HOSPITAL INDUSTRY IN SOUTHERN CALIFORNIA

ECONOMIC IMPACT ANALYSIS

Los Angeles County Economic Development Corporation

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This report was prepared by the Economic and Policy Analysis Group of the Los Angeles County Economic Development Corporation (LAEDC).

As the Southern California region's premier economic development organization, the mission of the LAEDC is to attract, retain and grow businesses and jobs in the regions of Los Angeles County.

The LAEDC Economic and Policy Analysis Group offers objective economic and policy research for public agencies and private firms. The Analysis Group focuses on economic impact studies, regional industry analyses, economic forecasts and issue studies, particularly in water, transportation, infrastructure and environmental policy. Projects are selected based on their relevance to the *L.A. County Strategic Plan for Economic Development* and the potential for the research to shape policy that supports the LAEDC mission.

Executive Summary

Economic Activity of the Hospital Industry

The 175 reporting hospitals of the six-county region served by the Hospital Association of Southern California (which includes the counties of Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara and Ventura), reported 37,020 available beds with an average occupancy rate of 64 percent. These hospitals provided almost 8.6 million inpatient days, with acute care accounting for more than 78 percent. More than 17.4 million outpatient visits were made to hospitals in the HASC region, of which almost one third were emergency room visits.

The hospital industry in the region is estimated to have generated $33.6 billion in revenues in 2010.

Economic and Fiscal Contribution

The total economic contribution of the hospital industry extends beyond the activity generated within the sector itself. Wages paid to the staff and payments made for purchases of goods and services circulate throughout the economy generating additional indirect and induced activity.

We estimate that in 2010, the hospital industry in the HASC region contributed $74.4 billion in total economic output and supported 507,550 full- and part-time jobs with total labor income (including benefits) of $31.9 billion. This economic activity is estimated to have generated $3.8 billion in state and local taxes.

The economic contribution is spread throughout the region. Over 58 percent of the total employment contribution is made by the ongoing operations at hospitals in Los Angeles County. Another 17.8 percent originates in Orange County hospitals, and ten percent from hospitals in San Bernardino County.

Economic and Fiscal Contribution of Hospital Industry
(HASC Region, 2010)

Estimated Annual Revenue ($ billions)	$ 33.6
Total Economic Contribution:	
Output ($ billions)	$ 74.4
Employment (jobs)	507,550
Labor income ($ billions)	$ 31.9
Total Fiscal Contribution ($ billions):	$ 3.8

Source: Estimates by LAEDC

Total Employment Contribution by County
(2010)

Los Angeles County	296,230
Orange County	90,150
Riverside County	37,280
San Bernardino County	50,900
Santa Barbara County	11,890
Ventura County	21,100
Total Employment Impact (HASC)	507,550

Source: Estimates by LAEDC

Hospital Construction Spending

The hospital industry continues to invest in construction projects at existing and new facilities, and carry out retrofits motivated by regulatory mandates. In 2010, we estimate that this spending reached $1.1 billion in the six-county region. The total economic impact was $2.4 billion in economic output, supporting 15,470 full- and part-time jobs with labor income of $907.5 million. We estimate that this spending generated $101.2 million in state and local taxes through its contribution to economic activity in the region.

Economic and Fiscal Impact of Hospital Industry Construction Spending
(HASC Region, 2010)

Estimated Construction Spending ($ millions)	$ 1,114.0
Total Economic Impact:	
Output ($ billions)	$ 2,380.9
Employment (jobs)	15,470
Labor income ($ billions)	$ 907.5
Total Fiscal Impact ($ billions):	$ 101.2

Source: Estimates by LAEDC

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SOUTHERN CALIFORNIA ANALYSIS

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1 Introduction

Across the six counties within the HASC region (comprised of Los Angeles, Orange, Riverside, San Bernardino, Ventura and Santa Barbara Counties), hospitals, health care centers, doctors' offices and laboratories provide access to a variety of vital health care services, employing thousands of workers, and generating significant revenues and tax dollars.

The health care sector is composed of several inter-related and supporting industries, including ambulatory health care services, hospitals, and nursing and residential care facilities. The sector as a whole has been growing over the past decade and is likely to be a driver of economic activity going forward as our population grows, as it ages, and as medical advances extend our productive lives.

There were nearly 40,000 private and public establishments and almost 667,500 payroll employees in the health care sector, representing 9.8 percent of all payroll employment in the HASC area. Offices of health care practitioners is the largest industry by number of establishments, but the hospital industry employs more workers, providing 238,176 jobs.

These data do not include the self-employed or freelance workers, which we estimate could add an additional 69,000 workers, many of whom are health care practitioners or work in home health care services.

Payroll employment in this sector has been growing over the past twenty years. In 1990, employment in the HASC region in the health care industry was 474,141, growing to 667,494 in 2010. Growth has accelerated in the past decade, averaging approximately 2.3 percent on an annual basis since 2000, compared to 1.1 percent per year in the prior decade.

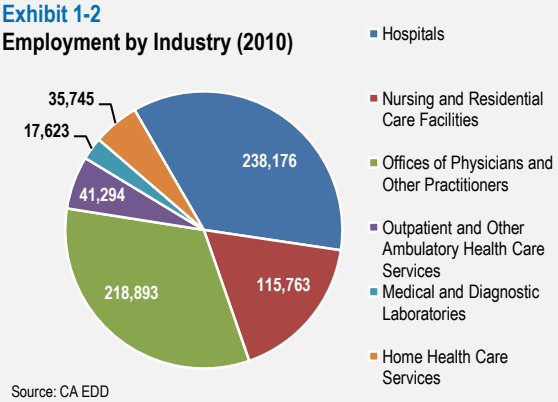
In the six-county region as a whole, total payroll employment has not shown such a steady increase over the period, and indeed experienced a dramatic decline during the recession.

Exhibit 1-1
Health Care Services in Southern California (2010)

	# of Establishments
Hospitals:	
General Medical and Surgical Hospitals[1]	211
Other Hospitals[2]	313
Nursing and Residential Care Facilities	3,278
Offices of Health Care Practitioners	32,140
Outpatient Care Centers	1,553
Medical and Diagnostic Laboratories	912
Home Health Care Services	1,350
TOTAL Establishments	**39,822**
% of all HASC Region Establishments	**6.05%**

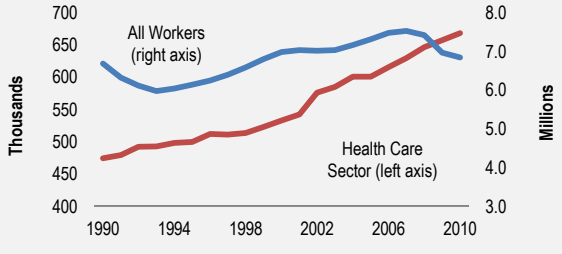
Source: CA EDD
[1] Includes federal, state and county general medical and surgical hospitals such as VA hospitals
[2] Includes psychiatric and substance abuse hospitals and specialty hospitals

Exhibit 1-2
Employment by Industry (2010)



Source: CA EDD

Exhibit 1-3
Employment (2010)



Source: CA EDD

Wages

Wages of health care workers vary by industry, as shown in Exhibit 1-4. Average wages were highest in hospitals in 2010, reaching $63,199 annually, and lowest in nursing and residential care facilities where workers earned an average of $29,097 in 2010.

Overall, the average annual wage in the health care industry in the HASC area in 2010 was $53,355.

The purchasing power of earnings in the health care sector has been improving recently, but this has not always been the case. In the 1990s, for example, real wages deteriorated, reaching a low in 1997. However, real wages have shown improvement since 2000 and in particular during the last two years. This is in contrast to the average real wages for all workers in Los Angeles County, which grew through 2000 but which have remained flat since.

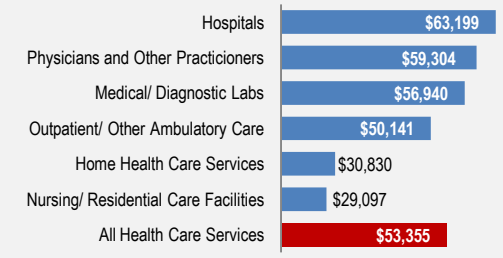
Output

The economic census of 2007 reports revenues by industry. The health care sector as a whole is estimated to have had total revenues of more than $48 billion in 2007 in the six-county region. Additional revenues earned by the self-employed are estimated to have been $2.2 billion.

In 2010, the health care sector employed almost 667,500 people in the HASC region, with an average annual wage of $53,335.

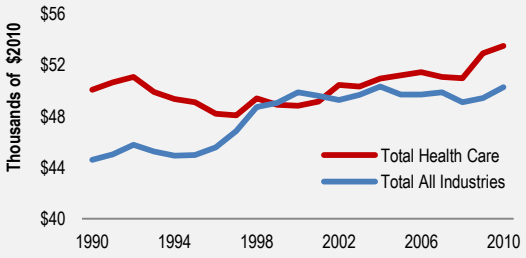
In 2007 (the most recent year for which data is available), total revenues exceeded $48 billion.

Exhibit 1-4
Average Annual Wages by Industry (2010)



Source: CA EDD

Exhibit 1-5
Average Annual Wages



Source: CA EDD

Exhibit 1-6
Health Care Services Output (2007)

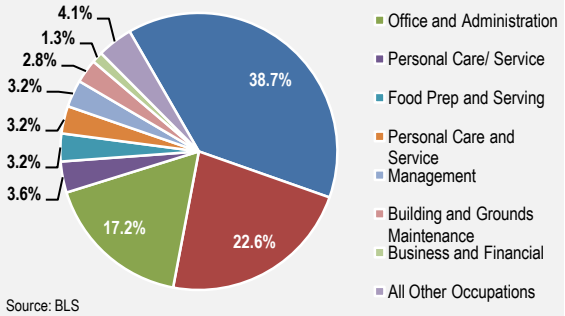
	Estimated Revenues ($ billions)
Hospitals	$ 20.5
Offices of Health Care Practitioners	14.2
Nursing and Residential Care Facilities	4.0
Outpatient and Other Ambulatory Health Care	2.6
Medical and Diagnostic Laboratories	1.2
Home Health Care Services	1.3
TOTAL Revenues	**$ 48.1**

Source: BLS

Health Care Occupations

There are many occupations in the health care sector, as shown in Exhibit 1-7. Almost 40 percent of employees are healthcare practitioners such as physicians and nurses. An additional 22.6 percent are in healthcare support occupations. Other occupations include managers, administrative workers, food preparation workers, teachers and maintenance personnel.

Exhibit 1-7
Occupational Makeup of Health Care



Source: BLS

The Bureau of Labor Statistics lists 51 separate occupations in the healthcare practitioner occupational group, and another 14 occupations in the healthcare support occupational group. Exhibits 1-8 and 1-9 list the largest individual occupations by employment in both of these occupational groups in the HASC region in 2010, along with the average annual wage paid for employees in these occupations in California. ❖

Exhibit 1-8
Practitioner and Technical Services Occupations (2010)

Occupation	Employment in HASC	Annual average wage in CA
Registered Nurses	136,920	$ 88,714
Licensed Practical and Vocational Nurses	38,480	51,200
Pharmacy Technicians	16,850	37,805
All Other Physicians and Surgeons	13,580	194,356
Pharmacists	13,560	120,488
Medical Records/ Information Techs	10,530	40,076
Radiologic Technologists/Technicians	9,270	66,972
Medical and Clinical Lab Technicians	8,960	42,887
Physical Therapists	8,880	85,801
EMTs and Paramedics	8,420	36,650
Dental Hygienists	8,250	91,492
Dentists, General	7,720	148,832
Respiratory Therapists	7,680	68,933
All Other Health Technologists	6,870	47,053
Medical and Clinical Lab Technologists	6,380	76,686
Psychiatric Technicians	5,230	53,387
Surgical Technologists	5,210	49,514
Veterinary Technologists/Technicians	5,110	35,798
Physician Assistants	4,870	94,980
Speech-Language Pathologists	4,840	83,068
Family and General Practitioners	4,750	170,389
Occupational Therapists	4,380	85,510
All Other Health / Tech Workers	3,810	73,397
Opticians, Dispensing	3,700	37,800
Internists, General	3,100	188,186
Diagnostic Medical Sonographers	3,080	78,349
Dietitians and Nutritionists	2,850	65,944
Pediatricians, General	2,770	168,035
All others	*27,780*	*n/a*
All	**383,830**	**$ 86,990**

Source: BLS

Exhibit 1-9
Healthcare Support Occupations (2010)

Occupation	Employment in HASC	Annual average wage in CA
Nursing Aides, Orderlies, and Attendants	61,020	$ 28,297
Medical Assistants	49,070	31,678
Home Health Aides	31,820	23,154
Dental Assistants	25,320	35,764
All Other Healthcare Support Workers	14,990	36,401
Pharmacy Aides	5,100	25,349
Massage Therapists	4,490	39,440
Physical Therapist Aides	3,710	27,738
Medical Equipment Preparers	3,670	31,062
Physical Therapist Assistants	3,040	58,533
Medical Transcriptionists	2,940	42,979
Veterinary Assistants	2,940	26,719
All others	*4,520*	*n/a*
All	**212,630**	**$ 30,600**

Source: BLS

2 Hospitals in the HASC Region

Ongoing Operations

Economic Activity

Data compiled by the State of California Office of Statewide Health Planning and Development (OSHPD) provides insight into the capabilities and activity at reporting hospitals in the six-county area of the Hospital Association of Southern California. Summary data is shown in Exhibit 2-1. This data excludes several hospitals, such as Kaiser Foundation Hospitals, California State hospitals and hospitals focused on long-term care, and therefore underreports the number of beds, patient days, discharges and outpatient visits.

The 175 reporting hospitals of the HASC region reported 39,000 licensed beds and 37,020 available beds with an average occupancy rate of 64 percent. These hospitals provided almost 8.6 million inpatient days, with acute care accounting for more than 78 percent. The average length of stay for patients who stayed at least one night was 5.3 days.

Total discharges numbered almost 1.6 million (although some of these were inter-institutional transfers). There were more than 17.4 million outpatient visits to hospitals in the HASC region, of which almost one third were emergency room visits.

Hospital operations generate substantial revenues, employment and labor income. A summary of the activity of the reporting hospitals for 2010 is shown in Exhibit 2-2.

These hospitals received almost $31 billion in net patient revenue and $3 billion in other revenue. Together they spent more than $18.5 billion in purchases, including services and supplies, much of which is spent within the region. In addition, over $11.5 billion was paid in wages and salaries, and an additional $4.6 billion in employee benefits. Moreover, $800 million was paid to physicians and $1.0 billion was paid for other professional services.

Exhibit 2-1
Hospitals in the HASC Region (2010)

Hospitals reporting[1]	175
Beds:	
Licensed	39,160
Available	37,030
Occupancy Rates:	
Licensed Beds	60.1%
Available Beds	63.6%
Patients Days:	
Acute Care	6,696,215
Psychiatric Care	838,427
Chemical Dependency	210,131
Rehabilitation	643,155
Long-term Care	193,395
Total	8,581,323
Average Length of Stay	5.3
Discharges	1,583,381
Outpatient Visits:	
Emergency Room	5,016,898
All Other Outpatients	12,401,864
Total	17,418,762

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Exhibit 2-2
Economic Activity of Hospital Operations (2010)[1]

	$ billions
Net Patient Revenue	$ 30.89
Other Operating Revenue	0.94
Non-Operating Revenue	1.80
Purchases:	
Supplies	4.93
Services	4.13
Leases and rentals	0.52
Other	4.08
Salaries and wages	11.53
Employee benefits	4.57
Physician professional fees	0.80
Other professional fees	0.98

Source: Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Economic and Fiscal Contribution

The total economic contribution of the hospital industry extends beyond the activity generated within the sector itself. Wages paid to the staff and payments made for purchases of goods and services circulate throughout the economy generating additional indirect and induced activity.

Using methodology described in the Appendix, we estimate that total industry revenues in 2010 were $33.6 billion. Note that this is consistent with the reported revenues from OSHPD but that this may underestimate actual industry revenues.

The total economic contribution of the hospital industry in the HASC region in 2010, including direct, indirect and induced activity, is shown in Exhibit 2-3.

Exhibit 2-3
Economic and Fiscal Contribution of Hospital Industry (HASC Region, 2010)

Estimated Annual Revenue ($ billions)	$ 33.6
Total Economic Contribution:	
Output ($ billions)	$ 74.4
Employment (jobs)	507,550
Labor income ($ billions)	$ 31.9
Total Fiscal Contribution ($ billions):	
Income taxes (including profits taxes)	$ 1.0
Sales taxes	1.0
Property taxes	1.1
Fees and fines	0.4
Social insurance	0.1
Other taxes	0.2
Total *	$ 3.8

* May not sum due to rounding
Source: Estimates by LAEDC

The hospital industry in the HASC region contributed $74.4 billion in total economic output and supported 507,550 full- and part-time jobs with total labor income (including benefits) of $31.9 billion. We estimate that the industry generated $3.8 billion in state and local taxes through its contribution to economic activity in the region.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 2-4.

The largest employment impact of course occurs in the health care and social assistance sector, but many other industry sectors reap employment benefits as a result of the economic activity generated by the hospital industry. Those most affected include retail trade, administrative and waste management, finance and insurance, and real estate and rental services.

Exhibit 2-4
Economic Contribution by Industry Sector (HASC Region, 2010)

Sector	Employment	Output ($ millions)
Agriculture	664	$ 89
Mining	485	122
Utilities	666	568
Construction	2,472	351
Manufacturing	8,619	4,349
Wholesale trade	7,379	1,280
Retail trade	34,114	2,564
Transportation and warehousing	7,684	948
Information	4,804	1,928
Finance and insurance	25,590	5,283
Real estate and rental	30,487	8,897
Professional, scientific and technical services	18,538	2,505
Management of companies	4,693	840
Administrative and waste management	35,103	1,903
Educational services	7,090	511
Health care and social assistance	260,748	37,781
Arts, entertainment and recreation	6,612	469
Accommodation and food services	24,639	1,520
Other services	22,297	1,590
All others	4,870	908
Total *	**507,550**	**$ 74,405**

* May not sum due to rounding
Source: Estimates by LAEDC

Virtually all industry sectors are impacted by the total economic contribution of the hospital industry. A description of the industry sectors is provided in the Appendix.

Occupational Analysis

Of the jobs supported by the industry, almost one third is in healthcare practitioner and healthcare support occupations, with average annual wages of $81,636 and $29,441 respectively.

The occupational distribution of the total jobs is shown in Exhibit 2-5.

Exhibit 2-5
Occupational Distribution of Total Employment Impact (HASC Region, 2010)

Occupational Description	Employment	Average Annual Wage
Management	22,156	$ 119,480
Business & financial operations	20,472	72,582
Computer & mathematical science	8,051	80,807
Architecture & engineering	2,412	87,504
Life, physical, & social science	3,056	70,189
Community & social services	9,457	51,316
Legal	2,629	124,318
Education, training, & library	6,947	59,897
Arts, design, entmt, sports, & media	4,463	70,263
Healthcare practitioners & tech	129,625	81,636
Healthcare support	37,268	29,441
Protective service	6,177	51,520
Food preparation & serving related	32,916	21,866
Building & grounds cleaning & maint	24,402	27,062
Personal care & service	12,027	26,201
Sales & related	36,370	38,593
Office & administrative support	94,012	36,963
Farming, fishing, & forestry	621	21,723
Construction & extraction	4,637	50,234
Installation, maintenance, & repair	16,109	47,004
Production	13,758	31,962
Transportation & material moving	19,979	32,731
All	**507,550**	**$ 49,330**

* May not sum due to rounding
Source: Estimates by LAEDC

While the industry has an impact on all industry sectors, the economic activity it supports throughout the region provides employment for a wide variety of occupations. The education and work experience requirements of each occupation are provided in the Appendix. ❖

Hospital Construction Spending

Economic and Fiscal Impact

In addition to ongoing, regular and recurring operations, the hospital industry continues to invest in construction projects at existing and new facilities, and carry out retrofits motivated by regulatory mandates. This investment generates significant economic activity.

Our estimates for construction spending in 2010 were obtained from OSHPD using the change in percentage of completion of active projects during the year.

The total economic impact of construction spending by the hospital industry in the HASC region in 2010, including direct, indirect and induced activity, is shown in Exhibit 2-6.

Exhibit 2-6
Economic and Fiscal Impact of Hospital Industry Construction Spending
(HASC Region, 2010)

Estimated Construction Spending ($ millions)	$ 1,114.0
Total Economic Impact:	
Output ($ millions)	$ 2,380.9
Employment (jobs)	15,470
Labor income ($ millions)	$ 907.5
Total Fiscal Impact ($ millions):	
Income taxes (including profits taxes)	$ 30.4
Sales taxes	24.6
Property taxes	27.2
Fees and fines	10.8
Social insurance	3.4
Other taxes	4.8
Total *	$ 101.2

* May not sum due to rounding
Source: Estimates by LAEDC

Construction spending by the hospital industry in the HASC region in 2010 generated $2.4 billion in total economic output and supported 15,470 full- and part-time jobs with total labor income (including benefits) of $907.5 million. We estimate that this spending generated $101 million in state and local taxes through its contribution to economic activity in the region.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 2-7. Most of these impacts will of course occur in the construction sector, but other sectors affected include retail trade, professional, scientific and technical services, and health care and social assistance.

Exhibit 2-7
Impact of Construction Spending by Industry Sector
(HASC Region, 2010)

Sector	Employment	Output ($ millions)
Agriculture	20	$ 3
Mining	28	7
Utilities	17	15
Construction	7,182	1,124
Manufacturing	774	249
Wholesale trade	309	54
Retail trade	1,009	76
Transportation and warehousing	281	37
Information	148	62
Finance and insurance	706	150
Real estate and rental	414	176
Professional, scientific and technical services	1,056	145
Management of companies	67	12
Administrative and waste management	604	37
Educational services	203	14
Health care and social assistance	1,002	99
Arts, entertainment and recreation	201	14
Accommodation and food services	709	44
Other services	647	47
All others	98	19
Total *	**15,470**	**$ 2,381**

* May not sum due to rounding
Source: Estimates by LAEDC

As seen with the economic impact of ongoing operations, almost all industry sectors are impacted by the total economic activity generated by the construction spending of the hospital industry. A description of the industry sectors is provided in the Appendix. ❖

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REGIONAL ANALYSIS

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3 Los Angeles County

Health Care Sector

Across Los Angeles County, hospitals, health care centers, doctors' offices and laboratories provide access to a variety of vital health care services, employing thousands of workers, and generating significant revenues and tax dollars.

The health care sector is composed of several inter-related and supporting industries, including ambulatory health care services, hospitals, and nursing and residential care facilities. The sector as a whole has been growing over the past decade and is likely to be a driver of economic activity going forward as our population grows, as it ages, and as medical advances extend our productive lives.

There were more than 22,400 private and public establishments and almost 390,000 payroll employees in the health care sector, representing 10.1 percent of all payroll employment in Los Angeles County. Offices of health care practitioners is the largest industry by number of establishments, but the hospital industry employs more workers, providing 146,340 jobs.

These data do not include the self-employed or freelance workers, which we estimate could add an additional 41,000 workers, many of whom are health care practitioners or work in home health care services.

Payroll employment in this sector has been growing over the past twenty years. In 1990, employment in Los Angeles County in the health care industry was 306,582, growing to 389,661 in 2010. Growth has accelerated in the past decade, averaging approximately 1.9 percent on an annual basis since 2000, compared to 0.4 percent per year in the prior decade.

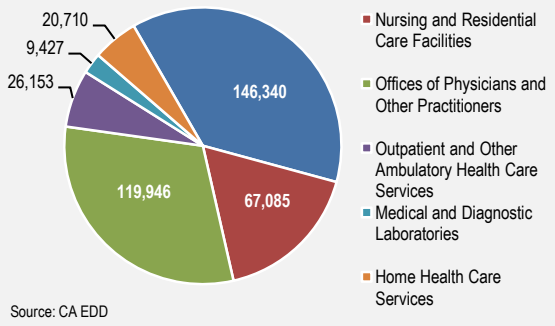
In the county as a whole, total payroll employment has not shown such a steady increase over the period, and indeed experienced a dramatic decline during the recession.

Exhibit 3-1
Health Care Services in Los Angeles County (2010)

	# of Establishments
Hospitals:	
General Medical and Surgical Hospitals[1]	121
Other Hospitals[2]	181
Nursing and Residential Care Facilities	1,719
Offices of Health Care Practitioners	18,219
Outpatient Care Centers	885
Medical and Diagnostic Laboratories	484
Home Health Care Services	826
TOTAL Establishments	**22,441**
% of all LAC Establishments	**5.3%**

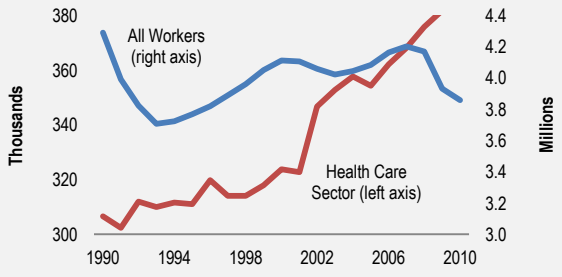
Source: CA EDD
[1] Includes federal, state and county general medical and surgical hospitals such as VA hospitals
[2] Includes psychiatric and substance abuse hospitals and specialty hospitals

Exhibit 3-2
Employment by Industry (2010)



Source: CA EDD

Exhibit 3-3
Employment (2010)



Source: CA EDD

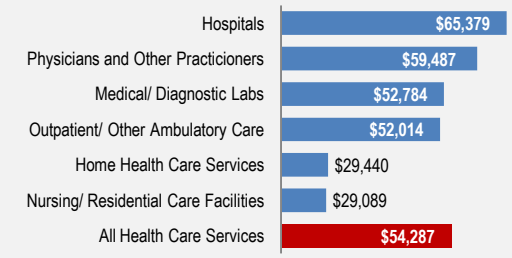
Wages

Wages of health care workers vary by industry, as shown in Exhibit 3-4. Average wages are highest in hospitals, reaching $65,379 annually, and lowest in nursing and residential care facilities where workers earned an average of $29,089 in 2010.

Overall, the average annual wage in the health care industry in Los Angeles County in 2010 was $54,287.

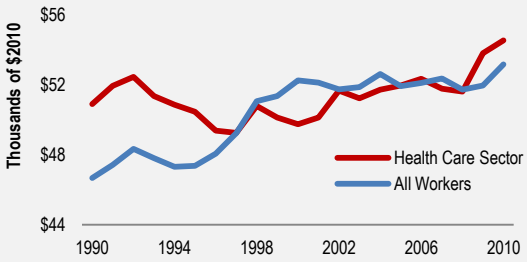
The purchasing power of earnings in the health care sector has been improving recently, but this has not always been the case. In the 1990s, for example, real wages deteriorated, reaching a low in 1997. However, real wages have shown improvement since 2000 and in particular during the last two years. This is in contrast to the average real wage for all workers in Los Angeles County, which grew through 2000 and remained relatively flat until just this last year. ❖

Exhibit 3-4
Average Annual Wages by Industry (2010)



Source: CA EDD

Exhibit 3-5
Average Annual Wages



Source: CA EDD

Ongoing Operations of Hospitals in Los Angeles County

Economic Activity

Data compiled by the State of California Office of Statewide Health Planning and Development (OSHPD) provides insight into the capabilities and activity at reporting hospitals. Summary data for hospitals in Los Angeles County is shown in Exhibit 3-6. This data excludes several hospitals, such as Kaiser Foundation Hospitals, California State hospitals and hospitals focused on long-term care, and therefore underreports the number of beds, patient days, discharges and outpatient visits.

The 97 reporting hospitals in Los Angeles County reported 23,310 licensed beds and 22,180 available beds with an average occupancy rate of 64.5 percent. These hospitals combined provided over 5.2 million inpatient days, with acute care accounting for nearly 78 percent. The average length of stay for patients who stayed at least one night was 5.7 days.

Total discharges numbered over 915,000 (although some of these were inter-institutional transfers). There were more than 9.3 million outpatient visits to hospitals in Los Angeles County, almost 30 percent of which were emergency room visits.

Hospital operations generate substantial revenues, employment and labor income. A summary of the activity of the reporting hospitals is shown in Exhibit 3-7.

These hospitals received $18 billion in net patient revenue and $1.8 billion in other revenue. Together they spent more than $7.9 billion in purchases, including services and supplies, much of which was spent within the Los Angeles region. In addition to this spending, $7.0 billion was paid in wages and salaries, with an additional $2.8 billion in employee benefits. Moreover, $450 million was paid to physicians and $650 million was paid for other professional services.

Exhibit 3-6
Los Angeles County Hospitals (2010)

Hospitals reporting[1]	97
Beds:	
Licensed	23,310
Available	22,186
Occupancy Rates:	
Licensed Beds	61.4%
Available Beds	64.5%
Patients Days:	
Acute Care	4,062,559
Psychiatric Care	547,815
Chemical Dependency	132,143
Rehabilitation	335,047
Long-term Care	138,174
Total	5,215,738
Average Length of Stay	5.7
Discharges	915,458
Outpatient Visits:	
Emergency Room	2,638,437
All Other Outpatients	6,707,489
Total	9,345,926

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Exhibit 3-7
Economic Activity of Hospital Operations (2010) [1]

	$ billions
Net Patient Revenue	$ 18.02
Other Operating Revenue	0.63
Non-Operating Revenue	1.16
Purchases:	
Supplies	$ 2.80
Services	2.45
Leases and rentals	0.28
Other	2.38
Salaries and wages	$ 7.01
Employee benefits	2.84
Physician professional fees	0.45
Other professional fees	0.65

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Economic and Fiscal Contribution

The total economic contribution of the hospital industry extends beyond the activity generated within the sector itself. Wages paid to the staff and payments made for purchases of goods and services circulate throughout the economy generating additional indirect and induced activity.

Using methodology described in the Appendix, we estimate that total industry revenues in Los Angeles County in 2010 were $19.8 billion.

The total economic contribution of the hospital industry in Los Angeles County in 2010, including direct, indirect and induced activity, is shown in Exhibit 3-8.

Exhibit 3-8
Economic and Fiscal Contribution of Hospital Industry (Los Angeles County, 2010)

Estimated Annual Revenue ($ billions)	$ 19.8
Total Economic Contribution:	
Output ($ billions)	$ 44.1
Employment (jobs)	296,230
Labor income ($ billions)	$ 19.1
Total Fiscal Contribution ($ millions):	
Income taxes (including profits taxes)	$ 605.0
Sales taxes	563.8
Property taxes	624.4
Fees and fines	222.4
Social insurance	81.8
Other taxes	110.2
Total *	**$ 2,207.6**

* May not sum due to rounding
Source: Estimates by LAEDC

The hospital industry in Los Angeles County contributed $44.1 billion in total economic output and supported almost 300,000 full- and part-time jobs with total labor income (including benefits) of $19.1 billion.

We estimate that the industry generated $2.2 billion in state and local taxes through its contribution to economic activity in the county.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 3-9.

Most of these impacts of course occur in the health care and social assistance sector, but other sectors affected will include administrative and waste management, retail trade, and real estate and rental services.

Exhibit 3-9
Economic Contribution by Industry Sector (Los Angeles County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	339	$ 46
Mining	285	73
Utilities	395	339
Construction	1,474	206
Manufacturing	5,223	2,713
Wholesale trade	4,543	781
Retail trade	19,306	1,460
Transportation and warehousing	4,781	596
Information	2,800	1,142
Finance and insurance	14,846	3,157
Real estate and rental	17,859	5,176
Professional, scientific and technical services	10,568	1,495
Management of companies	2,852	511
Administrative and waste management	20,611	1,096
Educational services	4,520	344
Health care and social assistance	151,666	22,291
Arts, entertainment and recreation	3,910	284
Accommodation and food services	14,099	881
Other services	13,232	937
All others	2,921	558
Total *	**296,230**	**$ 44,087**

* May not sum due to rounding
Source: Estimates by LAEDC

Most industry sectors benefit from the economic activity generated by the hospital industry. A description of the industry sectors is provided in the Appendix.

Occupational Analysis

Of the jobs supported by the industry, almost one third is in healthcare practitioner and healthcare support occupations, with average annual wages of $82,184 and $28,947 respectively.

The occupational distribution of the total jobs is shown in Exhibit 3-10.

Exhibit 3-10
Occupational Distribution of Total Employment Impact (Los Angeles County, 2010)

Occupational Description	Employment	Average Annual Wages
Management	12,945	$122,665
Business & financial operations	11,909	74,138
Computer & mathematical science	4,722	82,005
Architecture & engineering	1,412	90,170
Life, physical, & social science	1,800	69,898
Community & social services	5,566	51,351
Legal	1,505	131,809
Education, training, & library	4,310	59,608
Arts, design, entmt, sports, & media	2,591	75,670
Healthcare practitioners & tech	75,277	82,184
Healthcare support	21,684	28,947
Protective service	3,652	52,006
Food preparation & serving related	18,964	21,800
Building & grounds cleaning & maint	14,277	27,520
Personal care & service	7,165	26,961
Sales & related	20,970	38,837
Office & administrative support	54,801	37,195
Farming, fishing, & forestry	347	25,145
Construction & extraction	2,735	51,160
Installation, maintenance, & repair	9,450	47,310
Production	8,229	31,539
Transportation & material moving	11,919	33,128
All	**296,230**	**$ 50,844**

* May not sum due to rounding
Source: Estimates by LAEDC

While the industry has an impact on all industry sectors, the economic activity it supports throughout the region provides employment for a wide variety of occupations. The education and work experience requirements of each occupation are provided in the Appendix. ❖

Construction Spending

Economic and Fiscal Impact

In addition to ongoing, regular and recurring operations, the hospital industry continues to invest in construction projects at existing and new facilities, and carry out retrofits motivated by regulatory mandates. This investment generates significant economic activity.

Our estimates for construction spending in 2010 were obtained from OSHPD using the change in percentage of completion of active projects during the year.

The total economic impact of construction spending by the hospital industry in Los Angeles County in 2010, including direct, indirect and induced activity, is shown in Exhibit 3-11.

Exhibit 3-11
Economic and Fiscal Impact of Hospital Industry Construction Spending (Los Angeles County, 2010)

Estimated Construction Spending ($ millions)	$ 530.0
Total Economic Impact:	
Output ($ millions)	$ 1,133.1
Employment (jobs)	7,360
Labor income ($ millions)	$ 422.4
Total Fiscal Impact ($ millions):	
Income taxes (including profits taxes)	$ 13.9
Sales taxes	11.5
Property taxes	12.8
Fees and fines	4.9
Social insurance	1.6
Other taxes	2.3
Total *	$ 47.0

* May not sum due to rounding
Source: Estimates by LAEDC

Construction spending by the hospital industry in Los Angeles County in 2010 generated $1.1 billion in total economic output and supported 7,360 full- and part-time jobs with total labor income (including benefits) of $422 million. We estimate that this spending generated $47 million in state and local taxes through its contribution to economic activity in the region.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 3-12. Most of these impacts will occur in the construction sector, but other sectors affected include professional, scientific and technical services, retail trade, and health care and social assistance.

Exhibit 3-12
Impact of Construction Spending by Industry Sector (Los Angeles County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	7	$ 1
Mining	12	3
Utilities	8	7
Construction	3,512	535
Manufacturing	375	123
Wholesale trade	154	27
Retail trade	447	34
Transportation and warehousing	143	19
Information	69	29
Finance and insurance	324	71
Real estate and rental	196	81
Professional, scientific and technical services	467	70
Management of companies	32	6
Administrative and waste management	287	17
Educational services	102	8
Health care and social assistance	464	46
Arts, entertainment and recreation	93	7
Accommodation and food services	319	20
Other services	305	22
All others	48	9
Total *	**7,360**	**$ 1,133**

* May not sum due to rounding
Source: Estimates by LAEDC

As seen with the economic impact of ongoing operations, almost all industry sectors are impacted by the total economic activity generated by the construction spending of the hospital industry. A description of the industry sectors is provided in the Appendix. ❖

4 Orange County

Health Care Sector

Across Orange County, hospitals, health care centers, doctors' offices and laboratories provide access to a variety of vital health care services, employing thousands of workers, and generating significant revenues and tax dollars.

The health care sector is composed of several inter-related and supporting industries, including ambulatory health care services, hospitals, and nursing and residential care facilities. The sector as a whole has been growing over the past decade and is likely to be a driver of economic activity going forward as our population grows, as it ages, and as medical advances extend our productive lives.

There were more than 8,400 private and public establishments and 123,300 payroll employees in the health care sector, representing 9.1 percent of all payroll employment in Orange County. Offices of health care practitioners is the largest industry by number of establishments and employs the most workers, providing 47,052 jobs.

These data do not include the self-employed or freelance workers, which we estimate could add an additional 12,000 workers, many of whom are health care practitioners or work in home health care services.

Payroll employment in this sector has been growing over the past twenty years. In 1990, employment in Orange County in the health care industry was 79,787, rising to 123,320 in 2010. Growth has accelerated in the past decade, averaging approximately 3.2 percent on an annual basis since 2000, compared to 1.2 percent per year in the prior decade.

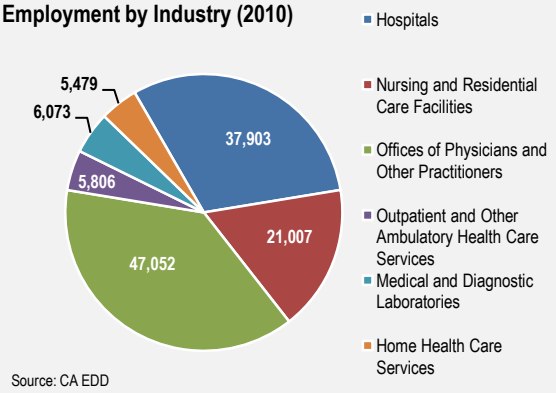
In the county as a whole, total payroll employment has not shown such a steady increase over the period, and indeed experienced a dramatic decline during the recession.

Exhibit 4-1
Health Care Services in Orange County (2010)

	# of Establishments
Hospitals:	
General Medical and Surgical Hospitals[1]	31
Other Hospitals[2]	18
Nursing and Residential Care Facilities	574
Offices of Health Care Practitioners	7,102
Outpatient Care Centers	230
Medical and Diagnostic Laboratories	219
Home Health Care Services	184
TOTAL Establishments	**8,415**
% of all OC Establishments	**8.3%**

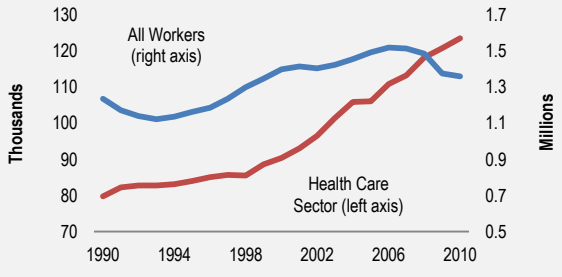
Source: CA EDD
[1] Includes federal, state and county general medical and surgical hospitals such as VA hospitals
[2] Includes psychiatric and substance abuse hospitals and specialty hospitals

Exhibit 4-2
Employment by Industry (2010)



Source: CA EDD

Exhibit 4-3
Employment (2010)



Source: CA EDD

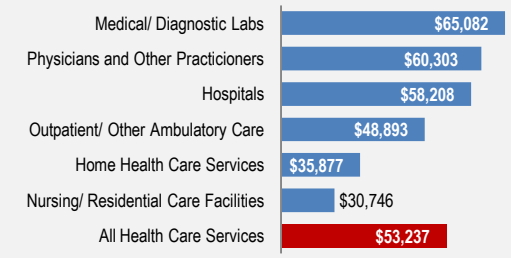
Wages

Wages of health care workers vary by industry, as shown in Exhibit 4-4. Average wages were highest in medical and diagnostic laboratories in 2010, reaching $65,082 annually, and lowest in nursing and residential care facilities where workers earned an average of $30,746 in 2010.

Overall, the average annual wage in the health care industry in Orange County in 2010 was $53,237.

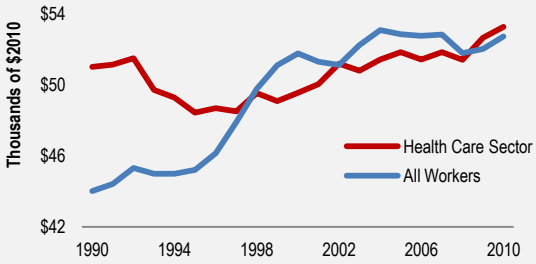
The purchasing power of earnings in the health care sector has been improving recently, but this has not always been the case. In the 1990s, for example, real wages deteriorated, reaching a low in 1995. However, real wages have shown improvement since then. Average real wages for all workers in Orange County has risen steadily since 1990 but stumbled during the recession and now are below those in the health care sector. ❖

Exhibit 4-4
Average Annual Wages by Industry (2010)



Source: CA EDD

Exhibit 4-5
Average Annual Wages



Source: CA EDD

Ongoing Operations of Hospitals in Orange County

Economic Activity

Data compiled by the State of California Office of Statewide Health Planning and Development (OSHPD) provides insight into the capabilities and activity at reporting hospitals. Summary data for hospitals in Orange County is shown in Exhibit 4-6. This data excludes several hospitals, such as Kaiser Foundation Hospitals, California State hospitals and hospitals focused on long-term care, and therefore underreports the number of beds, patient days, discharges and outpatient visits.

The 29 reporting hospitals in Orange County reported 6,354 licensed beds and 5,995 available beds with an average occupancy rate of 58.0 percent. These hospitals combined provided almost 1.3 million inpatient days, with acute care accounting for 81 percent. The average length of stay for patients who stayed at least one night was 5.1 days.

Total discharges numbered 251,749 (although some of these were inter-institutional transfers). There were more than 2.65 million outpatient visits to hospitals in Orange County, almost 30 percent of which were emergency room visits.

Hospital operations generate substantial revenues, employment and labor income. A summary of the activity of the reporting hospitals is shown in Exhibit 4-7.

These hospitals received $5.3 billion in net patient revenue and $413 million in other revenue. Together they spent almost $2.5 billion in purchases, including services and supplies, much of which was spent within the Orange County region. In addition to this spending, $1.9 billion was paid in wages and salaries, with an additional $661 million in employee benefits. Moreover, $95 million was paid to physicians and $110 million was paid for other professional services.

Exhibit 4-6
Orange County Hospitals (2010)

Hospitals reporting[1]	29
Beds:	
Licensed	6,354
Available	5,995
Occupancy Rates:	
Licensed Beds	54.8%
Available Beds	58.0%
Patients Days:	
Acute Care	1,023,013
Psychiatric Care	128,423
Chemical Dependency	32,545
Rehabilitation	70,427
Long-term Care	15,825
Total	1,270,233
Average Length of Stay	5.1
Discharges	251,749
Outpatient Visits:	
Emergency Room	738,576
All Other Outpatients	1,913,658
Total	2,652,234

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Exhibit 4-7
Economic Activity of Hospital Operations (2010)[1]

	$ millions
Net Patient Revenue	$ 5,307.0
Other Operating Revenue	218.1
Non-Operating Revenue	194.8
Purchases:	
Supplies	$ 880.2
Services	808.9
Leases and rentals	125.4
Other	663.4
Salaries and wages	$ 1,905.6
Employee benefits	660.8
Physician professional fees	94.9
Other professional fees	108.9

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Economic and Fiscal Contribution

The total economic contribution of the hospital industry extends beyond the activity generated within the sector itself. Wages paid to the staff and payments made for purchases of goods and services circulate throughout the economy generating additional indirect and induced activity.

Using methodology described in the Appendix, we estimate that total industry revenues in 2010 were $5.7 billion.

The total economic contribution of the hospital industry in Orange County in 2010, including direct, indirect and induced activity, is shown in Exhibit 4-8.

Exhibit 4-8
Economic and Fiscal Contribution of Hospital Industry (Orange County, 2010)

Estimated Annual Revenue ($ billions)	$ 5.7
Total Economic Contribution:	
Output ($ billions)	$ 13.4
Employment (jobs)	90,150
Labor income ($ billions)	$ 5.7
Total Fiscal Contribution ($ millions):	
Income taxes (including profits taxes)	$ 190.1
Sales taxes	177.4
Property taxes	196.5
Fees and fines	74.1
Social insurance	18.7
Other taxes	34.9
Total *	**$ 691.9**

* May not sum due to rounding
Source: Estimates by LAEDC

The hospital industry in Orange County contributed $13.4 billion in total economic output and supported 90,150 full- and part-time jobs with total labor income (including benefits) of $5.7 billion.

We estimate that the industry generated $692 million in state and local taxes through its contribution to economic activity in the county.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 4-9.

Most of these impacts of course occur in the health care and social assistance sector, but other sectors affected will include retail trade, administrative and waste management, and real estate and rental services.

Exhibit 4-9
Economic Contribution by Industry Sector (Orange County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	153	$ 20
Mining	120	29
Utilities	148	129
Construction	399	62
Manufacturing	1,721	839
Wholesale trade	1,362	246
Retail trade	6,380	488
Transportation and warehousing	1,229	156
Information	865	347
Finance and insurance	4,877	1,059
Real estate and rental	5,191	1,629
Professional, scientific and technical services	3,573	482
Management of companies	1,045	187
Administrative and waste management	5,572	353
Educational services	1,231	82
Health care and social assistance	45,795	6,469
Arts, entertainment and recreation	1,203	90
Accommodation and food services	4,595	286
Other services	3,912	285
All others	782	138
Total *	**90,150**	**$ 13,376**

* May not sum due to rounding
Source: Estimates by LAEDC

Most industry sectors benefit from the economic activity generated by the hospital industry. A description of the industry sectors is provided in the Appendix.

Occupational Analysis

Of the jobs supported by the industry, almost one third is in healthcare practitioner and healthcare support occupations, with average annual wages of $80,444 and $31,293 respectively.

The occupational distribution of the total jobs is shown in Exhibit 4-10.

Exhibit 4-10
Occupational Distribution of Total Employment Impact (Orange County, 2010)

Occupational Description	Employment	Average Annual Wages
Management	3,961	$ 122,996
Business & financial operations	3,720	73,131
Computer & mathematical science	1,509	81,828
Architecture & engineering	439	84,778
Life, physical, & social science	556	74,676
Community & social services	1,607	51,729
Legal	502	111,677
Education, training, & library	1,168	61,473
Arts, design, entmt, sports, & media	801	51,476
Healthcare practitioners & tech	22,860	80,444
Healthcare support	6,560	31,293
Protective service	1,008	50,300
Food preparation & serving related	6,007	22,147
Building & grounds cleaning & maint	4,309	26,166
Personal care & service	2,098	25,128
Sales & related	6,669	43,284
Office & administrative support	16,802	38,126
Farming, fishing, & forestry	123	22,686
Construction & extraction	775	49,913
Installation, maintenance, & repair	2,823	47,074
Production	2,431	32,554
Transportation & material moving	3,423	31,434
All	**90,150**	**$50,370**

* May not sum due to rounding
Source: Estimates by LAEDC

While the industry has an impact on all industry sectors, the economic activity it supports throughout the region provides employment for a wide variety of occupations. The education and work experience requirements of each occupation are provided in the Appendix. ❖

Construction Spending of Hospitals in Orange County

Economic and Fiscal Impact

In addition to ongoing, regular and recurring operations, the hospital industry continues to invest in construction projects at existing and new facilities, and carry out retrofits motivated by regulatory mandates. This investment generates significant economic activity.

Our estimates for construction spending in 2010 were obtained from OSHPD using the change in percentage of completion of active projects during the year.

The total economic impact of construction spending by the hospital industry in Orange County in 2010, including direct, indirect and induced activity, is shown in Exhibit 4-11.

Exhibit 4-11
Economic and Fiscal Impact of Hospital Industry Construction Spending
(Orange County, 2010)

Estimated Construction Spending ($ millions)	$ 320.0
Total Economic Impact:	
Output ($ millions)	$ 717.0
Employment (jobs)	4,390
Labor income ($ millions)	$ 292.4
Total Fiscal Impact ($ millions):	
Income taxes (including profits taxes)	$ 9.8
Sales taxes	7.6
Property taxes	8.4
Fees and fines	3.7
Social insurance	0.9
Other taxes	1.5
Total *	$ 31.8

* May not sum due to rounding
Source: Estimates by LAEDC

Construction spending by the hospital industry in Orange County generated $717 million in total economic output and supported 4,390 full- and part-time jobs with total labor income (including benefits) of $292 million. We estimate that this spending generated $31.8 million in state and local taxes through its contribution to economic activity in the region.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 4-12. Most of these impacts will occur in the construction sector, but other sectors affected include retail trade, professional, scientific and technical services, and health care and social assistance.

Exhibit 4-12
Impact of Construction Spending by Industry Sector
(Orange County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	7	$ 1
Mining	11	3
Utilities	6	5
Construction	1,830	323
Manufacturing	244	77
Wholesale trade	90	16
Retail trade	332	25
Transportation and warehousing	77	10
Information	44	18
Finance and insurance	230	51
Real estate and rental	122	56
Professional, scientific and technical services	308	41
Management of companies	23	4
Administrative and waste management	170	11
Educational services	63	4
Health care and social assistance	313	32
Arts, entertainment and recreation	63	5
Accommodation and food services	229	14
Other services	197	14
All others	27	5
Total *	**4,390**	**$ 717**

* May not sum due to rounding
Source: Estimates by LAEDC

As seen with the economic impact of ongoing operations, almost all industry sectors are impacted by the total economic activity generated by the construction spending of the hospital industry. A description of the industry sectors is provided in the Appendix. ❖

5 Riverside County

Health Care Sector

Across Riverside County, hospitals, health care centers, doctors' offices and laboratories provide access to a variety of vital health care services, employing thousands of workers, and generating significant revenues and tax dollars.

The health care sector is composed of several inter-related and supporting industries, including ambulatory health care services, hospitals, and nursing and residential care facilities. The sector as a whole has been growing over the past decade and is likely to be a driver of economic activity going forward as our population grows, as it ages, and as medical advances extend our productive lives.

There were 3,056 private and public establishments and 46,905 payroll employees in the health care sector, representing 8.5 percent of all payroll employment in Riverside County. Offices of health care practitioners is the largest industry by number of establishments employs the most workers, providing 17,104 jobs.

These data do not include the self-employed or freelance workers, which we estimate could add an additional 5,000 workers, many of whom are health care practitioners or work in home health care services.

Payroll employment in this sector has been growing over the past twenty years. In 1990, employment in Riverside County in the health care industry was 24,177, growing to 46,905 in 2010. Growth has been slowing however, averaging approximately 1.5 percent on an annual basis since 2000, compared to 5.4 percent per year in the prior decade.

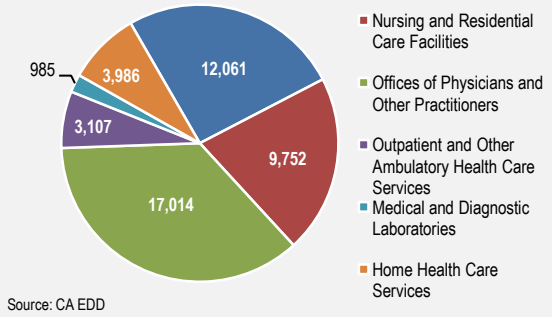
In the county as a whole, total payroll employment has also shown a steady increase over the period, but experienced a decline during the recession.

Exhibit 5-1
Health Care Services in Riverside County (2010)

	# of Establishments
Hospitals:	
General Medical and Surgical Hospitals[1]	16
Other Hospitals[2]	5
Nursing and Residential Care Facilities	353
Offices of Health Care Practitioners	2,328
Outpatient Care Centers	139
Medical and Diagnostic Laboratories	98
Home Health Care Services	117
TOTAL Establishments	**3,056**
% of all Riverside Establishments	**6.5%**

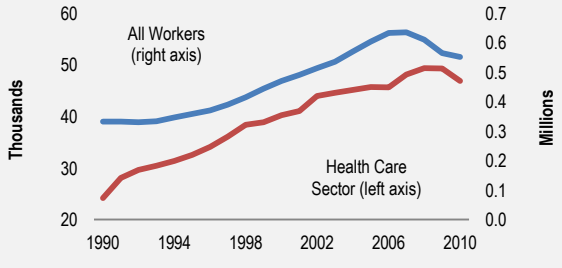
Source: CA EDD
[1] Includes federal, state and county general medical and surgical hospitals such as VA hospitals
[2] Includes psychiatric and substance abuse hospitals and specialty hospitals

Exhibit 5-2
Employment by Industry (2010)



Source: CA EDD

Exhibit 5-3
Employment (2010)



Source: CA EDD

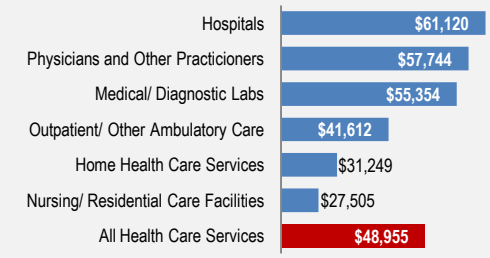
Wages

Wages of health care workers vary by industry, as shown in Exhibit 5-4. Average wages were highest in hospitals in 2010, reaching $61,120 annually, and lowest in nursing and residential care facilities where workers earned an average of $27,505 in 2010.

Overall, the average annual wage in the health care industry in Riverside County in 2010 was $48,955.

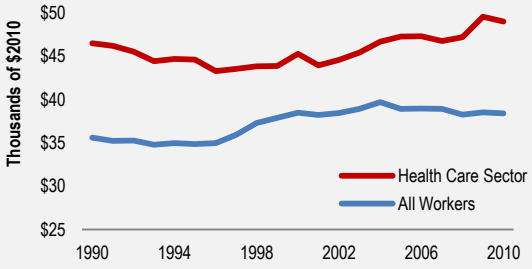
The purchasing power of earnings in the health care sector has been relatively flat since 1990, increasing only slightly since 1998. This performance is somewhat better than average real wages for all workers in Riverside County, which were flat through 2005 and have drifted lower since then. ❖

Exhibit 5-4
Average Annual Wages by Industry (2010)



Source: CA EDD

Exhibit 5-5
Average Annual Wages



Source: CA EDD

Ongoing Operations of Hospitals in Riverside County

Economic Activity

Data compiled by the State of California Office of Statewide Health Planning and Development (OSHPD) provides insight into the capabilities and activity at reporting hospitals. Summary data for hospitals in Riverside County is shown in Exhibit 5-6. This data excludes several hospitals, such as Kaiser Foundation Hospitals, California State hospitals and hospitals focused on long-term care, and therefore underreports the number of beds, patient days, discharges and outpatient visits.

The 15 reporting hospitals in Riverside County reported 3,136 licensed beds and 2,949 available beds with an average occupancy rate of 64.4 percent. These hospitals combined provided almost 692,000 inpatient days, with acute care accounting for nearly 86 percent. The average length of stay for patients who stayed at least one night was 4.7 days.

Total discharges numbered over 147,519 (although some of these were inter-institutional transfers). There were more than 1.34 million outpatient visits to hospitals in Riverside County, almost 47 percent of which were emergency room visits.

Hospital operations generate substantial revenues, employment and labor income. A summary of the activity of the reporting hospitals is shown in Exhibit 5-7.

These hospitals received $2.3 billion in net patient revenue and $168 million in other revenue. Together they spent more than $1 billion in purchases, including services and supplies, much of which was spent within the Riverside region. In addition to this spending, $801 million was paid in wages and salaries, with an additional $303 million in employee benefits. Moreover, $57 million was paid to physicians and $110 million was paid for other professional services.

Exhibit 5-6
Riverside County Hospitals (2010)

Hospitals reporting[1]	15
Beds:	
Licensed	3,136
Available	2,949
Occupancy Rates:	
Licensed Beds	60.6%
Available Beds	64.4%
Patients Days:	
Acute Care	592,995
Psychiatric Care	34,124
Chemical Dependency	4,672
Rehabilitation	26,373
Long-term Care	33,817
Total	691,981
Average Length of Stay	4.7
Discharges	147,519
Outpatient Visits:	
Emergency Room	627,394
All Other Outpatients	713,413
Total	1,340,807

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Exhibit 5-7
Economic Activity of Hospital Operations (2010)[1]

	$ millions
Net Patient Revenue	$ 2,339.2
Other Operating Revenue	31.9
Non-Operating Revenue	136.0
Purchases:	
Supplies	$ 371.4
Services	325.6
Leases and rentals	33.0
Other	310.7
Salaries and wages	$ 801.0
Employee benefits	303.4
Physician professional fees	57.4
Other professional fees	110.0

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Economic and Fiscal Contribution

The total economic contribution of the hospital industry extends beyond the activity generated within the sector itself. Wages paid to the staff and payments made for purchases of goods and services circulate throughout the economy generating additional indirect and induced activity.

Using methodology described in the Appendix, we estimate that total industry revenues in 2010 were $2.5 billion.

The total economic contribution of the hospital industry in Riverside County in 2010, including direct, indirect and induced activity, is shown in Exhibit 5-8.

Exhibit 5-8
Economic and Fiscal Contribution of Hospital Industry (Riverside County, 2010)

Estimated Annual Revenue ($ billions)	$ 2.5
Total Economic Contribution:	
Output ($ billions)	$ 5.1
Employment (jobs)	37,280
Labor income ($ billions)	$ 2.1
Total Fiscal Contribution ($ millions):	
Income taxes (including profits taxes)	$ 71.8
Sales taxes	69.0
Property taxes	76.4
Fees and fines	25.7
Social insurance	15.3
Other taxes	13.4
Total *	**$ 271.5**

* May not sum due to rounding
Source: Estimates by LAEDC

The hospital industry in Riverside County contributed $5.1 billion in total economic output and supported 37,280 full- and part-time jobs with total labor income (including benefits) of $2.1 billion.

We estimate that the sector generated $272 million in state and local taxes through its contribution to economic activity in the county.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 5-9.

Most of these impacts of course occur in the health care and social assistance sector, but other sectors affected will include retail trade, administrative and waste management, and real estate and rental services.

Exhibit 5-9
Economic Contribution by Industry Sector (Riverside County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	56	$ 9
Mining	20	5
Utilities	35	28
Construction	185	25
Manufacturing	491	230
Wholesale trade	480	80
Retail trade	2,607	188
Transportation and warehousing	515	59
Information	356	137
Finance and insurance	1,788	308
Real estate and rental	2,289	631
Professional, scientific and technical services	1,368	156
Management of companies	204	34
Administrative and waste management	2,907	140
Educational services	354	20
Health care and social assistance	19,399	2,759
Arts, entertainment and recreation	471	32
Accommodation and food services	1,814	108
Other services	1,588	113
All others	357	63
Total *	**37,280**	**$ 5,125**

* May not sum due to rounding
Source: Estimates by LAEDC

Most industry sectors benefit from the economic activity generated by the hospital industry. A description of the industry sectors is provided in the Appendix.

Occupational Analysis

Of the jobs supported by the industry, almost one third is in healthcare practitioner and healthcare support occupations, with average annual wages of $81,221 and $28,715 respectively.

The occupational distribution of the total jobs is shown in Exhibit 5-10.

Exhibit 5-10
Occupational Distribution of Total Employment Impact (Riverside County, 2010)

Occupational Description	Employment	Average Annual Wages
Management	1,607	$ 101,100
Business & financial operations	1,485	64,623
Computer & mathematical science	556	70,623
Architecture & engineering	171	77,937
Life, physical, & social science	208	65,054
Community & social services	679	52,175
Legal	194	97,252
Education, training, & library	429	59,831
Arts, design, entmt, sports, & media	319	48,373
Healthcare practitioners & tech	9,682	81,221
Healthcare support	2,766	28,715
Protective service	502	49,427
Food preparation & serving related	2,425	21,667
Building & grounds cleaning & maint	1,803	26,955
Personal care & service	869	24,741
Sales & related	2,706	32,831
Office & administrative support	6,893	34,448
Farming, fishing, & forestry	47	21,734
Construction & extraction	347	49,236
Installation, maintenance, & repair	1,190	45,909
Production	961	31,607
Transportation & material moving	1,441	32,824
All	**37,280**	**$ 43,447**

* May not sum due to rounding
Source: Estimates by LAEDC

While the industry has an impact on all industry sectors, the economic activity it supports throughout the region provides employment for a wide variety of occupations. The education and work experience requirements of each occupation are provided in the Appendix. ❖

Construction Spending of Hospitals in Riverside County

Economic and Fiscal Impact

In addition to ongoing, regular and recurring operations, the hospital industry continues to invest in construction projects at existing and new facilities, and carry out retrofits motivated by regulatory mandates. This investment generates significant economic activity.

Our estimates for construction spending in 2010 were obtained from OSHPD using the change in percentage of completion of active projects during the year.

The total economic impact of construction spending by the hospital industry in Riverside County in 2010, including direct, indirect and induced activity, is shown in Exhibit 5-11.

Exhibit 5-11
Economic and Fiscal Impact of Hospital Industry Construction Spending (Riverside County, 2010)

Estimated Construction Spending ($ millions)	$ 61.0
Total Economic Impact:	
Output ($ millions)	$ 121.8
Employment (jobs)	850
Labor income ($ millions)	$ 43.3
Total Fiscal Impact ($ millions):	
Income taxes (including profits taxes)	$ 1.5
Sales taxes	1.3
Property taxes	1.4
Fees and fines	0.5
Social insurance	0.3
Other taxes	0.2
Total *	$ 5.2

* May not sum due to rounding
Source: Estimates by LAEDC

Construction spending by the hospital industry in Riverside County in 2010 generated $122 million in total economic output and supported 850 full- and part-time jobs, with total labor income (including benefits) of $43 million. We estimate that the industry generated $5.2 million in state and local taxes through its contribution to economic activity in the region.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 5-12. Most of these impacts will occur in the construction sector, but other sectors affected include retail trade, professional, scientific and technical services, and health care and social assistance.

Exhibit 5-12
Impact of Construction Spending by Industry Sector (Riverside County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	1	$ 0
Mining	1	0
Utilities	1	1
Construction	411	62
Manufacturing	37	11
Wholesale trade	16	3
Retail trade	54	4
Transportation and warehousing	14	2
Information	8	3
Finance and insurance	36	7
Real estate and rental	22	9
Professional, scientific and technical services	68	8
Management of companies	3	0
Administrative and waste management	37	2
Educational services	7	0
Health care and social assistance	47	4
Arts, entertainment and recreation	10	1
Accommodation and food services	37	2
Other services	34	3
All others	5	1
Total *	**850**	**$ 122**

* May not sum due to rounding
Source: Estimates by LAEDC

As seen with the economic impact of ongoing operations, almost all industry sectors are impacted by the total economic activity generated by the construction spending of the hospital industry. A description of the industry sectors is provided in the Appendix. ❖

6 San Bernardino County

Health Care Sector

Across San Bernardino County, hospitals, health care centers, doctors' offices and laboratories provide access to a variety of vital health care services, employing thousands of workers, and generating significant revenues and tax dollars.

The health care sector is composed of several inter-related and supporting industries, including ambulatory health care services, hospitals, and nursing and residential care facilities. The sector as a whole has been growing over the past decade and is likely to be a driver of economic activity going forward as our population grows, as it ages, and as medical advances extend our productive lives.

There were more than 2,920 private and public establishments and 68,690 payroll employees in the health care sector, representing 11.6 percent of all payroll employment in San Bernardino County. Offices of health care practitioners is the largest industry by number of establishments, but the hospital industry employs more workers, providing 31,595 jobs.

These data do not include the self-employed or freelance workers, which we estimate could add an additional 5,000 workers, many of whom are health care practitioners or work in home health care services.

Payroll employment in this sector has been growing over the past twenty years. In 1990, employment in San Bernardino County in the health care industry was 38,021, growing to 68,690 in 2010. Growth has accelerated in the past decade, averaging approximately 3.5 percent on an annual basis since 2000, compared to 2.6 percent per year in the prior decade.

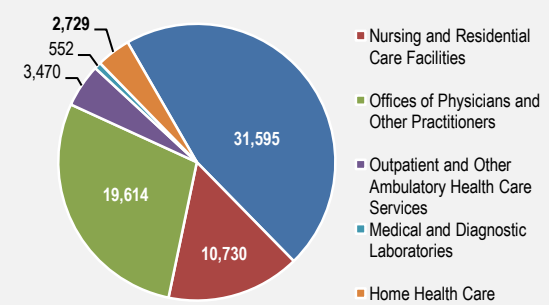
In the county as a whole, total payroll employment increased steadily over the period but at a slower rate, and experienced a decline during the recession.

Exhibit 6-1
Health Care Services in San Bernardino (2010)

	# of Establishments
Hospitals:	
General Medical and Surgical Hospitals[1]	24
Other Hospitals[2]	107
Nursing and Residential Care Facilities	377
Offices of Health Care Practitioners	2,071
Outpatient Care Centers	161
Medical and Diagnostic Laboratories	57
Home Health Care Services	122
TOTAL Establishments	**2,926**
% of all San Bernardino Establishments	**5.9%**

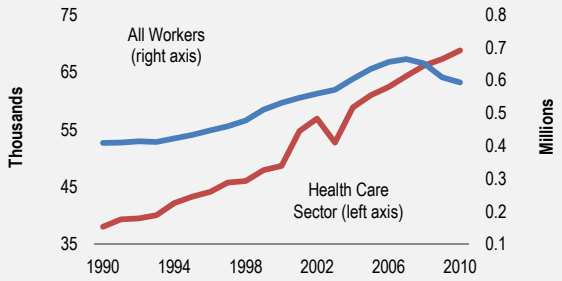
Source: CA EDD
[1] Includes federal, state and county general medical and surgical hospitals such as VA hospitals
[2] Includes psychiatric and substance abuse hospitals and specialty hospitals

Exhibit 6-2
Employment by Industry (2010)



Source: CA EDD

Exhibit 6-3
Employment (2010)



Source: CA EDD

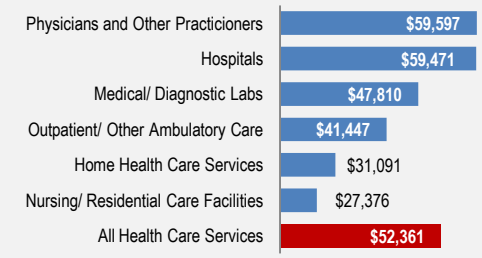
Wages

Wages of health care workers vary by industry, as shown in Exhibit 6-4. Average wages were highest in physicians and other practitioners in 2010, reaching $59,597 annually, and lowest in nursing and residential care facilities where workers earned an average of $27,376 in 2010.

Overall, the average annual wage in the health care industry in San Bernardino County in 2010 was $52,361.

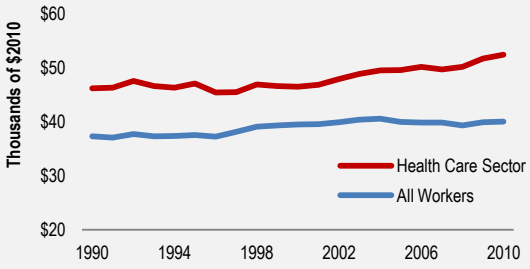
The purchasing power of earnings in the health care sector has remained relatively flat during the 1990s and increased only slightly since 2000. Nevertheless, this performance is better than average real wages for all workers in San Bernardino County, which have stagnated through the two decade period. ❖

Exhibit 6-4
Average Annual Wages by Industry (2010)



Source: CA EDD

Exhibit 6-5
Average Annual Wages



Source: CA EDD

Ongoing Operations of Hospitals in San Bernardino County

Economic Activity

Data compiled by the State of California Office of Statewide Health Planning and Development (OSHPD) provides insight into the capabilities and activity at reporting hospitals. Summary data for hospitals in San Bernardino County is shown in Exhibit 6-6. This data excludes several hospitals, such as Kaiser Foundation Hospitals, California State hospitals and hospitals focused on long-term care, and therefore underreports the number of beds, patient days, discharges and outpatient visits.

The 19 reporting hospitals in Los Angeles County reported 3,656 licensed beds and 3,451 available beds with an average occupancy rate of 67.4 percent. These hospitals combined provided over 843,524 inpatient days, with acute care accounting for 76 percent. The average length of stay for patients who stayed at least one night was 5.1 days.

Total discharges numbered 165,642 (although some of these were inter-institutional transfers). There were more than 2 million outpatient visits to hospitals in San Bernardino County, almost one third of which were emergency room visits.

Hospital operations generate substantial revenues, employment and labor income. A summary of the activity of the reporting hospitals is shown in Exhibit 6-7.

These hospitals received $3.1 billion in net patient revenue and $115 million in other revenue. Together they spent more than $1.37 billion in purchases, including services and supplies, much of which was spent within the San Bernardino region. In addition to this spending, $1.1 billion was paid in wages and salaries, with an additional $441 million in employee benefits. Moreover, $100 million was paid to physicians and $56 million was paid for other professional services.

Exhibit 6-6
San Bernardino County Hospitals (2010)

Hospitals reporting[1]	19
Beds:	
Licensed	3,656
Available	3,451
Occupancy Rates:	
Licensed Beds	63.6%
Available Beds	67.4%
Patients Days:	
Acute Care	642,479
Psychiatric Care	86,188
Chemical Dependency	23,810
Rehabilitation	85,468
Long-term Care	5,579
Total	843,524
Average Length of Stay	5.1
Discharges	165,642
Outpatient Visits:	
Emergency Room	655,796
All Other Outpatients	1,419,079
Total	2,074,875

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Exhibit 6-7
Economic Activity of Hospital Operations (2010)[1]

	$ millions
Net Patient Revenue	$ 3,143.4
Other Operating Revenue	27.7
Non-Operating Revenue	87.5
Purchases:	
Supplies	$ 534.5
Services	312.0
Leases and rentals	50.9
Other	477.1
Salaries and wages	$ 1,075.3
Employee benefits	441.5
Physician professional fees	100.2
Other professional fees	56.3

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Economic and Fiscal Contribution

The total economic contribution of the hospital industry extends beyond the activity generated within the sector itself. Wages paid to the staff and payments made for purchases of goods and services circulate throughout the economy generating additional indirect and induced activity.

Using methodology described in the Appendix, we estimate that total industry revenues in 2010 were $3.3 billion.

The total economic contribution of the hospital industry in San Bernardino County in 2010, including direct, indirect and induced activity, is shown in Exhibit 6-8.

Exhibit 6-8
Economic and Fiscal Contribution of Hospital Industry (San Bernardino County, 2010)

Estimated Annual Revenue ($ billions)	$ 3.3
Total Economic Contribution:	
Output ($ billions)	$ 7.0
Employment (jobs)	50,900
Labor income ($ billions)	$ 2.9
Total Fiscal Contribution ($ millions):	
Income taxes (including profits taxes)	$ 100.0
Sales taxes	92.5
Property taxes	102.4
Fees and fines	34.8
Social insurance	16.7
Other taxes	18.0
Total *	**$ 364.1**

* May not sum due to rounding
Source: Estimates by LAEDC

The hospital industry in San Bernardino County contributed $7.0 billion in total economic output and supported 50,900 full- and part-time jobs with total labor income (including benefits) of $2.9 billion.

We estimate that the sector generated $364 million in state and local taxes through its contribution to economic activity in the county.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 6-9.

Most of these impacts of course occur in the health care and social assistance sector, but other sectors affected will include retail trade, administrative and waste management, and real estate and rental services.

Exhibit 6-9
Economic Contribution by Industry Sector (San Bernardino County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	46	$ 6
Mining	26	7
Utilities	42	35
Construction	251	35
Manufacturing	726	342
Wholesale trade	541	94
Retail trade	3,608	263
Transportation and warehousing	769	91
Information	460	179
Finance and insurance	2,457	449
Real estate and rental	3,099	880
Professional, scientific and technical services	1,829	226
Management of companies	316	57
Administrative and waste management	3,765	190
Educational services	598	41
Health care and social assistance	26,476	3,697
Arts, entertainment and recreation	606	37
Accommodation and food services	2,549	149
Other services	2,206	157
All others	523	97
Total *	**50,900**	**$ 7,030**

* May not sum due to rounding
Source: Estimates by LAEDC

Most industry sectors benefit from the economic activity generated by the hospital industry. A description of the industry sectors is provided in the Appendix.

Occupational Analysis

Of the jobs supported by the industry, almost one third is in healthcare practitioner and healthcare support occupations, with average annual wages of $81,221 and $28,715 respectively.

The occupational distribution of the total jobs is shown in Exhibit 6-10.

Exhibit 6-10
Aggregated Occupational Distribution of Operations Jobs (San Bernardino County)

Occupational Description	Employment	Average Annual Wage
Management	2,194	$101,100
Business & financial operations	2,037	64,623
Computer & mathematical science	754	70,623
Architecture & engineering	237	77,937
Life, physical, & social science	296	65,054
Community & social services	994	52,175
Legal	253	97,252
Education, training, & library	635	59,831
Arts, design, entmt,, sports, & media	449	48,373
Healthcare practitioners & technical	13,098	81,221
Healthcare support	3,790	28,715
Protective service	628	49,427
Food preparation & serving related	3,390	21,667
Building & grounds cleaning & maint.	2,420	26,955
Personal care & service	1,173	24,741
Sales & related	3,661	32,831
Office & administrative support	9,402	34,448
Farming, fishing, & forestry	52	21,734
Construction & extraction	478	49,236
Installation, maintenance, & repair	1,610	45,909
Production	1,330	31,607
Transportation & material moving	2,013	32,824
Total *	**50,900**	**$ 43,447**

* May not sum due to rounding
Source: Estimates by LAEDC

While the industry has an impact on all industry sectors, the economic activity it supports throughout the region provides employment for a wide variety of occupations. The education and work experience requirements of each occupation are provided in the Appendix. ❖

Construction Spending of Hospitals in San Bernardino County

Economic and Fiscal Impact

In addition to ongoing, regular and recurring operations, the hospital industry continues to invest in construction projects at existing and new facilities, and carry out retrofits motivated by regulatory mandates. This investment generates significant economic activity.

Our estimates for construction spending in 2010 were obtained from OSHPD using the change in percentage of completion of active projects during the year.

The total economic impact of hospital construction spending in San Bernardino County in 2010, including direct, indirect and induced activity, is shown in Exhibit 6-11.

Exhibit 6-11
Economic and Fiscal Impact of Hospital Industry Construction Spending
(San Bernardino County, 2010)

Estimated Construction Spending ($ millions)	$ 130.0
Total Economic Impact:	
Output ($ millions)	$ 271.5
Employment (jobs)	1,940
Labor income ($ millions)	$ 98.2
Total Fiscal Impact ($ millions):	
Income taxes (including profits taxes)	$ 3.4
Sales taxes	2.8
Property taxes	3.1
Fees and fines	1.1
Social insurance	0.5
Other taxes	0.5
Total *	$ 11.5

* May not sum due to rounding
Source: Estimates by LAEDC

Construction spending by the hospital industry in San Bernardino County in 2010 generated $271.5 million in total economic output and supported 1,940 full- and part-time jobs with total labor income (including benefits) of $98 million. We estimate that this spending generated $11.5 million in state and local taxes through its contribution to economic activity in the region.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 6-12. Most of these impacts will occur in the construction sector, but other sectors affected include retail trade, professional, scientific and technical services, and health care and social assistance.

Exhibit 6-12
Impact of Construction Spending by Industry Sector
(San Bernardino County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	2	$ 0
Mining	2	1
Utilities	1	1
Construction	947	131
Manufacturing	86	27
Wholesale trade	31	5
Retail trade	123	9
Transportation and warehousing	34	4
Information	17	7
Finance and insurance	81	15
Real estate and rental	50	20
Professional, scientific and technical services	138	17
Management of companies	6	1
Administrative and waste management	74	4
Educational services	20	1
Health care and social assistance	127	12
Arts, entertainment and recreation	22	1
Accommodation and food services	85	5
Other services	77	6
All others	12	2
Total *	**1,940**	**$ 272**

* May not sum due to rounding
Source: Estimates by LAEDC

As seen with the economic impact of ongoing operations, almost all industry sectors are impacted by the total economic activity generated by the construction spending of the hospital industry. A description of the industry sectors is provided in the Appendix. ❖

7 Santa Barbara County

Health Care Sector

Across Santa Barbara County, hospitals, health care centers, doctors' offices and laboratories provide access to a variety of vital health care services, employing thousands of workers, and generating significant revenues and tax dollars.

The health care sector is composed of several inter-related and supporting industries, including ambulatory health care services, hospitals, and nursing and residential care facilities. The sector as a whole has been growing over the past decade and is likely to be a driver of economic activity going forward as our population grows, as it ages, and as medical advances extend our productive lives.

There were 1,021 private and public establishments and almost 15,210 payroll employees in the health care sector, representing 8.6 percent of all payroll employment in Santa Barbara County. Offices of health care practitioners is the largest industry by number of establishments and employs the most workers, providing 5,043 jobs.

These data do not include the self-employed or freelance workers, which we estimate could add an additional 1,500 workers, many of whom are health care practitioners or work in home health care services.

Payroll employment in this sector has been growing over the past twenty years. In 1990, employment in Santa Barbara County in the health care industry was 10,693, growing to 15,208 in 2010. Growth has accelerated in the past decade, averaging approximately 2.4 percent on an annual basis since 2000, compared to 1.0 percent per year in the prior decade.

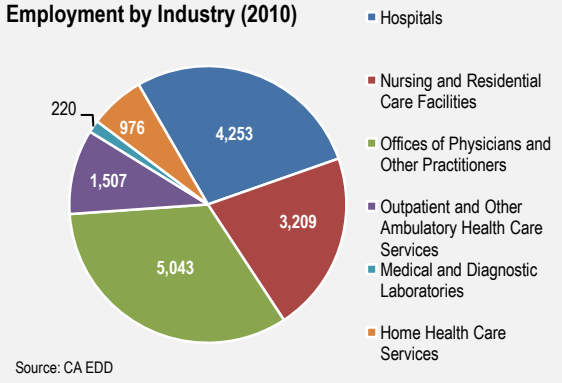
In the county as a whole, total payroll employment has been growing slowly since 1993, but experienced a decline during the recession.

Exhibit 7-1
Health Care Services in Santa Barbara County (2010)

	# of Establishments
Hospitals:	
General Medical and Surgical Hospitals[1]	7
Other Hospitals[2]	1
Nursing and Residential Care Facilities	115
Offices of Health Care Practitioners	792
Outpatient Care Centers	65
Medical and Diagnostic Laboratories	14
Home Health Care Services	28
TOTAL Establishments	**1,021**
% of all Santa Barbara Establishments	**7.2%**

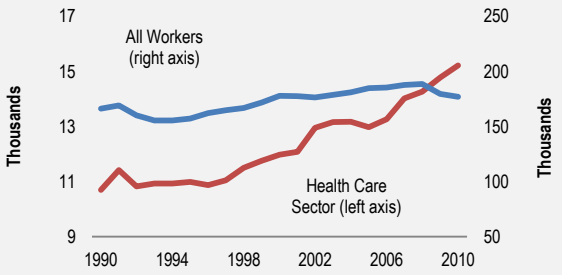
Source: CA EDD
[1] Includes federal, state and county general medical and surgical hospitals such as VA hospitals
[2] Includes psychiatric and substance abuse hospitals and specialty hospitals

Exhibit 7-2
Employment by Industry (2010)



Source: CA EDD

Exhibit 7-3
Employment (2010)



Source: CA EDD

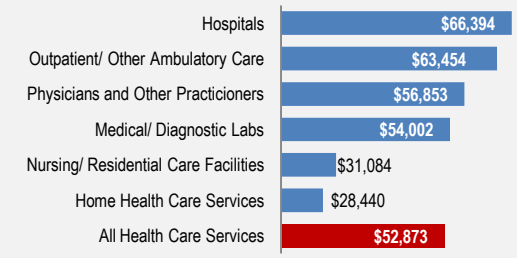
Wages

Wages of health care workers in Santa Barbara County vary by industry, as shown in Exhibit 7-4. Average wages were highest in hospitals in 2010, reaching $66,394 annually, and lowest in home health care services where workers earned an average of $28,440 in 2010.

Overall, the average annual wage in the health care industry in Santa Barbara County in 2010 was $52,873.

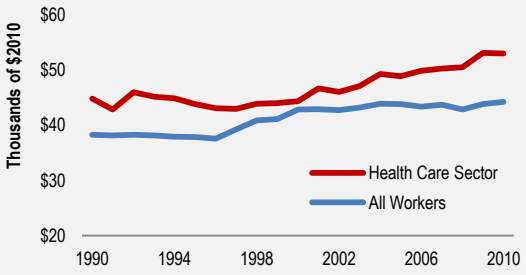
The purchasing power of earnings in the health care sector has been improving recently, but this has not always been the case. In the 1990s, for example, real wages languished. However, real wages have shown improvement since 1998 and have outperformed the average real wages for all workers in Santa Barbara County, which have been flat since 2004. ❖

Exhibit 7-4
Average Annual Wages by Industry (2010)



Source: CA EDD

Exhibit 7-5
Average Annual Wages



Source: CA EDD

Ongoing Operations of Hospitals in Santa Barbara County

Economic Activity

Data compiled by the State of California Office of Statewide Health Planning and Development (OSHPD) provides insight into the capabilities and activity at reporting hospitals. Summary data for hospitals in Santa Barbara County is shown in Exhibit 7-6. This data excludes several hospitals, such as Kaiser Foundation Hospitals, California State hospitals and hospitals focused on long-term care, and therefore underreports the number of beds, patient days, discharges and outpatient visits.

The 5 reporting hospitals in Santa Barbara County reported 972 licensed beds and 879 available beds with an average occupancy rate of 66.3 percent. These hospitals combined provided 212,838 inpatient days, with acute care accounting for 56 percent. The average length of stay for patients who stayed at least one night was 6.2 days.

Total discharges numbered 34,335 (although some of these were inter-institutional transfers). There were more than 489,000 outpatient visits to hospitals in Santa Barbara County, almost 30 percent of which were emergency room visits.

Hospital operations generate substantial revenues, employment and labor income. A summary of the activity of the reporting hospitals is shown in Exhibit 7-7.

These hospitals received $780 million in net patient revenue and $102 million in other revenue. Together they spent $310 million in purchases, including services and supplies, much of which was spent within the Santa Barbara region. In addition to this spending, $259 million was paid in wages and salaries, with an additional $125 million in employee benefits. Moreover, $20 million was paid to physicians and $25 million was paid for other professional services.

Exhibit 7-6
Santa Barbara County Hospitals (2010)

Hospitals reporting[1]	5
Beds:	
Licensed	972
Available	879
Occupancy Rates:	
Licensed Beds	60.0%
Available Beds	66.3%
Patients Days:	
Acute Care	120,067
Psychiatric Care	5,243
Chemical Dependency	9,154
Rehabilitation	78,374
Long-term Care	0
Total	212,838
Average Length of Stay	6.2
Discharges	34,335
Outpatient Visits:	
Emergency Room	141,705
All Other Outpatients	347,315
Total	489,020

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Exhibit 7-7
Economic Activity of Hospital Operations (2010)[1]

	$ millions
Net Patient Revenue	$ 780.0
Other Operating Revenue	21.2
Non-Operating Revenue	81.2
Purchases:	
Supplies	$ 129.5
Services	76.6
Leases and rentals	8.5
Other	95.3
Salaries and wages	$ 259.3
Employee benefits	124.7
Physician professional fees	20.1
Other professional fees	25.0

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Economic and Fiscal Contribution

The total economic contribution of the hospital industry extends beyond the activity generated within the sector itself. Wages paid to the staff and payments made for purchases of goods and services circulate throughout the economy generating additional indirect and induced activity.

Using methodology described in the Appendix, we estimate that total industry revenues in 2010 were $882 million.

The total economic contribution of the hospital industry in Santa Barbara County in 2010, including direct, indirect and induced activity, is shown in Exhibit 7-8.

Exhibit 7-8
Economic and Fiscal Contribution of Hospitality Industry (Santa Barbara County, 2010)

Estimated Annual Revenue ($ millions)	$ 882.4
Total Economic Contribution:	
Output ($ millions)	$ 1,722.8
Employment (jobs)	11,890
Labor income ($ millions)	$ 766.1
Total Fiscal Contribution ($ millions):	
Income taxes (including profits taxes)	$ 23.5
Sales taxes	22.1
Property taxes	24.5
Fees and fines	8.9
Social insurance	4.2
Other taxes	4.3
Total *	**$ 87.5**

* May not sum due to rounding
Source: Estimates by LAEDC

The hospital industry in Santa Barbara County contributed $1.7 billion in total economic output and supported 11,890 full- and part-time jobs with total labor income (including benefits) of $766 million.

We estimate that the sector generated $87.5 million in state and local taxes through its contribution to economic activity in the county.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 7-9.

Most of these impacts of course occur in the health care and social assistance sector, but other sectors affected will include retail trade, administrative and waste management, and real estate and rental services.

Exhibit 7-9
Economic Contribution by Industry Sector (Santa Barbara County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	25	$ 3
Mining	16	4
Utilities	9	7
Construction	56	8
Manufacturing	132	65
Wholesale trade	157	27
Retail trade	752	56
Transportation and warehousing	130	15
Information	120	43
Finance and insurance	478	87
Real estate and rental	747	209
Professional, scientific and technical services	429	52
Management of companies	93	19
Administrative and waste management	781	45
Educational services	143	9
Health care and social assistance	6,483	974
Arts, entertainment and recreation	184	11
Accommodation and food services	570	35
Other services	476	35
All others	109	19
Total *	**11,890**	**$ 1,723**

* May not sum due to rounding
Source: Estimates by LAEDC

Most industry sectors benefit from the economic activity generated by the hospital industry. A description of the industry sectors is provided in the Appendix.

Occupational Analysis

Of the jobs supported by the industry, almost one third is in healthcare practitioner and healthcare support occupations, with average annual wages of $85,419 and $30,468 respectively.

The occupational distribution of the total jobs is shown in Exhibit 7-10.

Exhibit 7-10
Occupational Distribution of Total Employment Impact (Santa Barbara County, 2010)

Occupational Description	Employment	Average Annual Wage
Management	519	$ 113,543
Business &financial operations	452	71,381
Computer &mathematical science	176	77,805
Architecture &engineering	53	87,683
Life, physical, &social science	72	68,846
Community &social services	231	44,381
Legal	60	96,301
Education, training, &library	142	63,089
Arts, design, entmt, sports, &media	117	60,860
Healthcare practitioners &technical	3,238	85,419
Healthcare support	920	30,468
Protective service	150	58,061
Food preparation &serving related	773	21,962
Building & grounds cleaning & maint.	583	36,541
Personal care &service	262	28,350
Sales &related	821	34,652
Office &administrative support	2,163	37,154
Farming, fishing, &forestry	18	20,780
Construction &extraction	106	50,643
Installation, maintenance, &repair	365	46,322
Production	262	36,543
Transportation &material moving	403	33,024
Total *	**11,890**	**$47,806**

* May not sum due to rounding
Source: Estimates by LAEDC

While the industry has an impact on all industry sectors, the economic activity it supports throughout the region provides employment for a wide variety of occupations. The education and work experience requirements of each occupation are provided in the Appendix. ❖

Construction Spending of Hospitals in Santa Barbara County

Economic and Fiscal Impact

In addition to ongoing, regular and recurring operations, the hospital industry continues to invest in construction projects at existing and new facilities, and carry out retrofits motivated by regulatory mandates. This investment generates significant economic activity.

Our estimates for construction spending in 2010 were obtained from OSHPD using the change in percentage of completion of active projects during the year.

The total economic impact of construction spending by the hospital industry in Santa Barbara County in 2010, including direct, indirect and induced activity, is shown in Exhibit 7-11.

Exhibit 7-11
Economic and Fiscal Impact of Hospital Industry Construction Spending
(Santa Barbara County, 2010)

Estimated Construction Spending ($ millions)	$ 62.0
Total Economic Impact:	
Output ($ millions)	$ 114.9
Employment (jobs)	780
Labor income ($ millions)	$ 43.2
Total Fiscal Impact ($ millions)**:**	
Income taxes (including profits taxes)	$ 1.4
Sales taxes	1.2
Property taxes	1.3
Fees and fines	0.5
Social insurance	0.2
Other taxes	0.2
Total *	$ 4.7

* May not sum due to rounding
Source: Estimates by LAEDC

Construction spending by the hospital industry in Santa Barbara County in 2010 generated $115 million in total economic output and supported 780 full- and part-time jobs, with total labor income (including benefits) of $43.2 million. We estimate that this spending generated $4.7 million in state and local taxes through its contribution to economic activity in the region.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 7-12. Most of these impacts will occur in the construction sector, but other sectors affected include retail trade, professional, scientific and technical services, and health care and social assistance.

Exhibit 7-12
Impact of Construction Spending by Industry Sector
(Santa Barbara County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	2	$ 0
Mining	2	0
Utilities	1	1
Construction	407	62
Manufacturing	25	8
Wholesale trade	15	3
Retail trade	44	3
Transportation and warehousing	10	1
Information	8	3
Finance and insurance	28	5
Real estate and rental	20	8
Professional, scientific and technical services	62	7
Management of companies	3	1
Administrative and waste management	30	2
Educational services	8	1
Health care and social assistance	42	4
Arts, entertainment and recreation	11	1
Accommodation and food services	33	2
Other services	29	2
All others	4	1
Total *	**780**	**$ 115**

* May not sum due to rounding
Source: Estimates by LAEDC

As seen with the economic impact of ongoing operations, almost all industry sectors are impacted by the total economic activity generated by the construction spending of the hospital industry. A description of the industry sectors is provided in the Appendix. ❖

8 Ventura County

Health Care Sector

Across Ventura County, hospitals, health care centers, doctors' offices and laboratories provide access to a variety of vital health care services, employing thousands of workers, and generating significant revenues and tax dollars.

The health care sector is composed of several inter-related and supporting industries, including ambulatory health care services, hospitals, and nursing and residential care facilities. The sector as a whole has been growing over the past decade and is likely to be a driver of economic activity going forward as our population grows, as it ages, and as medical advances extend our productive lives.

There were 1,963 private and public establishments and 23,710 payroll employees in the health care sector, representing 8.0 percent of all payroll employment in Ventura County. Offices of health care practitioners is the largest industry by number of establishments and employs the most workers, providing 10,224 jobs.

These data do not include the self-employed or freelance workers, which we estimate could add an additional 2,800 workers, many of whom are health care practitioners or work in home health care services.

Payroll employment in this sector has been growing over the past twenty years. In 1990, employment in Ventura County in the health care industry was 14,886, growing to 23,710 in 2010. Growth has accelerated in the past decade, averaging approximately 3.0 percent on an annual basis since 2000, compared to 1.0 percent per year in the prior decade.

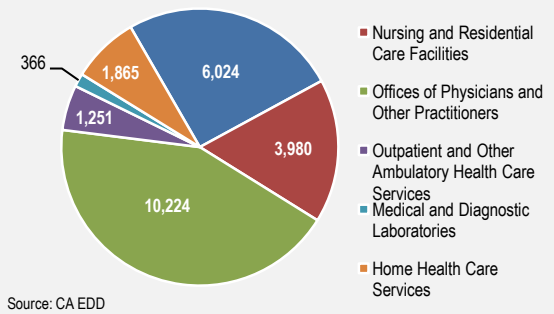
In the county as a whole, total payroll employment has not shown such a steady increase over the period, and indeed experienced a decline during the recession.

Exhibit 8-1
Health Care Services in Ventura County (2010)

	# of Establishments
Hospitals:	
General Medical and Surgical Hospitals[1]	12
Other Hospitals[2]	1
Nursing and Residential Care Facilities	140
Offices of Health Care Practitioners	1,628
Outpatient Care Centers	73
Medical and Diagnostic Laboratories	40
Home Health Care Services	73
TOTAL Establishments	**1,963**
% of all Ventura Establishments	**8.4%**

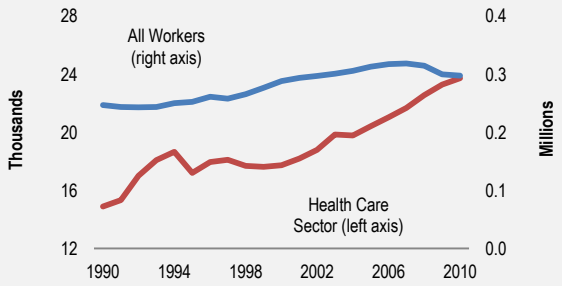
Source: CA EDD
[1] Includes federal, state and county general medical and surgical hospitals such as VA hospitals
[2] Includes psychiatric and substance abuse hospitals and specialty hospitals

Exhibit 8-2
Employment by Industry (2010)



Source: CA EDD

Exhibit 8-3
Employment (2010)



Source: CA EDD

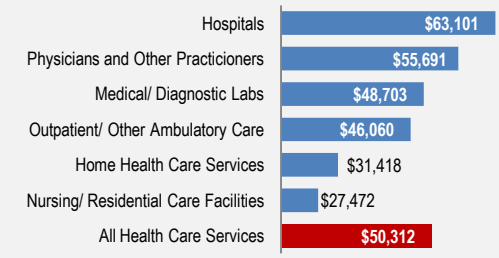
Wages

Wages of health care workers vary by industry in Ventura County, as shown in Exhibit 8-4. Average wages were highest in hospitals in 2010, reaching $63,101 annually, and lowest in nursing and residential care facilities where workers earned an average of $27,472 in 2010.

Overall, the average annual wage in the health care industry in Ventura County in 2010 was $50,312.

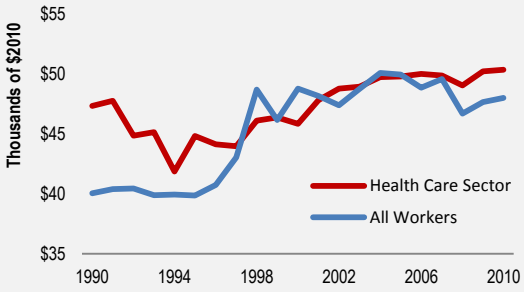
The purchasing power of earnings in the health care sector has been improving since 1994 when they reached a low. The average real wages for all workers in Ventura County fell during the recession and are now below that for the health care sector. ❖

Exhibit 8-4
Average Annual Wages by Industry (2010)



Source: CA EDD

Exhibit 8-5
Average Annual Wages



Source: CA EDD

Ongoing Operations of Hospitals in Ventura County

Economic Activity

Data compiled by the State of California Office of Statewide Health Planning and Development (OSHPD) provides insight into the capabilities and activity at reporting hospitals. Summary data for hospitals in Ventura County is shown in Exhibit 8-6. This data excludes several hospitals, such as Kaiser Foundation Hospitals, California State hospitals and hospitals focused on long-term care, and therefore underreports the number of beds, patient days, discharges and outpatient visits.

The 10 reporting hospitals in Ventura County reported 1,732 licensed beds and 1,570 available beds with an average occupancy rate of 60.6 percent. These hospitals combined provided over 347,000 inpatient days, with acute care accounting for nearly 74 percent. The average length of stay for patients who stayed at least one night was 5.1 days.

Total discharges numbered 68,678 (although some of these were inter-institutional transfers). There were more than 1.5 million outpatient visits to hospitals in Ventura County, only 14 percent of which were emergency room visits.

Hospital operations generate substantial revenues, employment and labor income. A summary of the activity of the reporting hospitals is shown in Exhibit 8-7.

These hospitals received $1.3 billion in net patient revenue and $149 million in other revenue. Together they spent more than $544 million in purchases, including services and supplies, much of which was spent within the Ventura County region. In addition to this spending, $474 million was paid in wages and salaries, with an additional $197 million in employee benefits. Moreover, $71 million was paid to physicians and $28 million was paid for other professional services.

Exhibit 8-6
Ventura County Hospitals (2010)

Hospitals reporting[1]	10
Beds:	
Licensed	1,732
Available	1,570
Occupancy Rates:	
Licensed Beds	54.9%
Available Beds	60.6%
Patients Days:	
Acute Care	255,102
Psychiatric Care	36,634
Chemical Dependency	7,807
Rehabilitation	47,466
Long-term Care	0
Total	347,009
Average Length of Stay	5.1
Discharges	68,678
Outpatient Visits:	
Emergency Room	214,990
All Other Outpatients	1,300,910
Total	1,515,900

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Exhibit 8-7
Economic Activity of Hospital Operations (2010)[1]

	$ millions
Net Patient Revenue	$ 1,297.7
Other Operating Revenue	8.2
Non-Operating Revenue	140.6
Purchases:	
Supplies	$ 213.8
Services	155.8
Leases and rentals	19.8
Other	154.9
Salaries and wages	$ 474.1
Employee benefits	197.4
Physician professional fees	70.9
Other professional fees	28.1

Source: California Office of Statewide Health Planning and Development
[1] Excludes Kaiser Foundation hospitals, California State hospitals and hospitals of the Department of Veterans Affairs

Economic and Fiscal Contribution

The total economic contribution of the hospital industry extends beyond the activity generated within the sector itself. Wages paid to the staff and payments made for purchases of goods and services circulate throughout the economy generating additional indirect and induced activity.

Using methodology described in the Appendix, we estimate that total industry revenues in 2010 were $1.4 billion.

The total economic contribution of the hospital industry in Los Angeles County in 2010, including direct, indirect and induced activity, is shown in Exhibit 8-8.

Exhibit 8-8
Economic and Fiscal Contribution of Hospital Industry (Ventura County, 2010)

Estimated Annual Revenue ($ billions)	$ 1.4
Total Economic Contribution:	
Output ($ billions)	$ 3.1
Employment (jobs)	21,100
Labor income ($ billions)	$ 1.3
Total Fiscal Contribution ($ millions):	
Income taxes (including profits taxes)	$ 44.4
Sales taxes	41.5
Property taxes	46.0
Fees and fines	17.2
Social insurance	5.1
Other taxes	8.2
Total *	**$ 162.4**

* May not sum due to rounding
Source: Estimates by LAEDC

The hospital industry in Ventura County contributed $3.1 billion in total economic output and supported 21,100 full- and part-time jobs with total labor income (including benefits) of $1.3 billion.

We estimate that the sector generated $162 million in state and local taxes through its contribution to economic activity in the county.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 8-9.

Most of these impacts of course occur in the health care and social assistance sector, but other sectors affected will include retail trade, administrative and waste management, and real estate and rental services.

Exhibit 8-9
Economic Contribution by Industry Sector

Sector	Employment	Output ($ millions)
Agriculture	46	$ 5
Mining	18	4
Utilities	37	29
Construction	107	14
Manufacturing	326	160
Wholesale trade	296	52
Retail trade	1,461	108
Transportation and warehousing	259	30
Information	204	80
Finance and insurance	1,144	223
Real estate and rental	1,302	372
Professional, scientific and technical services	770	95
Management of companies	183	33
Administrative and waste management	1,467	80
Educational services	244	15
Health care and social assistance	10,930	1,592
Arts, entertainment and recreation	240	15
Accommodation and food services	1,011	61
Other services	883	64
All others	177	33
Total *	**21,100**	**$ 3,064**

* May not sum due to rounding
Source: Estimates by LAEDC

Most industry sectors benefit from the economic activity generated by the hospital industry. A description of the industry sectors is provided in the Appendix.

Occupational Analysis

Of the jobs supported by the industry, almost one third is in healthcare practitioner and healthcare support occupations, with average annual wages of $79,526 and $30,027 respectively.

The occupational distribution of the total jobs is shown in Exhibit 8-10.

Exhibit 8-10
Aggregated Occupational Distribution of Operations Jobs (Ventura County)

Occupational Description	Employment	Average Annual Wage
Management	928	$ 116,694
Business & financial operations	869	69,692
Computer & mathematical science	334	80,586
Architecture & engineering	101	88,642
Life, physical, & social science	125	73,015
Community & social services	380	50,051
Legal	114	125,522
Education, training, & library	263	56,045
Arts, design, entmt, sports, & media	187	58,325
Healthcare practitioners & technical	5,470	79,526
Healthcare support	1,548	30,027
Protective service	238	56,245
Food preparation & serving	1,356	22,105
Building & grounds cleaning & maint	1,010	27,939
Personal care & service	459	26,988
Sales & related	1,543	37,681
Office & administrative support	3,951	37,430
Farming, fishing, & forestry	34	20,990
Construction & extraction	196	48,118
Installation, maintenance, & repair	671	48,206
Production	544	34,125
Transportation & material moving	780	31,743
All Occupations	**21,100**	**$ 48,469**

* May not sum due to rounding
Source: Estimates by LAEDC

While the industry has an impact on all industry sectors, the economic activity it supports throughout the region provides employment for a wide variety of occupations. The education and work experience requirements of each occupation are provided in the Appendix.

Construction Spending of Hospitals in Ventura County

Economic and Fiscal Impact

In addition to ongoing, regular and recurring operations, the hospital industry continues to invest in construction projects at existing and new facilities, and carry out retrofits motivated by regulatory mandates. This investment generates significant economic activity.

Our estimates for construction spending in 2010 were obtained from OSHPD using the change in percentage of completion of active projects during the year.

The total economic impact of construction spending by the hospital industry in Ventura County in 2010, including direct, indirect and induced activity, is shown in Exhibit 8-11.

Exhibit 8-11
Economic and Fiscal Impact of Hospital Industry Construction Spending (Ventura County, 2010)

Estimated Construction Spending ($ millions):	$ 11.0
Total Economic Impact:	
Output ($ millions)	$ 22.6
Employment (jobs)	150
Labor income ($ millions)	$ 8.0
Total Fiscal Impact ($ millions):	
Income taxes (including profits taxes)	$ 0.3
Sales taxes	0.2
Property taxes	0.3
Fees and fines	0.1
Social insurance	0.0
Other taxes	0.0
Total *	$ 1.0

* May not sum due to rounding
Source: Estimates by LAEDC

Construction spending by the hospital industry in Ventura County in 2010 generated $22.6 million in total economic output and supported 150 full- and part-time jobs, with total labor income (including benefits) of $8 million. We estimate that this spending generated $1.0 million in state and local taxes through its contribution to economic activity in the region.

Industry Sector Breakdown

The indirect and induced impacts spill across industries, as shown in Exhibit 8-12. Most of these impacts will occur in the construction sector, but other sectors affected include retail trade, professional, scientific and technical services, and health care and social assistance.

Exhibit 8-12
Impact of Construction Spending by Industry Sector (Ventura County, 2010)

Sector	Employment	Output ($ millions)
Agriculture	0	$ 0
Mining	0	0
Utilities	0	0
Construction	75	11
Manufacturing	7	2
Wholesale trade	3	1
Retail trade	9	1
Transportation and warehousing	2	0
Information	1	1
Finance and insurance	7	1
Real estate and rental	4	2
Professional, scientific and technical services	12	1
Management of companies	1	0
Administrative and waste management	6	0
Educational services	2	0
Health care and social assistance	8	1
Arts, entertainment and recreation	2	0
Accommodation and food services	6	0
Other services	6	0
All others	1	0
Total *	**150**	**$ 23**

* May not sum due to rounding
Source: Estimates by LAEDC

As seen with the economic impact of ongoing operations, many other industry sectors are impacted by the total economic activity generated by the construction spending of the hospital industry. A description of the industry sectors is provided in the Appendix. ❖

REGULATORY ENVIRONMENT

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9 Licensing, Certifications, Accreditations and CoPS

Hospitals are required to meet numerous requirements at the state and federal levels for licensing, certification, accreditation and conditions of participation compliance. Authority over California hospitals falls to the California Department of Public Health (CDPH) Licensing and Certification Program (L&C) and the U.S. Department of Health and Human Services' Centers for Medicare and Medicaid Services (CMS).

Hospitals are subject to license and certification revocation if they are noncompliant with the California Code of Regulations, and they face termination from the Centers for Medicare/ Medicaid if the Conditions of Participation are not being met.

California Department of Public Health (CDPH) Licensing and Certification Program (L&C)

All hospital facilities are required by law to be licensed. They are licensed, regulated, inspected, and/or certified by numerous public and private agencies at the state and federal levels, including the California Department of Public Health (CDPH) Licensing and Certification Program (L&C) and the U.S. department of Health and Human Services' Centers for Medicare and Medicaid Services (CMS). CDPH and CMS collaborate to make sure health care facilities meet federal requirements for accepting Medicare and Medi-Cal payments. In California, the Medicaid program is referred to as Medi-Cal.

The California Department of Public Health (CDPH) Licensing and Certification Program (L&C) has authority over state laws pertaining to health care, including the certification of nurse assistants, home health aides, hemodialysis technicians, and the licensing of nursing home administrators.

General acute care hospitals (GACHs) are identified as a "hospital licensed by the Department, having a duly constituted governing body with overall administrative and professional responsibility and an organized medical staff which provides 24-hour inpatient care, including the following basic services: medical, nursing, surgical, anesthesia, laboratory, radiology, pharmacy, and dietary services", pursuant to Section 70005(a) of Title 22 of the California Code of Regulations (CCR).

CCR Title 22, Social Security

The California Code of Regulations (CCR) that applies to hospitals is Title 22. The CCR, Title 22 applies to all community care facilities regulated by the California Department of Social Services (CDSS) Community Care Licensing Division, except for specified exemptions. Title 22 includes provisions related to hospital facilities and operations, including construction, fire safety, change of ownership, hospital organization, administration, operational policies and procedures, staffing and provision of both basic and supplemental health care services.

Hospital Accreditation and Certification

Because there are myriad requirements to comply with, many hospitals obtain certifications or accreditations from organizations who cross-walk all of the federal, state and local requirements according to their locations, such as the Joint Commission on Accreditation of Health Care Organizations or the American Osteopathic Association's Healthcare Facilities Accreditation Program (HFAP). An accreditation applies to an entire health care organization, such as a whole hospital, while certification is earned according to each program or services within a health care organization.

Joint Commission on Accreditation of Health Care Organizations

The Joint Commission on Accreditation of Health Care Organizations (JCAHCO) is an independent non-profit organization which accredits and certifies health care organizations and programs across the U.S. Its Hospital Accreditation Program accredits nearly 82 percent of the hospitals in the nation. JCAHCO monitors all state specific legislation and regulation pertaining to hospitals for their accreditation and certification criteria. Many states, including California through their Department of Public Health, contract with JCAHCO in their quality of care oversight for licensing (as stated in the California Health and Safety Code § 1282).

The Health Care Staffing Services Certification Program evaluates a staffing firm's ability to provide qualified and competent staffing services for health care providers such as hospitals and nursing homes.

American Osteopathic Association's Healthcare Facilities Accreditation Program

The American Osteopathic Association's (AOA) Healthcare Facilities Accreditation Program (HFAP) conducts an objective review of the services provided at medical facilities. They are authorized to survey hospitals and other health care facilities for compliance with conditions of participation required by Centers for Medicare and Medicaid Service (CMS). The accreditation is recognized by federal and state governments, and by insurance providers and managed care organizations. Hospitals and acute care hospitals with HFAP accreditation guarantees compliance with Medicare hospital standards (except for Utilization Review which is under sate jurisdiction, and special conditions for psychiatric hospitals.). HFAP accreditation requirements are based upon:

- Medicare Conditions of Participation
- National Fire Protection Association (NFPA) Life Safety Code
- Institute for Healthcare Improvement
- Agency for Healthcare Research & Quality (AHRQ)
- National Quality Forum
- Additional non-Medicare quality standards
- Suggestions and input from clients

Det Norske Veritas Healthcare, Inc. (DNVHC)

The Centers for Medicare & Medicaid Services (CMS) approved Det Norske Veritas Healthcare, Inc. (DNVHC) as an alternate independent national hospital accreditation organization. The recognition was effective as of September 26, 2008. DNVHC, like the other two accrediting organizations, monitors all state specific legislation and regulation pertaining to hospitals for their accreditation and certification criteria.

Medicare and Medicaid Conditions of Participation Title 42 (Federal Medicare/Medicaid Compliance Guidelines)

Hospitals contract with Medicare and Medicaid to receive reimbursement for health care services provided to their beneficiaries. In order to enter into these contracts, hospitals are required to meet conditions of participation (CoPs), which provide guidelines for hospital operations, such as administration and facilities guidelines, as well as care services, such as staffing requirements and procedural provisions specific to the type of

services provided, i.e. anesthesia services, surgical services, radiological services, etc.

The U.S. Department of Health and Human Services' Centers for Medicare and Medicaid Services (CMS) regulates compliance of the required CoPs as specified in Title 42 of the Code of Federal Regulations. ❖

10 Seismic Retrofitting

HSSA 1973 - SB 519 (Alquist)

The Alfred E. Alquist Hospital Facilities Seismic Safety Act (SB 519 HSSA) of 1973 established a seismic safety building standards program applicable to hospitals built on or after March 7, 1973 to be overseen by the Office of Statewide Health Planning and Development (OSHPD).

The legislation was initiated as a result of the Sylmar earthquake of 1971, when a Veteran's Hospital collapsed resulting in fatalities, serious injuries and damages that exceeded $2.4 billion. Insufficient building codes and defects in design and construction were found to be the cause.

Legislative Intent

This legislation was adopted to avoid the loss of life and the disruption of operations and the provision of emergency medical services that may result from structural damage sustained to hospitals resulting from an earthquake.

SB 519 established the Hospital Building Safety Board (HBSB) to advise OSHPD on the implementation of the Alquist Seismic Safety Act and act as a board of appeals for hospital facilities in regards to seismic safety and fire and life safety issues.

Amendments

A series of amendments have been made to the Alfred E. Alquist Hospital Facilities Seismic Safety Act since its adoption in 1973 to handle additional safety concerns, such as addressing nonstructural components, and implementation issues, such as required progress reports and deadline extensions.

SB 961 (Alquist, 1983)

The Alfred E. Alquist Hospital Facilities Seismic Safety Act of 1983 amended the original Alquist HSSA of 1973. This new legislation transferred the authority of construction plan review of health facilities from local building departments to OSHPD. The Facilities Development Division (FDD) of OSHPD was created to handle these new responsibilities. By 1991, construction observation activities (i.e. inspection) were added to its duties, making them the single authority and enforcement agency on construction projects of health care facilities. The OSHPD FDD governs all new construction, renovations, additions and alterations on health care facilities throughout in accordance with the California Building Standards Code, Title 24, California Code of Regulations. OSHPD responsibilities include plan review, construction observation, regulations, seismic retrofit and post earthquake evaluations. They are advised by the HBSB that was created by SB 1953.

SB 1953 (Alquist, 1994)

After the Northridge earthquake in 1994, SB 1953 was written to address the hazards related to damage incurred to nonstructural components of hospital buildings from a seismic event, in addition to the structural components addressed in the Alquist Seismic Safety Act.

The SB 1953 legislation is an unfunded mandate which states that in order for a facility to remain a general acute care hospital facility beyond a specified date, the owner must perform a seismic evaluation and submit to OSHPD a comprehensive evaluation report and compliance plan to reach the structural and nonstructural performance categories (see Exhibit 10-2 for performance category definitions).

The initial evaluation reports revealed that close to 40 percent of California's hospital buildings were in the SPC-1 performance category as of 2001; there was a significant risk of collapse resulting from damage sustained by a seismic event.

Exhibit 10-1
SB 1953 Seismic Compliance Deadlines

1996	OSHPD to establish performance categories
2002	Deadline for compliance plans to be submitted to OSHPD with facility's intent Required bracing of major nonstructural systems and features
2006	HAZUZ 2007 approved by HBSB and implemented by OSHPD
2008	All general acute-care inpatient buildings at risk of collapse must be retrofitted, rebuilt or closed
2013	The extended deadline for qualified SPC-1 facilities for retrofits, rebuilds or closure
2030	All hospital buildings must be operational following a major seismic event

The bill allowed for a possible extension of the 2008 deadline up to January 1, 2013 for SPC-1 facilities that qualify. Nearly all SPC-1 extension requests were granted.

Hospitals that cannot afford compliance by the set deadlines will be forced to close or reduce patient care to non-acute services.

Exhibit 10-2
SB 1953 Performance Categories

Structural Performance Categories

SPC-1	Buildings at risk of collapse. Must meet SPC-2 by 1/1/2008. Eligible for a possible 5-year extension to 2013.
SPC-2	Buildings are "life safe." May not be repairable post seismic event. Must meet SSA structural provisions by 1/1/2030 or switch to providing non-acute services.
SPC-3	Has SSA compliant steel movement resisting frames built pre-1994. May incur structural damage without significantly jeopardizing life. May not be repairable post seismic event. Usable to 1/1/2030 and beyond.
SPC-4	Compliant with structural provisions of SSA. May incur structural damage that disrupts services post seismic event. Usable to 1/1/2030 and beyond.
SPC-5	Compliant with SSA. Reasonably capable of providing services post seismic event. Usable to 1/1/2030 and beyond.

Nonstructural Performance Categories

NPC-1	Equipment and systems do not meet any NPC.
NPC-2	Certain equipment and systems must be braced to Part2, Title 24 requirements by 1/1/2002.
NPC-3	Meets NPC-2. Certain nonstructural components must be braced to Part2, Title 24 regs and fire sprinkler systems braced to NFPA 13, 1994 (or subsequent applicable standards) by 1/1/2008. Usable to 1/1/2030.
NPC-4	Meets NPC-3. Certain systems, components and equipment must be braced to Part2, Title 24 regs. Usable to 1/1/2030.
NPC-5	Meets NPC-4. Requires on-site water supplies, waste-water holding tanks and fuel supply for 72 hours of emergency operations by 1/1/2030. Usable to 1/1/2030 and beyond.

SB 1953 has no requirement for hospitals to provide an implementation progress report after the initial evaluation and compliance plan submittal, as such, additional legislation was undertaken to track progress towards established compliance deadlines.

AB 2194 (Gallegos, 2000)

Existing law under the HSSA of 1983 established the seismic safety standards for hospitals. AB 2194 would allow a general acute care hospital to obtain a waiver from certain standards if services were to be relocated on an interim basis as part of its compliance approval plan. This legislation appropriated $145,000 from the state general fund in order for the State Department of Health Services to establish the Alfred E. Alquist Hospital Facilities Seismic Safety Act Unit. Under the scope of the HSSA, this two liaison unit would serve as a central resource for hospitals and ensure compliance of licensing issues, serve as a liaison between OSHPD, the State Fire Marshall, the Seismic Safety Commission and other entities on hospital operation issues, and process requests for program flexibility.

SB 1801 (Speier, 2000)

Existing HHSA law gave OSHPD the authority to extend the January 1, 2008 compliance deadline for general acute care hospitals to January 1, 2013 if the owners demonstrate that compliance will negatively impact health care capacity that is not alternately available at other general acute hospitals within a reasonable proximity, and therefore may result in the loss of life.

SB 1801 allowed for the five-year extension of the January 1, 2008 compliance deadline to January 1, 2013 for certain hospital buildings of a general acute care hospital under the condition that certain designated services will be transferred to a building in compliance with the structural and nonstructural performance categories by that time. It was enacted to address the issue of those general acute care hospitals in the SPC-1 performance category that would not be able to meet the current compliance deadline due to lack of financing. This legislation also required

OSHPD to establish a schedule of interim work progress deadlines that hospitals must meet in order to be eligible for deadline extension.

AB 2632 Project Review (Bogh, 2004)

AB 2632 authorizes specified hospitals, skilled nursing facilities and intermediate care facilities to carry out certain types of maintenance and repair work without going through the lengthy OSHPD plan approval. Only single-story health facilities of wood or light steel frame construction are eligible for this expedited permitting process. Projects must meet all of the required project criteria in Exhibit 10-3. This statute applies to modifications done for routine maintenance purposes or those designed to restore health facilities back to normal operating status, including necessary alterations to repair systems or equipment. Examples would include the replacement of hot water heaters, dishwashers, handrails, lights, and finish materials. Except for the expedited permitting, these construction projects must still conform to the California Building Standards Code.

Exhibit 10-3
AB 2632 Project Criteria

1. The construction or alteration is for a single-story building of wood frame or light steel frame construction.
2. The construction or alteration is undertaken to repair existing systems or to keep up the course of normal or routine maintenance.
3. The construction or alteration either restores the facility to the same operational status, or improves operational status from its operating condition immediately prior to the event, occurrence, or condition that necessitated the alteration.
4. The scope of the construction or alteration is not ordinarily within the standard of practice of a licensed architect or registered engineer.
5. The construction or alteration does not degrade the status of condition of the fire and life safety system from the status of the system immediately prior to the event, occurrence, or condition that necessitated the alteration.

AB 2632 procedures do not prevent a facility from performing emergency work such as immediate repair or replacement necessary to maintain occupant safety or health that result from occurrences such as equipment failure or natural disasters.

SB 224 (Chesbro, 2005) (Discontinued)

Similar to AB 2632, SB 224 simplified plan review and construction observation for maintenance and repair projects for multi-story hospital buildings. It was intended to expedite the plan review process, diminish the potential for construction delays and reduce costs for hospital owners. A trial period, or demonstration project, that allowed hospital projects with certain criteria to be exempt from the OSHPD plan review process expired on January 1, 2009, when it was discontinued. Open SB 224 projects will be processed through the SB 224 review until complete. AB 2632 is still in effect.

SB 1838 (Perata, 2006)

Effective January 1, 2007, SB 1838 authorizes OSHPD to bypass its plan review process for hospital, skilled nursing facilities and intermediate care facilities construction or alteration projects if they meet the exemption criteria. This legislation is attempting to expedite the permitting and construction process of smaller projects.

Exemption criteria:

- Cost of construction is estimated at $50,000 or less.
  - Projects subdivided to avoid cost limit will not be exempt.
  - Excludes imaging equipment costs, design fees, inspection fees, off site work and fixed equipment costs.
- Project plans and specifications must be stamped and signed in accordance with Section 7-115 (a) and (b) of the 2007 California Administrative Code (CAC).
  - Pursuant to Section 7-115 (c) of the 2007 CAC does not qualify for exemption.

Some projects are excluded from exemption, as shown in Exhibit 10-4.

Additionally SB 1838 requires a pre-submittal meeting between OSHPD and design professionals for projects of buildings with estimated construction costs of $20 million or more. This legislation also authorizes OSHPD to establish training programs so that enough qualified individuals are available to facilitate the

timely performance of the office's duties and responsibilities, and requires the submittal of reports on the program until January 1, 2012 in addition to requiring the office to assess processing time for plan review and to provide an update of this assessment to the Legislature no later than February 1 of each year after.

Exhibit 10-4
Projects Excluded from Exemption in SB 1838

- Building additions (defined in Section 7-111, 2007 CAC) or projects that change occupancy
- Alternate Method of Compliance projects
- Modifications to seismic force load system, primary gravity load members and their load paths
- Addition/ alteration of medical gas or vacuum systems
- Addition/ alteration of fuel storage tanks
- Addition/ alteration of fire alarm or fire sprinkler systems, exceeding 5 devices or 10 sprinklers, respectively
- Addition/ replacement of an emergency generator or new electrical panel added to the essential electrical system
- Addition/ replacement of large capacity fan in excess of 2,000 cubic feet per minute (cfm)
- Projects where a plans and specifications review reveal a component that has a clear and significant risk to health and safety of the staff or general public

SB 1661 Compliance Status Reports (Cox, 2006)

SB 1661 would allow OSHPD to grant an additional two-year extension to hospital facilities from the original extended deadline of 1/1/2013 outlined in SB 1953. This 2-year extension of the HSSA compliance deadline to 1/1/2015 will be granted if it is under construction at the time the extension is requested and the hospital has made reasonable progress in meeting the compliance deadline, but extenuating circumstances prevented it. Additional provisions authorize OSHPD to revoke a deadline extension if construction has been suspended (except for extenuating circumstances) and will require, under certain circumstances, owners of general acute care hospitals to submit prescribed reports to OSHPD.

SB 2006 (Leslie, 2006)

This bill would allow any general acute care hospital building located in a seismic shaking zone classified as Zone 3, to request an exemption from certain nonstructural requirements of the HSSA outlined in SB 1953, as long as the hospital building complies with certain 2002 nonstructural requirements. This legislation would require OSHPD to grant the exemption if certain conditions are met.

Exhibit 10-5
Seismic Zones

- Seismic Zones in the U.S. range from 1 to 4; higher numbers indicate higher danger associated with earthquakes.
- All of California is classified as Seismic Zone 3 or 4.
- Stronger construction standards exist for structures in Zones 3 and 4. In Uniform Building Codes

Seismic Design Category D

- A newly defined geographic area which includes all Seismic Zone 3 and some of Seismic Zone 4 not in close proximity to fault lines.
- New OSHPD regulation allows buildings in this new category to have until 2030 to meet NPC compliance requirements

SB 306 (Ducheny, 2007)

SB 306 authorizes certain SPC-1 hospital owners lacking the financial capacity to meet compliance by 2013 to replace those buildings by January 1, 2020 instead. A declaration must be filed which includes specified financial information and a fee to cover the additional costs. The bill would require the hospital to bear the costs of reviewing and verifying the financial information. Additionally, the bill allows OSHPD to enter into a phased submission and review agreement at its discretion, and authorizes them to asses a related fee that will be deducted from the application fee.

SB 289 (Ducheny, 2009)

SB 289 requires all nonconforming SPC-1 general acute care hospitals who have requested an extension to the 2008 compliance deadline to

include additional information about the buildings they intend to remove from acute care services in their compliance reports to be submitted to OSHPD by June 30, 2011.

SB 499 (Ducheny, 2009)

Existing law of the HSSA of 1983 requires SSPC-1 general acute care hospitals that have been granted an extension to the compliance deadline to submit a compliance report by June 30, 2011. Compliance reports were not required of noncompliant SPC-1 general acute care hospitals who were not requesting a compliance deadline extension.

SB 499 requires the submittal of a compliance report from the owners of all noncompliant SPC-1 general acute care hospitals, regardless of whether they are requesting an extension or not. A compliance report must be submitted to OSHPD by November 1, 2010 and updated annually beyond. It requires additional information on the status of their compliance. The reports will be made available to the public via website within 90 days of receiving the information.

Hospitals who do not submit a compliance progress report by the deadline will incur per diem be fines until it meets the provisions of this legislation.

AB 303 (Beall, 2009)

AB 303 authorizes certain hospitals that contract with the California Medical Assistance Commission to serve Medi-Cal patients, specifically county hospitals and University of California disproportionate share hospitals, to receive supplemental Medi-Cal reimbursement for new capital to undertake projects to meet the existing HSSA deadlines from the Construction and Renovation Reimbursement Program.

SB 90 Seismic Safety Extension (Steinberg, 2010)

SB 90 grants OSHPD the authority to consider public safety when determining the approval of an extension request and the length if granted within the newly allotted seven-year extension of the existing seismic safety deadline for an SPC-1 building as long as certain criteria are met. The criteria for the public safety consideration include the

- Building's structural integrity
- Access to care by the community if it were to close
- Financial capacity required for project completion in a timely manner

Exhibit 10-6
SB 90 Compliance Deadlines

March 31 2012	Extension request submitted including the compliance project type (retrofit, rebuild, remove acute services) and the estimated time required
September 30, 2012	Submit HAZUS application for review
January 1 2015	Submit plans, the schedule and financial report addressing the capacity to complete project
July 1 2018	Obtain a building permit by this date

Any hospital with SPC-1 buildings may apply for the deadline extension regardless of its compliance status and approval of the extension for the compliance deadline will granted on a case-by-case basis for an additional fee. SB 90 extension request requirements and deadlines are in Exhibit 10-6 above.

Exhibit 10-7
SB 90 Fines for Noncompliance

$10 per licensed acute care bed (up to $1,000 per day), for each noncompliant SPC-1 building until provisions are met.

Implementation

Hospitals are needed to provide emergency medical services to the public in the event of a disaster, such as an earthquake, terrorist event or large scale accident and regularly house patients who face increased risk of death and injury when

forced to evacuate. Repairing heavy damage sustained to hospital buildings is expensive and it can take many years to complete, resulting in higher costs to the public in the form of tax monies spent and the loss of healthcare services to the local community. They are required to be much stronger than non-health care facilities, facing higher design and construction standards to withstand forces exerted by earthquakes, gravity and winds. Meeting these higher standards requires more complicated building codes, methodical and more time intensive plan review, and complex inspection and quality assurance requirements specific to this type of occupancy. The California Office of Statewide Health Planning and Development (OSHPD) Facilities Development Division (FDD) governs this specialty process for health care facility construction projects.

The OSHPD FDD is responsible for all plan checking and inspection for the design and details of health care facilities building components, including the architectural, structural, mechanical, plumbing, electrical, and fire and panic safety systems, in addition to observing the construction process in accordance with the California Building Standards Code, Title 24, California Code of Regulations.

CCR Title 24, California Building Standards Code

The California Code of Regulations (CCR), Title 24 compiles building code standards from three sources:

- National codes that have been adopted by state agencies without change
- National model code standards that have been adapted to address particular conditions in California
- Building standards authorized by the California legislature addressing particular California concerns as additions to supplement the above adopted model codes

Enforceable codes for hospital facilities under the authority of the Alfred E. Alquist Hospital Facilities Seismic Safety Act of 1983 for applications submitted to OSHPD on or after January 1, 2011 include:

- California Administrative Code (CAC)
  Part 1, Title 24, CCR
- California Building Code (CBC)
  Part 2, Title 24, CCR - based on 2009 International Building Code (IBC)
- California Electrical Code (CEC)
  Part 3, Title 24, CCR – based on 2008 National Electrical Code (NEC)
- California Mechanical Code (CMC)
  Part 4, Title 24, CCR – based on 2009 Uniform Mechanical Code (UMC)
- California Plumbing Code (CPC)
  Part 5, Title 24, CCR – based on 2009 Uniform Plumbing Code (UPC)
- California Fire Code (CFC)
  Part 9, Title 24, CCR – based on 2009 International Fire Code (IFC)

11 American Recovery and Reinvestment Act 2009 (Pub. L 111-5)

The American Recovery and Reinvestment Act (ARRA) of 2009 authorized the U.S. Department of Health and Human Services to distribute $2 billion in grants to health centers so that they may serve patients who are uninsured and underserved. ARRA federal provisions include:

- A temporary increase in the Federal Medical Assistance Percentage (FMAP) of Medicaid payments to at least 6.2 percent for every state
- A new tax credit of 65 percent to individuals who continue their health insurance through COBRA after losing their job
- Provides $1 billion for proven clinical preventative services and community-based prevention programs through Investing in Evidence-Based Prevention for Americans
- Provides $500 million to support the National Health Services Corps and existing workforce programs, such as Title VII and VIII to educate and train medical professionals
- Invests $10 billion in the National Institutes of Health to move valid research projects backlogged due to funding constraints
- Provides $1.1 billion for Comparative Effectiveness Research to investigate the relative merits of different treatment options
- Invests $2 billion in Community Health Centers
- Provides $500 million to Indian Health Services for HIT and to improve the quality and access to health care services for Native Americans and Alaskan Natives
- Invests $50 million in Health and Human Services IT security

The state of California was allotted $16.9 billion of stimulus funds, which were distributed among community health centers, universities and other institutions through several programs to improve and expand access to health care, establish the infrastructure for health information technology, conduct scientific research, provide fiscal relief and extend other social services to vulnerable populations.

Exhibit 11-1
Hospital Related ARRA Funding in CA

Total ARRA funding for CA: $16.9 billion

- $12.6 billion for increased FMAP for CA Medicaid
- $263.2 million – Community Health Center services
- $124.6 million – Health IT investment
  - $55.5 million - for 4 Regional Extension Centers
  - $38.8 million – CA Health and Human Services Agency for exchanges
- $18.8 million – immunization programs
- $4.6 million – surveillance and prevention of healthcare associated infections

Title V: The Healthcare Workforce

There are a number of provisions and incentives to increase the number of medical professionals. Hospitals rely upon a specially trained workforce to provide their services, workforce shortages can lead to increased costs for the hospital related to noncompliance. Nationally, $250 million was allotted to increase the number of primary care (PC) providers by offering new resources such as the following:

- Creating additional PC residency slots
- Supporting PA training in primary care
- Increasing the number of nurse practitioners trained
- Providing states with resources to address upcoming health care workforce needs
- Expanding tax benefits to health professionals working in underserved areas
- Building primary care capacity through Medicare/ Medicaid
- Making health care education more accessible and provide financial assistance for students

The PPACA included provisions addressing the current and future needs of the health care industry. Title V provides funding to the state and local governments for data collection, education and loan repayment, incentives for primary care and expanded educational and training

opportunities for healthcare professionals that are required by hospitals (Title VI contains workforce provisions pertaining to nursing homes and long-term care). Additionally Title V provides funding for health care construction projects and community health centers.

Increased Demand for Services and New Access Points Recovery Act Grant Program

ARRA funded $263.2 million to Community Health Centers for construction, renovation, health information technology (HIT) investment and needed care services and equipment. Funding was distributed through the Increased Demand for Services and New Access Points Recovery Act Program. There 117 health centers in California who received these grants. All patients seen and attributed to Increased Demand for Services and New Access Point funding in the state totaled 709,623, with 91 percent of those patients from Increased Demand Services.

Hospital Price Transparency and Disclosure Act of 2009 (H.R. 2566)

This legislation amends the Public Health Service Act and requires hospitals to report data to the Secretary of Health and Human Services and disclosure of charges for certain medical services and pharmaceuticals in hospitals to the public. Noncompliance can face a monetary penalty. California posts hospital cost comparisons for services products and procedures on the state website and on the OSHPD website.

Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH)

The Health Information Technology for Economic and Clinical Health Act (HITECH) was part of the ARRA legislation enacted in 2009 under President Obama. It provides incentives to states to adopt electronic health records and health information exchanges (HIE) to improve the quality and management of patient health care services. The legislative intent is to reduce federal and private expenditures on health services over the next decade by tens of billions of dollars through increases in efficiency.

Starting in 2011, Medicare or Medicaid healthcare providers will be offered financial incentives for demonstrating the meaningful use of electronic health records (EHR). The incentive money paid is determined by Medicare/Medicaid allowable billings; however, meaningful use involves the entire patient base. Incentives will be offered until 2015, when penalties may be imposed if the conditions of meaningful use have not been met. Each provider must decide whether the Medicare program or the Medicaid program will be most rewarding for his or her practice.

The final rule for meaningful uses a three phased approach, identified as Stage 1, Stage 2, and Stage 3. Stage 1 involves data capture and sharing and is effective 2011. Providers are required to electronically capture health record data in coded format that is reportable and can be used to track clinical conditions. Stage 1 "meaningful use" has detailed set of 15 criteria (core set) that providers must meet in order to prove that they are using their EMR as an effective tool in their practice. There are 10 additional criteria (menu set) from which only five needs to be demonstrated by the provider. In total, each provider must complete 20 Meaningful Use criteria to qualify for stimulus payments during stage one of the EHR incentive program. A detailed description of the criteria of Stage 1 is located in Exhibit 11-2.

Stage 2 involves the advance of the clinical process and is effective 2013. Providers are to guide and support care processes and care coordination. Stage 2 "meaningful use" criteria are expected to be proposed in early 2012 and finalized summer of 2012. Finally, Stage 3 involves improved outcomes and is effective 2015. Providers are to achieve and improve performance and support care processes and key health system outcomes. ❖

Exhibit 11-2
HITECH Stage 1 "Meaningful Use" Criteria

1. **Computerized Provider Order Entry (CPOE):**
   More than 30% of all unique patients with at least one medication seen by the EP and ordered using CPOE
   Excludes EPs who write fewer than 100 Rx during EHR reporting period
2. **E-Prescribing (eRx):**
   More than 40% of all permissible Rx by EP transmitted electronically using certified EHR technology
   Excludes EPs who write fewer than 100 Rx during EHR reporting period
3. **Report ambulatory clinical quality measures to Centers for Medicare & Medicaid Service (CMS)**
4. **Implement one clinical decision support rule**
5. **Provide patients with an electronic copy of their health information, upon request:**
   More than 50% who request during EHR reporting period are provided it within 3 business days
6. **Provide clinical summaries for patients for each office visit:**
   Provide for more than 50% of all office visits within 3 business days during EHR reporting period
7. **Drug-drug and drug-allergy interaction checks:**
   The EP has enabled this functionality for entire EHR reporting period
8. **Record demographics:**
   More than 50% of all unique patients seen by EP have demographics recorded as structured date
9. **Maintain an up-to-date problem list of current and active diagnoses:**
   More than 80% of all unique patients seen by EP have at least one entry recorded as structured data
10. **Maintain active medication list:**
    More than 80% of all unique patients seen by EP have at least one entry recorded as structured data
11. **Maintain active medication allergy list:**
    More than 80% of all unique patients seen by EP have at least one entry recorded as structured data
12. **Record and chart changes in vital signs:**
    More than 50% of all unique patients ages 2+ seen by EP have height, weight and blood pressure recorded as structured data
13. **Record smoking status for patients 13 years or older:**
    More than 50% of all unique patients 13 years or older seen by EP have status recorded as structured data
14. **Capability to exchange key clinical information among providers of care:**
    Perform at least one test of certified EHR technology's capacity to exchange key clinical information
15. **Protect electronic health information:**
    Perform a security risk analysis per 45 CFR 164.308 (a)(1) implementing security updates as necessary and correct identified security deficiencies as part of its risk management process

12 Affordable Health Care Act 2010

The Patient Protection and Affordable Care Act (HR3590) (PPACA) was amended by the Health Care and Education reconciliation Act (HCRA) (HR 4872); both are jointly referred to as the Affordable Health Care Act of 2010. This new legislation will affect nearly every aspect of health care, and its implementation will involve the participation of federal and state governments, insurance providers, health care providers such as hospitals and employers.

Federally, the Department of Human Health Services (HHS), the Departments of Education, the Department of Labor and the Department of the Treasury will all be participating in the definitions and implementation of the new legislation.

The legislative intent was to increase access to health insurance. It expands federal private health insurance market requirements, and requires the formation of health insurance exchanges to provide individuals and small employers with access to insurance. Costs are projected to be offset by tax increases, increased revenues and reduced expenditures on Medicare and Medicaid.

Much of the Affordable Care Act (ACA) of 2010 involves insurance reform. Provisions in the legislation that will affect hospitals involve a change in how medical providers and hospitals receive reimbursement for Medicare fee-for-service (FFS) and care delivery systems. Transparency is a key component of the legislation; required program elements, reports and mandates are included to increase transparency in the health care industry. It authorizes mandatory compliance plans for hospitals and other care providers. Hospitals must have written policies and procedures for patient medical records and hospital operation records to assist in compliance according to licensure laws, federal health care program requirements and other statutes and regulations.

Additional provisions affecting hospitals include demonstration projects and grant programs to incentivize and test new methods of care delivery.

Exhibit 12-1
Upcoming Compliance Deadlines

2013	• Decrease HAC by 40 percent • Reduce hospital readmissions by 20 percent
2014	• Medicaid eligibility expands with new uniform federal income limit (33%) and inclusion of childless adults • Health Benefit Exchange required to be fully certified and operational • Lifetime and annual limits are prohibited • End of temporary high risk health insurance pools and transition to the Health Benefit Exchange • Individual mandate goes into effect
2016	• ARRA penalties for not meeting meaningful use requirements for EHRs

Reimbursement Reductions

Reimbursement payments for Medicaid will be reduced to hospitals at the same time as the number of eligible Medicaid-eligible individuals increase, exposing hospitals to the potential for significant financial hardship. Public hospitals and safety-net hospitals which serve large numbers of Medicare and Medi-Cal beneficiaries will have higher exposure to this risk. Hospitals facing the reimbursement reduction in higher income areas may fare better as they have more opportunity for cost-shifting onto their patients with private insurance. General acute care hospitals will be facing mandated payment reforms including:

- *Hospital Readmissions Payment Reductions*
  Estimated to save $8.2 billion in savings for CMS through 2019, hospitals with readmission rates higher than their risk-adjusted expected readmission rates, beginning in 2013, will face reduced DRG payments for Medicare inpatients equal to that paid for the extra readmissions. The reduced

payments will apply to three conditions for the first two years, expand to five in 2015, and can be expanded thereafter.

- *Payment Adjustments for Hospital-Acquired Conditions (HACs)*
  Medicaid will not reimburse hospitals for services related to preventable HACs (10 specific types) and other preventable injuries and illnesses. The ACA set a deadline for implementation for July of 2011 but CMS extended the compliance deadline to July1, 2012. As of 2015, a one percent DRG payment reduction for Medicare services will apply to general acute care hospitals with HAC rates in the top 25 percent of hospitals in the U.S.

- *Hospital Value-Based Purchasing Program*
  Hospitals who meet quality and patient satisfaction measures, and who have established health IT infrastructure that can use patient-specific data for analysis and reporting to CMS, will be paid $850 million in incentives. Additional measures will be added in 2014 and in 2015 Medicare physicians will face a new value-based reimbursement system. All hospitals will experience reduced DRG payments, but only those that voluntarily choose to comply will receive the incentives. Reduced reimbursement will come into effect with one percent in 2013, and will increase by 0.25 percent every year until it reaches two percent in 2017 and remains at that rate thereafter.

- *Medicaid Reimbursement for Primary Care*
  This provision creates a floor for Medicaid payments made to primary care doctors, on a temporary basis, to address the shortage of primary care and specialty physicians in the Medi-Cal program. Medi-Cal has a low participation rate for providers due to low reimbursement rates for primary care; the physician fees are the fourth lowest in the nation and are less than half of Medicare reimbursement for the same services. Additionally this provision expands medical school loan repayment programs and training opportunities.

Delivery System Reforms

Medicaid

The PPACA will raise the threshold of Medicaid eligibility in 2014, expanding coverage to individuals with incomes up to 133 percent of the federal poverty guidelines ($14,404 for an individual and $29,326 for a family of four as of 2009). New measures include a federal uniform guideline for eligibility across the US and will now require states to offer coverage to individuals without children. The legislation will offer federal financing to newly eligible persons (FMAP) on the following schedule: 100 percent for 2014 to 2016, 95 percent for 2017, 94 percent for 2018 and 90 percent for 2020 and beyond. The Centers for Medicare and Medicaid Services (CMS) will oversee the implantation of the Medicaid expansion in 2014.

National Health Service Corps

The National Health Services Corps, a federal workforce program from the ARRA, was reauthorized through 2015 under the PPACA to continue to address healthcare workforce issues such as staff shortages.

Tax Provisions

The excise tax on medical devices enacted by the PPACA was repealed. After 2012 imposes a tax on sales of any taxable medical device by the manufacturer, producer or importer equal to 2.3 percent of the selling price. A "taxable medical device" is any device intended for humans except medical devices generally purchased by the general public at retail, such as eyeglasses, contacts, hearing aids, etc.

The tax deduction for expenses earmarked for the Medicare Part D subsidy is set to be eliminated. The elimination has been delayed until 2013.

The estimated tax payment of corporations with assets of $1 billion or more will be facing increases by 15.75% in the third quarter of 2014.

Pilot Programs

Hospitals are facing more individuals who qualify for Medicare benefits at the same time that they are receiving reduced levels of reimbursement. As such, care delivery and reimbursement reforms and pilot programs are being looked at as a way to offset the costs these hospitals will incur.

Reimbursement and care delivery reforms include:

- *Medicare and Medicaid Payment Bundling Demonstrations*
  A five-year bundling pilot program where a single price is charged for medical services provided during the entire course of the episode, defined as three days prior to a hospital admission to 30 days after discharge. The single payment cannot exceed the cost of the same services outside of the bundling.

- *Partnership for Patients*
  Decrease HAC by 40 percent and reduce hospital readmissions by 20 percent by 2013. CMS estimates savings in the amount of $35 billion over three years. California hospitals are also entering the Partnership for Patients programs.

- *State Demonstrations to Integrate Care for Dual-Eligible Individuals*
  California was one of 15 states who were funded up to $1 million to align service delivery and improve the quality and patient experience for dual-eligible individuals. Successful delivery system reform will be replicated in other states.

- *Medicare Shared Savings Program (MSSP)* The MSSP Accountable Care Organization program allows for the negotiation of other payers who may be in the private sector or with other public programs to negotiate new payments and create care delivery arrangements.

- *Community-based care transitions program (CCTP)* Beginning in 2013, Medicare will stop reimbursement for readmission within a 30 day period. Partnerships between hospitals and Community Based Organizations that provide transition services and with other public health agencies can build new care systems and related infrastructure that can reduce readmissions. Available funds for the program over a five-year period is$500 million and CBOs and any hospital may submit an application to receive funds, regardless of the hospital's current readmission rate. The CCTP program fits in with the Bridge to Reform 1115 waiver.

Bridge to Reform 1115 Waiver

The State of California has come up with provisions to help the state's health care delivery system transition to all the new provisions and mandates. The federal government is granting $8 billion to California over the next five years to be used for the waiver programs. They include:

- Expansion of county-based coverage for up to 500,000 low-income individuals who will become eligible in 2014
- Required enrollment of 380,000 Medi-Cal-only seniors and persons with disabilities into fully managed care for each individual
- The Delivery System Reform Incentive Pool (DSRIP) program: Under the DSRIP program, public hospitals have access to $3.3 billion if they use the funds to improve their HIT, chronically ill patient care and care quality and to try new care delivery models.
- Creation of pilot programs to test new care delivery models for children in the California Children's Services (CCS) program.

National Prevention, Health Promotion, and Public Health Council

Established programs dedicated to promoting health and promoting disease prevention as a part of a national strategy, called the National Prevention and Health Promotion Strategy, to improve public health. These programs will be directed by the Centers for Disease Control and Prevention (CDC), and try to expand the focus of health care to include wellness and prevention instead of focusing solely on sickness and disease. ❖

13 Other Legislation Relevant to Hospital Facilities

Nurse to Patient Ratios

AB 394 Nurse Staffing Law (Kuehl, 1999)

California became the first state to establish minimum registered nurse (RN)-to-patient ratios for general acute care hospitals. The ratios are the maximum number of patients assigned to an RN during one shift. Hospitals are also required to establish written policies and procedures for training and orientation of nursing staff. AB 394 restricted hospitals from using unlicensed personnel to provide certain nursing services, under the direct clinical supervision of a registered nurse or not. The law requires the state Department of Health Services (DHS) to establish specific ratios for specific hospital units. Final regulations for implementation were issued in 2003, with the compliance deadline for hospitals to meet the staffing ratios set as January 1, 2004.

Exhibit 13-1
CA Minimum Licensed Nurse-to-Patient Ratios

- Medical, surgical, medical/surgical and mixed units are 1:5
- Step down units are 1:3
- Telemetry units are 1:4
- Specialty Care units are 1:4
- Hospital emergency departments must comply with same requirements as all other units (requires documentation of specific nurse to specific patient assignments)

AB 1760 (Kuehl-D, 2000)

AB 1760 amended AB394 and granted the California Department of Health Services a one-year extension for establishing enforceable nurse-patient ratios. The new deadline was January 1, 2002. Existing law allowed a county hospital in Los Angeles County to phase-in to nurse-to-patient staffing ratio requirement; AB 1760 eliminated the phase-in.

California Code of Regulations Nurse-to-Patient Ratio Changes in 2008

On January 1, 2008, new nurse-to-patient ratios went into effect for step-down, telemetry and Other Specialty Care units as regulated in Title 22 of the California Code of Regulations. Step down units are transitional units between the intensive care unit (ICU) and general medical-surgical floors, the ratio was changes to 1:3 from the previous 1:4. Telemetry units are those where the patients are hooked up to monitors, the ratio was changed to 1:4 from the previous 1:5. Other Specialty Care units are those that specialize in certain types of care, such as cancer, etc., their ratio changed to 1:4 from the previous 1:5.

Hospital Fair Pricing Policies

AB 774 Hospital Fair Pricing Policies (Chan, 2006)

AB 774 established the Hospital Fair Pricing Policies, requiring all licensed general acute care hospitals, psychiatric acute hospitals and special hospitals to raise public awareness of the availability of charity care, discounted payments and government-sponsored health insurance and to standardize its billing and collection procedures. Hospitals are required to adopt specific procedures in regards to eligibility determination, billing practices and debt collection. The review process and their written policies must include clear language for each of these elements for charity care (free) and discount payments). This legislation is later amended by SB 350 and AB 1503.

SB 350 Hospital Fair Pricing Policies (Runner, 2007)

SB 350 amends SB 774. The Office of Administrative Law approved regulations requiring on-line submission of the required information using the OSHPD System for Fair Price Hospital Reporting effective late 2007. This legislation makes clarifications to current law in regards to collection activities associated with a hospital's charity care and discount payment policies.

AB 1503 (Lieu ,2010)

AB 1503 further amends AB 774. It requires emergency room physicians at hospitals that provide emergency care to offer discounts to the uninsured or patients with high medical costs at or below 350 percent of the federal poverty level. Hospitals are required to incorporate language into their current fair pricing policies to notify these patients of the availability of these discounts for ER physician services. A copy of the hospital's charity care and discount payment policy outlining eligibility, review and application procedures must be submitted to OSHPD by January 1, 2008, and every other year thereafter and when a significant change is made.

Transparency Legislation

SB 917 (Speier, 2005)

SB 917, also known as the Hospital Transparency Act of 2005, amends the Payers' Bill of Rights and requires OSHPD to compile and report the 25 most common Medicare DRGs, and the average charge for each, by hospitals and publish it on its website. OSHPD is required to use Medicare All Patient Refined (APR)-DRGs for all hospitals with 10 percent or more of their admissions on Medicare and is also required to create the APR-DRG methodology for
hospitals not reported on the Medicare DRG system. Hospitals are mandated to provide copies of its charge master to those who request it and may charge a copy fee. This legislation extends the deadline for hospitals to provide this list upon request to July 1, 2006.

AB 1045 (Frommer, 2005)

AB 1045 requires hospitals to publicly share the prices for the 25 most common outpatient services and procedures and requires OSHPD to create and update a public database with an online query system to display these average charges for the 25 most common procedures for every hospital in California. Additionally, this legislation requires hospitals to provide a written cost estimate for health care services upon request for an individual who is uninsured.

SB 1301 (Alquist, 2006)

SB 1301 requires general acute care hospitals to report specified adverse events to the Department of Health Services (DHS) within a five-day period once the event has been detected, or within a 24-hour period if the event is an urgent or emergent threat to patients, personnel or visitor health and safety. An adverse event would be any event that causes the death or serious disability. Once the report is received, the DHS must complete an on-site investigation within 2 business days. Administrative penalties and civil monetary penalties in an amount up to $100,000 per violation, can be levied against the hospitals and their licensing may be adversely affected. The legislation also establishes the deadlines of January 1, 2009 to provide the public with written information about corroborated adverse events and January 1, 2015 for those reports to be available to the public via their website.

The list of reportable adverse events as specified by the bill are as follows:

- Surgery on the wrong body part
- Surgery on the wrong patient
- Wrong surgical procedure performed on a patient
- Object left in patient after surgery
- Death of a patient, who had been generally healthy, during or immediately after surgery for a localized problem

- Patient death or serious disability associated with the use of contaminated drugs, devices, or biologics
- Patient death or serious disability associated with the misuse or malfunction of a device
- Patient death or serious disability associated with intravascular air embolism
- Infant discharged to the wrong person
- Patient death or serious disability associated with patient disappearing for more than four hours
- Patient suicide or attempted suicide resulting in serious disability
- Patient death or serious disability associated with a medication error
- Patient death or serious disability associated with transfusion of blood or blood products of the wrong type
- Maternal death or serious disability associated with labor or delivery in a low-risk pregnancy
- Patient death or serious disability associated with the onset of hypoglycemia, a drop in blood sugar
- Death or serious disability associated with failure to identify and treat hyperbilirubinemia, a blood abnormality, in newborns
- Severe pressure ulcers acquired in the hospital
- Patient death or serious disability due to spinal manipulative therapy
- Patient death or serious disability associated with an electric shock
- Any incident in which a line designated for oxygen or other gas to be delivered to a patient contains the wrong gas or is contaminated by toxic substances
- Patient death or serious disability associated with a burn incurred in the hospital
- Patient death associated with a fall suffered in the hospital
- Patient death or serious disability associated with the use of restraints or bedrails
- Any instance of care ordered by or provided by someone impersonating a physician, nurse, pharmacist, or other licensed healthcare provider
- Abduction of a patient
- Sexual assault on a patient
- Death or significant injury of a patient or staff member resulting from a physical assault in the hospital

Operational and Facility Legislation

SB 1312 (Alquist, 2006)

SB 1312 granted authority to the Department of Public Health (DPH) to levy administrative penalties against general acute care, psychiatric or special hospitals for code deficiencies or code violations that pose an immediate threat. Penalty maximums were established as up to $50,000 for the first violation, up to $75,000 for the second subsequent violation and up to $100,000 for the third and every subsequent violation thereafter. Later legislation raised the administrative penalty levels before the effective date when DPH adopted these regulations.

AB 2128 (Emerson, 2008)

AB 2128 created a state-mandated local program requiring health facilities to have a dietitian on staff on a full-time, part-time or consulting basis. Those with a dietician employed on less than full-time are required to employ a full-time dietetic services supervisor who meets the required educational requirements and who will receive regularly scheduled consultations from a qualified dietitian. The deadline for submittal of program flexibility requests, in regards to a dietetic services supervisor possessing more than 5 years of experience and enrolled in a specified education program, was set for December 31, 2009 and if granted would extend that individuals ability to practice as a dietetic services supervisor for an additional 18 months, with an option to extend that end date by an additional 6 months.

AB 2146 (Feuer, 2008)

AB 2146 creates a state-mandated program that prohibits health care providers from including in their care plan or insurer contracts provisions prohibiting nonpayment policies and practices for preventable HACs and it prevents a patient from being charged by the provider for the denied payment. It requires state public health programs to develop and implement policies in regards to the payment of health care providers for HACs, requires the provider's medical director and

director of nursing to make annual reports to their board regarding HACs and requires the Secretary of the CA HHS to report to the Governor and Legislature (by January 1, 2011 and bi-annually after) nonpayment policies for the Healthy Families Program and Medi-Cal and HAC prevention.

AB 2400 (Price, 2008)

Under existing law a hospital that plans to reduce or eliminate emergency medical services must give notice at least advance 90 days. AB 2400 would change that requirement to at least 30 days prior notice for closure, elimination or relocation of supplemental service.

AB 2565 (Eng, 2008)

AB 2565 requires a general acute care hospital to develop and implement a policy in regards to brain death, through discontinuation of cardiopulmonary support for the patient. Hospitals must provide the patient's legally recognized medical decision maker or family or next of kin with a written copy of this policy if it is deemed that there is potential for brain death, and must provide a reasonably brief period once the patient is declared dead. Additionally this legislation requires the hospital to make reasonable efforts to accommodate any special religious or cultural practices expressed by the patient's legally recognized medical decision maker or family or next of kin. It is a state mandated program.

AB 2702 (Nunez, 2008)

Existing law allows for the reimbursement of physicians and hospitals who provide uncompensated emergency medical services from Maddy Emergency Medical Services (EMS) fund and Prop 99 EMS funds, but only in certain locations, including a hospital with a basic or comprehensive emergency department (ED) or a small and rural hospital standby ED. AB 2702 would require counties to distribute these funds to physicians who provide EMS in standby EDs if the following conditions are met 1) the standby ED is in a hospital in existence as of January 1, 2007, 2) it is located in LA County and 3) there are experienced EMS physicians providing emergency services 24 hours per day.

AB 2747 (Berg, 2008)

AB 2747 states that once a patient is diagnosed with a terminal illness with the prognosis that they have less than one year to live, health care providers will provide information and counseling regarding legal end-of-life options (such as palliative care and hospice care) upon request and supply a referral or transfer if they do not want to comply with the patient's end-of-life option choice.

SB 158 (Florez, 2008)

SB 158 created a Department of Public Health infection surveillance, prevention, and control program. The program will oversee prevention and reporting of HACs in general acute care hospitals. It requires hospitals to develop patient safety plans with various health care staff in order to implement a facility-wide hand hygiene program. Additional provisions include:

- Prohibiting use of an intravenous connection, epidural connection or enteral feeding connection that will also fit into another type of connection port as of January 1, 2011
- Expands existing Healthcare Associated Infection Advisory Committee responsibilities
- Requires training or continuing education requirements for hospital epidemiologists or similar persons providing services at the facility.

SB 541 (Alquist, 2008)

SB 541 increased the levels for the administrative penalties levied against general acute care, psychiatric or special hospitals for code deficiencies or code violations that poses an immediate threat. New maximum penalties increased up to $75,000 for the first violation, up to $100,000 for the second subsequent violation and up to $125,000 for the third and every

subsequent violation thereafter. This legislation also authorized the DPH to levy administrative penalties for unauthorized access to, use, or disclosure of patients' medical information and for failure of the hospital to report such incidents. Additionally, this bill will create an Internal Departmental Quality Improvement Account where the penalties will be deposited.

SB 891 (Correa, 2008)

SB 891 would temporarily, until January 1, 2014, establish the Elective Percutaneous Coronary Intervention Pilot Program authorizing up to 6 general acute care hospitals licensed to perform cardiac catheterization laboratory service and meet the additional criteria to perform scheduled, elective primary percutaneous coronary intervention (PCI) on eligible patients.

SB 1058 (Alquist, 2008)

SB 1058 enacts the Medical Facility Infection Control and Prevention Act to establish standards to protect patients from exposure to pathogens in health facilities, including Methicillin-resistant Staphylococcus aureus (MRSA), to ensure they are adequate in reducing the incidence of these antibiotic-resistant infection acquired in health facilities.

SB 1260 (Runner, 2008)

SB 1260 requires the Department of Public Health (DPH) to separately identify on the license of a hospital (general acute care, acute psychiatric, or special) each supplemental service, including outpatient services, and identify the kind of services offered at each site.

AB 1083 (Perez, 2009)

AB 1083 requires all licensed general acute care, acute psychiatric and specialty hospitals to conduct a security and safety assessment at least once a year, effective July 1, 2010. A security plan must be developed based upon the assessment and annually updated. The plan must include measures to protect personnel, patients and visitors from aggressive or violent behavior. Incidents must be tracked as part of the quality assessment and improvement program.

AB 1544 (Jones, 2009)

AB 1544 establishes a state mandate that the State Department of Public Health must within 100 days approve a completed application and issue a new license to general acute care hospitals that meet certain criteria to add or modify an outpatient clinic service as a supplemental service and to have it included on the hospital's license. This legislation limits the outpatient clinic service to nonemergency primary health care in a clinical environment to patients who remain there less than 24 hours.

AB 415 (Logue, 2010)

AB 415, also referred to as the Telehealth Advancement Act of 2011, updates and defines current terminology related to telehealth and will allow patients to utilize telehealth services by giving verbal permission. Additionally it authorizes teleopthalmology and teledermatology by store and forward for Medi-Cal. This legislation revises the Telemedicine Development Act of 1996 (TDA).

SB 502 (Pavley and De Leon, 2010)

AB 502 requires all general acute care hospitals with a perinatal unit to have an infant-feeding policy that promotes breastfeeding, post that policy for the public and communicate and train perinatal staff in that policy.

AB 1863 (Gaines, 2010)

AB 1863 extends the standards and reporting deadlines for health facilities in regards to backup generator testing.

AB 1136 Safe Lifting – Hospitals (Swanson, 2011)

AB 1136, also referred to as the Hospital Patient and Health Care Worker Injury Protection Act, amends the California Occupational Safety and Health Act of 1973. It requires patient care units of general acute care hospitals to include the provision of trained lift teams in their safe patient handling policy as a part of the Injury Illness and Prevention Program (IIPP). Staff specifically trained in safe lifting techniques must be available at all times. A healthcare worker who elects not to lift, reposition or transfer a patient is exempt from disciplinary action. The legislative intent was to reduce the number of hospital workers who were sustaining injuries while lifting, moving and transferring patients. The hospital is required to provide training to health care workers on the proper use of lifting devices and equipment, the five areas most at risk during lifting and how to use lifting equipment safely. General acute care hospitals within the Department of Corrections and Rehabilitation or the State Department of Developmental Services are exempt. ❖

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APPENDIX

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A1 Methodology

The estimated economic impact includes economic output, employment, and labor income, which includes wages, salaries and benefits. The total impact includes *direct, indirect and induced effects*. *Direct* employment is the personnel hired by the department in its ongoing operations and maintenance programs, including engineers, construction workers, administrative, management, and so on. *Direct* output is the value of the services provided by the department. *Indirect* effects are those which stem from the employment and output motivated by the purchases made by the department. For example, indirect jobs are sustained by the suppliers of the office supplies and insurance purchased by a hospital. *Induced* effects are those generated by the household spending of employees whose wages are sustained by both direct and indirect spending.

Contribution analysis of an industry differs from economic impact analysis of a specific project or development to more accurately account for the inter-industry linkages of the sector under consideration. This limits the analysis to only those indirect and induced effects that can be attributed to the sector itself and eliminates double-counting which would occur if economic impact analysis were employed. It provides a more accurate estimate of the actual contribution of the sector to the regional economy.

Estimating the industry's total contribution is complicated by a lack of data. Industry revenues are published by the Economic Census at five-year intervals, the latest of which was completed in 2007. We use this data and extrapolate to 2010 by applying the rate of growth of employment calculated from the Census of Employment and Wages. The growth in employment from 2007 to 2010 was 1.74 percent. Assuming labor productivity to be constant, this implies revenues of $33.6 billion in 2010. Note that this methodology produces revenue consistent with

the reported revenues from OSHPD but that this may underestimate the total industry revenues.

Estimates for construction spending in 2010 for each county were obtained from OSHPD using the change in percentage of completion of active projects during the year.

Using these as direct output values, we estimated the indirect and induced impacts using models developed with data and software from MIG, Inc. MIG's IMPLAN system is a robust widely-used set of modeling tools that provide economic resolution from the national level down to the ZIP code level. Using multi-regional analysis, these tools allow the estimation of the contribution of hospital operations in the county where they occur and their consequent spillover impact on neighboring regions.

Our estimates for labor income and output are reported in 2010 dollars to correspond with the currency reported in the operations and construction budgets. Labor income includes payments made to wage and salary workers and to the self-employed. Employment estimates are measured on a job-count basis for both wage-and-salary workers and proprietors regardless of the number of hours worked, and are generally reported on an annual basis, i.e., the number of full and part time jobs supported in one year. ❖

A2 Description of Industry Sectors

The industry sectors used in this report are established by the North American Industry Classification System (NAICS). NAICS divides the economy into twenty sectors, and groups industries within these sectors according to production criteria. Listed below is a short description of each sector as taken from the sourcebook, *North American Industry Classification System,* published by the U.S. Office of Management and Budget (2007).

Agriculture, Forestry, Fishing and Hunting: Activities of this sector are growing crops, raising animals, harvesting timber, and harvesting fish and other animals from farms, ranches, or the animals' natural habitats.

Mining: Activities of this sector are extracting naturally-occurring mineral solids, such as coal and ore; liquid minerals, such as crude petroleum; and gases, such as natural gas; and beneficiating (e.g., crushing, screening, washing and flotation) and other preparation at the mine site, or as part of mining activity.

Utilities: Activities of this sector are generating, transmitting, and/or distributing electricity, gas, steam, and water and removing sewage through a permanent infrastructure of lines, mains, and pipes.

Construction: Activities of this sector are erecting buildings and other structures (including additions); heavy construction other than buildings; and alterations, reconstruction, installation, and maintenance and repairs.

Manufacturing: Activities of this sector are the mechanical, physical, or chemical transformation of material, substances, or components into new products.

Wholesale Trade: Activities of this sector are selling or arranging for the purchase or sale of goods for resale; capital or durable non-consumer goods; and raw and intermediate materials and supplies used in production, and providing services incidental to the sale of the merchandise.

Retail Trade: Activities of this sector are retailing merchandise generally in small quantities to the general public and providing services incidental to the sale of the merchandise.

Transportation and Warehousing: Activities of this sector are providing transportation of passengers and cargo, warehousing and storing goods, scenic and sightseeing transportation, and supporting these activities.

Information: Activities of this sector are distributing information and cultural products, providing the means to transmit or distribute these products as data or communications, and processing data.

Finance and Insurance: Activities of this sector involve the creation, liquidation, or change of ownership of financial assets (financial transactions) and/or facilitating financial transactions.

Real Estate and Rental and Leasing: Activities of this sector are renting, leasing, or otherwise allowing the use of tangible or intangible assets (except copyrighted works), and providing related services.

Professional, Scientific, and Technical Services: Activities of this sector are performing professional, scientific, and technical services for the operations of other organizations.

Management of Companies and Enterprises: Activities of this sector are the holding of securities of companies and enterprises, for the purpose of owning controlling interest or influencing their management decision, or administering, overseeing, and managing other establishments of the same company or enterprise and normally undertaking the strategic or organizational planning and decision-making of the company or enterprise.

Administrative and Support and Waste Management and Remediation Services: Activities of this sector are performing routine support activities for the day-to-day operations of other organizations, such as: office administration, hiring and placing of personnel, document preparation and similar clerical services, solicitation, collection, security and surveillance services, cleaning, and waste disposal services.

Educational Services: Activities of this sector are providing instruction and training in a wide variety of subjects. Educational services are usually delivered by teachers or instructors that explain, tell, demonstrate, supervise, and direct learning. Instruction is imparted in diverse settings, such as educational institutions, the workplace, or the home through correspondence, television, or other means.

Health Care and Social Assistance: Activities of this sector are operating or providing health care and social assistance for individuals.

Arts, Entertainment and Recreation: Activities of this sector are operating facilities or providing services to meet varied cultural, entertainment, and recreational interests of their patrons, such as: (1) producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) preserving and exhibiting objects and sites of historical, cultural, or educational interest; and (3) operating facilities or providing services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure-time interests.

Accommodation and Food Services: Activities of this sector are providing customers with lodging and/or preparing meals, snacks, and beverages for immediate consumption.

Other Services (except Public Administration): Activities of this sector are providing services not specifically provided for elsewhere in the classification system. Establishments in this sector are primarily engaged in activities, such as equipment and machinery repairing, promoting or administering religious activities, grant-making, advocacy, and providing dry-cleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services.

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A3 Occupational Requirements

Major occupational groups are aggregations used to classify workers using the 2000 Standard Occupational Classification (SOC) System. Major groups include broad descriptive categories such as production occupations, management occupations and business and financial operations occupations, as shown in Exhibit A-1 below. Within the major groups are 821 detailed occupations. Detailed occupations are differentiated according to job skills, abilities and work activities required. They are not generally industry-specific but are common to several industries.

Exhibits A-2 through A-23 provide the education, experience and training requirements for each of detailed occupations listed within each major occupational group in California.

Exhibit A-1
Aggregated Occupational Groups

SOC Code	Occupational Group
11-0000	Management occupations
13-0000	Business and financial operations occupations
15-0000	Computer and mathematical science occupations
17-0000	Architecture and engineering occupations
19-0000	Life, physical, and social science occupations
21-0000	Community and social services occupations
23-0000	Legal occupations
25-0000	Education, training, and library occupations
27-0000	Arts, design, entertainment, sports, and media occupations
29-0000	Healthcare practitioners and technical occupations
31-0000	Healthcare support occupations
33-0000	Protective service occupations
35-0000	Food preparation and serving related occupations
37-0000	Building and grounds cleaning and maintenance occupations
39-0000	Personal care and service occupations
41-0000	Sales and related occupations
43-0000	Office and administrative support occupations
45-0000	Farming, fishing, and forestry occupations
47-0000	Construction and extraction occupations
49-0000	Installation, maintenance, and repair occupations
51-0000	Production occupations
53-0000	Transportation and material moving occupations

Source: BLS

Exhibit A-2
Management Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
11-1011	Chief Executives	BA or Higher and Some Work Exp
11-1021	General and Operations Mgrs	BA or Higher and Some Work Exp
11-1031	Legislators	BA or Higher and Some Work Exp
11-2011	Advertising and Promotions Mgrs	BA or Higher and Some Work Exp
11-2021	Marketing Mgrs	BA or Higher and Some Work Exp
11-2022	Sales Mgrs	BA or Higher and Some Work Exp
11-2031	Public Relations Mgrs	BA or Higher and Some Work Exp
11-3011	Administrative Services Mgrs	BA or Higher and Some Work Exp
11-3021	Computer / Information Systems Mgrs	BA or Higher and Some Work Exp
11-3031	Financial Mgrs	BA or Higher and Some Work Exp
11-3041	Compensation and Benefits Mgrs	BA or Higher and Some Work Exp
11-3042	Training and Development Mgrs	BA or Higher and Some Work Exp
11-3049	Human Resources Mgrs, All Other	BA or Higher and Some Work Exp
11-3051	Industrial Production Mgrs	BA Degree
11-3061	Purchasing Mgrs	BA or Higher and Some Work Exp
11-3071	Transportation, Storage, and Distribution Mgrs	Work Exp in Related Occupation
11-9011	Farm, Ranch, and Other Agricultural Mgrs	BA or Higher and Some Work Exp
11-9012	Farmers and Ranchers	Long-Term On-the-Job Training
11-9021	Construction Mgrs	BA Degree
11-9031	Education Administrators, Preschool and Child Care Center/Program	BA or Higher and Some Work Exp
11-9032	Education Administrators, Elementary and Secondary School	BA or Higher and Some Work Exp
11-9033	Education Administrators, Postsecondary	BA or Higher and Some Work Exp
11-9039	Education Administrators, All Other	BA or Higher and Some Work Exp
11-9041	Engineering Mgrs	BA or Higher and Some Work Exp
11-9051	Food Service Mgrs	Work Exp in Related Occupation
11-9061	Funeral Directors	Associate Degree
11-9081	Lodging Mgrs	Work Exp in Related Occupation
11-9111	Health Services Mgrs	BA or Higher and Some Work Exp
11-9121	Natural Sciences Mgrs	BA or Higher and Some Work Exp
11-9131	Postmasters and Mail Superintendents	Work Exp in a Related Occupation
11-9141	Property, Real Estate, and Association Mgrs	BA Degree
11-9151	Social and Community Service Mgrs	BA Degree
11-9199	Mgrs, All Other	Work Exp in Related Occupation

Source: BLS

Exhibit A-3
Business and Financial Operations Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	BA or Higher and Some Work Exp
13-1021	Purchasing Agents and Buyers, Farm Products	Work Exp in Related Occupation
13-1022	Wholesale and Retail Buyers, Except Farm Products	BA Degree
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	BA Degree
13-1031	Claims Adjusters, Examiners, and Investigators	Long-Term On-the-Job Training
13-1032	Insurance Appraisers, Auto Damage	Long-Term On-the-Job Training
13-1041	Compliance Officers, Except Ag, Construction, Health and Safety, and Transportation	Long-Term On-the-Job Training
13-1051	Cost Estimators	BA Degree
13-1071	Employment, Recruitment, and Placement Specialists	BA Degree
13-1072	Compensation, Benefits, and Job Specialists	BA Degree
13-1073	Training and Development Specialists	BA Degree
13-1079	HR, Training, and Labor Relations Specialists, All Other	BA Degree
13-1081	Logisticians	BA Degree
13-1111	Management Analysts	BA or Higher and Some Work Exp
13-1121	Meeting and Convention Planners	BA Degree
13-1199	Business Operations Specialists, All Other	BA Degree
13-2011	Accountants and Auditors	BA Degree
13-2021	Appraisers and Assessors of Real Estate	Post-Secondary Vocational Education
13-2031	Budget Analysts	BA Degree
13-2041	Credit Analysts	BA Degree
13-2051	Financial Analysts	BA Degree
13-2052	Personal Financial Advisors	BA Degree
13-2053	Insurance Underwriters	BA Degree
13-2061	Financial Examiners	BA Degree
13-2071	Loan Counselors	BA Degree
13-2072	Loan Officers	BA Degree
13-2081	Tax Examiners, Collect-ors, Revenue Agents	BA Degree
13-2082	Tax Preparers	Moderate-Term On-the-Job Training
13-2099	Financial Specialists, All Other	BA Degree

Source: BLS

Exhibit A-4
Computer and Mathematical Science Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
15-1011	Computer and Information Scientists, Research	Doctoral Degree
15-1021	Computer Programmers	BA Degree
15-1031	Computer Software Engineers, Applications	BA Degree
15-1032	Computer Software Engineers, Systems Software	BA Degree
15-1041	Computer Support Specialists	Associate Degree
15-1051	Computer Systems Analysts	BA Degree
15-1061	Database Administrators	BA Degree
15-1071	Network and Computer Systems Administrators	BA Degree
15-1081	Network Systems and Data Communications Analysts	BA Degree
15-1099	Computer Specialists, All Other	Associate Degree
15-2031	Operations Research Analysts	Master's Degree
15-2041	Statisticians	Master's Degree
15-2099	Mathematical Science Occupations, All Other	Master's Degree

Source: BLS

Exhibit A-5
Architecture and Engineering Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
17-1011	Architects, Except Landscape and naval	BA Degree
17-1012	Landscape Architects	BA Degree
17-1021	Cartographers and Photogrammetrists	BA Degree
17-1022	Surveyors	BA Degree
17-2011	Aerospace Engineers	BA Degree
17-2031	Biomedical Engineers	BA Degree
17-2041	Chemical Engineers	BA Degree
17-2051	Civil Engineers	BA Degree
17-2061	Computer Hardware Engineers	BA Degree
17-2071	Electrical Engineers	BA Degree
17-2072	Electronics Engineers, Except Computer	BA Degree
17-2081	Environmental Engineers	BA Degree
17-2111	Health and Safety Engineers, Except Mining Safety Engineers, Inspectors	BA Degree
17-2112	Industrial Engineers	BA Degree
17-2131	Materials Engineers	BA Degree
17-2141	Mechanical Engineers	BA Degree
17-2161	Nuclear Engineers	BA Degree
17-2171	Petroleum Engineers	BA Degree
17-2199	Engineers, All Other	BA Degree
17-3011	Architectural and Civil Drafters	Post-Secondary Vocational Education
17-3012	Electrical and Electronics Drafters	Post-Secondary Vocational Education
17-3013	Mechanical Drafters	Post-Secondary Vocational Education
17-3019	Drafters, All Other	Post-Secondary Vocational Education
17-3021	Aerospace Engineering and Operations Technicians	Associate Degree
17-3022	Civil Engineering Technicians	Associate Degree
17-3023	Electrical and Electronic Engineering Technicians	Associate Degree
17-3024	Electro-Mechanical Technicians	Associate Degree
17-3025	Environmental Engineering Technicians	Associate Degree
17-3026	Industrial Engineering Technicians	Associate Degree
17-3027	Mechanical Engineering Technicians	Associate Degree
17-3029	Engineering Technicians, Except Drafters, All Other	Associate Degree
17-3031	Surveying and Mapping Technicians	Moderate-Term On-the-Job Training

Source: BLS

Exhibit A-6
Life, Physical and Social Science Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
19-1012	Food Scientists and Technologists	BA Degree
19-1013	Soil and Plant Scientists	BA Degree
19-1021	Biochemists and Biophysicists	Doctoral Degree
19-1022	Microbiologists	Doctoral Degree
19-1023	Zoologists and Wildlife Biologists	Master's Degree
19-1029	Biological Scientists, All Other	BA Degree
19-1031	Conservation Scientists	BA Degree
19-1032	Foresters	BA Degree
19-1042	Medical Scientists, Except Epidemiologists	Doctoral Degree
19-1099	Life Scientists, All Other	Master's Degree
19-2012	Physicists	Doctoral Degree
19-2031	Chemists	BA Degree
19-2041	Environmental Scientists and Specialists, Including Health	BA Degree
19-2042	Geoscientists, Except Hydrologists and Geographers	Master's Degree
19-2099	Physical Scientists, All Other	BA Degree
19-3011	Economists	Master's Degree
19-3021	Market Research Analysts	Master's Degree
19-3022	Survey Researchers	Master's Degree
19-3031	Clinical, Counseling, and School Psychologists	Doctoral Degree
19-3039	Psychologists, All Other	Master's Degree
19-3041	Sociologists	Master's Degree
19-3051	Urban and Regional Planners	Master's Degree
19-3099	Social Scientists and Related Workers, All Other	Master's Degree
19-4011	Agricultural and Food Science Technicians	Associate Degree
19-4021	Biological Technicians	Associate Degree
19-4031	Chemical Technicians	Associate Degree
19-4041	Geological and Petroleum Technicians	Associate Degree
19-4061	Social Science Research Assistants	Associate Degree
19-4091	Environmental Science and Protection Technicians, Including Health	Associate Degree
19-4092	Forensic Science Technicians	Associate Degree
19-4093	Forest and Conservation Technicians	Associate Degree
19-4099	Life, Physical, and Social Science Technicians, All Other	Associate Degree

Source: BLS

Exhibit A-7
Community and Social Services Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
21-1011	Substance Abuse and Behavioral Disorder Counselors	Master's Degree
21-1012	Educational, Vocational, and School Counselors	Master's Degree
21-1013	Marriage and Family Therapists	Master's Degree
21-1014	Mental Health Counselors	Master's Degree
21-1015	Rehabilitation Counselors	Master's Degree
21-1019	Counselors, All Other	Master's Degree
21-1021	Child, Family, and School Social Workers	BA Degree
21-1022	Medical and Public Health Social Workers	BA Degree
21-1023	Mental Health and Substance Abuse Social Workers	Master's Degree
21-1029	Social Workers, All Other	BA Degree
21-1091	Health Educators	Master's Degree
21-1092	Probation Officers and Correctional Treatment Specialists	BA Degree
21-1093	Social and Human Service Assistants	Moderate-Term On-the-Job Training
21-1099	Community and Social Service Specialists, All Other	BA Degree
21-2011	Clergy	BA Degree
21-2021	Directors, Religious Activities and Education	BA Degree
21-2099	Religious Workers, All Other	BA Degree

Source: BLS

Exhibit A-8
Legal Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
23-1011	Lawyers	First Professional Degree - LLD/MD
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	BA Degree or Higher and Some Work Experience
23-1022	Arbitrators, Mediators, and Conciliators	BA Degree or Higher and Some Work Experience
23-1023	Judges, Magistrate Judges, and Magistrates	BA Degree or Higher and Some Work Experience
23-2011	Paralegals and Legal Assistants	Associate Degree
23-2091	Court Reporters	Post-Secondary Vocational Education
23-2092	Law Clerks	BA Degree
23-2093	Title Examiners, Abstractors, and Searchers	Moderate-Term On-the-Job Training
23-2099	Legal Support Workers, All Other	BA Degree

Source: BLS

Exhibit A-9
Education, Training and Library Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
25-1011	Business Teachers, Postsecondary	Master's Degree
25-1021	Computer Science Teachers, Postsecondary	Master's Degree
25-1022	Mathematical Science Teachers, Postsecondary	Master's Degree
25-1032	Engineering Teachers, Postsecondary	Doctoral Degree
25-1041	Agricultural Sciences Teachers, Postsecondary	Doctoral Degree
25-1042	Biological Science Teachers, Postsecondary	Doctoral Degree
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	Doctoral Degree
25-1052	Chemistry Teachers, Postsecondary	Doctoral Degree
25-1054	Physics Teachers, Postsecondary	Doctoral Degree
25-1063	Economics Teachers, Postsecondary	Doctoral Degree
25-1065	Political Science Teachers, Postsecondary	Doctoral Degree
25-1066	Psychology Teachers, Postsecondary	Doctoral Degree
25-1067	Sociology Teachers, Postsecondary	Doctoral Degree
25-1071	Health Specialties Teachers, Postsecondary	Master's Degree
25-1072	Nursing Instructors and Teachers, Postsecondary	Master's Degree
25-1081	Education Teachers, Postsecondary	Doctoral Degree
25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	Doctoral Degree
25-1112	Law Teachers, Postsecondary	First Professional Degree - LLD/MD
25-1121	Art, Drama, and Music Teachers, Postsecondary	Master's Degree
25-1122	Communications Teachers, Postsecondary	Doctoral Degree
25-1123	English Language and Literature Teachers, Postsecondary	Master's Degree
25-1124	Foreign Language and Literature Teachers, Postsecondary	Master's Degree
25-1125	History Teachers, Postsecondary	Doctoral Degree
25-1126	Philosophy and Religion Teachers, Postsecondary	Doctoral Degree
25-1191	Graduate Teaching Assistants	BA Degree
25-1193	Recreation and Fitness Studies Teachers, Postsecondary	Master's Degree
25-1194	Vocational Education Teachers, Postsecondary	Post-Secondary Vocational Education
25-1199	Postsecondary Teachers, All Other	Master's Degree
25-2011	Preschool Teachers, Except Special Education	Post-Secondary Vocational Education
25-2012	Kindergarten Teachers, Except Special Education	BA Degree

Exhibit A-9 (Continued)

SOC Code	Occupational Description	Required Education, Experience and Training
25-2021	Elementary School Teachers, Except Special Education	BA Degree
25-2022	Middle School Teachers, Except Special and Vocational Education	BA Degree
25-2031	Secondary School Teachers, Except Special and Vocational Education	BA Degree
25-2032	Vocational Education Teachers, Secondary School	BA Degree
25-2041	Special Education Teachers, Preschool, Kindergarten, and Elementary School	BA Degree
25-2042	Special Education Teachers, Middle School	BA Degree
25-2043	Special Education Teachers, Secondary School	BA Degree
25-3011	Adult Literacy, Remedial Education, and GED Teachers/Instructors	BA Degree
25-3021	Self-Enrichment Education Teachers	Work Experience in Related Occupation
25-3099	Teachers and Instructors, All Other	BA Degree
25-4012	Curators	Master's Degree
25-4013	Museum Technicians and Conservators	BA Degree
25-4021	Librarians	Master's Degree
25-4031	Library Technicians	Short-Term On-the-Job Training
25-9031	Instructional Coordinators	Master's Degree
25-9041	Teacher Assistants	Short-Term On-the-Job Training
25-9099	Education, Training, and Library Workers, All Other	BA Degree

Source: BLS

Exhibit A-10
Arts, Design, Entertainment, Sports and Media Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
27-1011	Art Directors	BA Degree or Higher and Some Work Experience
27-1013	Fine Artists, Painters, Sculptors, and Illustrators	Long-Term On-the-Job Training
27-1014	Multi-Media Artists and Animators	BA Degree
27-1021	Commercial and Industrial Designers	BA Degree
27-1022	Fashion Designers	BA Degree
27-1023	Floral Designers	Moderate-Term On-the-Job Training
27-1024	Graphic Designers	BA Degree
27-1025	Interior Designers	BA Degree
27-1026	Merchandise Displayers and Window Trimmers	Moderate-Term On-the-Job Training
27-1027	Set and Exhibit Designers	BA Degree
27-1029	Designers, All Other	BA Degree
27-2011	Actors	Long-Term On-the-Job Training
27-2012	Producers and Directors	BA Degree or Higher and Some Work Experience
27-2021	Athletes and Sports Competitors	Long-Term On-the-Job Training
27-2022	Coaches and Scouts	Long-Term On-the-Job Training
27-2023	Umpires, Referees, and Other Sports Officials	Long-Term On-the-Job Training
27-2031	Dancers	Long-Term On-the-Job Training
27-2032	Choreographers	Related Work Experience
27-2041	Music Directors and Composers	BA Degree or Higher and Some Work Experience
27-2042	Musicians and Singers	Long-Term On-the-Job Training
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	Long-Term On-the-Job Training
27-3011	Radio and Television Announcers	Long-Term On-the-Job Training
27-3012	Public Address System and Other Announcers	Long-Term On-the-Job Training
27-3022	Reporters and Correspondents	BA Degree or Higher and Some Work Experience
27-3031	Public Relations Specialists	BA Degree
27-3041	Editors	BA Degree
27-3042	Technical Writers	BA Degree
27-3043	Writers and Authors	BA Degree
27-3091	Interpreters and Translators	Long-Term On-the-Job Training
27-3099	Media and Communication Workers, All Other	Long-Term On-the-Job Training
27-4011	Audio and Video Equipment Technicians	Long-Term On-the-Job Training
27-4012	Broadcast Technicians	Post-Secondary Vocational Education
27-4014	Sound Engineering Technicians	Post-Secondary Vocational Education
27-4021	Photographers	Long-Term On-the-Job Training
27-4031	Camera Operators	Moderate-Term On-the-Job Training
27-4032	Film and Video Editors	BA Degree
27-4099	Media and Communication Equipment Workers, Other	Moderate-Term On-the-Job Training

Source: BLS

Exhibit A-11
Healthcare Practitioners and Technical Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
29-1011	Chiropractors	First Prof Degree - LLD/MD
29-1021	Dentists, General	First Prof Degree - LLD/MD
29-1031	Dietitians and Nutritionists	BA Degree
29-1041	Optometrists	First Prof Degree - LLD/MD
29-1051	Pharmacists	First Prof Degree - LLD/MD
29-1061	Anesthesiologists	First Prof Degree - LLD/MD
29-1062	Family and General Practitioners	First Prof Degree - LLD/MD
29-1063	Internists, General	First Prof Degree - LLD/MD
29-1064	Obstetricians and Gynecologists	First Prof Degree - LLD/MD
29-1065	Pediatricians, General	First Prof Degree - LLD/MD
29-1066	Psychiatrists	First Prof Degree - LLD/MD
29-1067	Surgeons	First Prof Degree - LLD/MD
29-1069	Physicians and Surgeons, All Other	First Prof Degree - LLD/MD
29-1071	Physician Assistants	BA Degree
29-1081	Podiatrists	First Prof Degree - LLD/MD
29-1111	Registered Nurses	Associate Degree
29-1122	Occupational Therapists	Master's Degree
29-1123	Physical Therapists	Master's Degree
29-1124	Radiation Therapists	Associate Degree
29-1125	Recreational Therapists	BA Degree
29-1126	Respiratory Therapists	Associate Degree
29-1127	Speech-Language Pathologists	Master's Degree
29-1129	Therapists, All Other	BA Degree
29-1131	Veterinarians	First Prof Degree - LLD/MD
29-1199	Health Diagnosing and Treating Practitioners, All Other	Master's Degree
29-2011	Medical and Clinical Laboratory Technologists	BA Degree
29-2012	Medical and Clinical Laboratory Technicians	Associate Degree
29-2021	Dental Hygienists	Associate Degree
29-2031	Cardiovascular Technologists and Technicians	Associate Degree
29-2032	Diagnostic Medical Sonographers	Associate Degree
29-2033	Nuclear Medicine Technologists	Associate Degree
29-2034	Radiologic Technologists and Technicians	Associate Degree
29-2041	Emergency Medical Technicians and Paramedics	Post-Secondary Vocational Education
29-2051	Dietetic Technicians	Moderate-Term On-the-Job Training
29-2052	Pharmacy Technicians	Moderate-Term On-the-Job Training
29-2053	Psychiatric Technicians	Post-Secondary Vocational Education
29-2054	Respiratory Therapy Technicians	Post-Secondary Vocational Education
29-2055	Surgical Technologists	Post-Secondary Vocational Education
29-2056	Veterinary Technologists and Technicians	Associate Degree

Exhibit A-11 (Continued)

SOC Code	Occupational Description	Required Education, Experience and Training
29-2061	Licensed Practical and Licensed Vocational Nurses	Post-Secondary Vocational Education
29-2071	Medical Records and Health Information Technicians	Associate Degree
29-2081	Opticians, Dispensing	Long-Term On-the-Job Training
29-2099	Health Technologists and Technicians, All Other	Post-Secondary Vocational Education
29-9011	Occupational Health and Safety Specialists	BA Degree
29-9099	Healthcare Practitioners and Technical Workers, All Other	Post-Secondary Vocational Education

Source: BLS

Exhibit A-12
Healthcare Support Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
31-1011	Home Health Aides	Short-Term On-the-Job Training
31-1012	Nursing Aides, Orderlies, and Attendants	Short-Term On-the-Job Training
31-1013	Psychiatric Aides	Short-Term On-the-Job Training
31-2011	Occupational Therapist Assistants	Associate Degree
31-2021	Physical Therapist Assistants	Associate Degree
31-2022	Physical Therapist Aides	Short-Term On-the-Job Training
31-9011	Massage Therapists	Post-Secondary Vocational Education
31-9091	Dental Assistants	Moderate-Term On-the-Job Training
31-9092	Medical Assistants	Moderate-Term On-the-Job Training
31-9093	Medical Equipment Preparers	Short-Term On-the-Job Training
31-9094	Medical Transcriptionists	Post-Secondary Vocational Education
31-9095	Pharmacy Aides	Short-Term On-the-Job Training
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	Short-Term On-the-Job Training
31-9099	Healthcare Support Workers, All Other	Short-Term On-the-Job Training

Source: BLS

Exhibit A-13
Protective Service Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
33-1011	First-Line Supervisors/Mgrs of Correctional Officers	Work Experience in a Related Occupation
33-1012	First-Line Supervisors/Mgrs of Police and Detectives	Work Experience in a Related Occupation
33-1021	First-Line Supervisors/Mgrs of Fire Fighting and Prevention Workers	Work Experience in a Related Occupation
33-1099	First-Line Supervisors/Mgrs, Protective Service Workers, All Other	Work Experience in a Related Occupation
33-2011	Fire Fighters	Long-Term On-the-Job Training
33-3012	Correctional Officers and Jailers	Moderate-Term On-the-Job Training
33-3021	Detectives and Criminal Investigators	Work Experience in a Related Occupation
33-3041	Parking Enforcement Workers	Short-Term On-the-Job Training
33-3051	Police and Sheriff's Patrol Officers	Long-Term On-the-Job Training
33-9011	Animal Control Workers	Moderate-Term On-the-Job Training
33-9021	Private Detectives and Investigators	Work Experience in a Related Occupation
33-9032	Security Guards	Short-Term On-the-Job Training
33-9091	Crossing Guards	Short-Term On-the-Job Training
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	Short-Term On-the-Job Training
33-9099	Protective Service Workers, All Other	Short-Term On-the-Job Training

Source: BLS

Exhibit A-14
Food Preparation and Serving Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
35-1011	Chefs and Head Cooks	Post-Secondary Vocational Education
35-1012	First-Line Supervisors/ Mgrs of Food Preparation and Serving Workers	Work Experience in a Related Occupation
35-2011	Cooks, Fast Food	Short-Term On-the-Job Training
35-2012	Cooks, Institution and Cafeteria	Moderate-Term On-the-Job Training
35-2014	Cooks, Restaurant	Long-Term On-the-Job Training
35-2015	Cooks, Short Order	Short-Term On-the-Job Training
35-2021	Food Preparation Workers	Short-Term On-the-Job Training
35-3011	Bartenders	Short-Term On-the-Job Training
35-3021	Combined Food Prep and Serving Workers, Including Fast Food	Short-Term On-the-Job Training
35-3022	Counter Attendants, Cafeteria, Food Concession	Short-Term On-the-Job Training
35-3031	Waiters and Waitresses	Short-Term On-the-Job Training
35-3041	Food Servers, Nonrestaurant	Short-Term On-the-Job Training
35-9011	Dining Room / Cafeteria Attendants and Bartender Helpers	Short-Term On-the-Job Training
35-9021	Dishwashers	Short-Term On-the-Job Training
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	Short-Term On-the-Job Training
35-9099	Food Preparation and Serving Workers, All Other	Short-Term On-the-Job Training

Source: BLS

Exhibit A-15
Building and Grounds Cleaning and Maintenance Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
37-1011	First-Line Supervisors/ Managers of Housekeeping and Janitorial Workers	Work Experience in a Related Occupation
37-1012	First-Line Supervisors/ Mgrs of Landscaping, Lawn and Groundskeeping Workers	Work Experience in a Related Occupation
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Short-Term On-the-Job Training
37-2012	Maids and Housekeeping Cleaners	Short-Term On-the-Job Training
37-2021	Pest Control Workers	Moderate-Term On-the-Job Training
37-3011	Landscaping and Grounds-keeping Workers	Short-Term On-the-Job Training
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	Moderate-Term On-the-Job Training
37-3013	Tree Trimmers and Pruners	Short-Term On-the-Job Training
37-3019	Grounds Maintenance Workers, All Other	Short-Term On-the-Job Training

Source: BLS

Exhibit A-16
Personal Care and Service Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
39-1011	Gaming Supervisors	Post-Secondary Vocational Education
39-1012	Slot Key Persons	Post-Secondary Vocational Education
39-1021	First-Line Supervisors/ Managers of Personal Service Workers	Work Experience in a Related Occupation
39-2011	Animal Trainers	Moderate-Term On-the-Job Training
39-2021	Nonfarm Animal Caretakers	Short-Term On-the-Job Training
39-3011	Gaming Dealers	Post-Secondary Vocational Education
39-3012	Gaming and Sports Book Writers and Runners	Post-Secondary Vocational Education
39-3019	Gaming Service Workers, All Other	Moderate-Term On-the-Job Training
39-3021	Motion Picture Projectionists	Short-Term On-the-Job Training
39-3031	Ushers, Lobby Attendants, and Ticket Takers	Short-Term On-the-Job Training
39-3091	Amusement and Recreation Attendants	Short-Term On-the-Job Training
39-3092	Costume Attendants	Short-Term On-the-Job Training
39-3093	Locker Room, Coatroom, and Dressing Room Attendants	Short-Term On-the-Job Training
39-3099	Entertainment Attendants and Related Workers, All Other	Short-Term On-the-Job Training
39-4021	Funeral Attendants	Short-Term On-the-Job Training
39-5011	Barbers	Post-Secondary Vocational Education
39-5012	Hairdressers, Hairstylists, and Cosmetologists	Post-Secondary Vocational Education
39-5092	Manicurists and Pedicurists	Post-Secondary Vocational Education
39-5093	Shampooers	Short-Term On-the-Job Training
39-5094	Skin Care Specialists	Post-Secondary Vocational Education
39-6011	Baggage Porters, Bellhops	Short-Term On-the-Job Training
39-6012	Concierges	Moderate-Term On-the-Job Training
39-6021	Tour Guides and Escorts	Moderate-Term On-the-Job Training
39-6031	Flight Attendants	Long-Term On-the-Job Training
39-6032	Transportation Attendants, Except Flight Attendants and Baggage Porters	Short-Term On-the-Job Training
39-9011	Child Care Workers	Short-Term On-the-Job Training
39-9021	Personal and Home Care Aides	Short-Term On-the-Job Training
39-9031	Fitness Trainers and Aerobics Instructors	Post-Secondary Vocational Education
39-9032	Recreation Workers	BA Degree
39-9041	Residential Advisors	Moderate-Term On-the-Job Training
39-9099	Personal Care and Service Workers, All Other	Short-Term On-the-Job Training

Source: BLS

Exhibit A-17
Sales and Related Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
41-1011	First-Line Supervisors/Mgrs of Retail Sales Workers	Work Experience in a Related Occupation
41-1012	First-Line Supervisors/Mgrs of Non-Retail Sales Workers	Work Experience in a Related Occupation
41-2011	Cashiers	Short-Term On-the-Job Training
41-2012	Gaming Change Persons and Booth Cashiers	Short-Term On-the-Job Training
41-2021	Counter and Rental Clerks	Short-Term On-the-Job Training
41-2022	Parts Salespersons	Moderate-Term On-the-Job Training
41-2031	Retail Salespersons	Short-Term On-the-Job Training
41-3011	Advertising Sales Agents	Moderate-Term On-the-Job Training
41-3021	Insurance Sales Agents	Associate Degree
41-3031	Securities, Commodities, and Financial Services Sales Agents	BA Degree
41-3041	Travel Agents	Post-Secondary Vocational Education
41-3099	Sales Representatives, Services, All Other	Moderate-Term On-the-Job Training
41-4011	Sales Reps, Wholesale and Manufacturing, Technical and Scientific Products	Moderate-Term On-the-Job Training
41-4012	Sales Reps, Wholesale and Manufacturing, Except Technical and Scientific Products	Moderate-Term On-the-Job Training
41-9011	Demonstrators and Product Promoters	Moderate-Term On-the-Job Training
41-9021	Real Estate Brokers	Work Experience in a Related Occupation
41-9022	Real Estate Sales Agents	Post-Secondary Vocational Education
41-9031	Sales Engineers	BA Degree
41-9041	Telemarketers	Short-Term On-the-Job Training
41-9091	Door-To-Door Sales Workers, News and Street Vendors, and Related	Short-Term On-the-Job Training
41-9099	Sales and Related Workers, All Other	Moderate-Term On-the-Job Training

Source: BLS

Exhibit A-18
Office and Administrative Support Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
43-1011	First-Line Supervisors/Mgrs of Office and Administrative Support Workers	Work Experience in a Related Occupation
43-2011	Switchboard Operators, Including Answering Service	Short-Term On-the-Job Training
43-2021	Telephone Operators	Short-Term On-the-Job Training
43-3011	Bill and Account Collectors	Short-Term On-the-Job Training
43-3021	Billing and Posting Clerks and Machine Operators	Moderate-Term On-the-Job Training
43-3031	Bookkeeping, Accounting, and Auditing Clerks	Moderate-Term On-the-Job Training
43-3041	Gaming Cage Workers	Short-Term On-the-Job Training
43-3051	Payroll and Timekeeping Clerks	Moderate-Term On-the-Job Training
43-3061	Procurement Clerks	Short-Term On-the-Job Training
43-3071	Tellers	Short-Term On-the-Job Training
43-4011	Brokerage Clerks	Moderate-Term On-the-Job Training
43-4031	Court, Municipal, and License Clerks	Short-Term On-the-Job Training
43-4041	Credit Authorizers, Checkers, and Clerks	Short-Term On-the-Job Training
43-4051	Customer Service Representatives	Moderate-Term On-the-Job Training
43-4061	Eligibility Interviewers, Government Programs	Moderate-Term On-the-Job Training
43-4071	File Clerks	Short-Term On-the-Job Training
43-4081	Hotel, Motel, and Resort Desk Clerks	Short-Term On-the-Job Training
43-4111	Interviewers, Except Eligibility and Loan	Short-Term On-the-Job Training
43-4121	Library Assistants, Clerical	Short-Term On-the-Job Training
43-4131	Loan Interviewers and Clerks	Short-Term On-the-Job Training
43-4141	New Accounts Clerks	Related Work Experience
43-4151	Order Clerks	Short-Term On-the-Job Training
43-4161	Human Resources Assistants, Except Payroll	Short-Term On-the-Job Training
43-4171	Receptionists and Information Clerks	Short-Term On-the-Job Training
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	Short-Term On-the-Job Training
43-4199	Information and Record Clerks, All Other	Short-Term On-the-Job Training
43-5011	Cargo and Freight Agents	Moderate-Term On-the-Job Training
43-5021	Couriers and Messengers	Short-Term On-the-Job Training
43-5031	Police, Fire, and Ambulance Dispatchers	Moderate-Term On-the-Job Training
43-5032	Dispatchers, Except Police, Fire, and Ambulance	Moderate-Term On-the-Job Training
43-5041	Meter Readers, Utilities	Short-Term On-the-Job Training
43-5051	Postal Service Clerks	Short-Term On-the-Job Training
43-5052	Postal Service Mail Carriers	Short-Term On-the-Job Training
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	Short-Term On-the-Job Training
43-5061	Production, Planning, and Expediting Clerks	Short-Term On-the-Job Training
43-5071	Shipping, Receiving, and Traffic Clerks	Short-Term On-the-Job Training
43-5081	Stock Clerks and Order Fillers	Short-Term On-the-Job Training
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	Short-Term On-the-Job Training
43-6011	Executive Secretaries and Administrative Assistants	Moderate-Term On-the-Job Training
43-6012	Legal Secretaries	Post-Secondary Vocational
43-6013	Medical Secretaries	Post-Secondary Vocational
43-6014	Secretaries, Except Legal, Medical, and Executive	Moderate-Term On-the-Job Training
43-9011	Computer Operators	Moderate-Term On-the-Job Training
43-9021	Data Entry Keyers	Moderate-Term On-the-Job Training
43-9022	Word Processors and Typists	Moderate-Term On-the-Job Training
43-9031	Desktop Publishers	Post-Secondary Vocational
43-9041	Insurance Claims and Policy Processing Clerks	Moderate-Term On-the-Job Training
43-9051	Mail Clerks and Mail Machine Operators	Short-Term On-the-Job Training
43-9061	Office Clerks, General	Short-Term On-the-Job Training
43-9071	Office Machine Operators, Except Computer	Short-Term On-the-Job Training
43-9081	Proofreaders and Copy Markers	Moderate-Term On-the-Job Training
43-9111	Statistical Assistants	Moderate-Term On-the-Job Training
43-9199	Office and Administrative Support Workers, All Other	Moderate-Term On-the-Job Training

Source: BLS

Exhibit A-19
Farming, Fishing and Forestry Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
45-1011	First-Line Supervisors/Mgrs of Farming, Fishing, and Forestry Workers	Work Experience in a Related Occupation
45-2011	Agricultural Inspectors	Related Work Experience
45-2041	Graders and Sorters, Agricultural Products	Work Experience in a Related Occupation
45-2091	Agricultural Equipment Operators	Moderate-Term On-the-Job Training
45-2092	Farmworkers and Laborers, Crop, Nursery, Greenhouse	Short-Term On-the-Job Training
45-2093	Farmworkers, Farm and Ranch Animals	Short-Term On-the-Job Training
45-2099	Agricultural Workers, All Other	Short-Term On-the-Job Training
45-4011	Forest and Conservation Workers	Moderate-Term On-the-Job Training
45-4022	Logging Equipment Operators	Moderate-Term On-the-Job Training

Source: BLS

Exhibit A-20
Construction and Extraction Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
47-1011	First-Line Supervisors/Mgrs of Construction Trades and Extraction Workers	Work Experience in a Related Occupation
47-2021	Brickmasons and Blockmasons	Long-Term On-the-Job Training
47-2022	Stonemasons	Long-Term On-the-Job Training
47-2031	Carpenters	Long-Term On-the-Job Training
47-2041	Carpet Installers	Moderate-Term On-the-Job Training
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	Moderate-Term On-the-Job Training
47-2043	Floor Sanders and Finishers	Moderate-Term On-the-Job Training
47-2044	Tile and Marble Setters	Long-Term On-the-Job Training
47-2051	Cement Masons and Concrete Finishers	Long-Term On-the-Job Training
47-2053	Terrazzo Workers and Finishers	Moderate-Term On-the-Job Training
47-2061	Construction Laborers	Moderate-Term On-the-Job Training
47-2071	Paving, Surfacing, and Tamping Equipment Operators	Moderate-Term On-the-Job Training
47-2073	Operating Engineers and Other Construction Equipment Operators	Moderate-Term On-the-Job Training
47-2081	Drywall and Ceiling Tile Installers	Moderate-Term On-the-Job Training
47-2082	Tapers	Moderate-Term On-the-Job Training
47-2111	Electricians	Long-Term On-the-Job Training
47-2121	Glaziers	Long-Term On-the-Job Training
47-2131	Insulation Workers, Floor, Ceiling, and Wall	Moderate-Term On-the-Job Training
47-2132	Insulation Workers, Mechanical	Moderate-Term On-the-Job Training
47-2141	Painters, Construction and Maintenance	Moderate-Term On-the-Job Training
47-2142	Paperhangers	Moderate-Term On-the-Job Training
47-2151	Pipelayers	Moderate-Term On-the-Job Training
47-2152	Plumbers, Pipefitters, and Steamfitters	Long-Term On-the-Job Training
47-2161	Plasterers and Stucco Masons	Long-Term On-the-Job Training
47-2171	Reinforcing Iron and Rebar Workers	Long-Term On-the-Job Training
47-2181	Roofers	Moderate-Term On-the-Job Training
47-2211	Sheet Metal Workers	Moderate-Term On-the-Job Training
47-2221	Structural Iron and Steel Workers	Long-Term On-the-Job Training
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	Short-Term On-the-Job Training
47-3012	Helpers--Carpenters	Short-Term On-the-Job Training
47-3013	Helpers--Electricians	Short-Term On-the-Job Training
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	Short-Term On-the-Job Training

Exhibit A-20 (Continued)

SOC Code	Occupational Description	Required Education, Experience and Training
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	Short-Term On-the-Job Training
47-3016	Helpers--Roofers	Short-Term On-the-Job Training
47-3019	Helpers, Construction Trades, All Other	Short-Term On-the-Job Training
47-4011	Construction and Building Inspectors	Work Experience in a Related Occupation
47-4021	Elevator Installers and Repairers	Long-Term On-the-Job Training
47-4031	Fence Erectors	Moderate-Term On-the-Job Training
47-4041	Hazardous Materials Removal Workers	Moderate-Term On-the-Job Training
47-4051	Highway Maintenance Workers	Moderate-Term On-the-Job Training
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	Moderate-Term On-the-Job Training
47-4099	Construction and Related Workers, All Other	Moderate-Term On-the-Job Training
47-5011	Derrick Operators, Oil and Gas	Moderate-Term On-the-Job Training
47-5012	Rotary Drill Operators, Oil, Gas	Moderate-Term On-the-Job Training
47-5021	Earth Drillers, Except Oil and Gas	Moderate-Term On-the-Job Training
47-5071	Roustabouts, Oil and Gas	Moderate-Term On-the-Job Training
47-5081	Helpers--Extraction Workers	Short-Term On-the-Job Training

Source: BLS

Exhibit A-21
Installation, Maintenance and Repair Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
49-1011	First-Line Supervisors/Mgrs of Mechanics, Installers, and Repairers	Work Experience in a Related Occupation
49-2011	Computer, Automated Teller, and Office Machine Repairers	Post-Secondary Vocational Education
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	Long-Term On-the-Job Training
49-2091	Avionics Technicians	Post-Secondary Vocational Education
49-2092	Electric Motor, Power Tool, and Related Repairers	Post-Secondary Vocational Education
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	Post-Secondary Vocational Education
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	Post-Secondary Vocational Education
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	Post-Secondary Vocational Education
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	Post-Secondary Vocational Education
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	Post-Secondary Vocational Education
49-2098	Security and Fire Alarm Systems Installers	Post-Secondary Vocational Education
49-3011	Aircraft Mechanics and Service Technicians	Post-Secondary Vocational Education
49-3021	Automotive Body and Related Repairers	Long-Term On-the-Job Training
49-3022	Automotive Glass Installers and Repairers	Long-Term On-the-Job Training
49-3023	Automotive Service Technicians and Mechanics	Post-Secondary Vocational Education
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	Post-Secondary Vocational Education
49-3041	Farm Equipment Mechanics	Post-Secondary Vocational Education
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	Post-Secondary Vocational Education
49-3043	Rail Car Repairers	Long-Term On-the-Job Training
49-3051	Motorboat Mechanics	Long-Term On-the-Job Training
49-3052	Motorcycle Mechanics	Long-Term On-the-Job Training
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	Moderate-Term On-the-Job Training
49-3091	Bicycle Repairers	Moderate-Term On-the-Job Training
49-3092	Recreational Vehicle Service Technicians	Long-Term On-the-Job Training
49-3093	Tire Repairers and Changers	Short-Term On-the-Job Training
49-9011	Mechanical Door Repairers	Moderate-Term On-the-Job Training
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	Moderate-Term On-the-Job Training
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Long-Term On-the-Job Training
49-9031	Home Appliance Repairers	Long-Term On-the-Job Training
49-9041	Industrial Machinery Mechanics	Long-Term On-the-Job Training
49-9042	Maintenance and Repair Workers, General	Long-Term On-the-Job Training
49-9043	Maintenance Workers, Machinery	Long-Term On-the-Job Training
49-9044	Millwrights	Long-Term On-the-Job Training
49-9051	Electrical Power-Line Installers and Repairers	Long-Term On-the-Job Training
49-9052	Telecommunications Line Installers and Repairers	Long-Term On-the-Job Training
49-9062	Medical Equipment Repairers	Moderate-Term On-the-Job Training
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	Moderate-Term On-the-Job Training
49-9094	Locksmiths and Safe Repairers	Moderate-Term On-the-Job Training
49-9098	Helpers--Installation, Maintenance, and Repair Workers	Short-Term On-the-Job Training
49-9099	Installation, Maintenance, and Repair Workers, All Other	Moderate-Term On-the-Job Training

Source: BLS

Exhibit A-22
Production Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
51-1011	First-Line Supervisors/Mgrs of Production and Operating Workers	Work Experience in a Related Occupation
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	Long-Term On-the-Job Training
51-2021	Coil Winders, Tapers, and Finishers	Short-Term On-the-Job Training
51-2022	Electrical and Electronic Equipment Assemblers	Short-Term On-the-Job Training
51-2023	Electromechanical Equipment Assemblers	Short-Term On-the-Job Training
51-2031	Engine and Other Machine Assemblers	Short-Term On-the-Job Training
51-2041	Structural Metal Fabricators and Fitters	Moderate-Term On-the-Job Training
51-2091	Fiberglass Laminators and Fabricators	Moderate-Term On-the-Job Training
51-2092	Team Assemblers	Moderate-Term On-the-Job Training
51-2099	Assemblers and Fabricators, All Other	Moderate-Term On-the-Job Training
51-3011	Bakers	Long-Term On-the-Job Training
51-3021	Butchers and Meat Cutters	Long-Term On-the-Job Training
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	Short-Term On-the-Job Training
51-3023	Slaughterers and Meat Packers	Moderate-Term On-the-Job Training
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	Short-Term On-the-Job Training
51-3092	Food Batchmakers	Short-Term On-the-Job Training
51-3093	Food Cooking Machine Operators and Tenders	Short-Term On-the-Job Training
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	Moderate-Term On-the-Job Training
51-4012	Numerical Tool and Process Control Programmers	Long-Term On-the-Job Training
51-4021	Extruding and Drawing Machine Setters, Operators, Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training

Exhibit A-22 (Continued)

SOC Code	Occupational Description	Required Education, Experience and Training
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4041	Machinists	Long-Term On-the-Job Training
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4111	Tool and Die Makers	Long-Term On-the-Job Training
51-4121	Welders, Cutters, Solderers, and Brazers	Post-Secondary Vocational Education
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	Moderate-Term On-the-Job Training
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	Moderate-Term On-the-Job Training
51-4194	Tool Grinders, Filers, and Sharpeners	Moderate-Term On-the-Job Training
51-4199	Metal Workers and Plastic Workers, All Other	Moderate-Term On-the-Job Training
51-5011	Bindery Workers	Moderate-Term On-the-Job Training
51-5021	Job Printers	Long-Term On-the-Job Training
51-5022	Prepress Technicians and Workers	Long-Term On-the-Job Training
51-5023	Printing Machine Operators	Moderate-Term On-the-Job Training
51-6011	Laundry and Dry-Cleaning Workers	Moderate-Term On-the-Job Training
51-6021	Pressers, Textile, Garment, and Related Materials	Short-Term On-the-Job Training
51-6031	Sewing Machine Operators	Moderate-Term On-the-Job Training
51-6051	Sewers, Hand	Short-Term On-the-Job Training
51-6052	Tailors, Dressmakers, and Custom Sewers	Long-Term On-the-Job Training
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	Moderate-Term On-the-Job Training
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	Moderate-Term On-the-Job Training
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	Long-Term On-the-Job Training
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	Moderate-Term On-the-Job Training
51-6092	Fabric and Apparel Patternmakers	Long-Term On-the-Job Training
51-6093	Upholsterers	Long-Term On-the-Job Training
51-6099	Textile, Apparel, and Furnishings Workers, All Other	Short-Term On-the-Job Training

Exhibit A-22 (Continued)

SOC Code	Occupational Description	Required Education, Experience and Training
51-7011	Cabinetmakers and Bench Carpenters	Long-Term On-the-Job Training
51-7021	Furniture Finishers	Long-Term On-the-Job Training
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	Moderate-Term On-the-Job Training
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	Moderate-Term On-the-Job Training
51-7099	Woodworkers, All Other	Moderate-Term On-the-Job Training
51-8012	Power Distributors and Dispatchers	Long-Term On-the-Job Training
51-8013	Power Plant Operators	Long-Term On-the-Job Training
51-8021	Stationary Engineers and Boiler Operators	Long-Term On-the-Job Training
51-8031	Water and Liquid Waste Treatment Plant and System Operators	Long-Term On-the-Job Training
51-8091	Chemical Plant and System Operators	Long-Term On-the-Job Training
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	Long-Term On-the-Job Training
51-9011	Chemical Equipment Operators and Tenders	Moderate-Term On-the-Job Training
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	Moderate-Term On-the-Job Training
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	Moderate-Term On-the-Job Training
51-9022	Grinding and Polishing Workers, Hand	Moderate-Term On-the-Job Training
51-9023	Mixing and Blending Machine Setters, Operators, Tenders	Moderate-Term On-the-Job Training
51-9031	Cutters and Trimmers, Hand	Short-Term On-the-Job Training
51-9032	Cutting and Slicing Machine Setters, Operators, Tenders	Moderate-Term On-the-Job Training
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	Moderate-Term On-the-Job Training
51-9051	Furnace, Kiln, Oven, Drier, Kettle Operators, Tenders	Moderate-Term On-the-Job Training
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	Moderate-Term On-the-Job Training
51-9071	Jewelers and Precious Stone and Metal Workers	Post-Secondary Vocational Education
51-9081	Dental Laboratory Technicians	Long-Term On-the-Job Training
51-9082	Medical Appliance Technicians	Long-Term On-the-Job Training
51-9083	Ophthalmic Laboratory Technicians	Moderate-Term On-the-Job Training
51-9111	Packaging and Filling Machine Operators, Tenders	Short-Term On-the-Job Training
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	Moderate-Term On-the-Job Training
51-9122	Painters, Transportation Equipment	Moderate-Term On-the-Job Training
51-9123	Painting, Coating, and Decorating Workers	Short-Term On-the-Job Training
51-9131	Photographic Process Workers	Moderate-Term On-the-Job Training
51-9132	Photographic Processing Machine Operators	Short-Term On-the-Job Training
51-9141	Semiconductor Processors	Associate Degree
51-9191	Cementing and Gluing Machine Operators, Tenders	Moderate-Term On-the-Job Training
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	Moderate-Term On-the-Job Training
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	Moderate-Term On-the-Job Training
51-9196	Paper Goods Machine Setters, Operators, Tenders	Moderate-Term On-the-Job Training
51-9198	Helpers--Production Workers	Short-Term On-the-Job Training
51-9199	Production Workers, All Other	Moderate-Term On-the-Job Training

Source: BLS

Exhibit A-23
Transportation and Material Moving Occupations

SOC Code	Occupational Description	Required Education, Experience and Training
53-1021	First-Line Supervisors/Mgrs of Helpers, Laborers, and Material Movers, Hand	Work Experience in a Related Occupation
53-1031	First-Line Supervisors/Mgrs of Transport and Material-Moving Machine and Vehicle Operators	Work Experience in a Related Occupation
53-2011	Airline Pilots, Copilots, and Flight Engineers	BA Degree
53-2012	Commercial Pilots	Post-Secondary Vocational
53-2021	Air Traffic Controllers	Long-Term On-the-Job Training
53-3011	Ambulance Drivers and Attendants, Except EMTs	Moderate-Term On-the-Job Training
53-3021	Bus Drivers, Transit, Intercity	Moderate-Term OJT
53-3022	Bus Drivers, School	Short-Term On-the-Job Training
53-3031	Driver/Sales Workers	Short-Term On-the-Job Training
53-3032	Truck Drivers, Heavy and Tractor-Trailer	Moderate-Term On-the-Job Training
53-3033	Truck Drivers, Light or Delivery Services	Short-Term On-the-Job Training
53-3041	Taxi Drivers and Chauffeurs	Short-Term On-the-Job Training
53-3099	Motor Vehicle Operators, All Other	Short-Term On-the-Job Training
53-4011	Locomotive Engineers	Related Work Experience
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	Work Experience in a Related Occupation
53-4021	Railroad Brake, Signal, and Switch Operators	Work Experience in a Related Occupation
53-4031	Railroad Conductors and Yardmasters	Work Experience in a Related Occupation
53-5011	Sailors and Marine Oilers	Short-Term On-the-Job Training
53-5021	Captains, Mates, and Pilots of Water Vessels	Work Experience in a Related Occupation
53-6021	Parking Lot Attendants	Short-Term On-the-Job Training
53-6031	Service Station Attendants	Short-Term On-the-Job Training
53-6051	Transportation Inspectors	Related Work Experience
53-6099	Transportation Workers, All Other	Short-Term On-the-Job Training
53-7011	Conveyor Operators and Tenders	Short-Term On-the-Job Training
53-7021	Crane and Tower Operators	Moderate-Term OJT
53-7032	Excavating and Loading Machine and Dragline Operators	Moderate-Term On-the-Job Training
53-7051	Industrial Truck and Tractor Operators	Short-Term On-the-Job Training
53-7061	Cleaners of Vehicles and Equipment	Short-Term On-the-Job Training
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	Short-Term On-the-Job Training
53-7063	Machine Feeders and Offbearers	Short-Term On-the-Job Training
53-7064	Packers and Packagers, Hand	Short-Term On-the-Job Training
53-7081	Refuse and Recyclable Material Collectors	Short-Term On-the-Job Training
53-7121	Tank Car, Truck, and Ship Loaders	Moderate-Term On-the-Job Training
53-7199	Material Moving Workers, All Other	Short-Term On-the-Job Training

Source: BLS

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