



# LABOR MARKET REPORT: Motorcycle Technicians

SAN DIEGO AND IMPERIAL COUNTIES

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## Executive Summary

Motorcycles have increasingly become a mainstream mode of transportation in the United States as shifts in rider demographics and motorcycle usage ushered in significant industry changes that affect both technology and employment. The overall number of motorcycles in the U.S. has grown since 2003 with California having the largest number of motorcycle registrations and the highest employment rate for motorcycle mechanics in the nation. Projected employment growth in the industry; however, remains low. San Diego County has the second-highest concentration of motorcycle-related employment in the state, but as a relatively niche industry, motorcycle mechanics are projected to have just five openings per year for the next five years.

As a part of the larger Advanced Transportation industry sector, San Diego's motorcycle industry has approximately 440 motorcycle repair companies. Employment opportunities in motorcycle repair and related industries remain high, and if provided with the appropriate skills, education and training, workers can be better positioned for employment in the industry.

In order for education and training providers to produce workers qualified to meet employer demands, this report seeks to address the opportunities and challenges found in the motorcycle industry and present recommendations for greater employment opportunities in the region. Report findings were based on qualitative and quantitative secondary data sources, interviews, surveys and online job postings.

The study provides an overview of San Diego's motorcycle industry and identifies employment trends and employer demands. As a greater number of motorcycle mechanics are contracted on an as-needed basis, employers that do hire motorcycle mechanics tend to hire from dealership partners to ensure that workers have the requisite skills and training. Because of the specialized, technical nature of technician positions, employers desire workers who have a combination of education and hands-on training, or prior experience. San Diego does not currently have a motorcycle mechanic training program, and many related training programs throughout the state lack the hands-on training required by employers.

This study finds that due to very limited job opportunities for motorcycle technicians and related occupations in the region, there is no immediate need for community colleges to develop a training program. Such program would be viable if the college is planning to serve a broader geographic market with its graduates. For colleges that decide to embark on Motorcycle Technician program, this report recommends that it should focus on current and emerging technologies and include a strong diagnostic component. Establishing partnerships with motorcycle brands or manufacturers to better align curriculum with industry demands would be critical for the success of the program graduates. Programs should incorporate strong work experience components, either through an apprenticeship model or an internship. Additionally, workers interested in becoming motorcycle mechanics should consider employment in compatible occupations that require similar education, training and skill sets.

## Introduction

U.S. household penetration of motorcycles increased over the past five years by 20 percent or 1.5 million individuals, becoming increasingly mainstream in American culture.<sup>1</sup> Between 2003 and 2009, the number of motorcycles owned in the U.S. grew 19 percent to approximately 10.4 million.<sup>2</sup> California has the greatest number of motorcycle registrations in the nation with about 800,000 registered motorcycles, as well as the highest employment rate for motorcycle mechanics, with 1,360 jobs in 2013.<sup>3</sup>

The increase in motorcycle sales has led to a gradual evolution in the industry as seen through changes in rider demographics and motorcycle usage. Motorcycles are increasingly used for everyday transportation as opposed to just leisure riding over short distances.<sup>4</sup> These changes impact both technological advancements and employment in the motorcycle industry.

The motorcycle industry is part of the larger Advanced Transportation industry sector, which encompasses all means of transportation from land to air. Constant evolution and technological developments in the Advanced Transportation industry makes it challenging for education and training providers to produce quality workers that meet employers' needs. To better meet industry demands, the California Community Colleges Chancellor's Office Advanced Transportation and Renewable Energy (ATRE) program<sup>5</sup> commissioned the Centers of Excellence<sup>6</sup> and the San Diego Workforce Partnership<sup>7</sup> to conduct this study and provide insight on what types of skills employers expect from motorcycle technicians.

This study documents the employment opportunities for San Diego's motorcycle and motorcycle-related industries, specifically for motorcycle technicians, motorboat technicians and mechanics, machine tool setters and operators, small engine mechanics, and recreational vehicle service technicians.<sup>8</sup> The study provides a detailed understanding of job growth and employer needs for these professions and will be used to inform program development for Advanced Transportation at the local community colleges. In addition to analyzing online job postings and reviewing secondary data sources, motorcycle repair shops and motorcyclists were interviewed. For more information on the methodology see Appendix A.

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<sup>1</sup> [motorcycle-usa.com/2/3527/Motorcycle-Article/MIC-Survey--Motorcycling-Goes-Mainstream.aspx](http://motorcycle-usa.com/2/3527/Motorcycle-Article/MIC-Survey--Motorcycling-Goes-Mainstream.aspx)

<sup>2</sup> [motorcycle-usa.com/2/3527/Motorcycle-Article/MIC-Survey--Motorcycling-Goes-Mainstream.aspx](http://motorcycle-usa.com/2/3527/Motorcycle-Article/MIC-Survey--Motorcycling-Goes-Mainstream.aspx)

<sup>3</sup> [statista.com/topics/1305/motorcycles-in-the-us/](http://statista.com/topics/1305/motorcycles-in-the-us/); [bls.gov/oes/current/oes493052.htm#\(3\)](http://bls.gov/oes/current/oes493052.htm#(3))

<sup>4</sup> [ehow.com/list\\_6891648\\_motorcycle-industry-trends.html](http://ehow.com/list_6891648_motorcycle-industry-trends.html)

<sup>5</sup> The ATRE program represents an array of clean energy technologies that form a critical part of California's strategy for reducing its climate change impact. Through the Advanced Transportation Technology and Energy Center at San Diego Miramar College, the ATRE initiative works with industry and colleges to provide up-to-date technical training, ensuring that graduates are ready and able to actively participate in the workforce as part of the Doing What Matters initiative. ([doingwhatmatters.cccco.edu](http://doingwhatmatters.cccco.edu))

<sup>6</sup> [coecc.net](http://coecc.net)

<sup>7</sup> [workforce.org](http://workforce.org)

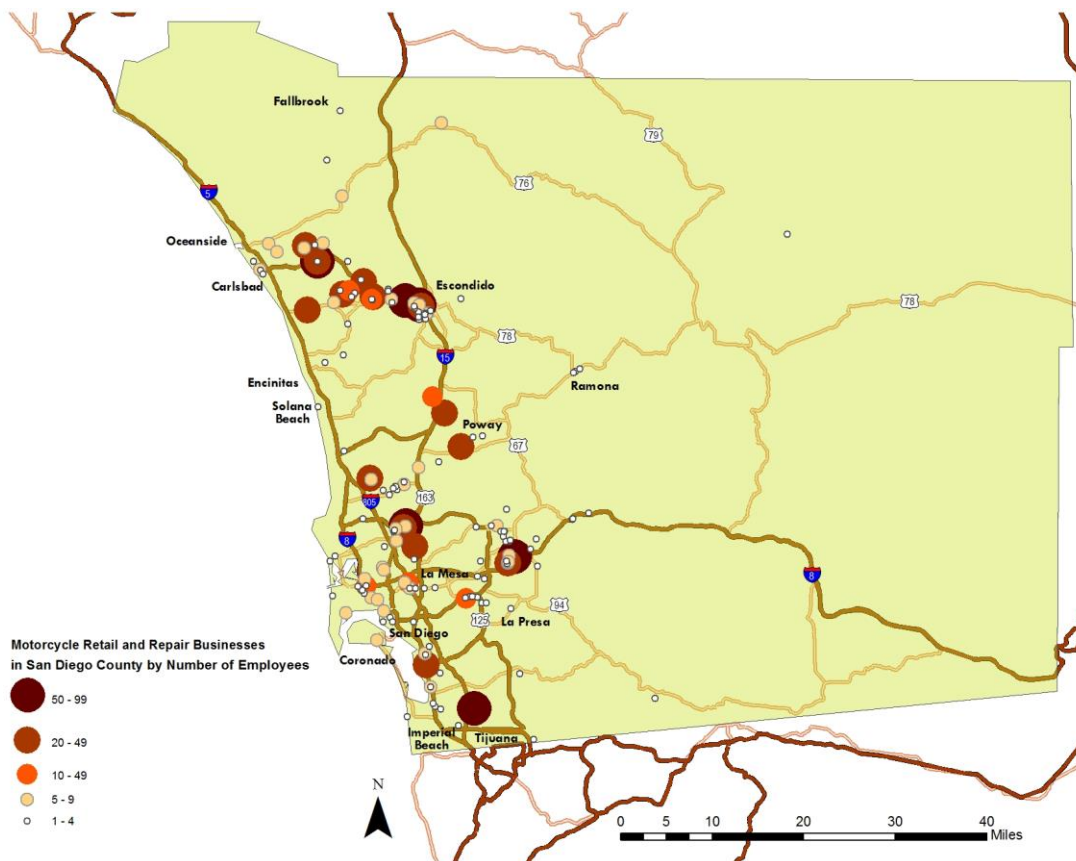
<sup>8</sup> Definitions for each occupation were derived from Standard Occupational Classification (SOC) codes. Standard Occupational Codes (SOC) is a coding standard used by federal agencies to collect and disseminate employment data related to industries and occupations.

## Industry Overview

In San Diego County, there are approximately 440 companies that maintain and/or repair motorcycles. Combined, these companies earn an estimated \$866 million in sales per year<sup>9</sup> and employ 2,000 to 2,500 workers in a variety of occupations.<sup>10</sup>

Motorcycle retail and repair businesses can be found throughout San Diego County with larger shops concentrated along the 78 freeway and smaller shops concentrated in the metro San Diego area (Figure 1). However, another trend seen in San Diego County is the spread of several small motorcycle repair shops throughout suburban neighborhoods. Since many individuals across the county own and ride motorcycles, the shops are located in convenient locations near riders' residences.

**Figure 1: Motorcycle Retail and Repair Businesses in San Diego County by Number of Employees<sup>11</sup>**



Motorcycle, ATV, and Other Motor Vehicle Dealers<sup>12</sup> (the largest of the industries that employ motorcycle mechanics) in San Diego County has an employment concentration approximately 20 percent higher than the national average.<sup>13</sup> Approximately 101 motorcycle mechanics are employed

<sup>9</sup> Estimates from InfoUSA and Inside Prospects databases for San Diego County.

<sup>10</sup> Estimates from InfoUSA and Inside Prospects databases and Economic Modeling Specialists, International. (EMSI) data for San Diego County. Imperial County has insufficient data to conduct an analysis.

<sup>11</sup> Map developed from InfoUSA and Inside Prospects databases

<sup>12</sup> NAICS 441228

<sup>13</sup> Location Quotient (LQ) is 1.2, meaning the concentration of employment is approximately 20 percent higher than the national average

in the Motorcycle, ATV, and Other Motor Vehicles industry, while about 100 are employed in other related industries.

## Industry Trends

### Electric Motorcycles and Bikes

Electric motorcycles currently make up less than 1 percent of the total motorcycle market in the U.S.<sup>14</sup> While global annual sales are expected to reach 1.4 million vehicles by 2023, demand will mostly be concentrated in China.<sup>15</sup> Industry leader Zero Motorcycles reported record sales for 2014 and expects continued growth in 2015 for their electric vehicles. The company expects to sell 2,400 e-bikes this year.<sup>16</sup> In addition to their core markets in North America and Europe, the company has also expanded into international markets including Thailand, Indonesia and Israel.<sup>17</sup> Demand from government agencies and law enforcement has boosted fleet business sales and Zero Motorcycles have been sold to almost 50 U.S. agencies, including the Los Angeles Police Department and the Philadelphia Fire Department.<sup>18</sup> The 2015 motorcycles will include upgraded consumer and police/authority models, as well as a military spec version.<sup>19</sup> Motorcycle mechanics will need to update their diagnostic and repair skills in order to meet the growing diversity in motorcycle designs and technologies.

### Sportier Bikes

Evolving demographics are changing the motorcycle market as riders are becoming progressively younger, forcing manufacturers to target a younger market. Super sport, racing-style bikes are especially popular among riders in their mid-late twenties<sup>20</sup> and make up approximately 30 percent of the motorcycles purchased by young riders.<sup>21</sup> As motorcycle designs and technology evolve and adapt to changing demographics, motorcycle mechanics will also need to update their skills and knowledge in order to remain current with the most recent trends.

### High-Tech Helmets

Skully Helmets began taking orders in 2014 for its Skully AR-1, a motorcycle helmet designed to improve rider safety. The helmet incorporates visual and audio-cued GPS navigation, a 180-degree review camera and heads-up display system and has won awards from Demo and South by Southwest Interactive.<sup>22</sup> Advancements in helmet technology provide motorcyclists with a safer riding experience, encouraging more people to ride.

### Motor Scooters

Navigant Research reports that e-scooter sales will grow from 4.1 million vehicles annually in 2014 to 4.6 million in 2023.<sup>23</sup> Total worldwide sales of motorcycles and scooters are estimated to reach 55 million between 2014 and 2023.<sup>24</sup> While male customers tend to favor motorcycles and scooters, female customers generally prefer mopeds and small scooters.<sup>25</sup>

In the U.S., motorcycles continue to outweigh scooters in popularity. Scooters make up just 7.4 percent of the overall market and sales in 2013 dropped 15.5 percent to 34,742 units sold, making scooters

<sup>14</sup> [jsonline.com/business/more-manufacturers-dealers-showing-interest-in-electric-motorcycles-b99295579z1264118701.html](http://jsonline.com/business/more-manufacturers-dealers-showing-interest-in-electric-motorcycles-b99295579z1264118701.html)

<sup>15</sup> [fool.com/investing/general/2014/09/01/heres-why-harley-davidson-wont-mass-produce-an-ele.aspx](http://fool.com/investing/general/2014/09/01/heres-why-harley-davidson-wont-mass-produce-an-ele.aspx)

<sup>16</sup> [fool.com/investing/general/2014/09/01/heres-why-harley-davidson-wont-mass-produce-an-ele.aspx](http://fool.com/investing/general/2014/09/01/heres-why-harley-davidson-wont-mass-produce-an-ele.aspx)

<sup>17</sup> [motorcyclecruiser.com/zero-motorcycles-reports-record-sales-2014](http://motorcyclecruiser.com/zero-motorcycles-reports-record-sales-2014)

<sup>18</sup> [motorcyclecruiser.com/zero-motorcycles-reports-record-sales-2014](http://motorcyclecruiser.com/zero-motorcycles-reports-record-sales-2014)

<sup>19</sup> [motorcyclecruiser.com/zero-motorcycles-reports-record-sales-2014](http://motorcyclecruiser.com/zero-motorcycles-reports-record-sales-2014)

<sup>20</sup> [rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/special\\_reports\\_and\\_issue\\_briefs/special\\_report/2009\\_05\\_14/html/entire.html](http://rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/special_reports_and_issue_briefs/special_report/2009_05_14/html/entire.html)

<sup>21</sup> [mic.org/news052109.cfm](http://mic.org/news052109.cfm)

<sup>22</sup> [cnet.com/news/skully-opens-pre-orders-for-high-tech-helmet/](http://cnet.com/news/skully-opens-pre-orders-for-high-tech-helmet/)

<sup>23</sup> [navigantresearch.com/newsroom/sales-of-electric-motorcycles-and-scooters-will-reach-6-million-annually-by-2023](http://navigantresearch.com/newsroom/sales-of-electric-motorcycles-and-scooters-will-reach-6-million-annually-by-2023)

<sup>24</sup> [navigantresearch.com/newsroom/55-million-electric-motorcycles-and-scooters-will-be-sold-worldwide-from-2014-to-2023](http://navigantresearch.com/newsroom/55-million-electric-motorcycles-and-scooters-will-be-sold-worldwide-from-2014-to-2023)

<sup>25</sup> [prweb.com/releases/motorcycles\\_scooters/mopeds\\_two\\_wheelers/prweb4695274.htm](http://prweb.com/releases/motorcycles_scooters/mopeds_two_wheelers/prweb4695274.htm)

the worst performer in the market.<sup>26</sup> 2014 (Q3) sales remained low with just 28,483 scooters sold.<sup>27</sup> While motorcycles are the most popular form of two-wheeled transportation, scooters are still a relevant part of a motorcycle mechanic's job, as both require repair and maintenance.

### Three-Wheelers

Motorized three-wheeled vehicles such as the Can-Am Spyder<sup>28</sup> give consumers added stability over traditional two-wheeled vehicles while still providing convenience and fuel efficiency. Minneapolis-based Polaris Industries unveiled the "Slingshot" in November 2014, which seats two passengers, while global competitors like Toyota are introducing electric three-wheelers like the i-ROAD electric vehicle, which can reach speeds of 37 miles per hour. In developing countries where rickshaws have traditionally been seen as a means of transportation, there is a huge market for three-wheeled vehicles.<sup>29</sup> The Japanese electric vehicle manufacturer Terra Motors expects to sell 10,000 electric three-wheelers in India in 2015.<sup>30</sup>

### Four-Wheelers

The all-terrain vehicle (ATV) market is concentrated mainly in North America and Europe (with the U.S. and Canada accounting for over three-quarters of the global ATV market<sup>31</sup>) while the most advanced production technology has emerged primarily from the U.S., Japan and Canada.<sup>32</sup> Ranging in price from \$1,500 to over \$10,000,<sup>33</sup> ATVs are typically manufactured for recreational and utility purposes, leading AVT sales to fluctuate according to economic conditions and changes in disposable income. In 2013, 228,305 ATVs were sold – an increase of 0.5 percent from 2012,<sup>34</sup> while 2014 (Q3) sales continued to decline to just 162,960 units.<sup>35</sup>

The popularity of ATVs has led to a range of styles including supercar, amphibious, futuristic, urbanized, hipster and tank-like, while a growing number of manufacturers have begun incorporating clean technology into their vehicles.<sup>36</sup> This trend towards environmentally friendly ATVs is seen in Facundo Elia's new eco-electric ATV "Quad" and Doran Electric Vehicles' e-ATVs, which are lighter than golf carts but 40% more powerful.<sup>37</sup> Workers who maintain and repair small engines need to be familiar with many types of ATVs to be successful in their work.

<sup>26</sup> [rideapart.com/articles/2013-u-s-motorcycle-sales-scooters](http://rideapart.com/articles/2013-u-s-motorcycle-sales-scooters)

<sup>27</sup> [motorcycle-usa.com/2/19487/Motorcycle-Article/2014-Motorcycle-Sales-Up-2-4--Through-Q3.aspx](http://motorcycle-usa.com/2/19487/Motorcycle-Article/2014-Motorcycle-Sales-Up-2-4--Through-Q3.aspx)

<sup>28</sup> [can-am.brp.com/spyder](http://can-am.brp.com/spyder)

<sup>29</sup> [electricvehiclesresearch.com/articles/7194/terra-motors-forays-into-the-electric-three-wheelers-market-in-asia](http://electricvehiclesresearch.com/articles/7194/terra-motors-forays-into-the-electric-three-wheelers-market-in-asia)

<sup>30</sup> [electricvehiclesresearch.com/articles/7194/terra-motors-forays-into-the-electric-three-wheelers-market-in-asia](http://electricvehiclesresearch.com/articles/7194/terra-motors-forays-into-the-electric-three-wheelers-market-in-asia)

<sup>31</sup> [bizjournals.com/prnewswire/press\\_releases/2015/01/09/MN04255](http://bizjournals.com/prnewswire/press_releases/2015/01/09/MN04255)

<sup>32</sup> [reuters.com/article/2014/01/23/research-and-markets-idUSnBw235439a+100+BSW20140123](http://reuters.com/article/2014/01/23/research-and-markets-idUSnBw235439a+100+BSW20140123)

<sup>33</sup> [usatoday.com/story/money/business/2013/03/04/atvs-deaths-injuries-down/1954989](http://usatoday.com/story/money/business/2013/03/04/atvs-deaths-injuries-down/1954989)

<sup>34</sup> [rideapart.com/articles/2013-u-s-motorcycle-sales-scooters](http://rideapart.com/articles/2013-u-s-motorcycle-sales-scooters)

<sup>35</sup> [motorcycle-usa.com/2/19487/Motorcycle-Article/2014-Motorcycle-Sales-Up-2-4--Through-Q3.aspx](http://motorcycle-usa.com/2/19487/Motorcycle-Article/2014-Motorcycle-Sales-Up-2-4--Through-Q3.aspx)

<sup>36</sup> [industrytap.com/cleaner-and-meaner-atvs/1012](http://industrytap.com/cleaner-and-meaner-atvs/1012)

<sup>37</sup> [industrytap.com/cleaner-and-meaner-atvs/1012](http://industrytap.com/cleaner-and-meaner-atvs/1012)

## Occupation Overview

This section analyzes the labor market demand for motorcycle technicians and the profession's top four compatible occupations. Compatible occupations have similar knowledge, skills and abilities as motorcycle technicians. Definitions for the occupations studied are provided below.

Occupation (SOC Code)	Definition
<b>Motorcycle technicians (49-3052)</b>	<b>Diagnose, adjust, repair, or overhaul motorcycles, scooters, mopeds, dirt bikes, or similar motorized vehicles.</b>
Motorboat technicians and mechanics (49-3051)	Repair and adjust electrical and mechanical equipment of inboard or inboard-outboard boat engines.
Recreational vehicle service technicians (49-3092)	Diagnose, inspect, adjust, repair, or overhaul recreational vehicles including travel trailers. May specialize in maintaining gas, electrical, hydraulic, plumbing, or chassis/towing systems as well as repairing generators, appliances, and interior components. Includes workers who perform customized van conversions.
Small engine mechanics (49-3053)	Diagnose, adjust, repair, or overhaul small engines used to power lawn mowers, chain saws, recreational sporting equipment and related equipment.
Machine tool setters, operators and tenders, metal and plastic (51-4081)	Set up, operate, or tend more than one type of cutting or forming machine tool or robot.

### Motorcycle Technicians

Motorcycle technicians—which are interchangeably referred to in this report as motorcycle mechanics—diagnose, adjust, repair or overhaul motorized vehicles like motorcycles, scooters, mopeds and dirt bikes. Training typically ranges from long-term, on-the-job training to post-secondary certificates from motorcycle mechanic training programs.

San Diego County is one of the most concentrated regions for motorcycle-related employment in the nation. One method to quantify the concentration of a region's share of employment in an industry compared to the nation is through the Location Quotient (LQ). An LQ greater than 1 indicates that the region is more specialized in an industry than the nation as a whole. The motorcycle technician occupation has an LQ of 1.22 for San Diego, making it 1.22 times more concentrated in employment than the rest of the nation.

#### Understanding the Location Quotient

If a local industry has an:

- LQ > 1, the region is **more** specialized than the nation
- LQ = 1, the region has the **same** employment concentration as the nation
- LQ < 1, the region is **less** specialized than the nation

San Diego County ranks second in employment for motorcycle technicians out of all counties in California, but pays the second lowest median hourly earnings (Table 1). San Diego's low wages could be a result of the high number of motorcycle repair shops, as well as the number of workers, especially extended proprietors (those who do not consider this to be their primary job). More research could be conducted to discover the causality behind the lower wages. The profession is male-dominated with only three female motorcycle mechanics reported in the San Diego region in 2014.<sup>38</sup>

<sup>38</sup> Economic Modeling Specialists, International (EMSI). Data as of January 2015.



**Table 1: Top Ten Counties in California Employing Motorcycle Technicians<sup>39</sup>**

County Name	2014 Jobs	Median Hourly Earnings	Location Quotient
Los Angeles	423	\$17.48	0.80
<b>San Diego</b>	<b>216</b>	<b>\$14.60</b>	<b>1.22</b>
Orange	112	\$22.21	0.58
Alameda	111	\$22.51	1.29
Ventura	100	\$18.22	2.49
San Bernardino	74	\$16.29	0.88
Riverside	68	\$15.05	0.86
Fresno	50	\$13.92	1.12
Contra Costa	43	\$19.26	0.99
Sacramento	43	\$17.29	0.56
All of California	1,659	\$17.37	0.83

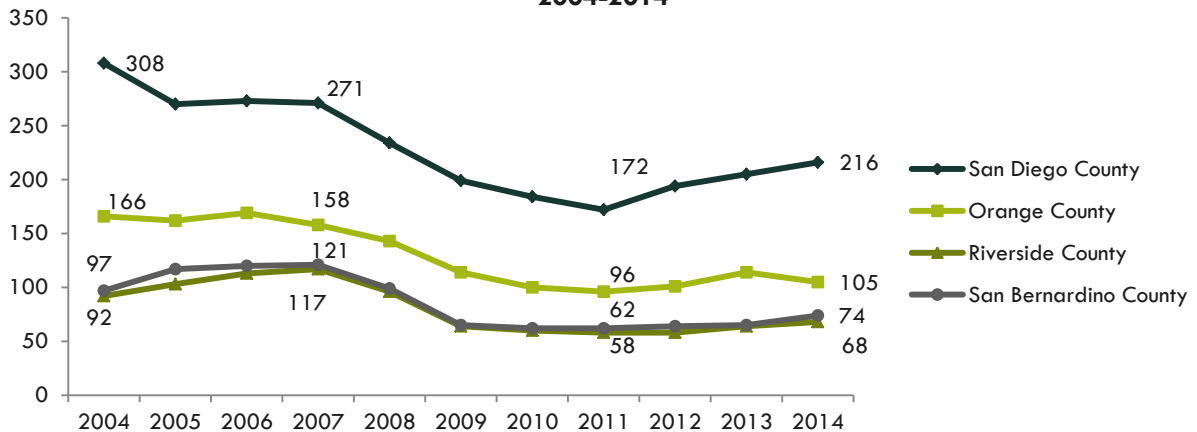
Although there will be an average of five openings per year over the next five years in San Diego County, motorcycle mechanic positions are projected to decline slightly with four fewer mechanics in 2019 than in 2014 (Table 2).

**Table 2: Current and Projected Employment for Motorcycle Technicians**

County Name	2014-2019 Change	2014-2019 % Change	Annual Openings	2014 Jobs	2019 Jobs
Los Angeles	36	9%	17	423	459
<b>San Diego</b>	<b>-4</b>	<b>-2%</b>	<b>5</b>	<b>216</b>	<b>212</b>
Riverside & San Bernardino	23	8%	13	271	294
Orange	-8	-4%	5	112	94
All of California	-58	-3%	38	1,659	1,601

Employment for motorcycle technicians recovered 17 percent since the Great Recession (2007-2009); however, it is still significantly below pre-recession levels across Southern California counties, which follows a trend similar to California and the nation as a whole (Figure 2).

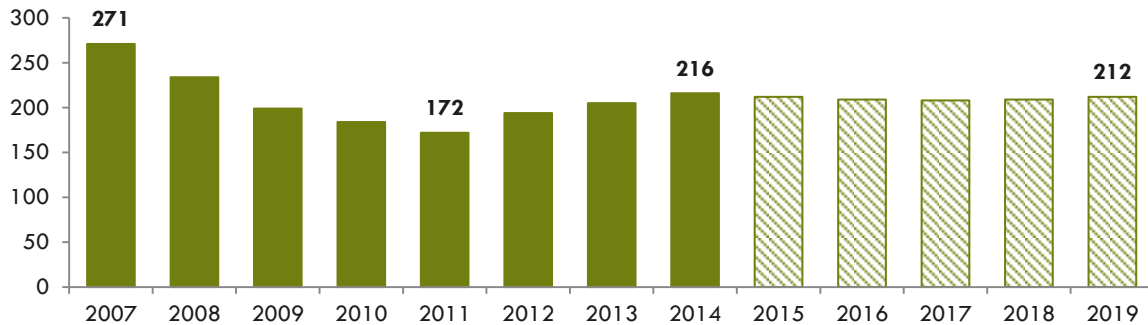
**Figure 2: Motorcycle Technician Employment in Southern California Counties, 2004-2014**



<sup>39</sup> EMSI. Data as of January 2015.

Though employment for motorcycle mechanics declined during the Great Recession and is gradually recovering between 2010 and 2014 (Figure 3a), the type of employment for this profession has shifted as more workers have become extended proprietors (Figure 3b)—individuals who receive income for the profession but do not consider it a primary job or source of income. Figure 3a includes workers who are self-employed or employed by a company, while Figure 3b includes these two employment types *and* extended proprietors. This increase in extended proprietors was also noted in the employer interviews, which indicates that motorcycle mechanics are contracted to motorcycle repair shops on an “as-needed basis.”

**Figure 3a: San Diego Motorcycle Technician Employment, 2007-2019**



**Figure 3b: San Diego Motorcycle Technician Employment by Employee Type, 2007-2019**



**Understanding Data Differences:  
Quarterly Census of Employment and Wages (QCEW), Non-QCEW, Self-Employed and Extended Proprietors**

Traditionally, labor market reports use data for employees who are counted in the QCEW<sup>1</sup>, non-QCEW<sup>2</sup>, and self-employed<sup>3</sup>. These three employment types report their profession as the primary source of income. However, many motorcycle mechanics do not fit into any of these three categories, but rather, repair and service motorcycles in addition to their day job. These types of workers are known as extended proprietors<sup>4</sup>, and are a significant portion of the labor force for motorcycle mechanics in San Diego County, as illustrated in Figure 3b.

1. The U.S. Bureau of Labor Statistics (BLS) publishes the QCEW (a quarterly count of employment and wages reported by employers), which covers 98 percent of U.S. jobs.
2. Non-QCEW workers are still considered employees, but are not covered by BLS's QCEW. The major types of employment covered in this set include military jobs, railroad jobs, many nonprofit and religious workers, certain salespersons, and miscellaneous government workers.
3. Self-employed covers people who consider self-employment to be a significant part of their income or time spent working. This data primarily comes from American Community Survey (ACS) and Census.
4. Extended proprietors cover the same types of jobs as self-employed, but are represented as other miscellaneous labor income for persons who do not consider it a primary job. This is generally a secondary or side job.

### Compatible Occupations

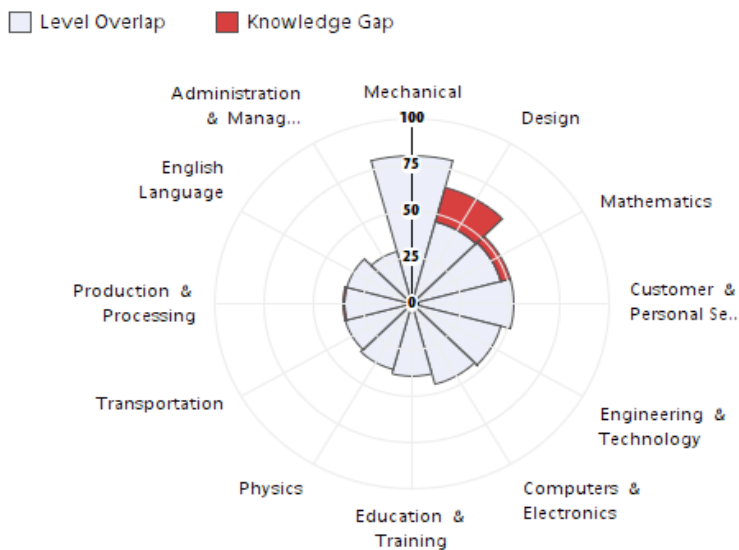
Due to the low number of annual job openings, workers interested in becoming motorcycle mechanics may want to look at other occupations with similar employer expectations of education, training and skill sets. When comparing the knowledge, skills and abilities of motorcycle mechanics, several occupations have similar transferable skills including motorboat mechanics and technicians, machine tool setters and operators, small engine mechanics, and recreational vehicle service technicians. Table 3 lists these top four occupations most compatible with motorcycle technicians, which are ranked on a scale of 1-100 in the compatibility index. The closer an occupation is to 100, the more compatible (and transferable) that occupation’s skills are to the skills of the motorcycle technician occupation.

**Table 3: Current and Expected Employment for Occupations Compatible to Motorcycle Technicians**

Occupation (SOC)	Median Hourly Earnings	2014 Jobs	2019 Jobs	2014-2019 Change	Annual Openings	Compatibility Index
Motorboat technicians and mechanics (49-3051)	\$14.99	168	165	-3	3	97
Recreational vehicle service technicians (49-3092)	\$17.73	325	324	-1	10	96
Small engine mechanics (49-3053)	\$15.08	246	241	-5	4	96
Machine tool setters, operators and tenders, metal and plastic (51-4081)	\$15.56	637	605	-32	10	96
<b>TOTAL</b>		<b>1,376</b>	<b>1,335</b>	<b>-41</b>	<b>27</b>	

According to the EMSI compatibility index,<sup>40</sup> the most compatible occupation to motorcycle mechanics is motorboat mechanics and service technicians. Figure 4 shows the knowledge requirements for both motorcycle mechanics and motorboat mechanics and service technicians—the red indicates areas where additional training may be required to satisfy employer requirements for a motorboat mechanic transitioning to motorcycle mechanic.

**Figure 4: Most Important Knowledge Levels – Motorboat Mechanic and Service Technician to Motorcycle Mechanic**



<sup>40</sup> The EMSI compatibility index measures deficiencies between occupations. Those with the fewest deficiencies are ranked as the most compatible.

## Employer Expectations

To assess employer expectations for motorcycle technicians, surveys, interviews and analysis of online job postings were conducted (see Appendices B & C for survey instrument and interview guide). Five motorcycle repair shops participated in in-person and phone interviews and six responded to online surveys (see Appendix A for detailed methodology).

## Education and Training

According to employer interviews, entry-level motorcycle mechanics typically need a combination of education and hands-on training or experience. Employers prefer to hire workers who have not only obtained a high school diploma or an equivalent degree, but also completed a motorcycle trade school program. Some employers will primarily employ workers trained through technical training schools for open mechanic or technician positions.<sup>41</sup> Workers who complete training programs tend to advance more quickly in their fields than those who do not, and will typically need at least five years of on-the-job training in order to become proficient with motorcycle engine repair.<sup>42</sup>

Motorcycle repair shops frequently mentioned hiring from training programs that provide dealer-authorized certification such as Honda Dealer Training Certificates. These training programs have curriculum that are aligned with and approved by dealerships. One Harley-Davidson repair shop owner noted hiring technicians from programs with curriculum that aligned with the Harley-Davidson University. Dealer-authorized training programs were previously offered only by the dealership; however, a few schools now offer Harley Davidson-authorized curriculum, which allows employers to hire from training programs outside of the dealership. Schools such as the Lake Washington Institute of Technology (LWIT)<sup>43</sup> and Fort Scott Community College<sup>44</sup> were frequently mentioned in interviews. LWIT offers the Harley-Davidson Option<sup>45</sup> in their Motorcycle, Marine & Power Equipment Service Associate in Applied Science (AAS) program. Employers will typically hire directly from the dealer, but one Harley-Davidson employer noted hiring recently from the LWIT training program when mechanics from the dealership were not available. Dealer-specific training allows mechanics to seek employment in both small motorcycle repair shops and dealerships.

## Skills

Interviews and surveys revealed that employers of motorcycle technicians had at least some difficulty finding qualified workers with the desired training and experience. One employer that services BMW motorcycles stated hiring only from the dealership due to the advanced technological systems in newer motorcycles. New BMW motorcycles have computer chips that require mechanics to have knowledge about computerized systems. As an independent repair shop owner, the employer hires mechanics on an as-needed basis directly from the dealership when his team cannot service BMW motorcycles on their own. According to the employer, mechanics are on-call and trained specifically to use in-house computers to diagnose potential problems with the motorcycle. Employers repeatedly mentioned one key skill that all mechanics must have: diagnostics. Employers hire from training programs through dealerships (i.e., Kawasaki, BMW, Harley-Davidson) because they are convinced that the technicians are trained consistently and are capable of performing motorcycle diagnostics, maintenance and repair. For Japanese brand bikes such as Kawasaki, Honda and Yamaha, motorcycle repair shops with clients who own newer motorcycles prefer mechanics trained at notable institutions outside of San Diego such as the Motorcycle Mechanics Institute (MMI)<sup>46</sup> in Phoenix, Arizona

<sup>41</sup> [enginecycle.com/motorcycle-technical-training-schools-directory](http://enginecycle.com/motorcycle-technical-training-schools-directory)

<sup>42</sup> [citytowninfo.com/employment/motorcycle-mechanics](http://citytowninfo.com/employment/motorcycle-mechanics)

<sup>43</sup> [lwtech.edu](http://lwtech.edu)

<sup>44</sup> [fortscott.edu](http://fortscott.edu)

<sup>45</sup> [catalog.lwtech.edu/preview\\_program.php?catoid=1&poid=122&hl=Motorcycle%2C+Marine+%26+Power+Equipment+Service+Technician&returnto=search](http://catalog.lwtech.edu/preview_program.php?catoid=1&poid=122&hl=Motorcycle%2C+Marine+%26+Power+Equipment+Service+Technician&returnto=search)

<sup>46</sup> [mfi.edu](http://mfi.edu)

and Orlando, Florida. MMI offers manufacturer-specific training such as Hon-Tech, K-Tech and YAMAPRO for Honda, Kawasaki and Yamaha, respectively.<sup>47</sup>

Other employers noted that many training programs do not provide hands-on experience, which is critical for motorcycle technicians. Workers must keep up with changing motorcycle technologies in order to be successful in the workplace. Those who lack hands-on training are at a disadvantage.

To better understand the skills that employers require and job titles used for motorcycle technicians, over 100 online job postings from the motorcycle industry were analyzed. These listings were for both mechanic positions and sales positions in the industry. Related job titles in online postings for motorcycle technicians include motorcycle service technician, motorcycle mechanic and motorcycle Type A technician. Diagnostics frequently appeared as a desired skill in both employer interviews and online job postings. The top skills employers seek from job candidates include both soft skills and technical skills:

- Mechanical diagnosis
- Repair
- Preventative maintenance
- Battery testing
- Ability to drive motorcycles
- Knowledge of electrical systems
- Retail experience
- Customer service

### Education and Training Programs

Despite the 440 motorcycle retail and repair businesses in San Diego, there are currently no mechanic training programs specialized for motorcycles. The San Diego and Imperial Counties do; however, have automotive technology and repair programs where a motorcycle technician training program may be most suited to be developed. (Table 4)

**Table 4: Community College Automotive Programs and Number of Completers by Program Year**

Community College and Program Name (TOP Code) <sup>48</sup>	2010-2011	2011-2012	2012-2013	3-Year Average (2010-2013)
<b>Cuyamaca</b>				
Automotive Technology (0948.00)	15	8	15	13
<b>Imperial</b>				
Automotive Technology (0948.00)	5	0	0	2
Automotive Collision Repair (0949.00)	2	0	1	1
<b>MiraCosta</b>				
Automotive Technology (0948.00)	67	57	95	73

<sup>47</sup> [uti.edu/programs/motorcycle](http://uti.edu/programs/motorcycle)

<sup>48</sup> From the California Community Colleges Chancellor's Office (CCCCO), the Taxonomy of Programs (TOP) is a system of numerical codes used at the state level to collect and report information on programs and courses in different colleges throughout California that have similar program outcomes. TOP codes were designed to aggregate data on programs, and each community college course must be assigned a TOP code.

Community College and Program Name (TOP Code) <sup>48</sup>	2010- 2011	2011- 2012	2012- 2013	3-Year Average (2010-2013)
<b>Palomar</b>				
Automotive Technology (0948.00)	9	7	26	14
Automotive Collision Repair (0949.00)	3	2	1	2
<b>San Diego Adult</b>				
Automotive Technology (0948.00)	114	188	185	162
Automotive Collision Repair (0949.00)	56	20	37	38
Upholstery Repair - Automotive (0949.10)	6	45	40	30
<b>San Diego Miramar</b>				
Automotive Technology (0948.00)	80	39	77	65
<b>Southwestern</b>				
Automotive Technology (0948.00)	24	20	14	19
<b>Grand Total</b>	<b>381</b>	<b>386</b>	<b>491</b>	<b>419</b>

There are additional programs in California that provide training specifically for motorcycle technicians and other small engine repairs, unlike San Diego's broader automotive programs. Table 5 lists the four California community colleges that offer motorcycle, outboard and small engine repair programs (TOP code 0948.30). Between 2010 and 2013, these four community colleges produced an average of 35 program completers a year. This nearly matches the demand for 38 annual average job openings that California has for motorcycle mechanics (as referenced in Table 2). For other motorcycle technician training programs, see Appendix E.

**Table 5: Motorcycle, Outboard and Small Engine Repair (0948.30) Programs in California Community Colleges and Number of Program Completers**

Community College	2010- 2011	2011- 2012	2012- 2013	3-Year Average (2010-2013)
San Francisco City	0	26	16	14
Los Angeles Trade	2	4	11	6
Cosumnes River*	5	8	4	6
Sacramento City	15	13	1	10
<b>Grand Total</b>	<b>22</b>	<b>51</b>	<b>32</b>	<b>35</b>

\*Cosumnes River recently discontinued their motorcycle technician training program. However, the college does still run a small engines training program, teaching similar skills.

## Conclusion and Recommendations

The labor market for motorcycle and other small engine mechanics seems to be a niche market, with very limited job opportunities in a given geographic area. Existing education and training programs that are considered successful (from the employer perspective) tend to have strong partnerships with manufacturers, which ensure that these programs are up-to-date on changing technologies. Employers from other counties and states hire graduates from such programs with strong industry connections. If an educational institution, such as a community college, decides to start a motorcycle and small engine repair program in San Diego County, it needs to consider a broader geographic area as a job market for program completers and determine if other institutions already provide similar training that meets employer needs. To ensure student success after graduation, the program should develop strong sustainable partnerships with major manufacturers of motorcycles and related small engine vehicles.

The following is recommended to community colleges in the San Diego and Imperial Counties if a motorcycle technician-related program *must* be developed:

- 1) Community colleges would benefit from evaluating successful practices such as widely recognized programs before beginning a new program. Successful motorcycle technician programs in community colleges are those that have a partnership with the motorcycle brand or manufacturer where the curriculum matches the dealer's training programs. For the Harley-Davidson brand, for example, Fort Scott Community College in Kansas and Central Carolina Community College in North Carolina would be appropriate models to replicate. Those programs are manufacturer-sponsored, and as such, they serve the nation as a whole, instead of just their local regions. The community colleges should emulate these programs and examine how programs like those from MMI and LWIT became successful.
- 2) The training program must have a strong diagnostic component to fulfill the skill demands of employers. Employers repeatedly emphasize the need for automotive and motorcycle technicians to be able to easily and quickly diagnose problems and figure out a resolution. These types of problem-solving skills can be useful in other occupations such as motorboat mechanics, machine tool setters, or other small engine mechanics that require minimal additional training or experience. Therefore, even with a small demand for motorcycle technicians in the labor market, graduates can still transfer their diagnostic skills to other small engine products.
- 3) Motorcycle technician training courses/programs should focus on new and emerging technologies, such as electric or sporty bikes, as well as scooters and three- and four-wheel vehicles so that workers are prepared for upcoming trends. The programs should seek to recruit students who have a passion for motorcycles and hands-on work. These students are motivated and already have some skills necessary to work as a motorcycle technician, making them ideal candidates for employers.
- 4) While soft skills are less emphasized in this occupation, employers still want individuals who are adept at customer service, have strong attention to detail and problem solving skills that training programs should focus on. These are also skills that should be emphasized to the future workforce, particularly those in the K-12 educational system.

Because there is not a strong need for motorcycle technicians (five openings per year projected), it is not imperative for community colleges to introduce a stand-alone motorcycle technician degree program. Most of the employment demand is met through training providers outside of the region. However, considering that no training currently exists, colleges could introduce students to a motorcycle technician career (or the skills necessary for one) through relevant courses, an add-on certificate program or an apprenticeship program. Again, these courses will be most beneficial to students if dealerships or motorcycle manufacturers support and assist with curriculum development.

## Appendix A – Methodology

*Motorcycle Technicians and Related Occupations: Labor Market Analysis* was conducted by the San Diego Workforce Partnership and Centers of Excellence for Labor Market Research, and was commissioned by Advanced Transportation Technology and Energy Center at Miramar College. This study analyzed qualitative and quantitative data from secondary sources, interviews with San Diego employers, and 39 online job postings between 2010 and 2014.

### Secondary Research, Surveys and Interviews

The study began with a literature review of the available secondary resources regarding the motorcycle industry and market. Six employers responded to online surveys, and in-person interviews were conducted with six local motorcycle repair companies to verify the secondary research.

### Employment Data

The research team reviewed online job postings from the Burning Glass database, *Labor Insight/Jobs* between 2010 and 2014 for San Diego. *Labor Insight/Jobs* is a specialized program that collects listings from online job boards or websites, compiles them in one database and de-duplicates the same posting from multiple sites.

Economic Modeling Specialists, International (EMSI) compiled the employment data used in this research in its *Analyst* database. *Analyst* collects data from over 90 sources such as the U.S. Census Bureau American Community Survey (ACS) and the U.S. Bureau of Labor Statistics (BLS). ACS provides the demographic data for San Diego County and BLS provides employment and wage data. This study analyzes EMSI data as of January 2015.

The priority sectors in this report were defined by North American Industry Classification System (NAICS) codes, and occupations were defined by Standard Occupational Classification (SOC) codes. SOC and NAICS are coding standards used by federal agencies to collect and disseminate employment data related to industries and occupations.

### Limitations of the Data

It should be noted that there are certain limitations to the data used in this study. Employment projections from the BLS are based on historical trends and do not involve changes in market demand or legislation that might support additional employment. Therefore, employer responses to surveys were included to assist in gauging labor supply and employer demand. Additionally, while the Burning Glass *Labor Insight/Jobs* database collects online job postings and de-duplicates similar job postings, some duplication may still occur.



## Appendix B - Survey Instrument

The community colleges in San Diego and Imperial Counties invite you to participate in this brief survey about skills and training for motorcycle technicians and mechanics. We value your participation. Your answers will help inform education and training programs to best meet your workforce needs.

Your individual responses will not be published; only aggregated information will be used in reporting the survey results.

The survey should take approximately 5 to 7 minutes of your time.

Please note that if you need to come back to the survey at any time, your responses will be saved automatically and you can begin from where you left off.

Thank you for participating in this important survey!

S1 In what county is your facility located?

- San Diego County
- Imperial County
- Neither

S2 In what zip code is your facility located?

S3 Does the company you work for maintain and/or repair motorcycles? Yes/No

S4 Are you familiar with the job duties and requirements (skills, experience and education) related to jobs in motorcycle maintenance and repair? Yes/No

S5 Please give us the name and contact information of someone at your company who is familiar with the requirements of jobs related to motorcycle maintenance and repair:

- Name
- Email

A1 What is your job title?

A2 How many employees (full- and part-time) currently work at your facility?

A3 What is the main focus of your company?

- Motorcycle dealer (only motorcycle and scooter sales)
- Motorcycle service or repair
- Motorcycle parts and accessories dealer
- Motorcycle parts and accessories manufacturer
- Sport vehicle dealer (motorcycles, dirt bikes, ATVs, etc.)
- General automobile dealer (cars, motorcycles, trucks, scooters, etc.)
- Other: \_\_\_\_\_

A4 Does your company employ any of the following general positions? (Select all that apply.)

- Motorcycle mechanic or technician
- Auto mechanic or technician skilled in motorcycle repair or maintenance
- Other motorcycle service position: \_\_\_\_\_

A5 How many people are currently permanent, full-time workers in the following position(s), and how many employees do you expect to employ 12 months from now at your location?

	Current number of full-time employees	Projected number of full-time employees in 12 months
Motorcycle mechanic or technician		
Auto mechanic or technician skilled in motorcycle repair or maintenance		
Other: _____		

A6 How many people are currently part-time workers in the following position(s), and how many employees do you expect to employ 12 months from now at your location?

	Current number of part-time employees	Projected number of part-time employees in 12 months
Motorcycle mechanic or technician		
Auto mechanic or technician skilled in motorcycle repair or maintenance		
Other: _____		

B1 On average, what level of education do you expect from a job candidate for an entry-level position in the following occupations?

	Less than high school	High school diploma	Vocational certificate from an accredited educational institution	Associate degree	Bachelor's degree or higher
Motorcycle mechanic or technician					
Auto mechanic or technician skilled in motorcycle repair or maintenance					
Other: _____					

B2 On average, what level of previous work experience do you expect from a job candidate, if any, for an entry-level position in the following occupations?

	No experience necessary	Less than 1 year	1-2 years	3-5 years	More than 5 years experience
Motorcycle mechanic or technician					
Auto mechanic or technician skilled in motorcycle repair or maintenance					
Other: _____					

B3 What type of experience do you expect from a job candidate for an entry-level worker in the following positions? (Select all that apply.)

	Internship experience	Apprenticeship training	Work experience
Motorcycle mechanic or technician			
Auto mechanic or technician skilled in motorcycle repair or maintenance			
Other: _____			

C1 What motorcycle makes/brands do you service at your location? (Select all that apply.)

- AJS
- Aprilia
- BMW
- Buell
- Ducati
- Harley-Davidson
- Honda
- Indian
- Kawasaki
- KTM
- Kymco
- Other: \_\_\_\_\_
- Moto Guzzi
- MV Augusta
- Suzuki
- Triumph
- Victory
- Yamaha
- Brammo
- Vectrix
- Zero
- Vespa

C2 Please rate the following skills or characteristics when hiring a new entry-level motorcycle mechanic or technician:

	Not at all Important	Very Unimportant	Neither Important nor Unimportant	Very Important	Extremely Important
Good work ethic					
Ability to work in a team					
Ability to learn quickly on the job					
Technical knowledge of maintaining motorcycles					
Hands-on experience in maintaining motorcycles					

C3 Which of the following resources do you use to hire new motorcycle mechanics or technicians? (Select all that apply.)

- Hire a friend/family member
- Word-of-mouth/networking
- Online job posting
- Temporary or placement agency
- Other: \_\_\_\_\_

C4 Please indicate if your company has no difficulty, some difficulty, or great difficulty in hiring or retaining qualified motorcycle technicians.

	No difficulty	Some difficulty	Great difficulty
Hiring qualified motorcycle technicians			
Retaining qualified motorcycle technicians			

C5 What motorcycle technician training programs are you familiar with?

C6 Does your company provide opportunities for additional training or career advancement to your current motorcycle technicians?

- Yes
- No

C6a What types of training do you offer your current motorcycle technicians for professional development?

C7 The San Diego and Imperial Counties Community Colleges often partner with employers to ensure training programs are meeting current employer needs. Are you interested in any of the following collaboration activities? (Select all that apply.)

- Hiring motorcycle technicians who have completed a community college training program
- Providing hands-on or internship experience for students who attend community college training programs
- Advising community college motorcycle technician training program curriculum
- Participating in career or job fair activities with the community colleges and other training providers
- None of the above

D1 Thank you for taking the time to complete our survey! Since it sometimes becomes necessary for the project manager to call back and confirm responses to certain questions, please provide your contact information.

- First and Last Name
- Company Name
- Phone Number
- Email

## Appendix C – Interview Guide

### I. Introduction/Warm-Up

Hello, my name is XXXX and I am conducting a study for the community colleges to understand if there is a need for a training program for motorcycle mechanics in San Diego.

The community colleges would like to know if you have any difficulty in hiring qualified motorcycles mechanics and if you do, what are some specific skills that you want them to have.

We would like to learn about the skills that you require from your mechanics. And what difficulties you have when hiring a new mechanic.

If there is a need in San Diego for motorcycle mechanic training then they will create a curriculum with your input.

I have some questions that should take about 15 minutes of your time to answer.

The information will be aggregated so we will not publish individual information.

- Thank participant and explain purpose -- focusing on motorcycle maintenance and repair technology occupations to help inform Community College curriculum
- Need for honest opinions; no right or wrong answers
- Interviewer's neutrality
- Recording
- Participant introduction... Who are you? Describe yourself to us
- What do you do for a living? Clarify the type of industry/company
- What is your role in the organization (and how long in role/at company)

### II. Company Background & Motorcycle Industry Trends

1. Tell us a little about your company -- what do you do? Understand industry/company/technology focus.
2. What do you think are the strengths of your industry for professionals seeking to work as a motorcycle mechanic or other professional? What does it offer?
3. What trends and changes have you noticed recently in your (motorcycle) industry and company? How is it evolving?
  - What about specific trends in the workforce related to motorcycle technicians: training, educating, occupations, and positions?
  - What, if anything does your company do to keep up with trends/changes as it relates to motorcycle maintenance and technology?
  - Any particular challenge(s) that your company faces as it relates to keep up with motorcycle trends and technological developments?

### III. Exploration Motorcycle Technician Skills/Education/Training Required

Now we'd like to focus specifically on occupations/positions within your company that are directly related to the motorcycle technician occupation.

1. Do you require at least an associate degree for your motorcycle technicians? Do you have any other types of positions (requiring at least an associate degree) at your company?
  - Where do new employees who fill these positions usually come from? Where do they typically receive their education and training? Listen for/probe on Community Colleges.
  - What are the educational requirements?
  - What are other job titles for motorcycle technicians at your company?
2. How easy or hard is it to recruit (qualified) workers for these motorcycle technician/repairer positions? How easy or hard is to retain current workers for these motorcycle technician/repairer positions? What challenges do you face with each?
3. What are the specific skills, education and training related to motorcycle repair and/or maintenance that you expect from an employee coming into your company today who will work in one of these positions?
  - What types of degrees?
  - What skills and traits are most important?
4. Where are those motorcycle technician skills and training taught... or acquired?
  - If not taught: would it be a benefit at all if they were taught at a Community College? Are there any opportunities?
  - How specific would motorcycle technician training need to be to be applicable to your company? Could that be achieved at the Community College level?
5. How do you typically train new workers in motorcycle technician positions? What about training incumbent workers? What are your needs in these areas?
  - Probe: on-the-job training, customized training at their location, local educational courses, courses from industry-specific organizations.
  - Could a Community College provide training in these areas?
6. What are the best job/growth opportunities and positions directly related to motorcycle technicians in your company (and industry) right now? What skills, education, training do you expect and want someone to have for these positions?
7. What skills, education and/or training for incoming workers in motorcycle technician positions do you feel are most *lacking* right now? What skills or training would you *most like* these incoming workers to have -- but usually don't right now?
  - Is there an opportunity for a Community College to teach these skills and provide this training? How would you feel about that?

#### IV. Ideal Education, Skills & Training

If you could design the ideal education program offered by an institution to provide skills to workers at your company who do activities directly related to motorcycle technicians in the next few years, what would it be comprised of?

- What type of institution might offer these programs and why?
- How do the ideal skills and current skills coming out of Community Colleges match up? Probe on if they are the same or different... and why.

What type of education/skills relating to alternative fuels would be most beneficial to your company if offered by a Community College?

- What type of courses would you imagine for these skills/training?
- What would this potential employee's area of study/degree be?

#### V. Wrap-Up/Close

Complete this statement: The most critical component for the success of your company in the next 5 years is \_\_\_\_\_ because \_\_\_\_\_. And Community Colleges can help by ensuring graduates are/have \_\_\_\_\_.

Anything I have forgotten to cover on motorcycle technicians that you would like to share as it relates to your company or Community College courses?

*Thank participant for their time.*

## **Appendix D – Occupation and Industry Definitions**

### **Standard Occupational Classification (SOC) codes for occupations studied:**

- 49-3052 Motorcycle Mechanics
- 49-3051 Motorboat Mechanics and Service Technicians
- 51-4081 Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic
- 49-3053 Outdoor Power Equipment and Other Small Engine Mechanics
- 49-3092 Recreational Vehicle Service Technicians

### **North American Industrial Classification System (NAICS) codes for industries studied:**

- 336991 Motorcycle, bicycle and parts manufacturing
- 423110 Automobile and other motor vehicle merchant wholesalers
- 441228 Motorcycle, ATV and all other motor vehicle dealers



## **Appendix E – Other Motorcycle Technician Training Programs**

- Fort Scott Community College in Kansas
- Motorcycle Mechanics Institute in Phoenix and Orlando, Florida
- Central Carolina Community College in North Carolina
- Lake Washington Technical College in Washington