electrical Appliance Manufacturing	
335220	Major Household Appliance Manufacturing	

NAICS Code	NAICS Title	Advanced Manufacturing
335311	Power, Distribution, and Specialty Transformer Manufacturing	
335312	Motor and Generator Manufacturing	
335313	Switchgear and Switchboard Apparatus Manufacturing	
335314	Relay and Industrial Control Manufacturing	
335911	Storage Battery Manufacturing	
335912	Primary Battery Manufacturing	
335921	Fiber Optic Cable Manufacturing	
335929	Other Communication and Energy Wire Manufacturing	
335931	Current-Carrying Wiring Device Manufacturing	
335932	Noncurrent-Carrying Wiring Device Manufacturing	
335991	Carbon and Graphite Product Manufacturing	
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	
336111	Automobile Manufacturing	
336112	Light Truck and Utility Vehicle Manufacturing	
336120	Heavy Duty Truck Manufacturing	
336211	Motor Vehicle Body Manufacturing	
336212	Truck Trailer Manufacturing	
336213	Motor Home Manufacturing	
336214	Travel Trailer and Camper Manufacturing	
336310	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	
336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing	
336330	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	
336340	Motor Vehicle Brake System Manufacturing	
336350	Motor Vehicle Transmission and Power Train Parts Manufacturing	
336360	Motor Vehicle Seating and Interior Trim Manufacturing	
336370	Motor Vehicle Metal Stamping	
336390	Other Motor Vehicle Parts Manufacturing	
336411	Aircraft Manufacturing	
336412	Aircraft Engine and Engine Parts Manufacturing	
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	
336414	Guided Missile and Space Vehicle Manufacturing	
336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	
336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	
336510	Railroad Rolling Stock Manufacturing	
336611	Ship Building and Repairing	
336612	Boat Building	
336991	Motorcycle, Bicycle, and Parts Manufacturing	
336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing	
336999	All Other Transportation Equipment Manufacturing	
337110	Wood Kitchen Cabinet and Countertop Manufacturing	
337121	Upholstered Household Furniture Manufacturing	
337122	Nonupholstered Wood Household Furniture Manufacturing	
337124	Metal Household Furniture Manufacturing	
337125	Household Furniture (except Wood and Metal) Manufacturing	
337127	Institutional Furniture Manufacturing	
337211	Wood Office Furniture Manufacturing	
337212	Custom Architectural Woodwork and Millwork Manufacturing	
337214	Office Furniture (except Wood) Manufacturing	
337215	Showcase, Partition, Shelving, and Locker Manufacturing	
337910	Mattress Manufacturing	
337920	Blind and Shade Manufacturing	
339910	Jewelry and Silverware Manufacturing	
339920	Sporting and Athletic Goods Manufacturing	
339930	Doll, Toy, and Game Manufacturing	
339940	Office Supplies (except Paper) Manufacturing	
339950	Sign Manufacturing	
339991	Gasket, Packing, and Sealing Device Manufacturing	

NAICS Code	NAICS Title	Advanced Manufacturing
339992	Musical Instrument Manufacturing	
339993	Fastener, Button, Needle, and Pin Manufacturing	
339994	Broom, Brush, and Mop Manufacturing	
339995	Burial Casket Manufacturing	
339999	All Other Miscellaneous Manufacturing	
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	

ADVANCED TRANSPORTATION AND LOGISTICS

NAICS Code	NAICS Title
423830	Industrial Machinery and Equipment Merchant Wholesalers
441110	New Car Dealers
441120	Used Car Dealers
441210	Recreational Vehicle Dealers
441222	Boat Dealers
441228	Motorcycle, ATV, and All Other Motor Vehicle Dealers
441310	Automotive Parts and Accessories Stores
441320	Tire Dealers
481111	Scheduled Passenger Air Transportation
481112	Scheduled Freight Air Transportation
481211	Nonscheduled Chartered Passenger Air Transportation
481212	Nonscheduled Chartered Freight Air Transportation
481219	Other Nonscheduled Air Transportation
484110	General Freight Trucking, Local
484121	General Freight Trucking, Long-Distance, Truckload
484122	General Freight Trucking, Long-Distance, Less Than Truckload
484220	Specialized Freight (except Used Goods) Trucking, Local
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance
485111	Mixed Mode Transit Systems
485112	Commuter Rail Systems
485113	Bus and Other Motor Vehicle Transit Systems
485119	Other Urban Transit Systems
483211	Inland Water Freight Transportation
483212	Inland Water Passenger Transportation
485210	Interurban and Rural Bus Transportation
485410	School and Employee Bus Transportation
485510	Charter Bus Industry
485999	All Other Transit and Ground Passenger Transportation
488119	Other Airport Operations
488190	Other Support Activities for Air Transportation
488210	Support Activities for Rail Transportation
488310	Port and Harbor Operations
488490	Other Support Activities for Road Transportation
488510	Freight Transportation Arrangement
488999	All Other Support Activities for Transportation
491110	Postal Service
492110	Couriers and Express Delivery Services
492210	Local Messengers and Local Delivery
493110	General Warehousing and Storage
493120	Refrigerated Warehousing and Storage
493130	Farm Product Warehousing and Storage
493190	Other Warehousing and Storage
541614	Process, Physical Distribution, and Logistics Consulting Services
811111	General Automotive Repair
811112	Automotive Exhaust System Repair

NAICS Code	NAICS Title	Advanced Transportation and Logistics
811113	Automotive Transmission Repair	
811118	Other Automotive Mechanical and Electrical Repair and Maintenance	
811121	Automotive Body, Paint, and Interior Repair and Maintenance	
811191	Automotive Oil Change and Lubrication Shops	
811198	All Other Automotive Repair and Maintenance	
482110	Rail transportation	
483111	Deep Sea Freight Transportation	
483112	Deep Sea Passenger Transportation	
483113	Coastal and Great Lakes Freight Transportation	
483114	Coastal and Great Lakes Passenger Transportation	
484210	Used Household and Office Goods Moving	
811122	Automotive Glass Replacement Shops	
485991	Special Needs Transportation	
486110	Pipeline Transportation of Crude Oil	
486210	Pipeline Transportation of Natural Gas	
486910	Pipeline Transportation of Refined Petroleum Products	
486990	All Other Pipeline Transportation	
487110	Scenic and Sightseeing Transportation, Land	
487210	Scenic and Sightseeing Transportation, Water	
487990	Scenic and Sightseeing Transportation, Other	
488111	Air Traffic Control	
488320	Marine Cargo Handling	
488330	Navigational Services to Shipping	
488390	Other Support Activities for Water Transportation	
488410	Motor Vehicle Towing	
488991	Packing and Crating	

AGRICULTURE, WATER, AND ENVIRONMENTAL TECHNOLOGIES

NAICS Code	NAICS Title
111000	Crop Production
112000	Animal Production
115111	Cotton Ginning
115112	Soil Preparation, Planting, and Cultivating
115113	Crop Harvesting, Primarily by Machine
115114	Postharvest Crop Activities (except Cotton Ginning)
115115	Farm Labor Contractors and Crew Leaders
115116	Farm Management Services
115210	Support Activities for Animal Production
115310	Support Activities for Forestry
221310	Water Supply and Irrigation Systems
423820	Farm and Garden Machinery and Equipment Merchant Wholesalers
424430	Dairy Product (except Dried or Canned) Merchant Wholesalers
424440	Poultry and Poultry Product Merchant Wholesalers
424460	Fish and Seafood Merchant Wholesalers
424470	Meat and Meat Product Merchant Wholesalers
424510	Grain and Field Bean Merchant Wholesalers
424520	Livestock Merchant Wholesalers
424590	Other Farm Product Raw Material Merchant Wholesalers
424910	Farm Supplies Merchant Wholesalers
445230	Fruit and Vegetable Markets
541620	Environmental Consulting Services
541940	Veterinary Services
561710	Exterminating and Pest Control Services
562211	Hazardous Waste Treatment and Disposal

NAICS Code	NAICS Title	Agriculture, Water, and Environmental Technologies
445230	Fruit and Vegetable Markets	
541620	Environmental Consulting Services	
541940	Veterinary Services	
561710	Exterminating and Pest Control Services	
562211	Hazardous Waste Treatment and Disposal	
562910	Remediation Services	
113110	Timber Tract Operations	
113210	Forest Nurseries and Gathering of Forest Products	
113310	Logging	
114111	Finfish Fishing	
114112	Shellfish Fishing	
114119	Other Marine Fishing	
114210	Hunting and Trapping	
562111	Solid Waste Collection	
562112	Hazardous Waste Collection	
562119	Other Waste Collection	
562212	Solid Waste Landfill	
562213	Solid Waste Combustors and Incinerators	
562219	Other Nonhazardous Waste Treatment and Disposal	
562920	Materials Recovery Facilities	
562991	Septic Tank and Related Services	
562998	All Other Miscellaneous Waste Management Services	

BUSINESS AND ENTREPRENEURSHIP

NAICS Code	NAICS Title
521110	Monetary Authorities-Central Bank
522110	Commercial Banking
522120	Savings Institutions
522130	Credit Unions
522190	Other Depository Credit Intermediation
522210	Credit Card Issuing
522220	Sales Financing
522291	Consumer Lending
522292	Real Estate Credit
522293	International Trade Financing
522294	Secondary Market Financing
522298	All Other Nondepository Credit Intermediation
522310	Mortgage and Nonmortgage Loan Brokers
522320	Financial Transactions Processing, Reserve, and Clearinghouse Activities
522390	Other Activities Related to Credit Intermediation
523110	Investment Banking and Securities Dealing
523120	Securities Brokerage
523130	Commodity Contracts Dealing
523140	Commodity Contracts Brokerage
523210	Securities and Commodity Exchanges
523910	Miscellaneous Intermediation
523920	Portfolio Management
523930	Investment Advice
523991	Trust, Fiduciary, and Custody Activities
523999	Miscellaneous Financial Investment Activities
524113	Direct Life Insurance Carriers
524114	Direct Health and Medical Insurance Carriers
524126	Direct Property and Casualty Insurance Carriers
524127	Direct Title Insurance Carriers

NAICS Code	NAICS Title	Business and Entrepreneurship
524128	Other Direct Insurance (except Life, Health, and Medical) Carriers	
524130	Reinsurance Carriers	
524210	Insurance Agencies and Brokerages	
524291	Claims Adjusting	
524292	Third Party Administration of Insurance and Pension Funds	
524298	All Other Insurance Related Activities	
525110	Pension Funds	
525120	Health and Welfare Funds	
525190	Other Insurance Funds	
525910	Open-End Investment Funds	
525920	Trusts, Estates, and Agency Accounts	
525990	Other Financial Vehicles	
531110	Lessors of Residential Buildings and Dwellings	
531120	Lessors of Nonresidential Buildings (except Miniwarehouses)	
531130	Lessors of Miniwarehouses and Self-Storage Units	
531190	Lessors of Other Real Estate Property	
531210	Offices of Real Estate Agents and Brokers	
531311	Residential Property Managers	
531312	Nonresidential Property Managers	
531320	Offices of Real Estate Appraisers	
531390	Other Activities Related to Real Estate	
532111	Passenger Car Rental	
541690	Other Scientific and Technical Consulting Services	
532112	Passenger Car Leasing	
541110	Offices of Lawyers	
541191	Title Abstract and Settlement Offices	
541199	All Other Legal Services	
541211	Offices of Certified Public Accountants	
541213	Tax Preparation Services	
541214	Payroll Services	
541219	Other Accounting Services	
541611	Administrative Management and General Management Consulting Services	
541612	Human Resources Consulting Services	
541613	Marketing Consulting Services	
541618	Other Management Consulting Services	
541810	Advertising Agencies	
541820	Public Relations Agencies	
541830	Media Buying Agencies	
541840	Media Representatives	
541850	Outdoor Advertising	
541860	Direct Mail Advertising	
541870	Advertising Material Distribution Services	
541890	Other Services Related to Advertising	
541910	Marketing Research and Public Opinion Polling	
541990	All Other Professional, Scientific, and Technical Services	
551111	Offices of Bank Holding Companies	
551112	Offices of Other Holding Companies	
551114	Corporate, Subsidiary, and Regional Managing Offices	
561110	Office Administrative Services	
561210	Facilities Support Services	
561311	Employment Placement Agencies	
561312	Executive Search Services	
561320	Temporary Help Services	
561330	Professional Employer Organizations	
561410	Document Preparation Services	
561421	Telephone Answering Services	
561422	Telemarketing Bureaus and Other Contact Centers	

NAICS Code	NAICS Title	Business and Entrepreneurship
561431	Private Mail Centers	
561439	Other Business Service Centers (including Copy Shops)	
561440	Collection Agencies	
561450	Credit Bureaus	
561491	Repossession Services	
561492	Court Reporting and Stenotype Services	
561499	All Other Business Support Services	
812210	Funeral Homes and Funeral Services	
812220	Cemeteries and Crematories	
813910	Business Associations	
532210	Consumer Electronics and Appliances Rental	
532281	Formal Wear and Costume Rental	
532282	Video Tape and Disc Rental	
532283	Home Health Equipment Rental	
532284	Recreational Goods Rental	
532289	All Other Consumer Goods Rental	
532310	General Rental Centers	
532411	Commercial Air, Rail, and Water Transportation Equipment Rental and Leasing	
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	
532420	Office Machinery and Equipment Rental and Leasing	
532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing	
533110	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	
541360	Geophysical Surveying and Mapping Services	
541930	Translation and Interpretation Services	
541720	Research and Development in the Social Sciences and Humanities	
561510	Travel Agencies	
561520	Tour Operators	
561591	Convention and Visitors Bureaus	
561599	All Other Travel Arrangement and Reservation Services	
561611	Investigation Services	
561612	Security Guards and Patrol Services	
561613	Armored Car Services	
561621	Security Systems Services (except Locksmiths)	
561622	Locksmiths	
561720	Janitorial Services	
561730	Landscaping Services	
561740	Carpet and Upholstery Cleaning Services	
811192	Car Washes	
811411	Home and Garden Equipment Repair and Maintenance	
811412	Appliance Repair and Maintenance	
811420	Reupholstery and Furniture Repair	
811430	Footwear and Leather Goods Repair	
811490	Other Personal and Household Goods Repair and Maintenance	
812111	Barber Shops	
812112	Beauty Salons	
812113	Nail Salons	
812191	Diet and Weight Reducing Centers	
812199	Other Personal Care Services	
812310	Coin-Operated Laundries and Drycleaners	
812320	Drycleaning and Laundry Services (except Coin-Operated)	
812331	Linen Supply	
812332	Industrial Launderers	
812910	Pet Care (except Veterinary) Services	
812921	Photofinishing Laboratories (except One-Hour)	
812922	One-Hour Photofinishing	
812930	Parking Lots and Garages	
812990	All Other Personal Services	

NAICS Code	NAICS Title	Business and Entrepreneurship
561790	Other Services to Buildings and Dwellings	
561910	Packaging and Labeling Services	
561920	Convention and Trade Show Organizers	
561990	All Other Support Services	

EDUCATION AND HUMAN DEVELOPMENT

NAICS Code	NAICS Title
611110	Elementary and Secondary Schools
611210	Junior Colleges
611310	Colleges, Universities, and Professional Schools
611410	Business and Secretarial Schools
611420	Computer Training
611430	Professional and Management Development Training
611511	Cosmetology and Barber Schools
611512	Flight Training
611513	Apprenticeship Training
611519	Other Technical and Trade Schools
611610	Fine Arts Schools
611620	Sports and Recreation Instruction
611630	Language Schools
611691	Exam Preparation and Tutoring
611692	Automobile Driving Schools
611699	All Other Miscellaneous Schools and Instruction
611710	Educational Support Services
624110	Child and Youth Services
624120	Services for the Elderly and Persons with Disabilities
624190	Other Individual and Family Services
624210	Community Food Services
624221	Temporary Shelters
624229	Other Community Housing Services
624230	Emergency and Other Relief Services
624310	Vocational Rehabilitation Services
624410	Child Day Care Services

ENERGY, CONSTRUCTION, AND UTILITIES

NAICS Code	NAICS Title
221111	Hydroelectric Power Generation
221112	Fossil Fuel Electric Power Generation
221113	Nuclear Electric Power Generation
221114	Solar Electric Power Generation
221115	Wind Electric Power Generation
221116	Geothermal Electric Power Generation
221117	Biomass Electric Power Generation
221118	Other Electric Power Generation
221121	Electric Bulk Power Transmission and Control
221122	Electric Power Distribution
221210	Natural Gas Distribution
221320	Sewage Treatment Facilities
221330	Steam and Air-Conditioning Supply
236115	New Single-Family Housing Construction (except For-Sale Builders)
236116	New Multifamily Housing Construction (except For-Sale Builders)
236117	New Housing For-Sale Builders

NAICS Code	NAICS Title	Energy, Construction, and Utilities
236118	Residential Remodelers	
236210	Industrial Building Construction	
236220	Commercial and Institutional Building Construction	
237110	Water and Sewer Line and Related Structures Construction	
237120	Oil and Gas Pipeline and Related Structures Construction	
237130	Power and Communication Line and Related Structures Construction	
237210	Land Subdivision	
237310	Highway, Street, and Bridge Construction	
237990	Other Heavy and Civil Engineering Construction	
238110	Poured Concrete Foundation and Structure Contractors	
238120	Structural Steel and Precast Concrete Contractors	
238130	Framing Contractors	
238140	Masonry Contractors	
238150	Glass and Glazing Contractors	
238160	Roofing Contractors	
238170	Siding Contractors	
238190	Other Foundation, Structure, and Building Exterior Contractors	
238210	Electrical Contractors and Other Wiring Installation Contractors	
238220	Plumbing, Heating, and Air-Conditioning Contractors	
238290	Other Building Equipment Contractors	
238310	Drywall and Insulation Contractors	
238320	Painting and Wall Covering Contractors	
238330	Flooring Contractors	
541320	Landscape Architectural Services	
238340	Tile and Terrazzo Contractors	
238350	Finish Carpentry Contractors	
238390	Other Building Finishing Contractors	
238910	Site Preparation Contractors	
238990	All Other Specialty Trade Contractors	
541310	Architectural Services	
541330	Engineering Services	
541340	Drafting Services	
541350	Building Inspection Services	
541370	Surveying and Mapping (except Geophysical) Services	
423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers	
423730	Warm Air Heating and Air-Conditioning Equipment and Supplies Merchant Wholesalers	
444190	Other Building Material Dealers	
541410	Interior Design Services	
541420	Industrial Design Services	
211120	Crude Petroleum Extraction	
211130	Natural Gas Extraction	
212111	Bituminous Coal and Lignite Surface Mining	
212112	Bituminous Coal Underground Mining	
212113	Anthracite Mining	
212210	Iron Ore Mining	
212221	Gold Ore Mining	
212222	Silver Ore Mining	
212230	Copper, Nickel, Lead, and Zinc Mining	
212291	Uranium-Radium-Vanadium Ore Mining	
212299	All Other Metal Ore Mining	
212311	Dimension Stone Mining and Quarrying	
212312	Crushed and Broken Limestone Mining and Quarrying	
212313	Crushed and Broken Granite Mining and Quarrying	
212319	Other Crushed and Broken Stone Mining and Quarrying	
212321	Construction Sand and Gravel Mining	
212322	Industrial Sand Mining	
212324	Kaolin and Ball Clay Mining	

NAICS Code	NAICS Title	Energy, Construction, and Utilities
212325	Clay and Ceramic and Refractory Minerals Mining	
212391	Potash, Soda, and Borate Mineral Mining	
212392	Phosphate Rock Mining	
212393	Other Chemical and Fertilizer Mineral Mining	
212399	All Other Nonmetallic Mineral Mining	
213111	Drilling Oil and Gas Wells	
213112	Support Activities for Oil and Gas Operations	
213113	Support Activities for Coal Mining	
213114	Support Activities for Metal Mining	
213115	Support Activities for Nonmetallic Minerals (except Fuels) Mining	

HEALTH CARE

NAICS Code	NAICS Title
424210	Drugs and Druggists' Sundries Merchant Wholesalers
621111	Offices of Physicians (except Mental Health Specialists)
621112	Offices of Physicians, Mental Health Specialists
621210	Offices of Dentists
621310	Offices of Chiropractors
621320	Offices of Optometrists
621330	Offices of Mental Health Practitioners (except Physicians)
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists
621391	Offices of Podiatrists
621399	Offices of All Other Miscellaneous Health Practitioners
621410	Family Planning Centers
621420	Outpatient Mental Health and Substance Abuse Centers
621491	HMO Medical Centers
621492	Kidney Dialysis Centers
621493	Freestanding Ambulatory Surgical and Emergency Centers
621498	All Other Outpatient Care Centers
621511	Medical Laboratories
621512	Diagnostic Imaging Centers
621610	Home Health Care Services
621910	Ambulance Services
621991	Blood and Organ Banks
621999	All Other Miscellaneous Ambulatory Health Care Services
622110	General Medical and Surgical Hospitals
622210	Psychiatric and Substance Abuse Hospitals
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals
623110	Nursing Care Facilities (Skilled Nursing Facilities)
623210	Residential Intellectual and Developmental Disability Facilities
623220	Residential Mental Health and Substance Abuse Facilities
623311	Continuing Care Retirement Communities
623312	Assisted Living Facilities for the Elderly
623990	Other Residential Care Facilities

ICT AND DIGITAL MEDIA

NAICS Code	NAICS Title
541921	Photography Studios, Portrait
541922	Commercial Photography
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
511210	Software Publishers
512110	Motion Picture and Video Production
517311	Wired Telecommunications Carriers
517312	Wireless Telecommunications Carriers (except Satellite)
517410	Satellite Telecommunications
517911	Telecommunications Resellers
517919	All Other Telecommunications
518210	Data Processing, Hosting, and Related Services
519130	Internet Publishing and Broadcasting and Web Search Portals
541511	Custom Computer Programming Services
541512	Computer Systems Design Services
512120	Motion Picture and Video Distribution
512131	Motion Picture Theaters (except Drive-Ins)
512132	Drive-In Motion Picture Theaters
512191	Teleproduction and Other Postproduction Services
512199	Other Motion Picture and Video Industries
512230	Music Publishers
512240	Sound Recording Studios
512250	Record Production and Distribution
512290	Other Sound Recording Industries
515111	Radio Networks
515112	Radio Stations
515120	Television Broadcasting
515210	Cable and Other Subscription Programming
541430	Graphic Design Services
541513	Computer Facilities Management Services
541519	Other Computer Related Services
541490	Other Specialized Design Services
811211	Consumer Electronics Repair and Maintenance
811212	Computer and Office Machine Repair and Maintenance
811213	Communication Equipment Repair and Maintenance
811219	Other Electronic and Precision Equipment Repair and Maintenance
511110	Newspaper Publishers
511120	Periodical Publishers
511130	Book Publishers
511140	Directory and Mailing List Publishers
511191	Greeting Card Publishers
511199	All Other Publishers
519110	News Syndicates
519120	Libraries and Archives
519190	All Other Information Services

LIFE SCIENCES AND BIOTECHNOLOGY

NAICS Code	NAICS Title
311221	Wet Corn Milling
311224	Soybean and Other Oilseed Processing
325193	Ethyl Alcohol Manufacturing
325220	Artificial and Synthetic Fibers and Filaments Manufacturing
325311	Nitrogenous Fertilizer Manufacturing

NAICS Code	NAICS Title	Life Sciences and Biotechnology
325312	Phosphatic Fertilizer Manufacturing	
325314	Fertilizer (Mixing Only) Manufacturing	
325320	Pesticide and Other Agricultural Chemical Manufacturing	
325411	Medicinal and Botanical Manufacturing	
325412	Pharmaceutical Preparation Manufacturing	
325413	In-Vitro Diagnostic Substance Manufacturing	
325414	Biological Product (except Diagnostic) Manufacturing	
333314	Optical Instrument and Lens Manufacturing	
334510	Electromedical and Electrotherapeutic Apparatus Manufacturing	
334516	Analytical Laboratory Instrument Manufacturing	
334517	Irradiation Apparatus Manufacturing	
339112	Surgical and Medical Instrument Manufacturing	
339113	Surgical Appliance and Supplies Manufacturing	
339114	Dental Equipment and Supplies Manufacturing	
339115	Ophthalmic Goods Manufacturing	
339116	Dental Laboratories	
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	
423460	Ophthalmic Goods Merchant Wholesalers	
446110	Pharmacies and Drug Stores	
446130	Optical Goods Stores	
541380	Testing Laboratories	
541713	Research and Development in Nanotechnology	
541714	Research and Development in Biotechnology (except Nanobiotechnology)	
541715	Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	

PUBLIC SAFETY AND GOVERNMENT

NAICS Code	NAICS Title
902619	All Other Schools and Educational Support Services (State Government)
903619	All Other Schools and Educational Support Services (Local Government)
901149	US Postal Service
901199	Federal Government, Civilian, Excluding Postal Service
901200	Federal Government, Military
902611	Elementary and Secondary Schools (State Government)
902612	Colleges, Universities, and Professional Schools (State Government)
902622	Hospitals (State Government)
902999	State Government, Excluding Education and Hospitals
903611	Elementary and Secondary Schools (Local Government)
903612	Colleges, Universities, and Professional Schools (Local Government)
903622	Hospitals (Local Government)
903999	Local Government, Excluding Education and Hospitals

RETAIL, HOSPITALITY, AND TOURISM

NAICS Code	NAICS Title
711110	Theater Companies and Dinner Theaters
711120	Dance Companies
711130	Musical Groups and Artists
711190	Other Performing Arts Companies
711211	Sports Teams and Clubs
711212	Racetracks
711219	Other Spectator Sports
711310	Promoters of Performing Arts, Sports, and Similar Events with Facilities
711320	Promoters of Performing Arts, Sports, and Similar Events without Facilities

NAICS Code	NAICS Title	Retail, Hospitality, and Tourism
711410	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	
711510	Independent Artists, Writers, and Performers	
712110	Museums	
712120	Historical Sites	
712130	Zoos and Botanical Gardens	
712190	Nature Parks and Other Similar Institutions	
713110	Amusement and Theme Parks	
713120	Amusement Arcades	
713210	Casinos (except Casino Hotels)	
713290	Other Gambling Industries	
713910	Golf Courses and Country Clubs	
713920	Skiing Facilities	
713930	Marinas	
713940	Fitness and Recreational Sports Centers	
713950	Bowling Centers	
713990	All Other Amusement and Recreation Industries	
721110	Hotels (except Casino Hotels) and Motels	
721120	Casino Hotels	
721191	Bed-and-Breakfast Inns	
721199	All Other Traveler Accommodation	
721211	RV (Recreational Vehicle) Parks and Campgrounds	
721214	Recreational and Vacation Camps (except Campgrounds)	
721310	Rooming and Boarding Houses, Dormitories, and Workers' Camps	
722310	Food Service Contractors	
722320	Caterers	
722330	Mobile Food Services	
722410	Drinking Places (Alcoholic Beverages)	
722511	Full-Service Restaurants	
722513	Limited-Service Restaurants	
722514	Cafeterias, Grill Buffets, and Buffets	
722515	Snack and Nonalcoholic Beverage Bars	
485310	Taxi Service	
485320	Limousine Service	
442110	Furniture Stores	
442210	Floor Covering Stores	
442291	Window Treatment Stores	
442299	All Other Home Furnishings Stores	
443141	Household Appliance Stores	
443142	Electronics Stores	
444110	Home Centers	
444120	Paint and Wallpaper Stores	
444130	Hardware Stores	
444210	Outdoor Power Equipment Stores	
444220	Nursery, Garden Center, and Farm Supply Stores	
445110	Supermarkets and Other Grocery (except Convenience) Stores	
445120	Convenience Stores	
445210	Meat Markets	
445220	Fish and Seafood Markets	
445291	Baked Goods Stores	
445292	Confectionery and Nut Stores	
445299	All Other Specialty Food Stores	
445310	Beer, Wine, and Liquor Stores	
446120	Cosmetics, Beauty Supplies, and Perfume Stores	
446191	Food (Health) Supplement Stores	
446199	All Other Health and Personal Care Stores	
447110	Gasoline Stations with Convenience Stores	
447190	Other Gasoline Stations	

NAICS Code	NAICS Title	Retail, Hospitality, and Tourism
448110	Men's Clothing Stores	
448120	Women's Clothing Stores	
448130	Children's and Infants' Clothing Stores	
448140	Family Clothing Stores	
448150	Clothing Accessories Stores	
448190	Other Clothing Stores	
448210	Shoe Stores	
448310	Jewelry Stores	
448320	Luggage and Leather Goods Stores	
451110	Sporting Goods Stores	
451120	Hobby, Toy, and Game Stores	
451130	Sewing, Needlework, and Piece Goods Stores	
451140	Musical Instrument and Supplies Stores	
451211	Book Stores	
451212	News Dealers and Newsstands	
452210	Department Stores	
452311	Warehouse Clubs and Supercenters	
452319	All Other General Merchandise Stores	
453110	Florists	
453210	Office Supplies and Stationery Stores	
453220	Gift, Novelty, and Souvenir Stores	
453310	Used Merchandise Stores	
453910	Pet and Pet Supplies Stores	
453920	Art Dealers	
453930	Manufactured (Mobile) Home Dealers	
453991	Tobacco Stores	
453998	All Other Miscellaneous Store Retailers (except Tobacco Stores)	
454110	Electronic Shopping and Mail-Order Houses	
454210	Vending Machine Operators	
454310	Fuel Dealers	
454390	Other Direct Selling Establishments	
532120	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing	
423110	Automobile and Other Motor Vehicle Merchant Wholesalers	
423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers	
423130	Tire and Tube Merchant Wholesalers	
423140	Motor Vehicle Parts (Used) Merchant Wholesalers	
423210	Furniture Merchant Wholesalers	
423220	Home Furnishing Merchant Wholesalers	
423310	Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers	
423320	Brick, Stone, and Related Construction Material Merchant Wholesalers	
423330	Roofing, Siding, and Insulation Material Merchant Wholesalers	
423390	Other Construction Material Merchant Wholesalers	
423410	Photographic Equipment and Supplies Merchant Wholesalers	
423420	Office Equipment Merchant Wholesalers	
423430	Computer and Computer Peripheral Equipment and Software Merchant Wholesalers	
423440	Other Commercial Equipment Merchant Wholesalers	
423490	Other Professional Equipment and Supplies Merchant Wholesalers	
423510	Metal Service Centers and Other Metal Merchant Wholesalers	
423520	Coal and Other Mineral and Ore Merchant Wholesalers	
423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers	
423620	Household Appliances, Electric Housewares, and Consumer Electronics Merchant Wholesalers	
423690	Other Electronic Parts and Equipment Merchant Wholesalers	
423710	Hardware Merchant Wholesalers	
423740	Refrigeration Equipment and Supplies Merchant Wholesalers	
423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	
423840	Industrial Supplies Merchant Wholesalers	

NAICS Code	NAICS Title	Retail, Hospitality, and Tourism
423850	Service Establishment Equipment and Supplies Merchant Wholesalers	
423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers	
423910	Sporting and Recreational Goods and Supplies Merchant Wholesalers	
423920	Toy and Hobby Goods and Supplies Merchant Wholesalers	
423930	Recyclable Material Merchant Wholesalers	
423940	Jewelry, Watch, Precious Stone, and Precious Metal Merchant Wholesalers	
423990	Other Miscellaneous Durable Goods Merchant Wholesalers	
424110	Printing and Writing Paper Merchant Wholesalers	
424120	Stationery and Office Supplies Merchant Wholesalers	
424130	Industrial and Personal Service Paper Merchant Wholesalers	
424310	Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers	
424320	Men's and Boys' Clothing and Furnishings Merchant Wholesalers	
424330	Women's, Children's, and Infants' Clothing and Accessories Merchant Wholesalers	
424340	Footwear Merchant Wholesalers	
424410	General Line Grocery Merchant Wholesalers	
424420	Packaged Frozen Food Merchant Wholesalers	
424450	Confectionery Merchant Wholesalers	
424480	Fresh Fruit and Vegetable Merchant Wholesalers	
424490	Other Grocery and Related Products Merchant Wholesalers	
424610	Plastics Materials and Basic Forms and Shapes Merchant Wholesalers	
424690	Other Chemical and Allied Products Merchant Wholesalers	
424710	Petroleum Bulk Stations and Terminals	
424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)	
424810	Beer and Ale Merchant Wholesalers	
424820	Wine and Distilled Alcoholic Beverage Merchant Wholesalers	
424920	Book, Periodical, and Newspaper Merchant Wholesalers	
424930	Flower, Nursery Stock, and Florists' Supplies Merchant Wholesalers	
424940	Tobacco and Tobacco Product Merchant Wholesalers	
424950	Paint, Varnish, and Supplies Merchant Wholesalers	
424990	Other Miscellaneous Nondurable Goods Merchant Wholesalers	
425110	Business to Business Electronic Markets	
425120	Wholesale Trade Agents and Brokers	

APPENDIX D: SECTOR DEFINITIONS BY SOC CODES

ADVANCED MANUFACTURING

SOC Code	SOC Title
11-3051	Industrial Production Managers
17-2011	Aerospace Engineers
17-2051	Civil Engineers
17-2061	Computer Hardware Engineers
17-2071	Electrical Engineers
17-2072	Electronics Engineers, Except Computer
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
17-2112	Industrial Engineers
17-2121	Marine Engineers and Naval Architects
17-2131	Materials Engineers
17-2141	Mechanical Engineers
17-2199	Engineers, All Other
17-3013	Mechanical Drafters
17-3019	Drafters, All Other
17-3021	Aerospace Engineering and Operations Technologists and Technicians
17-3022	Civil Engineering Technologists and Technicians
17-3023	Electrical and Electronic Engineering Technologists and Technicians
17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians
17-3026	Industrial Engineering Technologists and Technicians
17-3027	Mechanical Engineering Technologists and Technicians
17-3098	Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping
47-2211	Sheet Metal Workers
47-2221	Structural Iron and Steel Workers
49-2011	Computer, Automated Teller, and Office Machine Repairers
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay
49-3011	Aircraft Mechanics and Service Technicians
49-9031	Home Appliance Repairers
49-9041	Industrial Machinery Mechanics
49-9061	Camera and Photographic Equipment Repairers
49-9063	Musical Instrument Repairers and Tuners
49-9064	Watch and Clock Repairers
49-9069	Precision Instrument and Equipment Repairers, All Other
49-9071	Maintenance and Repair Workers, General
49-9094	Locksmiths and Safe Repairers
51-1011	First-Line Supervisors of Production and Operating Workers
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
51-2021	Coil Winders, Tapers, and Finishers
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers
51-2031	Engine and Other Machine Assemblers
51-2041	Structural Metal Fabricators and Fitters
51-2051	Fiberglass Laminators and Fabricators
51-2061	Timing Device Assemblers and Adjusters
51-2098	Miscellaneous Assemblers and Fabricators
51-3022	Meat, Poultry, and Fish Cutters and Trimmers
51-3023	Slaughterers and Meat Packers
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders
51-3092	Food Batchmakers
51-3093	Food Cooking Machine Operators and Tenders

SOC Code	SOC Title	Advanced Manufacturing
51-3099	Food Processing Workers, All Other	
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4041	Machinists	
51-4051	Metal-Refining Furnace Operators and Tenders	
51-4052	Pourers and Casters, Metal	
51-4061	Model Makers, Metal and Plastic	
51-4062	Patternmakers, Metal and Plastic	
51-4071	Foundry Mold and Coremakers	
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	
51-4111	Tool and Die Makers	
51-4121	Welders, Cutters, Solderers, and Brazers	
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	
51-4192	Layout Workers, Metal and Plastic	
51-4193	Plating Machine Setters, Operators, and Tenders, Metal and Plastic	
51-4194	Tool Grinders, Filers, and Sharpeners	
51-4199	Metal Workers and Plastic Workers, All Other	
51-5111	Prepress Technicians and Workers	
51-5112	Printing Press Operators	
51-5113	Print Binding and Finishing Workers	
51-6031	Sewing Machine Operators	
51-6041	Shoe and Leather Workers and Repairers	
51-6042	Shoe Machine Operators and Tenders	
51-6051	Sewers, Hand	
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	
51-6092	Fabric and Apparel Patternmakers	
51-6093	Upholsterers	
51-6099	Textile, Apparel, and Furnishings Workers, All Other	
51-7011	Cabinetmakers and Bench Carpenters	
51-7021	Furniture Finishers	
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	
51-9022	Grinding and Polishing Workers, Hand	
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	
51-9031	Cutters and Trimmers, Hand	
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	
51-9111	Packaging and Filling Machine Operators and Tenders	
51-9162	Computer Numerically Controlled Tool Programmers	
51-9161	Computer Numerically Controlled Tool Operators	
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	
51-9123	Painting, Coating, and Decorating Workers	

SOC Code	SOC Title	Advanced Manufacturing
51-9141	Semiconductor Processing Technicians	
51-9151	Photographic Process Workers and Processing Machine Operators	
51-9191	Adhesive Bonding Machine Operators and Tenders	
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	
51-9193	Cooling and Freezing Equipment Operators and Tenders	
51-9194	Etchers and Engravers	
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	
51-9196	Paper Goods Machine Setters, Operators, and Tenders	
51-9197	Tire Builders	
51-9198	Helpers--Production Workers	
51-9199	Production Workers, All Other	
53-7063	Machine Feeders and Offbearers	

ADVANCED TRANSPORTATION AND LOGISTICS

SOC Code	SOC Title
11-3071	Transportation, Storage, and Distribution Managers
11-3111	Compensation and Benefits Managers
11-3121	Human Resources Managers
11-3131	Training and Development Managers
11-9013	Farmers, Ranchers, and Other Agricultural Managers
11-9021	Construction Managers
11-9031	Education and Childcare Administrators, Preschool and Daycare
11-9032	Education Administrators, Kindergarten through Secondary
11-9033	Education Administrators, Postsecondary
11-9039	Education Administrators, All Other
11-9041	Architectural and Engineering Managers
13-1081	Logisticians
43-5011	Cargo and Freight Agents
43-5021	Couriers and Messengers
43-5061	Production, Planning, and Expediting Clerks
43-5071	Shipping, Receiving, and Inventory Clerks
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers
49-2091	Avionics Technicians
49-2092	Electric Motor, Power Tool, and Related Repairers
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles
49-3021	Automotive Body and Related Repairers
49-3022	Automotive Glass Installers and Repairers
49-3023	Automotive Service Technicians and Mechanics
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists
49-3041	Farm Equipment Mechanics and Service Technicians
49-3042	Mobile Heavy Equipment Mechanics, Except Engines
49-3043	Rail Car Repairers
49-3051	Motorboat Mechanics and Service Technicians
49-3052	Motorcycle Mechanics
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics
49-3092	Recreational Vehicle Service Technicians
49-3093	Tire Repairers and Changers
49-9097	Signal and Track Switch Repairers
53-1041	Aircraft Cargo Handling Supervisors
53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors
53-2011	Airline Pilots, Copilots, and Flight Engineers
53-2012	Commercial Pilots

SOC Code	SOC Title	Advanced Transportation and Logistics
53-2021	Air Traffic Controllers	
53-2022	Airfield Operations Specialists	
53-2031	Flight Attendants	
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	
53-3033	Light Truck Drivers	
53-3052	Bus Drivers, Transit and Intercity	
53-3031	Driver/Sales Workers	
53-3032	Heavy and Tractor-Trailer Truck Drivers	
53-3058	Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	
53-3099	Motor Vehicle Operators, All Other	
53-4011	Locomotive Engineers	
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	
53-4022	Railroad Brake, Signal, and Switch Operators and Locomotive Firers	
53-4031	Railroad Conductors and Yardmasters	
53-4041	Subway and Streetcar Operators	
53-4099	Rail Transportation Workers, All Other	
53-5011	Sailors and Marine Oilers	
53-5021	Captains, Mates, and Pilots of Water Vessels	
53-5022	Motorboat Operators	
53-5031	Ship Engineers	
53-6011	Bridge and Lock Tenders	
53-6041	Traffic Technicians	
53-6051	Transportation Inspectors	
53-6061	Passenger Attendants	
53-6098	Aircraft Service Attendants and Transportation Workers, All Other	
53-7011	Conveyor Operators and Tenders	
53-7021	Crane and Tower Operators	
53-7031	Dredge Operators	
53-7041	Hoist and Winch Operators	
53-7051	Industrial Truck and Tractor Operators	
53-7061	Cleaners of Vehicles and Equipment	
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	
53-7065	Stockers and Order Fillers	
53-7071	Gas Compressor and Gas Pumping Station Operators	
53-7072	Pump Operators, Except Wellhead Pumps	
53-7121	Tank Car, Truck, and Ship Loaders	
53-7199	Material Moving Workers, All Other	

AGRICULTURE, WATER, AND ENVIRONMENTAL TECHNOLOGIES

SOC Code	SOC Title
51-9071	Jewelers and Precious Stone and Metal Workers
47-5044	Loading and Moving Machine Operators, Underground Mining
13-1074	Farm Labor Contractors
13-1075	Labor Relations Specialists
17-2021	Agricultural Engineers
17-2081	Environmental Engineers
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers
17-3025	Environmental Engineering Technologists and Technicians
19-1011	Animal Scientists
19-1012	Food Scientists and Technologists
19-1013	Soil and Plant Scientists
19-1032	Foresters
19-2041	Environmental Scientists and Specialists, Including Health
19-2042	Geoscientists, Except Hydrologists and Geographers

SOC Code	SOC Title	Agriculture, Water, and Environmental Technologies
19-2043	Hydrologists	
19-2099	Physical Scientists, All Other	
19-3092	Geographers	
19-4011	Agricultural and Food Science Technicians	
19-4042	Environmental Science and Protection Technicians, Including Health	
19-4071	Forest and Conservation Technicians	
25-9021	Farm and Home Management Educators	
27-1023	Floral Designers	
29-1131	Veterinarians	
29-2056	Veterinary Technologists and Technicians	
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	
37-2021	Pest Control Workers	
37-3011	Landscaping and Groundskeeping Workers	
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	
37-3013	Tree Trimmers and Pruners	
37-3019	Grounds Maintenance Workers, All Other	
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	
45-2011	Agricultural Inspectors	
45-2021	Animal Breeders	
45-2041	Graders and Sorters, Agricultural Products	
45-2091	Agricultural Equipment Operators	
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	
45-2099	Agricultural Workers, All Other	
45-3031	Fishing and Hunting Workers	
45-4011	Forest and Conservation Workers	
45-4021	Fallers	
45-4022	Logging Equipment Operators	
45-4023	Log Graders and Scalers	
45-4029	Logging Workers, All Other	
47-5011	Derrick Operators, Oil and Gas	
47-5012	Rotary Drill Operators, Oil and Gas	
47-5013	Service Unit Operators, Oil and Gas	
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	
47-5041	Continuous Mining Machine Operators	
47-5051	Rock Splitters, Quarry	
47-5043	Roof Bolters, Mining	
47-5071	Roustabouts, Oil and Gas	
47-5081	Helpers--Extraction Workers	
47-5097	Earth Drillers, Except Oil and Gas; and Explosives Workers, Ordnance Handling Experts, and Blasters	
47-5098	Underground Mining Machine Operators and Extraction Workers, All Other	
51-8021	Stationary Engineers and Boiler Operators	
51-8031	Water and Wastewater Treatment Plant and System Operators	

BUSINESS AND ENTREPRENEURSHIP

SOC Code	SOC Title
11-1011	Chief Executives
11-1021	General and Operations Managers
11-2011	Advertising and Promotions Managers
11-2021	Marketing Managers
11-2022	Sales Managers
11-2031	Public Relations and Fundraising Managers
11-3011	Administrative Services and Facilities Managers
11-3031	Financial Managers
11-3061	Purchasing Managers
11-9141	Property, Real Estate, and Community Association Managers
11-9161	Emergency Management Directors
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other
13-1011	Agents and Business Managers of Artists, Performers, and Athletes
13-1028	Buyers and Purchasing Agents
13-1031	Claims Adjusters, Examiners, and Investigators
13-1032	Insurance Appraisers, Auto Damage
13-1041	Compliance Officers
13-1051	Cost Estimators
13-1071	Human Resources Specialists
13-1111	Management Analysts
13-1131	Fundraisers
13-1141	Compensation, Benefits, and Job Analysis Specialists
13-1151	Training and Development Specialists
13-1161	Market Research Analysts and Marketing Specialists
13-1198	Project Management Specialists and Business Operations Specialists, All Other
13-2011	Accountants and Auditors
13-2021	Property Appraisers and Assessors
13-2031	Budget Analysts
13-2041	Credit Analysts
13-2052	Personal Financial Advisors
13-2053	Insurance Underwriters
13-2061	Financial Examiners
13-2071	Credit Counselors
13-2072	Loan Officers
13-2081	Tax Examiners and Collectors, and Revenue Agents
13-2082	Tax Preparers
13-2098	Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other
15-2011	Actuaries
15-2021	Mathematicians
15-2031	Operations Research Analysts
15-2041	Statisticians
19-3011	Economists
23-1011	Lawyers
23-2011	Paralegals and Legal Assistants
39-4011	Embalmers
39-4021	Funeral Attendants
39-4031	Morticians, Undertakers, and Funeral Arrangers
39-5011	Barbers
39-5012	Hairdressers, Hairstylists, and Cosmetologists
39-5092	Manicurists and Pedicurists
39-5094	Skincare Specialists
39-9098	Crematory Operators and Personal Care and Service Workers, All Other
41-2022	Parts Salespersons

SOC Code	SOC Title	Business and Entrepreneurship
41-3011	Advertising Sales Agents	
41-3021	Insurance Sales Agents	
41-3031	Securities, Commodities, and Financial Services Sales Agents	
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	
41-9021	Real Estate Brokers	
41-9022	Real Estate Sales Agents	
41-9031	Sales Engineers	
41-9041	Telemarketers	
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	
41-9099	Sales and Related Workers, All Other	
43-1011	First-Line Supervisors of Office and Administrative Support Workers	
43-3011	Bill and Account Collectors	
43-3021	Billing and Posting Clerks	
43-3031	Bookkeeping, Accounting, and Auditing Clerks	
43-3051	Payroll and Timekeeping Clerks	
43-3061	Procurement Clerks	
43-3071	Tellers	
43-3099	Financial Clerks, All Other	
43-4011	Brokerage Clerks	
43-4021	Correspondence Clerks	
43-4041	Credit Authorizers, Checkers, and Clerks	
43-4051	Customer Service Representatives	
43-4071	File Clerks	
43-4131	Loan Interviewers and Clerks	
43-4141	New Accounts Clerks	
43-4151	Order Clerks	
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	
43-4171	Receptionists and Information Clerks	
43-4199	Information and Record Clerks, All Other	
43-6011	Executive Secretaries and Executive Administrative Assistants	
43-6012	Legal Secretaries and Administrative Assistants	
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	
43-9041	Insurance Claims and Policy Processing Clerks	
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	
43-9061	Office Clerks, General	
43-9071	Office Machine Operators, Except Computer	
43-9199	Office and Administrative Support Workers, All Other	
51-6011	Laundry and Dry-Cleaning Workers	
51-6021	Pressers, Textile, Garment, and Related Materials	

EDUCATION AND HUMAN DEVELOPMENT

SOC Code	SOC Title
19-3031	Clinical, Counseling, and School Psychologists
19-3032	Industrial-Organizational Psychologists
21-1012	Educational, Guidance, and Career Counselors and Advisors
21-1019	Counselors, All Other
21-1021	Child, Family, and School Social Workers
21-1029	Social Workers, All Other
21-1091	Health Education Specialists
21-1099	Community and Social Service Specialists, All Other
25-1099	Postsecondary Teachers
25-2011	Preschool Teachers, Except Special Education
25-2012	Kindergarten Teachers, Except Special Education

SOC Code	SOC Title	Education and Human Development
25-2021	Elementary School Teachers, Except Special Education	
25-2022	Middle School Teachers, Except Special and Career/Technical Education	
25-2023	Career/Technical Education Teachers, Middle School	
25-2031	Secondary School Teachers, Except Special and Career/Technical Education	
25-2032	Career/Technical Education Teachers, Secondary School	
25-2051	Special Education Teachers, Preschool	
25-2052	Special Education Teachers, Kindergarten and Elementary School	
25-2057	Special Education Teachers, Middle School	
25-2058	Special Education Teachers, Secondary School	
25-2059	Special Education Teachers, All Other	
25-3011	Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors	
25-3021	Self-Enrichment Teachers	
25-3031	Substitute Teachers, Short-Term	
25-3097	Tutors and Teachers and Instructors, All Other	
25-9044	Teaching Assistants, Postsecondary	
25-9031	Instructional Coordinators	
25-9045	Teaching Assistants, Except Postsecondary	
25-9099	Educational Instruction and Library Workers, All Other	
39-9011	Childcare Workers	

ENERGY, CONSTRUCTION, AND UTILITIES

SOC Code	SOC Title
17-1011	Architects, Except Landscape and Naval
17-1012	Landscape Architects
17-1022	Surveyors
17-2161	Nuclear Engineers
17-2171	Petroleum Engineers
17-3011	Architectural and Civil Drafters
17-3012	Electrical and Electronics Drafters
19-4045	Geological and Hydrologic Technicians
19-4051	Nuclear Technicians
43-5041	Meter Readers, Utilities
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers
47-2011	Boilermakers
47-2021	Brickmasons and Blockmasons
47-2022	Stonemasons
47-2031	Carpenters
47-2041	Carpet Installers
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles
47-2043	Floor Sanders and Finishers
47-2044	Tile and Stone Setters
47-2051	Cement Masons and Concrete Finishers
47-2053	Terrazzo Workers and Finishers
47-2061	Construction Laborers
47-2071	Paving, Surfacing, and Tamping Equipment Operators
47-2072	Pile Driver Operators
47-2073	Operating Engineers and Other Construction Equipment Operators
47-2081	Drywall and Ceiling Tile Installers
47-2082	Tapers
47-2111	Electricians
47-2121	Glaziers
47-2131	Insulation Workers, Floor, Ceiling, and Wall
47-2132	Insulation Workers, Mechanical
47-2141	Painters, Construction and Maintenance

SOC Code	SOC Title	Energy, Construction, and Utilities
47-2142	Paperhangers	
47-2151	Pipelayers	
47-2152	Plumbers, Pipefitters, and Steamfitters	
47-2161	Plasterers and Stucco Masons	
47-2171	Reinforcing Iron and Rebar Workers	
47-2181	Roofers	
47-2231	Solar Photovoltaic Installers	
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	
47-3012	Helpers--Carpenters	
47-3013	Helpers--Electricians	
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	
47-3016	Helpers--Roofers	
47-3019	Helpers, Construction Trades, All Other	
47-4011	Construction and Building Inspectors	
47-4021	Elevator and Escalator Installers and Repairers	
47-4031	Fence Erectors	
47-4041	Hazardous Materials Removal Workers	
47-4051	Highway Maintenance Workers	
47-4061	Rail-Track Laying and Maintenance Equipment Operators	
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	
47-4098	Miscellaneous Construction and Related Workers	
49-2098	Security and Fire Alarm Systems Installers	
49-9011	Mechanical Door Repairers	
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	
49-9043	Maintenance Workers, Machinery	
49-9044	Millwrights	
49-9045	Refractory Materials Repairers, Except Brickmasons	
49-9081	Wind Turbine Service Technicians	
49-9095	Manufactured Building and Mobile Home Installers	
49-9096	Riggers	
49-9098	Helpers--Installation, Maintenance, and Repair Workers	
49-9099	Installation, Maintenance, and Repair Workers, All Other	
51-7031	Model Makers, Wood	
51-7032	Patternmakers, Wood	
51-7099	Woodworkers, All Other	
51-8011	Nuclear Power Reactor Operators	
51-8012	Power Distributors and Dispatchers	
51-8013	Power Plant Operators	
51-8092	Gas Plant Operators	
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	
51-8099	Plant and System Operators, All Other	
53-7073	Wellhead Pumps	
53-7081	Refuse and Recyclable Material Collectors	

HEALTH CARE

SOC Code	SOC Title
11-9111	Medical and Health Services Managers
11-9151	Social and Community Service Managers
19-1042	Medical Scientists, Except Epidemiologists
19-3039	Psychologists, All Other
21-1013	Marriage and Family Therapists
21-1015	Rehabilitation Counselors

SOC Code	SOC Title	Health Care
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	
21-1022	Healthcare Social Workers	
21-1023	Mental Health and Substance Abuse Social Workers	
21-1093	Social and Human Service Assistants	
21-1094	Community Health Workers	
29-1011	Chiropractors	
29-1021	Dentists, General	
29-1022	Oral and Maxillofacial Surgeons	
29-1023	Orthodontists	
29-1024	Prosthodontists	
29-1029	Dentists, All Other Specialists	
29-1031	Dietitians and Nutritionists	
29-1041	Optometrists	
29-1051	Pharmacists	
29-1211	Anesthesiologists	
29-1215	Family Medicine Physicians	
29-1216	General Internal Medicine Physicians	
29-1218	Obstetricians and Gynecologists	
29-1221	Pediatricians, General	
29-1223	Psychiatrists	
29-1071	Physician Assistants	
29-1081	Podiatrists	
29-1122	Occupational Therapists	
29-1123	Physical Therapists	
29-1124	Radiation Therapists	
29-1125	Recreational Therapists	
29-1126	Respiratory Therapists	
29-1127	Speech-Language Pathologists	
29-1128	Exercise Physiologists	
29-1129	Therapists, All Other	
29-1141	Registered Nurses	
29-1151	Nurse Anesthetists	
29-1161	Nurse Midwives	
29-1171	Nurse Practitioners	
29-1181	Audiologists	
29-1228	Physicians, All Other; and Ophthalmologists, Except Pediatric	
29-1248	Surgeons, Except Ophthalmologists	
29-1298	Acupuncturists and Healthcare Diagnosing or Treating Practitioners, All Other	
29-2018	Clinical Laboratory Technologists and Technicians	
29-1292	Dental Hygienists	
29-2031	Cardiovascular Technologists and Technicians	
29-2032	Diagnostic Medical Sonographers	
29-2033	Nuclear Medicine Technologists	
29-2034	Radiologic Technologists and Technicians	
29-2035	Magnetic Resonance Imaging Technologists	
29-2041	Emergency Medical Technicians and Paramedics	
29-2051	Dietetic Technicians	
29-2052	Pharmacy Technicians	
29-2053	Psychiatric Technicians	
29-2055	Surgical Technologists	
29-2057	Ophthalmic Medical Technicians	
29-2061	Licensed Practical and Licensed Vocational Nurses	
29-2081	Opticians, Dispensing	
29-2091	Orthotists and Prosthetists	
29-2092	Hearing Aid Specialists	
29-2098	Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	

SOC Code	SOC Title	Health Care
29-9098	Health Information Technologists, Medical Registrars, Surgical Assistants, and Healthcare Practitioners and Technical Workers,	
31-1128	Home Health and Personal Care Aides	
19-5011	Occupational Health and Safety Specialists	
19-5012	Occupational Health and Safety Technicians	
29-9091	Athletic Trainers	
29-9092	Genetic Counselors	
31-1133	Psychiatric Aides	
31-1131	Nursing Assistants	
31-1132	Orderlies	
31-2011	Occupational Therapy Assistants	
31-2012	Occupational Therapy Aides	
31-2021	Physical Therapist Assistants	
31-2022	Physical Therapist Aides	
31-9011	Massage Therapists	
31-9091	Dental Assistants	
31-9092	Medical Assistants	
31-9093	Medical Equipment Preparers	
31-9094	Medical Transcriptionists	
31-9095	Pharmacy Aides	
31-9097	Phlebotomists	
31-9099	Healthcare Support Workers, All Other	
39-9041	Residential Advisors	
43-6013	Medical Secretaries and Administrative Assistants	
51-9081	Dental Laboratory Technicians	

ICT AND DIGITAL MEDIA

SOC Code	SOC Title
11-3021	Computer and Information Systems Managers
15-1221	Computer and Information Research Scientists
15-1211	Computer Systems Analysts
15-1212	Information Security Analysts
15-1251	Computer Programmers
15-1256	Software Developers and Software Quality Assurance Analysts and Testers
15-1257	Web Developers and Digital Interface Designers
15-1245	Database Administrators and Architects
15-1244	Network and Computer Systems Administrators
15-1241	Computer Network Architects
15-1232	Computer User Support Specialists
15-1231	Computer Network Support Specialists
15-1299	Computer Occupations, All Other
15-2098	Data Scientists and Mathematical Science Occupations, All Other
17-1021	Cartographers and Photogrammetrists
17-3031	Surveying and Mapping Technicians
19-3022	Survey Researchers
27-1014	Special Effects Artists and Animators
27-1021	Commercial and Industrial Designers
27-1024	Graphic Designers
27-2012	Producers and Directors
27-3011	Broadcast Announcers and Radio Disc Jockeys
27-3023	News Analysts, Reporters, and Journalists
27-3031	Public Relations Specialists
27-3041	Editors
27-3042	Technical Writers

SOC Code	SOC Title	ICT and Digital Media
27-3043	Writers and Authors	
27-3091	Interpreters and Translators	
27-3099	Media and Communication Workers, All Other	
27-4011	Audio and Video Technicians	
27-4012	Broadcast Technicians	
27-4014	Sound Engineering Technicians	
27-4031	Camera Operators, Television, Video, and Film	
27-4032	Film and Video Editors	
27-4098	Lighting Technicians and Media and Communication Equipment Workers, All Other	
43-2011	Switchboard Operators, Including Answering Service	
43-2021	Telephone Operators	
43-2099	Communications Equipment Operators, All Other	
43-4111	Interviewers, Except Eligibility and Loan	
43-9021	Data Entry Keyers	
43-9022	Word Processors and Typists	
43-9031	Desktop Publishers	
43-9081	Proofreaders and Copy Markers	
43-9111	Statistical Assistants	
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	
49-2097	Audiovisual Equipment Installers and Repairers	
49-9051	Electrical Power-Line Installers and Repairers	
49-9052	Telecommunications Line Installers and Repairers	

LIFE SCIENCES AND BIOTECHNOLOGY

SOC Code	SOC Title
11-9121	Natural Sciences Managers
17-2031	Bioengineers and Biomedical Engineers
17-2041	Chemical Engineers
19-1021	Biochemists and Biophysicists
19-1022	Microbiologists
19-1023	Zoologists and Wildlife Biologists
19-1029	Biological Scientists, All Other
19-1031	Conservation Scientists
19-1041	Epidemiologists
19-1099	Life Scientists, All Other
19-2012	Physicists
19-2031	Chemists
19-2032	Materials Scientists
19-4021	Biological Technicians
19-4031	Chemical Technicians
19-4061	Social Science Research Assistants
19-4092	Forensic Science Technicians
19-4099	Life, Physical, and Social Science Technicians, All Other
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products
49-9062	Medical Equipment Repairers
51-8091	Chemical Plant and System Operators
51-9011	Chemical Equipment Operators and Tenders
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers
51-9082	Medical Appliance Technicians
51-9083	Ophthalmic Laboratory Technicians

PUBLIC SAFETY AND GOVERNMENT

SOC Code	SOC Title
11-1031	Legislators
11-9131	Postmasters and Mail Superintendents
19-3051	Urban and Regional Planners
19-3094	Political Scientists
19-3099	Social Scientists and Related Workers, All Other
21-1092	Probation Officers and Correctional Treatment Specialists
23-1012	Judicial Law Clerks
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers
23-1022	Arbitrators, Mediators, and Conciliators
23-1023	Judges, Magistrate Judges, and Magistrates
23-2093	Title Examiners, Abstractors, and Searchers
23-2099	Legal Support Workers, All Other
25-4022	Librarians and Media Collections Specialists
25-4031	Library Technicians
27-3092	Court Reporters and Simultaneous Captioners
33-1011	First-Line Supervisors of Correctional Officers
33-1012	First-Line Supervisors of Police and Detectives
33-1021	First-Line Supervisors of Firefighting and Prevention Workers
33-2011	Firefighters
33-2021	Fire Inspectors and Investigators
33-2022	Forest Fire Inspectors and Prevention Specialists
33-3011	Bailiffs
33-3012	Correctional Officers and Jailers
33-3021	Detectives and Criminal Investigators
33-3031	Fish and Game Wardens
33-3041	Parking Enforcement Workers
33-3051	Police and Sheriffs Patrol Officers
33-3052	Transit and Railroad Police
33-9011	Animal Control Workers
33-9021	Private Detectives and Investigators
33-9031	Gambling Surveillance Officers and Gambling Investigators
33-9032	Security Guards
33-9091	Crossing Guards and Flaggers
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers
33-9093	Transportation Security Screeners
33-9098	School Bus Monitors and Protective Service Workers, All Other
43-4031	Court, Municipal, and License Clerks
43-4061	Eligibility Interviewers, Government Programs
43-4121	Library Assistants, Clerical
43-5031	Public Safety Telecommunicators
43-5032	Dispatchers, Except Police, Fire, and Ambulance
43-5051	Postal Service Clerks
43-5052	Postal Service Mail Carriers
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators
55-9999	Military-only occupations

RETAIL, HOSPITALITY, AND TOURISM

SOC Code	SOC Title
11-9051	Food Service Managers
11-9071	Gambling Managers
11-9081	Lodging Managers
11-9171	Funeral Home Managers
13-1121	Meeting, Convention, and Event Planners
25-4011	Archivists
25-4012	Curators
25-4013	Museum Technicians and Conservators
27-1011	Art Directors
27-1012	Craft Artists
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators
27-1019	Artists and Related Workers, All Other
27-1022	Fashion Designers
27-1025	Interior Designers
27-1026	Merchandise Displayers and Window Trimmers
27-1027	Set and Exhibit Designers
27-1029	Designers, All Other
27-2011	Actors
27-2021	Athletes and Sports Competitors
27-2022	Coaches and Scouts
27-2023	Umpires, Referees, and Other Sports Officials
27-2031	Dancers
27-2032	Choreographers
27-2041	Music Directors and Composers
27-2042	Musicians and Singers
27-2099	Miscellaneous Entertainers and Performers, Sports and Related Workers
33-1099	Miscellaneous First-Line Supervisors, Protective Service Workers
35-1011	Chefs and Head Cooks
35-1012	First-Line Supervisors of Food Preparation and Serving Workers
35-2011	Cooks, Fast Food
35-2012	Cooks, Institution and Cafeteria
35-2013	Cooks, Private Household
35-2014	Cooks, Restaurant
35-2015	Cooks, Short Order
35-2019	Cooks, All Other
35-2021	Food Preparation Workers
35-3011	Bartenders
35-3023	Fast Food and Counter Workers
35-3031	Waiters and Waitresses
35-3041	Food Servers, Nonrestaurant
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers
35-9021	Dishwashers
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop
35-9099	Food Preparation and Serving Related Workers, All Other
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners
37-2012	Maids and Housekeeping Cleaners
37-2019	Building Cleaning Workers, All Other
39-1013	First-Line Supervisors of Gambling Services Workers
39-1098	First-Line Supervisors of Personal Service and Entertainment and Recreation Workers, Except Gambling Services
39-2011	Animal Trainers
39-2021	Animal Caretakers
39-3011	Gambling Dealers

SOC Code	SOC Title	Retail, Hospitality, and Tourism
39-3012	Gambling and Sports Book Writers and Runners	
39-3019	Gambling Service Workers, All Other	
39-3021	Motion Picture Projectionists	
39-3031	Ushers, Lobby Attendants, and Ticket Takers	
39-3091	Amusement and Recreation Attendants	
39-3092	Costume Attendants	
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	
39-3099	Entertainment Attendants and Related Workers, All Other	
39-5091	Makeup Artists, Theatrical and Performance	
39-5093	Shampooers	
39-6011	Baggage Porters and Bellhops	
39-6012	Concierges	
39-7018	Tour and Travel Guides	
39-9031	Exercise Trainers and Group Fitness Instructors	
39-9032	Recreation Workers	
41-1011	First-Line Supervisors of Retail Sales Workers	
41-1012	First-Line Supervisors of Non-Retail Sales Workers	
41-2011	Cashiers	
41-2012	Gambling Change Persons and Booth Cashiers	
41-2021	Counter and Rental Clerks	
41-2031	Retail Salespersons	
41-3041	Travel Agents	
41-9011	Demonstrators and Product Promoters	
41-9012	Models	
43-3041	Gambling Cage Workers	
43-4081	Hotel, Motel, and Resort Desk Clerks	
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	
49-3091	Bicycle Repairers	
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	
49-9092	Commercial Divers	
51-3011	Bakers	
51-3021	Butchers and Meat Cutters	
51-6052	Tailors, Dressmakers, and Custom Sewers	
53-6021	Parking Attendants	
53-6031	Automotive and Watercraft Service Attendants	
53-7064	Packers and Packagers, Hand	



IMPORTANT DISCLAIMERS

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

Prepared by:

Tina Ngo Bartel, Director

John Edwards, Research Analyst

Robert Chu, Project Management and Admin Support

San Diego-Imperial Center of Excellence for Labor Market Research

