

2016

An Assessment of Sales Taxes on Select Services for the City of Tulsa

A Sponsored Study Commissioned by the
Oklahoma Municipal League



**AN ASSESSMENT
OF SALES TAXES
ON SELECT SERVICES FOR
THE CITY OF TULSA**

Presented to:

Oklahoma Municipal League

and

The City of Tulsa

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Executive Summary

This study attempts to revisit a critical point raised by The Legislative and Citizens Tax Force on Tax Reform (the Task Force) in 2002. Among many recommendations to overhaul the Oklahoma tax structure, the Task Force suggested initiating sales taxes for select services at a rate equal to the existing sales tax for other non-service industries. This study assesses the potential revenue impact from the implementation of such a sales tax for select services in the City of Tulsa.

Using multiple sources of information (mainly Economic Census and Quarterly Census of Employment of Wages), this study first examines whether indeed service industries' revenues manifest enough size and stability to warrant the proposed attention. Having documented formidable size—comparable to that of retail industries—and strong resiliency against macroeconomic fluctuations for the service industries, this study then proceeds to estimate the revenues of the service industries for the period of 2012-2016.

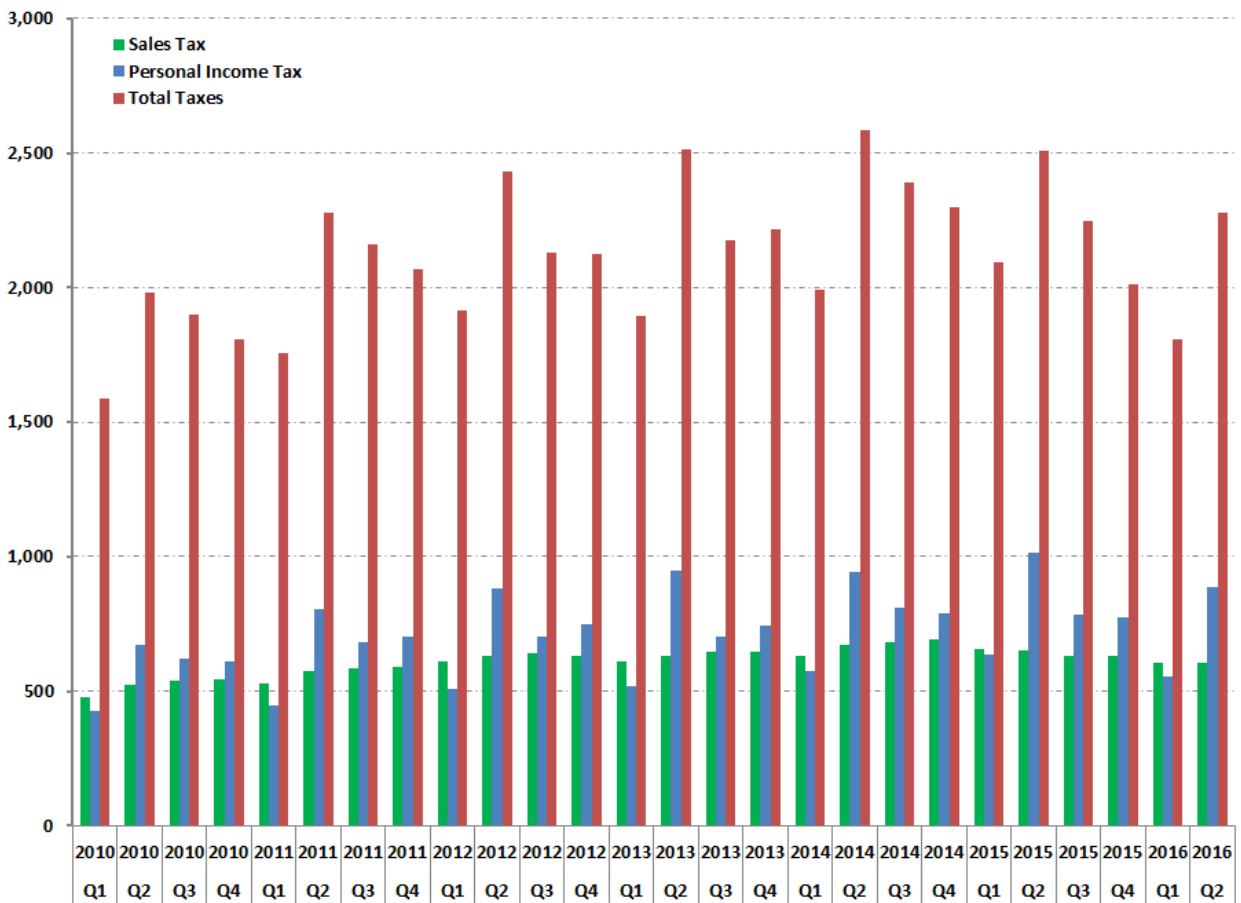
Excluding certain services (newspapers, professional services such as lawyers, accountants, and healthcare), the study estimates the total revenues from the remaining “select services industries” in 2015 to have been \$3,237,211,457.00 for the City of Tulsa. This implies that for every percentage tax excised, the City of Tulsa could have expected \$32,372,114.57 of additional revenues. Assuming that these revenues were to be taxed at the existing sales tax rate of 2%, the City of Tulsa then could have expected \$58,595,838.29, \$59,461,508.00, \$62,426,750.13, and, \$64,744,229.13 of additional tax revenues in 2012, 2013, 2014, and 2015.

To put this in perspective, at 2% tax rate, the service industries would have accounted for about 20% of all tax revenues in the City of Tulsa. In the State of South Dakota with very similar size economy and industrial variety, where services are taxed, the service industry accounts for about 15% of sales taxes and 21% of use taxes.

Introduction

The latest data from the Department of Commerce shows that in the second quarter of 2016 (typically the quarter with the largest total tax receipts), total tax receipts in Oklahoma have fallen to 2.276 US\$ billions (from 2.509 US\$ billions in the second quarter of 2015). This shows an almost 12% drop from the all-time peak of 2.584 US\$ billions of total taxes in the second quarter of 2014. The last time the total taxes were close to the most recent amounts was the second quarter of 2011. More troubling is the changes of total receipts within its four-quarter seasonal cycles. From the second quarter of 2015 to the first quarter of 2016, total tax receipts have fallen by more than 28%, a figure drastically higher than the 19% drop from the second quarter of 2014 to the first quarter of 2015 (which is in line with the prototypical seasonal patterns). While we still await the results for more recent quarters of 2016, it would be safe to say that, as far as tax revenues are concerned, the State of Oklahoma is facing a fiscal crisis.

Figure 1. ALL Taxes – The State of Oklahoma

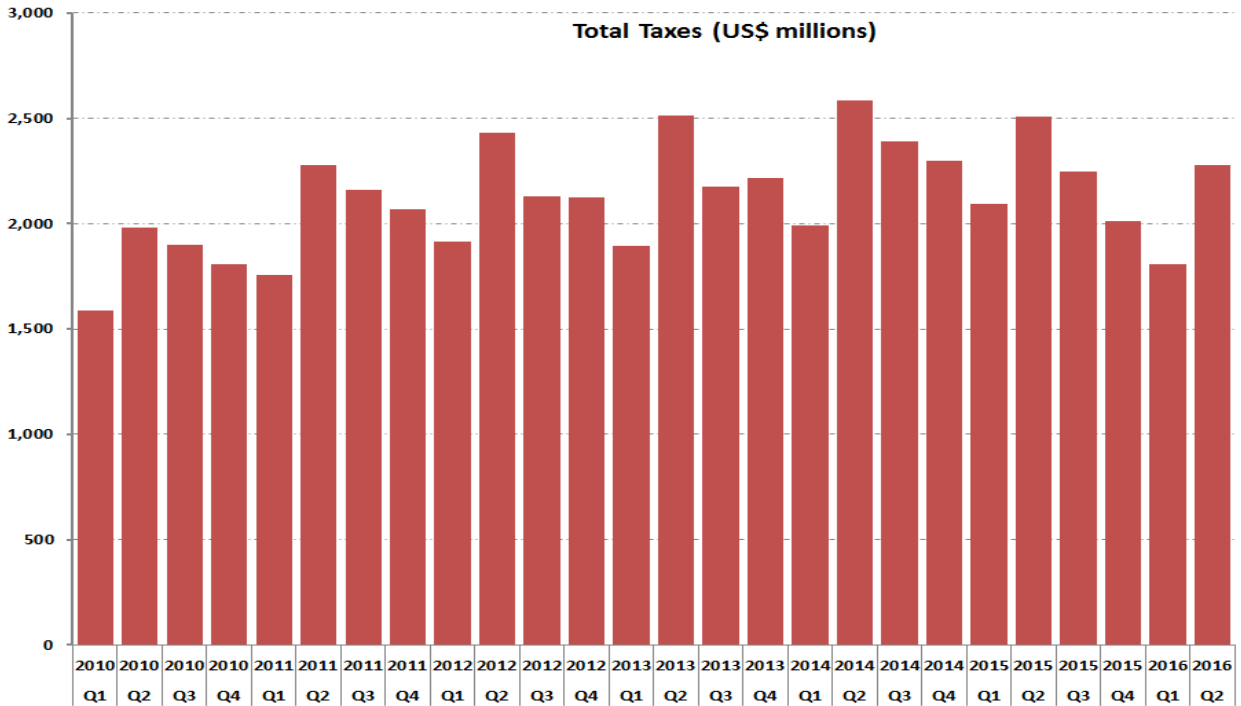


This figure shows the total, sales, and personal income taxes for the state of Oklahoma during the period of 2010Q1-2016Q1. The data is from the Quarterly Survey of State Governments' tax revenue conducted by the U.S. Census Bureau.

To illustrate these differences more clearly, the total taxes, personal taxes, and sales taxes

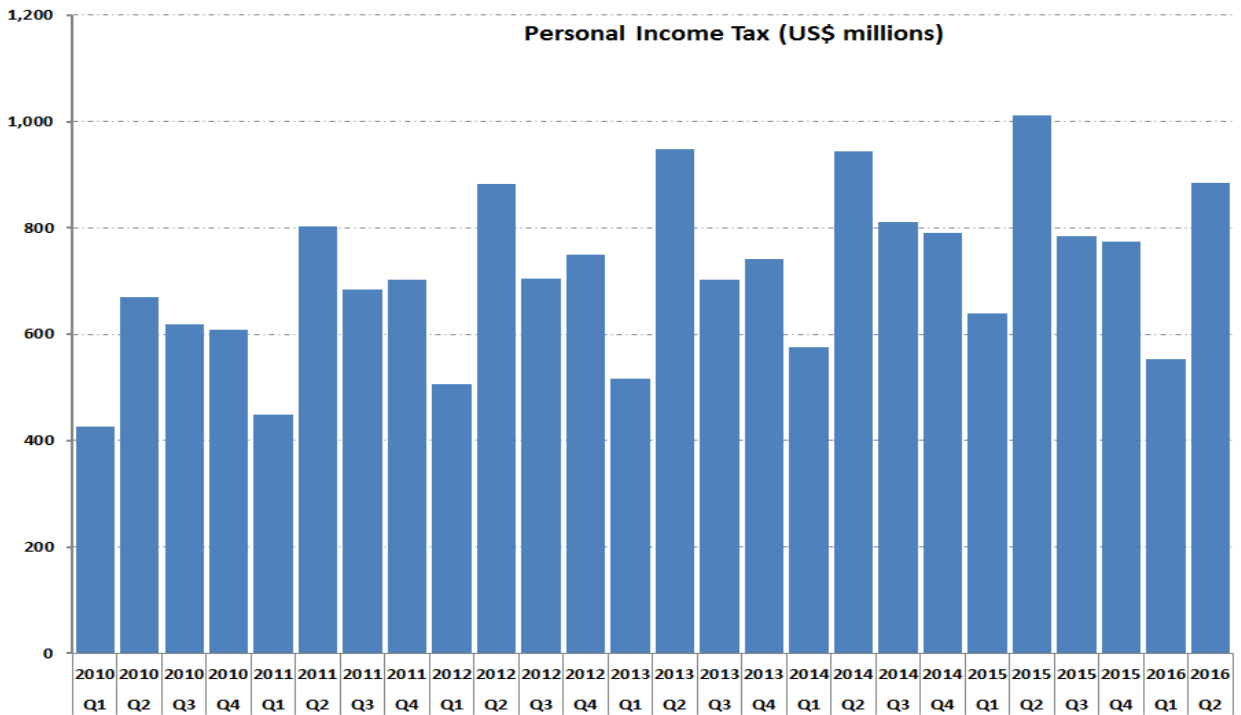
are shown in, respectively, Figures 2, 3, and 4. What is clear from these figures is that the majority of the seasonal patterns in the overall taxes are driven by personal income taxes.

Figure 2. Total Taxes – The State of Oklahoma



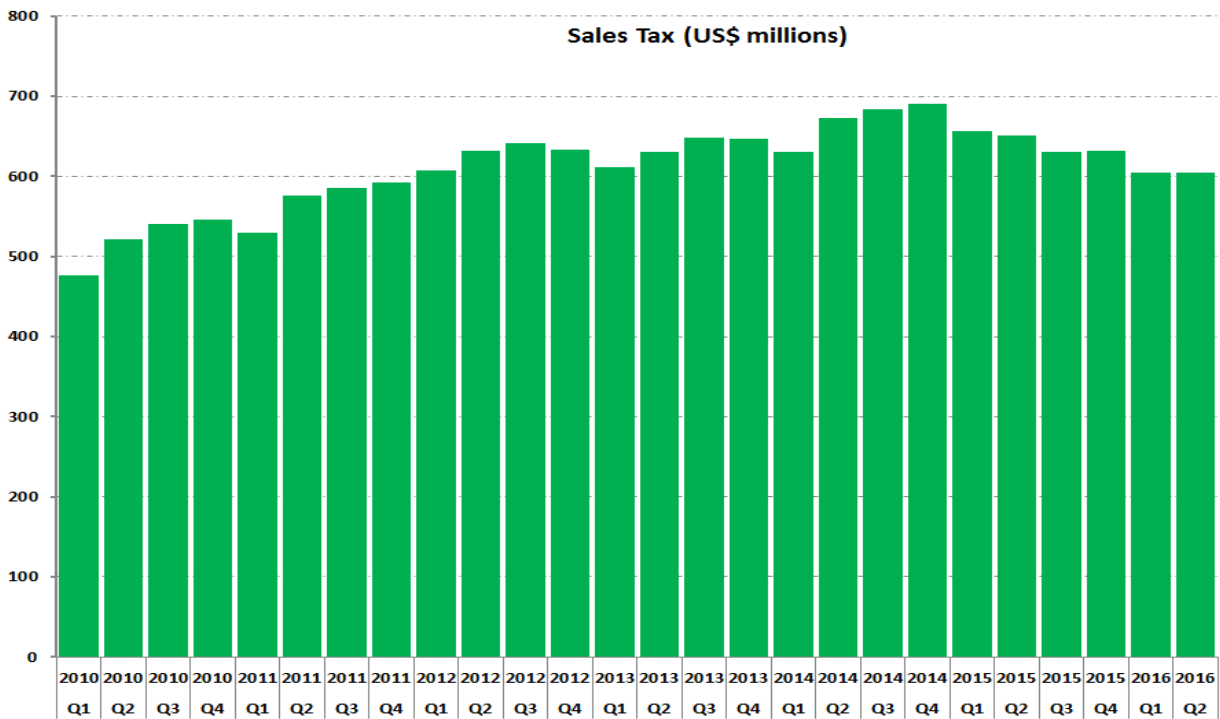
This figure shows the total taxes for the state of Oklahoma during the period of 2010Q1-2016Q1. The data is from the Quarterly Survey of State Governments' tax revenue conducted by the U.S. Census Bureau.

Figure 3. Personal Income Taxes – The State of Oklahoma



This figure shows the personal income taxes for the state of Oklahoma during the period of 2010Q1-2016Q1. The data is from the Quarterly Survey of State Governments' tax revenue conducted by the U.S. Census Bureau.

Figure 4. Sales Taxes – The State of Oklahoma



This figure shows the sales taxes for the state of Oklahoma during the period of 2010Q1-2016Q1. The data is from the Quarterly Survey of State Governments' tax revenue conducted by the U.S. Census Bureau.

As is shown above, sales taxes manifest similarly large declines since the last quarter of 2014, while they do not show statistically significant seasonality. These patterns further highlight the importance of exploring alternatives to the current tax structure which can provide more stability to the state and local governments' revenue streams. Undoubtedly, from a planning perspective alone, such stability can go a long way in assisting these governments to fend off budgetary crises.

Beyond the state level and at the local level, signs of tax revenue declines are even more dramatically evident. For instance, in Tulsa (in Tulsa County) the total sales and use tax from 2014 to 2015 remained virtually unchanged. However, historically pertinent industries for use taxes saw drastic declines. The third and fourth largest use tax generating industries of 2012, Plumbing/Heating Supplies (NAICS = 423490) and All Other Miscellaneous Retail Stores Except Tobacco (NAICS = 453210), respectively generated \$19.4M and \$17.1M. In 2015, these industries respectively generated \$13.4M and \$13.6M; a 44.8% and 25.7% respective decline. Obviously, managing government with such unstable revenue streams is tenuous at best.

Table 1 – Sales Tax for Tulsa (in Tulsa County) (Total & Top Industries)

This table depicts the aggregated sales tax (US\$) and for top gross sales tax generating industries (for NAIC codes see Appendix A) for years 2012, 2013, 2014, and 2015 for Tulsa (in Tulsa County). The data is from Oklahoma Tax Commission.

NAICS	2012 Sales Tax	2013 Sales Tax	2014 Sales Tax	2015 Sales Tax
All	121,811,011.02	116,633,622.09	243,542,661.15	244,367,481.36
445110	20,594,403.00	20,637,003.00	21,340,865.00	21,860,779.00
443112	15,323,181.00	16,818,755.14	20,929,269.00	24,692,000.80
44612	14,304,351.00	14,078,768.00	14,881,774.00	15,131,584.00
45211	14,304,351.00	14,078,544.00	14,881,529.00	15,131,257.00
446120	14,304,351.00	14,078,544.00	14,881,529.00	15,131,257.00
72211	10,134,726.00	9,713,450.00	9,614,357.00	10,019,989.00
532299	6,328,354.00	5,920,376.00	5,957,683.00	5,865,046.00
722410	4,447,844.00	4,891,108.00	5,108,655.00	5,284,280.00

Table 2 – Use Tax for Tulsa (in Tulsa County) (Total & Top Industries)

This table depicts the aggregated use tax (US\$) and for top gross use tax generating industries (for NAIC codes see Appendix A) for years 2012, 2013, 2014, and 2015 for the Tulsa (in Tulsa County). The data is from Oklahoma Tax Commission.

NAICS	2012 Use Tax	2013 Use Tax	2014 Use Tax	2015 Use Tax
All	421,055,073.42	426,917,546.29	477,596,710.74	447,818,551.43
423450	102,696,265.23	100,262,196.44	102,190,020.12	118,000,080.67
443120	65,000,866.47	68,315,727.19	80,180,931.63	66,866,506.99
423490	19,426,406.29	20,537,620.67	21,815,192.50	13,400,433.36
453210	17,159,650.29	13,011,755.79	14,036,839.21	13,664,832.68
454111	14,610,309.85	15,987,714.41	18,191,216.52	18,924,182.58
332994	13,498,350.72	9,729,485.34	12,286,670.20	4,611,274.35
339113	12,964,635.32	15,560,518.66	18,839,061.28	22,676,298.91
334210	10,308,508.00	7,738,357.00	10,051,910.18	4,878,537.00

As noted before, these shortfalls have given rise to a call for innovative thinking on taxation at all levels, but particularly at the city level. Not surprisingly, some of the old ideas about revamping taxation in Oklahoma have been resurrected. Of particular interest is the 2002 report by The Legislative and Citizens Tax Force on Tax Reform (hereafter The Task Force) in which a number of recommendations were made to overhaul Oklahoma taxation. The one recommendation that is the subject of this study is the introduction of taxes on select services. The Task Force has an extensive list of select services. Throughout this study, we adhere to that definition to the best of our ability. Appendix A provides a detailed list of what we consider select services.

The primary goal of this study is an assessment of the magnitude of taxes on select services for the City of Tulsa. To do so, we utilize Quarterly Census of Employment and Wages (QCEW) from the Bureau of Labor Statistics (BLS) (of the U.S. Department of Labor) and Economic Consensus from the U.S. Census Bureau (of the U.S. Department of Commerce). In this study we (1) overview the above data resources, (2) produce estimates of revenues

for all service industries using above data, and (3) make comparisons to the state of South Dakota as a benchmark. South Dakota has a similar size economy (to Tulsa County) and already imposes taxes on services. We note that the census information is only available at Tulsa County or Tulsa MSA level. Due to the greater geographical overlap, we choose Tulsa County as our benchmark. Using sales tax proportionalities (i.e., the City of Tulsa in Tulsa County versus all Tulsa County as reported by the Oklahoma Tax Commission), we then can comment on the potential impact of service tax for the City of Tulsa¹.

In what follows, we first discuss the main challenges in assessing tax revenues generated by the select services as defined by the Task Force's Pilot Study. We then overview our methodology designed to address these challenges. We discuss at length the most relevant data. In particular, we provide detailed discussions about revenues and payrolls of service industries. Using the time-series and cross-sectional patterns in the data, we then produce revenue estimates for all service industries. We calibrate these estimates to arrive at the most reasonable service industries' revenue estimates for the City of Tulsa. Lastly, we offer concluding remarks.

1. Tax Assessment Challenges

1.1. Data Challenges for Tax Assessment

Given that most services have never been taxed, data on these taxes simply do not exist. As such any assertion about how much service industries could contribute to the city budget ultimately relies on whether taxable revenues for these industries can be assessed and at what rate these revenues are going to be taxed. The latter question can be politically the most controversial. However, the Task Force's Pilot Study suggest excising the same 4.5% tax rate as other industries' sales' tax rate for select services. As such, we follow the same and assume that select services' revenues can be taxed at 4.5% rate at the state level. This in turn means that select services' revenues are taxed at 2% rate at the city level. Furthermore, to avoid any dependency on the tax rate, we will conclude our study by assessing potential tax revenues of these industries for every percentage of tax rates excised. This then leaves us with the task of assessing select services revenues. While this task may seem straightforward, in actuality, it is the most difficult part of the analysis.

The detail data on industry revenues and payrolls are only available on a 5-year basis. The U.S. Economic Census reports detailed information about industry revenues and payrolls

¹ The Tulsa MSA covers a geographic area of 6,269.3 sq. mi. which spans Creek, Okmulgee, Osage, Pawnee, Rogers, Tulsa, and Wagoner Counties. This area is much larger than the City of Tulsa. In contrast more than 80% of the City lies within the Tulsa County boundaries. This part of the City accounts for 70% of sales taxes and 85% of use taxes collected in the Tulsa County. Appendix C provides more detail information about the Tulsa MSA and Tulsa County.

every five years. The last census was conducted in 2012, and yet the last batch of data was reported in early 2016. This basically means that the most recent detailed information about industry revenues are about five years old. Given that majority of recent economic malaise in the state of Oklahoma started in 2014 when the crude oil prices took a sharp decline, we are left with a critical task of estimating the interim industry revenues for the 2012-2016. In what follows, we explain how by incorporating the relative patterns of revenues vis-à-vis payrolls (i.e., wage), we can generate reliable revenues estimates at the industry level.

Another challenge stems from the fact that the select services recommended by The Task Force entail industries that often offer services along with goods. For example, The Task Force sample businesses include Lawn Services, and among those services Sod Laying is recommended as a possible select taxable service. However, these service providers often sell the sod along with the installation service. To assess a sales tax on *the service* apart from the sod sold demands detailed knowledge of costs in order to split out the cost of the sod and the cost of the installation service to determine the tax rates of each. Interestingly though main data sources used in this study (Economic Census and Quarterly Census of Employment and Wages) do separate revenues from various industry categories. As such, when we estimate the revenues for each industry, the aggregated data already accounts for the aforementioned problem.

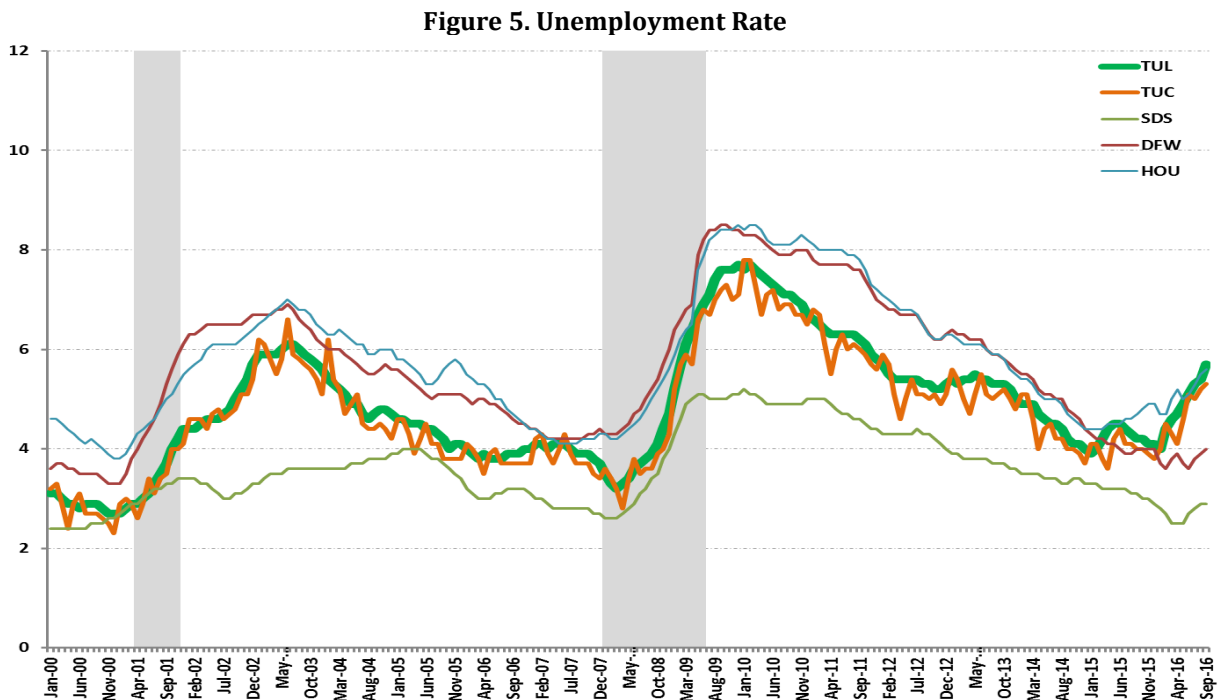
One last challenge in measuring service sales taxes is whether certain exemptions would be imposed and the extent to which these exemptions would affect the assessment of tax revenues. For instance, The Task Force in its Pilot Study proposed that “[t]his sales tax would exempt exported services and government purchased services, and a use tax would be imposed on imported services of the type covered by the sales tax” (p. 8). While we forecast revenues for all services industries, we separate select services and thus provide a breakdown of revenues along possible “exempted” services.

1.2. Employment, Economic Conditions and Industry Revenue Impacts

Beyond the availability of the appropriate data, forecasting the future has its own challenges and no one can forecast it with certainty. We want to employ data that we believe will give us the best chance to make a forecast of the unknown. For instance, in its Pilot Study, The Task Force employed population growth as an underlying force for the growth of various service industries. This is very a simplistic perspective and at times can be detrimental in accurate forecasting. Again, take for example Lawn Services. The growth of this industry is inherently related to new housing construction, which in turn is fundamentally driven by family formation patterns and family growth patterns as well as interstate immigration.

To be clear, imagine that the population grows by 10,000 each year. Clearly a proportion of that growth is due to births and thus is already accounted for by established family units: new babies do not necessarily lead to a greater demand for lawn services. As another example, major Oklahoma universities attract a large number of out-of-state students, mainly from neighboring states (e.g. Texas). To the extent that these students utilize existing multi-family dwellings (apartment complexes, university housing, etc.), there will not be any measurable impact on the growth in demand for lawn services.

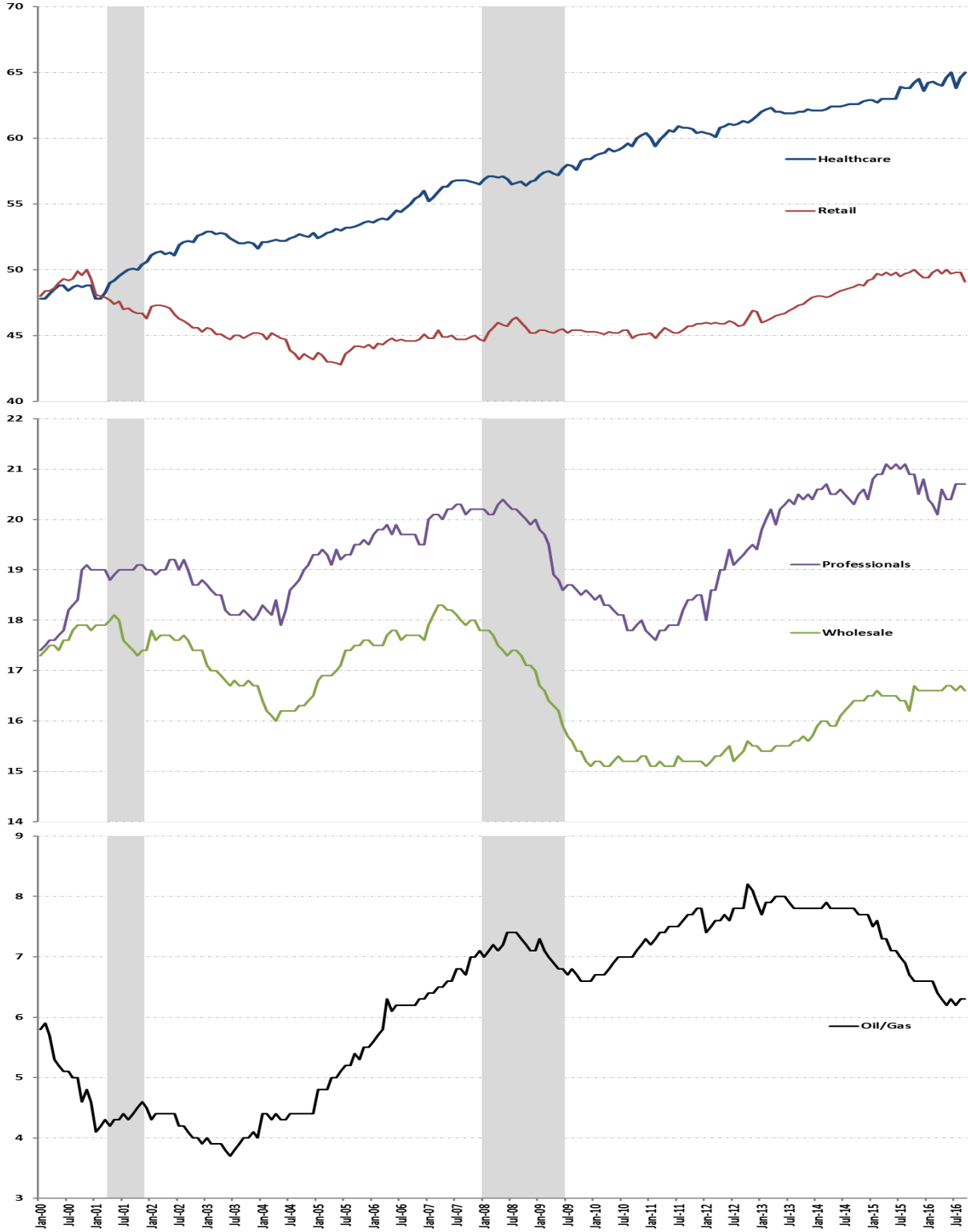
Similarly, changes in economic conditions can impact the need for services. During its booming years, the fracking industry attracted talent from beyond Oklahoma borders. The recent drastic slowdown in the industry led to a structural reduction of the workforce (Fig. 5, 6, and 7).



This figure shows the unemployment rate for Tulsa MSA (TUL), Tulsa County (TUC), South Dakota (SDS), Dallas-Forth Worth MSA (DFW), and Houston MSA (HOU). The shaded area denotes the NBER recession dates for the U.S. economy. The data is from U.S. Bureau of Labor Statistics via FRED databases at the St. Louis Federal Reserve Bank.

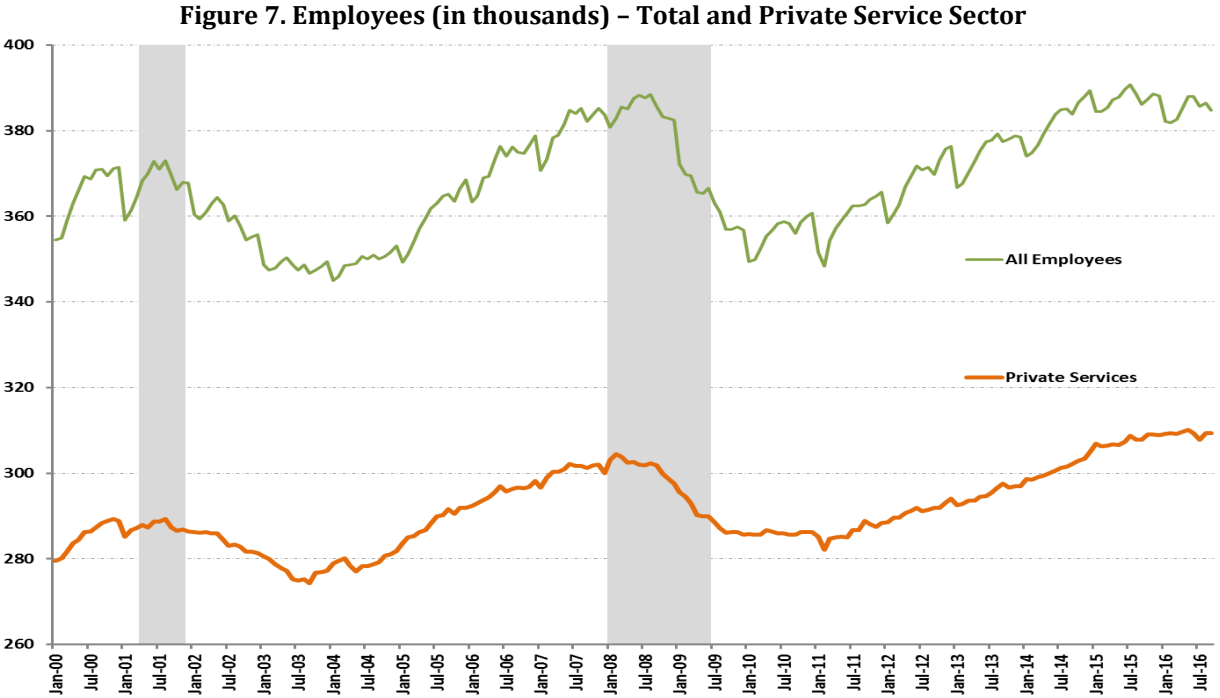
As is shown above in Figure 5, the overall unemployment patterns of Tulsa County and Tulsa MSA resemble those of major Oil and Gas industry centric locales. In both recent past recessions (shaded area), the rapid rise of unemployment in Tulsa MSA, Tulsa County, South Dakota, Dallas-Forth Worth MSA and Houston MSA have all been highly correlated (and statistically significant). While we still need to know whether the recent rise in unemployment rates across these locales are due to a recessionary force, we do know that Oil and Gas industry's troubles have contributed to the phenomenon.

Figure 6. Employees (in thousands) Across Various Sectors



This figure shows the number of employees for various sectors for Tulsa MSA the period of Jan. 2000-July 2016. The shaded area denotes the NBER recession dates for the U.S. economy. The data is from the Federal Reserve Bank of Philadelphia via FRED databases at the St. Louis Federal Reserve Bank.

As is evident from Figure 6, in the last four quarters, the Oil and Gas sector' number of employees in Tulsa MSA has dropped sharply by 20% from almost 9000 employees in March 2014 to little over 6300 employees in March 2016. The two major non-service sector of the economy—retail and wholesale—has also seen their share of stagnant or moderately declining employment. From Figure 7, however, we can see that the service sector through its continued employment growth has contributed greatly to moderating the overall employment situation in Tulsa MSA.



This figure shows the number of employees all sectors and service sector for Tulsa MSA the period of Jan. 2000-July 2016. The shaded area denotes the NBER recession dates for the U.S. economy. The data is from Federal Reserve Bank of Philadelphia via FRED databases at the St. Louis Federal Reserve Bank.

Undoubtedly, the close relationship between the employment situation and the overall state of the economy is of great interest to us. Clearly, a declining number of people employed adversely affects tax revenues through multiple channels. The declining number of the employed means declines in the personal income taxes for the state. But perhaps more importantly, lower employment can translate into much smaller aggregate disposal income which in turn can lead to smaller sales taxes. Coupled with lower wages (not shown for brevity), the overall adverse impact can be quite drastic. Interestingly though, the service industries show great level of resiliency in employment levels and overall payroll amounts. In what follows, we lay out the foundation for why using frequent payroll data vis-à-vis infrequent, occasional (every 5-year) census' revenue data can generate reliable estimates for the service industries' revenues.

2. Necessary Data

2.1. Industry Revenues and Payrolls – Five Year Census Data

Our first and foremost source of information is the Economic Census. The Economic Census is the U.S. Government's official five-year measure of American business and the economy. It is conducted by the U.S. Census Bureau, and a response is required by law. The last census was conducted in October of 2012. In October through December 2012, forms were sent out to nearly 4 million businesses, including large, medium and small companies representing all U.S. locations and industries. Respondents were asked to provide a range of operational and performance data for their companies. While some industries are not covered by the economic census, the census covers the broadest list of industries which can account for up to 2432 industry categories.

As for as the geographic reach goes, the Economic Census covers all the states in the U.S., their counties, and their major metropolitan statistical areas (MSA). For the 2007 Economic Census, a cutoff of 5,000 or more population or jobs was used to identify the economic places valid for publication. For the 2012 Economic Census, these cutoffs have been reduced to 2,500, resulting in nearly 5,000 new places to be published in the Census. The 2012 Economic Census will also reflect any boundary and/or title changes for counties, economic places, and other geographic areas.

The U.S. Census Bureau provides an excellent history of the Economic Census.² "... [I]n 1902, Congress authorized the establishment of a permanent Census Bureau, and at the same time directed that a census of manufactures be taken every five years. The 1905 manufacturing census was a milestone in that it marked the first time a census of any kind was taken separately from the regular every 10 years population census.

The first census of business, covering retail and wholesale trade, was conducted in 1930, and shortly thereafter was broadened to include some service trades. ... [After World War II, t]hey resumed with the 1947 Census of Manufactures and the 1948 Census of Business.

... The 1954 Economic Census was the first to fully integrate census taking for the various kinds of business. The census provided comparable statistics across economic sectors, using consistent time periods, concepts, definitions, classification and reporting units. ... The 1954 Economic Census also was the first to be taken by mail, using lists of firms provided from the administrative records of other federal agencies. Since 1963, administrative records have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

² <https://www.census.gov/econ/census/about/history.html>

The range of industries covered in the economic census has continued to expand. The census of construction industries began on a regular basis in 1967. The scope of service industries coverage was broadened at various points over the following 25 years. The census of transportation began in 1963 as a set of surveys covering travel, transportation of commodities, and trucks. Starting in 1987, census publications also reported on business establishments engaged in several transportation industries, paralleling the data on establishments in other sectors.

The final major expansion of the economic census took place in 1992, adding more transportation industries, plus finance, insurance, real estate, communications, and utilities - a group accounting for more than 20 percent of U.S. gross domestic product. On a smaller scale, the 2002 Census added coverage of four industries previously out of scope because they had been classified as agricultural services: landscape architecture, landscaping services, veterinary services, and pet care.

The 1997 Economic Census was the first major statistical report based on the North American industry Classification System (NAICS). Developed cooperatively by the U.S., Canada, and Mexico, NAICS replaced the Standard Industrial Classification (SIC) system to provide greater comparability with international statistics. Today the economic census, together with the separately conducted censuses of agriculture and governments, covers virtually the entire economy, excepting only for forestry, agricultural support, rail transportation, and employment by private households.”

A cornerstone of the Economic Census is confidentiality of the respondents. “... Responses to the economic census have been treated as confidential since the 19th century. Legislation authorizing the 1910 decennial census went even further and required that statistics be published so that no particular establishment or its operations could be identified.

In 1954, the confidentiality provisions were incorporated into the law (title 13, U.S. Code) that specifies the frequency and scope of the economic census. The law also prescribes penalties for any disclosure by the Census Bureau, or for a respondent's false reporting or willful refusal where response is mandatory. In 1962, the confidentiality rule for census questionnaires was extended by law to also make copies retained in respondents' files immune from legal process (title 13, section 9a).” As it happens, the effort to maintain confidentiality often leads to missing data which makes our task of assessing the revenues vis-à-vis payrolls quite challenging.

2.2. Industry Payrolls – Annual Data

The Quarterly Census of Employment and Wages (QCEW) from the Bureau of Labor Statistics (BLS) is an excellent source of detail information. The QCEW publication data set

“... is vastly larger in scale than most BLS products. For example, the national Current Employment Statistics (CES) program publishes data for most of the 1,083 NAICS detailed industries for the U.S. QCEW publishes every NAICS industry for the more than 3,000 counties in the United States, Puerto Rico, and the U.S. Virgin Islands, as well as every MSA, every state, and the nation.”³ The latest data is available for 2015. The industry-level aggregated data goes back to 1975. The detailed, entity-level data goes back to 1990. It is noteworthy that the Oklahoma Employment Security Commission (OESC) collects the raw data that in turn becomes QCEW. As such, there is a possibility that more up-to-date data can be obtained from OESC.

As the Bureau of Labor Statistics states: “The Quarterly Census of Employment and Wages Program is a cooperative program involving the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor and the State Employment Security Agencies (SESAs). The QCEW program produces a comprehensive tabulation of employment and wage information for workers covered by State unemployment insurance (UI) laws and Federal workers covered by the Unemployment Compensation for Federal Employees (UCFE) program. Publicly available files include data on the number of establishments, monthly employment, and quarterly wages, by NAICS industry, by County, by ownership sector, for the entire United States. These data are aggregated to annual levels, to higher industry levels (NAICS industry groups, sectors, and supersectors), and to higher geographic levels (national, State, and Metropolitan Statistical Area (MSA)).

The QCEW program serves as a near census of monthly employment and quarterly wage information by 6-digit NAICS industry at the national, State, and County levels. At the national level, the QCEW program publishes employment and wage data for nearly every NAICS industry. At the State and area level, the QCEW program publishes employment and wage data down to the 6-digit NAICS industry level, if disclosure restrictions are met. In accordance with BLS policy, data provided to the Bureau in confidence are not published and are used only for specified statistical purposes. BLS withholds publication of UI-covered employment and wage data for any industry level when necessary to protect the identity of cooperating employers. Totals at the industry level for the States and the Nation include the nondisclosable data suppressed within the detailed tables. However, these totals cannot be used to reveal the suppressed data.

Employment data under the QCEW program represent the number of covered workers who worked during, or received pay for, the pay period including the 12th of the month. Excluded are members of the armed forces, the self-employed, proprietors, domestic workers, unpaid family workers, and railroad workers covered by the railroad unemployment insurance system. Wages represent total compensation paid during the

³ <http://www.bls.gov/cew/>

calendar quarter, regardless of when services were performed. Included in wages are pay for vacation and other paid leave, bonuses, stock options, tips, the cash value of meals and lodging, and in some States, contributions to deferred compensation plans (such as 401(k) plans). The QCEW program does provide partial information on agricultural industries and employees in private households.

Data from the QCEW program serve as an important input to many BLS programs. The QCEW data are used as the benchmark source for employment by the Current Employment Statistics program and the Occupational Employment Statistics program. The UI administrative records collected under the QCEW program serve as a sampling frame for BLS establishment surveys.

In addition, data from the QCEW program serve as an input to other Federal and State programs. The Bureau of Economic Analysis (BEA) of the Department of Commerce uses QCEW data as the base for developing the wage and salary component of personal income. The Employment and Training Administration (ETA) of the Department of Labor and the SESAs use QCEW data to administer the employment security program. The QCEW data accurately reflect the extent of coverage of the State UI laws and are used to measure UI revenues; national, State and local area employment; and total and UI taxable wage trends.

BLS publishes data from the QCEW program every quarter in the County Employment and Wages press release. This is usually released 6 to 7 months after the end of the quarter. The QCEW program also publishes a subset of its quarterly data through the Create Customized Tables system, and full quarterly industry detail data at all geographic levels in several file formats, our data files.

In addition, QCEW publishes the annual bulletin *Employment and Wages, Annual Averages* about 10 months after the end of the year. The 2002 edition is the first to appear on the internet in its entirety. For more information about this, please see the Publications section of our home page. Also, the cooperating SESAs issue quarterly and/or annual reports of QCEW data.”

2.3. Tax Data

Thanks to the Oklahoma Tax Commission (OTC), we have excellent detailed data on sales and use taxes for over 400 industries (albeit non-services) between 2012 and 2015. For approximately 130 industries, OTC has been collecting sales taxes. For approximately 280 industries, OTC has been collecting use taxes.

Additionally, the Oklahoma Tax Commission has provided us with the “2015 South Dakota Sales and Use Taxes”. This data covers little over 700 distinct industries from which about 160 are service industries. The following table summarizes this data.

Table 3 – South Dakota Sales and Use Taxes - 2015

<i>Industry Categories</i>	Dollars Amounts (US\$ millions)			Percentage of Total		
	<i>Gross Sales</i>	<i>Use Taxable</i>	<i>Taxable Sales</i>	<i>Gross Sales</i>	<i>Use Taxable</i>	<i>Taxable Sales</i>
Agriculture, Forestry, & Fishing	743.642	21.353	297.864	1.08%	1.87%	1.45%
Mining	129.821	37.492	105.773	0.19%	3.29%	0.51%
Construction	43.911	0.623	27.091	0.06%	0.05%	0.13%
Manufacturing	8,647.183	297.224	873.761	12.62%	26.07%	4.24%
Transportation & Public Utilities	3,833.840	203.028	2,765.164	5.59%	17.81%	13.42%
Wholesale Trade	16,753.554	73.556	1,617.641	24.44%	6.45%	7.85%
Retail Trade	27,510.648	172.901	10,863.961	40.14%	15.17%	52.74%
Finance, Insurance, & Real Estate	559.017	83.177	394.756	0.82%	7.30%	1.92%
Services	10,317.464	250.242	3,649.376	15.05%	21.95%	17.72%
Public Administration	4.205	0.323	2.390	0.01%	0.03%	0.01%
Total	68,543.284	1,139.919	20,597.777	1.08%	1.87%	1.45%

3. Broad Overview of Data

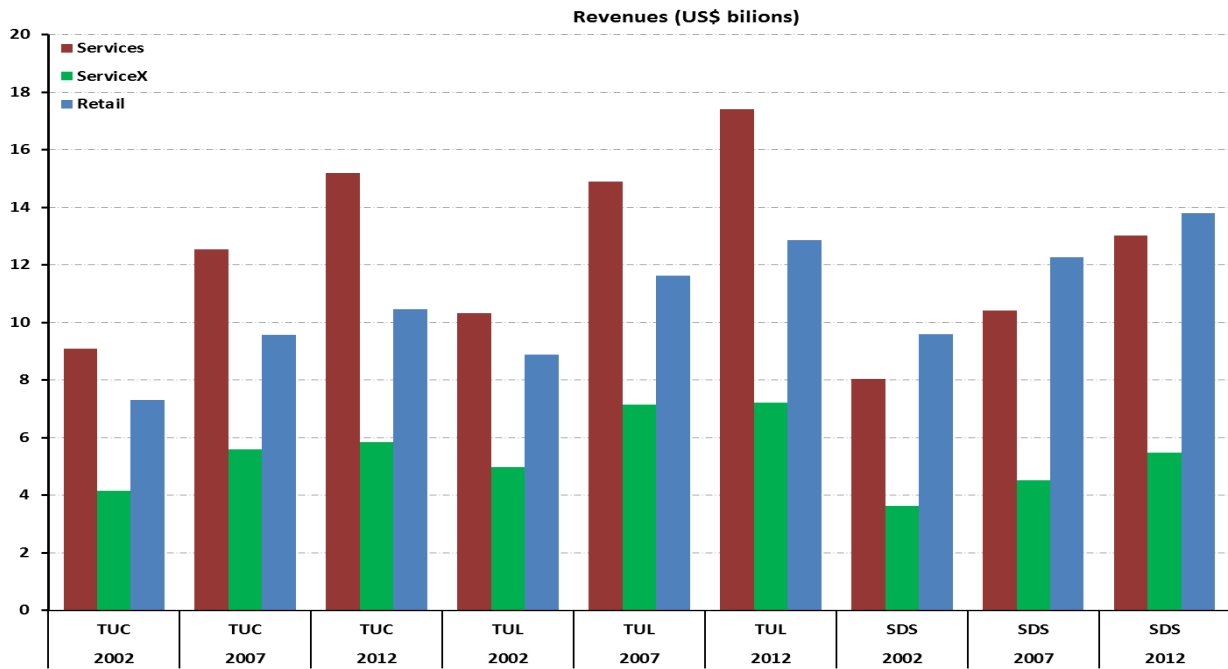
3.1. Revenues and Payrolls: Economic Census 2002, 2007, & 2012

As noted before, Economic Census provides detail information about revenues, payrolls, the number of employees, and the number of establishments for the largest set of industries. However, the census is conducted every five years and it takes almost four years for the data to be processed and reported to the public. For instance, the last batch of data for the 2012 Economic Census was reported in early 2016. While the industry categories have changed from 2002 to 2012, the latest census covers little over 700 six-digit industry categories for Tulsa County and Tulsa MSA.

Figure 8 provides an overview these censuses. We focus our attention to Tulsa County. The choice driven by the reasons that (1) geographically the two locales have great overlap with the City of Tulsa, and (2) in these smaller locales (than states) certain industries are more likely to have redacted data for the purpose of confidentiality. We do use information from Tulsa MSA to amend the data and improve our forecasting. We also use South Dakota as a comparable locale due to similarities in size and nature of industries.

In what follows, we examine the data from 2002, 2007, and, 2012 Economic Censuses. Our primary goal is to ascertain (1) how revenues of the service industry change over time, (2) how the payrolls of the service industry change over time, and lastly, (3) how the revenues vis-à-vis payrolls behave through time. If revenues and payrolls grow consistently over time and if the ratio of the two remains sizable and stable over time, we can then utilize more frequent data on payrolls (Quarterly Census of Employment and Wages) to form robust estimates of the service industries revenues.

Figure 8. Comparison of the Revenues of Select Services and Non-Service Industries in Tulsa County, Tulsa MSA, and South Dakota



This figure shows the revenues of various industries for 2002, 2007 and 2012 in Tulsa County (TUC), Tulsa MSA (TUL), and South Dakota (SDS). The data is from Economic Census conducted and reported by the U.S. Census Bureau every five years. ServiceX refers to all service industries excluding (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix.

As is evident in Figure 8, from 2002 to 2012, all services (and select services) and retail industries have enjoyed a continued growth in revenues in Tulsa County, Tulsa MSA, and South Dakota. In Tulsa County, the total revenues from all industries are \$35.97B, \$48.55B, and, \$57.59B, respectively, for 2002, 2007 and 2012. The retail industries' revenues are \$7.30B, \$9.58B, and, \$10.45B, respectively, for 2002, 2007 and 2012. The service industries' revenues are \$9.10B, \$12.55B, and, \$15.18B, respectively, for 2002, 2007 and 2012. Of these, select services'⁴ revenues are \$4.16B, \$5.59B, and, \$5.84B, respectively, for 2002, 2007 and 2012. It is noteworthy that the two largest non-service sectors in Tulsa County are manufacturing and wholesale. The manufacturing revenues are \$9.71B,

⁴ Detail list of industries and what is considered "select services" are provided in Appendix A. However, to provide a overview, we consider the following industries non-select services: (1) newspapers (i.e., publishing industries, except internet), (2) professional and business services (e.g., lawyers, accountants, engineering, technical services, etc.), (3) financial services (e.g., financial institutions, insurance companies, brokerages, wealth management, etc.), (4) real estate (e.g., leasing agencies, realtors, property managers, automotive leasing, etc.), (5) healthcare and social assistance services (e.g., physicians, dentists, podiatrists, ambulatory services, outpatient facilities, hospitals, nursing care, mental care, etc.), (6) hospitality and food services, (7) waste management (i.e., waste collection, treatment, and disposal), and (8) public institutions.

\$16.40B, and \$18.77B, respectively, for 2002, 2007 and 2012. The wholesale revenues are \$9.86B, \$10.03B, and \$13.18B, respectively, for 2002, 2007 and 2012.

To put these into perspective, we now consider Tulsa MSA and South Dakota. In Tulsa MSA, the total revenues from all industries are \$42.31B, \$68.59B, and \$74.56, respectively, for 2002, 2007 and 2012. The retail industries' revenues are \$8.89B, \$11.62B, and \$12.87B, respectively, for 2002, 2007 and 2012. The service industries' revenues are \$10.33B, \$14.90B, and \$17.40B, respectively, for 2002, 2007 and 2012. Of these, select services' revenues are \$4.98B, \$7.14B, and \$7.22B, respectively, for 2002, 2007 and 2012. Manufacturing and wholesales are also the largest non-service sectors in Tulsa MSA. The manufacturing revenues are \$12.49B, \$21.57B, and \$24.82B, respectively, for 2002, 2007 and 2012. The wholesale revenues are \$10.61B, \$20.50B, and \$19.47B, respectively, for 2002, 2007 and 2012.

In South Dakota, the total revenues from all industries are \$39.05B, \$56.08B, and \$73.56B, respectively, for 2002, 2007 and 2012. The retail industries' revenues are \$9.60B, \$12.27B, and \$13.79B, respectively, for 2002, 2007 and 2012. The service industries' revenues are \$8.04B, \$10.43B and, \$13.03B, respectively, for 2002, 2007 and 2012. Of these, select services' revenues are \$3.63B, \$4.53B, and \$5.47B, respectively, for 2002, 2007 and 2012. Manufacturing and wholesales are also the largest non-service sectors in South Dakota. The manufacturing revenues are \$10.71B, \$13.05B, and \$16.88B, respectively, for 2002, 2007 and 2012. The wholesale revenues are \$7.85B, \$14.77B, and \$25.29B, respectively, for 2002, 2007 and 2012.

Table 4 – Revenues Growth Across Industries

This table depicts the revenues growth sequentially between 2007 and 2002 Economic Census results and between 2012 and 2007 Economic Census results for major industry groupings.

	Tulsa County		Tulsa MSA		South Dakota	
	From 2002 To 2007	From 2007 To 2012	From 2002 To 2007	From 2007 To 2012	From 2002 To 2007	From 2007 To 2012
All Industries	35.0%	18.6%	62.1%	8.7%	43.6%	31.2%
Oil/Gas	N/A	N/A	N/A	N/A	81.9%	0.4%
Services	37.8%	21.0%	44.2%	16.8%	29.6%	25.0%
Select Services	34.4%	4.6%	43.6%	1.1%	24.9%	20.8%
Retail	31.3%	9.1%	30.8%	10.7%	27.8%	12.4%
Wholesale	1.7%	31.5%	93.3%	-5.0%	88.2%	71.3%
Manufacturing	68.8%	14.5%	72.8%	15.0%	21.9%	29.4%

Table 4 provides summary information about the census-to-census (i.e., cumulative 5-year) revenue growth for various major industry groupings for Tulsa County, Tulsa MSA, and South Dakota. As is evident, the services industries show smallest variations across the two

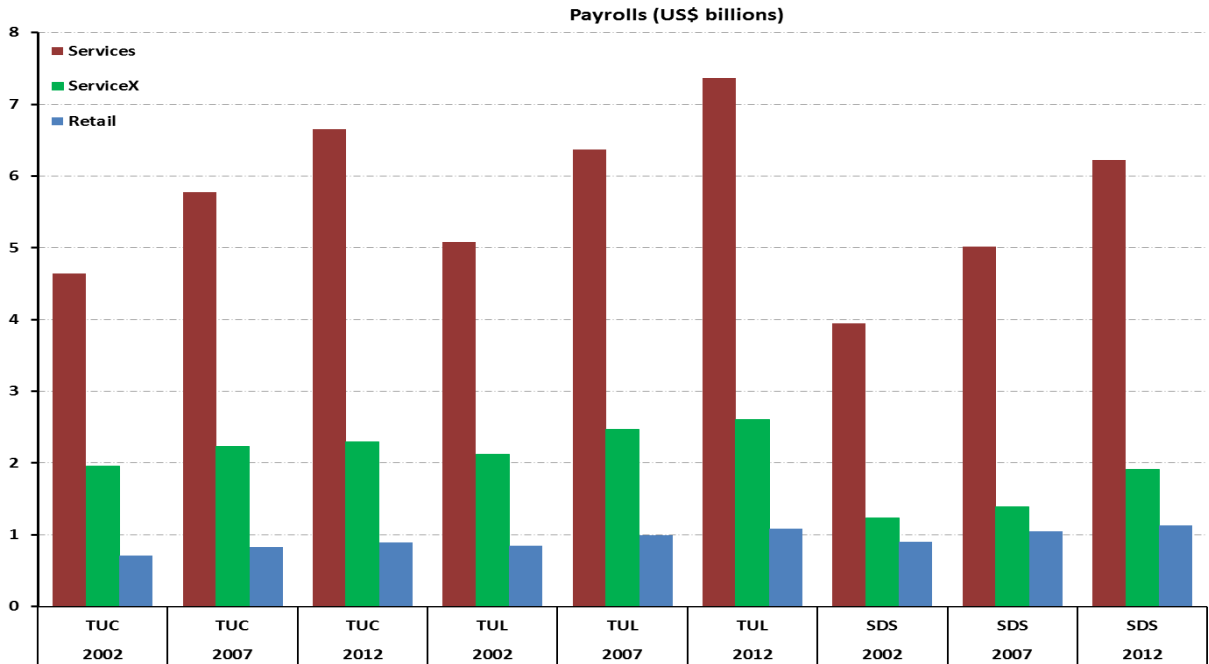
periods of 2002-2007 and 2007-2012, irrespective of locale. Given that the period of 2007-2012 spans the Great Recession of 2008 and the global financial crisis, it is quite clear that service industries' revenues manifest greatest resiliency against economic fluctuations.

To gain insight about the cost structure of these industries, we now focus on the characteristics of payrolls of these industries. As is evident in Figure 9, from 2002 to 2012, service industries have witnessed a continued growth in payrolls in Tulsa County, Tulsa MSA, and South Dakota. Interestingly though, the growth in payrolls for select service and retail industries has been much more modest. In Tulsa County, the total payrolls from all industries are \$7.58B, \$9.28B, and \$10.40B, respectively, for 2002, 2007 and 2012. The retail industries' payrolls are \$0.71B, \$0.83B, and \$0.89B, respectively, for 2002, 2007 and 2012. The service industries' payrolls are \$4.64B, \$5.78B, and \$6.65B, respectively, for 2002, 2007 and 2012. Of these, select services' payrolls are \$1.96B, \$2.23B, and \$2.30B, respectively, for 2002, 2007 and 2012. The manufacturing payrolls are \$1.53B, \$1.83B, and \$2.00B, respectively, for 2002, 2007 and 2012. The wholesale payrolls are \$0.69B, \$0.84B, and \$0.85B, respectively, for 2002, 2007 and 2012.

In Tulsa MSA, the total payrolls from all industries are \$8.66B, \$11.01B, and \$12.39B, respectively, for 2002, 2007 and 2012. The retail industries' payrolls are \$0.85B, \$1.00B, and \$1.08B, respectively, for 2002, 2007 and 2012. The service industries' payrolls are \$5.08B, \$6.37B, and \$7.37B, respectively, for 2002, 2007 and 2012. Of these, select services' payrolls are \$2.13B, \$2.47B, and \$2.61B, respectively, for 2002, 2007 and 2012. The manufacturing payrolls are \$1.98B, \$2.50B, and \$2.77B, respectively, for 2002, 2007 and 2012. The wholesale payrolls are \$0.75B, \$1.14B, and \$1.17B, respectively, for 2002, 2007 and 2012.

In South Dakota, the total payrolls from all industries are \$6.98B, \$9.30B, and \$10.76B, respectively, for 2002, 2007 and 2012. The retail industries' payrolls are \$0.90B, \$1.05B, and \$1.13B, respectively, for 2002, 2007 and 2012. The service industries' payrolls are \$3.95B, \$5.02B, and \$6.22B, respectively, for 2002, 2007 and 2012. Of these, select services' payrolls are \$1.24B, \$1.39B, and \$1.91B, respectively, for 2002, 2007 and 2012. The manufacturing payrolls are \$1.10B, \$1.54B, and \$1.76B, respectively, for 2002, 2007 and 2012. The wholesale payrolls are \$0.45, \$0.62, and \$0.83B, respectively, for 2002, 2007 and 2012.

Figure 9. Comparison of the Payrolls of Select Services and Non-Service Industries in Tulsa Country, Tulsa MSA, and South Dakota



This figure shows the payrolls of various industries for 2002, 2007 and 2012 in Tulsa County (TUC), Tulsa MSA (TUL), and South Dakota (SDS). The data is from Economic Census conducted and reported by the U.S. Census Bureau every five years. ServiceX refers to all service industries excluding (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix.

Table 5 provides summary information about the census-to-census (i.e., cumulative 5-year) payrolls growth for various major industry groupings for Tulsa County, Tulsa MSA, and South Dakota. As is evident, the services industries show smallest variations across the two periods of 2002-2007 and 2007-2012, irrespective of locales. More importantly, the select services show smallest levels of payroll growths across periods, irrespective of locales.

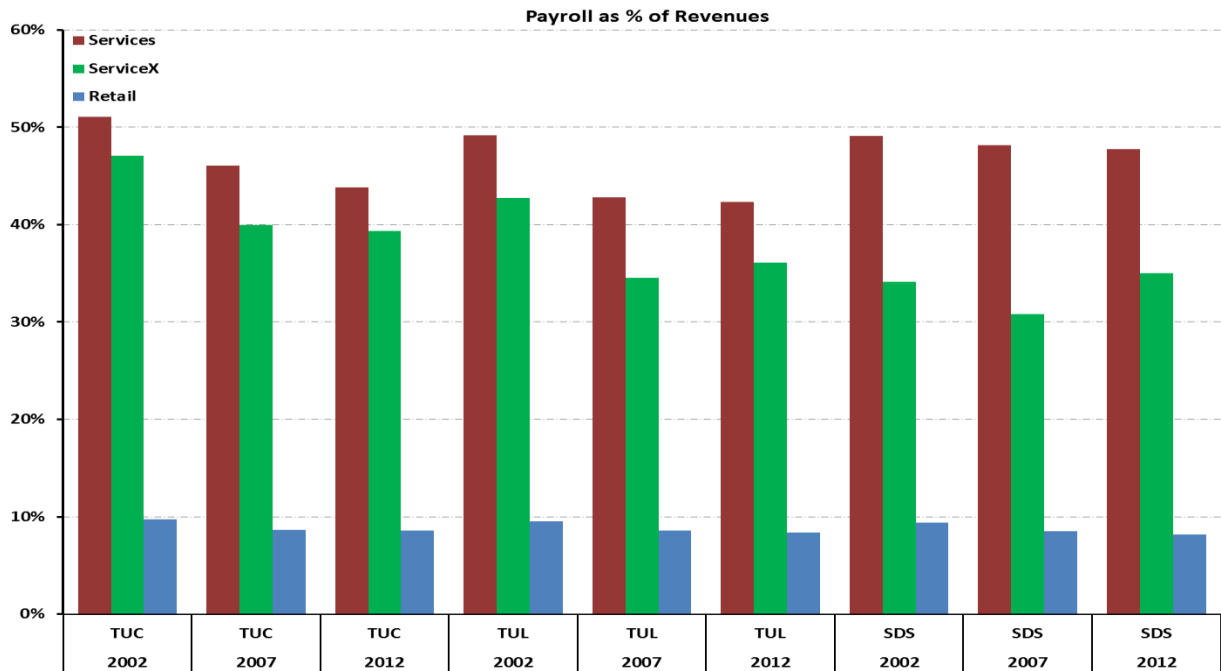
Table 5 – Payroll Growth Across Industries

This table depicts the payrolls growth sequentially between 2007 and 2002 Economic Census results and between 2012 and 2007 Economic Census results for major industry groupings.

	Tulsa County		Tulsa MSA		South Dakota	
	From 2002 To 2007	From 2007 To 2012	From 2002 To 2007	From 2007 To 2012	From 2002 To 2007	From 2007 To 2012
All Industries	22.5%	12.0%	27.1%	12.6%	33.3%	15.7%
Oil/Gas	N/A	N/A	N/A	N/A	36.2%	-6.3%
Services	24.4%	15.1%	25.4%	15.6%	27.1%	23.9%
Select Services	14.1%	3.0%	16.1%	5.7%	12.6%	37.2%
Retail	16.9%	7.8%	17.5%	8.6%	15.7%	7.8%
Wholesale	21.5%	1.9%	52.8%	2.4%	39.8%	32.8%
Manufacturing	19.9%	8.8%	26.0%	11.1%	40.3%	14.6%

Given the modest growth in both revenues and payrolls, particularly comparatively small variations across economic regimes, we are left with one more task to prove that services, especially select services, can indeed provide resilient, stable sources of tax revenues for the City of Tulsa. What we need to examine is whether the ratio of payroll-to-revenue remains large and stable over time.

Figure 10. Payroll vs. Revenues of Select Services and Non-Service Industries in Tulsa County, Tulsa MSA, and South Dakota



This figure shows the ratio of payrolls to revenues of various industries for 2002, 2007 and 2012 in Tulsa County (TUC), Tulsa MSA (TUL), and South Dakota (SDS). The data is from Economic Census conducted and reported by the U.S. Census Bureau every five years. ServiceX refers to all service industries excluding (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix.

As is shown in Figure 10, the ratio of payroll-to-revenues is quite robust across periods and across locales. In Tulsa County, this ratio for service industries is 49.2%, 42.8%, and 42.3%, respectively, for 2002, 2007 and 2012. In Tulsa MSA, this ratio for select service industries is 42.7%, 34.6%, and 36.1%, respectively, for 2002, 2007 and 2012. In Tulsa MSA, this ratio for service industries is 51.0%, 46.1%, and 43.8%, respectively, for 2002, 2007 and 2012. In Tulsa County, this ratio for select service industries is 47.0%, 39.9%, and 39.3%, respectively, for 2002, 2007 and 2012. In South Dakota, this ratio for service industries is 49.1%, 48.1%, and 47.7%, respectively, for 2002, 2007 and 2012. In South Dakota, this ratio for select service industries is 34.2%, 30.8%, and 35.0%, respectively, for 2002, 2007

and 2012. These patterns along with previously discussed regularities confirm that services (and select services, in particular) can provide resilient, stable tax revenues streams for the City of Tulsa. What is perhaps equally important to us as forecasters is these regularities lend themselves nicely into designing an estimation methodology which can generate timely tax revenue estimates even without details industry revenues data from Economic Census. Since the census data is only available with long lags and infrequently, we feel this can be quite critical in guiding policies and planning budgets.

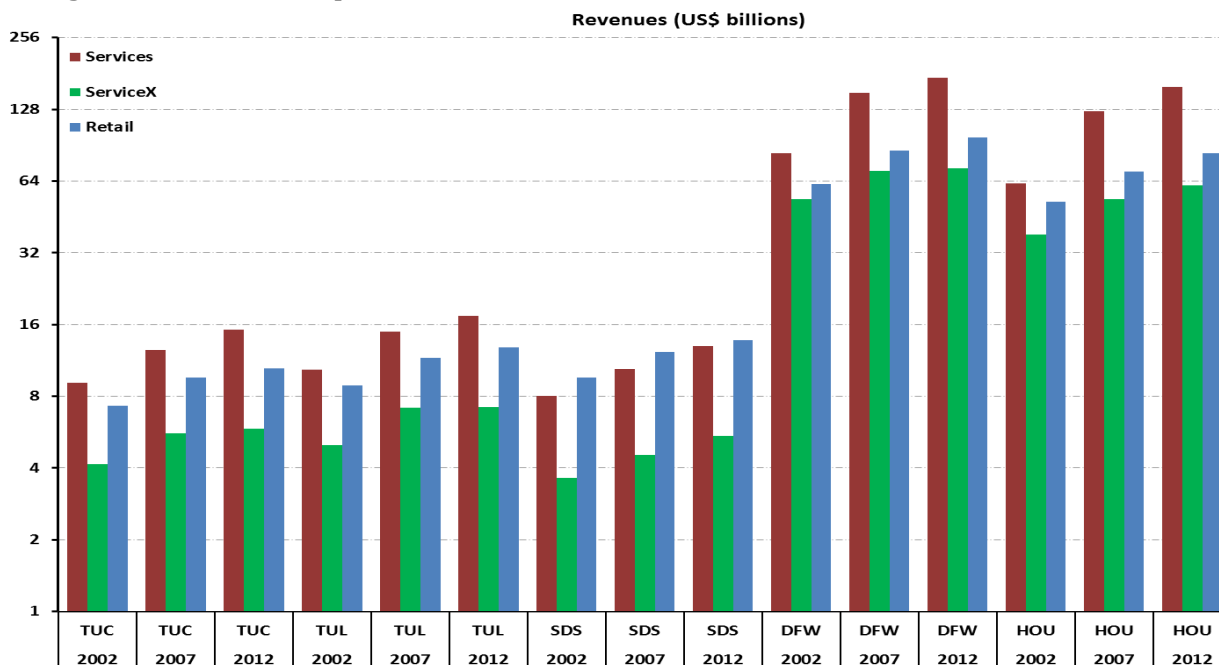
3.1.1. Broader Perspective about Revenues and Payrolls from Other Locales

Clearly our previous discussions and conclusions thereof are centered around information on Tulsa County. Our only comparable cases are Tulsa MSA and South Dakota. While comparisons with locales do cement our assertions, we are left with uneasy feeling that perhaps in a broader perspective our conclusions may not necessary remain robust. To address this concern, we turn our attention to large metropolitan areas in Oil and Gas rich locales. Per se, we consider Dallas-Forth Worth MSA and Houston MSA as alternative comparable locales. These two MSAs are much larger in size and have greater diversity of industries. While in Tulsa County, we observe data for roughly 700 industries, in Dallas-Forth Worth MSA and Houston MSA, we observe data for more than 1800 industries.

As is shown in Figure 11, in Dallas-Forth Worth MSA, the total revenues from all industries are \$374.82B, \$568.13B, and \$649.37B, respectively, for 2002, 2007 and 2012. The retail industries' revenues are \$62.30B, \$85.65B, and \$97.49B, respectively, for 2002, 2007 and 2012. The service industries' revenues are \$83.70B, \$150.46B, and \$173.54B, respectively, for 2002, 2007 and 2012. Of these, select services' revenues are \$53.84B, \$70.74B, and \$72.24B, respectively, for 2002, 2007 and 2012. The manufacturing industries' revenues are \$75.46B, \$104.88B, and \$109.65B, respectively, for 2002, 2007 and 2012. The wholesale industries' revenues are \$153.36B, \$206.96B, and \$268.68B, respectively, for 2002, 2007 and 2012.

In Houston MSA, the total revenues from all industries are \$357.96B, \$742.67B, and \$1,066.52B, respectively, for 2002, 2007 and 2012. The retail industries' revenues are \$52.30B, \$69.98B, and \$83.98B, respectively, for 2002, 2007 and 2012. The service industries' revenues are \$62.54B, \$125.35B, and \$158.62B, respectively, for 2002, 2007 and 2012. Of these, select services' revenues are \$38.04B, \$53.64B, and \$61.52B, respectively, for 2002, 2007 and 2012. The manufacturing industries' payrolls are \$95.09B, \$238.61B, and \$290.26B, respectively, for 2002, 2007 and 2012. The wholesale industries' payrolls are \$148.03B, \$283.56B, and \$533.67B, respectively, for 2002, 2007 and 2012.

Figure 11. Broader Comparison of the Revenues of Select Services and Non-Service Industries

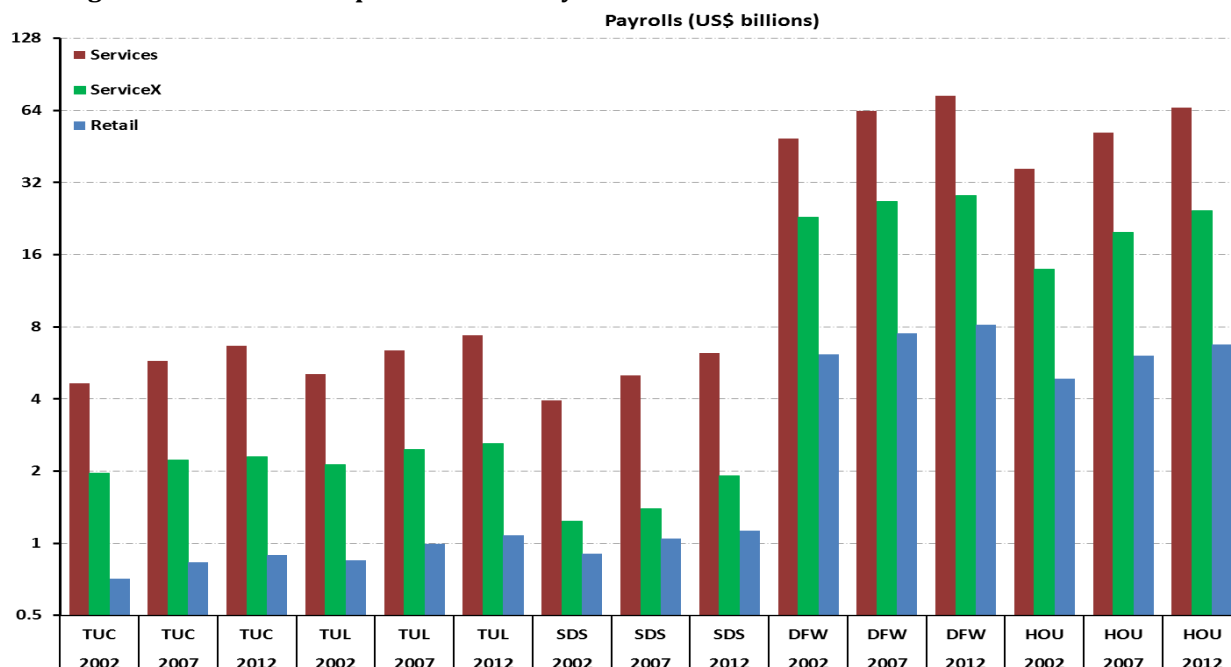


This figure shows the revenues of various industries for 2002, 2007 and 2012 in Tulsa County (TUC), Tulsa MSA (TUL), South Dakota (SDS), Dallas-ForthWorth MSA (DFW), and Houston MSA (HOU). The data is from Economic Census conducted and reported by the U.S. Census Bureau every five years. ServiceX refers to all service industries excluding (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix.

As is shown in Figure 12, in Dallas-Forth Worth MSA, the total payrolls from all industries are \$74.64B, \$101.59B, and \$104.87B, respectively, for 2002, 2007 and 2012. The retail industries' payrolls are \$6.14B, \$7.51B, and \$8.16B, respectively, for 2002, 2007 and 2012. The service industries' payrolls are \$48.73B, \$63.50B, and \$73.85B, respectively, for 2002, 2007 and 2012. Of these, select services' payrolls are \$22.97B, \$26.68B, and \$28.31B, respectively, for 2002, 2007 and 2012. The manufacturing industries' payrolls are \$11.85B, \$15.17B, and \$12.31B, respectively, for 2002, 2007 and 2012. The wholesale industries' payrolls are \$7.91B, \$9.82B, and \$10.55B, respectively, for 2002, 2007 and 2012.

In Houston MSA, the total payrolls from all industries are \$55.30B, \$83.68B, and \$96.37B, respectively, for 2002, 2007 and 2012. The retail industries' payrolls are \$4.86B, \$6.07B, and \$6.76B, respectively, for 2002, 2007 and 2012. The service industries' payrolls are \$36.43B, \$51.68B, and \$65.72B, respectively, for 2002, 2007 and 2012. Of these, select services' payrolls are \$13.96B, \$19.86B, and \$24.44B, respectively, for 2002, 2007 and 2012. The manufacturing industries' payrolls are \$8.72B, \$12.18B, and \$13.77B, respectively, for 2002, 2007 and 2012. The wholesale industries' payrolls are \$5.28B, \$8.34B, and \$10.12B, respectively, for 2002, 2007 and 2012.

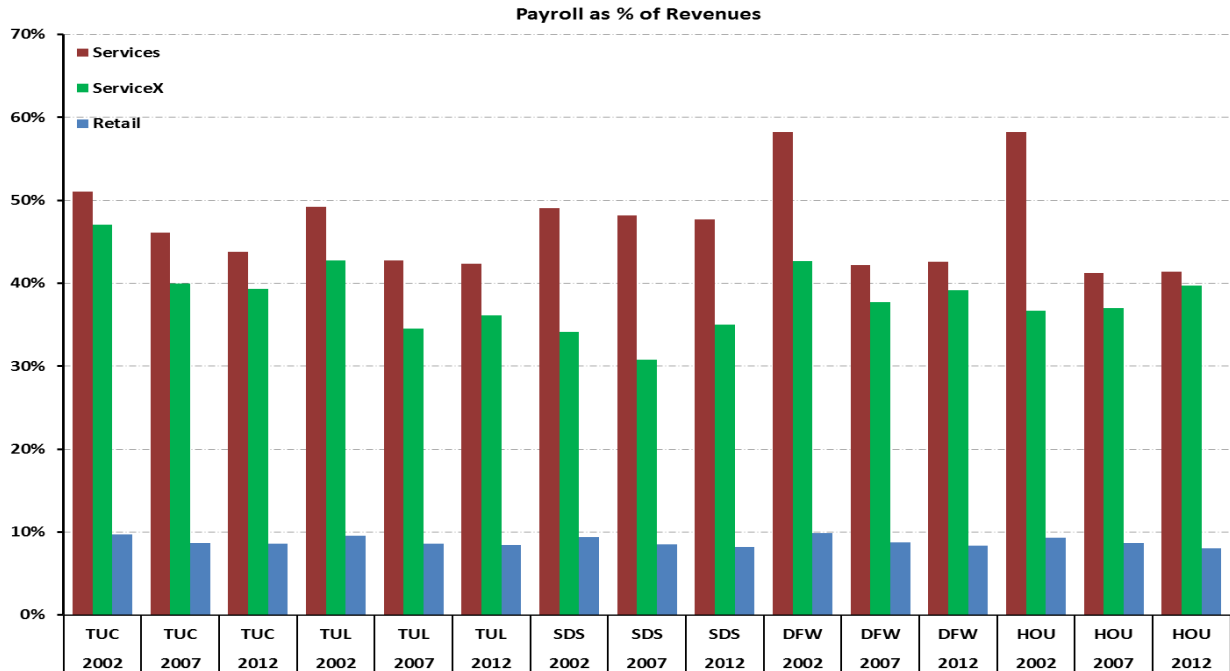
Figure 12. Broader Comparison of the Payrolls of Select Services and Non-Service Industries



This figure shows the payrolls of various industries for 2002, 2007 and 2012 in Tulsa County (TUC), Tulsa MSA (TUL), South Dakota (SDS), Dallas-ForthWorth MSA (DFW), and Houston MSA (HOU). The data is from Economic Census conducted and reported by the U.S. Census Bureau every five years. ServiceX refers to all service industries excluding (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix.

As is shown in Figure 13, as it is the case for Tulsa County, Tulsa MSA, and South Dakota, the ratio of payroll-to-revenues is quite similar and also robust across time for Dallas-Forth Worth MSA and Houston MSA. In Dallas-Forth Worth MSA, this ratio for service industries is 58.2%, 42.2%, and 42.6%, respectively, for 2002, 2007 and 2012. In Dallas-Forth Worth MSA, this ratio for select service industries is 42.7%, 37.7%, and 39.2%, respectively, for 2002, 2007 and 2012. In Houston MSA, this ratio for service industries is 58.2%, 41.2%, and 41.4%, respectively, for 2002, 2007 and 2012. In Houston MSA, this ratio for select service industries is 36.7%, 37.0%, and 39.7%, respectively, for 2002, 2007 and 2012.

Figure 13. Broader Comparison of Payrolls vs. Revenues of Select Service and Non-Service Industries



This figure shows the ratio of payrolls to revenues of various industries for 2002, 2007 and 2012 in Tulsa County (TUC), Tulsa MSA (TUL), South Dakota (SDS), Dallas-ForthWorth MSA (DFW), and Houston MSA (HOU). The data is from Economic Census conducted and reported by the U.S. Census Bureau every five years. ServiceX refers to all service industries excluding (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix.

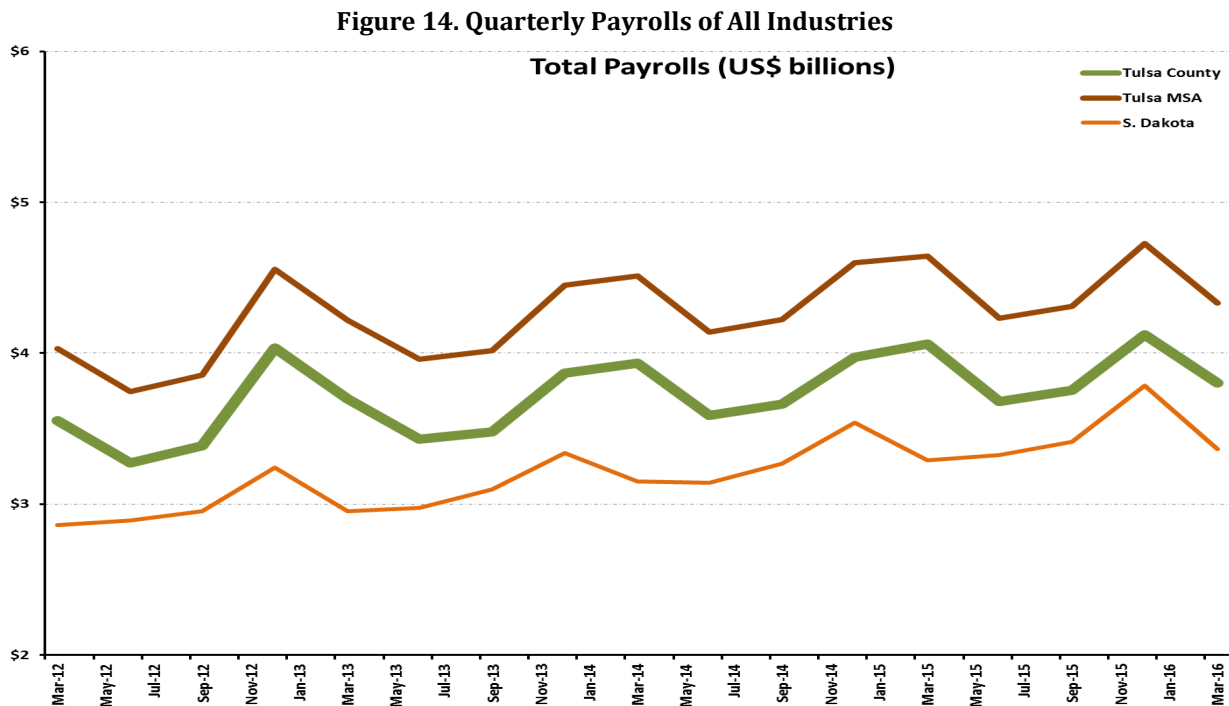
Overall, the above-mentioned results show that patterns for revenues and payrolls are quite similar in other notably, sizably different locales: Dallas-Forth Worth MSA and Houston MSA. Furthermore, these confirm our original assertion that from a forecasting perspective, the stability and size of the payroll-to-revenues for the service industries across a broad set of geographies (and thus, industries) helps to generate robust, timely tax revenues estimates even without detailed revenues data from Economic Census.

3.2. More Recent Payroll Patterns: Quarterly Census of Employment and Wages 2012-2016

As noted before, one of the great challenges of assessing the magnitude of taxes on services is the infrequency and long lags of detailed data reported in the Economic Census. The last census was conducted in 2012 but only recently (early 2016) was the complete data released for the public use. This means that the next census's results, which won't be conducted until 2017, will not be available until 2021. Clearly, there is an urgent need for accurate and timely forecasts of industry-level taxable revenues. The great difficulty is that the typical time-series forecasting techniques do not address cross-sectional nuances of the industries. Moreover, given the import of Oil and Gas industry in the overall health of the

economy in Oklahoma (and the City of Tulsa), it is less clear if prototypical time-series can address economic-regime dependencies.

To overcome these challenges, as explained before, we resort to understanding how service industries' revenues and costs change over time. What we learn is that revenues of the service industries have modest but robust (less volatile) revenue growth coupled with much more modest (and a lot less volatile) payroll growth. Moreover, the payroll accounts for the preponderance of cost, roughly close to 40% of revenues. This then leads us to assert that by observing payrolls, we can generate reliable forecasts of revenues over time. We will, of course, take into account prototypical time-series concerns (e.g., seasonality, cyclicity, etc.) in generating ultimate revenue forecasts. It is noteworthy that we see this as a more accurate method of forecasting exclusively for service industries. No other industry grouping manifests such large, stable payroll-to-revenue characteristics.

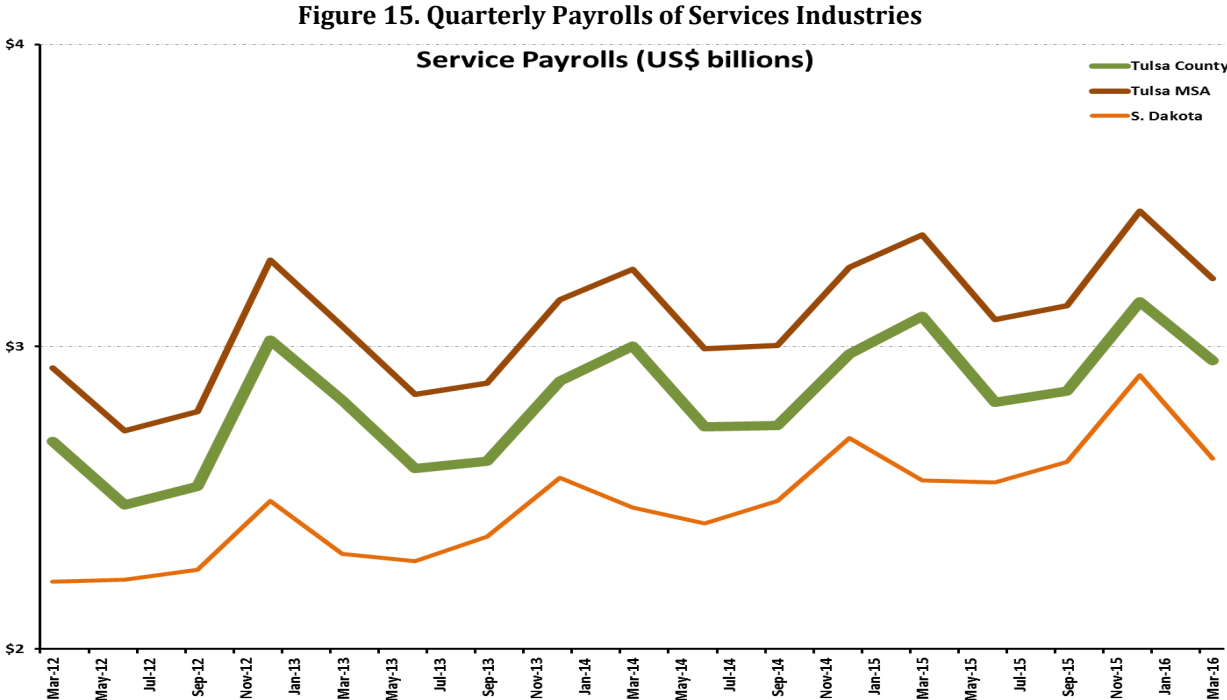


This figure shows the quarterly total payroll of all industries in Tulsa County, Tulsa MSA, and the state of South Dakota for the period of March 2012-March 2016. The data is from the Quarterly Census of Employment and Wages conducted by the U.S. Bureau of Labor Statistics.

Secondly, and in no small part, we are also motivated to employ the aforementioned forecasting technique because payroll data is available with much greater frequency and recency. The U.S. Bureau of Labor Statistics reports the Quarterly Census of Employment and Wages with only one quarter lag. The data basically covers almost all industries which Economic Census covers. While there are subtle differences in how payrolls are defined, for most part, the definitions of payrolls are also the same. In essence, from the last Economic

Census, we have quite an accurate picture about the payrolls. As such, before we delve into the forecasting of revenues, we overview general patterns of payrolls for the service industries. As before, we focus on Tulsa County but have other locales in mind as well.

As is shown in Figure 14, the payrolls of all industries in Tulsa County, Tulsa MSA, and South Dakota, respectively, have been growing year-on-year at average rates of 2.47%, 2.73%, and 4.74% since March 2012. There are distinct seasonal patterns. A simple regression (time-trend only) of the payrolls without any seasonality has adjusted R² of 27.45%, 32.77%, and 67.52%, respectively for Tulsa County, Tulsa MSA, and South Dakota. By incorporating seasonality, the adjusted R² rises to 80.91%, 81.02%, and 97.15%, respectively for Tulsa County, Tulsa MSA, and South Dakota.



This figure shows the quarterly total payroll of service industries in Tulsa County, Tulsa MSA, and the state of South Dakota for the period of March 2012-March 2016. The data is from the Quarterly Census of Employment and Wages conducted by the U.S. Bureau of Labor Statistics.

As is shown in Figure 15, the payrolls of service industries in Tulsa County, Tulsa MSA, and South Dakota, respectively, have been growing year-on-year at average rates of 3.04%, 3.09%, and 4.76% since March 2012. There are distinct seasonal patterns. A simple regression (time-trend only) of the payrolls without any seasonality has adjusted R² of 35.37%, 39.29%, and 70.95%, respectively for Tulsa County, Tulsa MSA, and South Dakota. By incorporating seasonality, the adjusted R² rises to 83.29%, 84.96%, and 97.11%, respectively for Tulsa County, Tulsa MSA, and South Dakota. Combined results of Figures 14 and 15 underlie the resilience of the service industries’ payroll pattern over time.

Moreover, the fact that basic time-series regularities of payrolls can explain the majority of variations over time affirms the superiority of the payrolls as the best basis for forecasting service industries' revenues. Table 6 reports the quarterly payrolls for all industries and for service industries. Tables 7 and 8, respectively, report the year-on-year and quarter-on-quarter growth in payrolls of all industries and service industries.

Table 6 - Payrolls (US\$ billions)

	Tulsa County		Tulsa MSA		South Dakota	
	All Industries	Service Industries	All Industries	Service Industries	All Industries	Service Industries
2016Q1	\$3.801	\$2.954	\$4.330	\$3.226	\$3.364	\$2.629
2015Q4	\$4.123	\$3.148	\$4.724	\$3.448	\$3.785	\$2.906
2015Q3	\$3.755	\$2.854	\$4.311	\$3.136	\$3.414	\$2.618
2015Q2	\$3.682	\$2.817	\$4.234	\$3.089	\$3.326	\$2.551
2015Q1	\$4.062	\$3.101	\$4.644	\$3.370	\$3.292	\$2.557
2014Q4	\$3.974	\$2.976	\$4.598	\$3.262	\$3.538	\$2.697
2014Q3	\$3.663	\$2.739	\$4.225	\$3.005	\$3.267	\$2.490
2014Q2	\$3.588	\$2.735	\$4.140	\$2.993	\$3.142	\$2.414
2014Q1	\$3.932	\$3.002	\$4.510	\$3.256	\$3.152	\$2.469
2013Q4	\$3.868	\$2.887	\$4.449	\$3.155	\$3.338	\$2.565
2013Q3	\$3.479	\$2.621	\$4.018	\$2.879	\$3.096	\$2.372
2013Q2	\$3.431	\$2.596	\$3.959	\$2.842	\$2.973	\$2.290
2013Q1	\$3.697	\$2.823	\$4.217	\$3.068	\$2.954	\$2.315
2012Q4	\$4.035	\$3.022	\$4.556	\$3.287	\$3.243	\$2.489
2012Q3	\$3.388	\$2.538	\$3.857	\$2.786	\$2.955	\$2.263
2012Q2	\$3.274	\$2.476	\$3.745	\$2.722	\$2.893	\$2.230
2012Q1	\$3.555	\$2.686	\$4.030	\$2.930	\$2.859	\$2.223

Table 7 - Payroll Quarter-on-Quarter Growth

	Tulsa County		Tulsa MSA		South Dakota	
	All Industries	Service Industries	All Industries	Service Industries	All Industries	Service Industries
Average for 2012Q1-2016Q1	0.75%	0.91%	0.75%	0.89%	1.23%	1.22%
2016Q1 to 2015Q4	-7.80%	-6.18%	-8.34%	-6.42%	-11.14%	-9.52%
2015Q4 to 2015Q3	9.80%	10.31%	9.59%	9.95%	10.88%	10.99%
2015Q3 to 2015Q2	1.98%	1.31%	1.83%	1.50%	2.64%	2.60%
2015Q2 to 2015Q1	-9.36%	-9.16%	-8.84%	-8.32%	1.04%	-0.21%
2015Q1 to 2014Q4	2.21%	4.20%	1.01%	3.31%	-6.97%	-5.18%
2014Q4 to 2014Q3	8.48%	8.64%	8.84%	8.54%	8.29%	8.30%
2014Q3 to 2014Q2	2.10%	0.17%	2.04%	0.39%	4.01%	3.13%
2014Q2 to 2014Q1	-8.75%	-8.90%	-8.20%	-8.06%	-0.33%	-2.19%
2014Q1 to 2013Q4	1.66%	3.99%	1.35%	3.18%	-5.58%	-3.77%
2013Q4 to 2013Q3	11.18%	10.12%	10.73%	9.59%	7.85%	8.14%
2013Q3 to 2013Q2	1.40%	0.98%	1.50%	1.29%	4.12%	3.57%
2013Q2 to 2013Q1	-7.20%	-8.03%	-6.12%	-7.36%	0.65%	-1.08%
2013Q1 to 2012Q4	-8.36%	-6.61%	-7.45%	-6.65%	-8.92%	-6.99%
2012Q4 to 2012Q3	19.11%	19.08%	18.14%	17.98%	9.75%	10.01%
2012Q3 to 2012Q2	3.47%	2.50%	2.98%	2.35%	2.16%	1.49%
2012Q2 to 2012Q1	-7.90%	-7.82%	-7.07%	-7.09%	1.17%	0.29%

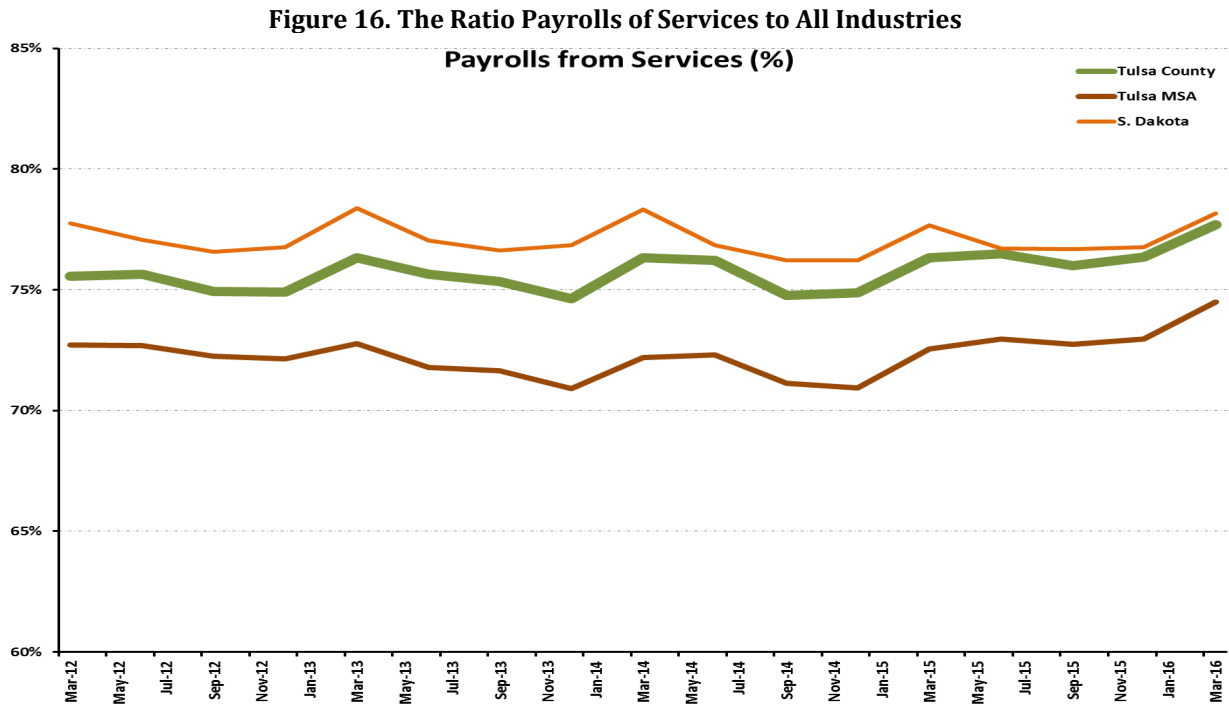
As is evident in Table 8, the year-on-year growths show sharp 6.42% and 6.76% declines for all industries' payrolls as of recently in Tulsa County and Tulsa MSA, respectively. The

year-on-year growths show somewhat slower declines of 4.26% and 4.75% for service industries' payrolls as of recently in Tulsa County and Tulsa MSA, respectively. While South Dakota does not show declines in payrolls, the most recent quarter results show much smaller growth—almost one half of average growth—than previous quarters.

Table 8 -Payroll Year-on-Year Growth

	Tulsa County		Tulsa MSA		South Dakota	
	All Industries	Service Industries	All Industries	Service Industries	All Industries	Service Industries
Average for 2012Q1-2016Q1	2.47%	3.04%	2.73%	3.09%	4.74%	4.76%
2016Q1 to 2015Q4	-6.42%	-4.75%	-6.76%	-4.26%	2.19%	2.82%
2015Q4 to 2015Q3	3.74%	5.79%	2.75%	5.70%	6.98%	7.75%
2015Q3 to 2015Q2	2.50%	4.19%	2.04%	4.35%	4.48%	5.13%
2015Q2 to 2015Q1	2.61%	3.01%	2.26%	3.21%	5.87%	5.67%
2015Q1 to 2014Q4	3.30%	3.30%	2.99%	3.50%	4.43%	3.58%
2014Q4 to 2014Q3	2.74%	3.09%	3.34%	3.37%	5.99%	5.12%
2014Q3 to 2014Q2	5.29%	4.49%	5.14%	4.37%	5.55%	4.97%
2014Q2 to 2014Q1	4.57%	5.34%	4.57%	5.31%	5.67%	5.42%
2014Q1 to 2013Q4	6.35%	6.35%	6.94%	6.11%	6.71%	6.62%
2013Q4 to 2013Q3	-4.13%	-4.50%	-2.34%	-4.00%	2.94%	3.05%
2013Q3 to 2013Q2	2.71%	3.28%	4.19%	3.35%	4.76%	4.83%
2013Q2 to 2013Q1	4.80%	4.83%	5.72%	4.43%	2.78%	2.73%
2013Q1 to 2012Q4	4.01%	5.07%	4.65%	4.72%	3.31%	4.14%

Figure 16 shows the ratio of service industries' payrolls to all industries' payrolls.

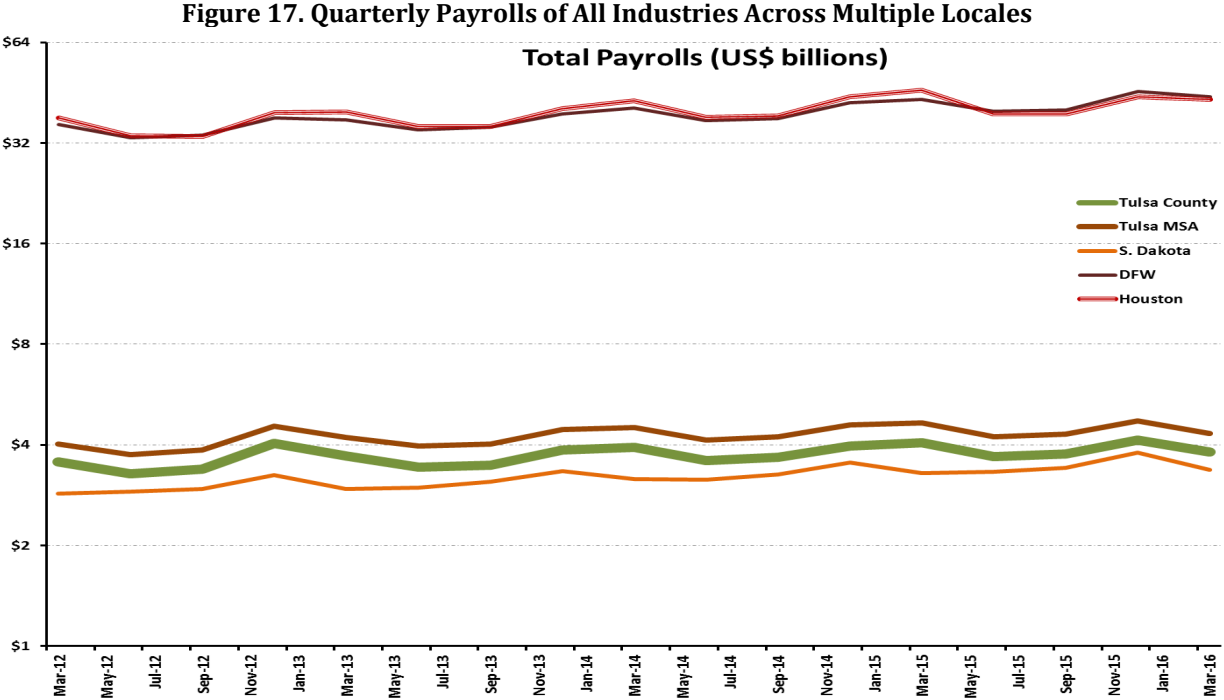


This figure shows the percentage of payroll of service industries in the total payroll of all industries in Tulsa County, Tulsa MSA, and the state of South Dakota for the period of March 2012-March 2016. The data is from the Quarterly Census of Employment and Wages conducted by the U.S. Bureau of Labor Statistics.

It is noteworthy that service industries account for majority of total payrolls. For Tulsa County, the service payroll accounts for more than 75% of total payrolls. This percentage, however, has been rising steadily in the past six quarters; approaching 78% in the most recent quarter. For Tulsa MSA, the service payroll accounts for more than 70% of total payrolls. This percentage also has been rising steadily in the past six quarters; approaching 75% in the most recent quarter. For South Dakota, the service payroll accounts for more than 76% of total payrolls. This percentage, again, has been rising steadily in the past six quarters; approaching 78% in the most recent quarter. These results, along with previously discussed time-series regularities of payrolls for service industries, reaffirm our earlier contention that by using payrolls, we can yield the most reliable forecasts of service industries' revenues.

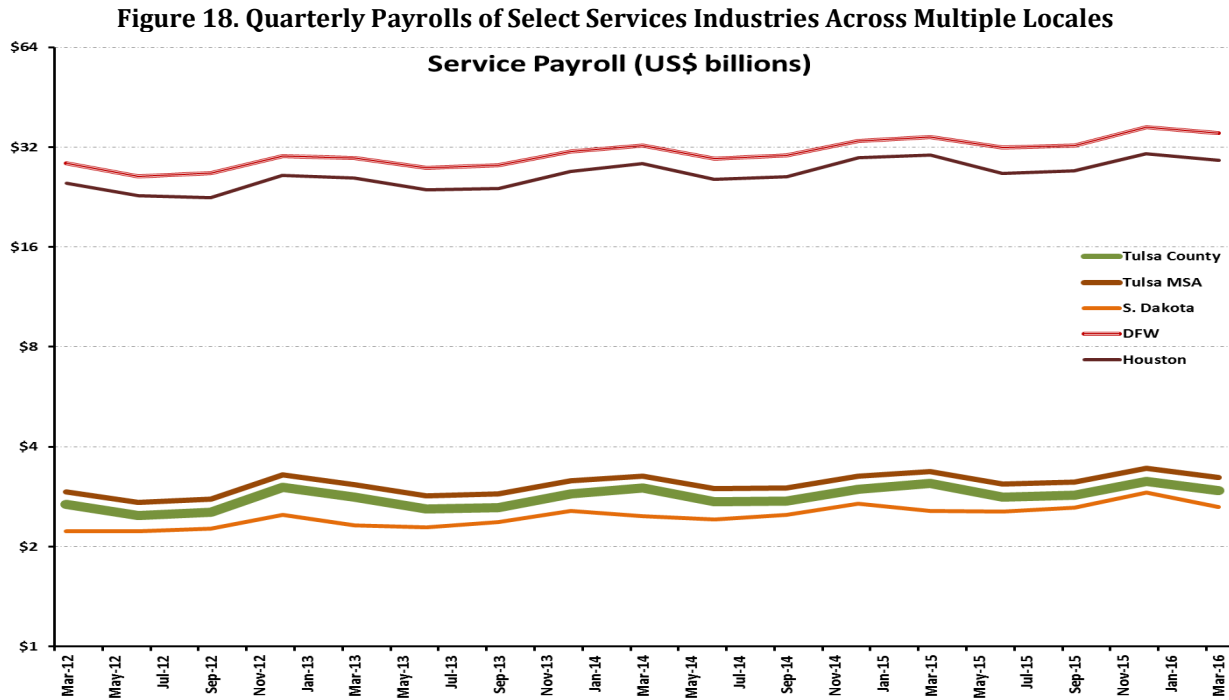
3.2.1. Broader Perspective about Most Recent Payrolls from Other Locales

As noted before, one concern of our analysis is the focus on Tulsa County and using only Tulsa MSA and South Dakota as comparable locales. To mitigate this, as before, we also consider Dallas-Forth Worth MSA and Houston MSA as alternative comparable locales. Interestingly, despite material differences in the sheer dollar size of payrolls in these areas, the time-series patters of payrolls shows great similarities.



This figure shows the quarterly total payroll of all industries in Tulsa County, Tulsa MSA, Dallas-Forth Worth MSA, Houston MSA, and the states of Oklahoma and South Dakota for the period of March 2012-March 2016. The data is from the Quarterly Census of Employment and Wages conducted by the U.S. Bureau of Labor Statistics.

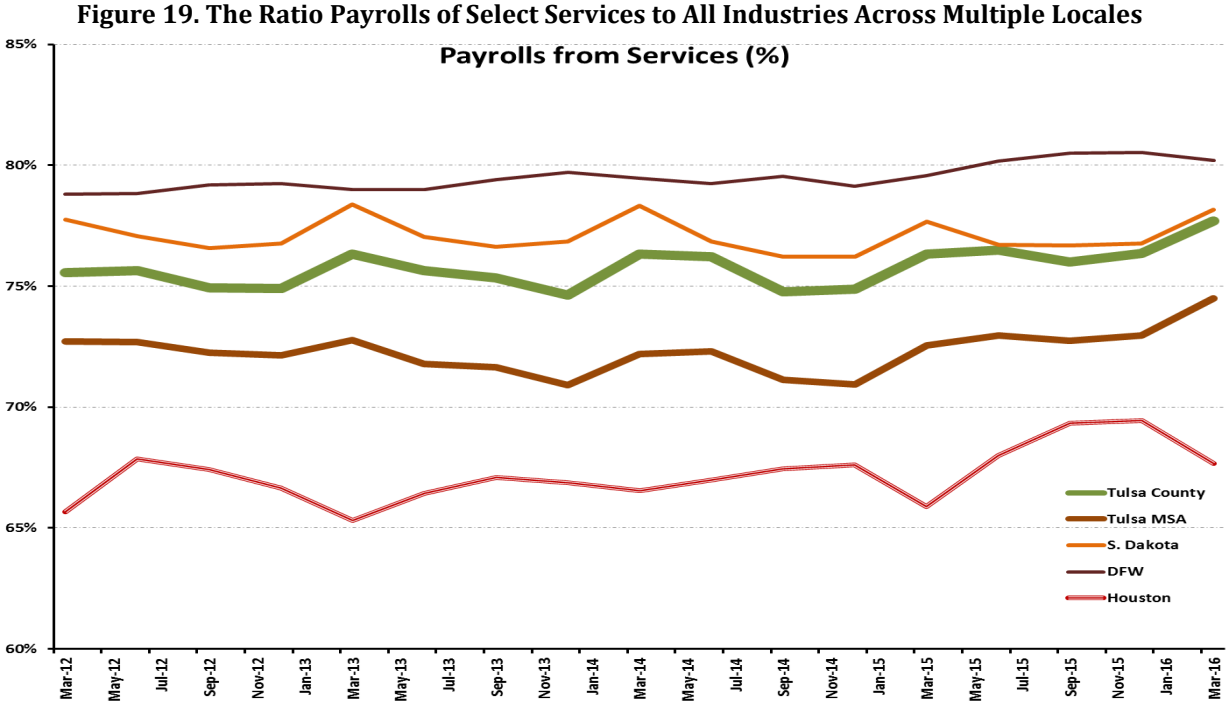
As is shown in Figure 17, the payrolls of all industries in Dallas-Forth Worth MSA, and Houston MSA, respectively, have been growing year-on-year at average rates of 5.81%, and 4.37% since March 2012. There are distinct seasonal patterns. A simple regression (time-trend only) of the payrolls has adjusted R^2 of 68.91%, and 42.80%, respectively for Dallas-Forth Worth MSA, and Houston MSA. By incorporating seasonality, the adjusted R^2 rises to 97.13%, and 90.10%, respectively for Dallas-Forth Worth MSA, and Houston MSA.



This figure shows the quarterly payroll of service industries in Tulsa County, Tulsa MSA, Dallas-Forth Worth MSA, Houston MSA, and the states of Oklahoma and South Dakota for the period of March 2012-March 2016. The data is from the Quarterly Census of Employment and Wages conducted by the U.S. Bureau of Labor Statistics.

As is shown in Figure 18, the payrolls of service industries in Dallas-Forth Worth MSA, and Houston MSA, respectively, have been growing year-on-year at average rates of 6.37%, and 5.16% since March 2012. There are distinct seasonal patterns. A simple regression (time-trend only) of the payrolls has adjusted R^2 of 72.14%, and, 56.50%, respectively for Dallas-Forth Worth MSA, and Houston MSA. By incorporating seasonality, the adjusted R^2 rises to 96.99%, and 93.23%, respectively for Dallas-Forth Worth MSA, and Houston MSA.

As before, we are keenly interested in the contribution of service industries' payroll to the total payroll. As Figure 19 shows, the payrolls for services account for a large part of total payroll costs. The lowest across all locales seem to be Houston MSA with services' payrolls of about 65%-70% of the total payrolls. The highest across all locales seem to be Dallas-Forth Worth MSA with services' payrolls of about 80% of the total payrolls. Unlike Tulsa County, both of these locales seem to witness a decrease in the service payrolls' share in the overall payrolls. Nonetheless, as before, the evidence underlies the significance of payrolls (i.e., the cost of human capital) as a main economic driver of service industries' revenues.

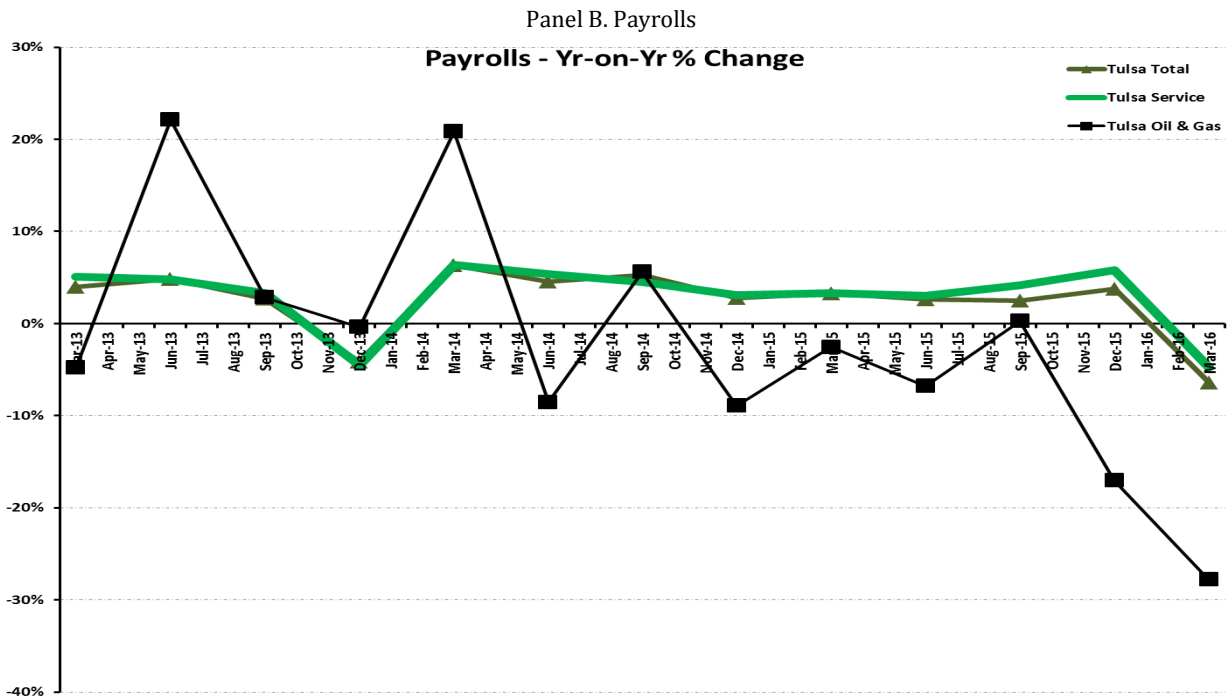
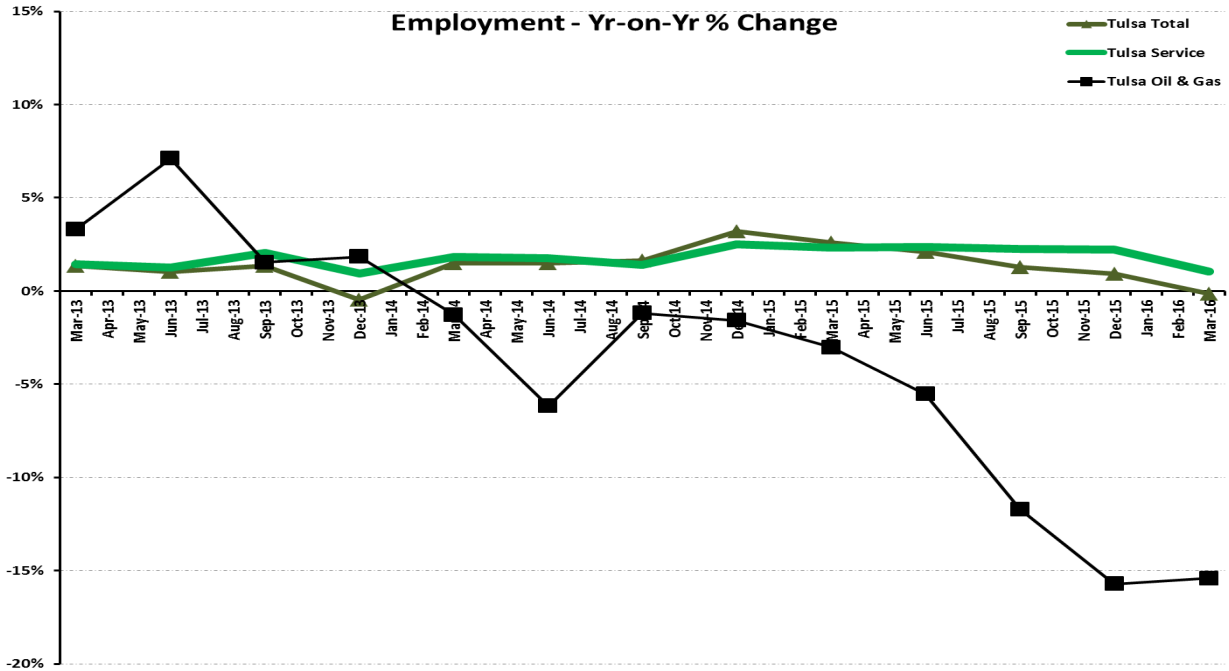


This figure shows the percentage of payroll of service industries in the total payroll of all industries in Tulsa County, Tulsa MSA, Dallas-Forth Worth MSA, Houston MSA, and the states of Oklahoma and South Dakota for the period of March 2012-March 2016. The data is from the Quarterly Census of Employment and Wages conducted by the U.S. Bureau of Labor Statistics.

3.3. Cross-Industry Comparisons for Tulsa County

As we noted before, one of the main reasons for choosing payrolls as a basis for forecasting revenues is their time-series stability. To ensure this contention holds true particularly for Tulsa County, we also examine the time-series patterns of year-on-year changes in payrolls (for which seasonality is already accounted). As is shown in Figure 20, the average year-on-year change in service payrolls of 3.04% is statistically indifferent from the average year-on-year change in total payrolls of 2.47% (one-tail *p*-value of 0.3974). However, the average year-on-year change in oil and gas payrolls of -1.93% is statistically different from that of services' (one-tail *p*-value of 0.0839).

Figure 20. Comparison of the Year-on-Year Changes in Employment and Payrolls of Select Service and Non-Service Industries in Tulsa County
 Panel A. Employment



This figure shows the year-on-year quarterly changes in employment and payrolls of all industries, select services, and Oil and Gas industry in Tulsa County for the period of December 2012-March 2016. The data is from the Quarterly Census of Employment and Wages conducted by the U.S. Bureau of Labor Statistics.

As is evident in Figure 20, the majority of negative average year-on-year change in Oil and Gas payrolls is due to drastic loss of employment since beginning 2015. This, of course, follows the crude oil prices dramatic fall from the peak of \$107 per barrel in June 2014.

4. Revenues Estimates for Select Services

4.1. Estimation Methodology

As noted, we first employ the reported revenues and payrolls data from Economic Census (2002, 2007 and 2012) to first form an opinion about patterns of payroll-to-revenue ratios for all service industries. We then use these ratios to ascertain how they changed over time for each industry. What matters greatly to us from conducting this exercise are: (1) how to fill the gap for missing data (e.g., missing revenues and/or missing payrolls), and (2) how to construct reliable benchmark for time-series patterns (e.g., economic cyclicity).

To deal with missing data, we utilize both coding as well as ultimately visually examining the data. In simplest form, missing ratios can be replaced with (a) closest industry (higher or lower level) ratios, and/or (b) previous censuses ratios. This is not, however, always possible in that the missing data can persist over time and can afflict adjacent industries. Ultimately, we visually examine the data after basic coded correction is applied. Using best available information (over time and across industries), we then manually fill the gaps that cannot be easily coded away. The manner in which the information about time-series patterns are incorporated is explained later when we discuss how our estimates are generated.

Having established the benchmark payroll-to-revenue ratios, we use (the more frequent) payroll data from the Quarterly Census of Employment and Wages to then estimate the total industry-level revenues during the period of 2012Q1-2016Q1. To do so, we essentially make eight major sets of assumptions which lead to eighteen estimates of revenues. Appendix B explains each method and then reports the results for all service industries. For instance, in method 1, we first compute the revenues-to-payroll ratios from 2002, 2007, and 2012 Economic Census' for Tulsa County only. We then use these ratios to estimate revenues from the payrolls from the Quarterly Census of Employment and Wages. To generate 75%ile confidence bounds for our estimates, we then add (subtract) one standard deviation to (from) these ratios and repeat the procedure. This method generates one median estimate and two upper/lower estimates.

In method 2, again, we first compute the revenues-to-payroll ratios from 2002, 2007, and 2012 Economic Census' for Tulsa County only. But then, using the only overlapping year, 2012, we incorporate quarterly seasonal patterns of payrolls (from the Quarterly Census of Employment and Wages) to adjust the revenues-to-payroll ratios. We then use these new seasonally corrected revenues-to-payroll ratios to estimate revenues from the quarterly payrolls. To generate 75%ile confidence bounds, we then add (subtract) one standard

deviation to (from) these ratios and repeat the procedure. This method generates one median estimate and two upper/lower estimates.

The aforementioned generate 18 distinct estimates of service industries revenues for the period of 2012Q1-2016Q1. To assess the city of Tulsa’s service tax revenues, we then need to find out the share of the City’s from these service industries’ revenues. To do so, as is shown in Table 6 and 7, we first examine how current sales taxes of the City of Tulsa compare to those of the Tulsa County. As is evident, we can conservatively say that the City Tulsa can account for 70% of the Tulsa County service industries’ revenues. Using this 70%, we adjust all the previously estimated service industries’ revenues.

Table 6 –Sales Tax for the City of Tulsa vs. Tulsa County

This table depicts the aggregated sales tax (US\$) for the years 2012, 2013, 2014, and 2015 for Tulsa (in Tulsa, Osage, and Wagoner counties) versus Tulsa County. The percentage (out of Tulsa County taxes) are also reported. The data is from Oklahoma Tax Commission.

	2012 Sales Tax	2013 Sales Tax	2014 Sales Tax	2015 Sales Tax
Tulsa (TULSA)	\$121,811,011.02	\$116,633,622.09	\$243,542,661.15	\$244,367,481.36
Tulsa (OSAGE)	\$6,413,922.80	\$4,742,359.20	\$6,055,777.82	\$5,160,215.45
Tulsa (WAGONER)	\$6,032,437.00	\$722,471.93	\$319,200.00	\$495,682.09
TULSA COUNTY	\$164,628,129.20	\$158,792,275.13	\$348,368,614.38	\$353,253,109.17
%Tulsa (TULSA)	73.99%	73.45%	69.91%	69.18%
%Tulsa (OSAGE)	3.90%	2.99%	1.74%	1.46%
%Tulsa (WAGONER)	3.66%	0.45%	0.09%	0.14%
%Tulsa (ALL)	81.55%	76.89%	71.74%	70.78%

Table 7 –Use Tax for the City of Tulsa vs. Tulsa County

This table depicts the aggregated use tax (US\$) for the years 2012, 2013, 2014, and 2015 for Tulsa (in Tulsa, Osage, and Wagoner counties) versus Tulsa County. The percentage (out of Tulsa County taxes) are also reported. The data is from Oklahoma Tax Commission.

	2012 Sales Tax	2013 Sales Tax	2014 Sales Tax	2015 Sales Tax
Tulsa (TULSA)	\$421,055,073.42	\$426,917,546.29	\$477,596,710.74	\$447,818,551.43
Tulsa (OSAGE)	\$35,207,445.04	\$27,744,272.91	\$16,881,666.21	\$13,883,079.73
Tulsa (WAGONER)	\$30,267,560.60	\$24,099,983.64	\$18,108,706.13	\$20,442,531.29
TULSA COUNTY	\$508,989,851.91	\$517,238,627.54	\$579,093,345.88	\$563,293,766.32
%Tulsa (TULSA)	82.72%	82.54%	82.47%	79.50%
%Tulsa (OSAGE)	6.92%	5.36%	2.92%	2.46%
%Tulsa (WAGONER)	5.95%	4.66%	3.13%	3.63%
%Tulsa (ALL)	95.59%	92.56%	88.52%	85.59%

4.3. Revenues for Select Services' Industries

Table 8 reports the summary statistics of the estimated annual select and non-select industries' revenues for the City of Tulsa for the years 2012, 2013, 2014, and, 2015. As is evident, the average estimated revenues from select services are, respectively, \$2,929,791,915, \$2,973,075,400, \$ 3,121,337,507, and \$3,237,211,457 for the years 2012, 2013, 2014, and, 2015. This implies that for every percentage sales taxes, the City of Tulsa could have expected additional revenues of \$29,297,919.15, \$29,730,754.00, \$31,213,375.07, and \$32,372,114.57, respectively. At the prototypical 2% rate, then the City of Tulsa could have expected additional revenues of \$58,595,838.29, \$59,461,508.00, \$62,426,750.13, and \$64,744,229.13, respectively.

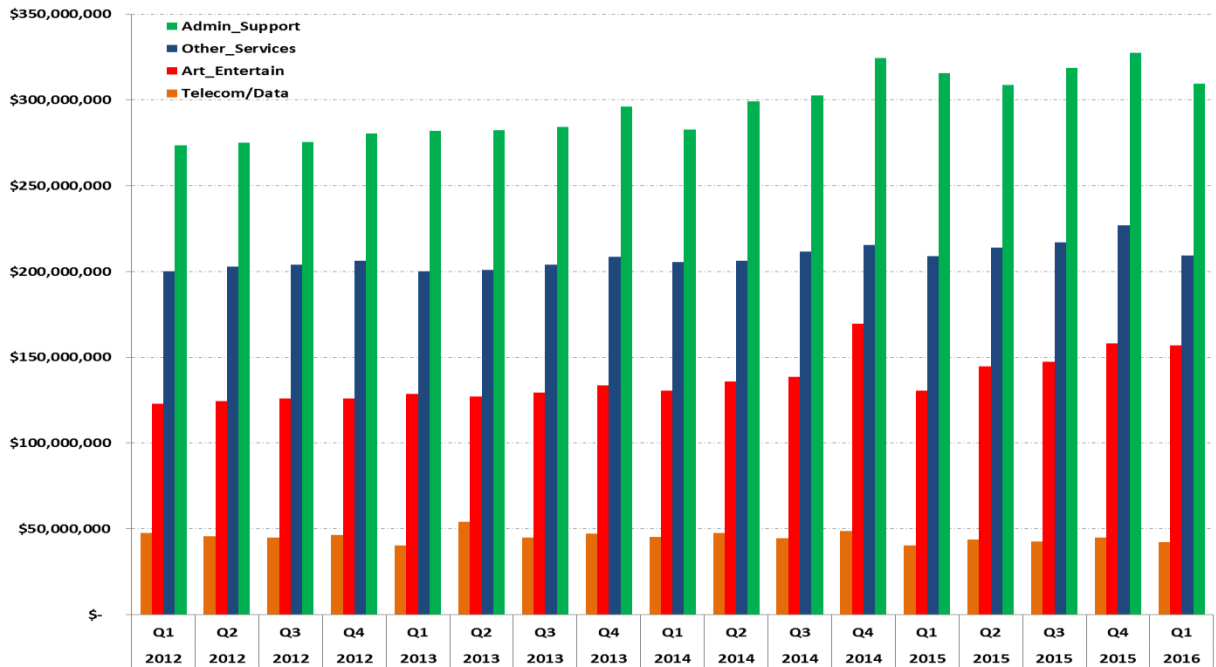
Table 8 – Summary Statistics of Service Industries' Estimated Revenues and Possible Commensurate Service Taxes

This table reports the average, lower bound (of 75%ile of confidence) and upper bound (of 75%ile of confidence) the estimated revenues of select and non-select service industries for the years 2012, 2013, 2014, and 2015 for the City of Tulsa.

	2012	2013	2014	2015
<i>Select Services</i>				
Average	\$ 2,929,791,915	\$ 2,973,075,400	\$ 3,121,337,507	\$ 3,237,211,457
Upper Bound	\$ 3,465,215,744	\$ 3,501,936,765	\$ 3,677,447,585	\$ 3,816,120,596
Lower Bound	\$ 2,456,478,145	\$ 2,503,225,461	\$ 2,630,372,359	\$ 2,719,022,430
<i>Non-Select Services</i>				
Average	\$ 9,298,909,208	\$ 9,375,533,009	\$ 9,778,933,635	\$ 10,221,516,240
Upper Bound	\$ 10,661,949,107	\$ 10,647,641,250	\$ 11,106,358,334	\$ 11,595,242,935
Lower Bound	\$ 7,946,809,153	\$ 8,049,073,694	\$ 8,393,451,781	\$ 8,790,137,582
Sales tax rate = 1%	\$ 29,297,919.15	\$ 29,730,754.00	\$ 31,213,375.07	\$ 32,372,114.57
Sales tax rate = 2%	\$ 58,595,838.29	\$ 59,461,508.00	\$ 62,426,750.13	\$ 64,744,229.13

The quarter-by-quarter results of our service industries' revenue estimates are depicted in Figures 21 and 22. Figure 21 shows the results for the largest select industries: (1) Administrative Support (e.g., office administrator, temporary help, call centers, private mail, collection agencies, travel agencies, security and armored cars, private investigation, janitorial, carpet cleaning, landscaping, locksmiths, exterminators), (2) Other Services (e.g., automotive repair, auto-glass repair, auto-body shops, computer and office machine repair, barber shops, beauty salons, death care and funeral homes, dry-cleaning, pet-care, carwashes), (3) Arts and Entertainments (e.g., performing arts centers, spectator sports, agents and managers of public figures, golf courses, amusement parks, gambling, museums, marinas, fitness facilities, bowling centers, zoos), and (4) Telecom and Data (e.g., wireless carriers, telecom resellers, data processing, web-hosting, internet publishing, web-search).

Figure 21. Average Estimated Revenues for Major Select Services Industries in the City of Tulsa



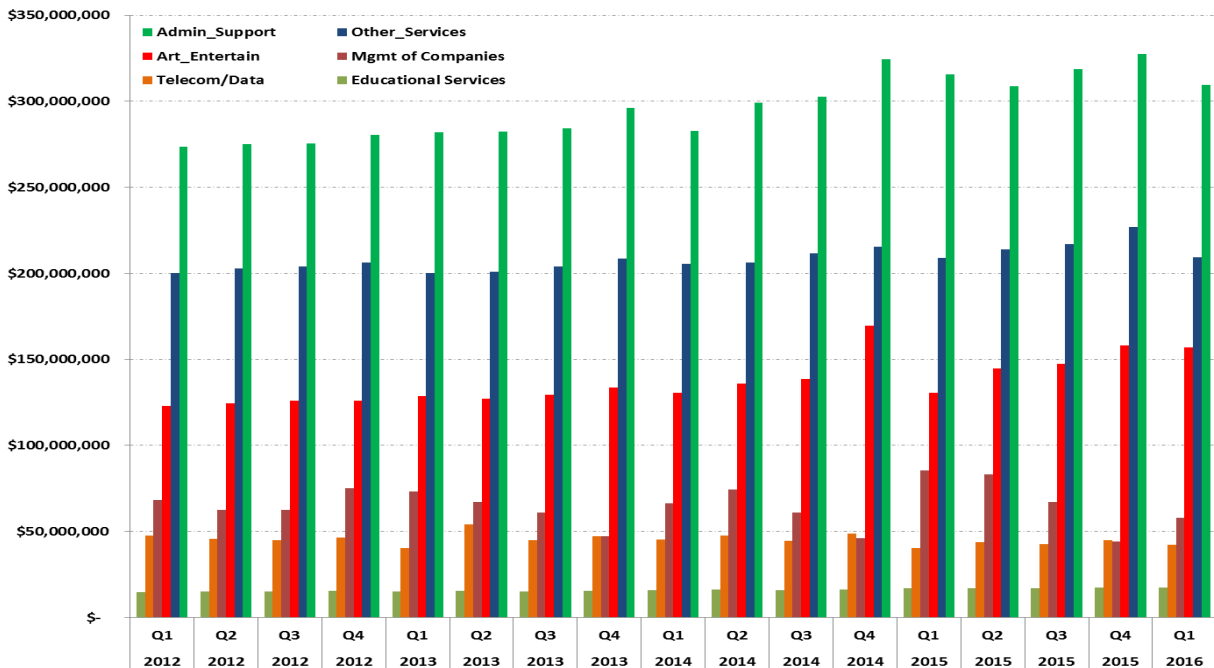
This figure shows the median estimated quarterly revenues of four major select services industries for period of 2012Q1-2016Q1 in the City of Tulsa. Select services refers to all service industries excluding (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix A.

Figure 22 also shows the results for additional select service industries: (1) management of companies (e.g., managing offices) and (2) educational services (e.g., management training, technical and trade schools, cosmetology and barber schools, flight training, apprenticeship training, fine arts schools, exam preparation and tutoring).

To provide a complete perspective, we also show the quarter-by-quarter revenue estimates for non-select service industries in Figure 23. These industries include: (1) healthcare and social services (e.g., physicians, dentists, chiropractors, optometrists, mental health practitioners, specialty therapists, podiatrists, outpatient care centers, family planning centers, kidney dialysis centers, medical and diagnostic laboratories, diagnostic imaging centers, home health care services, ambulance services, blood and organ banks, hospitals, nursing and residential care facilities, residential mental health facilities, continuing care, assisted living facilities, social assistance, individual and family services, child and youth services, community food services, vocational rehabilitation services, child day care services), (2) professional and business services (e.g., legal services, title abstract and settlement offices, accounting and bookkeeping services, tax preparation services, payroll services, architectural and engineering services, building inspection services, geophysical

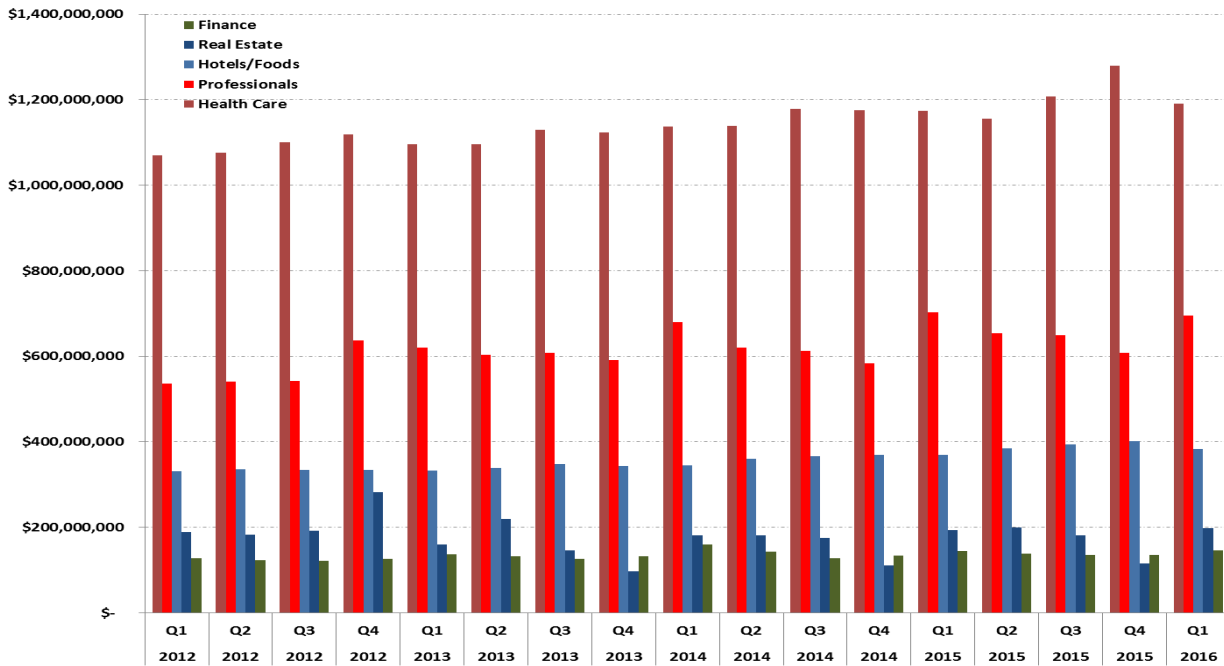
surveying and mapping services, testing laboratories, graphic design services, computer systems design services, management and technical consulting services, human resources consulting services, marketing consulting services, advertising, PR, and related services, photography studios, portrait, veterinary services), (3) hospitality and food services (e.g., hotels and motels, except casino hotels, bed-and-breakfast inns, food services and drinking places, food service contractors, drinking places, alcoholic beverages, restaurants, cafeterias, grill buffets, and buffet, snack and nonalcoholic beverage bars), (4) real estate (e.g., realtor and real estate agents, lessors of real estate, mini-warehouse and self-storage unit operators, real estate property managers, real estate appraisers, rental and leasing services, automotive equipment rental and leasing, consumer goods rental, machinery and equipment rental and leasing, heavy machinery rental and leasing), and (5) financial services (e.g., credit unions, nondepository credit intermediation, consumer lending, real estate credit, securities and commodity contracts brokerage, investment banking and securities dealing, portfolio management, investment advice, trust, fiduciary, and custody activities, insurance carriers, insurance agencies and brokerages, claims adjusting).

Figure 22. Average Estimated Revenues for All Select Services Industries in the City of Tulsa



This figure shows the median estimated quarterly revenues of all select services industries for period of 2012Q1-2016Q1 in the City of Tulsa. Select services refers to all service industries excluding (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix A.

Figure 23. Average Estimated Revenues for the Largest Non-Select Services Industries in the City of Tulsa



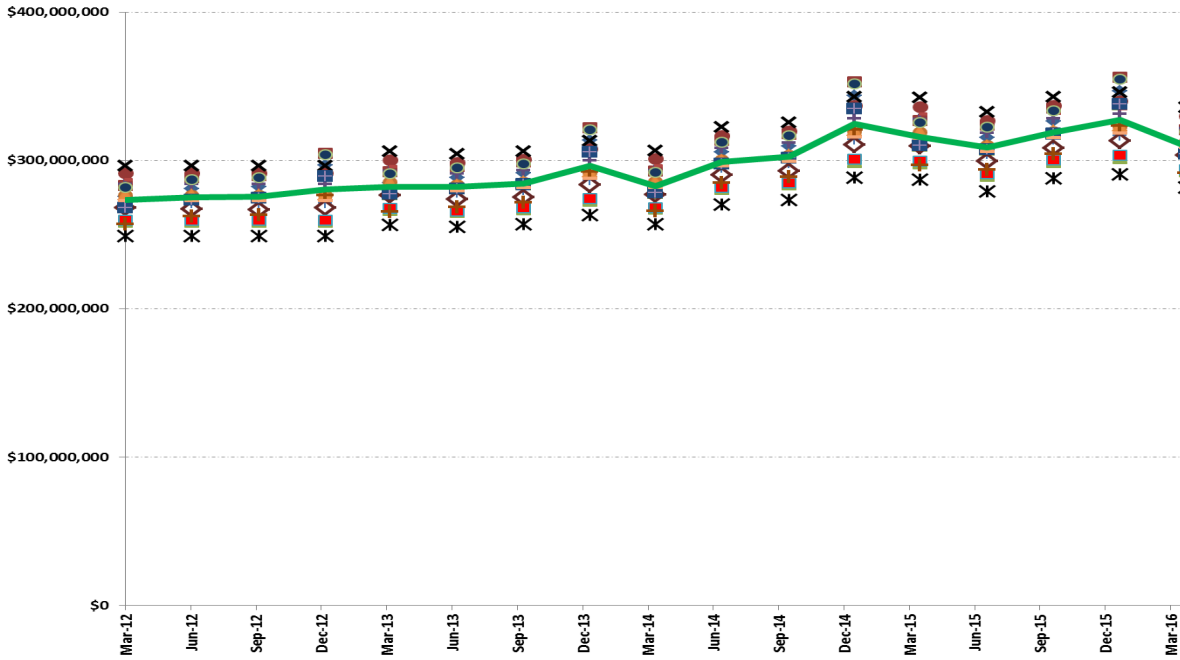
This figure shows the median estimated quarterly revenues of non-select services industries for period of 2012Q1-2016Q1 in the City of Tulsa. Non-select services refers to: (1) newspapers, (2) professionals and business services (e.g., lawyers, accountants), (3) financial services, (4) real estate, (5) healthcare services, (6) hospitality and food services, (7) waste management, and (8) public institutions. Service industries are those with 2-digit NAICS code of 51, 52, 53, 54, 55, 56, 61, 62, 71, 72, and 81. For detailed list of all of these industries, consult with the appendix A.

As noted in Table 8, the total revenues of all non-service industries are more than three larger than those of select service industries. These industries account for the lion share of growth in employment and wages in the City of Tulsa as well. The critical role of these industries perhaps is the main reason why the Task Force excluded them from tax considerations.

4.3. Detail Estimates of Revenues for Major Select Services' Industries

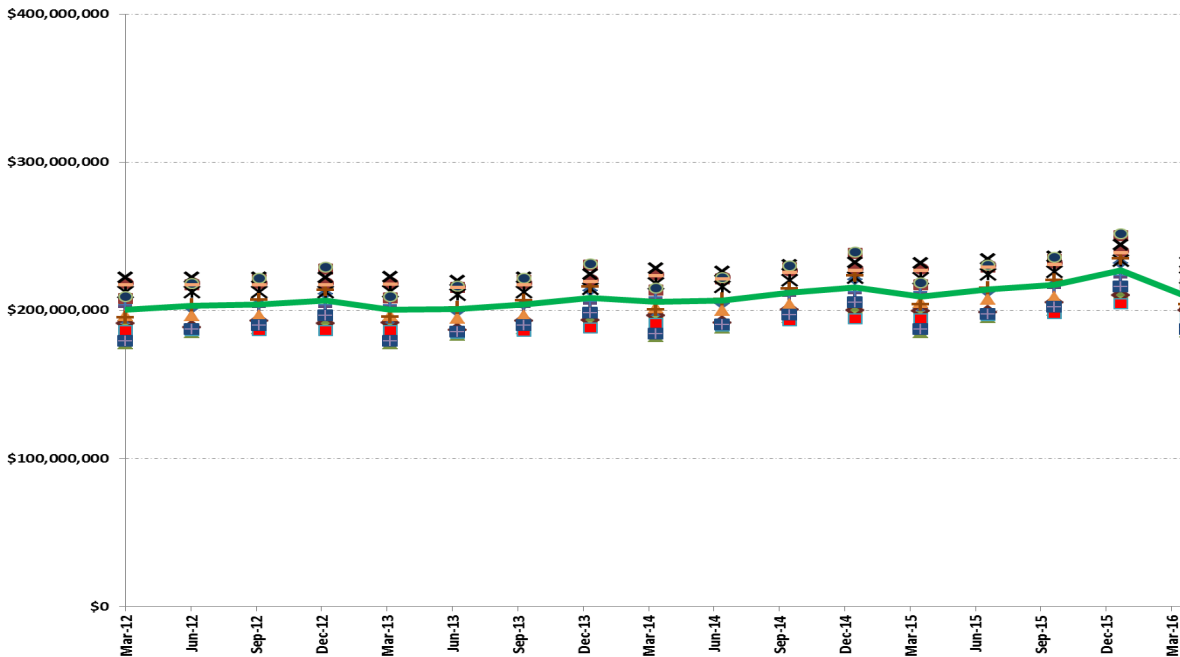
We do report all revenue estimates for all industries in Appendix B. However, to provide a better, heuristics representation of these estimates for each industry, we provide graphical representation of our estimates for the six major select service industries in Figures 24-29. Figure 24 shows the revenue estimates for the administrative support services. As noted before, this industry includes: office administrator, temporary help, call centers, private mail, collection agencies, travel agencies, security and armored cars, private investigation, janitorial, carpet cleaning, landscaping, locksmiths, and, exterminators.

Figure 24. Estimates of Revenues for Administrative Support Services in the City of Tulsa



This figure shows all estimated quarterly revenues of the Administrative Support industry for the period of March 2012 – March 2016. The Administrative Support industry includes sub-industries such as office administrator, temporary help, call centers, private mail, collection agencies, travel agencies, security and armored cars, private investigation, janitorial, carpet cleaning, landscaping, locksmiths, and, exterminators.

Figure 25. Estimates of Revenues for Other Services in the City of Tulsa

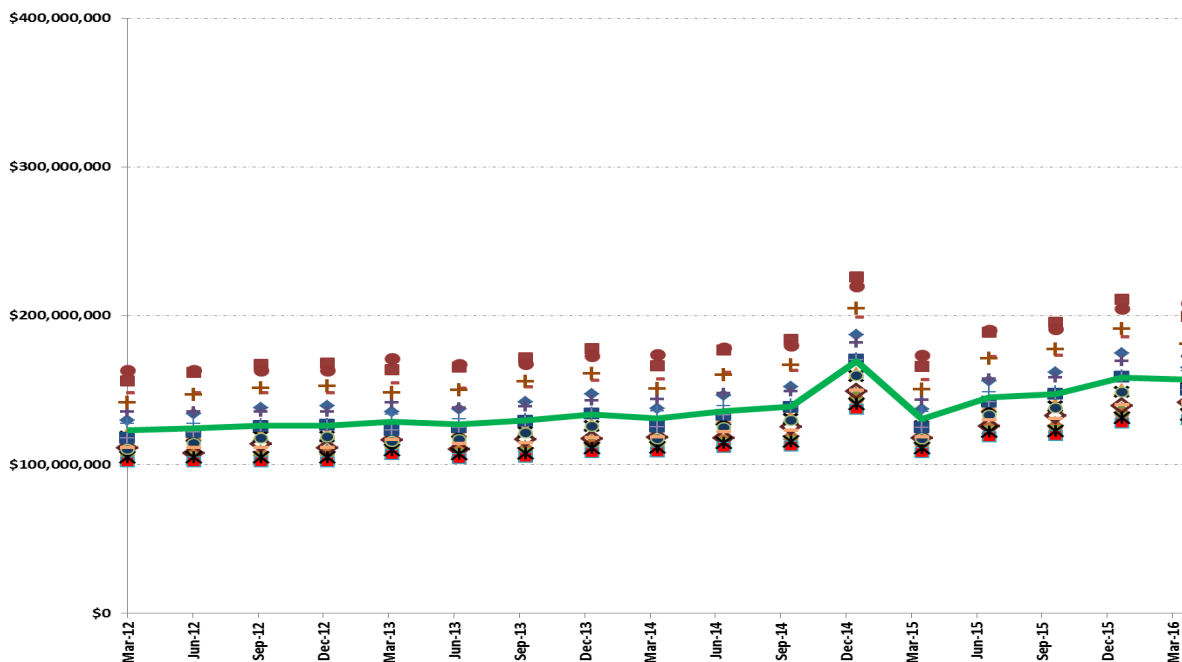


This figure shows all estimated quarterly revenues of the Other Industries for the period of March 2012 – March 2016. The Other Industries include sub-industries such as automotive repair, auto-glass repair, auto-body shops, computer and office machine repair, barber shops, beauty salons, death care and funeral homes, dry-cleaning, pet-care, and, carwashes.

Figure 25 shows the revenue estimates for the other services industries. As noted before, this industry includes: automotive repair, auto-glass repair, auto-body shops, computer and office machine repair, barber shops, beauty salons, death care and funeral homes, dry-cleaning, pet-care, and, car washes.

Figure 26 shows the revenue estimates for the arts and entertainments industry. As noted before, this industry includes: performing arts centers, spectator sports, agents and managers of public figures, golf courses, amusement parks, gambling, museums, marinas, fitness facilities, bowling centers, and, zoos.

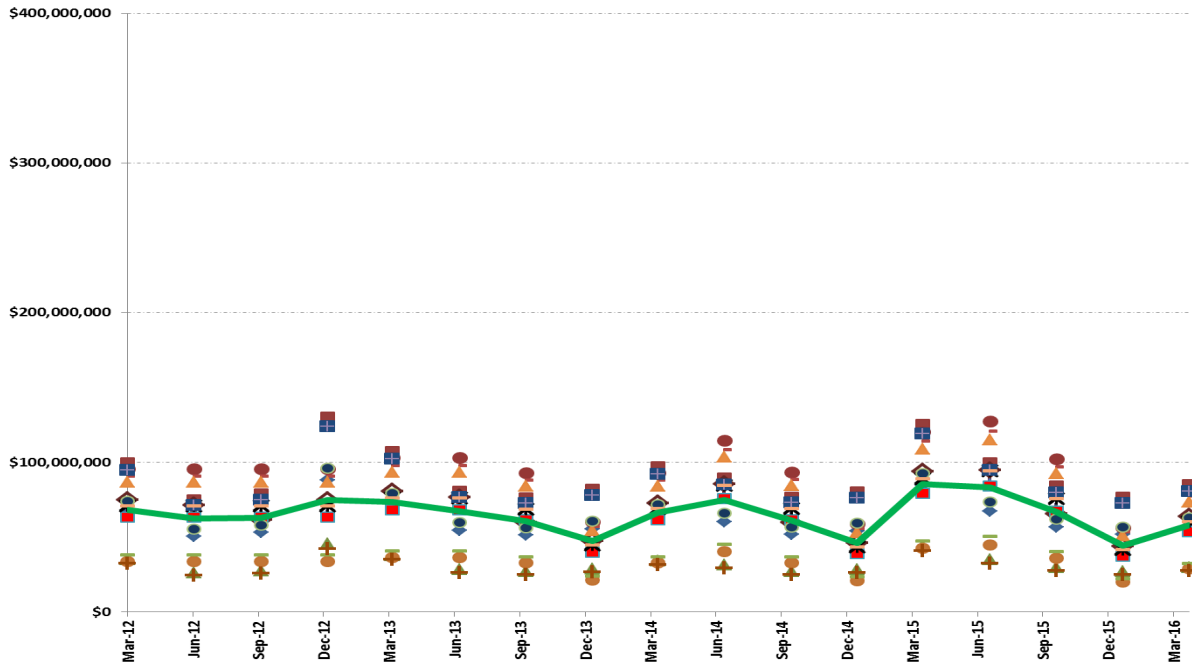
Figure 26. Estimates of Revenues for Arts/Entertainments in the City of Tulsa



This figure shows all estimated quarterly revenues of the Art/Entertainment industry for the period of March 2012 – March 2016. The Arts/Entertainment industry include sub-industries such as performing arts centers, spectator sports, agents and managers of public figures, golf courses, amusement parks, gambling, museums, marinas, fitness facilities, bowling centers, and, zoos.

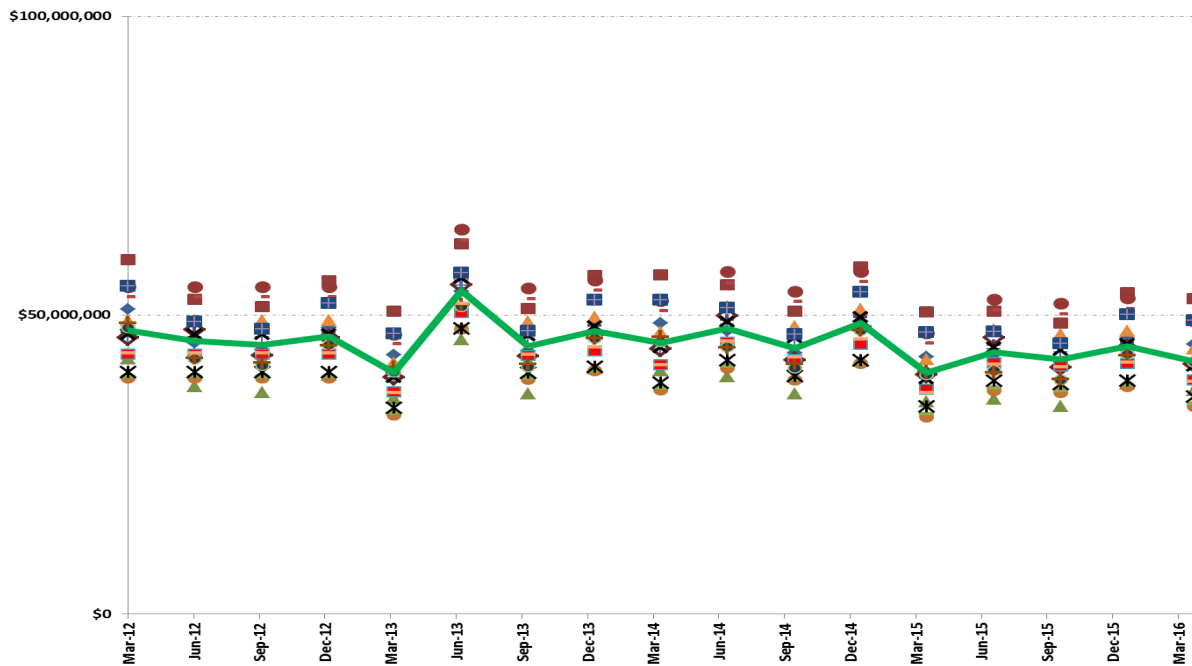
Figure 27 shows the revenues estimates for the management of companies industry. Figure 28 shows the revenue estimates for the telecom/data industry. As noted before, this industry includes: wireless carriers, telecom resellers, data processing, web-hosting, internet publishing, and, web-search. Figure 29 shows the revenues estimates for the educational services industry. As noted before, this industry includes: management training, technical and trade schools, cosmetology and barber schools, flight training, apprenticeship training, fine arts schools, exam preparation, and, tutoring.

Figure 27. Estimates of Revenues for Management of Companies in the City of Tulsa



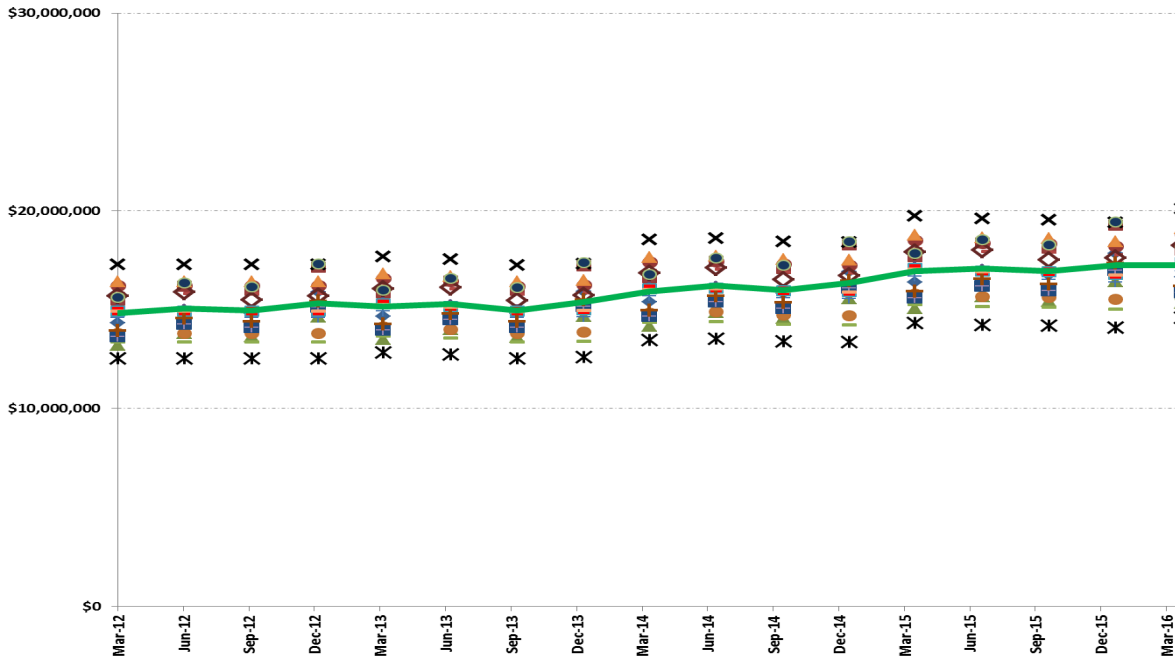
This figure shows all estimated quarterly revenues of the Management of Companies industry for the period of March 2012 – March 2016.

Figure 28. Estimates of Revenues for Telecom/Data in the City of Tulsa



This figure shows all estimated quarterly revenues of the Telecom/Data industry for the period of March 2012 – March 2016. The Telecom/Data industry include sub-industries such as wireless carriers, telecom resellers, data processing, web-hosting, internet publishing, and web-search.

Figure 29. Estimates of Revenues for Educational Services in the City of Tulsa



This figure shows all estimated quarterly revenues of the Educational Services industry for the period of March 2012 – March 2016. The Educational Services industry include sub-industries such as management training, technical and trade schools, cosmetology and barber schools, flight training, apprenticeship training, fine arts schools, exam preparation, and, tutoring..

5. Conclusion

Using Economic Census and the Quarterly Census of Employment of Wages, we examine the characteristics of the service industries’ revenues. Having documented formidable size and strong resiliency against macroeconomic fluctuations for the service industries, we then estimate the revenues of the service industries for the period of 2012-2016.

Excluding certain services (newspapers, professional services such as lawyers, accountants, and healthcare), we estimate the total revenues from the remaining “select services industries” in 2015 to have been \$3,237,211,457.00 for the City of Tulsa. This implies that for every percentage tax excised, the City of Tulsa could have expected \$32,372,114.57 of additional revenues. Assuming the City of Tulsa can excise a service tax rate of 2% on select service, we estimates that the City of Tulsa could have expected \$58,595,838.29, \$59,461,508.00, \$62,426,750.13, and \$64,744,229.13 of additional tax revenues in 2012, 2013, 2014, and 2015.

Appendix A. Service Industry Codes and Corresponding Business Line Description

Department of Labor uses 6-digit NAIC codes to distinguish various service industries. The following table shows how these codes map into various industries. The industries which are NOT considered “select services” are highlighted in gray.

NAIC Code / Industry Name	NAIC Code / Industry Name	NAIC Code / Industry Name
NAICS 511 Publishing industries, except Internet	NAICS 52211 Commercial banking	NAICS 525 Funds, trusts, and other financial vehicles
NAICS 5111 Newspaper, book, and directory publishers	NAICS 522110 Commercial banking	NAICS 52592 Trusts, estates, and agency accounts
NAICS 51111 Newspaper publishers	NAICS 52213 Credit unions	NAICS 525920 Trusts, estates, and agency accounts
NAICS 511110 Newspaper publishers	NAICS 522130 Credit unions	NAICS 52599 Other financial vehicles
NAICS 51112 Periodical publishers	NAICS 5222 Nondepository credit intermediation	NAICS 525990 Other financial vehicles
NAICS 511120 Periodical publishers	NAICS 52229 Other nondepository credit intermediation	NAICS 53 Real estate and rental and leasing
NAICS 51113 Book publishers	NAICS 522291 Consumer lending	NAICS 531 Real estate
NAICS 511130 Book publishers	NAICS 522292 Real estate credit	NAICS 5311 Lessors of real estate
NAICS 51114 Directory and mailing list publishers	NAICS 5223 Activities related to credit intermediation	NAICS 53111 Lessors of residential buildings
NAICS 511140 Directory and mailing list publishers	NAICS 52239 Other credit intermediation activities	NAICS 531110 Lessors of residential buildings
NAICS 51119 Other publishers	NAICS 522390 Other credit intermediation activities	NAICS 53112 Lessors of nonresidential buildings
NAICS 5112 Software publishers	NAICS 523 Securities, commodity contracts, investments	NAICS 531120 Lessors of nonresidential buildings
NAICS 51121 Software publishers	NAICS 5231 Securities and commodity contracts brokerage	NAICS 53113 Miniwarehouse and self-storage unit operators
NAICS 511210 Software publishers	NAICS 52311 Investment banking and securities dealing	NAICS 531130 Miniwarehouse and self-storage unit operators
NAICS 512 Motion picture and sound recording industries	NAICS 523110 Investment banking and securities dealing	NAICS 53119 Lessors of other real estate property
NAICS 5121 Motion picture and video industries	NAICS 52312 Securities brokerage	NAICS 531190 Lessors of other real estate property
NAICS 51211 Motion picture and video production	NAICS 523120 Securities brokerage	NAICS 5312 Offices of real estate agents and brokers
NAICS 512110 Motion picture and video production	NAICS 52319 Other financial investment activities	NAICS 53121 Offices of real estate agents and brokers
NAICS 51213 Motion picture and video exhibition	NAICS 52391 Miscellaneous intermediation	NAICS 531210 Offices of real estate agents and brokers
NAICS 5122 Sound recording industries	NAICS 523910 Miscellaneous intermediation	NAICS 5313 Activities related to real estate
NAICS 515 Broadcasting, except Internet	NAICS 52392 Portfolio management	NAICS 53131 Real estate property managers
NAICS 515111 Radio networks	NAICS 523920 Portfolio management	NAICS 531311 Residential property managers
NAICS 51512 Television broadcasting	NAICS 52393 Investment advice	NAICS 531312 Nonresidential property managers
NAICS 515120 Television broadcasting	NAICS 523930 Investment advice	NAICS 53132 Offices of real estate appraisers
NAICS 517 Telecommunications	NAICS 52399 All other financial investment activities	NAICS 531320 Offices of real estate appraisers
NAICS 5171 Wired telecommunications carriers	NAICS 523991 Trust, fiduciary, and custody activities	NAICS 53139 Other activities related to real estate
NAICS 51711 Wired telecommunications carriers	NAICS 523999 Miscellaneous financial investment activities	NAICS 531390 Other activities related to real estate
NAICS 517110 Wired telecommunications carriers	NAICS 524 Insurance carriers and related activities	NAICS 532 Rental and leasing services
NAICS 5172 Wireless telecommunications carriers	NAICS 5241 Insurance carriers	NAICS 5321 Automotive equipment rental and leasing
NAICS 51721 Wireless telecommunications carriers	NAICS 52411 Direct life and health insurance carriers	NAICS 53211 Passenger car rental and leasing
NAICS 517210 Wireless telecommunications carriers	NAICS 524113 Direct life insurance carriers	NAICS 53212 Truck, trailer, and RV rental and leasing
NAICS 517911 Telecommunications resellers	NAICS 524114 Direct health and medical insurance carriers	NAICS 532120 Truck, trailer, and RV rental and leasing
NAICS 518 Data processing, hosting and related services	NAICS 52412 Direct insurers, except life and health	NAICS 5322 Consumer goods rental
NAICS 5182 Data processing, hosting and related services	NAICS 524126 Direct property and casualty insurers	NAICS 53221 Consumer electronics and appliances rental
NAICS 51821 Data processing, hosting and related services	NAICS 5242 Insurance agencies and brokerages	NAICS 532210 Consumer electronics and appliances rental
NAICS 518210 Data processing, hosting and related services	NAICS 52421 Insurance agencies and brokerages	NAICS 53229 Other consumer goods rental
NAICS 51913 Internet publishing and web search portals	NAICS 524210 Insurance agencies and brokerages	NAICS 5323 General rental centers
NAICS 519130 Internet publishing and web search portals	NAICS 52429 Other insurance related activities	NAICS 53231 General rental centers
NAICS 52 Finance and insurance	NAICS 524291 Claims adjusting	NAICS 532310 General rental centers

NAIC Code / Industry Name	NAIC Code / Industry Name	NAIC Code / Industry Name
NAICS 522 Credit intermediation and related activities	NAICS 524292 Third party administration of insurance funds	NAICS 5324 Machinery and equipment rental and leasing
NAICS 5221 Depository credit intermediation	NAICS 524298 All other insurance related activities	NAICS 53241 Heavy machinery rental and leasing
NAICS 533 Lessors of nonfinancial intangible assets	NAICS 541611 Administrative management consulting services	NAICS 56131 Employment placement and executive search
NAICS 5331 Lessors of nonfinancial intangible assets	NAICS 541612 Human resources consulting services	NAICS 56132 Temporary help services
NAICS 53311 Lessors of nonfinancial intangible assets	NAICS 541613 Marketing consulting services	NAICS 561320 Temporary help services
NAICS 533110 Lessors of nonfinancial intangible assets	NAICS 541614 Process and logistics consulting services	NAICS 56133 Professional employer organizations
NAICS 54 Professional and technical services	NAICS 541618 Other management consulting services	NAICS 561330 Professional employer organizations
NAICS 541 Professional and technical services	NAICS 54162 Environmental consulting services	NAICS 5614 Business support services
NAICS 5411 Legal services	NAICS 541620 Environmental consulting services	NAICS 56142 Telephone call centers
NAICS 54111 Offices of lawyers	NAICS 54169 Other technical consulting services	NAICS 561421 Telephone answering services
NAICS 541110 Offices of lawyers	NAICS 541690 Other technical consulting services	NAICS 561422 Telemarketing and other contact centers
NAICS 54119 Other legal services	NAICS 5417 Scientific research and development services	NAICS 56143 Business service centers
NAICS 541191 Title abstract and settlement offices	NAICS 541712 Other physical and biological research	NAICS 561431 Private mail centers
NAICS 541199 All other legal services	NAICS 5418 Advertising, PR, and related services	NAICS 561439 Other business service centers
NAICS 5412 Accounting and bookkeeping services	NAICS 54181 Advertising agencies	NAICS 56144 Collection agencies
NAICS 54121 Accounting and bookkeeping services	NAICS 541810 Advertising agencies	NAICS 561440 Collection agencies
NAICS 541211 Offices of certified public accountants	NAICS 54182 Public relations agencies	NAICS 56149 Other business support services
NAICS 541213 Tax preparation services	NAICS 541820 Public relations agencies	NAICS 561491 Repossession services
NAICS 541214 Payroll services	NAICS 54183 Media buying agencies	NAICS 561492 Court reporting and stenotype services
NAICS 541219 Other accounting services	NAICS 541830 Media buying agencies	NAICS 561499 All other business support services
NAICS 5413 Architectural and engineering services	NAICS 54184 Media representatives	NAICS 5615 Travel arrangement and reservation services
NAICS 54131 Architectural services	NAICS 541840 Media representatives	NAICS 56151 Travel agencies
NAICS 541310 Architectural services	NAICS 54185 Outdoor advertising	NAICS 561510 Travel agencies
NAICS 54132 Landscape architectural services	NAICS 541850 Outdoor advertising	NAICS 5616 Investigation and security services
NAICS 541320 Landscape architectural services	NAICS 54186 Direct mail advertising	NAICS 56161 Security and armored car services
NAICS 54133 Engineering services	NAICS 541860 Direct mail advertising	NAICS 561612 Security guards and patrol services
NAICS 541330 Engineering services	NAICS 5419 Other professional and technical services	NAICS 56162 Security systems services
NAICS 54134 Drafting services	NAICS 54192 Photographic services	NAICS 561621 Security systems services, except locksmiths
NAICS 541340 Drafting services	NAICS 541921 Photography studios, portrait	NAICS 561622 Locksmiths
NAICS 54135 Building inspection services	NAICS 541922 Commercial photography	NAICS 5617 Services to buildings and dwellings
NAICS 541350 Building inspection services	NAICS 54194 Veterinary services	NAICS 56171 Exterminating and pest control services
NAICS 54136 Geophysical surveying and mapping services	NAICS 541940 Veterinary services	NAICS 561710 Exterminating and pest control services
NAICS 541360 Geophysical surveying and mapping services	NAICS 54199 All other professional and technical services	NAICS 56172 Janitorial services
NAICS 54137 Other surveying and mapping services	NAICS 541990 All other professional and technical services	NAICS 561720 Janitorial services
NAICS 541370 Other surveying and mapping services	NAICS 55 Management of companies and enterprises	NAICS 56173 Landscaping services
NAICS 54138 Testing laboratories	NAICS 551 Management of companies and enterprises	NAICS 561730 Landscaping services
NAICS 541380 Testing laboratories	NAICS 5511 Management of companies and enterprises	NAICS 56174 Carpet and upholstery cleaning services
NAICS 5414 Specialized design services	NAICS 55111 Management of companies and enterprises	NAICS 561740 Carpet and upholstery cleaning services
NAICS 54143 Graphic design services	NAICS 551114 Managing offices	NAICS 56179 Other services to buildings and dwellings
NAICS 541430 Graphic design services	NAICS 56 Administrative and waste services	NAICS 561790 Other services to buildings and dwellings
NAICS 5415 Computer systems design and related services	NAICS 561 Administrative and support services	NAICS 5619 Other support services
NAICS 54151 Computer systems design and related services	NAICS 5611 Office administrative services	NAICS 56199 All other support services
NAICS 541511 Custom computer programming services	NAICS 56111 Office administrative services	NAICS 561990 All other support services
NAICS 541512 Computer systems design services	NAICS 561110 Office administrative services	NAICS 562 Waste management and remediation services
NAICS 541513 Computer facilities management services	NAICS 5612 Facilities support services	NAICS 5621 Waste collection
NAICS 541519 Other computer related services	NAICS 56121 Facilities support services	NAICS 56211 Waste collection

NAICS Code / Industry Name	NAICS Code / Industry Name	NAICS Code / Industry Name
NAICS 5416 Management and technical consulting services	NAICS 561210 Facilities support services	NAICS 562111 Solid waste collection
NAICS 54161 Management consulting services	NAICS 5613 Employment services	NAICS 5622 Waste treatment and disposal
NAICS 56221 Waste treatment and disposal	NAICS 621399 Offices of miscellaneous health practitioners	NAICS 624110 Child and youth services
NAICS 5629 Remediation and other waste services	NAICS 6214 Outpatient care centers	NAICS 62412 Services for the elderly and disabled
NAICS 56291 Remediation services	NAICS 62141 Family planning centers	NAICS 624120 Services for the elderly and disabled
NAICS 562910 Remediation services	NAICS 621410 Family planning centers	NAICS 62419 Other individual and family services
NAICS 61 Educational services	NAICS 62142 Outpatient mental health centers	NAICS 624190 Other individual and family services
NAICS 611 Educational services	NAICS 621420 Outpatient mental health centers	NAICS 6242 Emergency and other relief services
NAICS 6111 Elementary and secondary schools	NAICS 62149 Other outpatient care centers	NAICS 62421 Community food services
NAICS 61111 Elementary and secondary schools	NAICS 621492 Kidney dialysis centers	NAICS 624210 Community food services
NAICS 611110 Elementary and secondary schools	NAICS 621493 Freestanding emergency medical centers	NAICS 6243 Vocational rehabilitation services
NAICS 6113 Colleges and universities	NAICS 621498 All other outpatient care centers	NAICS 62431 Vocational rehabilitation services
NAICS 61131 Colleges and universities	NAICS 6215 Medical and diagnostic laboratories	NAICS 624310 Vocational rehabilitation services
NAICS 611310 Colleges and universities	NAICS 62151 Medical and diagnostic laboratories	NAICS 6244 Child day care services
NAICS 6114 Business, computer and management training	NAICS 621511 Medical laboratories	NAICS 62441 Child day care services
NAICS 61143 Management training	NAICS 621512 Diagnostic imaging centers	NAICS 624410 Child day care services
NAICS 611430 Management training	NAICS 6216 Home health care services	NAICS 71 Arts, entertainment, and recreation
NAICS 6115 Technical and trade schools	NAICS 62161 Home health care services	NAICS 711 Performing arts and spectator sports
NAICS 61151 Technical and trade schools	NAICS 621610 Home health care services	NAICS 7111 Performing arts companies
NAICS 611511 Cosmetology and barber schools	NAICS 6219 Other ambulatory health care services	NAICS 7112 Spectator sports
NAICS 611512 Flight training	NAICS 62191 Ambulance services	NAICS 71121 Spectator sports
NAICS 611513 Apprenticeship training	NAICS 621910 Ambulance services	NAICS 7113 Promoters of performing arts and sports
NAICS 611519 Other technical and trade schools	NAICS 62199 All other ambulatory health care services	NAICS 71131 Promoters with facilities
NAICS 6116 Other schools and instruction	NAICS 621991 Blood and organ banks	NAICS 711310 Promoters with facilities
NAICS 61161 Fine arts schools	NAICS 621999 Miscellaneous ambulatory health care services	NAICS 71132 Promoters without facilities
NAICS 611610 Fine arts schools	NAICS 622 Hospitals	NAICS 711320 Promoters without facilities
NAICS 61169 All other schools and instruction	NAICS 6221 General medical and surgical hospitals	NAICS 7114 Agents and managers for public figures
NAICS 611691 Exam preparation and tutoring	NAICS 62211 General medical and surgical hospitals	NAICS 71141 Agents and managers for public figures
NAICS 62 Health care and social assistance	NAICS 622110 General medical and surgical hospitals	NAICS 711410 Agents and managers for public figures
NAICS 621 Ambulatory health care services	NAICS 623 Nursing and residential care facilities	NAICS 7115 Independent artists, writers, and performers
NAICS 6211 Offices of physicians	NAICS 6231 Nursing care facilities, skilled nursing	NAICS 71151 Independent artists, writers, and performers
NAICS 62111 Offices of physicians	NAICS 62311 Nursing care facilities, skilled nursing	NAICS 711510 Independent artists, writers, and performers
NAICS 621111 Offices of physicians, except mental health	NAICS 623110 Nursing care facilities, skilled nursing	NAICS 712 Museums, historical sites, zoos, and parks
NAICS 621112 Offices of mental health physicians	NAICS 6232 Residential mental health facilities	NAICS 7121 Museums, historical sites, zoos, and parks
NAICS 6212 Offices of dentists	NAICS 62321 Residential developmental disability homes	NAICS 713 Amusements, gambling, and recreation
NAICS 62121 Offices of dentists	NAICS 623210 Residential developmental disability homes	NAICS 7139 Other amusement and recreation industries
NAICS 621210 Offices of dentists	NAICS 62322 Residential mental and substance abuse care	NAICS 71391 Golf courses and country clubs
NAICS 6213 Offices of other health practitioners	NAICS 623220 Residential mental and substance abuse care	NAICS 713910 Golf courses and country clubs
NAICS 62131 Offices of chiropractors	NAICS 6233 Continuing care, assisted living facilities	NAICS 71393 Marinas
NAICS 621310 Offices of chiropractors	NAICS 62331 Continuing care, assisted living facilities	NAICS 713930 Marinas
NAICS 62132 Offices of optometrists	NAICS 623311 Continuing care retirement communities	NAICS 71394 Fitness and recreational sports centers
NAICS 621320 Offices of optometrists	NAICS 623312 Assisted living facilities for the elderly	NAICS 713940 Fitness and recreational sports centers
NAICS 62133 Offices of mental health practitioners	NAICS 6239 Other residential care facilities	NAICS 71395 Bowling centers
NAICS 621330 Offices of mental health practitioners	NAICS 62399 Other residential care facilities	NAICS 713950 Bowling centers
NAICS 62134 Offices of specialty therapists	NAICS 623990 Other residential care facilities	NAICS 71399 All other amusement and recreation industries
NAICS 621340 Offices of specialty therapists	NAICS 624 Social assistance	NAICS 713990 All other amusement and recreation industries

NAIC Code / Industry Name	NAIC Code / Industry Name	NAIC Code / Industry Name
NAICS 62139 Offices of all other health practitioners	NAICS 6241 Individual and family services	NAICS 72 Accommodation and food services
NAICS 621391 Offices of podiatrists	NAICS 62411 Child and youth services	NAICS 721 Accommodation
NAICS 7211 Traveler accommodation	NAICS 81142 Reupholstery and furniture repair	NAICS 813410 Civic and social organizations
NAICS 72111 Hotels and motels, except casino hotels	NAICS 811420 Reupholstery and furniture repair	NAICS 8139 Professional and similar organizations
NAICS 721110 Hotels and motels, except casino hotels	NAICS 81149 Other household goods repair and maintenance	NAICS 81391 Business associations
NAICS 72119 Other traveler accommodation	NAICS 811490 Other household goods repair and maintenance	NAICS 813910 Business associations
NAICS 721191 Bed-and-breakfast inns	NAICS 812 Personal and laundry services	NAICS 81392 Professional organizations
NAICS 721199 All other traveler accommodation	NAICS 8121 Personal care services	NAICS 813920 Professional organizations
NAICS 722 Food services and drinking places	NAICS 81211 Hair, nail, and skin care services	NAICS 81393 Labor unions and similar labor organizations
NAICS 7223 Special food services	NAICS 812111 Barber shops	NAICS 813930 Labor unions and similar labor organizations
NAICS 72231 Food service contractors	NAICS 812112 Beauty salons	NAICS 814 Private households
NAICS 722310 Food service contractors	NAICS 812113 Nail salons	NAICS 8141 Private households
NAICS 7224 Drinking places, alcoholic beverages	NAICS 81219 Other personal care services	NAICS 81411 Private households
NAICS 72241 Drinking places, alcoholic beverages	NAICS 812191 Diet and weight reducing centers	NAICS 814110 Private households
NAICS 722410 Drinking places, alcoholic beverages	NAICS 812199 Other personal care services	
NAICS 7225 Restaurants and other eating places	NAICS 8122 Death care services	
NAICS 72251 Restaurants and other eating places	NAICS 81221 Funeral homes and funeral services	
NAICS 722511 Full-service restaurants	NAICS 812210 Funeral homes and funeral services	
NAICS 722513 Limited-service restaurants	NAICS 81222 Cemeteries and crematories	
NAICS 722514 Cafeterias, grill buffets, and buffets	NAICS 812220 Cemeteries and crematories	
NAICS 722515 Snack and nonalcoholic beverage bars	NAICS 8123 Drycleaning and laundry services	
NAICS 81 Other services, except public administration	NAICS 81231 Coin-operated laundries and drycleaners	
NAICS 811 Repair and maintenance	NAICS 812310 Coin-operated laundries and drycleaners	
NAICS 8111 Automotive repair and maintenance	NAICS 81232 Drycleaning and laundry services	
NAICS 81111 Automotive mechanical and electrical repair	NAICS 812320 Drycleaning and laundry services	
NAICS 811111 General automotive repair	NAICS 81233 Linen and uniform supply	
NAICS 811112 Automotive exhaust system repair	NAICS 8129 Other personal services	
NAICS 811113 Automotive transmission repair	NAICS 81291 Pet care, except veterinary, services	
NAICS 811118 Other automotive mechanical and elec. repair	NAICS 812910 Pet care, except veterinary, services	
NAICS 811112 Automotive body, interior, and glass repair	NAICS 81293 Parking lots and garages	
NAICS 811121 Automotive body and interior repair	NAICS 812930 Parking lots and garages	
NAICS 811122 Automotive glass replacement shops	NAICS 813 Membership associations and organizations	
NAICS 81119 Other automotive repair and maintenance	NAICS 8131 Religious organizations	
NAICS 811191 Automotive oil change and lubrication shops	NAICS 81311 Religious organizations	
NAICS 811192 Car washes	NAICS 813110 Religious organizations	
NAICS 811198 All other automotive repair and maintenance	NAICS 8132 Grantmaking and giving services	
NAICS 8112 Electronic equipment repair and maintenance	NAICS 81321 Grantmaking and giving services	
NAICS 81121 Electronic equipment repair and maintenance	NAICS 813211 Grantmaking foundations	
NAICS 811212 Computer and office machine repair	NAICS 813212 Voluntary health organizations	
NAICS 811219 Other electronic equipment repair	NAICS 813219 Other grantmaking and giving services	
NAICS 8113 Commercial machinery repair and maintenance	NAICS 8133 Social advocacy organizations	
NAICS 81131 Commercial machinery repair and maintenance	NAICS 81331 Social advocacy organizations	
NAICS 811310 Commercial machinery repair and maintenance	NAICS 813319 Other social advocacy organizations	
NAICS 8114 Household goods repair and maintenance	NAICS 8134 Civic and social organizations	
NAICS 81141 Home and garden equip. and appliance repair	NAICS 81341 Civic and social organizations	

Appendix B. Estimated Revenues for Service Industries During the Period of 2012Q1-2016Q1

Method 1. We first compute the revenues-to-payroll ratios from 2002, 2007, and 2012 Economic Census' for Tulsa County only. We then use these ratios to estimate revenues from the payrolls from Quarterly Census of Employment and Wages. To generate upper (lower) 75%ile, we then add (subtract) one standard deviation and repeat the procedure. This method generates one median estimate and two upper/lower estimates. The table below reports the median estimates.

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
51	45.067	46.127	41.696	43.289	43.039	50.096	43.700	47.363	48.686	48.763	43.967	53.903	43.339	47.845	44.202	45.323	51.008
511	47.735	45.238	43.871	44.905	47.281	42.666	45.288	45.762	51.765	47.924	50.621	49.485	95.692	50.634	51.215	52.195	55.117
5111	37.289	35.328	34.456	36.081	37.437	33.565	36.629	37.370	40.318	37.906	41.177	40.774	87.116	41.248	42.740	43.520	45.655
51111	12.127	10.875	10.668	11.659	11.811	10.353	11.207	9.752	11.422	12.412	13.168	11.406	52.885	15.079	15.898	13.960	16.208
511110	12.127	10.875	10.668	11.659	11.811	10.353	11.207	9.752	11.422	12.412	13.168	11.406	52.885	15.079	15.898	13.960	16.208
51112	22.183	18.884	18.632	21.293	21.071	18.068	19.402	21.354	22.263	20.276	21.021	22.316	21.960	18.866	19.706	22.248	21.836
511120	22.183	18.884	18.632	21.293	21.071	18.068	19.402	21.354	22.263	20.276	21.021	22.316	21.960	18.866	19.706	22.248	21.836
51114	5.902	5.024	4.957	5.665	5.606	4.807	5.162	5.681	5.923	5.394	6.075	6.450	6.347	5.453	5.695	6.430	6.311
511140	5.902	5.024	4.957	5.665	5.606	4.807	5.162	5.681	5.923	5.394	6.075	6.450	6.347	5.453	5.695	6.430	6.311
5112	12.641	11.992	11.400	10.713	11.930	11.021	10.521	10.211	13.848	12.140	11.485	10.615	10.798	11.416	10.350	10.591	11.539
51121	12.641	11.992	11.400	10.713	11.930	11.021	10.521	10.211	13.848	12.140	11.485	10.615	10.798	11.416	10.350	10.591	11.539
511210	12.641	11.992	11.400	10.713	11.930	11.021	10.521	10.211	13.848	12.140	11.485	10.615	10.798	11.416	10.350	10.591	11.539
51213	12.495	10.964	11.248	11.570	11.860	8.477	7.135	7.354	7.291	6.995	7.613	7.532	7.045	6.838	7.613	7.631	6.534
515	28.601	28.841	25.752	28.166	27.733	29.097	24.103	28.948	28.367	28.863	25.644	27.949	25.623	29.891	25.665	27.036	29.114
515111	0.541	0.535	0.507	0.569	0.532	0.572	0.539	0.560	0.553	0.633	0.550	0.605	0.555	0.605	0.541	0.577	0.610
51512	20.043	19.447	17.171	18.283	18.485	18.273	14.572	17.764	18.041	18.347	15.561	17.282	15.853	16.229	14.293	15.237	16.102
515120	20.043	19.447	17.171	18.283	18.485	18.273	14.572	17.764	18.041	18.347	15.561	17.282	15.853	16.229	14.293	15.237	16.102
517	3.183	2.688	2.744	2.590	3.484	2.617	2.912	2.671	3.675	2.668	2.883	2.546	3.475	2.835	2.958	2.702	3.645
517110	4.491	4.033	4.158	3.576	5.116	3.513	4.126	3.709	5.469	3.671	4.102	3.637	5.282	3.765	3.998	3.565	5.120
517911	2.873	0.501	0.331	2.160	2.178	2.842	2.570	2.828	3.135	2.699	2.146	1.842	1.875	1.625	1.654	1.615	1.852
518	13.283	14.598	13.200	12.533	11.822	18.382	16.685	15.744	16.644	17.232	15.441	23.408	14.241	15.119	15.580	15.585	18.248
5182	13.516	14.854	13.432	12.753	12.029	18.704	16.977	16.020	16.935	17.534	15.711	23.818	14.490	15.383	15.852	15.857	18.568
51821	13.516	14.854	13.432	12.753	12.029	18.704	16.977	16.020	16.935	17.534	15.711	23.818	14.490	15.383	15.852	15.857	18.568
518210	13.516	14.854	13.432	12.753	12.029	18.704	16.977	16.020	16.935	17.534	15.711	23.818	14.490	15.383	15.852	15.857	18.568
51913	4.895	5.183	4.273	3.850	3.666	9.099	3.652	5.529	4.408	13.673	5.470	5.604	5.052	2.771	2.453	2.255	1.679
519130	5.591	5.920	4.881	4.398	4.188	10.393	4.171	6.315	5.035	15.619	6.248	6.401	5.771	3.165	2.801	2.576	1.918
52	140.685	127.404	117.490	122.901	138.913	126.221	110.621	126.670	154.268	124.976	109.595	117.319	131.274	118.859	105.105	108.432	122.027
522130	23.674	24.588	20.802	23.051	21.098	23.227	19.348	21.468	19.863	22.611	18.787	21.351	18.841	21.147	17.698	19.329	16.979
5222	143.182	147.040	141.344	132.686	140.811	126.231	113.148	110.946	138.939	133.374	118.211	121.107	125.658	121.412	107.961	107.636	110.917
52229	112.956	124.038	112.921	104.185	112.187	94.069	86.520	81.122	113.057	100.677	89.154	91.291	98.309	91.812	82.982	80.837	81.479
522291	7.957	8.362	7.885	8.133	8.869	8.507	8.135	8.638	8.723	8.602	6.945	7.677	7.487	7.715	6.293	7.043	6.654
522292	58.580	64.411	58.807	52.687	56.219	43.906	40.073	35.269	57.382	48.045	43.942	44.109	49.252	42.907	40.798	38.160	39.153
5223	9.144	11.674	8.777	9.238	13.309	13.031	8.470	8.540	8.733	10.019	7.209	8.012	7.592	10.867	6.613	7.464	6.405
52239	2.568	3.423	2.455	2.668	4.377	4.136	2.511	2.681	2.687	3.824	2.595	2.973	2.672	4.194	2.316	2.785	2.270
522390	2.568	3.423	2.455	2.668	4.377	4.136	2.511	2.681	2.687	3.824	2.595	2.973	2.672	4.194	2.316	2.785	2.270
523	124.920	117.662	99.813	111.924	131.565	91.545	82.882	83.618	157.753	78.380	70.998	74.750	124.798	100.447	91.674	89.695	115.458
5231	89.595	69.573	59.019	66.181	90.632	63.063	57.095	57.602	108.672	53.994	48.909	51.493	95.474	68.954	62.932	61.573	84.313
52311	2.685	1.335	1.132	1.270	2.704	1.881	1.703	1.718	3.242	1.611	1.459	1.536	3.515	1.489	1.359	1.329	2.756
523110	2.685	1.335	1.132	1.270	2.704	1.881	1.703	1.718	3.242	1.611	1.459	1.536	3.515	1.489	1.359	1.329	2.756
52312	83.390	69.765	67.153	67.103	84.599	76.004	68.933	67.852	80.752	73.430	66.933	70.718	78.690	62.850	59.422	62.370	73.986
523120	83.390	69.765	67.153	67.103	84.599	76.004	68.933	67.852	80.752	73.430	66.933	70.718	78.690	62.850	59.422	62.370	73.986
5239	35.592	44.514	38.995	35.122	40.251	42.362	31.496	30.856	38.156	36.792	27.627	27.093	31.132	37.148	28.210	25.973	31.780
52391	3.615	6.594	6.871	6.113	6.874	8.178	6.963	6.376	10.038	7.752	6.765	6.092	8.785	8.517	8.864	7.017	9.633

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
811212	0.912	1.025	1.057	0.826	0.848	0.842	0.829	0.849	0.743	0.868	0.760	0.757	0.743	1.119	1.023	1.032	0.950
811219	3.025	4.079	3.253	3.105	3.346	3.705	3.474	3.288	4.019	4.844	4.137	3.820	4.292	4.099	4.428	3.724	4.014
8113	22.884	28.553	28.352	24.807	26.452	28.013	26.559	24.164	24.236	25.301	23.402	22.119	22.579	36.984	28.878	26.919	24.880
81131	22.884	28.553	28.352	24.807	26.452	28.013	26.559	24.164	24.236	25.301	23.402	22.119	22.579	36.984	28.878	26.919	24.880
811310	22.884	28.553	28.352	24.807	26.452	28.013	26.559	24.164	24.236	25.301	23.402	22.119	22.579	36.984	28.878	26.919	24.880
8114	1.773	2.041	2.241	2.037	2.004	2.035	2.263	2.061	2.200	2.163	2.344	2.119	2.027	2.247	2.528	2.283	2.231
81141	0.584	0.708	0.783	0.731	0.709	0.668	0.793	0.679	0.803	0.743	0.827	0.723	0.713	0.796	1.003	0.877	0.828
81142	0.306	0.371	0.411	0.383	0.372	0.351	0.416	0.356	0.422	0.390	0.434	0.397	0.347	0.349	0.392	0.384	0.395
811420	0.306	0.371	0.411	0.383	0.372	0.351	0.416	0.356	0.422	0.390	0.434	0.397	0.347	0.349	0.392	0.384	0.395
81149	1.558	1.706	2.010	1.608	1.703	1.908	1.956	1.883	1.886	1.956	1.752	1.683	1.644	1.948	1.692	1.530	1.554
811490	1.430	1.566	1.844	1.475	1.563	1.750	1.794	1.728	1.730	1.795	1.607	1.544	1.508	1.787	1.552	1.404	1.426
812	45.735	51.488	48.442	48.515	45.361	49.210	47.590	47.114	44.674	47.623	45.519	45.556	42.335	45.582	42.977	44.058	41.976
8121	14.239	16.384	15.249	15.598	13.952	15.042	14.289	14.582	13.269	14.261	13.263	13.348	12.298	13.201	12.480	12.423	11.964
81211	10.070	11.277	10.750	10.957	10.018	9.953	10.043	10.146	9.508	9.497	9.188	9.104	8.452	8.796	8.680	8.633	8.356
812111	0.417	0.429	0.369	0.356	0.327	0.337	0.289	0.274	0.187	0.181	0.148	0.192	0.143	0.160	0.182	0.174	0.167
812112	8.176	9.329	8.979	9.107	8.600	8.520	8.382	8.526	8.300	8.262	8.109	8.075	7.665	7.935	7.783	7.726	7.597
812113	1.835	1.857	1.713	1.862	1.258	1.260	1.693	1.231	1.286	1.114	1.114	0.943	0.678	0.749	0.765	0.798	0.585
81219	4.430	5.490	4.787	4.946	4.149	5.548	4.525	4.746	3.971	5.181	4.369	4.577	4.136	4.791	4.067	4.058	3.854
812191	0.882	1.093	0.760	0.785	0.658	0.880	0.800	0.839	0.702	1.417	1.195	1.507	1.160	1.343	1.276	1.288	1.359
812199	3.335	4.133	3.711	3.834	3.216	4.301	3.462	3.632	3.038	3.686	3.108	3.116	2.927	3.390	2.803	2.788	2.573
8122	7.217	7.988	7.936	7.837	7.457	7.735	7.436	7.596	7.305	7.503	7.368	7.453	6.953	7.888	7.182	7.976	7.030
81221	6.142	6.800	6.819	6.729	6.402	6.592	6.223	6.247	5.978	6.278	5.843	6.022	5.883	6.281	5.729	6.211	5.716
812210	5.998	6.641	6.660	6.572	6.252	6.438	6.078	6.101	5.838	6.131	5.707	5.881	5.746	6.134	5.595	6.066	5.582
81222	0.938	1.036	0.978	0.970	0.924	0.997	1.052	1.163	1.143	1.062	1.303	1.228	0.931	1.375	1.243	1.503	1.130
812220	0.938	1.036	0.978	0.970	0.924	0.997	1.052	1.163	1.143	1.062	1.303	1.228	0.931	1.375	1.243	1.503	1.130
8123	14.437	15.846	14.792	14.923	14.335	15.615	15.065	14.549	14.126	15.040	14.467	14.586	13.888	14.961	14.296	14.610	14.266
81231	2.845	2.922	2.736	2.964	2.657	3.048	2.859	2.649	2.249	2.254	1.983	1.989	1.672	1.826	1.745	1.962	1.916
812310	2.862	2.940	2.752	2.982	2.673	3.066	2.876	2.665	2.262	2.268	1.995	2.001	1.682	1.837	1.755	1.974	1.927
81232	3.890	4.454	4.218	4.426	4.086	4.407	4.271	4.442	4.156	4.466	4.365	4.554	4.247	4.623	4.440	4.729	4.641
812320	3.889	4.453	4.217	4.424	4.085	4.406	4.270	4.441	4.155	4.465	4.364	4.553	4.246	4.622	4.439	4.728	4.640
81233	8.619	9.398	8.728	8.613	8.457	9.190	8.881	8.390	8.370	8.931	8.607	8.572	8.303	8.840	8.490	8.478	8.321
8129	9.788	11.309	10.614	9.975	9.602	10.932	11.171	10.637	10.359	11.234	10.983	10.555	9.346	9.597	8.965	9.157	8.585
81291	2.741	3.166	3.080	2.854	2.681	2.659	2.927	2.546	2.535	2.381	2.557	2.369	2.240	2.237	2.140	2.082	1.984
812910	2.741	3.166	3.080	2.854	2.681	2.659	2.927	2.546	2.535	2.381	2.557	2.369	2.240	2.237	2.140	2.082	1.984
81293	3.532	4.132	3.605	3.557	3.692	4.491	4.415	4.348	4.252	4.735	4.662	4.340	3.793	3.847	3.728	3.769	3.644
812930	3.532	4.132	3.605	3.557	3.692	4.491	4.415	4.348	4.252	4.735	4.662	4.340	3.793	3.847	3.728	3.769	3.644
813	81.108	92.666	85.307	84.367	79.313	87.133	84.032	78.486	76.551	81.877	80.818	78.345	76.217	78.607	77.691	75.887	74.363
8132	63.753	72.737	61.127	69.419	62.393	70.964	65.931	57.045	55.459	69.412	58.502	61.605	56.922	57.946	49.536	54.094	52.863
81321	63.753	72.737	61.127	69.419	62.393	70.964	65.931	57.045	55.459	69.412	58.502	61.605	56.922	57.946	49.536	54.094	52.863
813211	54.802	69.617	58.743	69.430	61.467	69.808	67.932	52.894	52.268	66.076	57.935	61.059	56.646	54.068	48.923	53.962	53.671
813212	8.935	6.380	5.384	6.363	5.634	6.398	6.226	4.848	4.017	5.668	4.130	4.673	3.835	4.981	3.473	4.061	3.540
813219	6.421	8.041	6.785	8.019	7.099	8.063	7.846	6.109	6.023	6.957	5.429	5.522	5.285	6.056	4.656	4.749	4.546
8133	7.877	8.938	8.057	7.993	8.068	8.503	8.010	7.748	7.766	7.145	6.749	6.467	6.590	6.570	7.005	6.967	6.963
81331	7.877	8.938	8.057	7.993	8.068	8.503	8.010	7.748	7.766	7.145	6.749	6.467	6.590	6.570	7.005	6.967	6.963
813319	4.411	5.015	4.633	4.659	4.698	4.820	4.524	4.367	4.405	4.063	3.802	3.628	3.752	3.680	4.071	4.048	4.039
8134	6.157	6.893	7.719	6.726	6.248	6.241	7.660	6.750	6.308	6.061	7.373	6.867	6.441	6.318	7.394	7.104	6.622
81341	6.157	6.893	7.719	6.726	6.248	6.241	7.660	6.750	6.308	6.061	7.373	6.867	6.441	6.318	7.394	7.104	6.622
813410	6.086	6.813	7.630	6.648	6.176	6.169	7.572	6.672	6.235	5.991	7.288	6.787	6.366	6.245	7.309	7.022	6.545
8139	23.098	26.449	24.166	23.438	21.927	24.695	22.822	22.007	21.247	22.862	23.204	22.078	21.622	22.727	22.207	20.746	20.503
81391	14.260	14.162	13.106	13.123	12.873	14.402	12.618	12.554	12.171	12.979	12.647	12.837	12.774	13.782	12.765	12.107	12.070
813910	14.260	14.162	13.106	13.123	12.873	14.402	12.618	12.554	12.171	12.979	12.647	12.837	12.774	13.782	12.765	12.107	12.070
81392	6.506	9.352	8.655	8.666	8.501	9.511	8.333	7.519	7.289	7.868	7.111	7.218	7.182	8.680	8.040	6.775	6.754
813920	6.506	9.352	8.655	8.666	8.501	9.511	8.333	7.519	7.289	7.868	7.111	7.218	7.182	8.680	8.040	6.775	6.754

Method 2. We first compute the revenues-to-payroll ratios from 2002, 2007, and 2012 Economic Census' for Tulsa County only. Using the only overlapping year, 2012, we incorporate quarterly seasonal patterns of payrolls (from Quarterly Census of Employment and Wages) to adjust the 2012 revenues-to-payroll ratios. This generates four quarterly seasonally adjusted revenues-to-payroll ratios. We then use these new seasonally corrected revenues-to-payroll ratios to estimate revenues from the quarterly payrolls. To generate upper (lower) 75%ile, we then add (subtract) one standard deviation and repeat the procedure. This method generates one median estimate and two upper/lower estimates. The following table reports the median estimates.

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
51	41.828	45.400	44.507	44.976	39.954	49.601	46.493	49.198	44.984	48.210	46.851	55.961	40.061	47.095	47.095	47.095	47.095
511	45.286	46.718	44.791	44.987	44.856	44.062	46.239	45.846	49.110	49.492	51.684	49.576	90.784	52.290	52.290	52.290	52.290
5111	35.358	37.078	34.900	35.891	35.498	35.228	37.101	37.173	38.231	39.783	41.707	40.559	82.605	43.291	43.291	43.291	43.291
51111	11.437	11.025	10.257	12.767	11.139	10.496	10.776	10.678	10.772	12.583	12.661	12.489	49.876	15.286	15.286	15.286	15.286
511110	11.437	11.025	10.257	12.767	11.139	10.496	10.776	10.678	10.772	12.583	12.661	12.489	49.876	15.286	15.286	15.286	15.286
51112	20.993	20.684	19.537	19.777	19.941	19.790	20.346	19.834	21.068	22.209	22.043	20.727	20.782	20.664	20.664	20.664	20.664
511120	20.993	20.684	19.537	19.777	19.941	19.790	20.346	19.834	21.068	22.209	22.043	20.727	20.782	20.664	20.664	20.664	20.664
51113	0.236	-	-	0.250	0.225	-	-	0.251	0.237	-	-	0.262	0.234	-	-	0.261	0.233
511130	0.236	-	-	0.250	0.225	-	-	0.251	0.237	-	-	0.262	0.234	-	-	0.261	0.233
51114	5.585	5.503	5.198	5.261	5.305	5.265	5.413	5.277	5.605	5.908	6.371	5.990	6.006	5.972	5.972	5.972	5.972
511140	5.585	5.503	5.198	5.261	5.305	5.265	5.413	5.277	5.605	5.908	6.371	5.990	6.006	5.972	5.972	5.972	5.972
51119	0.138	0.130	-	-	0.142	0.110	-	-	0.139	0.171	-	-	0.176	0.095	-	-	0.143
5112	12.022	11.527	12.088	11.100	11.346	10.594	11.156	10.580	13.170	11.669	12.179	10.998	10.270	10.974	10.974	10.974	10.974
51121	12.022	11.527	12.088	11.100	11.346	10.594	11.156	10.580	13.170	11.669	12.179	10.998	10.270	10.974	10.974	10.974	10.974
511210	12.022	11.527	12.088	11.100	11.346	10.594	11.156	10.580	13.170	11.669	12.179	10.998	10.270	10.974	10.974	10.974	10.974
51213	13.681	11.471	10.570	10.847	12.986	8.868	6.705	6.895	7.983	7.318	7.154	7.062	7.714	7.154	7.154	7.154	7.154
515	27.435	26.946	28.022	29.093	26.601	27.185	26.227	29.901	27.210	26.966	27.904	28.869	24.577	27.927	27.927	27.927	27.927
515111	0.518	0.516	0.547	0.575	0.509	0.551	0.581	0.566	0.529	0.611	0.592	0.611	0.530	0.583	0.583	0.583	0.583
51512	19.250	18.532	18.579	18.557	17.754	17.414	15.766	18.030	17.328	17.484	16.836	17.541	15.226	15.465	15.465	15.465	15.465
515120	19.250	18.532	18.579	18.557	17.754	17.414	15.766	18.030	17.328	17.484	16.836	17.541	15.226	15.465	15.465	15.465	15.465
517	2.650	2.877	2.816	2.909	2.901	2.801	2.988	3.000	3.060	2.856	2.958	2.860	2.893	3.035	3.035	3.035	3.035
517110	3.607	4.405	4.277	4.124	4.109	3.837	4.244	4.279	4.392	4.009	4.219	4.195	4.242	4.112	4.112	4.112	4.112
517911	2.616	0.520	0.337	2.256	1.983	2.949	2.621	2.954	2.855	2.800	2.189	1.924	1.707	1.687	1.687	1.687	1.687
518	11.743	15.578	13.669	12.974	10.452	19.615	17.278	16.298	14.714	18.388	15.989	24.232	12.590	16.133	16.133	16.133	16.133
5182	11.949	15.850	13.908	13.202	10.635	19.959	17.580	16.583	14.972	18.710	16.269	24.656	12.810	16.415	16.415	16.415	16.415
51821	11.949	15.850	13.908	13.202	10.635	19.959	17.580	16.583	14.972	18.710	16.269	24.656	12.810	16.415	16.415	16.415	16.415
518210	11.949	15.850	13.908	13.202	10.635	19.959	17.580	16.583	14.972	18.710	16.269	24.656	12.810	16.415	16.415	16.415	16.415
51913	6.672	4.283	3.989	3.909	4.998	7.519	3.409	5.613	6.008	11.299	5.106	5.690	6.887	2.289	2.289	2.289	2.289
519130	7.621	4.892	4.557	4.465	5.709	8.588	3.894	6.412	6.863	12.906	5.832	6.499	7.867	2.615	2.615	2.615	2.615
52	130.975	121.773	126.993	128.766	129.326	120.643	119.567	132.715	143.622	119.453	118.458	122.918	122.214	113.606	113.606	113.606	113.606
522130	26.197	21.846	22.084	22.406	23.347	20.636	20.636	20.867	21.980	20.089	19.945	20.753	20.850	18.788	18.788	18.788	18.788
5222	144.557	135.619	146.608	138.043	142.163	116.426	117.361	115.426	140.272	123.014	122.613	125.997	126.864	111.981	111.981	111.981	111.981
52229	116.836	113.859	114.683	108.620	116.040	86.349	87.871	84.575	116.940	92.415	90.545	95.176	101.686	84.278	84.278	84.278	84.278
522291	8.283	7.507	8.679	7.998	9.232	7.637	8.954	8.494	9.080	7.723	7.644	7.544	7.793	6.926	6.926	6.926	6.926
522292	60.227	60.429	58.023	55.579	57.800	41.191	39.539	37.204	58.996	45.075	43.357	46.530	50.637	40.255	40.255	40.255	40.255
5223	11.188	8.419	10.403	9.700	16.284	9.398	10.039	8.967	10.686	7.226	8.544	8.412	9.290	7.837	7.837	7.837	7.837
52239	3.270	2.359	3.065	2.770	5.574	2.851	3.135	2.784	3.421	2.636	3.239	3.086	3.403	2.891	2.891	2.891	2.891
522390	3.270	2.359	3.065	2.770	5.574	2.851	3.135	2.784	3.421	2.636	3.239	3.086	3.403	2.891	2.891	2.891	2.891
523	107.458	116.340	108.137	123.933	113.174	90.516	89.793	92.590	135.702	77.499	76.918	82.770	107.353	99.319	99.319	99.319	99.319
5231	73.794	70.066	65.126	74.640	74.647	63.510	63.002	64.965	89.506	54.376	53.969	58.075	78.635	69.443	69.443	69.443	69.443
52311	1.688	1.554	1.444	1.655	1.701	2.190	2.173	2.240	2.039	1.875	1.861	2.003	2.210	1.733	1.733	1.733	1.733

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
81392	7.285	8.147	8.141	9.673	9.518	8.286	7.838	8.393	8.162	6.855	6.688	8.057	8.042	7.562	7.562	7.562	7.562
813920	7.285	8.147	8.141	9.673	9.518	8.286	7.838	8.393	8.162	6.855	6.688	8.057	8.042	7.562	7.562	7.562	7.562

Method 3. We first compute the revenues-to-payroll ratios from 2002, 2007, and 2012 Economic Census' for Tulsa MSA, Tulsa County, and the state of Oklahoma. We then compute the panel median of these revenues-to-payroll ratios. Using the only overlapping year, 2012, we incorporate quarterly seasonal patterns of payrolls (from Quarterly Census of Employment and Wages) to adjust the 2012 revenues-to-payroll ratios. This generates four quarterly seasonally adjusted revenues-to-payroll ratios. We then use these new seasonally corrected revenues-to-payroll ratios to estimate revenues from the quarterly payrolls. To generate upper (lower) 75%ile, we then add (subtract) one standard deviation and repeat the procedure. This method generates one median estimate and two upper/lower estimates. The following table reports the median estimates.

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
51	41.201	44.681	43.823	44.298	39.370	48.776	45.739	48.425	44.284	47.418	46.110	54.997	39.446	46.349	46.349	46.349	46.349
511	45.350	46.783	44.854	45.050	44.919	44.123	46.304	45.910	49.179	49.561	51.756	49.645	90.911	52.363	52.363	52.363	52.363
5111	35.216	36.929	34.760	35.746	35.356	35.086	36.952	37.023	38.077	39.623	41.539	40.395	82.273	43.116	43.116	43.116	43.116
51111	11.490	11.076	10.305	12.826	11.190	10.544	10.826	10.728	10.822	12.641	12.720	12.547	50.108	15.357	15.357	15.357	15.357
511110	11.490	11.076	10.305	12.826	11.190	10.544	10.826	10.728	10.822	12.641	12.720	12.547	50.108	15.357	15.357	15.357	15.357
51112	20.957	20.649	19.505	19.744	19.907	19.757	20.312	19.801	21.033	22.172	22.006	20.692	20.747	20.629	20.629	20.629	20.629
511120	20.957	20.649	19.505	19.744	19.907	19.757	20.312	19.801	21.033	22.172	22.006	20.692	20.747	20.629	20.629	20.629	20.629
51113	0.236	-	-	0.250	0.225	-	-	0.251	0.237	-	-	0.262	0.234	-	-	0.261	0.233
511130	0.236	-	-	0.250	0.225	-	-	0.251	0.237	-	-	0.262	0.234	-	-	0.261	0.233
51114	5.053	4.979	4.703	4.760	4.800	4.764	4.897	4.774	5.071	5.346	5.764	5.420	5.434	5.404	5.404	5.404	5.404
511140	5.053	4.979	4.703	4.760	4.800	4.764	4.897	4.774	5.071	5.346	5.764	5.420	5.434	5.404	5.404	5.404	5.404
51119	0.119	0.113	-	-	0.123	0.095	-	-	0.120	0.148	-	-	0.152	0.082	-	-	0.124
5112	11.658	11.179	11.722	10.764	11.003	10.274	10.819	10.260	12.772	11.316	11.810	10.666	9.959	10.642	10.642	10.642	10.642
51121	11.658	11.179	11.722	10.764	11.003	10.274	10.819	10.260	12.772	11.316	11.810	10.666	9.959	10.642	10.642	10.642	10.642
511210	11.658	11.179	11.722	10.764	11.003	10.274	10.819	10.260	12.772	11.316	11.810	10.666	9.959	10.642	10.642	10.642	10.642
51213	12.647	10.604	9.771	10.027	12.005	8.198	6.198	6.374	7.380	6.765	6.614	6.528	7.131	6.614	6.614	6.614	6.614
515	27.107	26.624	27.687	28.746	26.284	26.861	25.914	29.544	26.885	26.644	27.571	28.525	24.284	27.593	27.593	27.593	27.593
515111	0.512	0.510	0.540	0.569	0.503	0.545	0.574	0.560	0.523	0.604	0.585	0.604	0.524	0.576	0.576	0.576	0.576
51512	18.932	18.226	18.271	18.250	17.460	17.125	15.505	17.732	17.041	17.195	16.558	17.251	14.974	15.209	15.209	15.209	15.209
515120	18.932	18.226	18.271	18.250	17.460	17.125	15.505	17.732	17.041	17.195	16.558	17.251	14.974	15.209	15.209	15.209	15.209
517	2.650	2.877	2.816	2.909	2.901	2.801	2.988	3.000	3.060	2.856	2.958	2.860	2.893	3.035	3.035	3.035	3.035
517110	3.607	4.405	4.277	4.124	4.109	3.837	4.244	4.279	4.392	4.009	4.219	4.195	4.242	4.112	4.112	4.112	4.112
517911	2.616	0.520	0.337	2.256	1.983	2.949	2.621	2.954	2.855	2.800	2.189	1.924	1.707	1.687	1.687	1.687	1.687
518	11.443	15.180	13.320	12.643	10.185	19.114	16.836	15.882	14.339	17.918	15.581	23.613	12.268	15.721	15.721	15.721	15.721
5182	11.561	15.336	13.457	12.773	10.289	19.311	17.010	16.045	14.486	18.103	15.741	23.856	12.395	15.883	15.883	15.883	15.883
51821	11.561	15.336	13.457	12.773	10.289	19.311	17.010	16.045	14.486	18.103	15.741	23.856	12.395	15.883	15.883	15.883	15.883
518210	11.561	15.336	13.457	12.773	10.289	19.311	17.010	16.045	14.486	18.103	15.741	23.856	12.395	15.883	15.883	15.883	15.883
51913	6.996	4.490	4.182	4.098	5.240	7.883	3.574	5.885	6.300	11.846	5.354	5.965	7.221	2.400	2.400	2.400	2.400
519130	7.945	5.099	4.750	4.654	5.951	8.953	4.059	6.684	7.154	13.454	6.080	6.775	8.201	2.726	2.726	2.726	2.726
52	130.108	120.967	126.152	127.913	128.470	119.844	118.776	131.836	142.671	118.662	117.674	122.104	121.405	112.854	112.854	112.854	112.854
522130	25.864	21.568	21.803	22.121	23.050	20.373	20.279	20.601	21.700	19.833	19.691	20.489	20.584	18.549	18.549	18.549	18.549
5222	148.364	139.191	150.470	141.679	145.907	119.493	120.452	118.466	143.967	126.255	125.842	129.315	130.205	114.931	114.931	114.931	114.931
52229	111.736	108.888	109.677	103.878	110.974	82.580	84.035	80.883	111.835	88.381	86.593	91.021	97.247	80.599	80.599	80.599	80.599
522291	8.263	7.489	8.658	7.978	9.209	7.619	8.933	8.473	9.058	7.704	7.625	7.531	7.774	6.909	6.909	6.909	6.909
522292	61.588	61.794	59.334	56.834	59.106	42.122	40.432	38.045	60.328	46.093	44.336	47.581	51.781	41.164	41.164	41.164	41.164
5223	12.032	9.054	11.187	10.432	17.512	10.107	10.796	9.643	11.491	7.771	9.188	9.046	9.990	8.428	8.428	8.428	8.428
52239	3.490	2.519	3.271	2.957	5.950	3.044	3.346	2.971	3.652	2.814	3.458	3.294	3.632	3.086	3.086	3.086	3.086
522390	3.490	2.519	3.271	2.957	5.950	3.044	3.346	2.971	3.652	2.814	3.458	3.294	3.632	3.086	3.086	3.086	3.086
523	109.866	118.947	110.559	126.710	115.710	92.545	91.805	94.664	138.742	79.235	78.642	84.625	109.759	101.544	101.544	101.544	101.544
5231	72.553	68.889	64.031	73.385	73.393	62.443	61.943	63.873	88.001	53.462	53.062	57.099	77.313	68.276	68.276	68.276	68.276
52311	1.661	1.528	1.421	1.628	1.673	2.154	2.137	2.204	2.005	1.844	1.831	1.970	2.174	1.705	1.705	1.705	1.705

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
81392	7.142	7.987	7.980	9.483	9.331	8.123	7.683	8.228	8.001	6.720	6.557	7.899	7.883	7.413	7.413	7.413	7.413
813920	7.142	7.987	7.980	9.483	9.331	8.123	7.683	8.228	8.001	6.720	6.557	7.899	7.883	7.413	7.413	7.413	7.413

Method 4. We first compute the revenues-to-payroll ratio from 2002, 2007, and 2012 Economic Census' for Tulsa MSA, Tulsa County, Dallas-Forth Worth MSA, Houston MSA, and the states of Oklahoma and South Dakota. We then compute the panel median of these revenues-to-payroll ratios. Using the only overlapping year, 2012, we incorporate quarterly seasonal patterns of payrolls (from Quarterly Census of Employment and Wages) to adjust the 2012 revenues-to-payroll ratios. This generates four quarterly seasonally adjusted revenues-to-payroll ratios. We then use these new seasonally corrected revenues-to-payroll ratios to estimate revenues from the quarterly payrolls. To generate upper (lower) 75%ile, we then add (subtract) one standard deviation and repeat the procedure. This method generates one median estimate and two upper/lower estimates. The following table reports the median estimates.

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
51	41.739	44.564	41.216	46.193	40.064	48.015	42.452	49.890	44.341	46.843	43.064	55.025	39.620	46.234	43.278	47.561	46.234
511	45.093	46.518	43.683	45.652	44.664	43.873	45.094	46.523	48.900	49.280	50.405	50.308	90.395	52.066	50.996	53.062	52.066
5111	39.238	41.147	38.237	40.556	39.394	39.093	40.649	42.005	42.426	44.148	45.695	45.831	91.670	48.041	47.430	48.918	48.041
51111	13.387	12.905	12.487	13.122	13.038	12.285	13.118	10.975	12.609	14.728	15.413	12.837	58.382	17.893	18.609	15.712	17.893
511110	13.387	12.905	12.487	13.122	13.038	12.285	13.118	10.975	12.609	14.728	15.413	12.837	58.382	17.893	18.609	15.712	17.893
51112	20.577	20.274	18.263	21.887	19.546	19.398	19.018	21.949	20.651	21.769	20.604	22.937	20.370	20.255	19.316	22.868	20.255
511120	20.577	20.274	18.263	21.887	19.546	19.398	19.018	21.949	20.651	21.769	20.604	22.937	20.370	20.255	19.316	22.868	20.255
51113	0.263	-	-	-	0.250	-	-	-	0.264	-	-	-	0.261	-	-	-	0.259
511130	0.263	-	-	-	0.250	-	-	-	0.264	-	-	-	0.261	-	-	-	0.259
51114	5.000	4.926	4.438	5.318	4.749	4.714	4.621	5.333	5.018	5.290	5.439	6.055	5.377	5.347	5.099	6.037	5.347
511140	5.000	4.926	4.438	5.318	4.749	4.714	4.621	5.333	5.018	5.290	5.439	6.055	5.377	5.347	5.099	6.037	5.347
51119	0.162	0.154	-	-	0.167	0.130	-	-	0.164	0.202	-	-	0.207	0.112	-	-	0.169
5112	11.582	11.105	10.982	10.944	10.930	10.207	10.136	10.431	12.687	11.242	11.065	10.843	9.894	10.572	9.970	10.819	10.572
51121	11.582	11.105	10.982	10.944	10.930	10.207	10.136	10.431	12.687	11.242	11.065	10.843	9.894	10.572	9.970	10.819	10.572
511210	11.582	11.105	10.982	10.944	10.930	10.207	10.136	10.431	12.687	11.242	11.065	10.843	9.894	10.572	9.970	10.819	10.572
51213	12.727	10.671	10.464	10.114	12.081	8.250	6.638	6.429	7.426	6.808	7.083	6.585	7.176	6.655	7.082	6.671	6.655
515	29.411	28.886	27.607	32.855	28.517	29.143	25.839	33.767	29.169	28.908	27.491	32.603	26.348	29.938	27.513	31.538	29.938
515111	0.464	0.463	0.455	0.550	0.457	0.494	0.483	0.541	0.475	0.548	0.493	0.584	0.476	0.523	0.485	0.557	0.523
51512	22.211	21.383	19.812	22.824	20.484	20.092	16.813	22.177	19.993	20.173	17.954	21.574	17.568	17.844	16.492	19.022	17.844
515120	22.211	21.383	19.812	22.824	20.484	20.092	16.813	22.177	19.993	20.173	17.954	21.574	17.568	17.844	16.492	19.022	17.844
517	2.806	3.046	2.905	2.814	3.072	2.966	3.083	2.902	3.240	3.024	3.052	2.767	3.064	3.214	3.132	2.937	3.214
517110	3.825	4.671	4.409	3.900	4.357	4.069	4.375	4.045	4.657	4.251	4.349	3.967	4.498	4.360	4.239	3.888	4.360
517911	2.748	0.547	0.348	2.314	2.084	3.098	2.700	3.030	2.999	2.942	2.254	1.973	1.793	1.772	1.737	1.730	1.772
518	9.523	12.632	10.704	10.524	8.475	15.906	13.530	13.220	11.932	14.911	12.521	19.655	10.209	13.082	12.633	13.086	13.082
5182	9.502	12.604	10.681	10.501	8.457	15.871	13.501	13.192	11.906	14.878	12.494	19.613	10.187	13.054	12.606	13.058	13.054
51821	9.502	12.604	10.681	10.501	8.457	15.871	13.501	13.192	11.906	14.878	12.494	19.613	10.187	13.054	12.606	13.058	13.054
518210	9.502	12.604	10.681	10.501	8.457	15.871	13.501	13.192	11.906	14.878	12.494	19.613	10.187	13.054	12.606	13.058	13.054
51913	9.458	6.070	6.057	5.094	7.084	10.657	5.176	7.316	8.516	16.015	7.753	7.415	9.762	3.245	3.476	2.984	3.245
519130	10.321	6.625	6.610	5.559	7.731	11.630	5.649	7.984	9.294	17.478	8.461	8.092	10.653	3.541	3.794	3.256	3.541
52	129.223	120.144	115.919	131.064	127.596	119.029	109.141	135.083	141.700	117.854	108.129	125.111	120.579	112.086	103.699	115.633	112.086
522130	25.991	21.674	20.639	24.280	23.164	20.474	19.196	22.612	21.808	19.931	18.640	22.488	20.686	18.641	17.559	20.360	18.641
5222	280.397	263.060	274.166	266.956	275.753	225.833	219.473	223.217	272.086	238.611	229.294	243.659	246.078	217.211	209.412	216.556	217.211
52229	156.517	152.528	151.271	141.748	155.450	115.675	115.905	110.369	156.656	123.802	119.433	124.204	136.221	112.900	111.165	109.981	112.900
522291	9.139	8.282	8.700	9.876	10.185	8.426	8.976	10.489	10.018	8.520	7.662	9.323	8.598	7.641	6.943	8.553	7.641
522292	69.589	69.822	67.948	60.065	66.785	47.594	46.302	40.208	68.166	52.081	50.773	50.287	58.508	46.512	47.140	43.504	46.512
5223	11.573	8.708	9.079	11.325	16.844	9.721	8.761	10.469	11.053	7.474	7.457	9.821	9.609	8.106	6.840	9.150	8.106
52239	3.627	2.617	2.723	3.695	6.183	3.163	2.785	3.713	3.795	2.924	2.878	4.117	3.774	3.207	2.568	3.857	3.207
522390	3.627	2.617	2.723	3.695	6.183	3.163	2.785	3.713	3.795	2.924	2.878	4.117	3.774	3.207	2.568	3.857	3.207
523	112.017	121.275	104.048	126.402	117.976	94.356	86.398	94.434	141.459	80.787	74.010	84.419	111.908	103.532	95.563	101.297	103.532

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
81391	14.392	12.518	12.590	12.524	12.992	12.730	12.122	11.980	12.284	11.472	12.149	12.251	12.892	12.182	12.263	11.554	12.182
813910	14.392	12.518	12.590	12.524	12.992	12.730	12.122	11.980	12.284	11.472	12.149	12.251	12.892	12.182	12.263	11.554	12.182
81392	6.743	7.542	8.011	7.545	8.810	7.670	7.713	6.546	7.555	6.345	6.582	6.284	7.444	7.000	7.442	5.898	7.000
813920	6.743	7.542	8.011	7.545	8.810	7.670	7.713	6.546	7.555	6.345	6.582	6.284	7.444	7.000	7.442	5.898	7.000

Method 5. We first compute the revenues-to-payroll ratio from 2002 Economic Census' for Tulsa MSA, Tulsa County, and the state of Oklahoma. We then compute the panel median of these revenues-to-payroll ratios. Using the only overlapping year, 2012, we incorporate quarterly seasonal patterns of payrolls (from Quarterly Census of Employment and Wages) to adjust the 2002 revenues-to-payroll ratios. This generates four quarterly seasonally adjusted revenues-to-payroll ratios. We then use these new seasonally corrected revenues-to-payroll ratios by the quarterly payrolls. This method generates only one estimate. The following table reports this estimate.

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
51	49.121	50.057	45.242	47.243	47.100	53.791	46.762	51.227	52.534	52.508	47.357	57.052	46.892	51.926	47.596	48.899	54.858
511	45.000	42.647	41.358	42.333	44.573	40.222	42.694	43.141	48.800	45.179	47.722	46.651	90.211	47.733	48.282	49.205	51.960
5111	35.134	33.286	32.464	33.996	35.273	31.625	34.512	35.210	37.988	35.715	38.797	38.417	82.081	38.863	40.270	41.005	43.016
51111	13.062	11.713	11.490	12.558	12.721	11.151	12.071	10.504	12.302	13.369	14.183	12.285	56.963	16.241	17.124	15.036	17.458
511110	13.062	11.713	11.490	12.558	12.721	11.151	12.071	10.504	12.302	13.369	14.183	12.285	56.963	16.241	17.124	15.036	17.458
51112	21.198	18.045	17.804	20.348	20.136	17.266	18.541	20.406	21.275	19.376	20.087	21.325	20.985	18.028	18.831	21.260	20.866
511120	21.198	18.045	17.804	20.348	20.136	17.266	18.541	20.406	21.275	19.376	20.087	21.325	20.985	18.028	18.831	21.260	20.866
51114	5.867	4.994	4.928	5.632	5.573	4.779	5.131	5.648	5.888	5.363	6.040	6.412	6.310	5.421	5.662	6.392	6.274
511140	5.867	4.994	4.928	5.632	5.573	4.779	5.131	5.648	5.888	5.363	6.040	6.412	6.310	5.421	5.662	6.392	6.274
5112	12.753	12.098	11.501	10.808	12.036	11.119	10.615	10.301	13.971	12.247	11.587	10.709	10.894	11.518	10.441	10.685	11.642
51121	12.753	12.098	11.501	10.808	12.036	11.119	10.615	10.301	13.971	12.247	11.587	10.709	10.894	11.518	10.441	10.685	11.642
511210	12.753	12.098	11.501	10.808	12.036	11.119	10.615	10.301	13.971	12.247	11.587	10.709	10.894	11.518	10.441	10.685	11.642
51213	15.358	13.477	13.826	14.221	14.578	10.420	8.770	9.040	8.962	8.598	9.358	9.259	8.659	8.406	9.358	9.380	8.031
515	33.147	33.425	29.845	32.642	32.141	33.722	27.934	33.549	32.875	33.450	29.720	32.391	29.695	34.642	29.744	31.333	33.742
515111	0.386	0.382	0.362	0.406	0.380	0.408	0.385	0.400	0.395	0.452	0.392	0.432	0.396	0.432	0.386	0.412	0.435
51512	20.485	19.876	17.549	18.686	18.893	18.676	14.893	18.156	18.439	18.752	15.904	17.663	16.203	16.587	14.608	15.573	16.457
515120	20.485	19.876	17.549	18.686	18.893	18.676	14.893	18.156	18.439	18.752	15.904	17.663	16.203	16.587	14.608	15.573	16.457
517	3.625	3.061	3.125	2.950	3.969	2.980	3.317	3.042	4.186	3.039	3.283	2.900	3.958	3.230	3.369	3.078	4.152
517110	5.109	4.588	4.730	4.067	5.819	3.996	4.693	4.219	6.220	4.175	4.665	4.137	6.008	4.283	4.547	4.055	5.824
517911	1.100	0.192	0.127	0.827	0.834	1.088	0.984	1.083	1.200	1.033	0.822	0.705	0.718	0.622	0.633	0.618	0.709
518	12.348	13.571	12.271	11.651	10.990	17.088	15.511	14.636	15.473	16.019	14.354	21.761	13.239	14.055	14.483	14.488	16.964
5182	12.748	14.010	12.668	12.028	11.346	17.641	16.013	15.110	15.973	16.538	14.819	22.465	13.667	14.509	14.952	14.957	17.513
51821	12.748	14.010	12.668	12.028	11.346	17.641	16.013	15.110	15.973	16.538	14.819	22.465	13.667	14.509	14.952	14.957	17.513
518210	12.748	14.010	12.668	12.028	11.346	17.641	16.013	15.110	15.973	16.538	14.819	22.465	13.667	14.509	14.952	14.957	17.513
51913	4.887	5.174	4.267	3.844	3.661	9.084	3.646	5.520	4.401	13.652	5.461	5.595	5.044	2.766	2.449	2.251	1.677
519130	4.887	5.174	4.267	3.844	3.661	9.084	3.646	5.520	4.401	13.652	5.461	5.595	5.044	2.766	2.449	2.251	1.677
52	119.421	108.147	99.732	104.325	117.917	107.144	93.901	107.525	130.951	106.087	93.030	99.587	111.432	100.894	89.219	92.043	103.584
522130	24.778	25.736	21.772	24.127	22.082	24.310	20.251	22.470	20.790	23.666	19.664	22.347	19.720	22.134	18.523	20.231	17.771
5222	81.852	84.058	80.801	75.852	80.497	72.162	64.682	63.424	79.426	76.245	67.577	69.232	71.834	69.407	61.717	61.531	63.407
52229	182.956	200.904	182.898	168.749	181.709	152.363	140.137	131.394	183.118	163.067	144.403	147.863	159.232	148.708	134.407	130.932	131.971
522291	9.186	9.653	9.103	9.389	10.238	9.821	9.392	9.971	10.070	9.930	8.017	8.862	8.643	8.906	7.264	8.131	7.681
522292	61.138	67.224	61.375	54.987	58.674	45.823	41.823	36.809	59.888	50.143	45.861	46.036	51.402	44.781	42.580	39.826	40.863
5223	10.743	13.715	10.312	10.854	15.636	15.310	9.951	10.033	10.260	11.771	8.470	9.412	8.920	12.767	7.769	8.769	7.525
52239	3.052	4.068	2.918	3.172	5.203	4.916	2.984	3.187	3.194	4.545	3.084	3.533	3.176	4.985	2.752	3.310	2.698
522390	3.052	4.068	2.918	3.172	5.203	4.916	2.984	3.187	3.194	4.545	3.084	3.533	3.176	4.985	2.752	3.310	2.698
523	133.754	125.983	106.871	119.839	140.869	98.019	88.742	89.531	168.908	83.922	76.018	80.036	133.623	107.550	98.157	96.037	123.622
5231	102.209	79.369	67.329	75.498	103.392	71.942	65.133	65.712	123.972	61.596	55.794	58.743	108.915	78.663	71.792	70.242	96.183
52311	3.262	1.622	1.376	1.543	3.286	2.286	2.070	2.088	3.939	1.957	1.773	1.867	4.271	1.809	1.651	1.615	3.349
523110	3.262	1.622	1.376	1.543	3.286	2.286	2.070	2.088	3.939	1.957	1.773	1.867	4.271	1.809	1.651	1.615	3.349
52312	98.487	82.395	79.310	79.251	99.914	89.763	81.412	80.136	95.370	86.722	79.050	83.520	92.935	74.227	70.179	73.661	87.380
523120	98.487	82.395	79.310	79.251	99.914	89.763	81.412	80.136	95.370	86.722	79.050	83.520	92.935	74.227	70.179	73.661	87.380
5239	40.469	50.614	44.338	39.935	45.767	48.167	35.811	35.084	43.384	41.833	31.413	30.806	35.398	42.238	32.076	29.532	36.135

Method 6. We first compute the revenues-to-payroll ratio from 2007 Economic Census' for Tulsa MSA, Tulsa County, and the state of Oklahoma. We then compute the panel median of these revenues-to-payroll ratios. Using the only overlapping year, 2012, we incorporate quarterly seasonal patterns of payrolls (from Quarterly Census of Employment and Wages) to adjust the 2007 revenues-to-payroll ratios. This generates four quarterly seasonally adjusted revenues-to-payroll ratios. We then use these new seasonally corrected revenues-to-payroll ratios to estimate revenues from the quarterly payrolls. This method generates only one estimate. The following table reports this estimate.

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
51	42.316	43.273	39.263	40.380	40.423	47.425	41.806	44.561	46.338	46.070	41.737	51.720	41.213	44.902	42.000	42.826	48.635
511	55.673	52.761	51.166	52.373	55.144	49.761	52.820	53.372	60.373	55.893	59.040	57.715	111.605	59.054	59.732	60.875	64.283
5111	44.249	41.922	40.887	42.815	44.424	39.830	43.466	44.345	47.844	44.980	48.862	48.384	103.376	48.946	50.717	51.643	54.176
51111	12.467	11.180	10.967	11.986	12.142	10.643	11.521	10.025	11.742	12.760	13.537	11.726	54.368	15.502	16.344	14.352	16.663
511110	12.467	11.180	10.967	11.986	12.142	10.643	11.521	10.025	11.742	12.760	13.537	11.726	54.368	15.502	16.344	14.352	16.663
51112	24.649	20.983	20.703	23.661	23.414	20.077	21.559	23.728	24.738	22.530	23.357	24.796	24.402	20.963	21.897	24.721	24.263
511120	24.649	20.983	20.703	23.661	23.414	20.077	21.559	23.728	24.738	22.530	23.357	24.796	24.402	20.963	21.897	24.721	24.263
51114	6.369	5.421	5.349	6.113	6.050	5.187	5.570	6.131	6.392	5.821	6.556	6.960	6.849	5.884	6.146	6.939	6.811
511140	6.369	5.421	5.349	6.113	6.050	5.187	5.570	6.131	6.392	5.821	6.556	6.960	6.849	5.884	6.146	6.939	6.811
5112	12.685	12.033	11.439	10.750	11.972	11.060	10.558	10.247	13.896	12.182	11.525	10.651	10.836	11.456	10.385	10.628	11.579
51121	12.685	12.033	11.439	10.750	11.972	11.060	10.558	10.247	13.896	12.182	11.525	10.651	10.836	11.456	10.385	10.628	11.579
511210	12.685	12.033	11.439	10.750	11.972	11.060	10.558	10.247	13.896	12.182	11.525	10.651	10.836	11.456	10.385	10.628	11.579
51213	6.972	6.118	6.277	6.456	6.618	4.730	3.982	4.104	4.068	3.903	4.248	4.203	3.931	3.816	4.248	4.258	3.646
515	24.033	24.235	21.639	23.667	23.303	24.450	20.253	24.324	23.836	24.253	21.548	23.485	21.530	25.117	21.566	22.718	24.464
515111	0.381	0.377	0.357	0.401	0.375	0.403	0.380	0.395	0.390	0.446	0.387	0.426	0.391	0.426	0.381	0.407	0.430
51512	16.882	16.380	14.463	15.399	15.570	15.391	12.273	14.962	15.196	15.454	13.106	14.556	13.353	13.669	12.039	12.834	13.563
515120	16.882	16.380	14.463	15.399	15.570	15.391	12.273	14.962	15.196	15.454	13.106	14.556	13.353	13.669	12.039	12.834	13.563
517	4.140	3.496	3.570	3.369	4.533	3.404	3.788	3.475	4.781	3.471	3.750	3.312	4.521	3.689	3.848	3.516	4.742
517110	5.503	4.942	5.095	4.381	6.269	4.305	5.056	4.545	6.701	4.498	5.026	4.456	6.472	4.613	4.899	4.368	6.273
517911	3.493	6.010	4.042	2.626	2.648	3.455	3.125	3.438	3.812	3.281	2.609	2.239	2.279	1.976	2.010	1.963	2.252
518	14.142	15.542	14.054	13.344	12.587	19.571	17.764	16.762	17.720	18.346	16.439	24.922	15.162	16.096	16.587	16.592	19.429
5182	14.142	15.542	14.054	13.344	12.587	19.571	17.764	16.762	17.720	18.346	16.439	24.922	15.162	16.096	16.587	16.592	19.429
51821	14.142	15.542	14.054	13.344	12.587	19.571	17.764	16.762	17.720	18.346	16.439	24.922	15.162	16.096	16.587	16.592	19.429
518210	14.142	15.542	14.054	13.344	12.587	19.571	17.764	16.762	17.720	18.346	16.439	24.922	15.162	16.096	16.587	16.592	19.429
51913	5.422	5.741	4.734	4.265	4.061	10.079	4.045	6.124	4.883	15.146	6.059	6.208	5.597	3.069	2.717	2.498	1.860
519130	7.511	7.953	6.557	5.908	5.626	13.962	5.604	8.484	6.764	20.982	8.394	8.600	7.753	4.251	3.763	3.460	2.577
52	77.711	70.375	64.899	67.888	76.733	69.722	61.105	69.970	85.215	69.034	60.538	64.805	72.513	65.655	58.058	59.895	67.405
522130	26.462	27.485	23.252	25.767	23.584	25.963	21.627	23.997	22.203	25.275	21.001	23.866	21.061	23.638	19.783	21.606	18.979
5222	275.442	282.863	271.906	255.249	270.881	242.833	217.663	213.429	267.278	256.574	227.403	232.975	241.729	233.562	207.686	207.060	213.372
52229	73.818	81.060	73.795	68.086	73.315	61.475	56.542	53.014	73.884	65.794	58.263	59.659	64.246	60.000	54.230	52.828	53.247
522291	7.920	8.323	7.849	8.095	8.828	8.468	8.098	8.598	8.683	8.562	6.913	7.642	7.452	7.679	6.264	7.011	6.623
522292	56.614	62.250	56.834	50.919	54.333	42.433	38.729	34.085	55.457	46.433	42.468	42.629	47.599	41.468	39.429	36.880	37.840
5223	8.114	10.359	7.789	8.198	11.810	11.563	7.516	7.578	7.749	8.891	6.397	7.109	6.737	9.643	5.868	6.623	5.684
52239	2.258	3.010	2.159	2.347	3.849	3.637	2.208	2.358	2.363	3.363	2.282	2.614	2.350	3.688	2.036	2.449	1.996
522390	2.258	3.010	2.159	2.347	3.849	3.637	2.208	2.358	2.363	3.363	2.282	2.614	2.350	3.688	2.036	2.449	1.996
523	111.778	105.283	89.312	100.149	117.724	81.914	74.162	74.821	141.156	70.134	63.528	66.886	111.669	89.880	82.029	80.258	103.311
5231	73.382	56.983	48.339	54.204	74.231	51.651	46.763	47.178	89.006	44.223	40.058	42.175	78.196	56.476	51.543	50.430	69.055
52311	3.092	1.537	1.304	1.462	3.114	2.167	1.962	1.979	3.734	1.855	1.681	1.769	4.048	1.715	1.565	1.531	3.174
523110	3.092	1.537	1.304	1.462	3.114	2.167	1.962	1.979	3.734	1.855	1.681	1.769	4.048	1.715	1.565	1.531	3.174
52312	71.293	59.644	57.411	57.369	72.326	64.978	58.933	58.009	69.037	62.777	57.223	60.459	67.274	53.732	50.801	53.322	63.253
523120	71.293	59.644	57.411	57.369	72.326	64.978	58.933	58.009	69.037	62.777	57.223	60.459	67.274	53.732	50.801	53.322	63.253
5239	29.675	37.114	32.513	29.284	33.560	35.320	26.260	25.727	31.813	30.676	23.035	22.590	25.957	30.973	23.521	21.656	26.497

Method 7. We first compute the revenues-to-payroll ratio from 2012 Economic Census' for Tulsa MSA, Tulsa County, and the state of Oklahoma. We then compute the panel median of these ratios. Using the only overlapping year, 2012, we incorporate quarterly seasonal patterns of payrolls (from Quarterly Census of Employment and Wages) to adjust the 2012 revenues-to-payroll ratio. This generates four quarterly seasonally adjusted revenues-to-payroll ratio. We then use these new seasonally corrected revenues-to-payroll ratio to estimate revenues from adjust the quarterly payrolls. To generate upper (lower) 75%ile, we then add (subtract) one standard deviation and repeat the procedure. This method generates one median estimate and two upper/lower estimates. The following table reports this estimate.

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
51	38.869	42.086	41.317	41.758	37.005	46.026	43.035	45.676	41.642	44.705	43.439	51.973	37.034	43.637	43.637	43.637	43.637
511	40.540	41.821	40.096	40.272	40.154	39.443	41.392	41.040	43.962	44.304	46.266	44.379	81.268	46.809	46.809	46.809	46.809
5111	30.376	31.853	29.982	30.833	30.496	30.264	31.873	31.935	32.843	34.177	35.830	34.843	70.965	37.190	37.190	37.190	37.190
51111	10.393	10.019	9.321	11.602	10.122	9.538	9.792	9.704	9.789	11.434	11.506	11.350	45.325	13.891	13.891	13.891	13.891
511110	10.393	10.019	9.321	11.602	10.122	9.538	9.792	9.704	9.789	11.434	11.506	11.350	45.325	13.891	13.891	13.891	13.891
51112	19.486	19.199	18.135	18.357	18.509	18.370	18.885	18.410	19.556	20.615	20.460	19.239	19.290	19.181	19.181	19.181	19.181
511120	19.486	19.199	18.135	18.357	18.509	18.370	18.885	18.410	19.556	20.615	20.460	19.239	19.290	19.181	19.181	19.181	19.181
51113	0.247	-	-	0.261	0.235	-	-	0.262	0.248	-	-	0.273	0.244	-	-	0.273	0.243
511130	0.247	-	-	0.261	0.235	-	-	0.262	0.248	-	-	0.273	0.244	-	-	0.273	0.243
51114	3.580	3.527	3.332	3.373	3.400	3.375	3.470	3.382	3.593	3.787	4.084	3.840	3.850	3.828	3.828	3.828	3.828
511140	3.580	3.527	3.332	3.373	3.400	3.375	3.470	3.382	3.593	3.787	4.084	3.840	3.850	3.828	3.828	3.828	3.828
51119	0.079	0.075	-	-	0.082	0.063	-	-	0.080	0.099	-	-	0.101	0.055	-	-	0.082
5112	10.783	10.339	10.842	9.956	10.177	9.503	10.007	9.490	11.813	10.467	10.924	9.865	9.211	9.843	9.843	9.843	9.843
51121	10.783	10.339	10.842	9.956	10.177	9.503	10.007	9.490	11.813	10.467	10.924	9.865	9.211	9.843	9.843	9.843	9.843
511210	10.783	10.339	10.842	9.956	10.177	9.503	10.007	9.490	11.813	10.467	10.924	9.865	9.211	9.843	9.843	9.843	9.843
51213	13.492	11.312	10.424	10.697	12.807	8.746	6.612	6.799	7.873	7.217	7.056	6.964	7.607	7.055	7.055	7.055	7.055
515	26.474	26.002	27.040	28.074	25.670	26.233	25.309	28.854	26.257	26.022	26.927	27.859	23.717	26.949	26.949	26.949	26.949
515111	0.801	0.798	0.845	0.890	0.788	0.852	0.898	0.876	0.819	0.945	0.916	0.945	0.820	0.902	0.902	0.902	0.902
51512	20.907	20.127	20.177	20.154	19.281	18.912	17.123	19.582	18.818	18.988	18.285	19.050	16.536	16.796	16.796	16.796	16.796
515120	20.907	20.127	20.177	20.154	19.281	18.912	17.123	19.582	18.818	18.988	18.285	19.050	16.536	16.796	16.796	16.796	16.796
517	1.484	1.611	1.577	1.629	1.625	1.569	1.674	1.680	1.714	1.599	1.657	1.601	1.620	1.700	1.700	1.700	1.700
517110	2.299	2.807	2.726	2.628	2.619	2.445	2.705	2.727	2.799	2.555	2.688	2.674	2.703	2.621	2.621	2.621	2.621
517911	3.667	0.729	0.473	3.162	2.780	4.133	3.674	4.140	4.001	3.924	3.067	2.696	2.392	2.364	2.364	2.364	2.364
518	10.911	14.473	12.700	12.054	9.710	18.224	16.052	15.142	13.671	17.084	14.855	22.513	11.697	14.989	14.989	14.989	14.989
5182	10.911	14.473	12.700	12.054	9.710	18.224	16.052	15.142	13.671	17.084	14.855	22.513	11.697	14.989	14.989	14.989	14.989
51821	10.911	14.473	12.700	12.054	9.710	18.224	16.052	15.142	13.671	17.084	14.855	22.513	11.697	14.989	14.989	14.989	14.989
518210	10.911	14.473	12.700	12.054	9.710	18.224	16.052	15.142	13.671	17.084	14.855	22.513	11.697	14.989	14.989	14.989	14.989
51913	6.934	4.451	4.146	4.062	5.194	7.814	3.543	5.834	6.244	11.743	5.307	5.913	7.158	2.379	2.379	2.379	2.379
519130	6.934	4.451	4.146	4.062	5.194	7.814	3.543	5.834	6.244	11.743	5.307	5.913	7.158	2.379	2.379	2.379	2.379
52	206.798	192.268	200.510	203.309	204.194	190.484	188.786	209.544	226.765	188.605	187.035	194.075	192.965	179.373	179.373	179.373	179.373
522130	20.889	17.419	17.609	17.866	18.616	16.454	16.378	16.639	17.526	16.018	15.904	16.548	16.625	14.981	14.981	14.981	14.981
5222	84.369	79.153	85.567	80.568	82.972	67.951	68.497	67.367	81.869	71.797	71.562	73.537	74.043	65.357	65.357	65.357	65.357
52229	69.615	67.840	68.332	64.719	69.140	51.449	52.356	50.392	69.676	55.064	53.950	56.709	60.588	50.215	50.215	50.215	50.215
522291	6.982	6.328	7.315	6.741	7.782	6.438	7.548	7.159	7.654	6.509	6.443	6.363	6.569	5.838	5.838	5.838	5.838
522292	63.699	63.912	61.368	58.782	61.132	43.565	41.818	39.349	62.396	47.673	45.856	49.212	53.556	42.575	42.575	42.575	42.575
5223	13.023	9.800	12.108	11.291	18.955	10.939	11.685	10.437	12.438	8.411	9.945	9.792	10.813	9.122	9.122	9.122	9.122
52239	3.709	2.676	3.476	3.142	6.322	3.234	3.555	3.157	3.881	2.990	3.674	3.500	3.859	3.279	3.279	3.279	3.279
522390	3.709	2.676	3.476	3.142	6.322	3.234	3.555	3.157	3.881	2.990	3.674	3.500	3.859	3.279	3.279	3.279	3.279
523	118.388	128.173	119.136	136.539	124.686	99.723	98.926	102.007	149.505	85.382	84.742	91.189	118.273	109.421	109.421	109.421	109.421
5231	73.037	69.348	64.458	73.874	73.882	62.859	62.357	64.299	88.588	53.819	53.416	57.480	77.829	68.731	68.731	68.731	68.731
52311	0.985	0.907	0.843	0.966	0.993	1.278	1.268	1.308	1.190	1.095	1.086	1.169	1.290	1.012	1.012	1.012	1.012

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
81392	6.658	7.446	7.439	8.840	8.698	7.572	7.163	7.670	7.459	6.264	6.112	7.363	7.349	6.911	6.911	6.911	6.911
813920	6.658	7.446	7.439	8.840	8.698	7.572	7.163	7.670	7.459	6.264	6.112	7.363	7.349	6.911	6.911	6.911	6.911

Method 8. We first compute the revenues-to-payroll ratio from 2012 Economic Census' for Tulsa County. We then correct for missing information. The corrected ratio then is used in conjunction with the quarterly payrolls to generate the revenue estimates. This method generates only one estimate. The following table reports this estimate.

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
51	42.155	43.427	39.135	40.657	40.034	47.434	41.176	44.670	45.589	46.085	41.363	51.365	40.469	45.024	41.565	42.722	47.892
511	42.978	40.730	39.499	40.431	42.570	38.415	40.776	41.202	46.607	43.149	45.577	44.555	86.157	45.589	46.112	46.994	49.625
5111	32.484	30.776	30.016	31.432	32.613	29.240	31.910	32.555	35.123	33.021	35.871	35.520	75.891	35.933	37.233	37.913	39.772
51111	10.851	9.731	9.546	10.433	10.569	9.264	10.029	8.726	10.221	11.106	11.783	10.206	47.323	13.493	14.226	12.492	14.504
511110	10.851	9.731	9.546	10.433	10.569	9.264	10.029	8.726	10.221	11.106	11.783	10.206	47.323	13.493	14.226	12.492	14.504
51112	20.741	17.656	17.420	19.909	19.701	16.893	18.141	19.966	20.815	18.958	19.654	20.865	20.532	17.639	18.424	20.801	20.416
511120	20.741	17.656	17.420	19.909	19.701	16.893	18.141	19.966	20.815	18.958	19.654	20.865	20.532	17.639	18.424	20.801	20.416
51114	3.809	3.242	3.199	3.656	3.618	3.102	3.331	3.666	3.822	3.481	3.921	4.162	4.096	3.519	3.676	4.150	4.073
511140	3.809	3.242	3.199	3.656	3.618	3.102	3.331	3.666	3.822	3.481	3.921	4.162	4.096	3.519	3.676	4.150	4.073
5112	10.790	10.236	9.730	9.144	10.183	9.408	8.981	8.716	11.820	10.362	9.804	9.060	9.217	9.745	8.834	9.041	9.850
51121	10.790	10.236	9.730	9.144	10.183	9.408	8.981	8.716	11.820	10.362	9.804	9.060	9.217	9.745	8.834	9.041	9.850
511210	10.790	10.236	9.730	9.144	10.183	9.408	8.981	8.716	11.820	10.362	9.804	9.060	9.217	9.745	8.834	9.041	9.850
51213	13.112	11.506	11.804	12.142	12.446	8.896	7.488	7.718	7.651	7.341	7.990	7.905	7.393	7.176	7.989	8.008	6.857
515	27.014	27.240	24.323	26.602	26.193	27.482	22.765	27.341	26.792	27.261	24.220	26.398	24.200	28.232	24.240	25.536	27.498
515111	0.837	0.828	0.785	0.880	0.824	0.884	0.834	0.866	0.856	0.980	0.850	0.935	0.858	0.935	0.837	0.892	0.943
51512	21.768	21.120	18.648	19.856	20.075	19.845	15.825	19.292	19.593	19.925	16.899	18.768	17.217	17.625	15.523	16.547	17.488
515120	21.768	21.120	18.648	19.856	20.075	19.845	15.825	19.292	19.593	19.925	16.899	18.768	17.217	17.625	15.523	16.547	17.488
517	1.782	1.505	1.537	1.450	1.951	1.465	1.631	1.496	2.058	1.494	1.614	1.426	1.946	1.588	1.656	1.513	2.041
517110	2.862	2.570	2.650	2.279	3.261	2.239	2.630	2.364	3.485	2.339	2.614	2.318	3.366	2.399	2.548	2.272	3.263
517911	4.027	0.703	0.464	3.027	3.053	3.983	3.602	3.964	4.394	3.782	3.007	2.581	2.627	2.278	2.318	2.263	2.596
518	13.359	14.681	13.276	12.605	11.890	18.487	16.780	15.834	16.739	17.330	15.529	23.542	14.322	15.205	15.668	15.673	18.352
5182	13.359	14.681	13.276	12.605	11.890	18.487	16.780	15.834	16.739	17.330	15.529	23.542	14.322	15.205	15.668	15.673	18.352
51821	13.359	14.681	13.276	12.605	11.890	18.487	16.780	15.834	16.739	17.330	15.529	23.542	14.322	15.205	15.668	15.673	18.352
518210	13.359	14.681	13.276	12.605	11.890	18.487	16.780	15.834	16.739	17.330	15.529	23.542	14.322	15.205	15.668	15.673	18.352
51913	4.261	4.512	3.720	3.351	3.192	7.920	3.179	4.813	3.837	11.903	4.762	4.878	4.398	2.412	2.135	1.963	1.462
519130	4.261	4.512	3.720	3.351	3.192	7.920	3.179	4.813	3.837	11.903	4.762	4.878	4.398	2.412	2.135	1.963	1.462
52	222.128	201.159	185.506	194.049	219.331	199.292	174.660	200.001	243.575	197.326	173.040	185.236	207.269	187.668	165.952	171.204	192.670
522130	19.201	19.943	16.871	18.696	17.112	18.838	15.692	17.412	16.110	18.339	15.238	17.317	15.281	17.152	14.354	15.677	13.771
5222	82.046	84.256	80.992	76.031	80.687	72.332	64.835	63.574	79.614	76.425	67.736	69.396	72.004	69.571	61.863	61.677	63.557
52229	67.303	73.905	67.281	62.077	66.844	56.049	51.551	48.335	67.362	59.986	53.121	54.394	58.576	54.704	49.443	48.165	48.548
522291	6.661	7.000	6.601	6.808	7.424	7.122	6.811	7.231	7.302	7.201	5.814	6.427	6.268	6.459	5.268	5.896	5.570
522292	63.319	69.622	63.565	56.949	60.767	47.458	43.315	38.122	62.024	51.932	47.497	47.678	53.236	46.379	44.099	41.247	42.321
5223	8.865	11.318	8.510	8.957	12.903	12.634	8.212	8.279	8.467	9.714	6.989	7.767	7.361	10.536	6.411	7.237	6.210
52239	2.937	3.914	2.807	3.052	5.006	4.730	2.872	3.067	3.073	4.373	2.967	3.400	3.056	4.796	2.648	3.185	2.596
522390	2.937	3.914	2.807	3.052	5.006	4.730	2.872	3.067	3.073	4.373	2.967	3.400	3.056	4.796	2.648	3.185	2.596
523	135.085	127.237	107.936	121.032	142.271	98.995	89.626	90.422	170.590	84.758	76.775	80.833	134.954	108.621	99.134	96.994	124.853
5231	92.272	71.652	60.782	68.158	93.339	64.947	58.801	59.323	111.918	55.607	50.370	53.032	98.326	71.014	64.812	63.412	86.832
52311	1.567	0.779	0.661	0.741	1.578	1.098	0.994	1.003	1.892	0.940	0.852	0.897	2.051	0.869	0.793	0.776	1.608
523110	1.567	0.779	0.661	0.741	1.578	1.098	0.994	1.003	1.892	0.940	0.852	0.897	2.051	0.869	0.793	0.776	1.608
52312	79.002	66.094	63.619	63.572	80.147	72.004	65.306	64.282	76.502	69.565	63.411	66.996	74.549	59.542	56.295	59.088	70.093
523120	79.002	66.094	63.619	63.572	80.147	72.004	65.306	64.282	76.502	69.565	63.411	66.996	74.549	59.542	56.295	59.088	70.093
5239	39.070	48.864	42.806	38.554	44.185	46.502	34.573	33.871	41.885	40.387	30.327	29.741	34.175	40.778	30.967	28.512	34.886
52391	5.441	9.926	10.343	9.202	10.347	12.310	10.481	9.597	15.110	11.668	10.182	9.170	13.224	12.821	13.342	10.563	14.500
523910	5.441	9.926	10.343	9.202	10.347	12.310	10.481	9.597	15.110	11.668	10.182	9.170	13.224	12.821	13.342	10.563	14.500
52392	13.747	11.574	12.060	10.730	14.202	11.584	10.176	9.832	12.976	9.800	8.009	8.120	9.600	11.049	7.088	7.327	9.525
523920	13.747	11.574	12.060	10.730	14.202	11.584	10.176	9.832	12.976	9.800	8.009	8.120	9.600	11.049	7.088	7.327	9.525
52393	6.705	9.820	7.104	7.137	7.004	7.919	4.790	5.157	4.841	6.359	4.240	4.287	3.864	4.886	3.994	3.629	3.803
523930	6.705	9.820	7.104	7.137	7.004	7.919	4.790	5.157	4.841	6.359	4.240	4.287	3.864	4.886	3.994	3.629	3.803

NAIC	2016Q1	2015Q4	2015Q3	2015Q2	2015Q1	2014Q4	2014Q3	2014Q2	2014Q1	2013Q4	2013Q3	2013Q2	2013Q1	2012Q4	2012Q3	2012Q2	2012Q1
8114	2.050	2.360	2.591	2.355	2.317	2.353	2.617	2.383	2.544	2.501	2.710	2.450	2.343	2.598	2.923	2.639	2.580
81141	0.851	1.032	1.142	1.065	1.034	0.975	1.156	0.990	1.171	1.083	1.206	1.054	1.040	1.161	1.463	1.279	1.207
81142	0.232	0.281	0.311	0.290	0.282	0.266	0.315	0.270	0.319	0.295	0.328	0.300	0.263	0.264	0.297	0.291	0.299
811420	0.232	0.281	0.311	0.290	0.282	0.266	0.315	0.270	0.319	0.295	0.328	0.300	0.263	0.264	0.297	0.291	0.299
81149	1.234	1.351	1.592	1.273	1.348	1.510	1.548	1.491	1.493	1.549	1.387	1.332	1.301	1.542	1.339	1.212	1.230
811490	1.234	1.351	1.592	1.273	1.348	1.510	1.548	1.491	1.493	1.549	1.387	1.332	1.301	1.542	1.339	1.212	1.230
812	45.014	50.676	47.678	47.750	44.646	48.434	46.840	46.371	43.969	46.872	44.801	44.838	41.667	44.863	42.299	43.363	41.314
8121	14.871	17.112	15.925	16.290	14.571	15.710	14.923	15.229	13.858	14.894	13.852	13.940	12.844	13.787	13.034	12.974	12.495
81211	10.463	11.717	11.170	11.385	10.409	10.341	10.435	10.543	9.880	9.868	9.547	9.460	8.782	9.140	9.019	8.970	8.683
812111	0.431	0.443	0.382	0.369	0.338	0.349	0.299	0.284	0.193	0.188	0.153	0.199	0.148	0.165	0.189	0.180	0.172
812112	8.095	9.237	8.890	9.017	8.514	8.436	8.299	8.441	8.218	8.180	8.029	7.995	7.589	7.856	7.706	7.650	7.522
812113	2.769	2.801	2.585	2.809	1.898	1.901	2.608	2.554	1.858	1.940	1.681	1.423	1.023	1.130	1.154	1.204	0.882
81219	4.353	5.395	4.704	4.860	4.077	5.451	4.446	4.664	3.902	5.091	4.293	4.498	4.064	4.707	3.997	3.988	3.787
812191	0.852	1.056	0.734	0.759	0.637	0.851	0.773	0.811	0.678	1.370	1.155	1.457	1.121	1.299	1.233	1.246	1.314
812199	3.286	4.073	3.657	3.779	3.170	4.238	3.412	3.579	2.994	3.633	3.063	3.070	2.885	3.341	2.763	2.748	2.535
8122	7.509	8.312	8.258	8.154	7.759	8.048	7.738	7.904	7.601	7.807	7.667	7.755	7.235	8.208	7.473	8.299	7.315
81221	6.723	7.444	7.465	7.366	7.008	7.216	6.812	6.839	6.543	6.872	6.396	6.592	6.440	6.875	6.271	6.799	6.257
812210	6.723	7.444	7.465	7.366	7.008	7.216	6.812	6.839	6.543	6.872	6.396	6.592	6.440	6.875	6.271	6.799	6.257
81222	0.909	1.005	0.948	0.940	0.896	0.967	1.020	1.127	1.108	1.030	1.264	1.191	0.903	1.333	1.205	1.458	1.095
812220	0.909	1.005	0.948	0.940	0.896	0.967	1.020	1.127	1.108	1.030	1.264	1.191	0.903	1.333	1.205	1.458	1.095
8123	14.873	16.324	15.238	15.373	14.768	16.086	15.519	14.988	14.552	15.493	14.904	15.026	14.307	15.413	14.727	15.051	14.696
81231	3.370	3.462	3.241	3.511	3.148	3.610	3.387	3.138	2.664	2.671	2.349	2.357	1.981	2.163	2.067	2.325	2.270
812310	3.370	3.462	3.241	3.511	3.148	3.610	3.387	3.138	2.664	2.671	2.349	2.357	1.981	2.163	2.067	2.325	2.270
81232	4.066	4.654	4.408	4.625	4.270	4.605	4.464	4.642	4.343	4.667	4.562	4.759	4.438	4.831	4.640	4.942	4.850
812320	4.066	4.654	4.408	4.625	4.270	4.605	4.464	4.642	4.343	4.667	4.562	4.759	4.438	4.831	4.640	4.942	4.850
81233	8.030	8.757	8.132	8.025	7.880	8.563	8.274	7.817	7.799	8.322	8.020	7.987	7.736	8.236	7.910	7.899	7.753
8129	7.648	8.837	8.294	7.794	7.503	8.542	8.729	8.311	8.094	8.778	8.582	8.248	7.303	7.499	7.005	7.155	6.709
81291	2.089	2.413	2.348	2.175	2.043	2.026	2.231	1.940	1.932	1.815	1.949	1.806	1.707	1.705	1.631	1.587	1.512
812910	2.089	2.413	2.348	2.175	2.043	2.026	2.231	1.940	1.932	1.815	1.949	1.806	1.707	1.705	1.631	1.587	1.512
81293	3.607	4.218	3.681	3.632	3.770	4.585	4.508	4.439	4.342	4.835	4.760	4.431	3.873	3.928	3.806	3.848	3.721
812930	3.607	4.218	3.681	3.632	3.770	4.585	4.508	4.439	4.342	4.835	4.760	4.431	3.873	3.928	3.806	3.848	3.721
813	93.616	106.956	98.463	97.377	91.544	100.570	96.991	90.590	88.356	94.504	93.281	90.427	87.971	90.729	89.672	87.590	85.831
8132	64.056	73.083	61.419	69.750	62.691	71.302	66.245	57.317	55.723	69.743	58.781	61.899	57.194	58.222	49.771	54.352	53.115
81321	64.056	73.083	61.419	69.750	62.691	71.302	66.245	57.317	55.723	69.743	58.781	61.899	57.194	58.222	49.771	54.352	53.115
813211	47.449	60.277	50.862	60.115	53.220	60.442	58.817	45.798	45.255	57.211	50.162	52.867	49.046	46.814	42.359	46.722	46.470
813212	7.995	5.709	4.817	5.694	5.041	5.725	5.571	4.338	3.594	5.072	3.695	4.181	3.431	4.457	3.107	3.634	3.167
813219	6.011	7.528	6.352	7.507	6.646	7.548	7.345	5.719	5.638	6.513	5.082	5.169	4.948	5.669	4.359	4.446	4.256
8133	6.244	7.085	6.387	6.336	6.395	6.740	6.349	6.141	6.156	5.664	5.350	5.126	5.224	5.208	5.552	5.523	5.520
81331	6.244	7.085	6.387	6.336	6.395	6.740	6.349	6.141	6.156	5.664	5.350	5.126	5.224	5.208	5.552	5.523	5.520
813319	3.913	4.449	4.110	4.133	4.168	4.276	4.013	3.874	3.908	3.604	3.373	3.219	3.328	3.265	3.611	3.591	3.583
8134	6.417	7.183	8.044	7.009	6.511	6.503	7.983	7.034	6.573	6.316	7.683	7.156	6.712	6.584	7.706	7.403	6.901
81341	6.417	7.183	8.044	7.009	6.511	6.503	7.983	7.034	6.573	6.316	7.683	7.156	6.712	6.584	7.706	7.403	6.901
813410	6.417	7.183	8.044	7.009	6.511	6.503	7.983	7.034	6.573	6.316	7.683	7.156	6.712	6.584	7.706	7.403	6.901
8139	23.576	26.996	24.666	23.923	22.380	25.205	23.295	22.462	21.686	23.335	23.684	22.534	22.070	23.197	22.667	21.175	20.927
81391	14.514	14.414	13.340	13.357	13.103	14.659	12.844	12.778	12.388	13.211	12.872	13.067	13.002	14.028	12.993	12.323	12.285
813910	14.514	14.414	13.340	13.357	13.103	14.659	12.844	12.778	12.388	13.211	12.872	13.067	13.002	14.028	12.993	12.323	12.285
81392	5.946	8.546	7.909	7.920	7.769	8.692	7.615	6.871	6.662	7.191	6.498	6.596	6.564	7.933	7.347	6.191	6.172
813920	5.946	8.546	7.909	7.920	7.769	8.692	7.615	6.871	6.662	7.191	6.498	6.596	6.564	7.933	7.347	6.191	6.172

Appendix C. Metropolitan Statistical Areas

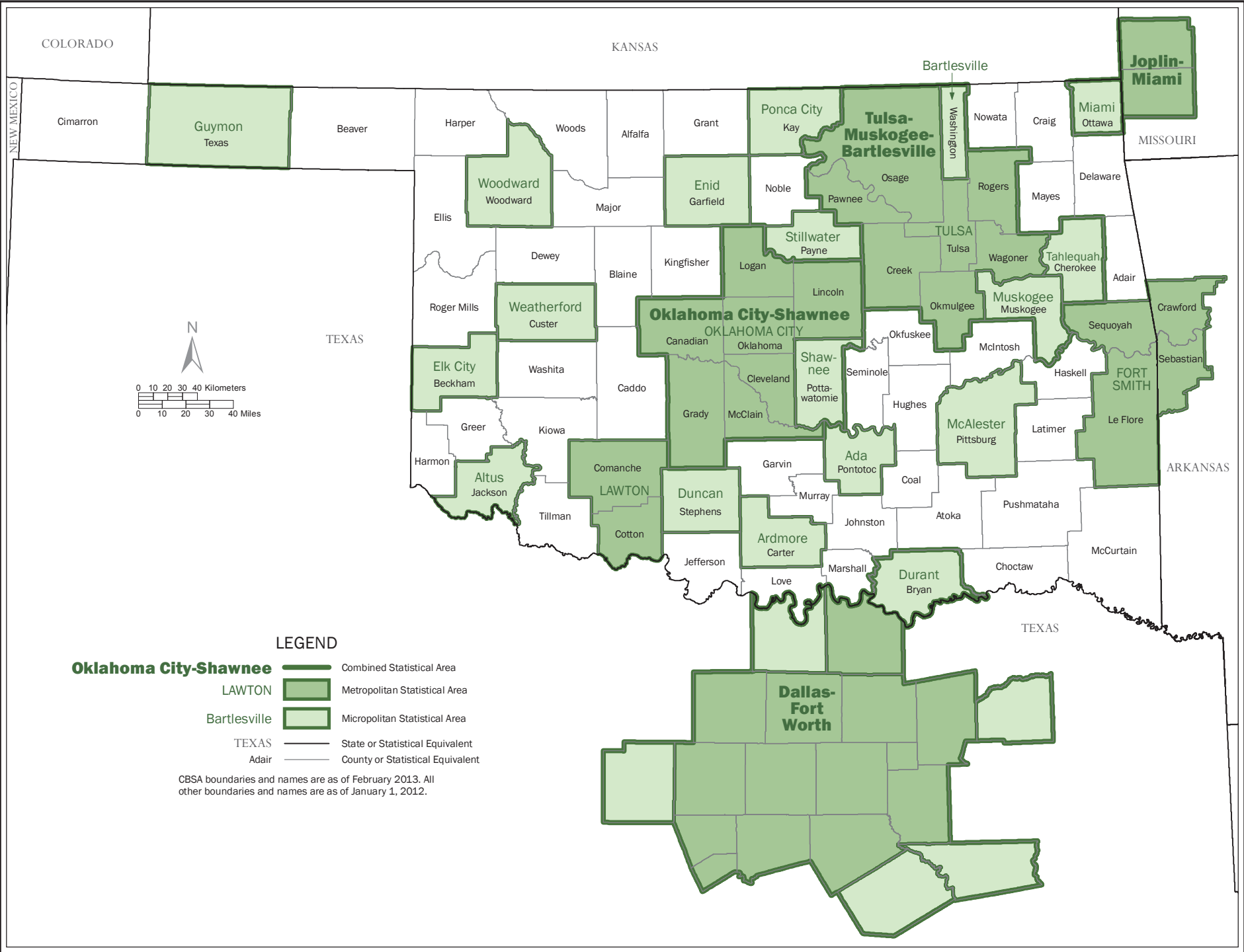
According to the U.S. Census Bureau, "Metropolitan and micropolitan statistical areas (metro and micro areas) are geographic entities delineated by the Office of Management and Budget (OMB) for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics. The term "Core Based Statistical Area" (CBSA) is a collective term for both metro and micro areas. A metro area contains a core urban area of 50,000 or more population, and a micro area contains an urban core of at least 10,000 (but less than 50,000) population. Each metro or micro area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core."⁵

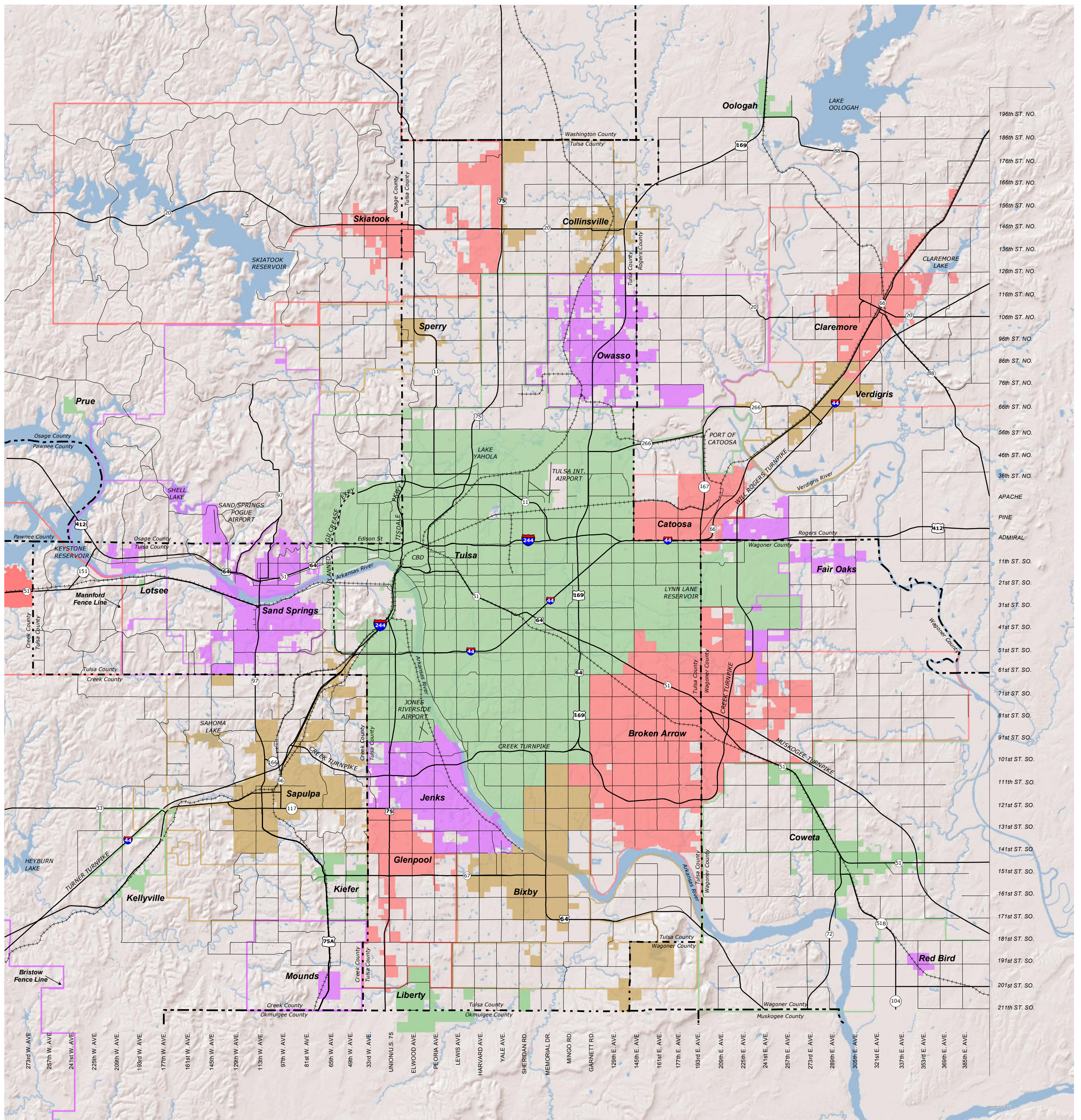
"A metropolitan or micropolitan statistical area's geographic composition, or list of geographic components at a particular point in time, is referred to as its "delineation." Metropolitan and micropolitan statistical areas are delineated by the U.S. Office of Management and Budget (OMB) and are the result of the application of published standards to Census Bureau data. The standards for delineating the areas are reviewed and revised once every ten years, prior to each decennial census. Generally, the areas are delineated using the most recent set of standards following each decennial census. Between censuses, the delineations are updated to reflect Census Bureau population estimates. Areas based on the 2010 standards and Census Bureau data were delineated in February of 2013, and updated in July of 2015."⁶

Per most recent Office of Management and Budget (OMB) bulletin, the Tulsa MSA includes: the principal city of Tulsa, Creek County, Okmulgee County, Osage County, Pawnee County, Rogers County, Tulsa County, and, Wagoner County. According the 2010 census, Tulsa MSA had a population 937,478 (which is estimated to be 981,005 in 2015; of which 399,682 reside in the City of Tulsa). The City of Tulsa (according to the attached map from the City) spans three counties: Tulsa, Osage and Wagoneer. But based on tax data, the Tulsa County part of the city has generated over 90% of all sales/use taxes. The attached maps show the Tulsa MSA limits as well as the City of Tulsa limits.

⁵ <https://www.census.gov/population/metro/>

⁶ <https://www.census.gov/population/metro/data/metrodef.html>





METROPOLITAN TULSA AREA CORPORATE LIMITS

TERRITORIAL AND JURISDICTIONAL LIMITS
2014

NOTE:

THIS MAP IS UPDATED ANNUALLY AND CHANGES MAY OCCUR AFTER THE DATE OF PUBLICATION. THEREFORE, AREAS IN QUESTION SHOULD BE VERIFIED AT THE INCOG OFFICE OR AT THE RESPECTIVE MUNICIPALITY.

THIS MAP SHOULD BE USED FOR GENERAL REFERENCE PURPOSE ONLY. SOME FEATURES HAVE BEEN GRAPHICALLY ENHANCED FOR CLARITY PURPOSES.



PREPARED BY INCOG
May 2014

Biographical Information

Professor Ali Nejadmalayeri, Ph.D., CFA, or as students call him, “Dr. N”, is an Associate Professor of Finance and the Jay and Fayenelle Helm Professor in Business at the Spears School of Business of the Oklahoma State University. He is currently the Finance Department’s Ph.D. program director. He teaches undergraduate and graduate (MBA and doctoral) courses about portfolio management, risk management, investment theory, and corporate finance. He has coached OSU’s trading team to the Rotman’s International Trading Competition in Canada where the team placed first in the sales and trading heat in 2008. He was previously the finance area coordinator and the faculty advisor to a student-managed fund at the University of Nevada-Reno.



Dr. N has published in leading finance and economics journals, including *The Journal of Business*, *The Journal of Banking and Finance*, *The Journal of Corporate Finance*, *The Journal of Real Estate Finance and Economics*, and *The Journal of the Academy of Marketing Science*. His published research deals with topics such as the effect of corporate taxation on bond yields, the impact of macroeconomics (e.g., monetary policy, Sarbanes-Oxley Act) and microeconomics (e.g., corporate advertising) on corporate bond prices, the impact of interest rate movements on corporate decisions, and a variety of other questions that investigate the intersection of capital markets and corporate finance. More recently, he has examined how the macroeconomy (e.g., housing prices) and the public policy (e.g., GASB rules) affect municipal bonds prices. His research has been recognized with numerous awards and accolades, including the 2016 OSU-Tulsa President’s Researcher of the Year Award, the Spears School Poole Research Award in 2012, 2014, and 2016; the Nevada Alpha Chapter of BETA GAMMA SIGMA 2003 Researcher of the Year Award; and the McGraw-Hill/Irwin Distinguished Paper Award MBAA in 2005 and 2013.

Dr N holds a Bachelor of Science degree in Electrical Engineering from the University of Tehran, an M.B.A. degree from Texas A&M University and a Ph.D. in Finance from the University of Arizona. Prior to joining academia, he had worked in the Oil and Gas industry, and since, has consulted with major global banks such as Barclays Global and investment management companies.