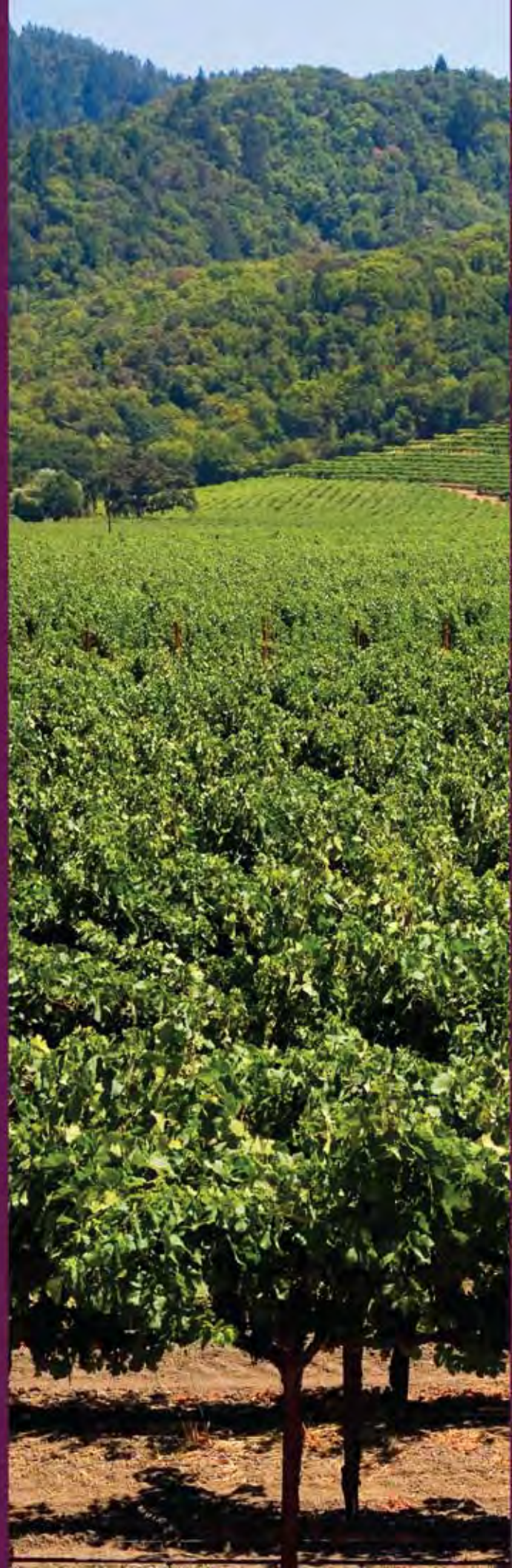


ECONOMIC IMPACT REPORT for Sonoma Valley Hospital



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Executive Summary

The purpose of this report, commissioned by the Sonoma Valley Hospital (SVH), is to estimate the economic impact of SVH spending in Sonoma County. With the exception of some construction and charity estimates, all data reported are in 2014 dollars. Key findings include:

- SVH and SVH-related spending in Sonoma County generates **\$103 million in spending annually and 658 jobs.**

Impact Type	Employment	Labor Income	Output
Hospital Direct Effect	252	\$24,601,980	\$45,379,435
Construction Direct Effect	94.8	\$6,172,448	\$16,731,887
Indirect Effect	108.8	\$4,985,132	\$15,634,835
Induced Effect	203.1	\$8,621,473	\$25,963,278
Total Effect	658.7	\$44,381,033	\$103,709,435

SVH provides a wide variety of employment opportunities, from highly-skilled positions to jobs for less-skilled workers.

- The wages and salaries for these healthcare professionals are twice the average wages and salaries in the county.
- The projected growth rate for healthcare jobs in Sonoma County from 2010-2020 is higher in healthcare than for other occupations. Overall, the State projects a 13.7 per cent growth in employment for Sonoma County. However, the respective growth in healthcare jobs is 16.4.
- Employment in the healthcare industry is more stable and less cyclical – during recessions, fewer jobs are lost in healthcare than in many other sectors. Hospitals and healthcare organizations support jobs requiring a wide variety of education and experience levels, not just those intended for skilled professionals with advanced training and education.
- In addition to the economic ‘engine’ provided by SVH, the hospital provided an additional \$1.5 million in unreimbursed and charity care during the 2012-2014 fiscal years.
- SVH also generated a portion of the region’s construction jobs (94.8) in addition to generating \$16.7 million in economic activity within the construction industry during the 2013 fiscal year. (Construction impacts are averaged over three years)

Introduction and Overview

The purpose of this report, commissioned by Sonoma Valley Hospital (SVH) in the winter of 2014, is to estimate the economic impact of the hospital and its related spending in Sonoma County. Virtually all of the data used in this report is publicly available and vetted through California State audits. In a small number of cases where data was not publicly available, Sonoma Valley Hospital provided specific data. The report uses standard techniques (i.e., input-output analysis and *IMPLAN*) to estimate these impacts using government-generated data for the Sonoma County. This report begins with a summary of all the economic impacts of hospitals and related spending followed by a more detailed discussion of how these estimates were derived. With the exception of some construction and charity spending, all data reported is in 2014 dollars.

Economic Impact of Sonoma Valley Hospital

Table 1 summarizes the analysis contained in this report. Overall, including recent construction spending, **the hospital generates \$103 million in spending annually and 658 jobs.**

Table 1 Economic Impact of SVH Spending in Sonoma County: 2013¹
(Adjust to 2014 dollars)

Impact Type	Employment	Labor Income	Output
Hospital Direct Effect	252	\$24,601,980	\$45,379,435
Construction Direct Effect	94.8	\$6,172,448	\$16,731,887
Indirect Effect	108.8	\$4,985,132	\$15,634,835
Induced Effect	203.1	\$8,621,473	\$25,963,278
Total Effect	658.7	\$44,381,033	\$103,709,435

The total economic impact can be broken down into three individual components. The *direct* spending of \$45.3 million represents the amount of dollars that go directly through the hospital to pay salaries and to, buy equipment and supplies. In addition, recent construction has generated an average of \$16.7 million in direct spending. In addition to this direct spending, there are *indirect* and *induced* impacts,

¹ The employment total estimated is based on IMPLAN's input-output model; the current actual number of SVH full-time employees is 299.

often referred to as “*multiplier effects*,” since hospital spending also generates a significant number of other jobs and economic activities in the region. Without the direct hospital spending, other economic sectors of Sonoma County would shrink.

An Overview of Sonoma Valley Hospital

Sonoma Valley Hospital is an 83-bed, full-service acute care district hospital located in the heart of the City of Sonoma. As part of the Sonoma Valley Health Care District, the hospital is supported primarily by revenues from services, augmented by taxpayer support in the form of a parcel tax, and charitable bequests and donations. The hospital serves the Sonoma Valley with both inpatient and outpatient services. Hospital services include a wide spectrum of healthcare needs and medical treatment covers all but the most specialized issues.

Services provided at SVH include²:

Emergency Department

Inpatient:

Surgery Center

Birthing services

Skilled Nursing Facility

End-of-life services (Hospice and Palliative care)

Infection isolation room

Outpatient:

Breast cancer screening/mammograms

Home Health Care

Physical rehabilitation

Women's Health Center

Wound Care services

Laboratory services

Cardiopulmonary services

² <http://health.usnews.com/best-hospitals/area/ca/sonoma-valley-hospital-6933520/details>

Nutrition Counseling

Patient/Family Support Services:

Help with government services

Community Outreach:

Health screenings

Imaging Services (Diagnostic and Therapeutic):

CT scanner

Diagnostic radioisotope facility

Magnetic resonance imaging (MRI)

Occupational Health

Telemedicine

Employment

There are a wide variety of healthcare jobs in Sonoma County. Table 2 presents wage and salary data for Sonoma County from the California Employment Development Department (EDD). Healthcare practitioners and technical professionals earn, on average, \$39.77 an hour or \$82,720 per year in salary. This is almost double the average wages (\$23.59) and salaries (\$49,060) for all occupations in Sonoma County as reported by EDD. Note that these wages and benefits for all health care jobs are slightly different than those for hospital jobs alone reported in Table 1.

As shown in Table 3, the projected growth rate for healthcare jobs in Sonoma County from 2010-2020 will be somewhat higher than all other occupations. Overall, the State projects a 13.7 per cent growth in employment for Sonoma County. However, the respective growth in healthcare jobs is projected to be 16.4 per cent. Moreover, employment in the healthcare industry tends to be more stable and less cyclical – during recessions fewer jobs are lost in healthcare than in many other sectors. Figure 1 illustrates how healthcare jobs have not only grown faster than all other jobs in Sonoma County over the last 14 years, but have also been much more consistent in their growth over this time period. Healthcare supports jobs requiring a wide variety of education and experience levels, not just those for highly skilled and educated professionals.

Table 2 Health Care Wages and Salaries in Sonoma County: 2013
(Source: CA Employment Development Dept.)

Occupation Title	Total Employed	Mean Hourly Wage	Annual Mean Salary
All occupations		\$23.59	\$49,060
Healthcare Practitioners and Technical Occupations	10,410	\$39.77	\$82,720
Chiropractors	30	\$39.75	\$82,670
Dentists, General	110	\$89.18	\$185,490
Dietitians and Nutritionists	110	\$35.81	\$74,490
Pharmacists	240	\$64.34	\$133,830
Family and General Practitioners	140	\$72.96	\$151,750
Internists, General	70	\$118.57	\$246,620
Surgeons	70	\$118.83	\$247,170
Physicians and Surgeons, All Other	80	\$111.63	\$232,180
Physician Assistants	70	\$50.82	\$105,700
Occupational Therapists	110	\$40.47	\$84,180
Physical Therapists	250	\$41.42	\$86,160
Recreational Therapists	30	\$35.87	\$74,600
Respiratory Therapists	130	\$35.50	\$73,840
Speech-Language Pathologists	110	\$33.24	\$69,150
Veterinarians	140	\$51.28	\$106,660
Registered Nurses	3,580	\$48.36	\$100,600
Nurse Practitioners	90	\$50.63	\$105,320
Audiologists	**	\$41.65	\$86,620
Medical and Clinical Laboratory Technologists	90	\$36.22	\$75,340
Medical and Clinical Laboratory Technicians	250	\$21.43	\$44,580
Dental Hygienists	300	\$49.13	\$102,200
Cardiovascular Technologists and Technicians	80	\$33.97	\$70,650
Diagnostic Medical Sonographers	40	\$46.68	\$97,090
Radiologic Technologists	140	\$37.39	\$77,780
Emergency Medical Technicians and Paramedics	1,140	\$17.67	\$36,750
Dietetic Technicians	100	\$17.47	\$36,350
Pharmacy Technicians	400	\$21.13	\$43,950
Psychiatric Technicians	560	\$23.54	\$48,950
Surgical Technologists	250	\$27.52	\$57,230
Veterinary Technologists and Technicians	200	\$18.13	\$37,700
Licensed Practical and Licensed Vocational Nurses	520	\$25.85	\$53,760
Medical Records and Health Information Technicians	160	\$19.76	\$41,100
Opticians, Dispensing	100	\$19.09	\$39,710
Health Technologists and Technicians, All Other	240	\$24.14	\$50,210
Occupational Health and Safety Specialists	60	\$35.77	\$74,390
Healthcare Support Occupations	5,110	\$16.95	\$35,250
Home Health Aides	1,010	\$11.09	\$23,060
Nursing Assistants	1,030	\$15.79	\$32,830
Orderlies	40	\$20.96	\$43,600
Physical Therapist Assistants	50	\$27.12	\$56,400
Massage Therapists	330	\$20.20	\$42,020
Dental Assistants	710	\$21.57	\$44,860
Medical Assistants	930	\$19.53	\$40,630
Medical Equipment Preparers	70	\$21.38	\$44,470
Pharmacy Aides	190	\$15.83	\$32,920
Veterinary Assistants and Laboratory Animal Caretake	110	\$14.17	\$29,480
Phlebotomists	200	\$18.65	\$38,780
Healthcare Support Workers, All Other	**	\$20.38	\$42,400

*Table 3 Employment Projections for Sonoma County
(Source: CA Employment Development Dept.)*

Industry Title	Annual Average Employment		Employment Change	
	2010	2020	Numerical	Percent
Total Employment	195,700	222,600	26,900	13.7
Health Care	18,300	21,300	3,000	16.4

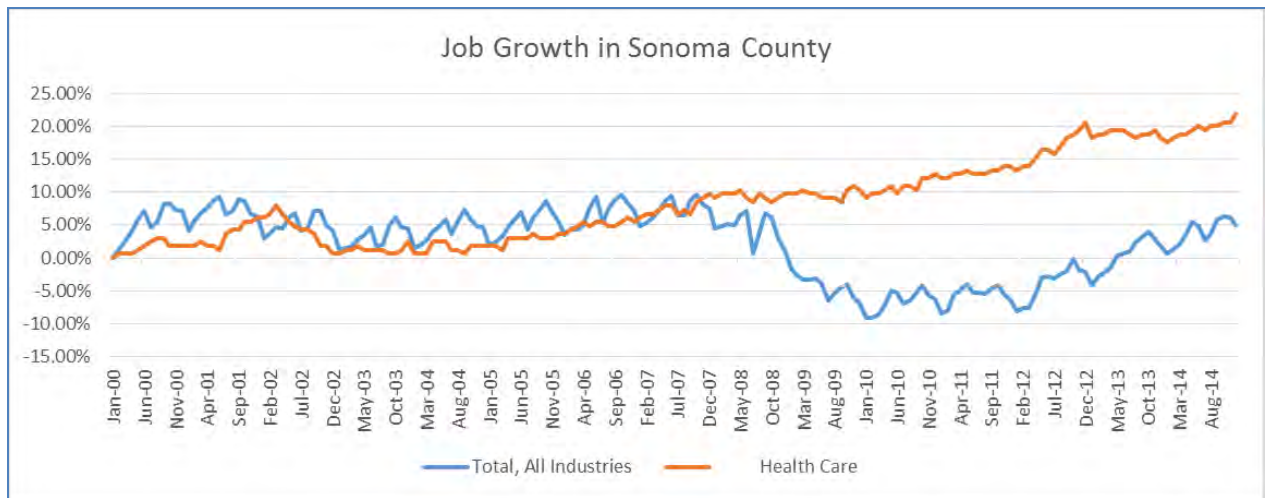


Figure 1 Job Growth in Sonoma County (Jan, 2000 - Dec, 2014)

Unreimbursed and Charity Care

Sonoma County Hospital also provides significant amounts of unreimbursed and charity care within their community. The majority of this unreimbursed care comes from significant under-funding of government-sponsored programs, including Medi-Cal and Medicare. Table 4 below summarizes these costs during the 2012-2014 fiscal years. Sonoma Valley Hospital provided \$273,000 in charity and unreimbursed care in 2014; \$732,000 in 2013; and \$482,000 in 2012.

*Table 4 Charity/Unreimbursed Care Costs: Sonoma Valley Hospital
(Source: Sonoma Valley Hospital)*

Charity Care Costs	
Fiscal Year	Charity Care
FY 2014	\$273,556
FY 2013	\$732,796
FY 2012	\$482,677

Hospital Spending: Methodology

This section contains a more detailed breakdown of the economic impact numbers presented at the beginning of the report. To estimate the economic impact of Sonoma Valley Hospital, this study used official audited information reported to the State of California's Office of Statewide Health and Planning Development (OSHPD). We used 2013 audited financial disclosure reports since these were the latest available. However, the data was updated for inflation using the Bureau of Labor Statistics' estimate for inflation in the hospital sector between 2013 and 2014.³ To estimate the economic impact of the hospital, this report used the "net benefits" including expenditures for salaries, wages and employee benefits; purchased goods, services and supplies; as well as expenditures on research and education. The accounting statements also include depreciation under net patient revenues. We subtracted this item since it is not related to direct economic impacts (i.e. spending).

It is important to note that the data only includes services provided by the hospital, not all medical services. For example, if a patient goes to any hospital in the region, the expenditures by the hospital are included in this economic impact. However, physicians also bill for separately for services provided both inside and outside of the hospital and these fees are not included. Table 8 below summarizes the basic data used to estimate economic impact and other pertinent data. The hospital net benefits (defined above) for the 2012-2013 fiscal year is \$45.3 million and represents the direct spending by SVH.

³ See <http://www.bls.gov/cpi/#publications>.

*Table 5 Selected Data for Sonoma Valley Hospital: June, 2013
(Source: CA Office of Statewide Health Planning and Development)*

Hospital	Average Staffed	Total Census	Outpatient Visits	Total Expenses	Hospital Net Benefits
Sonoma Valley Hospital	83	12,592	59,865	\$54,274,650	\$45,379,435

Construction Spending for Fiscal Years 2012-2014

Many hospitals act as a significant driver in the construction industry, generating a large number of jobs. Since construction tends to be “lumpy” – it occurs in fits and starts – estimating average yearly construction costs is more difficult. This study collected data regarding construction costs SVH over a 3 year period. As shown in Table 6 below, shows that SVH spent \$46.4 million on construction during the 2013-2014 fiscal year. The average annual spending on construction over the three-year period was \$16.7 million.

*Table 6 Hospital Construction Spending Direct Impacts (FY 2012-2014)
(Source: Sonoma Valley Hospital)*

Hospital Construction Spending for SVH	
FY 2013-2014	\$46,418,553
FY 2012-2013	\$1,756,694
FY 2011-2012	\$2,020,413
3-Year Avg.	\$16,731,887

Economic Impact of Hospital and Related Spending

Table 7 summarizes the analysis contained in this report. Table 7 combines the estimates on annual Direct Hospital Spending and annual Hospital Construction spending. Overall this spending generates \$62.1 million in annual spending.

Table 7 Direct Economic Impact of Sonoma Valley Hospital Spending in Sonoma County (2013)

Direct Economic Impact of SVH in Sonoma County: 2013 (Hospital Spending Adjusted to 2014 dollars)	
Hospital Spending	\$45,379,435
Hospital Construction	\$16,731,887
Total	\$62,111,322

In addition, there are indirect and induced impacts, also referred to as “multiplier effects.” The *indirect impact* is a product of spending by the local, regional or state companies from which the hospital purchases goods and services. The *induced impact* represents the impact of routine household spending by hospital employees – for rent, food, clothing, transportation, etc. – and by the employees of its suppliers.

Intuitively, if any of these hospitals were to significantly reduce their services or close completely, Sonoma County would not only experience an economic contraction from the loss of wages and services directly paid for by these hospitals, but also would lose spending by hospital employees and other members of the workforce who provide services to these hospitals as well as the spending on other industries who provide inputs to these hospitals.

To estimate the interaction of Sonoma Valley Hospital with the rest of the area’s economy, economists use input/output analysis, which estimates the interactions of different industries as well as additional consumer spending. These interactions vary from industry to industry and region to region. To analyze these impacts, this report uses *IMPLAN* software⁴, which is based on the Bureau of Economic Analysis’ Input-Output models. (See the technical Appendix for more details.) The specific data used in this analysis is based on actual data collected by the U.S. Government applicable to the Sonoma County. This data was run through an input/output model generated in *IMPLAN*.

Table 8 looks at the indirect and induced effects of this spending as well as overall job creation. When one adds in these impacts, SVH and spending related to it in Sonoma County generate \$103 million annually in total economic output and 658 jobs.

*Table 8 Total Economic Impact of Sonoma Valley Hospital Spending in Sonoma County: 2013
(Adjusted to 2014 Dollars)*

Impact Type	Employment	Labor Income	Output
Hospital Direct Effect	252	\$24,601,980	\$45,379,435
Construction Direct Effect	94.8	\$6,172,448	\$16,731,887
Indirect Effect	108.8	\$4,985,132	\$15,634,835
Induced Effect	203.1	\$8,621,473	\$25,963,278
Total Effect	658.7	\$44,381,033	\$103,709,435

⁴ See www.implan.com.

The total economic impact can be broken down into individual components.

- The *direct* spending of \$45.3 million represents the amount of dollars that go directly through the hospital to pay salaries and to buy equipment and supplies. In addition, recent construction has generated an average of \$16.7 million in direct spending.
- However, in addition to this direct spending, there are *indirect* and *induced* impacts, often referred to as “multiplier effects” since hospitals spending also generates other jobs and economic activities in the region and without this spending other economic sectors of Sonoma County would shrink.

Table 9 indicates which industries within Sonoma County are most impacted by spending related to Sonoma Valley Hospital. Unsurprisingly, the hospital and construction industries are most impacted by SVH with an increase in economic activity of \$46.6 million and \$16.7, respectively and an increase in 259 and 94 jobs, respectively. Real estate, restaurants and employment services are also significantly impacted, with SVH being responsible for \$6.8 million, \$1.8 million and \$826,000 in respective economic activity and 32, 28 and 19 jobs, respectively.

*Table 9 Industries Most Impacted by Sonoma Valley Hospital Related Spending: 2013
(Adjusted to 2014 dollars)*

Description	Employ.	Labor Income	Output
Private hospitals	259.1	\$25,293,025	\$46,654,098
Construction of health care structures	94.8	\$6,172,448	\$16,731,887
Real estate establishments	32.1	\$685,792	\$6,870,532
Food services and drinking places	28.2	\$646,216	\$1,870,472
Employment services	19.9	\$600,552	\$826,891

Conclusion

This study was commissioned to demonstrate the economic contributions of Sonoma Valley Hospital to the economic ‘health’ of Sonoma County. SVH is a significant driver in the local economy, in addition to its role in delivering quality healthcare, providing ‘safety net’ services to many residents, and serving as a key element in the region’s public safety plans.

This study has estimated the economic impact of acute care hospital and hospital-related expenditures in Sonoma County. Overall, hospitals and hospital related spending generate \$103 million in spending annually and 658 jobs. Moreover, SVH

provides a wide variety of employment opportunities. The wages and salaries for these healthcare professionals are roughly twice as big as the average in the county. Hospital and healthcare spending also generates jobs for less-skilled workers.

The projected growth rate for healthcare jobs in Sonoma County from 2010-2020 is also significantly higher in healthcare than other occupations. Overall, the State projects a 13.7 per cent growth in employment for Sonoma County. However the respective growth in healthcare jobs is projected to 16.4 per cent, measurably higher than the growth rate of all other jobs.

Employment in the health industry also tends to be more stable and less cyclical – during recessions fewer jobs are lost in healthcare than in many other sectors. Healthcare supports jobs requiring a wide variety of education and experience levels, not just those intended for white-collar professionals.

Sonoma Valley Hospital also provided \$1.5 million in charity and unreimbursed care during the 2012-2014 fiscal years. SVH has also generated a substantial amount of construction in recent years, annually generating \$16.7 million, on average, in direct economic impacts over that time period.

It is clear from this analysis that SVH is a strong contributor to the ‘economic engine’ of the region, in addition to its role as a primary provider of emergency, acute and specialty care in the Sonoma Valley.

Technical Appendix

Input-Output Analysis

Input-output (I/O) was designed to analyze the transactions among the industries in an economy. These models are largely based on the work of Wassily Leontief. Detailed I/O analysis captures the indirect and induced interrelated circular behavior of the economy. For example, an increase in the demand for health services requires more equipment, more labor, and more supplies, which, in turn, requires more labor to produce the supplies, etc. By simultaneously accounting for structural interaction between sectors and industries, I/O analysis gives expression to the general economic equilibrium system. The analysis utilizes assumptions based on linear and fixed coefficients and limited substitutions among inputs and outputs. The analysis also assumes that average and marginal I/O coefficients are equal.

IMPLAN

IMPLAN is a computer program developed by the United States Forest Service to construct I/O accounts and models. Typically, the complexity of I/O modeling has hindered practitioners from constructing models specific to a community requesting an analysis. Five different sets of multipliers are estimated by *IMPLAN*, corresponding to five measures of regional economic activity. These are: total industry output, personal income, total income, value added, and employment. Two types of multipliers are generated. Type I multipliers measure the impact in terms of direct and indirect effects. Direct impacts are the changes in the activities of the focus industry or firm, such as the closing of a hospital. The focus business changes its purchases of inputs as a result of the direct impacts. This produces indirect impacts in other business sectors. However, the total impact of a change in the economy^{A-3} consists of direct, indirect, and induced changes. Both the direct and indirect impacts change the flow of dollars to the state, region, or county's households. Subsequently, households alter their consumption accordingly. The effect of the changes in household consumption on businesses in a community is referred to as an induced effect. To measure the total impact, a Type II multiplier is used. The Type II multiplier compares direct, indirect, and induced effects

Like other input-output models, *IMPLAN* calculates the flow of payments for goods and services across different industry sectors, and between households and industries. It can be envisioned simply as a table with hundreds of rows and columns, with all industries (plus households) listed down the side as producers; and the same industries (and households) listed across the top as consumers. Spending by any consumer

industry is allocated across all of the producing industries and the household sector. Each of these producer industries in turn purchases its own distinct set of inputs from other industries and households in order to produce the output it sells.

Table A1: Economic Multipliers Applied to Hospitals

Type of Multiplier	Direct	Induced	Indirect
Employment	Hospital employees and those providing services directly to hospitals	Retail and Service jobs generated by employee spending.	Jobs created by indirect suppliers of services to hospitals (e.g., ambulance repair service).
Income	Employee/service provider Income.	Retail/Service Income	Supplier income.
Output	Hospital Expenditures	Retail/Service Expenditures	Supplier Expenditures

However, in addition to this direct spending, there are *indirect* and *induced* impacts, often referred to as “multiplier effects.” The *indirect impact* is a product of spending by the local, regional or State companies from which the hospital purchases goods and services. The *induced impact* represents the impact of routine household spending by hospital employees – for rent, food, clothing, transportation, etc. – and by the employees of its suppliers. Table A1 above provides an illustration of these multipliers.

Intuitively, if these hospitals close, the region would not only experience an economic contraction due to the loss of wages and services directly paid for by these hospitals, Sonoma County would also lose the spending by hospital employees and other members of the workforce who provide services to hospitals as well as the spending on other industries who provide inputs top these hospitals.

To estimate the interactions of Sonoma County’ hospitals with the rest of the region’s economy, economists use input/output analysis, which estimates the interactions of different industries as well as additional consumer spending. These interactions vary from industry to industry and region to region. To analyze these impacts, we use

IMPLAN software⁵, which is based on the Bureau of Economic Analysis' Input Output models. The specific data used in this analysis is based on actual data collected by the U.S. Government applicable to Sonoma County. This data is run through an input/output model generated in *IMPLAN* software and presented in the tables in this report.

⁵ See www.implan.com.

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Dr. Philip King received his Ph.D. from Cornell in 1987. His specialty is in Applied Microeconomics. He is an Associate Professor in Economics at San Francisco State University and was chair from 2002-2005. Over the past 15 years, he has completed over thirty economic studies for various government agencies including the Corps, and State and local governments. These projects analyzed the economic and tax revenue impacts of various projects at the national, State and regional/local levels.