

Northern San Joaquin

Health Services and Biomedical Industries: Economics and Impact

2,500 firms

34,900 jobs

\$1.8 bil in sales

\$960 mil in wages

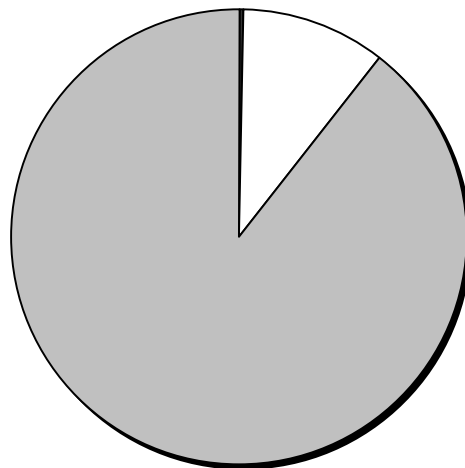
700 support jobs

The industries that make up the health services and biomedical cluster in northern San Joaquin Valley directly account for about 21 percent of the employment in the region, or 72,100 jobs. In addition, these jobs support an additional 8,300 jobs in supplier industries such as machinery, wholesale, and trucking.

Employment in health services and biomedical industries in the northern San Joaquin region

Total 1999 Estimated
Employment
363,000

- Biomedical Industries
- Health Services
- Other



The health care industry has undergone many changes in the past few years with a switch from treatment charges under insurance to managed care (HMOs, PPOs), with the number of enrollees doubled between 1990 and 1996. This trend may be changing based on evidence that the cycle of approvals and referrals necessary for specialized treatment can cost more than simply allowing the doctors to make the choices. Another recent change has been the movement toward home health care as a cost-cutting measure. There is an emphasis on costs because of the relatively high expenditures on health compared to other developed countries.

Medical industries trends

With new technologies, especially gene therapy, current trends in the industry are like those of the Internet boom. A small group may be doing some innovative research without much return. An IPO may be issued, and a discovery may leap the company into prominence. The stock jumps along with a great increase in staff to support the researchers. And, as in the case of other industries, the site of the smaller company may be closed and employees moved to another site. New Jersey, New York, Pennsylvania, and Palo Alto are the largest centers for research.

Production of pharmaceuticals is the lowest cost of the business, so most production by American companies takes place in the United States. Jobs may be highly physical, depending on dexterous hands operating smaller pieces of equipment. The rest of the jobs in the industry go to marketing and sales. Initial marketing of a major new drug, previously targeted exclusively to physicians and other practitioners but now increasingly to the consumer, may cost \$150 million. Sales forces are spread out, but have

good salaries. This trend is similar to that of the medical equipment supply manufacturing industry. Manufacturing of specialized, expensive products dominates the growth of the industry. Larger established corporations supply the more generic technology. The United States is a net exporter of products, compared to being a net importer of drugs.

As for the future, with the longer life span in the developed world, quality-of-life drugs will become more prominent. The companies are interested in developing these products because of the huge demand. People want to keep looking and feeling young until later years. The growth amongst U.S. consumers is with new, expensive medications.

The changing nature of service provision will also affect this industry. There will be growth in mobile equipment for home health care. Also, new technology such as lasers allows outpatient surgery. This reduces the overall cost of surgeries because up to half of the cost is the hospital care.

Health services will continue as one of the fastest growing segments of the regional economy, with over 10,500 new jobs projected between 1999 and 2006. The bulk of this increase will be in hospitals and personal care facilities. Projected biomedical manufacturing employment will increase by over 75 percent between 1999 and 2006, with over 1,200 jobs expected by 2006. Medical instruments manufacturing is projected to nearly double during this period.

Health facilities such as hospitals, residential care homes, and nursing aid and personal care facilities are projected to provide thousands of new jobs.

Local health services & biomedical industries cluster

What are industry clusters?

Industry clusters represent industry groups that share similar technologies, labor skills, distribution channels, and related markets. There is substantial evidence that collaboration among businesses with such shared interests, supported by research and educational institutions as well as governmental agencies, can provide a useful understanding of local economies. Cluster analysis can identify industry groupings that competitively export goods and services from the region; encourage further development of the robust parts of each cluster; and supplement those parts that are currently weak.

Industry	SIC	Firms (1996)	Employment (1996)	Employment (Est. 1999)	Projected Growth 1999 to 2006	Yearly Growth Rate
Health Services Core		2,275	34,322	37,887	9,968	3.4%
Hospitals	806	24	11,473	12,472	2,682	2.8%
Offices & clinics of medical doctors	801	808	6,664	7,249	1,571	2.8%
Nursing and personal care facilities	805	81	6,096	6,937	2,441	4.4%
Offices and clinics of dentists	802	510	3,048	3,380	921	3.5%
Residential care	836	255	2,836	3,233	1,157	4.5%
Offices of other health practitioners	804	434	1,919	2,150	653	3.9%
Home health care services	808	32	885	1,003	340	4.3%
Health and allied services, nec	809	42	845	919	198	2.8%
Medical and dental laboratories	807	77	515	489	-55	-1.7%
Offices of osteopathic physicians	803	12	41	56	61	11.0%
Biomedical Industries Core		20	565	710	537	8.4%
Medical instruments and supplies	384	12	353	473	462	10.2%
Ophthalmic goods	385	2	149	160	30	2.5%
Drugs	283	6	63	77	45	6.8%

Current job locations and concentration

Within the region, the highest number of core health services employment is

in San Joaquin and Stanislaus counties. Facilities there tend to support other areas. In addition, San Joaquin County generally has the highest concentrations of supplier industries in the region. But it should be noted that concentration of employment (compared to statewide concentration) in Amador, Calaveras, and Tuolumne counties is also high, as indicated in bold in the following table.

JOBS IN THE HEALTH SERVICES CLUSTER

County	Percentage of Total
Alpine	0.0%
Amador	2.6%
Calaveras	1.4%
Mariposa	0.3%
Merced	10.1%
San Joaquin	42.8%
Stanislaus	39.7%
Tuolumne	3.0%

Future job growth

Occupation Demand 1999 to 2006

Health Services

Registered nurses	1,400
CNA (nurses' aids)	1,310
Receptionists/information clerks	410
Physicians & surgeons	320
General office clerks	280
LVNs	280
Dental assistants	280
Maids & housekeeping cleaners	260
Social welfare service aids	250
Medical assistants	220

Biomedical Industries

Assemblers, fabricators	100
Engineers & technicians	70
Machine tool operators	40
Clerks	40
Specialized medical fabricators	30
Managers	30

Clusters and workforce development

The cluster approach is important to workforce development agencies because it shows where employment growth is likely to occur, and shows the variety of related businesses that share common attributes. For instance, several types of hospitals and care providers need skilled nurses. Training providers can coordinate their training programs for groups of occupations and skills within a cluster. Cost-effective programs can be tailored directly to the needs of the businesses in that cluster.

The aging of the population will bring many changes. The average age of a registered nurse is between 45 and 48 years statewide. Many RNs and other specialists in their forties and fifties will be retiring at a high rate, just as the need for these occupations increases. In particular, more trained specialists will be needed in the diseases of the aging, including phlebotomy, oncology and long-term care.

All this points to a continued chronic shortage of skilled nurses, including RNs, LVNs and CNAs.

Training and policy issues

Public policy makers are aware of the shortage of skilled nurses, of the aging population, and of the trend toward outpatient care, and are adapting their programs accordingly. For instance, Governor Davis' 2000 proposed budget targets \$15 million of Workforce Investment Act funds and \$35 million of welfare-to-work monies for recruitment, training and retention of caregivers.

The following training issues are among the key issues in the health care industry over the next decade.

- The large number of retiring nurses and the need to replace them. Nursing schools need to ramp up their capacity.
- As public nursing schools such as Delta College, Modesto College and Merced College increase capacity in the face of limited funding for expansion, they need to better coordinate their curricula and the specialties they offer.
- The need for increased nurses skilled in the diseases of aging. Nursing schools need to adjust their curricula into these less glamorous specialties.
- Recent nursing graduates often have strong verbal skills, but often lack documentation and charting skills, supervisory skills, and teamwork skills. Many lack an understanding of the need to establish a long term relationship with a patient. Basic communication skills such as English-as-a-second-language (ESL) are increasingly indicated.
- Entry level pay is often low, especially in the rural areas of the region. Entry level nursing is hard, physical work and the rewards are often too few to encourage recent graduates to stay in the profession.

The smaller hospitals in the valley and foothills tend not to have enough specialists. Since the smaller hospitals cannot pay the premium for more experienced nursing staff, the most experienced tend to find the valley a more appealing work location.

In addition, smaller facilities, residential care and rehabilitation facilities tend to rely on Medicare for a high percentage of their revenues. Reimbursement limits are a way of life, also putting downward pressure on salaries.

Wages and availability

The trend toward home health care and other outpatient services is also tending to limit the length of hospital stays, further limiting

revenues. The following table identifies average wages in selected job categories.

WAGES IN CLUSTER, 1996

Industry	SIC	Avg Wage (\$)
Health Services Core Industries		
Offices/clinics of medical doctors	801	44,100
Offices/clinics of dentists	802	27,300
Offices of osteopathic physicians	803	23,600
Offices, other health practitioners	804	22,400
Nursing/personal care facilities	805	17,000
Hospitals	806	27,800
Medical and dental laboratories	807	33,700
Home health care services	808	20,900
Other health and allied services	809	30,200
Residential care	836	14,900
Biomedical Core Industries		
Drugs	283	26,400
Medical instruments and supplies	384	33,700
Ophthalmic goods	385	23,400
Supplier Industries		
Other industrial inorganic chems	2819	53,900
Other industrial organic chems	2869	N/A
Other fabricated rubber products	3069	27,400
Other plastics products	308	28,700
Other service industry machinery	3589	26,000
Semiconductors/related devices	3674	25,400
Misc. electronic components	3679	20,000
Optical instruments and lenses	3827	21,700
Medical and hospital equipment	5047	32,500
Ophthalmic goods	5048	26,900
Drugs, proprietaries, sundries	512	36,800
Medical service/health insurance	632	30,900
Insurance agents/brokers/service	641	30,100
Medical equipment rental	7352	19,700
Employment agencies	7361	8,000
Data processing and preparation	7374	22,600
Misc. electrical repair shops	7629	23,400
Misc. social services	839	17,700
Professional organizations	862	28,400
Commercial physical research	8731	39,100
Noncommercial research orgs	8733	29,800

In addition to almost 2,600 companies in the core health care industries in the region, there are many more establishments that supply and support core health care industries. These supplier industries include chemicals and gases,

Supplier industries and local employers

rubber and plastic products, medical and optical electronics and other devices,

ophthalmic goods, drugs, medical service industries, insurance agents, employment agencies, data and reimbursement processing, social services, professional organizations and research organizations. An estimated 700 employees in the region directly support the health care industry, although since these supplier industries also support other clusters, the exact numbers are hard to estimate. The following table estimates job growth in selected supplier industries.

New Jobs by 2006

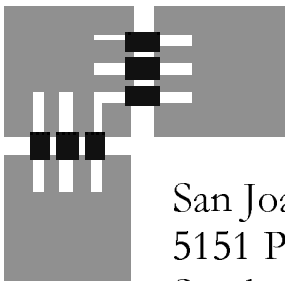
Industry	New Jobs by 2006
Miscellaneous plastics products, nec	1,320
Commercial printing	740
Beer, wine, and distilled beverages whlsl.	570
Trucking & courier services, except air	270
Paperboard containers and boxes	270
Food products machinery	90
Farm-product raw materials wholesale	60
Packaging machinery	40
Wood containers	40

The major employers in the various core and supplier industries are included in the following table.

SELECTED MAJOR CLUSTER EMPLOYERS

Establishment	Product or Service	City
Core Industries		
Doctors Medical Center	Hospital	Modesto
Memorial Hospital	Hospital	Modesto
St. Joseph's Medical Center	Hospital	Stockton
Emmanuel Medical Center	Hospital	Turlock
Dameron Hospital Assn.	Hospital	Stockton
Depuy Orthopedic Technology	Orthopedic appliances	Tracy
Gould Medical Group	Physicians' clinics	Modesto
Lodi Memorial Hospital	Hospital	Lodi
Mercy Hospital	Hospital	Merced
Sonora Community Hospital	Hospital	Sonora
Stanislaus Medical Center	Hospital	Modesto
Human Services Agency	Social services	Stockton
Supplier Industries		
Blue Shield of California	Insurance	Lodi
National Health Plans	HMO	Modesto
Delta Health Systems	Insurance	Stockton
Omni Health Care	Hospital & medical services	Stockton
Prudential Health Care	Insurance	Stockton
Addus Healthcare	Nurses' registry	Modesto

This fact sheet provides detailed information on where employment growth will occur in the eight-county region and highlights the skill requirements of the health services and biomedical industries. These data can be used by the Northern San Joaquin Regional Collaborative the basis for aggregation of market demand by skill and category. This will permit the development of efficient training and education programs that cut across county boundaries and serve all health services and biomedical firms in the region. Establishing a system for continued reassessment of the needs of these businesses would lead to the creation of a regional labor market that can effectively match the supply and demand for labor without public sector intervention.



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