

Economic Role of Oklahoma Hospitals

Industry Profile & Economic Impacts



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Prepared By



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RegionTrack Inc. (regiontrack.com) is an Oklahoma City-based economic research firm specializing in regional economic forecasting and analysis. The authors of the report are RegionTrack economists Mark C. Snead and Amy A. Jones.

Executive Summary

Oklahoma hospitals are the cornerstones of their communities. Not only do they provide high quality, often lifesaving care to their communities 24 hours a day, seven days a week, 365 days a year, but they serve as economic anchors in cities and towns in every region of the state. They provide well-paying jobs to working families, vital community benefits and partnerships, and economic stability.

This study, commissioned by the Oklahoma Hospital Association, examines both the direct and indirect impact made by hospitals in Oklahoma. We were not surprised to find that impact to be significant. Based primarily on data from the 2022 American Hospital Association Annual Survey, with data from 2021, highlights of the findings include:

- The state's hospitals **supported \$30.5 billion** in economic impact (direct plus spillover effects).
- Activity within hospital sector **supported \$13.7 billion** in state GDP, 6.3% of the state's GDP.
- Hospitals **support 186,000 jobs statewide and \$12.7 billion in earnings** received by Oklahoma households. This represents **18% of Oklahoma jobs** across all industries and 9.1% of household earnings.
- Directly, the hospital sector produces **\$7 billion in state GDP**, 3.3% of the statewide total.
- Revenue produced by Oklahoma's hospitals represents **\$15.3 billion**, 4% of the state's total economic output.
- Oklahoma hospitals' 78,361 wage and salary workers earn **\$6.5 billion in compensation**. The **average annual wage for hospital jobs was \$68,922**, 28% higher than the statewide average.
- Hospitals have been among the steadiest and largest contributors to net economic growth in the state, **adding more than 15,000 jobs** in the past three decades.

It is clear that Oklahoma hospitals are critical to the future economic growth in the state. The Oklahoma Hospital Association will continue to work with state and federal lawmakers and policymakers to ensure that these important drivers of the economic engine thrive into the coming decades.



Rich Rasmussen
President & CEO

Introduction

Hospitals are widely recognized as essential pillars of community healthcare, providing a broad spectrum of services. They serve as primary care centers, advanced treatment facilities, and hubs for medical research and innovation, standing at the forefront of healthcare delivery.

Less frequently discussed is the economic role played by hospitals. This report provides an in-depth analysis of the economic role played by Oklahoma's hospitals, an aspect often overshadowed by their primary healthcare role. The hospital sector represents a large component of the state economy and the local economies in which they operate. Ultimately, the report seeks to underscore the dual role of hospitals as essential healthcare providers and key economic engines, highlighting their substantial contributions to the economic health and community well-being of Oklahoma.

The report aims to unfold the layers of the economic contribution of hospitals by highlighting their various contributions, including:

- The relationship between the health of local populations and economic productivity, emphasizing the vital role of accessible and quality healthcare provided by hospitals.
- The significant portion of household income spent on health services, underscoring the economic weight of the healthcare sector in Oklahoma and nationally.
- The central role hospitals play within local communities, marking them as key stakeholders in the business landscape.
- The influence of hospitals on regional economic stability and attractiveness, where the availability of healthcare services is a crucial factor for businesses and individuals in their location decisions.
- The broader social and philanthropic roles hospitals fulfill, contributing to community welfare and support networks, thus enhancing their economic and societal impacts.

The report begins with a profile of the hospital sector in Oklahoma, detailing the size, variety, capacity, and regional distribution of hospitals. Recent data from the annual survey of hospitals conducted by the American Hospital Association provides a detailed dataset on hospital operations and finances. The profile lays the groundwork for in-depth economic analysis of healthcare and hospital activity statewide.

Following this, the report delves into the economic footprint of the hospital sector in Oklahoma, focusing on revenue sources, spending activity, and the direct impact on the state's economy. Revenue produced by hospitals and the subsequent spending of the revenue are the two most fundamental measures of the direct economic activity of the sector in the state.

The analysis then expands to evaluate the spillover economic effects stemming from the hospital sector, including its significant role in enhancing state GDP, generating employment, increasing wages, generating taxes, and contributing to overall economic activity.

The report concludes by summarizing key insights and findings.

Profile of Oklahoma Hospitals

Understanding the size, structure, and geography of Oklahoma's hospitals provides helpful context for evaluating the economic role played by the sector. The state has a varied distribution of hospitals based on operational focus, specialty, market size, ownership, and other factors. These characteristics influence not only the types of care available but also the economic contribution of hospital operations to a region. The remainder of this section provides an in-depth profile of the state's hospital sector with breakdowns by type, size, capacity, and location.

AHA HOSPITAL SURVEY

Much of the information used throughout the report to describe the Oklahoma hospital sector is sourced from the annual nationwide survey of hospitals conducted by the American Hospital Association (AHA). The Oklahoma Hospital Association (OHA) plays a key role in implementing the survey in Oklahoma. The AHA survey is the most comprehensive data source available on U.S. hospitals and provides extensive data on the operational and financial characteristics of each facility. The most recent survey provides data for fiscal year 2021 for each responding hospital.¹

NUMBER OF HOSPITALS BY TYPE AND SPECIALTY

Based on AHA survey data, Oklahoma had an extensive network of 148 hospitals distributed widely across the state in 2021.² *Figure 1* provides a count of hospitals in the state by both major type and care specialty.

By major type, hospitals are broadly categorized by AHA as either **general medical and surgical hospitals** or **specialty hospitals** with a single care focus. Oklahoma's hospital sector is characterized by 107 general medical and surgical hospitals complemented by 41 specialized facilities.

General Medical and Surgical Hospitals

The state's 107 general medical and surgical hospitals anchor the Oklahoma healthcare delivery system. These facilities are spread widely across the state and comprise nearly three out of every four hospitals statewide. Hospitals are strategically located across the state, primarily reflecting population concentrations, to ensure widespread access to general healthcare needs in most communities.

Figure 1. Oklahoma Hospitals by Type (2021)

Hospital Type	Count
General medical and surgical hospitals	107
Specialty hospitals:	
Psychiatric	12
Acute long-term care hospital	9
Rehabilitation	5
Orthopedic	4
Surgical	4
Heart	2
Obstetrics and gynecology	1
Children's acute long-term care	1
Children's rehabilitation	1
Children's psychiatric	1
Other specialty treatment	1
Specialty - Total	41
Total	148

Source: American Hospital Association and Oklahoma Hospital Association

¹ Data collected in the 2021 vintage of the survey asks respondents to provide data for the most recent fiscal year (or 12 months) of data available at the time of the survey. The average reporting period in the 2021 survey is approximately equal to the 12 months ended September 2021. For revenue and spending measures, estimates for fiscal year 2021 should slightly understate the amount of annual activity expected in the 12 months of calendar year 2021.

² The OHA directory of Oklahoma hospitals is available online at: https://www.okoha.com/OHA/OHA/Directory/Hospital_List_Public.aspx

Offering a diverse array of services, general medical and surgical hospitals vary in size and scope. The spectrum of general hospitals ranges from large urban hospitals equipped to offer trauma care and other specialized services, to smaller community hospitals dedicated to providing primary care for residents in a localized area. This structure allows for both specialized and basic healthcare needs to be met efficiently across the state's diverse regions.

Specialized Hospitals

In addition to general medical and surgical hospitals, Oklahoma's healthcare system includes 41 specialized facilities, each dedicated to providing healthcare services in distinct practice areas or patient specialties (*Figure 1*). Although these specialized care facilities are less numerous, they play a vital role in addressing specific health needs that might not require the broad-based services of a general hospital.

The largest group of specialized hospitals includes 12 psychiatric hospitals, catering to a spectrum of mental health needs, from acute inpatient care to more common mental health services. Other types of specialized hospitals encompass various areas of care, including nine for acute long-term care, five for rehabilitation, four for orthopedics, four for surgery, two for heart care, and one each for obstetrics and gynecology, children's psychiatric care, children's rehabilitation, children's acute long-term care, and other specialty treatments. A key offering within the state is three specialized hospitals providing care for children, focusing on psychiatry, rehabilitation, and acute long-term care.

This diverse array of specialized facilities ensures access to comprehensive and targeted healthcare coverage across Oklahoma.

DIVERSIFIED OWNERSHIP TYPES

The ownership structure of hospitals differs greatly across hospital types and regions of the state. Ownership structure influences the economic impact produced by a hospital in a region as funding sources, profit distribution, wage structure, and service offerings can differ greatly by ownership type.

The distribution of ownership among Oklahoma's hospitals reflects a healthcare system that is supported by a diverse mix of public and private sector stakeholders (*Figure 2*). Public sector entities include both the federal government and multiple forms of nonfederal government (i.e., state, city, county, tribal, and health district/authority).

Private sector ownership includes substantial numbers of both for-profit and not-for-profit entities. While hospitals are commonly owned by private entities, the public sector interests surrounding the provision of healthcare have led to two unique elements of the ownership mix. First, there are numerous governmental and quasi-governmental entities at the federal, state, and local levels that own and operate hospitals. Second, tax exemptions within U.S. tax code provide incentives that support the creation and operation of hospitals by private not-for-profit organizations.

Investor-Owned (For-Profit)

The state's 53 private for-profit hospitals represent the most common category of ownership, representing more than one-third of hospitals statewide. These privately owned entities typically operate as either partnerships or corporation-owned hospitals. Most (46) for-profit hospitals are structured as corporations, with only seven formed as partnerships. For-profit hospitals tend to retain profits in-state

Figure 2. Oklahoma Hospitals by Type and Ownership (2021)

Hospital Type	Ownership Type											
	Government-Nonfederal					Nongovernment & Not-for-profit		Investor-owned (for-profit)		Government-Federal		Total
	State	County	City	Hospital district or authority	Tribal	Church operated	Other not-for-profit	Partnership	Corporation	Veterans Affairs	Public Health Service Indian	
General medical and surgical	1	4	10	23	5	22	15	4	19	2	2	107
<i>Specialized:</i>												
Psychiatric	6						2		4			12
Acute long-term care hospital					1				8			9
Rehabilitation									5			5
Orthopedic								1	3			4
Surgical								1	3			4
Heart									2			2
Obstetrics and gynecology									1			1
Children's psychiatric									1			1
Children's rehabilitation	1											1
Children's acute long-term care							1					1
Other specialty treatment								1				1
Total	8	4	10	23	6	22	18	7	46	2	2	148

Source: American Hospital Association and Oklahoma Hospital Association

as added household income. They also tend to operate in larger market areas where substantial demand for health services may result in unmet demand without the contribution of for-profit hospitals.

For-profit hospitals are notably present in the general medical and surgical category (23 of 53), suggesting a significant for-profit healthcare sector in many regions of the state. The remaining 30 for-profit hospitals in the state have a care specialty, most commonly acute long-term care (8), rehabilitation (5), psychiatric (4), orthopedic (3), surgical (3), and heart (2).

Nongovernment & Not-for-Profit

Oklahoma is home to 40 private not-for-profit hospitals, almost 30% of all hospitals statewide. Non-profits include 22 church-operated and 18 other not-for-profit hospitals. These facilities play a key role in basic healthcare provision, accounting for 37 general medical and surgical hospitals.

Four of the state's largest healthcare systems are organized as church-operated non-profits, including Mercy, Ascension St. John, Saint Francis, and SSM Health St. Anthony. Other non-profits include numerous city, county, and tribal operated hospitals; single facilities such as OU Health and Bethany Children's Health Center; and other large health systems including INTEGRIS.

Only three private not-for-profit hospitals offer specialized care. Two provide psychiatric care while one provides acute long-term care to children.

The economic influence of non-profit hospitals works through differing channels relative to for-profit facilities. The business model of non-profit hospitals does not produce profit from operations that can be distributed to households as income. Instead, non-profits strive to use a more favorable tax status to reduce the net cost of health services to patients.

Government-Federal

Oklahoma is home to four federally operated hospitals, including two Veterans Affairs (VA) hospitals and two U.S. Public Health Service (PHS) hospitals serving both Indian and non-Indian populations. Large VA medical centers serve the nation's veterans and some dependents through major facilities in Oklahoma City and Muskogee. PHS hospitals devoted to Indian populations are in Claremore and Lawton.

Federal facilities are fewer in number but serve a crucial role in communities with high concentrations of veteran and tribal populations. Federal facilities also represent a return of federal tax payments by residents to the state economy, often producing surplus federal funding when drawing patients from outside the state. Federal hospitals do not, however, earn profits or return income to households other than through compensation paid to employees.

Government-Nonfederal

Nonfederal government hospitals include 51 state, city, county, tribal and hospital district or authority owned hospitals. They collectively represent more than one-third of the state's hospitals facilities, highlighting the key role played by state and local governments in healthcare provision. Most nonfederal government facilities are general medical and surgical hospitals (43), with many located in rural areas of the state. The primary role of many nonfederal government hospitals is assuring access to

care in areas where competitive market conditions may not be producing an adequate supply of health services at the local level.

The state of Oklahoma operated a general medical and surgical hospital – the OSU Medical Center in Tulsa – and seven specialty hospitals in 2021. Six of the specialty hospitals are psychiatric facilities located in McAlester, Lawton, Fort Supply, Norman, Vinita, and Tulsa, and one is a children's rehabilitation hospital in Norman.

Tribal governments operated five general medical and surgical hospitals and one specialty care facility in 2021. These include W. W. Hastings Medical Center (Cherokee Nation) in Tahlequah, Chickasaw Nation Medical Center in Ada, Choctaw Nation Health Care Center in Poteau, Creek Nation Community Hospital in Okemah, Muscogee Creek Nation Medical Center in Okmulgee, and Muscogee Creek Nation Physical Rehabilitation Center in Okmulgee.

Local hospital districts or authorities operate 23 of the state's general medical and surgical hospitals. District or authority-operated hospitals are in Altus, Alva, Atoka, Beaver, Blackwell, Cheyenne, Chickasha, Cleveland, Cordell, Fairview, Hobart, Hollis, Hugo, Lawton, Norman, Okeene, Perry, Poteau, Pushmataha, Sallisaw, Stillwater, Wagoner, and Weatherford. Most district and authority-operated hospitals are found in relatively small cities across the state, with few serving metropolitan area counties.

An additional 14 general medical and surgical hospitals are owned by either a city or county government in Oklahoma. Ten general medical and surgical hospitals are operated by city governments – Carnegie, Holdenville, Lindsay, Mangum, McAlester, Pawhuska, Purcell, Shattuck, Seiling, and Tahlequah. Four hospitals – in Boise City, Buffalo, Guymon, and Sulphur – are owned and operated by the respective county.

Implications of Diversified Ownership

The diverse composition of Oklahoma's hospital ownership, which includes a roughly equal distribution among non-federal government, nonprofit, and for-profit hospitals, offers a robust framework capable of addressing a broad spectrum of patient needs and preferences. This balanced ecosystem underscores the critical role a varied healthcare system plays in delivering accessible and effective patient care throughout the state. The heterogeneity in hospital ownership not only enhances the scope of healthcare delivery but also improves accessibility and the quality of care for different demographics.

HOSPITAL CAPACITY CHARACTERISTICS

The type of hospital along with characteristics of the community where it operates determine the needed capacity and amount of activity in most hospitals. *Figure 3* summarizes the operational capacities of Oklahoma's 148 hospitals by type in 2021. Included are key metrics summarizing capacity and utilization rates by type of hospital. Capacity and utilization status provide policymakers and healthcare administrators with needed information regarding the allocation of resources to enhance access and uphold the standard of care statewide. These measures of activity and capacity are also reflective of the potential economic impact of a hospital in its operating region.

Capacity, Bed Count, and Admissions

In 2021, Oklahoma's network of 148 hospitals demonstrated a strong and varied capacity to address a wide range of healthcare needs. Collectively, these facilities staffed a total of 13,088 beds, with the average hospital maintaining staffing for 89 beds.

Systemwide, Oklahoma hospitals managed a total of 431,557 admissions throughout the year, or 1,182 per day. Admissions numbers in portions of 2021 reflect heightened hospital activity during the COVID-19 pandemic.³ The number of admissions reached 10.8% of the state population in 2021, equivalent to about one in nine Oklahomans each year. On a per hospital basis, Oklahoma hospitals made an average of 2,936 admissions per year, or eight per day.

The total number of inpatient days (IPDs) reached nearly 2.8 million in 2021. A hospital stay typically extends across multiple days, with an average of 6.5 IPDs for each admission. The variability in the length of the average inpatient stay across hospital types reflects the range of comprehensive healthcare services provided throughout the state's hospital system.

Figure 3. Hospital Capacity Characteristics by Hospital Type (2021)

Hospital Type	Hospital Count	Bed Count	Beds per Hospital	Admissions	Admissions per Hospital	Inpatient Days (IPD)	IPD per Admission
General medical and surgical	107	10,717	100.2	377,104	3,558	2,168,526	5.8
Psychiatric	12	1,052	87.7	19,953	1,663	305,428	15.3
Acute long-term care	9	417	46.3	4,393	488	95,444	21.7
Rehabilitation	5	254	50.8	6,444	1,289	77,059	12.0
Orthopedic	4	86	21.5	4,050	1,013	9,798	2.4
Surgical	4	157	39.3	6,864	1,716	15,556	2.3
Heart	2	141	70.5	10,145	5,073	42,709	4.2
Obstetrics and gynecology	1	23	23.0	1,565	1,565	3,424	2.2
Other specialty treatment	1	12	12.0	182	182	601	3.3
Children's acute long-term Care	1	120	120.0	248	248	40,412	163.0
Children's rehabilitation	1	36	36.0	52	52	8,439	162.3
Children's psychiatric	1	73	73.0	557	557	24,105	43.3
Total	148	13,088	88.4	431,557	2,916	2,791,501	6.5

Source: American Hospital Association and Oklahoma Hospital Association

The state's 107 general medical and surgical hospitals form the backbone of the hospital system, accounting for most staffed beds (10,717) and admissions (377,104). General medical and surgical hospitals staffed an average of 101.1 beds per hospital and admitted 3,558 patients per hospital in 2021. General hospitals had an average of 5.8 IPDs per admission, highlighting their critical role in providing comprehensive patient care, often with extended care. The greater average capacity of general hospitals underlies their comparatively higher share of the total economic contribution of the hospital system.

Specialized hospitals, including psychiatric, acute long-term care, rehabilitation, orthopedic, surgical, heart, and others, expand the system's capability to cater to specific healthcare needs. Psychiatric hospitals, though only 12 in number, had a significant bed count (1,052) and higher average

³ For COVID-19 associated hospitalizations, see: <https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalization-network>

IPD per admission (15.3 days), indicative of the specialized and extended care required in psychiatric treatments requiring hospitalization.

Other specialized hospitals vary in their size and scope, with acute long-term care hospitals having a high IPD per admission of 21.7, reflecting their focus on prolonged patient care. In contrast, other specialized hospitals, such as those for rehabilitation, orthopedic, surgical, heart, and obstetrics/gynecology, typically see fewer admissions and shorter patient stays, averaging 2-4 IPDs. This pattern reflects their focused healthcare approach, where more targeted treatments allow for less bed capacity.

Children's hospitals, despite having fewer admissions, record significant IPDs per admission, highlighting the often intensive and extended nature of pediatric care. Similarly, general acute long-term care hospitals, catering to non-pediatric needs, also show a high number of IPDs, indicating prolonged care periods, albeit less than those for pediatric care.

Overall, the AHA survey paints a picture of a diversified state healthcare system with a strong foundation in general medical and surgical hospitals, supplemented by a range of specialized hospitals catering to specific healthcare needs. The differences in bed counts, admissions, and IPDs per hospital admission highlight the diverse healthcare landscape, accommodating everything from routine medical care to long-term and specialized treatments. This diversity is key to meeting the broad spectrum of health needs in the state population.

Hospital Type by Bed Count

The number of staffed beds is a key indicator of a hospital's size and capacity, and this metric shows considerable variation among the different types of hospitals in Oklahoma. Generally, hospitals with a higher bed count are equipped both to serve more patients and provide a broader range of patient services. Higher bed capacity not only enhances the potential volume of healthcare delivery but also enables a more substantial economic contribution to a hospital's operating region.

Figure 4 provides an overview of the distribution of bed count by hospital type. The state's 107 general medical and surgical hospitals range in size from small facilities with fewer than 100 beds to very large ones with over 500 beds.

A large portion of general medical and surgical hospitals fall into the smaller bed categories. Specifically, there are 82 general medical and surgical hospitals with less than 100 beds, indicating an emphasis on community-level care. This prevalence of smaller general medical and surgical hospitals underlies the broad accessibility of healthcare across various regions of the state, particularly rural areas. Mid-sized hospitals, with bed counts ranging from 100-299, are also a significant component of Oklahoma's hospital system. With 16 general medical and surgical hospitals and six specialized facilities in this category, they are equipped to provide a wide array of services and serve larger communities.

The hospital sector is highly dependent upon the capacity and special health services available at the largest hospitals in the system. Large hospitals not only provide comprehensive healthcare to a larger population, including urban and surrounding areas, but also significantly impact the local economy and often rank among the largest employers in their regions.

Figure 4. Oklahoma Hospitals by Type and Bed Count

Hospital Type	Bed Count								Total
	6-24	25-49	50-99	100-199	200-299	300-399	400-499	500+	
General medical and surgical	31	36	15	14	2	3		6	107
Psychiatric	2	1	4	4	1				12
Acute long-term care hospital	1	4	4						9
Rehabilitation		1	4						5
Orthopedic	3		1						4
Surgical	1	2	1						4
Heart		1	1						2
Obstetrics and gynecology	1								1
Other specialty treatment	1								1
Children's psychiatric			1						1
Children's rehabilitation		1							1
Children's acute long-term care				1					1
Total	40	46	31	19	3	3	0	6	148

Source: American Hospital Association and Oklahoma Hospital Association

A group of six very large general medical and surgical hospitals with 500 or more beds (OU Health-University of Oklahoma Medical Center, INTEGRIS Baptist Medical Center, SSM Health St. Anthony Hospital-Oklahoma City, Hillcrest Medical Center, Saint Francis Hospital, and Ascension St. John Medical Center) provides a significant share of total state hospital capacity. These large facilities are in or near urban centers and act as tertiary (beyond primary and secondary care) or quaternary (highly specialized or experimental) care centers with wide-ranging services. Three of the facilities are in Oklahoma City and three are in Tulsa. Additionally, many of the state's largest hospitals are involved in educational and research activities, contributing to the training of medical professionals and clinical researchers.

An additional group of three large general medical and surgical hospitals (Norman Regional Health System, Comanche County Memorial Hospital, and Mercy Hospital Oklahoma City) have bed counts ranging from 300 to 499 and play a crucial role in their service areas. These hospitals are in metropolitan areas and serve as regional healthcare centers, offering a broader range of medical services and specialized care compared to smaller hospitals.

Specialized hospitals are commonly small, with 35 having less than 100 beds. This smaller size is conducive to the specialized and intimate care setting required for their specific services. Only six specialized hospitals in the state have 100 or more staffed beds, five with a psychiatric specialty. No specialized hospital in the state has 300 or more beds.

The state has 12 psychiatric hospitals in the small and mid-sized bed count categories, reflecting the need for a more personalized care approach in mental health services. Similarly, children's hospitals, offering acute long-term care, rehabilitation, and psychiatric care, typically operate with fewer beds and focus on intensive, specialized treatment for pediatric patients.

Overall, Oklahoma's healthcare system is marked by a predominance of smaller hospitals, highlighting a focus on community-level and semi-specialized care. While medium and large hospitals are less common, they play a significant role in providing a broader range of healthcare services to larger

communities across Oklahoma. The very large hospitals, though few, are essential in offering comprehensive care and providing the most specialized forms of care. This distribution of hospital sizes and types ensures a well-rounded healthcare system in Oklahoma, balancing accessibility with specialized care.

REGIONAL DISTRIBUTION OF HOSPITALS

The widespread presence of hospitals across the state ensures that high-level medical services are accessible statewide. A broader presence not only enhances the overall effectiveness of Oklahoma's healthcare system but also distributes the economic impact of the hospital sector to all regions of the state. A breakdown of hospital type by city and county in *Figure 5* highlights the availability of hospital care services across the state. *Figure 6* provides a map of hospital locations by city and county within Oklahoma.

General Medical and Surgical Hospitals

Of the state's 148 hospitals, general medical and surgical hospitals are the most numerous (107) and most widely distributed across Oklahoma. At least one general medical and surgical hospital is located within 72 of the state's 77 counties. These hospitals typically serve as the hub for primary healthcare provision in their respective counties and are most often based in the largest city in the region. Some larger general medical and surgical hospitals effectively serve multiple surrounding counties, especially in instances where local hospitals are unavailable or nearby facilities provide less comprehensive services.

Specialized Hospitals

More specialized hospitals like psychiatric, rehabilitation, and long-term care facilities are far more concentrated in urban areas of the state, reflecting the specialized nature of their services and the larger patient base required to support them. The distribution of specialized hospitals across counties is highly uneven, even within metropolitan areas, with some metropolitan area counties having multiple hospitals while others have none. Thirty of the state's 41 specialized hospitals are in just two counties – Oklahoma and Tulsa. This spatial concentration contributes to a more localized economic contribution by specialty hospitals to a small number of regions in the state. It also tends to attract the most highly skilled medical professionals to these regions.

Counties with no Hospital

Five Oklahoma counties – Alfalfa, Cotton, Grant, McIntosh, and Tillman – had no hospital in 2021. All five counties are highly rural with flat or declining population growth trends in recent decades. Residents in these counties are served by hospitals in larger cities in adjacent counties but often require patients to undergo significant travel time.

Alfalfa and Grant counties are in north central Oklahoma just north of a hospital in Enid. McIntosh County is located along I-40 in east central Oklahoma between hospitals in the cities of Muskogee and McAlester. Tillman and Cotton counties are in southwest Oklahoma, located equidistant from large hospitals in the Lawton and Wichita Falls, Texas metropolitan areas.

The absence of a general medical and surgical hospital in a county can indicate potential healthcare access gaps in these regions. The gaps are likely to be greatest for trauma care and other specialized treatments. The lack of a local healthcare hub facility poses significant challenge for residents in these areas, resulting in longer travel times when seeking medical care and greater difficulty accessing timely healthcare services. From an economic perspective, the absence of a local hospital reflects a significant leakage of healthcare spending outside the local economy. It also reduces the number of high-skill medical professionals residing in the area and an accompanied loss of wages in the local economy.

Rural vs. Urban Divide

The distribution of hospitals in Oklahoma reflects an urban-rural divide that is present in most states. Consistent with population density, urban areas generally have a higher concentration of healthcare resources than rural locations. The disparity in accessibility is widest for trauma care and other forms of highly specialized care at large general medical and surgical hospitals and care at smaller hospitals offering niche specialty care.

Most of the state's hospitals are concentrated in the Oklahoma City and Tulsa metropolitan areas, and primarily in just two counties – Oklahoma and Tulsa. Oklahoma County has the highest concentration with 30 hospitals (10 general medical and surgical and 20 specialty), reflecting its status as the state's most populous urban center. Tulsa County has 20 hospitals (10 general medical and surgical and 10 specialty), consistent with its position as the state's second most populous area. This is indicative of higher healthcare demand and population density in these areas.

Outside the state's two largest metropolitan areas, some of the larger remaining population centers including Lawton, Stillwater, Enid, Ada, Muskogee, and Okmulgee support a mix of general and specialty hospitals and provide a more comprehensive range of services than in smaller rural communities.

Hospital Agglomeration Effects

Despite concerns over concentrations of hospitals in urban areas, there are well known benefits from having clusters of medical facilities in large population centers. Known as *agglomeration effects*, sectors of the economy tend to benefit in several ways from having a concentration of similar firms in near proximity. Most fundamentally, competing firms clustered together have access to a deeper labor pool and a more diverse supplier base.

Research has long demonstrated the presence of agglomeration effects in healthcare provision, including effects on the flow of hospital patients at the regional level.⁴ Research findings indicate that hospitals share production techniques and better serve the targeted needs of the local consumer base when grouped together. Empirical evidence suggests that hospitals can experience increased productivity, lower laboratory costs, and effectively learn from neighboring facilities through knowledge spillovers when concentrated together.⁵

⁴ For an example of regional patient flows traced to agglomeration effects, see: <https://link.springer.com/article/10.1007/s12197-013-9275-x>.

⁵ For examples of empirical evaluations of the various types of hospital agglomeration effects, see:

https://www.researchgate.net/publication/5220900_Do_Agglomeration_Economies_Exist_in_the_Hospital_Services_Industry;

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4671981/>; [https://academic.oup.com/chicago-scholarship-online/book/28702/chapter-](https://academic.oup.com/chicago-scholarship-online/book/28702/chapter-abstract/232945779?redirectedFrom=fulltext)

[abstract/232945779?redirectedFrom=fulltext](https://www.jstor.org/stable/40326367); <https://www.jstor.org/stable/40326367>; and <https://www.sciencedirect.com/science/article/abs/pii/S0166046208000586>

The same agglomeration effects are present at the state level as Oklahoma's hospital sector must compete with hospitals in surrounding states. These are the same economic effects that underlie the success of many of the nation's largest medical care hubs such as the MD Anderson Cancer Center, Mayo Clinic, and Cleveland Clinic that attract patients from far outside their immediate market for treatment. As discussed in the "Oklahoma Healthcare and Hospital Expenditures" section of the report (Appendix 1), Oklahoma has historically experienced a substantial net outflow of medical care spending by Oklahoma residents to other markets. This spending is often in search of specialty care and treatments that are not readily available in Oklahoma.

Healthcare policymakers must balance policy efforts that address the geographic gaps in healthcare access in Oklahoma with potential gains from the development of a more robust concentration of hospitals in the state's major metropolitan areas.

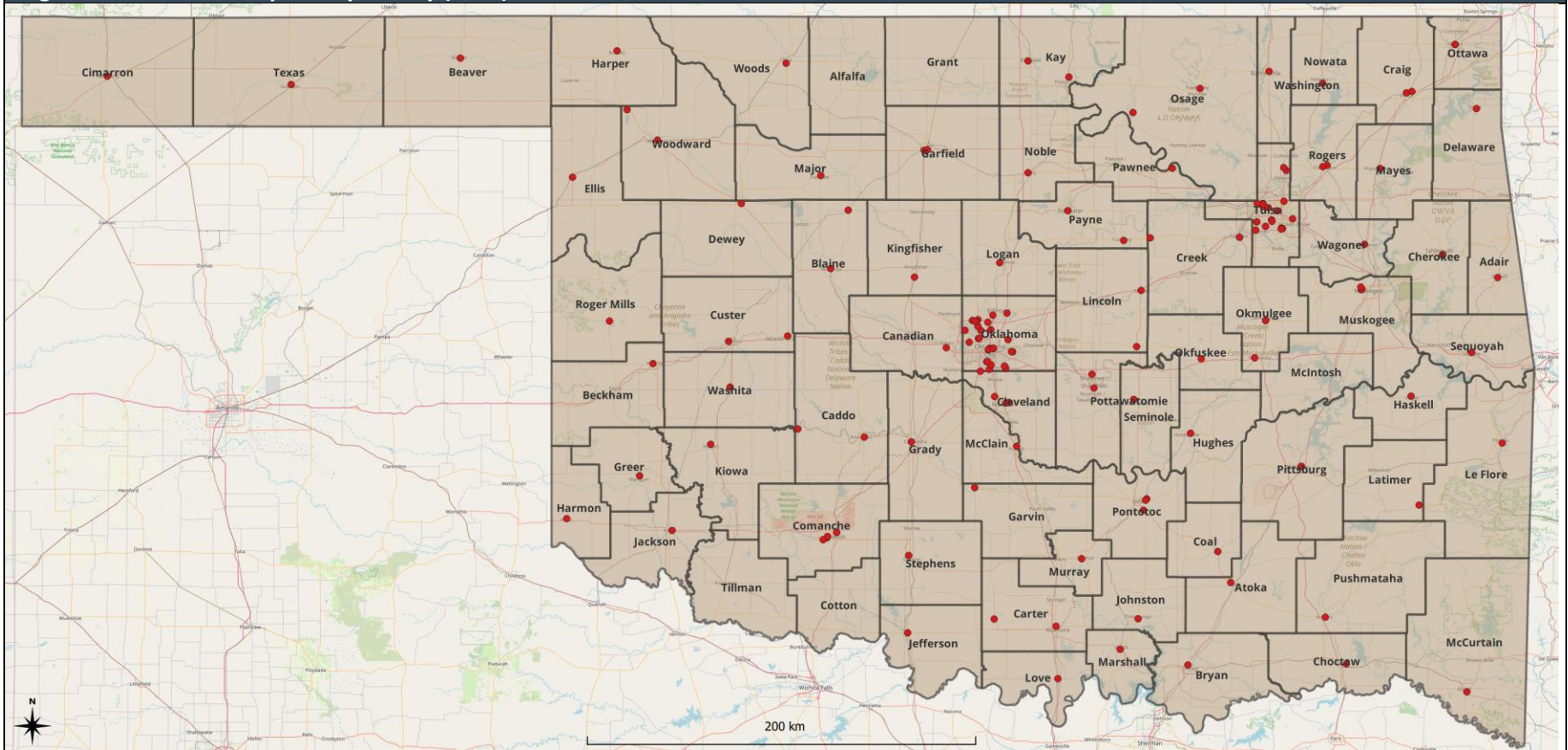
Figure 5. Oklahoma Hospitals by County/City and Major Type (2021)

County	City	General medical and surgical	All other types	Total	County	City	General medical and surgical	All other types	Total
State of Oklahoma		107	41	148	Lincoln County	Prague	1	0	1
Adair County	Stilwell	1	0	1		Stroud	1	0	1
Alfalfa County*	-	-	-	0	Logan County	Guthrie	1	0	1
Atoka County	Atoka	1	0	1	Love County	Marietta	1	0	1
Beaver County	Beaver	1	0	1	Major County	Fairview	1	0	1
Beckham County	Elk City	1	0	1	Marshall County	Madill	1	0	1
Blaine County	Okeene	1	0	1	Mayes County	Pryor	1	0	1
	Watonga	1	0	1	McClain County	Purcell	1	0	1
Bryan County	Durant	1	0	1	McCurtain County	Idabel	1	0	1
Caddo County	Anadarko	1	0	1	McIntosh County*	-	-	-	0
	Carnegie	1	0	1	Murray County	Sulphur	1	0	1
Canadian County	Yukon	1	0	1	Muskogee County	Muskogee	2	1	3
Carter County	Ardmore	1	0	1	Noble County	Perry	1	0	1
	Healdton	1	0	1	Nowata County	Nowata	1	0	1
Cherokee County	Tahlequah	2	0	2	Okfuskee County	Okemah	1	0	1
Choctaw County	Hugo	1	0	1	Oklahoma County	Bethany	0	1	1
Cimarron County	Boise City	1	0	1		Edmond	2	0	2
Cleveland County	Norman	1	2	3		Midwest City	1	1	2
Coal County	Coalgate	1	0	1		Oklahoma City	7	18	25
Comanche County	Lawton	3	1	4	Okmulgee County	Henryetta	1	0	1
Cotton County*	-	-	-	0		Okmulgee	1	1	2
Craig County	Vinita	1	1	2	Osage County	Fairfax	1	0	1
Creek County	Drumright	1	0	1		Pawhuska	1	0	1
	Sapulpa	1	0	1	Ottawa County	Miami	1	1	2
Custer County	Clinton	1	0	1	Pawnee County	Cleveland	1	0	1
	Weatherford	1	0	1	Payne County	Cushing	1	0	1
Delaware County	Grove	1	0	1		Stillwater	1	0	1
Dewey County	Seiling	1	0	1	Pittsburg County	McAlester	1	1	2
Ellis County	Shattuck	1	0	1	Pontotoc County	Ada	2	1	3
Garfield County	Enid	2	0	2	Pottawatomie County	Shawnee	1	1	2
Garvin County	Lindsay	1	0	1	Pushmataha County	Antlers	1	0	1
Grady County	Chickasha	1	0	1	Roger Mills County	Cheyenne	1	0	1
Grant County*	-	-	-	0	Rogers County	Claremore	2	0	2
Greer County	Mangum	1	0	1	Seminole County	Seminole	1	0	1
Harmon County	Hollis	1	0	1	Sequoyah County	Sallisaw	1	0	1
Harper County	Buffalo	1	0	1	Stephens County	Duncan	1	0	1
Haskell County	Stigler	1	0	1	Texas County	Guymon	1	0	1
Hughes County	Holdenville	1	0	1	Tillman County*	-	-	-	0
Jackson County	Altus	1	0	1	Tulsa County	Broken Arrow	1	1	2
Jefferson County	Waurika	1	0	1		Jenks	0	1	1
Johnston County	Tishomingo	1	0	1		Owasso	2	0	2
Kay County	Blackwell	1	0	1		Tulsa	7	8	15
	Ponca City	1	0	1	Wagoner County	Wagoner	1	0	1
Kingfisher County	Kingfisher	1	0	1	Washington County	Bartlesville	1	0	1
Kiowa County	Hobart	1	0	1	Washita County	Cordell	1	0	1
Latimer County#	Talihina	1	0	1	Woods County	Alva	1	0	1
Le Flore County	Poteau	1	0	1	Woodward County	Fort Supply	0	1	1
						Woodward	1	0	1

Source: American Hospital Association and Oklahoma Hospital Association

Notes: *Indicates counties with no hospital. # The hospital has a Talihina address but is situated in Latimer County.

Figure 6. Oklahoma Hospitals by County (2021)



Revenue in the Oklahoma Hospital Sector

The direct economic contribution of the state's hospital sector is determined largely by the total amount of revenue received by hospitals. Total revenue is the broadest top-line measure of the amount of direct economic activity (or output) taking place within a sector of an economy, especially services sectors such as healthcare. The AHA survey of hospitals provides a comprehensive estimate of revenue by source that is well suited for evaluating the economic contribution of the sector.⁶

OKLAHOMA HOSPITAL REVENUE BY HOSPITAL TYPE

Hospital revenue is measured throughout the remainder of the report as net revenue for fiscal year 2021 as defined within the AHA hospital survey. Net revenue is calculated as gross revenue from all sources minus revenue either written off, foregone, forgiven, or not collected. Gross revenue includes patient revenue plus other forms of operating revenue (including tax appropriations) as well as non-operating revenue such as gifts, grants, and donations.

Use of the AHA survey data allows revenue to be partitioned by type of hospital, source of revenue, and geography for more detailed analysis of the economic impact. Based on fiscal year 2021 data, Oklahoma's 148 hospitals reported \$15.3 billion in revenue (*Figure 7*). Revenue was up 11% from \$13.8 billion reported in the 2020 survey. The sharp increase in hospital revenue in 2021 reflects both increased care delivery in the pandemic period and higher inflation. Average revenue per hospital reached a reported \$104 million in 2021.

Figure 7. Oklahoma Hospital Revenue by Hospital Type (2021)

Hospital Type	Hospital Count	Total Net Revenue (\$millions)	Share of Net Revenue	Net Revenue per Hospital (\$millions)
Nongovernment & not-for-profit	40	\$8,296	54.1%	\$207.4
Investor-owned (for-profit)	53	3,241	21.1%	61.1
Government-Nonfederal	51	2,928	19.1%	57.4
Government-Federal	4	876	5.7%	219.0
Total	148	\$15,341	100.0%	\$103.7

Source: American Hospital Association and Oklahoma Hospital Association

Hospitals owned by **nongovernmental and non-profit** entities generated the largest share of state hospital revenue. The state's 40 private not-for-profit hospitals generated \$8.3 billion in revenue in 2021, slightly more than half (54%) of all hospital revenue. The group includes most of the state's largest privately owned hospitals, including major healthcare networks Ascension St. John, Mercy, SSM Health St. Anthony, Saint Francis, and INTEGRIS. The presence of these large hospital groups contributes to the significant average revenue per hospital of \$207 million, double the overall average. The private non-profit category also includes the substantial OU Health-University of Oklahoma Medical Center operated by non-profit OU Medicine Inc.

⁶ Centers for Medicare and Medicaid Services (CMS) estimates of expenditures on hospital care received by Oklahoma providers detailed in Appendix 1 of the report are closely related to the amount of revenue received by hospitals. However, CMS estimates of spending do not capture non-operating sources of revenue beyond direct payments for services rendered and can understate total hospital revenue.

The 53 **private investor-owned** hospitals across the state produced more than \$3.2 billion in revenue in 2021, 21% of total net revenue in the sector. These for-profit hospitals tend to be smaller, producing an average of only \$61 million in annual net revenue. Nearly all specialized psychiatric, acute long-term care, rehabilitation, orthopedic, surgical, heart, obstetrics and gynecology, and children's psychiatric hospitals in Oklahoma are organized as for-profit entities through partnerships or corporations. These investor-owned facilities are widely distributed across the state, ranging from several community hospitals in rural areas of the state to highly specialized care hospitals in the Oklahoma City and Tulsa metropolitan areas. Many of these entities operate multiple locations or an affiliated network such as AllianceHealth, Hillcrest, Mercy Rehabilitation, Oklahoma Heart Hospital, Post Acute Medical (PAM), and Select Specialty.

The state's 51 **nonfederal government-owned** hospitals (state, city, county, tribal, or district/authority-owned) accounted for about 19% (\$2.9 billion) of total statewide hospital revenue in 2021. The group includes 8 hospitals operated by the state, 14 operated by cities and counties, 6 operated by tribal governments, and 23 operated by local hospital districts or authorities. The 8 state-owned hospitals in Oklahoma have highly specialized missions with 2 mental health facilities, 2 behavioral health facilities, a developmental disability facility, an acute psychiatric hospital, a forensic center, and the OSU Medical Center in Tulsa for training physicians. Most nonfederal government-owned hospitals operate in rural areas of the state outside the state's two largest metropolitan areas. Nonfederal government hospitals are also relatively small on average due to their narrow specialties and service regions, producing only \$57 million each in net revenue annually. Exceptions to the typical small size are three large district and authority-owned hospitals located in Norman, Stillwater, and Lawton.

Four hospitals in Oklahoma operated by the **federal government** generated a reported \$876 million in revenue in 2021, or just less than 6% of total hospital revenue statewide. Revenue for federal hospitals is generally sourced as federal transfers to the hospitals to fund operations. Federal hospitals produced the largest amount of annual revenue on average, with a reported \$219 million per facility in 2021.

HOSPITAL REVENUE BY TYPE OF PAYOR

Hospital revenue is highly diversified by source and reflects the major avenues through which health services are funded by households, employers, governments, and other nongovernmental entities. Hospital revenue is most broadly categorized as either patient revenue, other forms of operating revenue, or non-operating revenue. *Figure 8* details the composition of Oklahoma hospital revenue by major type of payor in 2021.

Patient Revenue

Patient revenue for services rendered is the primary source of revenue for hospitals. Total patient revenue reached \$12.2 billion in 2021, or nearly 80% of \$15.3 billion in total hospital revenue. Multiple forms of patient revenue are received by the state's hospitals. The largest component of patient revenue is \$5.0 billion received from third-party payors on behalf of patients, accounting for almost one-third (32.6%) of total hospital revenue. Third-party payors are primarily private insurers, Health Maintenance Organizations (HMOs), and Preferred Provider Organizations (PPOs) who provide payment for services on behalf of patients.

Figure 8. Sources of Oklahoma Hospital Revenue (2021)

Revenue Source	Amount (\$millions)	Share of Revenue
Patient Revenue:		
Third-party payors	\$4,997.0	32.6%
Medicare	4,649.2	30.3%
Medicaid	1,881.5	12.3%
Other government sources	320.6	2.1%
Self-Pay	244.1	1.6%
Other non-government	65.2	0.4%
Total Patient Revenue	\$12,157.5	79.2%
Other Operating Revenue:		
Tax Appropriations	1,585.4	10.3%
Other Than Tax Appropriations	934.9	6.1%
Total Other Operating Revenue	2,520.3	16.4%
Other Non-Operating Revenue	662.9	4.3%
Total Revenue	\$15,340.6	100.0%
Source: American Hospital Association and RegionTrack calculations		

Medicare, the nation's federally operated insurance system for people age 65 or older is the second largest revenue source for state hospitals, accounting for \$4.65 billion, nearly one-third (30.3%) of total revenue. Jointly, third-party payors and Medicare accounted for almost two-thirds (\$9.65 billion, 62.9%) of total hospital revenue.

The Medicaid program, a collaboration between state and federal governments, ranks as the third largest contributor to patient revenue in Oklahoma, amounting to \$1.9 billion or 12.3% of the total hospital revenue. The Medicaid program offers free or affordable health coverage to individuals with low income, making payments for services on behalf of eligible patients. The scope of the program was broadened considerably in Oklahoma in 2020 following approval of State Question 802 by voters.⁷

The combined \$11.5 billion in revenue received from third-party payors, Medicare, and Medicaid accounted for 75% of all hospital revenue received in Oklahoma in 2021.

Other smaller sources of patient revenue included other forms of government payors (\$321 million, 2.1%) and patient self-pay (\$244 million, 1.6%). All remaining patient revenue was received from non-government sources and totaled only \$65 million (0.4%) in 2021.

Other Operating Revenue

After patient revenue, other operating revenue accounted for more than 16% (\$2.5 billion) of total hospital revenue in 2021. The two major categories within other operating revenue include tax appropriations and all other operating revenue other than tax appropriations.

Tax appropriations from governments are the largest component of other operating revenue, totaling \$1.6 billion, or 10.3% of total revenue, in 2021. Government tax appropriations of \$100,000 or more are

⁷ For more discussion of the Medicaid expansion in Oklahoma, see: <https://oklahoma.gov/ohca/about/medicaid-expansion/expansion.html>

reported by 46 of the state's 148 hospitals. Only 21 hospitals reported tax appropriations of \$1 million or more in 2021. Most of the appropriated tax dollars are provided by the federal government to hospitals operated by the VA and the Indian Health System. The state's two large VA hospitals received combined tax appropriations of \$867 million in 2021. The state of Oklahoma made major appropriations of \$184 million to support the OSU Medical Center and \$20 million for the Oklahoma Forensics Center, along with smaller appropriations for several mental health facilities across the state. In addition, several local governments across the state provided varying degrees of support to local community hospitals through tax appropriations.

Other operating revenue includes a range of other forms of payment for the delivery of services that are not received through traditional patient payment channels. These other forms of operating revenue totaled \$935 million in 2021, or about 6% of total hospital revenue.

Nonoperating Revenue

Roughly two-thirds (97 of 148) of hospitals in the state reported non-operating revenue, primarily in the form of grants and donations in 2021. All forms of nonoperating revenue received by Oklahoma hospitals totaled \$663 million but comprised only 4.3% of total hospital revenue.

The average amount of nonoperating revenue reported in 2021 was approximately \$6.9 million per hospital, but the average was influenced upward by a few large recipients. After removing the top 10 recipients, non-operating revenue received by each of the remaining 87 hospitals averaged only about \$1.6 million in 2021.

Economic Profile of the Oklahoma Hospital Sector

Revenue received by the hospital sector is ultimately re-spent to purchase goods and services or to pay employees, owners, and taxes. It is this distribution and re-spending of revenue that generates spillover economic impacts in the state economy. Understanding the various channels through which hospital spending influences the state economy requires extensive data on the types and amounts of spending by hospitals.

Figure 9 details the estimated distribution of \$15.34 billion in spending by the Oklahoma hospital sector in 2021.⁸ A breakdown is provided for both total expenditures and the share of spending taking place within the state.

Figure 9. Oklahoma Hospital Sector Spending (2021)					
NAICS Code	Industry Sector	Total Purchases (\$millions)	Share of Output	In-State Purchases	In-State Share of Purchases
Purchases of Intermediate Goods and Services:					
11	Agriculture, Forestry, Fishing and Hunting	\$0.0	0.0%	\$0.0	100.0%
21	Mining, Quarrying, and Oil and Gas Extraction	0.5	0.0%	0.5	100.0%
22	Utilities	176.3	1.1%	163.4	92.7%
23	Construction	36.0	0.2%	33.2	92.2%
31-33	Manufacturing	1,986.9	13.0%	890.1	44.8%
42	Wholesale trade	0.6	0.0%	0.6	100.0%
44-45	Retail Trade	0.0	0.0%	0.0	100.0%
48-49	Transportation and Warehousing	182.6	1.2%	159.3	87.2%
51	Information	156.9	1.0%	43.8	27.9%
52	Finance and Insurance	716.2	4.7%	439.8	61.4%
53	Real Estate and Rental and Leasing	1,655.8	10.8%	1,309.8	79.1%
54	Professional, Scientific, and Technical Services	1,182.8	7.7%	516.9	43.7%
55	Management of Companies and Enterprises	194.6	1.3%	183.7	94.4%
56	Administrative and Support & Waste Management Serv.	982.4	6.4%	949.0	96.6%
61	Educational Services	0.1	0.0%	0.1	100.0%
62	Health Care and Social Assistance	273.7	1.8%	245.8	89.8%
71	Arts, Entertainment, and Recreation	27.3	0.2%	27.3	100.0%
72	Accommodation and Food Services	378.5	2.5%	378.5	100.0%
81	Other Services (except Public Administration)	229.0	1.5%	22.9	10.0%
FG	Federal Government and Enterprises	48.1	0.3%	0.0	0.0%
SLG	State and Local Government and Enterprises	14.4	0.1%	14.4	100.0%
Total Intermediate Purchases of Goods and Services		\$8,242.8	53.7%	\$5,378.9	65.3%
Sources of Value Added:					
Compensation of employees (wages & salary + supplements)		6,306.0	41.1%		
Taxes on production and imports, less subsidies		-88.4	-0.6%		
Gross operating surplus (including proprietor earnings)		879.3	5.7%		
Total Value Added		\$7,096.9	46.3%		
Total Industry Output		\$15,339.7	100.0%		

Source: Bureau of Economic Analysis-U.S. Input-Output Accounts, Bureau of Labor Statistics; American Hospital Association; and RegionTrack estimates
Notes: Total industry output differs slightly from total net revenue due to the rounding of component totals.

⁸ The estimates of purchases of intermediate goods and services are model-based and determined by adjusting detailed data on hospital spending at the national level to reflect activity at the state level.

CHANNELS OF ECONOMIC INFLUENCE

Hospital spending enters the state economy through two main channels. The first is the purchase of goods and services used in the operation of the hospital. The second is the various sources of value added (or state GDP) produced through hospital operations. Value added includes compensation paid to employees, payments to ownership (or gross operating surplus), and tax payments net of subsidies to governments.

As detailed in *Figure 9*, not all the spending by Oklahoma hospitals takes place within the state. The net economic effect of hospital purchases on the rest of the state economy is highly dependent upon the share of these goods and services purchased within the region rather than imported from outside the state.⁹ The share of hospital spending outside the state does not generate any net spillover benefit within the state. Economic models are commonly used to estimate these leakages, with larger leakages reducing the expected economic spillover to the state economy.

The estimates in *Figure 9* reflect the combined spending of all hospitals within the state. For any individual hospital, the distribution of purchases may differ considerably. The actual mix of spending at any single hospital is influenced by many factors including the size and location of the hospital, the types of services offered, the skill level and average compensation of the workforce, form of hospital ownership, profitability, and tax status.

INDUSTRY PURCHASES

Purchases of goods and services are the largest component of Oklahoma hospital spending. Estimated purchases totaled \$8.24 billion in 2021, or 53.7% of total hospital spending.

Purchases made by the state's hospitals are spread across most major industry sectors. The three largest categories measured by 2-digit NAICS code are manufactured goods (\$1.99 billion), real estate and rental and leasing services (\$1.66 billion), and professional, scientific, and technical services (\$1.18 billion).

These three sectors provide the items most critical to healthcare provision and account for nearly 60% of all purchases of goods and services. For example, hospitals use a wide assortment of common and specialized manufactured goods including medical supplies, medical equipment, food, paper products, plastic products, cleaning products, transportation equipment, and other manufactured items. Real estate remains a key element of the industry, with nearly all hospitals owning or leasing buildings or other structures along with grounds that must be maintained on a regular basis. The real estate used within the hospital sector is often highly specialized and must follow stringent construction and maintenance practices. Various high-skill professional services are essential to enabling hospitals to deliver modern diagnostic, treatment, and rehabilitation services to patients.

Other major purchases of goods and services by hospitals include administrative, support, and waste management services (\$982 million) and finance and insurance services (\$716 million). Smaller categories of purchases include accommodation and food services (\$379 million), other health care and

⁹ The estimated shares of purchases within each category made within the region are commonly referred to as regional purchase coefficients (RPCs).

social assistance services (\$274 million), management of companies and enterprises (\$195 million), transportation and warehousing (\$183 million), utilities (\$176 million), information services (\$157 million), and other services not elsewhere classified (\$229 million).

The in-state share of hospital spending is a critical determinant of the ultimate economic impact on the state economy. Nearly two-thirds (65.3%) of total spending is estimated to take place within Oklahoma, with the remaining roughly one-third occurring outside the state. This \$5.38 billion of in-state spending is highlighted by major industry sector in *Figure 9*.

In-state spending in sectors with sharply reduced purchases after adjustment for out-of-state spending include real estate and rental and leasing services (\$1.31 billion), manufactured goods (\$890 million), professional, scientific, and technical services (\$517 million), finance and insurance services (\$440 million), information services (\$44 million), and other services (\$23 million).

Leakages of purchases outside the state for these sectors totaled \$1.1 billion for manufactured goods, \$665 million for professional, scientific, and technical services, \$346 million for real estate and rental and leasing services, \$276 million for finance and insurance services, \$206 million for other services, and \$113 million for information services. These sectors represent significant opportunities for state-based vendors to capture additional hospital sector spending.

STATE GDP (VALUE ADDED)

The second largest component of hospital spending comprises the various forms of value added (or state GDP) produced by hospitals, accounting for 46.3% of total hospital spending. The term *value added* refers to the incremental value produced in the process of delivering services to the end user, beyond the cost of any other goods and services used in the production of the services. In other words, value added (\$7.11 billion) is the difference between the total value of hospital services provided (\$15.34 billion) and the cost of goods and services purchased by hospitals (\$8.24 billion) and used in producing the services. The term *state GDP* is used interchangeably with value added because it reflects the amount of net new economic activity produced in the state economy.

The components of value added, or state GDP, include compensation paid to hospital wage and salary employees, taxes paid by hospitals on production and imports less any subsidies received, and gross operating surplus earned by owners of the entities. Each component is described in the following sections.

Employee Compensation

Compensation to hospital workers totaled an estimated \$6.31 billion in 2021 based on estimates from the AHA survey. Compensation represents the amount of direct earnings received by wage and salary workers employed within the sector (*Figure 9*). The high share (41%) of revenue devoted to compensation reflects the labor-intensive nature of healthcare provision and most other service-providing sectors of the economy. Wage and salary earnings comprise about 85% of total compensation, with the remaining received as various employee benefits.

Business Taxes and Subsidies

A portion of revenue received by hospitals is used to pay a range of business taxes (less any subsidies received from government) on production and imports. BEA maintains an extensive database on business-type tax payments and subsidies by industry sector as part of the data collection program for state GDP.¹⁰

The database provides the most widely used comparative measure of federal, state, and local taxes paid by industry sector.¹¹ The dataset is unique in that it provides a comprehensive and consistent tabulation of business taxes paid across 81 NAICS industry sectors at the state level. The hospital sector (NAICS 622) is one of the sectors covered in the dataset.

The BEA dataset measures the 'business' tax contribution of firms within a sector by capturing all federal, state, and local taxes paid by firms that are deductible for tax purposes. As a result, the dataset captures nearly all taxes paid except corporate income taxes and employer social security contributions. The large share of hospitals that are either government owned or not-for-profit, and hence pay no corporate income tax, reduces the potential significance of excluding corporate income taxes from the database.

It is also important to note that the BEA dataset captures the payment of business taxes only and excludes income tax payments by hospital employees on the compensation of wage and salary workers and payments of sales, property, ad valorem, and other taxes by hospital-related households in Oklahoma. Taxes paid on self-employment or proprietors' earnings by the owners or partners of for-profit hospitals are likewise excluded. These significant personal income tax contributions from both hospital employees and owners are estimated separately in a later section of the report.

Pandemic Effects on Taxes Paid

Large subsidies received by hospitals during the recent COVID-19 pandemic distorted the typical business tax payments made by hospitals in Oklahoma and across the nation. The hospital sector in most states reported negative net tax payments during the period due to large federal subsidies received. In Oklahoma, net taxes after subsidies totaled an estimated -\$88.4 million in 2021 (*Figure 9*). BEA reported gross tax payments by Oklahoma hospitals of \$90.1 million that were more than offset by federal and state subsidies that reached a reported \$178.5 million in 2021. A similar negative net tax contribution of -\$91.7 million was reported for the initial pandemic year of 2020, with business tax payments of \$72.7 million more than offset by federal and state subsidies of \$164.4 million.

In contrast to the pandemic period, hospitals historically receive few subsidies and instead make substantial net business tax payments. Total tax payments from hospitals are substantial despite the large share of not-for-profit and government-owned and operated hospitals with tax exemptions. In 2019, immediately prior to the pandemic, Oklahoma hospitals made net tax payments after subsidies on operations of \$66.9 million. Subsidies totaled only \$115,000 in 2019. Across the three pre-pandemic

¹⁰ For access to the BEA state-level tax and subsidy database, see: <https://www.bea.gov/data/gdp/gdp-state>

¹¹ For details on the BEA methodology, see: https://www.bea.gov/sites/default/files/methodologies/0417_GDP_by_State_Methodology.pdf. For detailed coverage of taxes, see: <https://apps.bea.gov/scb/2018/04-april/0418-preview-2018-comprehensive-nipa-update.htm>

years from 2017 to 2019, net business tax payments after subsidies by hospitals averaged \$60.3 million annually, with annual subsidies of only \$1.25 million. This period is typical of the historical tax contribution of the state's hospital sector. Tax payments by hospitals have since reverted back to the long-run trend in recently released data for 2022, with total net tax payments by hospitals of \$65.8 million after subsidies of \$33 million.

It is important to note that large subsidies and sharply reduced tax payments during the pandemic period were not unique to the hospital sector, or healthcare in general. Most industries received significant federal, state, and local subsidies in 2020 and 2021 that resulted in far lower, and often negative, net business tax payments. Statewide, Oklahoma businesses received subsidies of \$8.9 billion in 2020 and \$5.8 billion in 2021.¹² For comparison, total statewide subsidies across all sectors averaged only \$720 million annually from 2017 to 2019. For 2022, total subsidies in Oklahoma declined sharply to only \$1.4 billion.

Gross Operating Surplus

Revenue generated by hospitals also results in some gross operating surplus earned that accrues to owners. The four components of gross operating surplus are proprietor income (earnings of self-employed hospital owners and partners), consumption of fixed capital (an economic measure of depreciation),¹³ corporate profits,¹⁴ and net business transfer payments. For 2021, gross operating surplus in the state's hospital sector reached an estimated \$879.3 million, or about 5.7% of total hospital sector revenue.

Two of the components, proprietor income and corporate profits, are not earned by the state's not-for-profit and government owned hospitals. These factors contribute to a far lower share of revenue going to owners in the hospital sector relative to many other industry sectors.

Proprietor income is earned primarily by owners of for-profit hospitals that are organized as partnerships. The proprietor income component totaled \$344.2 million (39%) in 2021. When proprietor income is combined with employee compensation of \$6.31 billion, total labor income from Oklahoma hospitals reached \$6.65 billion in 2021. Total labor income captures the total direct effect of the hospital sector on household income in Oklahoma.

The remaining three components of gross operating surplus – consumption of fixed capital (economic depreciation), corporate profits, and net business transfer payments – totaled \$535.2 million in 2021. These items are combined within broader categories in the state-level BEA data, leaving the size of the individual components unknown.

¹² The increased subsidies included Paycheck Protection Program (PPP) forgivable loans and other forms of federal and state assistance.

¹³ See: <https://www.bea.gov/help/glossary/consumption-fixed-capital-cfc>. According to BEA, consumption of fixed capital is a "charge for the using up of private and government fixed capital located in the United States. It is the decline in the value of the stock of fixed assets due to wear and tear, obsolescence, accidental damage, and aging. For general government and for nonprofit institutions that primarily serve individuals, CFC serves as a measure of the value of the current services of the fixed assets owned and used by these entities."

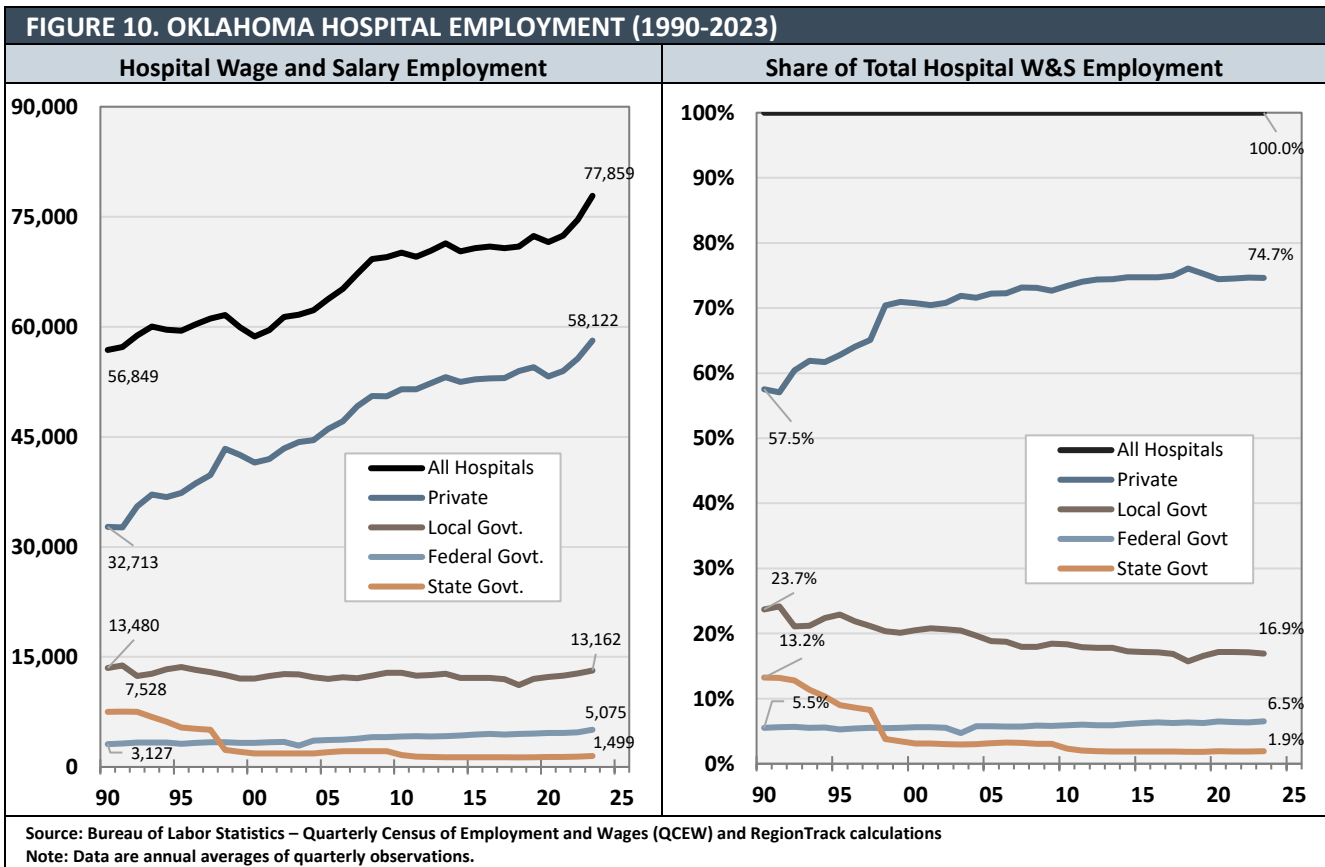
¹⁴ Corporate profits accrue only to those hospitals that are organized as a corporation and are used to support the payment of corporate dividends.

LONG-RUN HOSPITAL EMPLOYMENT & WAGE TRENDS

The state's hospitals support a sizeable workforce that is highly skilled and paid relatively high average wages. The Quarterly Census of Employment and Wages (QCEW) data program operated by the Bureau of Labor Statistics (BLS) provides a comprehensive historical dataset on the number of wage and salary jobs and total compensation paid to workers at the detailed NAICS level that extends across multiple decades. The dataset covers workers at both private and public sector business establishments that participate in the state Unemployment Insurance (UI) program. Government employment is divided into federal, state, and local components. Tribal government hiring is tracked within QCEW data as local government.

QCEW VS. AHA EMPLOYMENT & WAGE DATA

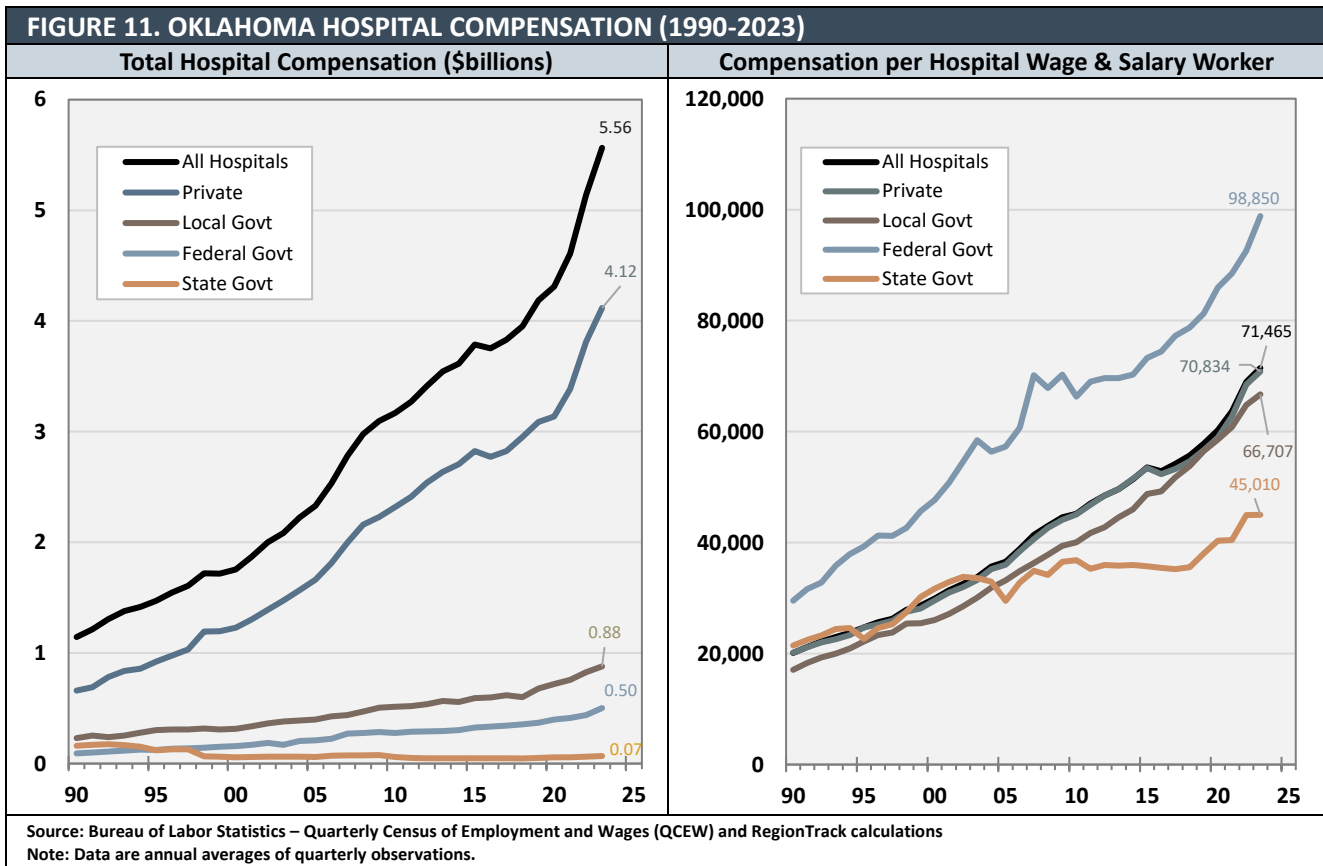
Because QCEW tracks only jobs at firms with employees subject to UI withholding, some hospital employees and their wages are excluded from UI coverage and, consequently, the QCEW data program. The definition used to identify hospitals also differs between the QCEW and AHA surveys. As a result of these differences, QCEW estimates of total hospital employment and compensation will generally fall below the more comprehensive and detailed estimates found in the AHA survey. For comparison, the AHA survey reports 78,361 (71,192 FTE) employees for all reporting hospitals for fiscal year 2021. QCEW estimates suggest a total of 72,420 hospital employees in calendar year 2021, roughly 6,000 fewer (7.5% less) workers. Compensation in the hospital sector reported in the AHA survey (\$6.31 billion) exceeds the amount reported in the QCEW (\$5.56 billion) by 12%.



The long historical series data available within QCEW allow for the evaluation of long-run trends in employment and compensation. *Figure 10* details historical trends in hiring for all components of hospital employment covered in the QCEW data since 1990. On an annual average basis, Oklahoma's hospitals employed 77,859 wage and salary workers in 2023. In the fourth quarter of 2023, the most recently available data, hospital employment reached a record 78,813 wage and salary workers.

Hospitals employed about 4.5% of the 1.62 million wage and salary workers across all industries statewide in 2023. Approximately 75% (55,685) of jobs in the hospital sector in 2023 were in private hospitals. The private share of total hospital jobs has increased steadily in the past few decades, rising from about 58% of total hospital jobs in the early 1990s to three-fourths currently. Private hospitals also employed approximately 3.4% of all wage and salary workers in the state.

Jobs in hospitals owned and operated by local governments totaled 13,162 in 2023, approximately 17% of total hospital sector jobs. The share has dropped steadily from a peak of nearly 24% across the past few decades. Federal government hospitals employed an estimated 5,075 workers in 2023, approximately 6.5% of the total hospital workforce. Only about 2% of the hospital workforce, or about 1,500 workers, were employed by state government operated hospitals. This share is down from more than 13% in the early 1990s.



COMPENSATION

Figure 11 details the long run trend in compensation paid by hospitals in the 1990-2023 period, along with the average annual compensation for each category of hospital employment. For 2023, QCEW data indicate that covered hospital wage and salary employees earned a total of \$5.56 billion in

compensation. Again, wage and salary income comprised about 85% of total compensation, as reported in *Figure 9*.

Workers across all categories of hospitals earned an average of \$71,465 annually in 2023, more than 27% higher than the average compensation of \$56,070 across all statewide workers covered by QCEW data in 2023. As a share of statewide activity, hospital workers earned 5.9% of \$94.2 billion in total statewide compensation in 2023.

Along with employing 75% of the state's hospital workers, privately owned hospitals paid 74% (\$4.12 billion) of the total compensation paid to hospital workers statewide. Private workers earned \$70,834 in average compensation in 2023, only about 1% less than the overall hospital average.

Local government hospitals employed almost 16.8% of hospital workers and paid nearly 16% of total hospital compensation. Local government-owned hospitals paid an average of \$66,707 per worker in 2023, which falls about 6.5% below the overall hospital average wage.

State hospitals employed about 1.8% of hospital workers but paid only 1.2% of total hospital compensation. State facilities paid the lowest average wages of \$45,010 in 2023, 37% below the overall hospital average.

Federal hospitals had the highest average compensation of \$98,850 in 2023, roughly 38% higher than both the overall average and the private sector average. The federal sector remains a relatively small component of the overall hospital industry, employing only 6.4% of all hospital employees yet paying 9% of all compensation.

Economic Impact of Oklahoma's Hospitals

Business activity within the state's hospital sector produces a substantial direct economic contribution to the Oklahoma economy. Like all industry sectors, hospitals have a strong degree of economic interdependence with the remainder of the state economy. In this section, the amount of direct activity in the sector is summarized and then used to form estimates of spillover economic activity to the overall state economy.

DIRECT ECONOMIC CONTRIBUTION OF THE HOSPITAL SECTOR

Figure 12 provides a summary of the direct economic effects generated within the state's hospital sector in 2021. The direct contribution of the sector is first split between the 93 private sector and 55 public sector hospitals operating in the state. Nearly two-thirds (63%) of the state's hospitals are private entities, but these hospitals account for three-fourths (75%) of total hospital revenue.

A private/public split of the data is necessary given differences in the economic structure of the underlying financial operations of private sector versus public sector hospitals. Key differences between the two groups exist for proprietor income, average wages per employee, and tax structure. Spillover effects for the two ownership types are estimated separately and then combined to form overall estimates for the full industry.

Figure 12. Oklahoma Hospitals - Direct Economic Effects (2021)			
	Hospital Ownership		Total
	Private Sector	Public Sector	
Hospital Count	93	55	148
Economic Output (millions)	\$11,536.5	\$3,804.1	\$15,340.6
Value Added or GDP (millions)	\$5,062.6	\$2,034.3	\$7,096.9
<i>Household Earnings: (millions)</i>			
Employee Compensation	\$4,279.2	\$2,026.8	\$6,306.0
Proprietor Earnings	\$344.2	\$0.0	\$344.2
Total Labor Income	\$4,623.4	\$2,026.8	\$6,650.2
<i>Employment:</i>			
Wage & Salary Employees	51,237	27,124	78,361
Proprietors (self-employment)	107	0	107
Total Employment	51,344	27,124	78,468
Source: Bureau of Economic Analysis-U.S. Input-Output Accounts & RIMS II; Bureau of Labor Statistics; American Hospital Association; and RegionTrack estimates.			
Notes: Employment includes full- and part-time employment.			

The direct economic contribution of Oklahoma's 148 hospitals in 2021 included total output of \$15.34 billion. Privately-owned facilities produced \$11.5 billion (75%) in output, while publicly owned facilities produced the remaining \$3.8 billion (25%). The average hospital in the state produced about \$104 million in output in 2021. Private hospitals (\$124 million average) produced 80% more economic output, on average, than public hospitals (\$69 million average).

Value added, or state GDP, produced by the hospital sector totaled \$7.1 billion in 2021, with approximately 71% traced to private sector hospitals. The largest component of value added is \$6.65 billion in labor income earned by hospital employees and self-employed proprietors in the sector. Almost 70% of total labor income was paid by private sector hospitals. Total compensation received by hospital employees totaled \$6.31 billion, or 95% of total labor income. Proprietor income totaled only \$344.2 million, or 5% of total labor income. Only 107 proprietors with an ownership interest in a private hospital were reported within the state in 2021.

The state hospital sector directly employed almost 78,500 total workers, with nearly all of them wage and salary employees. Again, the estimates of direct wage and salary employment and compensation are derived from the AHA survey of hospitals. Approximately two-thirds (51,344) of all workers were employed by private hospitals, while the remaining one-third (27,124) worked in publicly owned facilities.

SPILLOVER AND TOTAL EFFECTS

In describing the economic impact of hospitals in Oklahoma, the amount of economic activity transacted in the hospital sector is deemed the *direct* effect. Again, these effects are summarized in *Figure 12*.

The direct effect, in turn, underlies subsequent *indirect* and *induced* spillover economic effects statewide. The *indirect* effect is new economic activity generated in the state economy resulting from hospital spending on goods and services used in the provision of medical care services. The distribution of hospital spending is detailed by industry in *Figure 9*. The *induced* effect reflects the economic activity triggered in other sectors of the state economy resulting from new household spending in the state out of earnings received as part of the direct and indirect effects.

The indirect and induced effects are jointly referred to as *multiplier* (or spillover) effects resulting from the direct effect. The *total* economic impact from activity in the hospital sector is simply the sum of the direct and spillover (indirect and induced) effects.

Multipliers

Economic impact multipliers provide a convenient means for quantifying the expected relationship between the initial direct effect of activity in the hospital sector and the resulting spillover effects on the state economy. Direct-effect multipliers are derived for economic output, value added (state GDP), household earnings, and employment in the hospital sector.

Type-1 multipliers describe the size of the estimated indirect spillover effects only (calculated as $(\text{direct} + \text{indirect}) / \text{direct}$). Multipliers for hospitals are typically larger in those states where a higher share of purchases made by the hospital are met by producers within the state rather than imported from outside. The estimated share of purchases made within the state is referred to as the regional purchase coefficient (RPC).¹⁵ Higher RPCs lead to higher multipliers.

¹⁵ The share of purchases made from outside the region are equal to 1-RPC. The more purchases made in-state the larger the estimated multiplier. The multipliers used in this report are regionalized using location quotients (LQs). An LQ shows the share of activity within an industry at the local level relative to the activity occurring outside the region, or nationally. An LQ of 1 suggests that the industry presence in the local region is the same as the national level. An LQ less (greater) than one suggests that the

Type-2 multipliers describe the size of the combined indirect and induced spillover effects, or the total multiplier (or spillover) effect (calculated as (direct + indirect + induced) / direct). Type-2 hospital multipliers will generally be larger in states where a larger share of hospital purchases is made within the state or where a larger share of the earnings generated directly and indirectly through the hospital sector is subsequently spent within the state. With some exceptions, the size of a Type-2 multiplier for most regions is closely related to the size of the corresponding Type-1 multiplier.

GROSS SPILLOVER EFFECTS FROM THE HOSPITAL SECTOR

Gross economic spillover impacts resulting from the operation of the state’s hospital sector in 2021 are detailed in *Figure 13*.¹⁶ Included are estimates of the amount of statewide economic output, value added (GDP), labor income, and employment supported by the state’s hospitals, both directly and through spillover effects.¹⁷

Figure 13. Estimated Gross Multiplier Effects - Oklahoma Hospitals (2021)

Economic Measure	Multiplier Effects				Share of Total State Activity		
	Direct Effect	Indirect & Induced Effects	Total Effect	Implied Multiplier	State Total	Direct Effect as Share of State Total	Total Effect as Share of State Total
Output (billions)	\$15.34	\$15.13	\$30.47	1.99	\$386.7	4.0%	7.9%
Value Added (billions)	\$7.10	\$6.62	\$13.71	1.93	\$217.7	3.3%	6.3%
Labor Income (billions)	\$6.65	\$6.06	\$12.71	1.91	\$139.2	4.8%	9.1%
Employment (FT+PT)	78,468	107,413	185,881	2.37	2,314,387	3.4%	8.0%

Notes: Total employment includes both wage and salary and proprietor employment.

Economic Output

State output traced to hospitals can be partitioned into direct, spillover (indirect and induced), and total effects. The *direct* effect of \$15.34 billion in output supported an additional \$15.13 billion in estimated spillover output in other industries statewide. **In total, the state’s hospitals supported an estimated \$30.5 billion in economic activity across all state sectors.**

Each dollar of direct output within the hospital sector supported an additional \$0.99 in estimated economic activity statewide. The \$30.5 billion in estimated state economic output supported by the state’s hospitals represents **7.9% of total statewide economic output** of \$386.7 billion in 2021.

industry share in the local region is smaller (larger) than the national share. Other input-output models use varying approaches to regionalizing multipliers at the state level. For example, IMPLAN multipliers use either a trade-flow model or econometric estimation.

¹⁶ We make no attempt to formulate a comprehensive net cost-benefit analysis of the hospital sector. There are many relevant components to a net analysis that extend well beyond the direct economic role of the sector. These include social costs and benefits, alternative uses of federal, state, and local funding, alternative outcomes for healthcare service provision in the state, and the deadweight economic loss that can occur in the private sector because of taxpayer funding of services.

¹⁷ Caution must always be exercised when using input-output analysis to estimate the total economic activity ‘supported’ by an existing industry or firm. Input-output multipliers are designed to predict the gross changes in a regional economy resulting from a small, incremental change in its current structure. For an accessible discussion of how multiplier-based estimates of spillover effects are frequently misused and often overstate resulting spillover effects, see Hughes (2018) <https://extension.tennessee.edu/publications/Documents/W644.pdf> and Olfert and Stabler (1994) <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1468-2257.1994.tb00155.x>.

State GDP (Value Added)

Measured using state GDP in the hospital sector, the *direct* effect of \$7.1 billion supported an incremental \$6.6 billion in spillover GDP in other industries statewide. In other words, each dollar of direct GDP produced within the hospital sector supported an additional \$0.93 in estimated GDP statewide. **The \$13.7 billion in total GDP supported by the activity of hospitals represents 6.3% of \$217.7 billion in total state GDP in 2021.**

Labor Income

The total impact of household earnings supported by hospital activity can also be partitioned into direct and spillover effects. The *direct* effect is the \$6.65 billion in labor income paid directly to employees and self-employed proprietors in the hospital sector. The direct earnings supported an additional \$6.06 billion in indirect and induced earnings for workers and proprietors in other industries statewide. Each dollar of direct earnings by hospital employees and proprietors supported an additional \$0.91 of household earnings statewide. **The \$12.7 billion in estimated gross labor income to households supported by hospital activity represents 9.1% of total statewide household earnings of \$139.2 billion in 2021.**

Employment

Measured by direct employment, 78,468 employees worked as either wage and salary workers or self-employed proprietors in the Oklahoma hospital sector in 2021. This employment supported an estimated 107,413 additional jobs statewide through indirect and induced effects. Each direct job in the hospital sector supports 1.37 additional jobs in other sectors statewide.

The high multiplier (2.37) for job creation reflects the high average wages paid in the hospital sector relative to the overall average in other sectors. In total, **the operations of the state's hospital sector directly and indirectly supported nearly 186,000 jobs statewide**, or 8.0% of the 2,314,400 total jobs statewide in 2021.

State and Local Tax Impacts

State and local tax impacts can be approximated as a share of the \$12.71 billion in total labor income supported by hospital activity in *Figure 13*. Expected tax revenue would total \$979 million at a 7.7% average tax rate applied to the estimated gross labor income impact. The average tax rate is calculated as the ratio of total state taxes as defined by the Census Bureau (minus corporate taxes and taxes not elsewhere classified (which include oil and gas severance taxes)) to total state labor income over the 2015 to 2019 period.¹⁸ The state and local tax impact is equivalent to 3.2% of total economic activity supported by the hospital sector. These tax impacts include personal income taxes on household earnings, sales and use taxes, ad valorem (or property) taxes, motor vehicle taxes, motor fuel taxes, and others.

¹⁸ See: Urban Land Institute, 2020. "State and Local Finance Data." <https://state-local-finance-data.taxpolicycenter.org/pages.cfm>

Summary of Gross Impacts

Estimates in *Figure 13* illustrate the sizeable influence of the state's hospitals on the broader state economy.¹⁹ Including spillover effects, direct activity at the state's hospitals supported gross economic activity of \$30.5 billion in economic output, \$13.7 billion in state GDP, \$13.4 billion in labor income earned by households, and 185,650 full- and part-time jobs in 2021. Estimated state and local tax contributions derived from gross hospital activity total \$979 million in 2021.

¹⁹ We do not construct a counterfactual scenario that represents an alternative comparative view of the state economy that removes the hospital sector and its various interrelationships from the structure of the input-output model. Devising a sound counterfactual analysis that represents a reasonable alternative use of spending on hospital services presents a considerable modeling challenge. It is not at all clear what a possible counterfactual case would be in assessing the economic role of the state's hospitals.

Summary of Key Findings

1. The hospital sector plays a vital role in supporting both the state's economy and the well-being of its residents. Beyond healthcare provision, hospitals make important economic contributions through several channels:
 - Hospitals directly influence the health and productivity of the local population and workforce.
 - They are foundational to workforce and community development efforts.
 - Their operations contribute substantially to economic growth in the regions where they operate.
 - Hospitals provide economic stability and enhance the attractiveness of regions for residents and businesses.
2. Hospitals serve as the hub for delivery of healthcare services in Oklahoma:
 - In 2021, Oklahoma had 148 general and specialized hospitals operating statewide.
 - Hospitals are widespread across the state and located in 72 of the state's 77 counties.
 - Hospitals serve as the hub for both general and specialized healthcare delivery in most markets where they operate.
3. Oklahoma has a highly diversified group of hospitals assuring accessible and quality healthcare:
 - Hospitals range from rural community hospitals to large urban research and teaching hospitals that offer the highest levels of care in the state.
 - Most hospitals (107) in the state are general medical and surgical hospitals.
 - The remaining hospitals (41) specialize in areas such as surgery, obstetrics, maternity, psychiatry, and rehabilitation. Several hospitals in the state provide specialized care for children.
4. Hospitals in Oklahoma represent an expensive network of healthcare facilities with substantial capacity:
 - Collectively, these facilities staffed a total of 13,088 beds in 2021, with the average hospital maintaining staffing for 89 beds.
 - Systemwide, Oklahoma hospitals managed a total of 431,557 admissions throughout the year, or 1,182 per day. The number of admissions is equivalent to about one in nine Oklahomans each year.
 - The total number of inpatient days (IPDs) reached nearly 2.8 million in 2021. A hospital stay typically extends across multiple days, with an average of 6.5 IPDs for each admission.
5. The location of hospitals aligns closely with the population centers of the state:
 - More than half (79) of the 148 hospitals operating in the state are located within 19 metropolitan area counties. The remaining 69 hospitals are in the 58 non-metropolitan counties of the state.
 - The state's 17 smaller micropolitan areas (covering 19 counties) are home to 32 hospitals.
 - The remaining 37 hospitals are spread across 33 rural counties.
6. The state's hospitals represent a mix of ownership types that typically align with the mission and services offered at each hospital:
 - Most hospitals (93) are privately operated and represent a mix of for-profit and not-for-profit entities.
 - Only about one-third (53) of Oklahoma's hospitals are private for-profit entities.

- The state's 51 nonfederal government operated hospitals reflect a mix of state, tribal, and local (municipal and county) governments as well as district or authority operated hospitals.
 - Ownership type influences the economic impact of a hospital on the state economy.
7. Hospitals are important from an economic perspective because they generate business activity and account for a significant share of household spending on health services:
- Spending on total personal healthcare services received by providers located in Oklahoma totaled \$37.6 billion in 2021, or about 17% of total personal income in the state.
 - Hospital care is the largest single component of health services spending, accounting for \$15.6 billion (41% of total personal healthcare spending) in Oklahoma in 2021.
 - Patient spending at hospitals in Oklahoma equaled 7.1% of total personal income earned in the state in 2021.
8. Hospitals make a substantial direct economic contribution to the Oklahoma economy through the creation of business activity, jobs, and wages:
- In 2021, revenue produced by Oklahoma's hospitals represented \$15.3 billion of total direct economic activity in Oklahoma, or 4.0% of total economic output statewide.
 - The hospital sector produced \$7 billion in state GDP (value added), or 3.3% of total GDP statewide.
 - Hospitals employed an estimated 78,361 wage and salary workers earning \$6.31 billion in compensation, nearly 5% of all wage and salary jobs and employee compensation statewide.
9. The hospital sector has a large and highly skilled workforce:
- The hospital workforce consists of both wage and salary employees and a small number of self-employed proprietors with an ownership interest in private hospitals.
 - Full-time equivalent (FTE) employees in the hospital sector totaled 71,190 in 2021, comprising 65,150 full-time employees and an additional 13,209 part-time employees.
10. Hospital workers are paid well above statewide average wages:
- Based on QCEW data, the average annual compensation for hospital workers in Oklahoma was \$71,465 in 2023, more than 27% higher than the average of \$56,070 across all workers statewide.
 - Private sector hospitals paid workers an average of \$70,834 annually while government sector hospitals paid an average of \$73,324 in 2023.
 - Federal hospital workers have the highest average compensation among the groupings of hospital workers with average annual wages of \$98,850 but comprise less than 10% of the workforce.
11. Including estimated spillover effects, economic activity at Oklahoma's hospitals made a substantial gross contribution to the broader state economy:
- In 2021, direct economic output at hospitals plus estimated spillover effects supported a total of \$30 billion in economic output, or 7.9% of state economic output.
 - Including spillover effects, activity within the hospital sector supported \$13.7 billion in state GDP (or value added) in 2021, 6.3% of statewide GDP.
 - Through both direct activity and spillover effects, the state's hospitals supported 186,000 total jobs statewide and \$12.7 billion in earnings received by Oklahoma households in 2021. Statewide, this represents 8.0% of total employment and 9.1% of household earnings, respectively.

- Tax payments to state and local governments in Oklahoma traced to hospital industry activity totaled an estimated \$979 million in 2021.
12. Substantial ongoing purchases by state hospitals reach all major industry sectors across the state:
- Hospitals spent a total of \$8.4 billion on goods and services in 2021, with \$5.3 billion (64.2%) spent with businesses located in the state.
 - Key purchases of \$500 million or more in 2021 included \$1.3 billion in real estate, rental, and leasing services; \$949 million in administrative, support, and waste management services; \$890 million in manufactured goods; and \$517 million in professional, scientific, and technical services.
 - Smaller spending categories included \$440 million in finance and insurance; \$379 million in accommodations and food service; \$163 million in utilities; \$159 million in transportation and warehousing; \$158 million in healthcare and social services; \$44 million in information services; and \$33 million in construction.
13. Hospitals are one of the steadiest and largest contributors to net economic growth in the state:
- The hospital sector added more than 15,000 net new jobs statewide in the past three decades.
 - Hospital spending, like most forms of personal healthcare spending, remains relatively insensitive to recessionary conditions and provides stability to the state economy.
 - The presence of a hospital in a community retains the income earned by workers in specialized healthcare occupations in the local economy.
14. Recent developments have significantly strengthened the role played by hospitals in Oklahoma:
- The recent expansion in Medicaid coverage in Oklahoma provided children in low-income families with greater access to hospitals and other forms of medical care.
 - Substantial expansion has occurred in tribal provision of healthcare services in recent years, including expansion in the hospital sector.
 - The recent pandemic provided considerable one-time financial resources to bolster healthcare access and provision in the state.
15. Some economic concerns remain over access, quality, and affordability of hospital care and healthcare services more broadly:
- Total spending on hospital services within the state has increased 4.4% annually since 1990.
 - The pace of rising healthcare costs continues to slow over time but still exceeds inflation.
 - Hospital coverage is not available in all areas of the state, with five counties having no local access to hospital care.
 - Many rural hospitals in the state continue to struggle financially to maintain services.

Appendix 1. Oklahoma Healthcare Expenditures

The economic significance of the healthcare sector is traced to the high share of household income spent on healthcare services. Hospitals play the most significant role in delivering healthcare services and are the largest single component of healthcare spending.

This appendix examines historical trends in Oklahoma healthcare expenditures, including spending both within Oklahoma and by Oklahoma residents both inside and outside the state. State hospital spending estimates are used in the report to estimate the size of economic spillovers from the hospital sector to the state economy.

OKLAHOMA PERSONAL HEALTHCARE SPENDING

Datasets produced by the Centers for Medicare and Medicaid Services (CMS) provide detailed historical estimates of healthcare spending at the state level.²⁰ A unique element of the data is the recognition that healthcare spending of a state's residents often extends beyond state boundaries, with patients receiving care both inside and outside their home state.

To account for the interstate flow of spending, CMS provides estimates of both the expenditures received by providers in a state and expenditures made by residents of the state, irrespective of the provider's location. The net difference between these two measures indicates the net flow of healthcare spending into or out of the state.

State health expenditure data tabulated by CMS have two limitations. The first is that state-level estimates include only the personal healthcare component of total healthcare expenditures. Excluded are the costs associated with government administration of health programs, net cost of health insurance, government public health efforts, medical research, and investment in facilities and equipment. These five components of U.S. healthcare expenditures detailed are not readily calculated at the state level, and there is no established method for distributing the expenditures among the states. They also do not represent direct purchases of health services by consumers and the financial flows are not readily tracked.

Nevertheless, the personal healthcare component remains the most common measure of total health expenditures used for analysis at the state level. It is the largest component of total healthcare spending, representing more than 80% of total health expenditures at the national level and in most states. Most importantly, hospital spending is one of the components of personal healthcare spending provided at the state level in the dataset.

The second limitation is that the most recently available data extends only through 2020. Historical data extends back to 1980 for spending at providers based in the state and to 1991 for spending by residents of the state regardless of where the spending occurred. The dataset provides ample context for evaluating both recent and historical trends in healthcare spending in Oklahoma.

²⁰ The Centers for Medicare and Medicaid Services (CMS) provides detailed historical estimates of healthcare expenditures at the national and state levels. Datasets are available online at: <https://www.cms.gov/data-research/statistics-trends-and-reports/national-health-expenditure-data>

Figure A1-1. Oklahoma Personal Healthcare Expenditures (2020)

Personal Healthcare Spending (\$millions)	Received by Oklahoma Providers		Spent by Oklahoma Residents		Net In-State Spending
	Spending	Share	Spending	Share	
Hospital Care	\$14,912	41.8%	\$15,888	42.3%	-\$976
Physician & Clinical Services	7,656	21.5%	8,275	22.0%	-619
Other Professional Services	1,318	3.7%	1,424	3.8%	-106
Dental Services	1,493	4.2%	1,636	4.4%	-143
Other Health, Residential, and Personal Care	1,598	4.5%	1,616	4.3%	-18
Home Health Care	1,101	3.1%	1,103	2.9%	-2
Nursing Home Care	2,130	6.0%	2,176	5.8%	-46
Prescription Drugs	4,273	12.0%	4,273	11.4%	0
Durable Medical Products	404	1.1%	436	1.2%	-32
Other Non-durable Medical Products	769	2.2%	769	2.0%	0
Total Personal Healthcare Spending	\$35,654	100.0%	\$37,595	100.0%	-\$1,941

Source: Centers for Medicare & Medicaid Services and RegionTrack calculations
Notes: Spending shares are calculated as a percentage of total personal care spending.

OKLAHOMA HEALTHCARE SPENDING

Figure A1-1 details the components of personal healthcare spending in Oklahoma in 2020 for both in-state spending and spending by Oklahoma residents. Spending on personal healthcare services received by providers located in the state totaled \$35.7 billion, or about 18% of total state personal income of \$199.2 billion in 2020. Hospital care is the largest single spending component, accounting for \$14.9 billion (41.8%) of total healthcare spending.

Spending on physician and clinical services, amounting to \$7.7 billion (21.5%), represents the second largest component. However, it is only about half the amount of spending allocated to hospitals. Prescription drug spending of \$4.3 billion (12.0%) is the third largest component but is less than one-third the amount spent on hospital care.

Other categories with more than \$1 billion in spending received by Oklahoma healthcare providers include nursing home care (\$2.1 billion), dental services (\$1.5 billion), other professional services (\$1.3 billion), and all other health, residential, and personal care services (\$1.6 billion).

Healthcare Spending Leakage

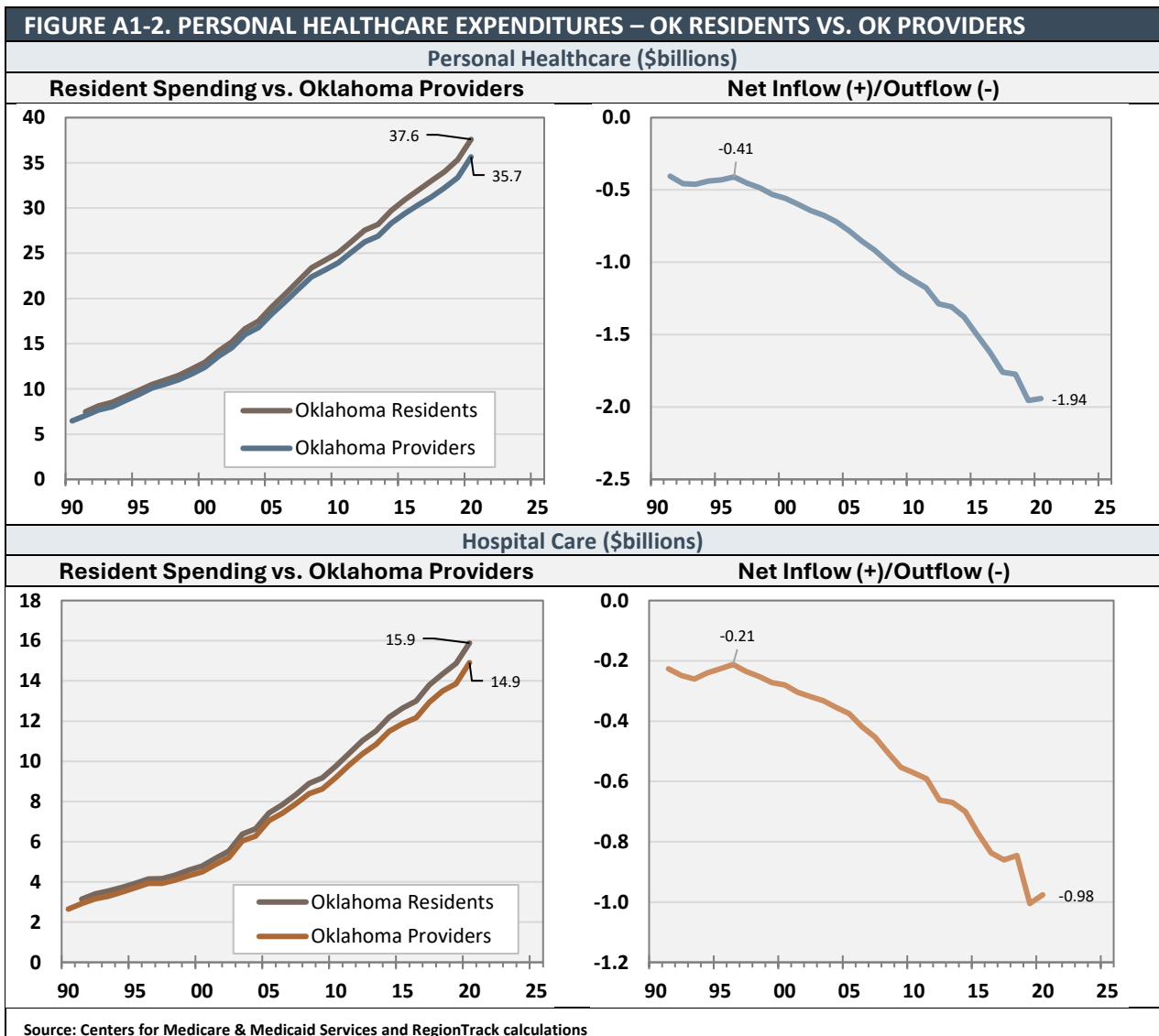
Spending by Oklahoma residents, both within and outside the state, totaled \$37.6 billion in 2020 and exceeded the \$35.7 billion spent with providers based in the state (Figure A1-1). This difference indicates a net outflow of personal care spending of \$1.94 billion to areas outside Oklahoma. The outflow represents a spending leakage of 5.2% of total healthcare expenditures by Oklahoma residents. Almost half of the net outflow in healthcare spending, totaling \$976 million, was due to hospital care, as residents sought hospital-based treatments outside the state.

The findings in Figure A1-1 highlight net spending outflows for Oklahoma residents in most spending categories. The most substantial outflows include -\$619 million in physician and clinical services, -\$143

million in dental services, and -\$106 million in other professional services. In contrast, other spending areas with only minor net outflows include nursing homes, home healthcare, and medical products.

Figure A1-2 provides a historical overview of spending outflows for both personal healthcare expenditures and hospital expenditures in the 1991-2020 period. Oklahoma has reported a steady but growing net outflow of healthcare spending over the past few decades, with the hospital sector consistently comprising about half of the outflow.

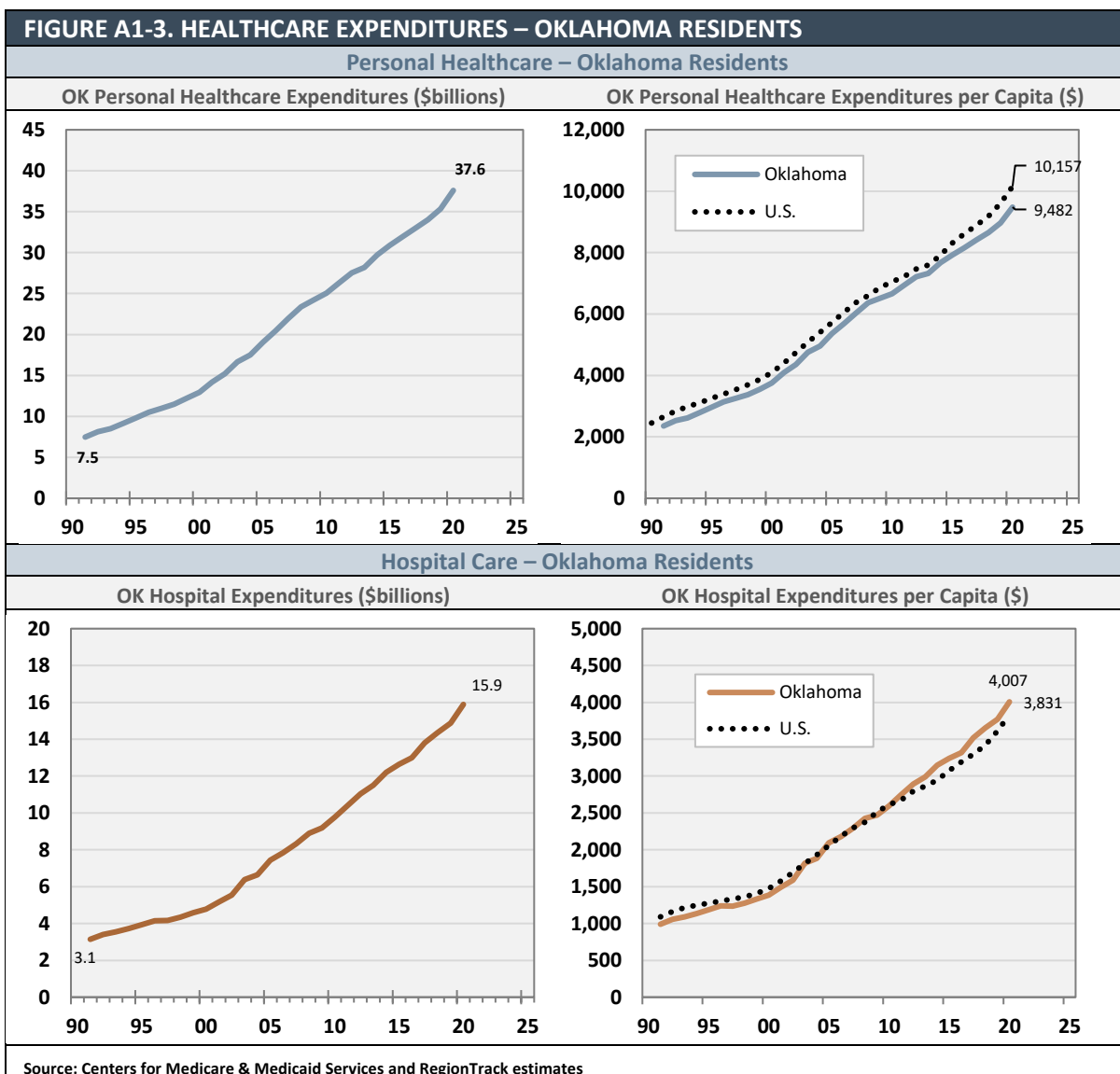
Although the outflow of personal healthcare spending has grown over time in nominal terms, the gap has remained stable at 4-5% of personal healthcare spending by Oklahoma residents. The outflow for hospitals has similarly remained stable since 1991 at 6-7% of total hospital spending by state residents. The hospital share of the net outflow has also remained stable over time, accounting for about half of the net outflow.



Oklahoma Per Capita Spending

Figure A1-3 provides an overview of healthcare spending in Oklahoma relative to the nation over the past three decades. In the most recently available data for 2020, Oklahomans spent 6.6% less than the U.S. average on overall personal healthcare (\$9,482 vs. \$10,157) annually but 4.6% more on hospital care than the nation (\$4,007 vs. 3,831).

Over time, healthcare spending in Oklahoma has closely tracked the overall trend in national spending. However, Oklahomans have long spent slightly less per capita than the nation on total personal healthcare. This pattern has reversed in recent years for hospital spending per capita, as the state moved above the national average a little more than a decade ago. Slightly more spending per person on hospital care in Oklahoma relative to the nation may simply indicate a more prominent role for hospitals in the delivery of primary care relative to other states.



The 6.6% lower amount of overall spending per person in the state is 3.6 percentage points less than the 10.2% difference reported in the overall cost-of-living in Oklahoma versus the nation in 2020.²¹ In other words, Oklahomans are spending more on personal healthcare services than expected based solely on the difference in cost of living in Oklahoma versus the nation.

The differential could be explained by greater relative use of healthcare services in Oklahoma relative to the nation, the presence of a more national-like market driving prices for healthcare services in low cost of living states, or other factors.

²¹ The Bureau of Economic Analysis Regional Price Parity index is used to compare the overall price level between Oklahoma and the nation. In 2020, the index value is 100.0 for the U.S. and 89.829 for Oklahoma. The index value indicates that the average price level in the state is 89.829% of the national price level, or a 10.171% difference in the overall price level in Oklahoma.

Appendix 2. Modeling Methodology

Spillover economic impacts from the operation of Oklahoma's hospitals are estimated using the Oklahoma Econometric Input-Output Model (OKEIM), an economic modeling tool developed and maintained by RegionTrack economists over more than two decades.

The model is widely used on an ongoing basis for economic impact analysis and forecasting at the state, metropolitan area, and county levels in Oklahoma. The model is used to form economic and tax forecasts for state agencies, local governments, and other economic development and policy groups around the state.

OKEIM is currently in its third major version and has been extended and rebuilt in stages over time to reflect ongoing advances in regional economic modeling. Prior uses of the model for economic impact analysis in Oklahoma include evaluations of higher education, oil and gas activity, manufacturing, vocational training, film and TV activity, state and local incentives, construction projects, child care, entertainment development, and many other subjects.

The model integrates a detailed regional input-output (I-O) model of the Oklahoma economy with a full-scale econometric forecasting model. The I-O component of the model is constructed using a methodology like that employed by the Bureau of Economic Analysis (BEA) to create the commonly used RIMS II input-output multipliers.²² In the model, industry level final demand changes in the input output model are used as inputs to inform the economic forecasts.

The I-O component of the model has up to 380 detailed industry sectors that include a few industries beyond the current coverage of the current RIMS II industry mix, with the number of detailed industry sectors dependent upon the region under analysis.²³ In modeling the activity of the state's hospitals, the individual effects of the sector are estimated separately for private and public sector hospitals and then aggregated to determine the overall effect.²⁴

The primary role of the model is to produce estimates of direct-effect economic multipliers. Economic impact multipliers are commonly used to estimate the effect of a change in economic activity in a given industry sector on the broader regional or national economy. The estimated multipliers quantify the expected impact (or spillover effect) of the direct economic activity occurring in a sector of the state economy on overall state economic activity.

For the hospital sector, the model accomplishes this by mapping spending at hospitals to the ongoing expenditure flows between businesses, households, and government sectors across the state.²⁵

²² The RIMS (Regional Input-Output Modeling System) II system and its approach to forming multipliers are discussed in detail at: <https://apps.bea.gov/regional/rims/rimsii/>.

²³ Many smaller counties or regions frequently have no current industry activity in some of the more highly detailed sectors.

²⁴ The three-step process of matching the components of the development to individual NAICS sectors, modeling the individual effects, and then aggregating the individual contributions of the components to form a total is often termed analysis-by-parts. It is technically equivalent to modeling the activity as a single entity, but the process can produce more appropriate impact estimates when the activities being modeled do not fit precisely within a single industry sector. This is the case with both private and government operated hospitals.

²⁵ While the input-output approach provides a useful way to measure the extent of the economic interlinkages within a regional economy, the approach is not without shortcomings. The primary criticisms of the approach are misapplication of the models and the failure of the largely static approach to account for changes in other areas of the economy such as prices, wages, and traded activity. Input-output analysis is most appropriate when the policy change or stimulus does not alter production patterns, product prices, input prices, wage rates, or cost of capital. It is generally most useful when there are no capital or labor constraints. Despite these criticisms, careful application of the models can provide useful estimates of the total economic activity attributable to an individual industry, firm, or institution within a region.

Spillover activity occurs as vendors to hospitals make subsequent purchases of goods and services from firms in other sectors of the state economy. The earnings of households with hospital employees and hospital owners are also subsequently re-spent throughout the state economy. Spending from the initial round of activity creates multiple additional rounds of spending and increased wage gains throughout the state economy.



4000 Lincoln Blvd.
Oklahoma City, OK, 73105
405.427.9537
www.okoha.com