The 2006 Fresno County Employment Study

(a detailed sector analysis)

Executive Summary

This report documents the survey design methodology and preliminary results from the first phase of data analysis of the Fresno County Employment Gap Study. More than 600 employers participated in the survey to determine the current and future workforce needs across six high-growth industry sectors - Construction & Trades, Agile Manufacturing, IT, Logistics, Automotive and Healthcare. Employers were asked to define their employment needs now and in future. The study identifies several occupations that are experiencing current high demand and projected growth.

Table of Contents

Table of Figures

History and Background of the Project

In accordance to the DOL Workforce Investment Act (WIA) five-year plan, the Secretary of Labor developed nine priorities, one of which focuses on "developing strategies to promote career advance." For individuals seeking economic self-sufficiency, the current employment environment requires high-level reasoning skills; a readiness to pursue training and on-going life-long learning, as well as need to assume greater responsibility for career advancement.

Because the work environment now necessities a wide range of skills and places new expectations on workers, the Fresno County Workforce Investment Board (FCWIB) has been extremely proactive in its adaptation of local polices to meet the needs of both the employers *and* job seekers. The Business and Industry Committee (B&I), a dynamic subcommittee of FCWIB, "actively supports and engages the Fresno business and industry community with WIA resources and facilities through information and education to stimulate job growth and retention." To accomplish its mission, the B&I have created a number of KRAs (Key Result Areas) to adhere to the needs of the Fresno County business community:

- ✓ Recommend policies and standards to ensure that current and future human capital needs of Fresno County employers are met by WIA services and clients; and
- ✓ Determine the short-term job skills needs of employers and assist in forecasting future employment trends.

In August 2005 the Fresno County Workforce Investment Board entered in partnership with the Regional Jobs Initiative, a private sector led group to generate sustainable and economic development for the region to submit an Appropriation grant application to the U.S. Department of Labor (DOL) for the "Central California Excellence in Workforce Development project which proposed to conduct an Employment Gap Analysis project. With the support of Senator Barbara Boxer, the request to fund the project was accepted.

The Intent of the Fresno County Employment Gap Analysis was to focus on employer needs now, and in future. The follow high-growth six sectors were identified as having the greatest potential for job-growth and economic impact were targeted for analysis: Agile Manufacturing, Automotive, Construction & Trades, Healthcare, Information Services, and Logistics.

Making the Case – Why is this project important?

Fresno County, along with the rest of the San Joaquin Valley Counties, has not shared fully in the Nation's prosperity. There exists a significant body of empirical research over the past 20 years, culminating in the recent United States Congressional Report – *California's San Joaquin Valley: a Region in Transition*, which demonstrates that the San Joaquin Valley is not on par with the rest of the nation in regards to federal assistance, social welfare, air quality, education, and economics. In response to these poor socioeconomic indicators, the San Joaquin Valley has federally recognized regional status: a federal interagency task force was created in 2000 by Executive Order.[1] Recognizing that the Valley faces a number of challenges, California Governor Schwarzenegger formed a similar task force by Executive Order to address the high level of poverty and unemployment, poor air quality and limited access to health care in the region.[2]

It has often been stated that California serves as an economic bellwether for the entire nation. California may represent the future of the country; however, the Central Valley is the focal point of the future of California. It is imperative that the socioeconomic conditions improve in the Valley.

This survey is one of many first steps being taken to address the economic conditions and represents a model of collaboration between government, public and private agencies and business and industry. While there is ample Labor Marker information based on hind casting, there was little to no research based on real-time forecasting by the employers of a given San Joaquin County.

This project provided the needed accurate forecasting in terms of occupational need as well as current training capacity in Fresno County. The results of the survey yield valuable information about labor force requirements, such as criminal screening and drug testing, wage rates and projections for future hiring. In addition, this survey explores important business and industry driven projections based on their unique and specific set of workforce indicators including age of current workforce, projected growth and expansion.

By using a comprehensive definition of "employment need" the survey yielded a multiple hierarchy results which included entry-level, mid-level and professional level employment needs for Fresno County. The inclusive survey design captured the full spectrum of employment needs and will prove useful in designing programs to help people find work.

The survey identified the project area's potential for economic development.

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[1] Executive Order 13173: *Interagency Task Force on the Economic Development of the Central SJV,* October 25, 2000. Executive Order 13359, October 4, 2004, amended the original Order to designate the Secretary of Housing and Urban Development as the Chair of the task force.

[2] Executive Order S-5-05: *California Partnership for the San Joaquin Valley,* June 24, 2005. Executive Order S-22-06, November 28, 2006, reauthorized the original Order for an additional two years.

Fresno County Demographics

Fresno County encompasses 6,000 square miles and is comprised on one large central city, 14 smaller cities and approximately 25 unincorporated areas. Agriculture remains as the County's economic industries being one of the most agriculturally productive counties in the nation. In 2004, Fresno County was the largest single agriculture-producing county in the nation, grossing over $4.6 billion from more than 260 commercial crops. While much of this region is rural, the city of Fresno, in Fresno County, has an estimated population of 877,584 residents who reside over a 6,000 square mile area and is ranked the ninth most populous city in the state.

The demographic profile of the Fresno County differs from the rest of the state in many ways that indicate unique, complex economic, social, and environmental challenges. This county has a rapidly growing population and greater racial/ethnic diversity than other regions of California. In terms of diversity, according to the US Census Bureau, Fresno County residents represent over 70 ethnicities and speak over 100 languages.

While Fresno County is one of the largest, fastest growing and diverse counties in the state of California, it is also one of the most economically depressed counties in the nation. Compared with other regions of the United States, Fresno County residents experience among the highest rates of unemployment and chronic academic underperformance – only 17.5% of Fresno County residents hold a Bachelor's degree or higher as compared to 24.4% nationally[3]. Figure 1 further illustrates the disparity in educational attainment.

Figure 1

Comparison of Education Attainment

	Percent of Population Completed High School		Percent of Population Completed College	
	1990	**2000**	**1990**	**2000**
United States	75.2	80.4	20.3	24.4
California	76.2	76.8	23.4	26.6
Appalachian Region	68.3	76.8	14.3	17.7
Fresno County	66.2	67.5	16.9	**17.5**

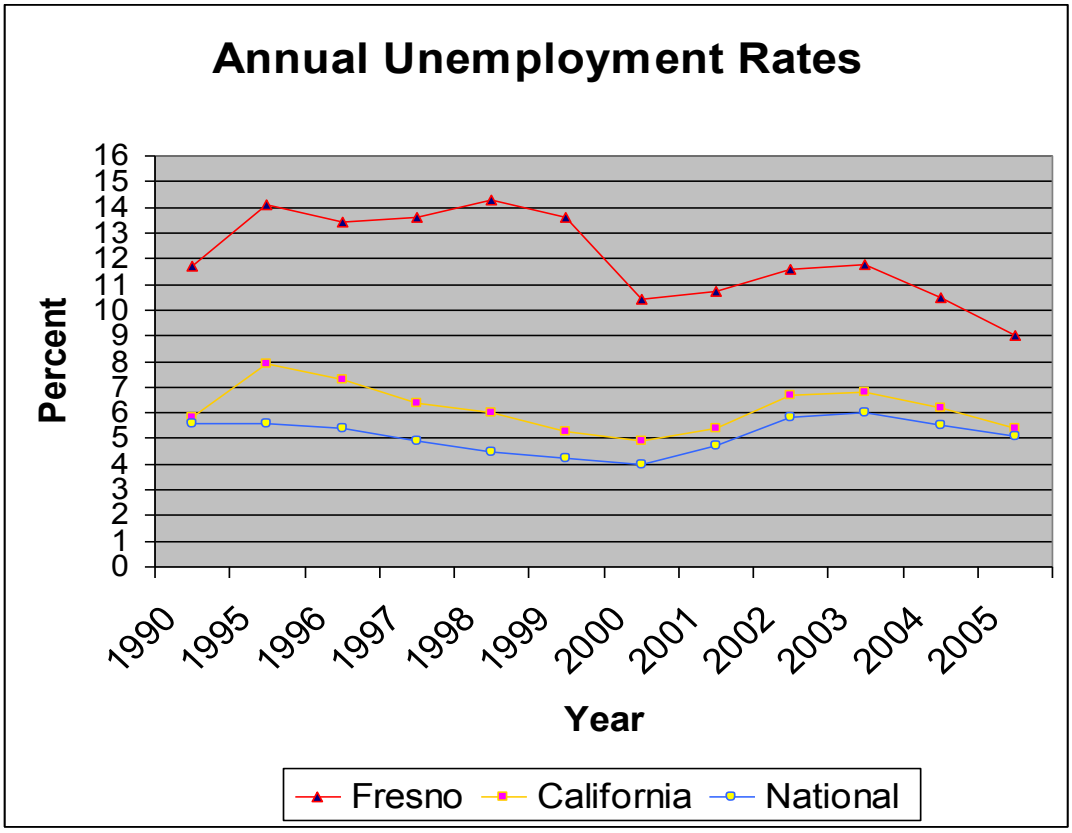
U.S., CA & Fresno Data Source: U.S. Bureau of the Census, 1990 & 2000 Census
Appalachian Region Source: Appalachian Regional Commission Resource Center

[3] *Fresno County Quick Facts.* U.S. Census Bureau. http://quickfacts.census.gov/qfd/states/06/06019.html

Historically, Fresno County has experience unemployment rates above both the state and national averages. While the national trend over the 1990s to the 2001 recession there was a general decrease in unemployment, Fresno County unemployment rates were among the worst in the nation.[4]

Figure 2 illustrates the unemployment rates over the last 15 years, graphic evidence of persistently high levels of unemployment.

Figure 2

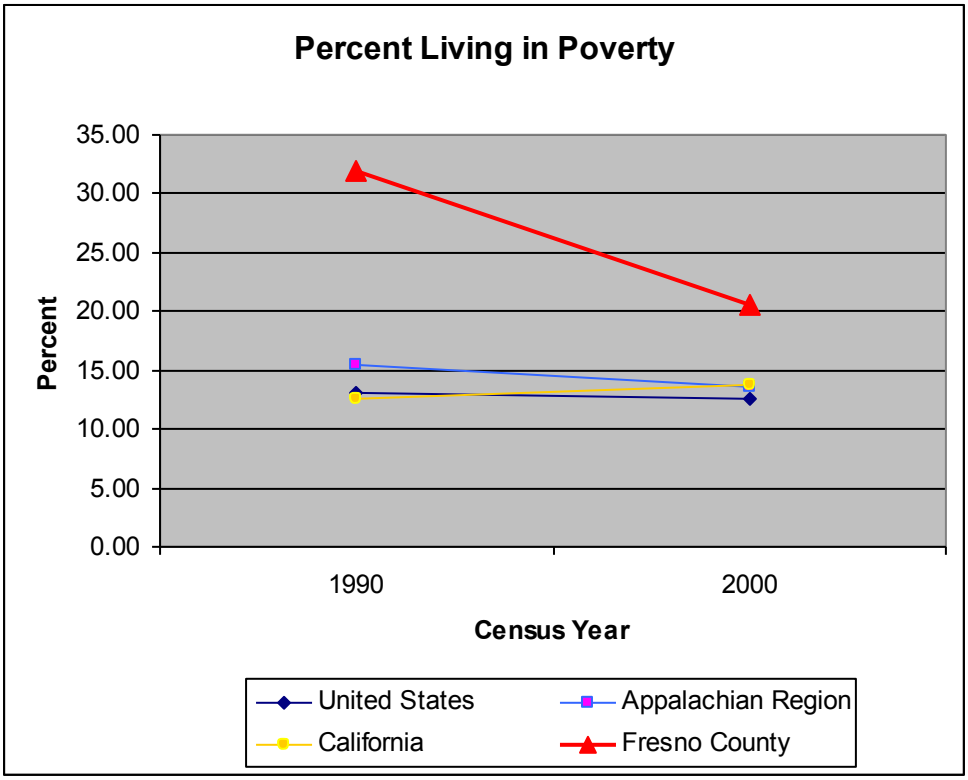


Source: Bureau of Labor Statistics

[4] Congressional Research Service. (2005). *California's San Joaquin Valley: A Region in Transition.*

Even with the county's incredible agricultural prosperity, many Fresno County families are living in poverty. Fresno County ranks 4th out of 58 counties in California in poverty and 3rd in childhood poverty. [5]

Figure 3



Some theorist from argued that due to the higher costs of housing in the state, poverty is actually higher in California than other states.[6]

These strained economic, educational and social situations have placed a tremendous stress on the existing under-funded public institutions such as schools, hospitals and workforce development agencies.

[5] California Food Policy Advocates. (2002). *Fresno County: A Profile of Poverty, Hunger & Food Assistance.* Available on line at: www.dhs.ca.gov/ps/cdic/cpns/research/download/appendix/Fresno.pdf
[6] Zedlewski, S.R., Giannarelli, J., Wheaton, L. (2002). *Extreme Poverty Rising, Existing Government Programs Could Do More.*

Project Methodology

The following six sectors present high growth opportunities in the Fresno region and were targeted to participate in the survey: Agile Manufacturing, Automotive, Construction & Trades, Healthcare, Information Services, and Logistics. A random sampling technique was used to select small (0-9 employees) medium (10-50 employees) and large (51+ employees) employers from the each of six selected sectors. The sample size represents approximately 36% of employers from each sector.

The project utilized the Statistical Package for Social Science (SPSS) to create a statistical model to capture a 90% confidence level. Non-experimental research involves describing a population in terms of one or more variables, without manipulation. A descriptive study presents a broad overview of a specific phenomenon.

Stringent security precautions were established and followed in order to maintain participant confidentiality and survey validity. Employers from the six selected sectors were contacted via mail regarding the pending survey project.

Figure 4

Response Rate by Sector and Total			
Industry	**Survey Goals**	**Number of Completed Surveys**	**Response Rate**
Mfg	130	99	**76.1%**
HealthCare	159	73	**45.9%**
Logistics	143	110	**76.9%**
Trades	158	157	**99.3%**
Automotive	285	127	**44.5%**
Info Serv	58	58	**100%**
Total	**933**	**624**	**66.9%**

Subsequent telephone calls and in-person interviews were conducted over a 3 month period. Human resource representatives from each company were asked an array of questions regarding employment status: total number of current employees, current vacancies, and estimated number needed over the next year, estimated number of employees needed in three years. Additionally, employers were asked about back ground requirements and pay scale in relation to each job position. A total of 622 surveys were completed, representing a 66.9% response rate. The survey's high response rate was sufficient to draw statistically significant conclusions.

While the overall project had a cumulative response rate of 66.9%, many sectors had considerably higher response rates. For example, the Information Service sector had 100% response rate and the Trades sector has 99.3% response rate. Figure 4 details the response rate by each industry sector.

Priority Areas of Analysis and Results

Agile Manufacturing Sector

Sector Background

Today's economy has become a true global marketplace, which has resulted in increasing fragmentation of almost all markets. Most companies have much wider product ranges and are introducing more new products more quickly. This new environment has caused the manufacturing industry to undergo a major paradigm shift. This shift is likely to take business away from mass production, beyond lean manufacturing, into a world of Agile Manufacturing. Agile Manufacturing, however, is a relatively new term, one which was first introduced with the publication of the Iacocca Institute report 21st Century Manufacturing Enterprise Strategy.[7] The information age has ushered in significant changes which represent new and exciting challenges for all manufacturers. Agile Manufacturing is a response to the need for a "highly flexible, short-to-medium run production, as opposed to high-run assembly line production".[8]

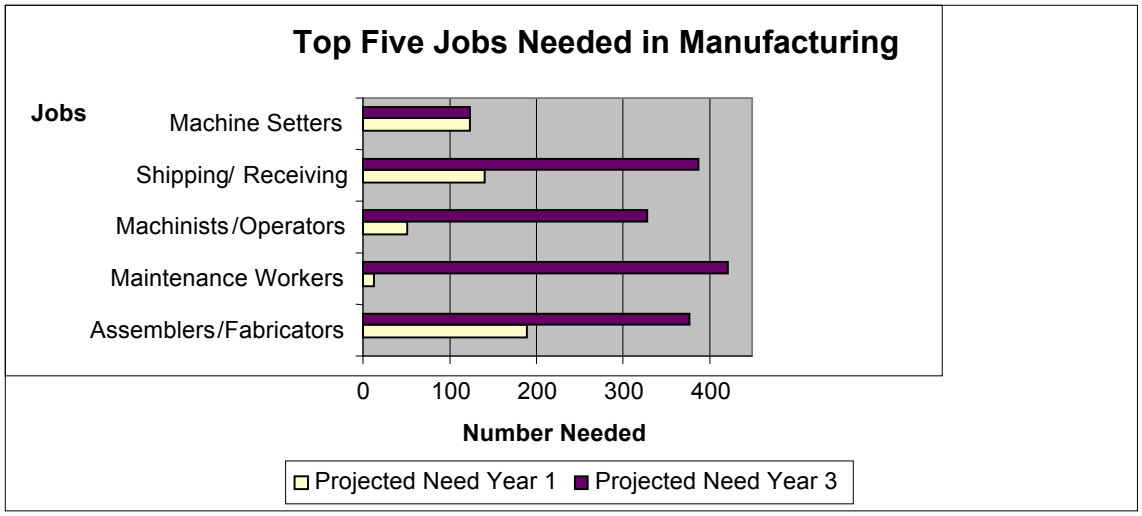
Analysis and Results

The Agile Manufacturing survey response rate was 76.1% with 99 completed instruments returned from the inital130 surveys. Representatives from small, medium and large manufacturing companies identified 79 occupations across all levels of employment, including entry level and executive. At the time of the survey, it was reported that there were over 1,000 current job vacancies. Using data analysis to extrapolate the data to project the county need, it was determined that the county has a need for nearly 3,000 workers over the one year period. Utilizing the statistical analysis to forecast the three year county need, it was found that the Agile Manufacturing Sector would need 8,086 workers to replace retiring workers and meet growing demand.

The occupation with the highest identified need was Production Laborers with a projected one year need of 2,257 workers and over 5,000 workers are projected to be needed in three years. Figure 5 illustrates the five most needed manufacturing occupations as reported by respondents.

[7] Iacocca Institute. (1991). *21st Century Manufacturing Enterprise Strategy: An Industry-Led View.*
[8] Regional Jobs Imitative (2005). *Advanced Manufacturing Website.*

Figure 5



Nature of the Work

Assemblers are a critical team member in manufacturing; they assemble, test, and calibrate parts and mechanisms for both finished and unfinished goods to meet product specifications. Many Manufactures have incorporated innovative techniques by using a "lean" system approach that requires assemblers to work in teams. Advances in computers have resulted in a need for a highly skilled worker to use programmable motion control devices, pneumatics and robotics.[9]

Maintenance Workers perform numerous tasks and must have skills and knowledge of multiple trades as they are responsible for troubleshooting of related mechanical equipment, ventilation and air conditioning units, centralized heating and electrical systems. They must be knowledgeable of basic carpentry, painting, HVAC, and plumbing. They may also operating and repair solar systems, and other building equipment.[10]

Machinists/Operators are highly skilled workers that read blueprints and operate a wide range of machines such as lathes, milling machines, and computer numerically controlled (CNC) machines to produce precision metal parts or one-of-a-kind products.[11] New technology has advanced metal cutting tools. Now machinists must understand new techniques using water jets and lasers.

Shipping/Receiving and traffic clerks prepare shipping orders, verify incoming orders and maintain accurate documentation regarding inventory.

[9] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Assemblers and Fabricators.*
[10] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook:*

Depending on the size of the company and the level of automation, shipping and receiving may be separate jobs.

Brazing Machine Setters operate brazing machines to braze, heat treat or weld fabricated metal components as specified by layout specifications. Skilled brazing workers must be able to read blueprints, examine work to ensure industry standards are met and be knowledgeable of fluxes and base metals. [12]

[11] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Machinists.*

[12] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Welding, Soldering, and Brazing Workers.*

Auto Sector

Sector Background

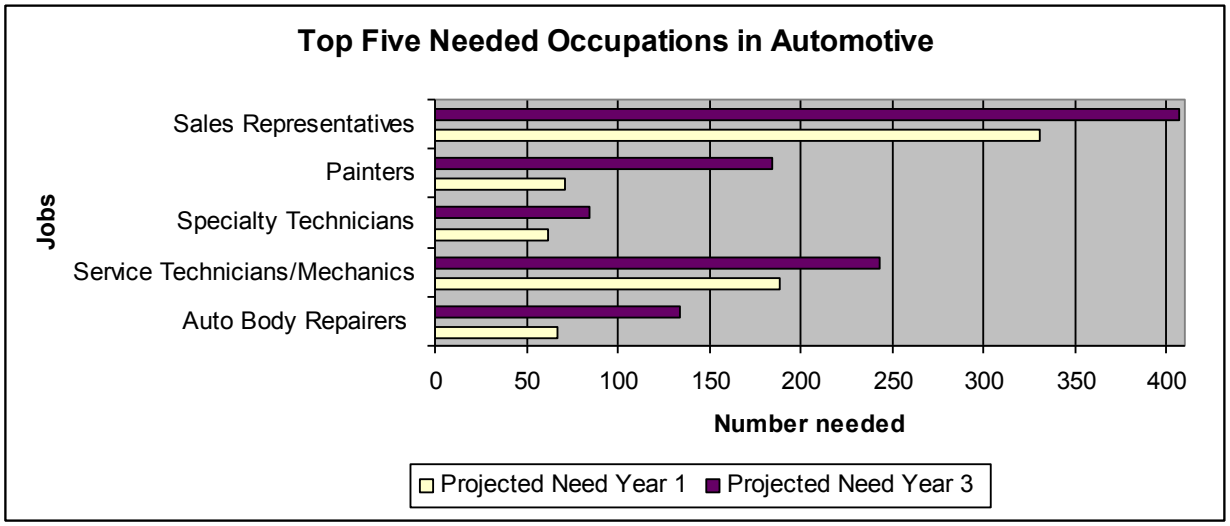
The automotive sector is comprised of two main subcategories – the automotive repair industry and the automotive sales industry. The automotive repair industry in Fresno County is lead by both small and large businesses which specialize in the service and repair of motor vehicles. This includes but is not limited to: automotive paint shops, general and specialized repair shops, tire and wheel businesses, brake, radiator and tune-up shops, oil changers, exhaust system repair and dealerships.

Analysis and Results

Survey completion rate from the automotive sector yielded a response rate of 44.5% with 127 completed instruments returned from the initial 159 surveys.

Automotive companies identified 57 occupations across all levels of service, ranging from entry level stockers to sales representatives to specialty technicians and executive positions. At the time of the survey, it was reported that there were 778 current job vacancies. Using data analysis to extrapolate the data to project the county need, it was determined that the county has a need for over 1,250 workers over the one year period and an additional 1,790 workers three years out. Figure 6 illustrates the high demand careers in the automotive sector.

Figure 6



Nature of the Work

Anyone who has experienced automotive troubles with their car or truck knows first hand the importance of those who work in the automotive sector. The ability to demonstrate good reasoning ability and diagnose the source of a problem quickly is highly desirable by all employers in this sector. Below is a brief description of each of the five most needed occupations in the automotive sector:

Sales Representatives are generally self-motivated professionals with strong intrapersonal and communication skills. As the internet has provided vast amount of information, customers are more educated. Sales Representatives must demonstrate in-depth knowledge and enthusiasm for the vehicles, accessories, and services offered by their employer.[13] In addition, automotive Sales Representatives must be able to close sales effectively, be profit-minded, and understand new and used car financing and insurance.

Painters are employed by dealerships, auto body repair shops, custom auto shops, and trucking and bus companies. They must be able to read work orders, inspect vehicles, possess excellent manual dexterity and be detail orientated. Painters may also refinish galvanized outer panels, anodize aluminum moldings, apply decals and restore anti-corrosion treatments to cars, trucks and boats.

Specialty Technicians are highly trained specialists who repair only one automotive system such as brakes, suspension, and air conditioning or electrical. They are responsible to examine the vehicles, compile estimates of repair time and cost and secure approval for repairs. They use a variety of test equipment to locate and correct malfunctions. Technicians must be knowledge of machines and tools, computers, principles of providing customer service, practical application of engineering science and technology.[14]

Service Technicians/Mechanics work has evolved to a highly technological job due to wide-spread advances in the automotive industry. These skilled technicians must posses an understanding of integrated electronic systems, complex computers and have a broad knowledge about how vehicles' components work and interact. Technicians utilize logic and a diagnostic approach to analyze and solve automotive malfunctions. Service technicians use a wide spectrum of tools – power tools, such as pneumatic wrenches, torches, hand tools, and computers.[15]

Auto Body Repairers restore damaged vehicles. These skilled workers can repair and replace all of the various components of cars, trucks and buses. "Unibody" (designs built without frames) automobile must be restored to exact factory specifications for the vehicle to function properly. To do so, repairers use benchmark systems to make accurate measurements of how much each section is out of alignment, and hydraulic machinery to return the vehicle to its original shape. Repairers must posses the ability to read for information, mathematics and computer skills, and be able to read diagrams. [16]

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[13] National Automobile Dealers Association. (2007). *Car Dealers Seek Workers, Even as Makers Slash Jobs.*

[14] College Tool Kit. (2007). *CollegeToolKit.com: Automotive Specialty Technicians.*

[15] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Automotive Service Technicians and Mechanics.*

[16] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Automotive Body and Related Repairers.*

Healthcare Sector

Sector Background

It has been recognized that the Healthcare Industry is one of the largest sources of potential economic growth and leading employment opportunities and a major job creator throughout the Central Valley[17]. That finding was echoed in this project as local workforce data was reviewed. For example, Coalinga State Mental Hospital which opened in September, 2005 will be hiring over 1,000 health care professionals including over 200 Registered Nurses over the next 3-5 years.

There are Factors contributing to California's nursing shortage include changes in the healthcare environment that resulted in downsizing of the nursing work force as a result of managed care, the aging nursing work force, and public policy regarding nursing education. As a result, California ranks 50th in the nation in number of RNs per 100,000 population.[18] The California shortage has been termed a "public health crisis" citing a projected shortfall of 25,000 nurses within the next five years.[19] State forecasting models predict that there will be 97,500 new job openings for RNs by 2010.[20]

While much attention has been focused on the shortage of registered nurses (RNs), research suggest that the healthcare workforce shortage is wide spread across several direct patient care occupations and shortages are also seen in the allied health arena as well as support positions.[21] [22]

Analysis and Result

Survey completion rate from the Healthcare sector was not as robust as originally planned – a response rate of 46% with 71 completed instruments returned from the initial 159 surveys. The dearth of reliable information about the wide variety of health practitioners and allied health support staff meant that the agency's own methods for projecting a shortage fell short of scientific.

At the time of the survey, those responding reported that there were over 1,100 current job vacancies. Using statistical analysis to forecast the three year county need, it was found that the Healthcare Sector would need over 7,300 workers to

[17] Milken Institute. (December, 2003). *Good Medicine: Making Healthcare an Economic Priority for the San Joaquin Valley.* Great Valley Center

[18] United States Bureau of Health Professions. (2002). *The Registered Nurse Population: March 2000. Findings from the National Sample Survey of Registered Nurses.*

[19] Keating, S., Sechrist, K. (January 31, 2001) "The Nursing Shortage In California: The Public Policy Role Of The California Strategic Planning Committee For Nursing" *Online Journal of Issues in Nursing.* Vol. #6, No. #1.

[20] California Employment Development Department. (2003). *Help Wanted: Making a Difference in Health Care.*

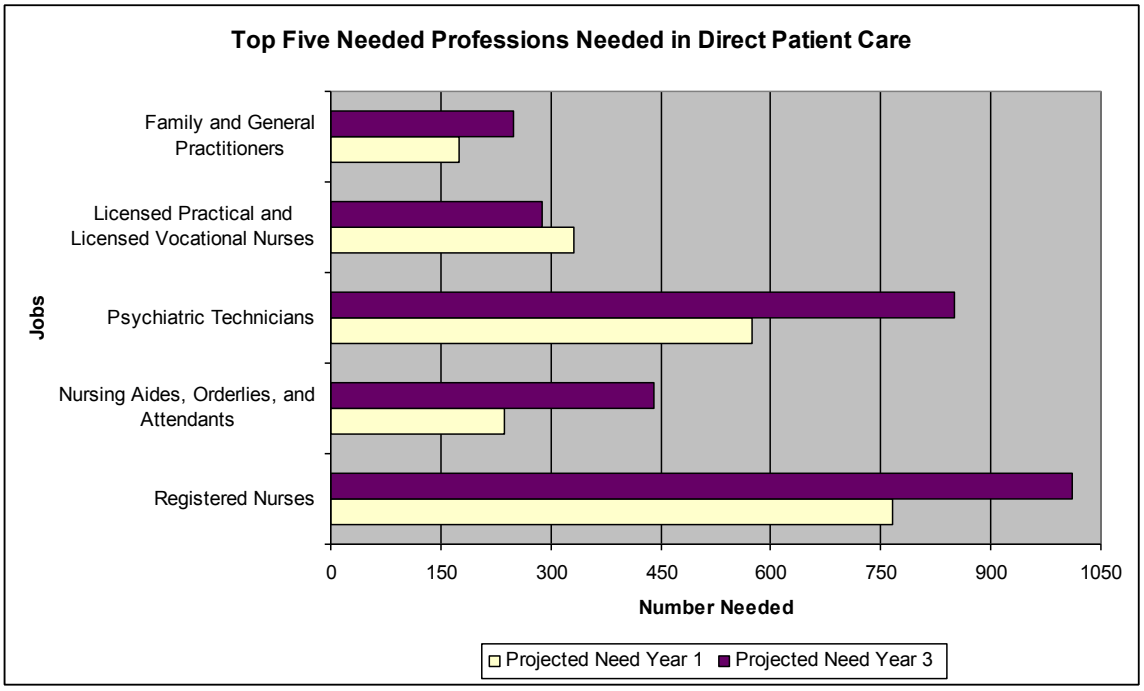
[21] Chapman, S.E.; Lindler, V., Ward-Cook, K. (2005). An Assessment of Critical Issues Facing the Clinical Laboratory Workforce.

[22] Chapman SA, Dronsky M, Newcomer RJ, Harrington C, Grumbach K. (submitted) (2004) An Aging U.S. Population and the Health Care Workforce: Factors Affecting the Need for Geriatric Care Workers.

replace retiring healthcare workers and meet increasing demand of the counties growing population.

Representatives from rural and urban, private and non-profit short-term and long-term hospitals as well as skilled nursing facilities were surveyed. Employers identified nearly 200 occupations across all levels of healthcare occupations, including entry level and executive. Because of the multiple occupations identified as "high demand" the results for this sector will be shown in two tables – one for Direct Patient Care and the other for Medical Technicians and Support positions.

Figure 7



Nature of the Work – Direct Patient Care

For purposes of this project, Individuals who were identified as being in the direct patient care arena are those professionals who assists in the delivery of care to patients in a variety of settings, within the scope of their defined skills, while maintaining accountability for own practice. Occupations found in this subcategory of healthcare providers included but not limited to: Physicians, Nurses, Psychiatric Technicians, Physical Therapist and PT Assistants, Occupational Therapist and OT Assistants, Dietetic Technologist, Dental Hygienist and Assistants, and Respiratory Care. Figure 7 shows the top five high demand professions in this area.

Family and General Practitioners - A general practitioner (GP), family physician or family practitioner (FP) is a physician/medical doctor who provides primary care. A GP/FP treats acute and chronic illnesses, provides preventive care and health education for all ages and both sexes. Some also care for hospitalized patients, do minor surgery and/or obstetrics, where they have hospital privileges.[23] The academic and training requirements are among the most difficult and demanding of any profession.

Licensed Vocational Nurses – are entry-level health care professional who is responsible for providing basic nursing care. A licensed vocational nurse practices under the direction of a physician or registered nurse.[24] They must complete an accredited 12-14 month training program, pass a state licensing exam and participate in continuing education. They are employed at hospitals, psychiatric hospitals, long term care facilities, doctor's offices, dialysis centers, correctional facilities and county jails.

Psychiatric Technicians - California is one of only four states that licenses psychiatric technicians. Psychiatric technicians perform basic patient care functions similar to LVNs in mental health, correctional or developmental rehabilitation settings, but their scope of practice is broader than that of LVNs.[25] However, like an LVN, they can not practice independently, they must work under the supervision of psychologist, nurses or physicians. They must complete an accredited 12-18 month training program, pass a state licensing exam and participate in continuing education.

Nursing Aides – under the direction of the nursing and medical staff, they assist patients with basic care functions, measure and document food and liquid intake and output, record vital signs, observe patients' physical, mental and emotional status and report changes to medical staff.[26]

Registered Nurses –. RNs work to promote health, treat patients, educate patients and others about diverse medical conditions, document patients' medical histories and symptoms, perform diagnostic tests and analyze results, operate medical machinery, administer treatment and medications, and help with patient follow-up and rehabilitation. In California there are two major educational paths to registered nursing: Bachelor of Science degree in Nursing (B.S.N.) and Associate Degree in Nursing (A.D.N.). A bachelor's degree is often required for administrative positions, and it is a prerequisite for admission to graduate nursing programs in research, consulting, teaching, or a clinical specialization.[27]

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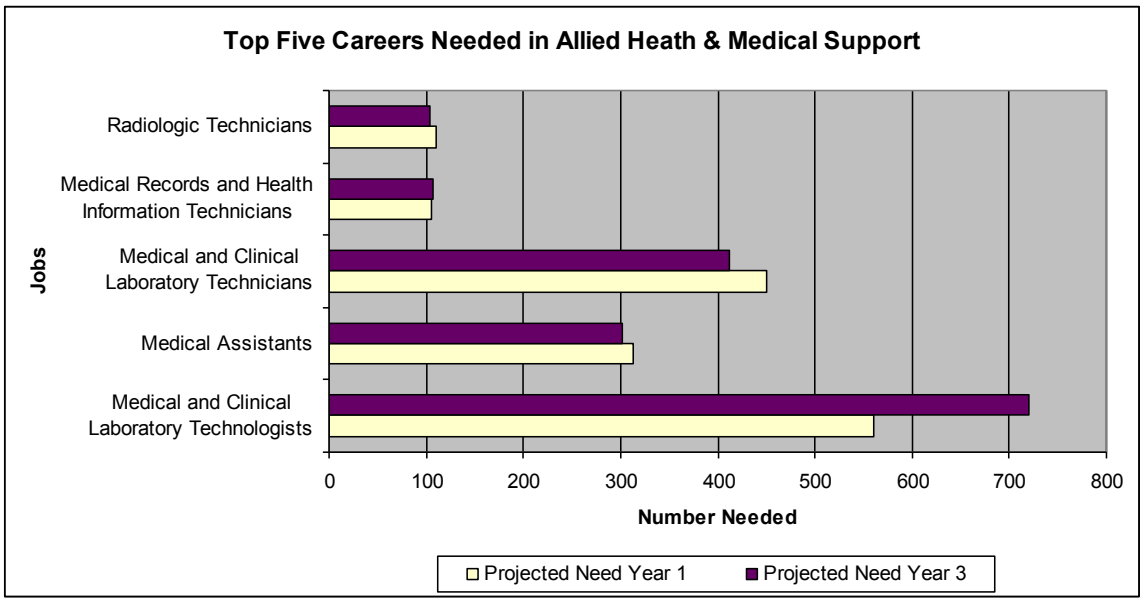
[23] Wikipedia. (December, 2006). *General Practitioner*
[24] California Board of Vocational Nursing and Psychiatric Technicians. (2004). *Fact Sheet.*
[25] California HealthCare Foundation and The California Endowment. (2003). *The Mental Health Workforce: Who's Meeting California's Needs?*
[26] California Employment Development Department. (2002). *Nursing Aides and Orderlies.*
[27] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Registered Nurses*

Figure 8 illustrates the top five high demand professions in Allied Health and Medical Support.

Figure 8



Nature of the Work – Medical Technicians and Support

Most medical technicians and medical assistants generally have either an associate degree from a community or junior college or a certificate from a hospital or adult school, a vocational or technical school, or one of the U.S. Armed Forces.[28,29] However, the usual requirement for an entry-level position as a clinical laboratory technologist is a bachelor's degree.[30]

The following description is based on local job announcements and state licensure requirements:

[28] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Clinical Laboratory and Technicians.*
[29] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Medical Assistants.*
[30] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Clinical Laboratory and Technologists.*

Radiologic Technicians - Radiologic technologists and technicians take x rays and administer nonradioactive materials into patients' bloodstreams for diagnostic purposes. Some specialize in diagnostic imaging technologies, such as computerized tomography (CT) and magnetic resonance imaging (MRI).[31] They must follow directions and monitor radiation exposure instruments carefully to ensure their safety as well as their patients.

Medical Records and Health Information Technicians – These technicians make certain that the patients' health information is accurate, organized and complete. They process and maintain all records in a manner consistent with medical, ethical, legal and regulatory requirements of the health care system.[32] Technicians must be detail orientated and possess communication skills as they must follow-up with multiple health care and insurance professionals to obtain additional information or seek clarification. There are opportunities for advancement through additional education and specialization - *health information coders*, *medical record coders*, *coder/abstractors*, or *coding specialists*. These technicians assign a code to each diagnosis and procedure.

Medical and Clinical Laboratory Technicians

Medical and Clinical Laboratory Technicians typically need to earn either an associate degree from a community college or private postsecondary school. Depending on education and credential obtainment, these individuals perform routine tests in medical laboratory for use in treatment and diagnosis of disease; prepare vaccines, biologicals, and serums for prevention of disease. Prepare tissue samples for pathologists, take blood samples, and execute such laboratory tests as urinalysis and blood counts.[33] They may work under the general supervision of a physician, nurse, or medical laboratory technologist.

Medical Assistants

Medical assistants are employed in physician offices, hospitals, clinics, insurance companies, and surgery centers. Most employers prefer graduates from a formal training program such as from a community college or a training certificate for a vocational-technical high school or private postsecondary school.[34] They perform basic medical procedures, such as injections, blood draws, basic laboratory procedures, and recording of vital signs. Additionally, they may assist with administrative clinical tasks to keep the offices of physicians, podiatrists, chiropractors, and other health practitioners operating effectively.

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[31] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Radiologic Technicians and Technologists.*

[32] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Medical Records Technicians.*

[33] Occupational Information Network. (2006). *Medical and Clinical Laboratory Technicians*

[34] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Medical Assistants.*

Medical and Clinical Laboratory Technologists

Medical and Clinical Laboratory Technologists generally have to attend a four-year college or university to attain a Bachelor degree. They perform a wide range of complex procedures in the general area of the clinical laboratory or perform specialized procedures in such areas as cytology, histology, and microbiology. Duties may include supervising and coordinating activities of workers engaged in laboratory testing and teaching medical technology when teaching is not their primary activity.[35]

[35] Occupational Information Network. (2006). *Medical and Clinical Laboratory Technologists*

Logistics Sector

Sector Background

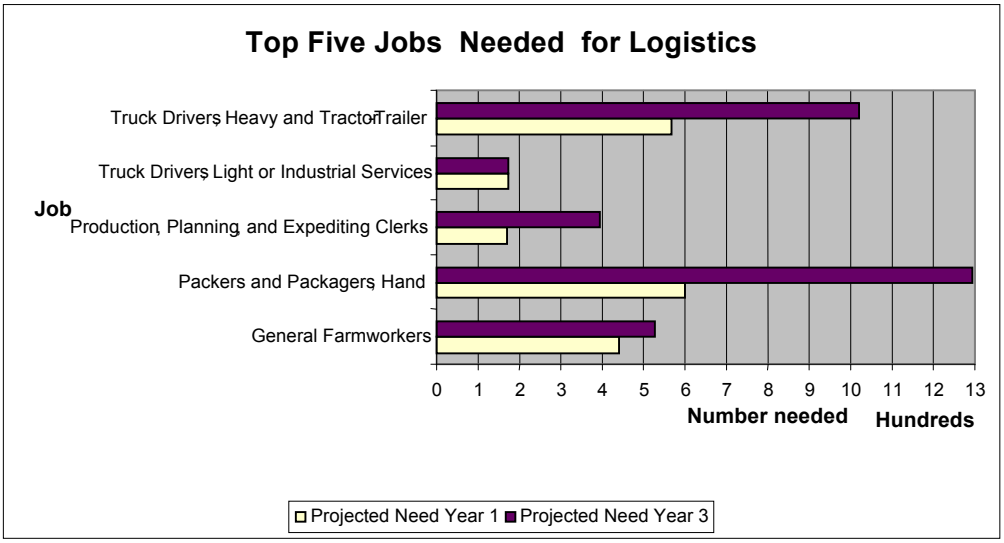
The geographic location of this region and major interstates create an ideal distribution hub for the agricultural and food manufacturing industries. Due to the volume of goods transported, logistics play a crucial role in the Central California economy. As an industry, logistics involves the integration of information, transportation, warehousing, inventory and materials handling. Like many industries, the logistics sector has also increased its use of technology enabling the industry to compete globally, which results in an expanded need for trained and skilled workers vital to all segments within the industry.

Analysis and Results

The survey results from the Logistics Sector demonstrated a 77% response rate with 110 completed instruments returned from the initial 143 surveys. Respondents from small, medium and large Logistics firms identified 57 occupations across all levels of service, ranging from entry level to executive positions. At the time of the survey, it was reported that there were 1,060 current job vacancies. Using data analysis to extrapolate the data to project the county need, it was determined that the county has a need for over 2,400 workers over the one year period. Using statistical analysis to forecast the three year county need, it was found that the Logistics Sector would need 4,347 workers to replace retiring workers and meet projected demand.

Survey results indicated that the two most needed occupations in this sector are Packagers and Truck Drivers. Statistical projections show more than 1,000 new Truck Drivers and 1,000 new packers will be added in three years. Figure 9 shows the top five demand occupations as reported by representatives from the Logistics Sector.

Figure 9



Construction and Trade Sector

Sector Background

The Construction Cluster was developed by the Regional Jobs Initiative in response to the significant increase in employment opportunities in both public and private sector construction projects. According to a study conducted by University of the Pacific economist Sean Snaith, (2004) over 2,100 construction jobs were added in the Fresno area — 3.5 times more than in manufacturing.[36] The study concluded that this sector will decline in 2007, after seeing only 3.9% job growth in 2006. However, while residential construction growth is expected to decline, it is predicted that the loss of jobs may be equalized by gains made by federal, state and local governmental building projects.[37]

Analysis and Results

Results from the Trades Sector survey yielded an impressive 99% response rate with 157 completed instruments returned from the original 158 surveys. At the time of the survey, it was reported that there were over 800 current job vacancies. Using data analysis to extrapolate the data to project the county need, it was determined that the county has a need for over 3,400 workers over year one and 5,116 workers over the next three years to meet projected demand.

Figure 10 shows the top five demand occupations as reported by representatives from the Construction Trades Sector.

Figure 10

[36] Nax, S. (July 2005). Area may see future gains in economy: economist says income in the Fresno area quadruple by 2030. Fresno Bee.

[37] Nax, S. (July 2005). Area may see future gains in economy: economist says income in the Fresno area quadruple by 2030. Fresno Bee.

Nature of the Work

Brickmasons and Blockmasons – are closely related construction trades which also include stonemasons. These tradesmen can create both simple and ornate building exteriors, walkways, walls, fireplaces and other structures with brick, concrete block and other masonry materials. [38]

Carpenters – work in a variety of construction activities. Depending on the type of work and employer, they may specialize and become highly skilled in one or two aspects of construction. Most learn their trade through formal and informal training programs offered by private postsecondary, community colleges, employers and apprenticeship programs. To become a skilled carpenter normally takes between 3 and 4 years of both classroom and on-the-job training.[39]

Construction related workers – are usually entry-level workers who work closely with a skilled tradesmen to provide general assistance.

Heating & Air Conditioning Mechanics – frequently specialize in commercial or residential, installation or repair. These workers must follow specifications to install heating, ventilation, air-conditioning and refrigeration systems. Technicians must be able to maintain, diagnose and correct problems throughout the entire system. [40] New technologies such as solar and bio-fuels offer promising growth potential for this current high-demand profession.

Roofers – repair and replace old or damaged roofs on both commercial, and residential buildings. They may also install attic fans and ventilation ducts which require cutting through roofs and water sealing the interior and exterior surface. Roofers can gain training either by working as helper with a skilled tradesman, enroll at postsecondary training program or enter an apprenticeship program.[41]

Plumbers – are one of five specialized trades that work with pipe systems: *Piplelayers* (install pipe for water, sewer or gas lines), *pipefitters* (set up high pressure systems such as those used in manufacturing), *steamfitters* (fit pipe that transport liquids or gases under high pressure) and *sprinkerfitters* (fit fire sprinkler systems).[42] There are multiple types of pipe used for different functions such as the movement of city water, disposal of waste, and pipes are used in manufacturing to move materials through the production processes. [43]

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[38] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Brickmasons, Blockmasons, and Stonemsons.*
[39] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Carpenters.*
[40] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Heating, Air-Conditioning, and Refrigeration Mechanics.*
[41] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Roofers.*
[42] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Pipelayers, Plumbers, Pipefitters, and Steamfitters.*
[43] Ibid.

Information Services Sector

Sector Background

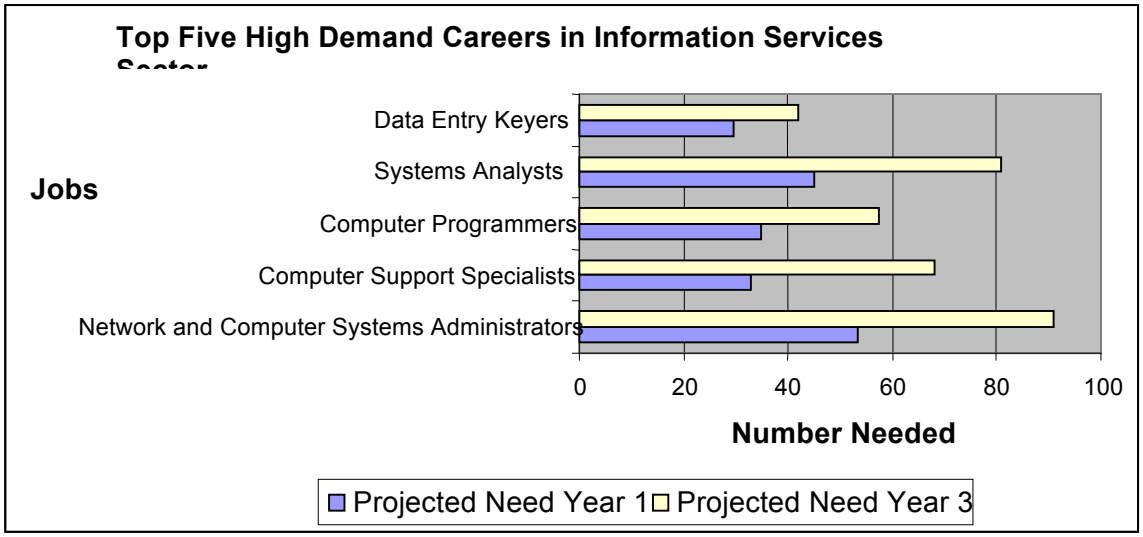
In today's highly competitive business environment, the Information Services Sector often provides mission critical services to companies. The Information Services Sector is a relatively new sector as it relies on technology innovations in both communications, computers, software and programming to provide in-depth technology information services to both public and private sector organizations. Information such as business research, security management, consulting and IT services.

Analysis and Results

The response rate from the Information Services Sector was an extraordinary 100% with 58 completed instruments returned from the original 58 surveys. After examination of the data it was projected that the county has a need of over 230 Information Service workers over the next one year period. Figure 11 illustrates the statistical forecasts show the three year county need was found that the Logistics Sector would need nearly 400 workers to replace retiring workers and meet projected demand.

Figure 11 lists the Information Services Sector careers with the highest projected demand in Fresno County.

Figure 11



Nature of the Work

Data Entry Keyers

Most companies rely data to make important business decisions. Data Entry Keyers are the workers who enter data into a computer to assist with the efficient handing of information.[44] These workers may enter the data through a variety of means optical character recognition, voice recognition and network computers. The work requires speed, accuracy and concentration. They typically work inside office buildings.

Systems Analysts

Systems Analysts (or computer systems analysts) are mainly responsible for creating or monitoring a computer system that will allow for individual computers to work together in order to improve production or work flow. They may also design new systems or expand existing systems to serve new purposes.[45] The information they deal with relates to all aspects of an employer's operations planning, monitoring, testing, accounting, forecasting, coordination, scheduling, etc. They must understand the capabilities of a firm's equipment and software, and may be asked to make recommendations about selection of new equipment or software packages.

Computer Programmers

Most computer programs have formal college education, according to the Bureau of Labor Statistics, nearly half hold a bachelor's degree. Computer programmers write, test, and maintain the detailed instructions, called programs that computers must follow to perform their functions. Programmers also conceive, design, and test logical structures for solving problems by computer. Many technical innovations in programming—advanced computing technologies and sophisticated new languages and programming tools—have redefined the role of a programmer and elevated much of the programming work done today. [46]

Computer Support Specialists

While Job titles and descriptions may vary, depending on the organization, Computer Support Specialist offers technical assistance, support and guidance to customers, co-workers and other users. They troubleshoot software and

[44] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Data Entry and Information Processing Workers.*
[45] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Computer Systems Analysts.*
[46] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Computer Programmers*

hardware problems via telephone, on-line help-desk systems or directly with clients. [47]

Network and Computer Administrators

The design, installation, and support of a company's local-area network (LAN), wide-area network (WAN), internet and intranet systems are performed by the Network Administrator. They are responsible for the efficient use of networks, monitor performance, coordinate network security efforts, troubleshoot problems and make recommendations for system improvements and plan for future implementation of servers. [48]

[47] U.S. Department of Labor, Bureau of Labor Statistics. (2006). *Occupational Outlook Handbook: Computer Support Specialists and Systems Administrators.*
[48] *Ibid.*

Across All Sectors

The survey examined six industry sectors; all demonstrated an unprecedented demand for employees. This report echoes findings that the Healthcare Industry is suffering from a critical workforce shortage with a projected need of nearly 7,000 new highly-skilled workers in year one. The projection for three year demand for Healthcare workers is also virtually unchanged. Despite the housing market "cooling-off", the Trades sector is predicted to seek more skilled workers in the next three years partly due to high retirements and to the many private, state and federal building project already underway. Manufacturing in the Fresno County area is projected to experience extraordinary need as well. The total projected need for employees is staggering – over 26,000 new workers in the next three years. Figure 12 provides more detail.

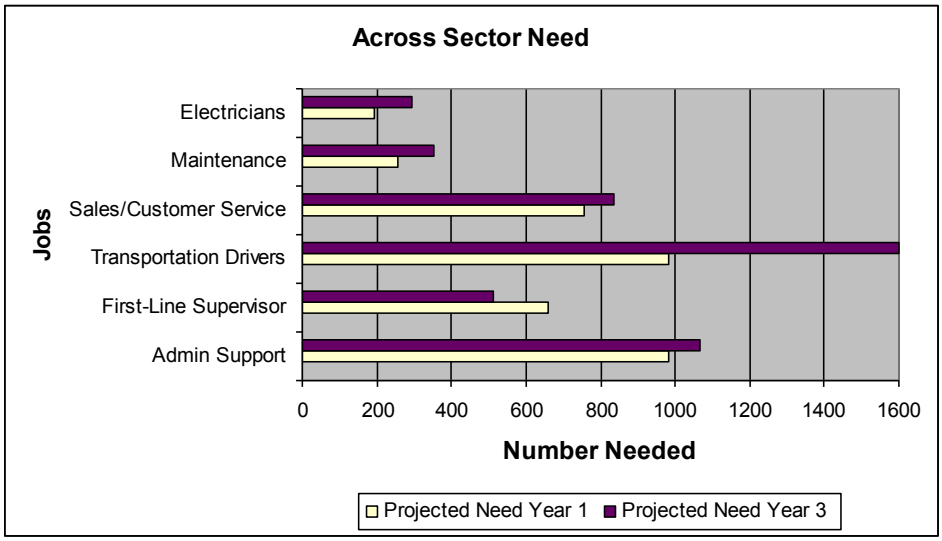
Figure 12

Total Projected Growth		
Industry	**Projected One Year Need**	**Projected Three Year Need**
Manufacturing	2,907	8,086
Healthcare	6,958	6,544
Logistics	2,454	4,347
Trades	3,449	5,116
Auto	1,250	1,790
Information Services	231	394
Totals	**17,249**	**26,277**

Need Common Across All Sectors

The survey identified many occupations which have a common skill set that were identified by multiple sectors as a "need". Figure 13 illustrates those careers that were identified by all sectors as hard-to-find employees.

Figure 13



Next Steps

The next step is to continue coordinate efforts with educational leaders, business and industry representatives and appropriate economic development entities to implement training project for Fresno County.

Staff from Fresno County Workforce Investment Board has initiated a series of dialogue sessions with local community college faculty and administration, private training providers and K-12 school officials to begin categorizing the existing training programs offered through private and public institutions as well as reviewing the current training capacity offered through these training institutions. Discussions will continue to ensure that all educational partners are engaged in the strategic planning to meet the needs of both the employer and the job seeker.

Further analysis of data will lead to a multi-sector Entry-Level Job Profile, which will include education and training requirements, in depth information regarding wage and benefits, career advancement, will be shared with education and training for planning purposes.

Limitations and areas of Further Research

While survey research may provide a vast array of useful information such as forecasting, data gathered by respondents represents their best knowledge at a given time. All respondents who participated in this project were encouraged to check all available sources of data and to take the time needed to accurately respond. An important limitation of this survey is that it asked about all positions that exist currently in a given industry sector. Changes in occupation demand due to external pressures such as advancement in technology or market pricing and there are other unavoidable internal changes such as reorganization of given industry which may have a positive or negative effect on the need for a given occupation.

Conclusion and Future research:

The current workforce shortage will only intensify as the “baby boomer” and qualified worker population age. Multiple articles have offered suggestions to alleviate the national and state shortages, though specific county analysis of state of workforce is incomplete. Because states, especially California, are large entities, comprehensive solutions might be difficult. Examinations such as the Fresno County analysis allows for solutions to be proposed that will meet a region’s specific needs.

By using this Gap Analysis methodology, this report places California and its regions within the larger framework of the nation. We believe this is a first and significant step towards the construction of a regional specific strategy to reduce the workforce shortages and assist both employers and job seekers. This report

serves to heighten awareness of the wide-spread workforce shortages across multiple sectors that are present in all Central Valley regions.

Further research should be conducted in order to capture the changes in demand brought about by external and internal pressures. In addition, comparative studies of other San Joaquin counties may prove to be useful in terms of creating a regional response to training needs and may provide valuable information for policy makers.

Acknowledgements:

The Fresno County Workforce Investment Board thanks several organizations, employers and individuals for their valuable contribution to this study. Finally, this study would not have been possible without the assistance from Senator Barbara Boxer, who made the request to the U.S. Department of Labor (DOL) which funded the project.