

# LOGISTICS and SUPPLY CHAIN EDUCATION IN THE INLAND EMPIRE/DESERT REGION

## Inventory & Assessment Summary

Servando Gereau, Customized Training & Consulting  
Michael Goss, Director, Center of Excellence for Labor Market Research  
Larry McLaughlin, Regional Director, Employer Engagement, AT&L

### Background and Perspective

According to the UCR School of Business Spring of 2020 report on logistics, the industry in Southern California has been growing over the last few decades for a variety of reasons – reasons which are still in play. Easy access to the region’s network of freeways, proximity to the Port of Los Angeles and Port of Long Beach, and access to rail lines operating across the region have combined with changing consumer expectations and just-in-time delivery strategies to drive much of this growth. During the last ten years, logistics operations in Los Angeles and Orange Counties have continuously moved East to realize lower costs. Enormous warehouses and distribution centers have become omnipresent, rising along the I-10 and I-215 corridors. In addition to these distribution centers, many third-party logistics operators are also setting up in the Inland Empire to take advantage of the same cost-cutting factors. With two of the busiest seaports in the United States nearby along with two airports specializing in logistics operations, the Inland Empire has developed into a major logistics enterprise center and all indicators point to its continued growth.

To advance the economic opportunities in a way that promotes inclusiveness, better pathways to good jobs, and improving educational outcomes, the Inland Empire Economic Growth & Opportunity (IEGO) campaign is bringing together community organizations and leaders from Riverside and San Bernardino Counties to develop specific actionable strategies and support for industry sectors with high potential for growth. Recognizing the region’s current assets and unique position for industry growth, a centerpiece initiative of the IEGO campaign is the proposed *Excellence in Logistics and Supply Chain Management Center*. This center represents a concerted effort to make the region a global hub for innovation in logistics and supply chain management, and thereby, create new jobs and educational opportunities for our residents.

## **Education Inventory & Assessment**

According to the Institute for Applied Economics of the Los Angeles County Economic Development Corporation, it is expected that 21,430 new job openings will be created by the logistics and transportation industries throughout Southern California between 2018 and 2023. In addition, the industries will need 69,910 workers over the same period to replace those who retire and for other reason of attrition. Occupations in greatest demand throughout Southern California will include drivers and warehouse workers, with approximately 7,010 new jobs and 21,760 replacement jobs added over the next 5 years. To continue having a vibrant and growing logistics and supply chain industry in our two-county region of Southern California, and to ensure that the industry fully benefits from a well-trained workforce, the right educational programs in the right measure must be in place. As a consultant in developing the Excellence in Logistics and Supply Chain Management Center proposal, the Georgia Tech Supply Chain and Logistics Institute emphasized the need to address both the current and future workforce, as well as create an environment that encourages growth and more executive positions in the region: “A wide range of delivery mechanisms, credentials, and content is required.”

To better assess the type and level of educational offerings needed to support a growing logistics and supply chain industry in the Riverside/San Bernardino region (to be referred to throughout as “the region”), four steps were taken: (1) an inventory of logistics and supply chain related programs and courses currently available at community colleges, regional university campuses, and the workforce development system was created, (2) occupational data with staffing patterns and job projections were obtained from the California Community College Center of Excellence for Labor Market Research, (3) occupations with the greatest projected need for hiring were identified, and (4) information on industry recognized credentials was compiled and listed. The authors of this report recognize that education and training from labor and community-based organizations, directly related to the logistics and supply chain industry, may be available in the region but none were discovered in the research process. Submitting information about them for listing in the inventory is encouraged. Additionally, it is difficult to separate transportation and logistics as industry segments when discussing opportunities for growth and workforce development. Some of

the broad-brush data in this report will naturally refer to both. However, because transportation has one foot in the movement of goods but the other foot in the movement of people, generally speaking, some but not all high-demand transportation occupations in our region were considered in this assessment of education and training needs.

The inventory shows that, with a few exceptions, the education and training currently available for workforce development in this field is primarily geared to those wishing to enter the industry at a management level or for those already employed in the logistics industry and wishing to advance to management roles in their career. Examples of this would be bachelor's degrees in administration and management with logistics and supply chain management concentrations available at several university campuses, and an MBA degree with a concentration in operations and supply chain management. At the community college level, logistics related certificates and associate degrees designed to prepare students for management or non-managing administrative roles in the industry are available at three of the region's 12 community colleges. In addition, workforce training programs that provide skill training for technical occupations or product handling are offered periodically. The most active logistics and supply chain related programs for technical skill development are at the Norco College-hosted NSF Advanced Technological Education Center as well as Norco's regular training of workers in both logistics and supply chain automation.

As for industry recognized credentials in logistics and supply chain management, the inventory shows that, except for one, the well-known certifications are also targeted for higher level logistics and management careers. Examples of this can be seen with certifications from the Association of Supply Chain Management or the Council of Supply Chain Management Professionals (See *Logistics Credentialing* tab in the Logistics Education Data spreadsheet). The one exception is credentialing available from the Manufacturing Skills Standards Council. They offer logistics credentialing via the Certified Logistics Associate (CLA) and the Certified Logistics Technician (CLT) certificates. The CLA certificate is achieved after obtaining a passing score in a fundamental knowledge assessment while the CLT delves a bit deeper into the workings of warehouses and distribution centers. Classes are occasionally available at community colleges to prepare individuals to sit for both certifications, but this study found they are not currently offered on a routine basis in our region. In the recent

past, and at various times, training for the CLA and CLT certifications have been offered by the following institutions in the Inland Empire/Desert Region:

- Riverside Community College
- Chaffey College / Intech Center
- San Bernardino Community College

## **Looking Ahead**

Currently, San Bernardino County and the next largest workforce, Riverside County, has more than 52,000 employees in the logistics and supply chain industry. San Bernardino alone boasts a logistics workforce of more than 40,000, according to 2019 county-level data. San Bernardino, Riverside, and Los Angeles Counties combine for a total of about 90,555 employees in the warehouse and storage sector. The area ranks second highest in warehouse construction in the country with 22.7 million square feet in projects underway. The only market experiencing more construction is Dallas/Fort Worth, Texas. According to the Center of Excellence for Labor Market Research – in the transportation and logistics sectors combined – there were 150,264 jobs in our region in 2019. A growth rate of 17% is expected over 5 years, adding 26,060 jobs to the combined sectors in our region by 2024.

To take a closer look at logistics occupations and their potential for growth in the two-county region, a *Staffing Patterns Report for Transportation and Logistics* in the Riverside / San Bernardino / Ontario area was developed and analyzed by the Center of Excellence for Labor Market Research. The report included job numbers for management, administrative, technical, and labor oriented occupations currently found within the transportation and logistics industries of our region. Again, transportation occupations that typically function outside the logistics and supply chain industry were excluded from consideration. The following highlights three education-level and occupation groupings:

### **Management Level Occupations Typically Requiring a Bachelor’s Degree**

The education level for those entering management positions is, typically, the bachelor’s degree. Management occupations with the highest number of jobs in our region are General and Operations Managers; Transportation, Storage, and Distribution Managers; and Sales Managers.

### **Administrative & Technical Occupations Typically Requiring a Bachelor’s Degree**

Several administrative and technical positions also seem to require a bachelor’s degree. The occupations in this category with the highest job numbers are Business Operations Specialists, Logisticians, Human Resources Specialists, Buyers and Purchasing Agents, Accountants and Auditors, Industrial Engineers, and Training and Development Specialists.

### **Administrative & Labor-oriented Occupations Requiring an Associate Degree or Less**

The typical education level for those entering most administrative and labor-oriented positions is “Associate Degree or Less” (with only a few at the associate degree level). The occupations with the highest job numbers in this category are Stock Clerks and Order Fillers; Shipping, Receiving, and Traffic Clerks; Office Clerks, General; Customer Service Representatives; First-line Supervisors of Office and Administrative Workers; Dispatchers; Counter and Rental Clerks; Secretaries and Administrative Assistants; Counter and Rental Clerks; Production, Planning, and Expediting Clerks; and others included in the table below.

For each of the above categories, the following table shows industry occupations in the region with the highest job numbers in 2018 and 2019, their projected job numbers for 2023, and the number change from 2018 to 2023. There were numerous transportation occupations with high numbers in the Staffing Patterns Report as well. Although the focus of this study is on logistics and supply chain related education, transportation is an integral part of the sector, so related high-demand transportation occupations were included in a separate category of the table for a broader consideration of workforce needs.

Logistics & Supply Chain Occupations with Highest Current Demand and Projected Growth

Description	Employed in 2018	Employed in 2019	Projected Employment in 2023	Change (2018 – 2023)	Median Hourly Earnings
<b>Management Occupations Having a Bachelor’s Degree as Typical for Entry</b>					
General and Operations Managers	1,415	1,472	1,726	311	\$48.54
Transportation, Storage, and Distribution Mgrs.	1,364	1,413	1,661	297	\$41.71
Sales Managers	253	262	297	44	\$43.00
<b>Administrative and Tech Occupations Having a Bachelor’s Degree as Typical for Entry</b>					
Business Operations Specialists, All Other	486	506	601	115	\$31.18
Logisticians	356	374	452	96	\$34.88
Human Resources Specialists	325	337	401	76	\$29.60
Buyers and Purchasing Agents	280	288	340	60	\$27.40
Accountants and Auditors	258	270	322	64	\$33.75
Industrial Engineers	126	133	169	43	\$38.44
<b>Administrative and Labor Occupations Requiring: Some College</b>					
<b>High School or Less</b>					
Stock Clerks and Order Fillers	6,907	7,139	8,504	1,597	\$12.93
Shipping, Receiving, and Traffic Clerks	4,406	4,582	5,543	1,137	\$15.99
Office Clerks, General	1,975	2,019	2,247	272	\$17.08
Customer Service Representatives	1,611	1,676	1,972	361	\$17.44
First-line Supervisors of Office/Admin. Workers	1,457	1,510	1,769	312	\$26.41
Dispatchers	1,403	1,423	1,536	133	\$18.60
Maintenance and Repair Workers, General	1,139	1,195	1,494	355	\$19.84
Secretaries and Administrative Assistants	1,086	1,102	1,196	110	\$18.58
Counter and Rental Clerks	986	1,038	1,157	171	\$14.87
Production, Planning, and Expediting Clerks	934	975	1,185	251	\$22.06
Bookkeeping, Accounting, and Auditing Clerks	901	922	1,016	115	\$19.60
Sales Representatives, Services, All Other	880	915	1,046	166	\$22.92
Couriers and Messengers	692	740	812	120	\$14.17
Cargo and Freight Agents	550	608	802	252	\$23.15
<b>Transportation Specific</b>					
Laborers and Freight, Stock, & Material Movers	33,914	35,269	42,094	8,180	\$14.14
Heavy and Tractor-Trailer Truck Drivers *	23,126	23,609	25,924	2,798	\$21.57
Light Truck or Delivery Services Drivers	6,794	7,165	8,414	1,620	\$17.83
Packers and Packagers, Hand	4,710	4,779	5,368	658	\$12.52
First-line Supervisors of Transportation and Material Moving Workers	4,319	4,480	5,324	1,005	\$27.19
Bus and Truck Mechanics & Diesel Engine Spec.	1,623	1,653	1,803	180	\$24.05
Machine Feeders and Off-bearers	1,008	1,046	1,245	237	\$14.24
Cleaners of Vehicles and Equipment	756	784	861	105	\$11.92

\* Not necessarily college, but post-secondary training is typical

According to the Institute for Applied Economics of the Los Angeles County Economic Development Corporation, in its report on *Trade & Logistics in Southern California (2017)*, approximately 42% of all openings in Southern California over the next five-year period will require a high school diploma but will need no on-the-job experience. More than 25% can be filled by entrants without a high school diploma. Slightly more than 9% will require some post-secondary schooling, and 16.1% will need a bachelor's degree in a related field. While the proportions may be slightly different in our region among the high-demand occupations, the numbers seem to reflect the projections for Southern California overall.

It is important to note that the labor market data used in this report are pre-Covid-19. The number of jobs existing in a given occupation during 2018 or 2019 may not reflect the status of employment today. Likewise, projected future employment may be impacted by the current economic recession, the extent and length of which is unknown. The following assessment is meant to apply during labor market conditions similar to those that existed before Covid-19.

## **Conclusions**

To determine where gaps may exist between the projected job demand and supply of qualified workers from the educational programs in our region, additional data on degree and certificate completers are needed from each education provider in the inventory. Gathering this data and comparing demand with supply could be a valuable next phase of this study. However, based purely on projected growth in the high demand occupations, a potential gap appears to be with management level training typically met by bachelor's level degree and certificate programs. A logistics industry panel featured in the virtual *2020 eCommerce and Logistics Summit*, held July 8, 2020, confirmed the value of the bachelor's degree when asked about the type of education needed to enter executive positions in the logistics industry. Their response was a unanimous, "bachelor's level."

Our universities have a significant role to play in preparing students to enter the workforce at the management level and in meeting additional management skill needs as the logistics and supply

chain industry grows and new jobs are created in our region. Among the region's university campuses, three offer professional certificate programs in logistics and/or supply chain management and four offer business or management degrees with logistics-related concentrations (See Logistics Education Inventory). Most of those preparing for management roles or are seeking career advancement through additional undergraduate or graduate coursework are likely well-served by our universities at this time. However, with the projected growth in the industry and creation of new management level positions in our region, growth may also be required in the enrollment capacity and offerings of our established university programs in order to keep pace with regional demand.

Although the Logistics and Supply Chain Education Inventory attempts to list the region's programs that are specifically designed for logistics and supply chain workforce preparation and development, it is important to consider offerings from other disciplines that support the "must-know" needs of the industry's managers, such as safety, health, and environmental regulations, and that support initiatives that drive growth opportunities and new directions in the region. For example, the UCR College of Engineering offers regular courses on a variety of environmental issues, technologies, and regulations impacting the transportation and logistics sectors. A sample of these courses are listed in the Inventory and support the Excellence in Logistics and Supply Chain Management Center initiative and its emphasis on sustainability.

Community colleges also have a significant role to play in management level education for the growing logistics and supply chain industry. Associate degree programs provide coursework at the lower-division level that help students enter certain occupations, supports career advancement, and/or prepares those seeking to transfer into the upper-division of a bachelor's degree program. Among the region's community colleges, two offer certificate programs in Supply Chain Management and one offers a certificate in Business Administration with a logistics management concentration. Two offer Associate of Science degrees in Supply Chain Management and one offers an Associate of Science degree in Business Administration with a logistics management concentration (See Logistics and Supply Chain Education Inventory).

For the middle-skill technical occupations, the region currently has a number of community college career education programs that provide relevant skills training and that are positioned to grow as demand grows for workers in these occupations. There are only a few technical occupations identified in the Staffing Patterns Report for which the typical education for entering each is an associate degree. Those occupations included electrical, electro-mechanical, engineering technician, and non-administrative computing occupations, for which a small number of new jobs in the logistics and supply chain sectors are currently expected. However, as sector operations become increasingly automated, networked, and computer controlled, these specific middle-skill occupations will grow in number and skill complexity. To meet the growth challenge, related community college programs will need to be enhanced with advanced electro-mechanical, process control, and IT curricula.

In addition to providing for-credit certificate and degree pathways, community colleges are equipped to train managers for higher level leadership roles and to deliver professional training that keeps manager and executive level employees up-to-date on industry trends and promising practices. Many college training programs design their curriculum around preparing students for industry validated, nationally recognized certification exams (See *Logistics Credentialing* tab of the Logistics and Supply Chain Education Inventory for list, descriptions, and sponsoring organizations). To better assess the specific demand for widely known industry certifications in the labor market, the Center of Excellence for Labor Market Research conducted a search of online job postings in the transportation and logistics industry cluster. The search was conducted across the State of California over the last five years (August 1, 2015 to July 31, 2020). Of the eleven certifications reviewed from the inventory list, only three returned reliable results. Results for the remaining eight were identified but need further analysis due to the unreliable nature of key word search-only results. The three with reliable results are as follows:

<b>Certification</b>	<b>Sector &amp; Credential</b>	<b>Sector &amp; Key Word</b>
Certified in Production and Inventory Management (CPIM)	243	491
Certified Professional in Supply Management (CPSM)	87	441
Certified Supply Chain Professional certification (CSCP)	49	396

A complete report on online job postings for industry certifications is available upon request.

Several of the region's community colleges have departments that provide this type of professional training on a "not-for-credit" (or contract education) basis. These departments are designed to confer industry credentials and to meet training needs on a rapid-response, industry-suitable schedule. They are also equipped to provide training on a customized basis. Many of these programs generate revenue through Employment Training Panel (ETP) funding – a business and labor-supported state program that supports vocational training for upskilling and reskilling workers. This allows the colleges to remain flexible, operate efficiently, and to quickly implement training and certification programs needed by industry. There are no training programs for industry recognized certifications scheduled in the region at the time of this report. However, they can be planned and scheduled in a relatively short time frame if funding, a contract agreement, or fee revenue is available and provided to colleges in the region for this purpose.

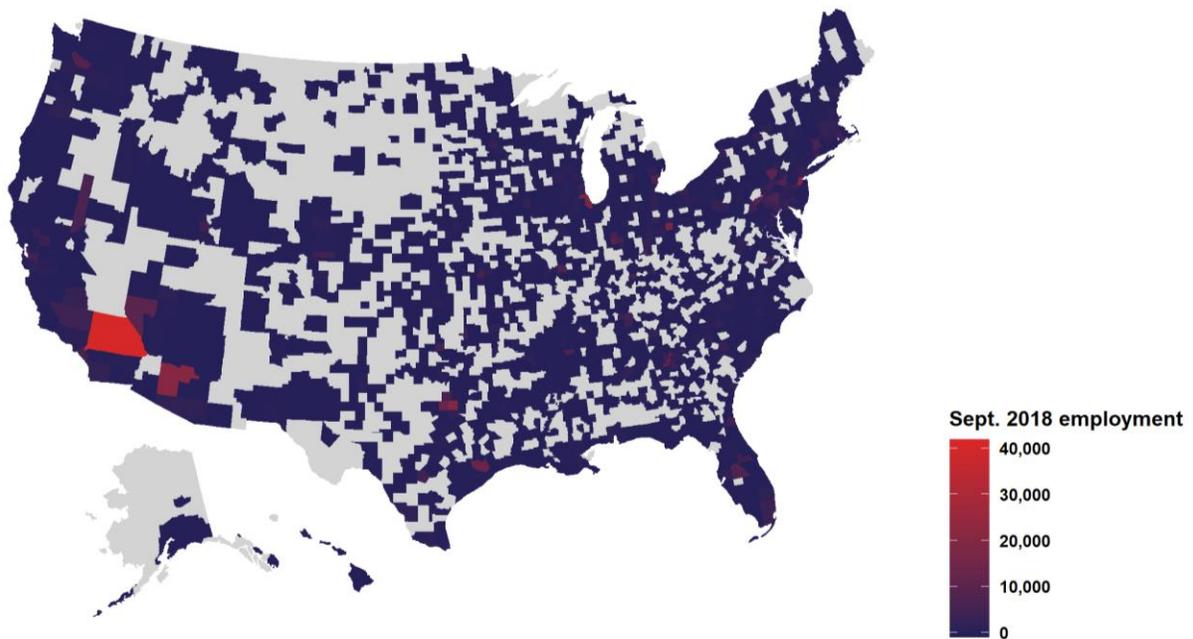
Another potential gap to be addressed in meeting future logistics and supply chain workforce needs, as indicated by the labor market data, is recruitment and training for administrative support and clerical positions such as Stock Clerks; Order Fillers; Shipping, Receiving, & Traffic Clerks; and Truck Loaders. Indeed, there is a wide range of jobs like these listed in the Staffing Patterns Report. These positions typically require only a high-school level education but, in total, amount to a large number of jobs that should not be ignored. Entry-level and lower-skilled jobs associated with the logistics and supply chain industry primarily require on-the-job training. It is interesting to note that between 75 and 80 percent of the jobs in the industry require only a high school education or less. However, numerous reports and articles indicate that many sector operations continue to be automated in various ways and, over time, will displace work in occupations such as those mentioned at the top of this paragraph. The upside is that automation will create jobs in the logistics and supply chain sectors requiring more of the skills mentioned in the middle-skill occupations two paragraphs above. It is difficult to say at this point whether there will be a net loss of entry-level, lower-skill jobs in our region resulting from automation or a net gain due to industry growth.

One shortcoming for entry-level jobs requiring a high school education or less is that the industry must rely on untrained individuals with no knowledge of the industry. Employers will benefit from a

better prepared workforce if these candidates could gain some logistics and supply chain industry knowledge at the onset of employment or prior to employment. An opportunity exists to prepare potential candidates for entry-level jobs in these sectors with training offerings of eight to ten weeks prior to or at the point of hire. The region's community colleges are well equipped to provide short-term training and to work with the region's high schools to incorporate introductory course content and create logistics and supply chain career pathways. The current recession is expected to adversely impact the logistics and supply chain industry for an unknown length of time. It is critical that the educational system utilize its most nimble, efficient, and impactful resources to meet the training needs of companies and to help get people back to work. It is also critical that employers and education providers begin to form partnerships to identify and plan for addressing these needs. This is consistent with the Community College Chancellor's Office Strong Workforce objectives announced for Round 5 projects and suggests a special role for those community college departments charged with conducting not-for-credit contract and fee-based programs.

With the continuing rise in logistics and supply chain operations, particularly in Southern California, a common-sense approach would be to provide broad-knowledge training for those wishing to enter the logistics field at the entry-level and to prepare them for higher-level jobs by training on the fundamentals of the logistics and supply chain industry. For example, a program that would impart foundational knowledge on the major functions in a typical distribution center, from receiving, stocking, order processing, shipping, and even reverse logistics would be invaluable for those wishing to get a foot in the door and to work up to higher level positions. At that point, an individual could take advantage of the many degree and certificate programs currently offered at various colleges and universities. Targeted programs aimed at reducing the time spent by new entrants in on-the-job training could create a career-ready workforce for our region in a reduced time frame.

**Warehouse workforce is highly concentrated**  
2018 warehouse and storage employment



**California Logistics Employment Profile \***

TOTAL CA LOGISTICS JOBS	FRONT-LINE LOGISTICS JOBS	TOTAL LOGISTICS AS % OF CA WORKFORCE
1,160,680	812,476	6.82%

HOURLY MEAN WAGE	ANNUAL MEAN WAGE
\$15.49	\$32,220

\*Source: BLS Occupational Employment Statistics 2018

Note: As of June 2020, supply chain professionals with a bachelor's degree have a median salary of \$78,750, 24% higher than the national median, according to the Association for Supply Chain Management (ASCM).

**Demographics\***

MALE	FEMALE
63%	37%

\*Source: MIT Center for Transportation and logistics

National statistics on some of these occupations can be found in the table below.

- Logisticians
- Quality Control Inspectors
- Cost Estimators
- Industrial Engineers
- Wholesale/Retail Buyers
- First-line Supervisors
- Transportation Workers
- Material Moving Workers

	<b>1<sup>st</sup> Line Supervisors</b>	<b>Transportation Workers</b>	<b>Material Moving Workers</b>
2019 Median Annual Wage	\$55,060	\$37,000	\$31,770
Growth Rate	+5%	+7%	+5%
Education	H.S	H.S	No formal ed.
Work Experience	< 5 yrs.	none	None
On-the-job training	none	Short-term	Short-term

	<b>Logisticians</b>	<b>Cost Estimators</b>	<b>QC Inspectors</b>	<b>Buyers</b>	<b>Industrial Engineers</b>
Median Annual Salary	\$74,600	\$^64,040	\$38,250	\$57,340	\$87,040
Job Growth	+5%	+9%	-18%	-7%	+8%
Education	BA / BS	BA / BS	BA / BS	BA / BS	BA / BS

Source: \*U.S. Bureau of Labor Statistics (BLS)