

# Wichita in Megapolitan America: An Analysis of Wichita's Potential Export Markets

2015 Report

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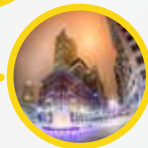
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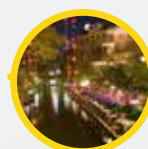
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# Introduction & Background



Historically, cities have been thought of as the centers of commerce for local regions, and while this is still true in the modern economy, intercity trade has become more important than ever before. The metropolitan area, centered on a single city and including its outlying regions, has been the traditional method of designating interconnected urban areas. However, as interconnectivity between nearby metropolitan areas increases, continuing to focus on commerce within the traditional metropolitan area designations would miss this important and growing segment of the local economy.

In their book *Megapolitan America*, Arthur Nelson and Robert Lang identify 23 “megapolitan” regions in the United States, which are groups of nearby metropolitan areas with significant economic ties to each other, including substantial trade and worker commuting between the metropolitan areas in each megapolitan region. The authors identify these megapolitan regions as the new economic core of the American economy and predict that megapolitan areas will likely be the drivers of economic growth in the near future for the American economy. In addition, areas outside the megapolitan regions risk isolation and the inability to share in that economic growth if they fail to integrate into the economic networks of the megapolitan regions.

By Nelson and Lang’s methodology, Wichita is not currently in any of the megapolitan regions,

due to its relative geographic isolation from other metropolitan areas. Extending slightly beyond their criteria for megapolitan region geography, there are a number of metropolitan and megapolitan regions within 500 miles of Wichita. Wichita has the potential to export more to each of these regions, and in doing so, to become more integrated with the nearby megapolitan regions. There are four nearby megapolitan regions, one centered on Denver, Colo., and three centered on major cities in Texas.

This report focuses on Wichita’s potential to export goods to supply industries that are highly concentrated in nearby metropolitan and megapolitan areas. Using data on industry inputs and outputs, we identified goods-producing industries that are highly concentrated in Wichita and their potential to serve as inputs to highly concentrated industries in nearby metropolitan areas. We found a number of exporting opportunities to each nearby metropolitan area in a number of industries.



This project investigated the potential export markets for intermediate goods produced by Wichita's manufacturing industry in eight major nearby metropolitan areas (MSAs): Denver, Kansas City, St. Louis, Oklahoma City, Tulsa, Dallas, Houston, and San Antonio. To examine this question, the 2012 Census County Business Patterns dataset provided employment and location quotient (LQ) data for the metropolitan areas. A location quotient is a measure of how concentrated an industry is in a particular region relative to the nation as a whole. The location quotient for a region takes the proportion of the workforce in that region, working in that industry, and divides it by the proportion of the workforce nationwide working in that industry. A location quotient larger than one indicates that the industry is more concentrated in the region relative to the nation, while a location quotient less than one indicates that the industry is less concentrated in the region relative to the nation.

The highest location quotients among detailed NAICS code industries are identified for each major nearby metropolitan area industries with more than 500 employees. The high location quotient industries are identified because they represent industries that are heavily concentrated in these metropolitan areas, and could potentially represent a concentrated cluster needing exports.

To look at the relationships between the high location quotient industries in nearby MSAs and Wichita's industries, the Bureau of Economic

Analysis (BEA) Input – Output Accounts data were used. The BEA dataset details the relationship between each input industry and each output industry, and summarizes this by providing, for each output industry, the share of the output that was spent on purchasing goods or services from each input industry, as well as the value added by the output industry itself. This identifies the Wichita industries providing inputs to high location quotient industries in the nearby MSAs. This study focuses on industries that Wichita currently specializes in, so the input industries being focused on are those for which Wichita has a location quotient of 1.2 or higher, which are the manufacturing industries with above average concentrations.

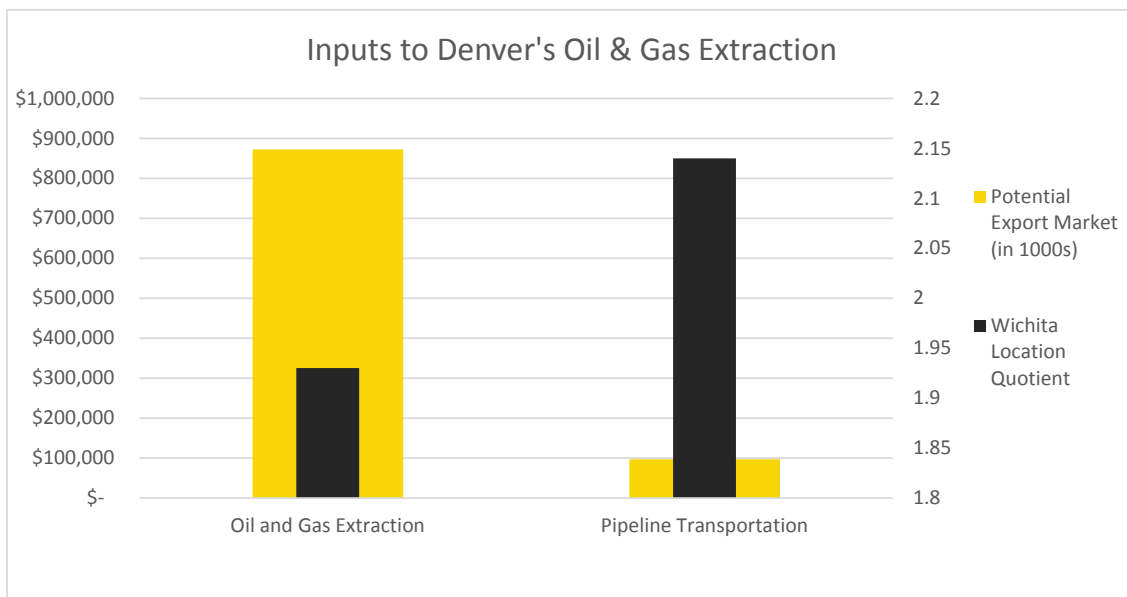
To determine the size of the potential export market, local sales for each output industry are estimated based on national data from the 2007 Economic Census. This is achieved by calculating the national sales per employee, and using that in conjunction with the County Business Patterns employee data by industry, and by MSA, to find the approximate size of local sales. This number is only an estimate, and the true value could vary from it if the employees in a specific MSA were more or less productive in terms of total sales than the industry's average.



***“...the potential export market is approximately \$872 million for oil and gas extraction”***

Denver’s high-LQ industries are largely focused in the service sector, such as air transportation and computer related services, with a couple of large exceptions. These service industries do not require large inputs from manufacturing production, so they do not require any inputs produced by Wichita’s industries.

Denver’s two major high-LQ non-service sectors are oil and gas extraction and concrete pipe manufacturing industries. The larger of the two is the oil and gas extraction sector, which has an LQ of 3.1 and 2007 estimated sales of more than \$5.8 billion. Wichita has two industries that could export to Denver’s oil and gas extraction industry; oil and gas extraction has an input share of 15 percent, and the pipeline transportation industry has an input share of 1.7 percent. This implies that the size of the potential export market is approximately \$872 million for oil and gas extraction and \$97 million for pipeline transportation. The major companies in Denver’s oil and gas extraction sector are Great Western Oil & Gas, McElvain Energy Inc., and Sanjel USA Inc.





## Inputs to Denver's Oil & Gas Extraction

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Oil and Gas Extraction	1.93	15.0%	\$ 872,147
Pipeline Transportation	2.14	1.7%	\$ 97,168

The concrete pipe manufacturing sector is the smaller of the two sectors, with an LQ of 2.6 and estimated 2007 sales of \$142 million. Wichita has one concentrated industry that serves as an input to the concrete pipe manufacturing industry, and that is the coating and engraving sector, with a 0.9 percent input share. The potential export market for Wichita's coating and engraving manufacturing sector is \$1.3 million. The largest companies in Denver's concrete pipe manufacturing industry are Basalite Concrete Products, Pavestone Co., and Plum Creek Structures.

## Inputs to Denver's Concrete Pipe Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	0.9%	\$ 1,320



***“...a potential export market of \$57.8 million for Wichita’s coating and engraving sector.”***

Kansas City’s high LQ industries are generally service sectors and nondurable manufacturing, neither of which requires many inputs from Wichita’s manufacturing sectors. There are, however, a couple of sectors that have potential export markets for Wichita’s manufacturing.

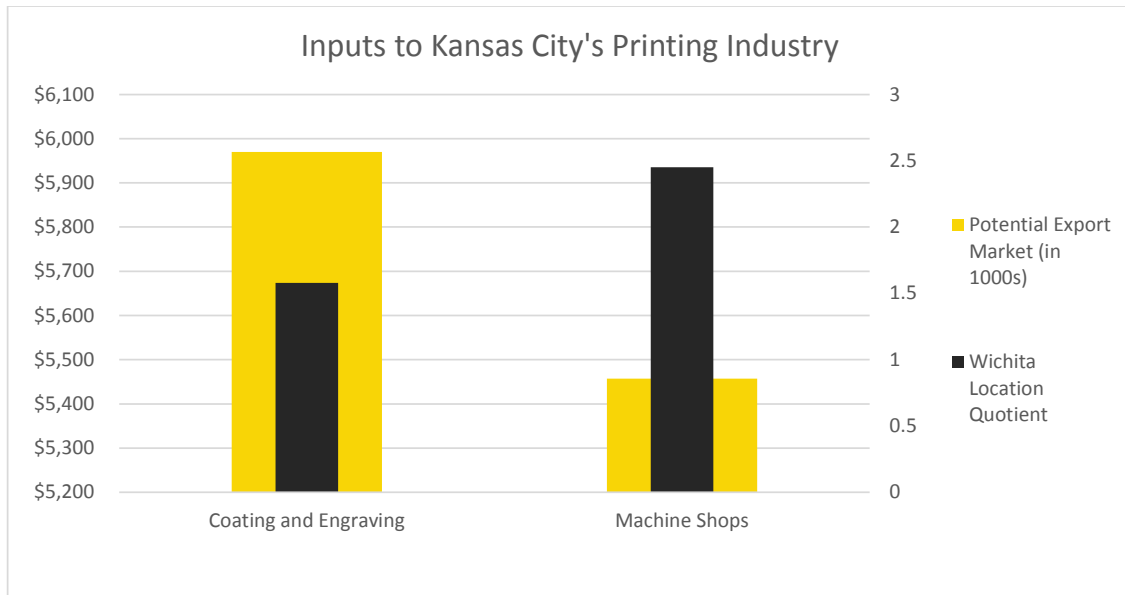
Kansas City’s highest-LQ industry is the wireless telecommunication carriers sector, with a location quotient of 7.2. While wireless telecoms do not rely heavily on manufacturing, the coating and engraving manufacturing industry has an input share of 0.7 percent, creating a potential export market of \$57.8 million for Wichita’s coating and engraving sector. The major companies in the wireless telecommunication sector in Kansas City are Sprint and Cellular Sales.

### Inputs to Kansas City's Wired Telecommunication Carriers

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	0.7%	\$ 57,759

Kansas City’s other high-LQ industry that has inputs that could be provided by Wichita is the printing industry, with an LQ of 1.86 and sales of more than \$1 billion. The coating and engraving sector has an input share of 0.6 percent in the production of the printing industry, leading to an export market of \$6 million. The machine shops sector has an input share of 0.5 percent, for an export market of \$5.5 million. The major companies in Kansas City’s printing industry are Gill Studios Inc., Hallmark Cards, and R. R. Donnelley.





Inputs to Kansas City's Printing Industry			
Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	0.6%	\$ 5,970
Machine Shops	2.45	0.5%	\$ 5,457



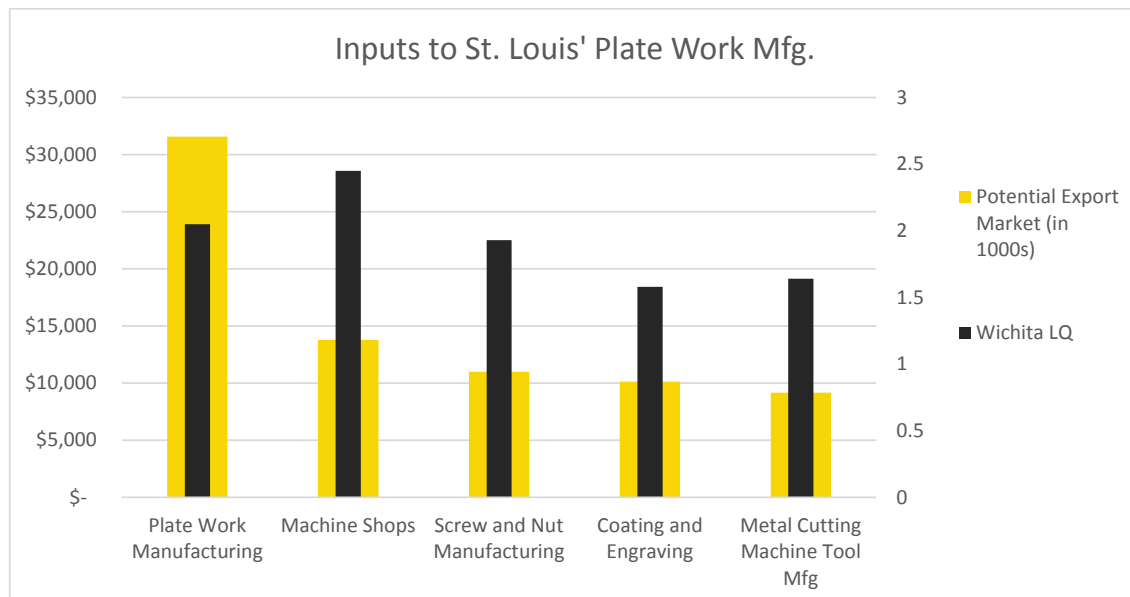
***“Plate work manufacturing requires five different inputs that could be supplied by Wichita.”***

St. Louis’ high LQ industries are made up largely of nondurable and durable manufacturing and tend to require a number of inputs that could be supplied by Wichita’s manufacturing sectors. The St. Louis industry with the biggest opportunities for Wichita manufacturing is the plate work manufacturing industry, with an LQ of 2.1 and local sales of \$778.4 million. Plate work manufacturing requires five different inputs that could be supplied by Wichita. The first potential input is plate work manufacturing, with an input share of 4.1 percent and an export market of \$31.6 million. Another input for plate work is the machine shop sector, which has a 1.8 percent input share, creating a potential \$13.8 million export market.

Plate work also requires smaller amounts of the screw and nut manufacturing, coating and engraving, and metal cutting machine tool manufacturing sectors, with input shares of 1.4 percent, 1.3 percent, and 1.2 percent, respectively. This leads to potential export markets between \$9 and \$11 million for each of these Wichita manufacturing sectors. The major companies in the plate work manufacturing sector in St. Louis are Hillsdale Fabricators, Canam Steele Corp, and Trinity Products Inc.

### Inputs to St. Louis' Plate Work Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Plate Work Manufacturing	2.05	4.1%	\$ 31,567
Machine Shops	2.45	1.8%	\$ 13,792
Screw and Nut Manufacturing	1.93	1.4%	\$ 11,005
Coating and Engraving	1.58	1.3%	\$ 10,129
Metal Cutting Machine Tool Mfg.	1.64	1.2%	\$ 9,183



The largest of these is St. Louis' soap and cleaning compound manufacturing sector, with an LQ of 5.3 and local sales of \$2.3 billion. The input share of the coating and engraving sector is 0.6 percent, leading to a potential export market of \$13.8 million for Wichita. The major companies in St. Louis' coating and engraving sector are Dial and Procter & Gamble Co.

Inputs to St. Louis' Soap and Cleaning Compound Manufacturing			
Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	0.6%	\$ 13,800

St. Louis also has a large soft drink and ice manufacturing sector, with sales of more than \$900 million and an LQ of 2.1. Wichita could potentially supply this sector with its coating and engraving sector, which has a 1 percent input share and an export market of \$8.9 million. The largest corporation in St. Louis' soft drink manufacturing sector is the Coca-Cola Bottling Co.

Inputs to St. Louis' Soft Drink and Ice Manufacturing			
Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	1.0%	\$ 8,942

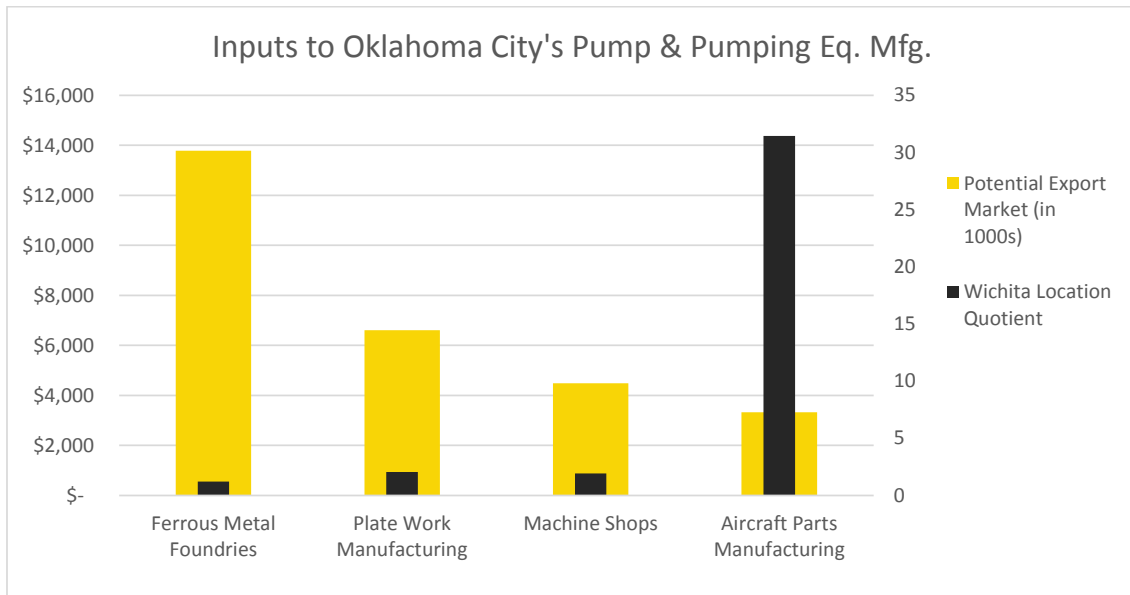
The last St. Louis industry with opportunities for Wichita exports is the rubber product manufacturing sector. The rubber product manufacturing sector in St. Louis has an LQ of 1.9 and sales of \$266.4 million. The input share of the coating and engraving sector is 1.3 percent, creating a potential export market of \$3.8 million. The major companies in St. Louis' rubber product manufacturing industry are Hydro-Dredge Accessory Co, Goldstein Schwartz Inc., and Zone Reed Industries.

Inputs to St Louis' Rubber Product Manufacturing			
Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	1.3%	\$ 3,812



***“The ferrous metal foundries sector... potential export market to be \$13.8 million.”***

Oklahoma City has high LQ industries focusing on manufacturing and natural resource extraction. The pump and pumping equipment manufacturing sector is heavily concentrated in Oklahoma City, with a location quotient of 8.2 and local sales of \$374 million. There are four input sectors that Wichita could supply, with the largest potential export market in the ferrous metal foundries sector. The ferrous metal foundries sector has an input share of 3.7 percent, causing the potential export market to be \$13.8 million. The plate work manufacturing sector has an input share of 1.8 percent, with a potential export market of \$6.6 million. With an input share of 1.2 percent, the machine shop sector has a potential export market of \$4.5 million. The last potential export opportunity for Wichita is the aircraft parts manufacturing sector, which has an input share of 0.9 percent and an export market of \$3.3 million. Kimray Inc. is the largest Oklahoma City company in the pump and pumping equipment manufacturing sector.



## Inputs to Oklahoma City's Pump and Pumping Equipment Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Ferrous Metal Foundries	1.21	3.7%	\$ 13,782
Plate Work Manufacturing	2.05	1.8%	\$ 6,605
Machine Shops	1.93	1.2%	\$ 4,483
Aircraft Parts Manufacturing	31.46	0.9%	\$ 3,320

The largest and highest LQ industry in Oklahoma City is the oil and gas extraction sector, with \$12.8 billion in sales and a location quotient of 14.9. The two inputs that Wichita could potentially supply would be the pipeline transportation and oil and gas extraction sectors. The pipeline transportation sector has an input share of 1.7 percent with a potential export market of \$205.9 million, and the oil and gas extraction sector has an input share of 15 percent and a potential export market of \$1.8 billion. Oklahoma City's largest companies in the oil and gas extraction sector are Access Midstream and Chesapeake Energy.

## Inputs to Oklahoma City's Oil and Gas Extraction

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Oil and Gas Extraction	1.94	15.0%	\$ 1,848,278
Pipeline Transportation	2.14	1.7%	\$ 205,921

Another Oklahoma City industry with export opportunities for Wichita is the mining and oil field machinery manufacturing sector. This manufacturing sector has an LQ of 3.9 and sales of \$984 million. The input share of the coating and engraving sector into this manufacturing sector is 1.1 percent, leading to a potential export market of \$3.5 million. The largest companies in Oklahoma City's mining and oil field machinery manufacturing are KF Industries and Service King Mfg. Inc.

## Inputs to Oklahoma City's Mining and Oil Field Machinery Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	1.1%	\$ 3,470

In addition, Oklahoma City has an LQ of 2.7 and local sales of \$1.6 billion for its wireless telecommunication carriers sector. Wichita's potential export opportunity to this sector is from the coating and engraving sector, with an input share of 0.7 percent and an export market of \$11.8 million. The largest wireless telecom firms in Oklahoma City are Verizon Wireless and International Crystal Manufacturing.

## Inputs to Oklahoma City's Wireless Telecommunication Carriers

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	0.7%	\$ 11,821

The last highly concentrated Oklahoma City sector with an export opportunity for Wichita manufacturing is the other miscellaneous manufacturing. This sector includes all types of manufacturing not otherwise classified by the NAICS industry code system. The sector has an LQ of 2.5 and sales of \$242 million in Oklahoma City. With an input share of 2.6 percent, the machine shop sector could potentially export \$6.4 million to Oklahoma City's miscellaneous manufacturing sector. The largest companies in this Oklahoma City sector are Factory Direct Inc., Horizon Fleet Svc., and Decorative Arts Inc.

## Inputs to Oklahoma City's Miscellaneous Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	2.6%	\$ 6,367





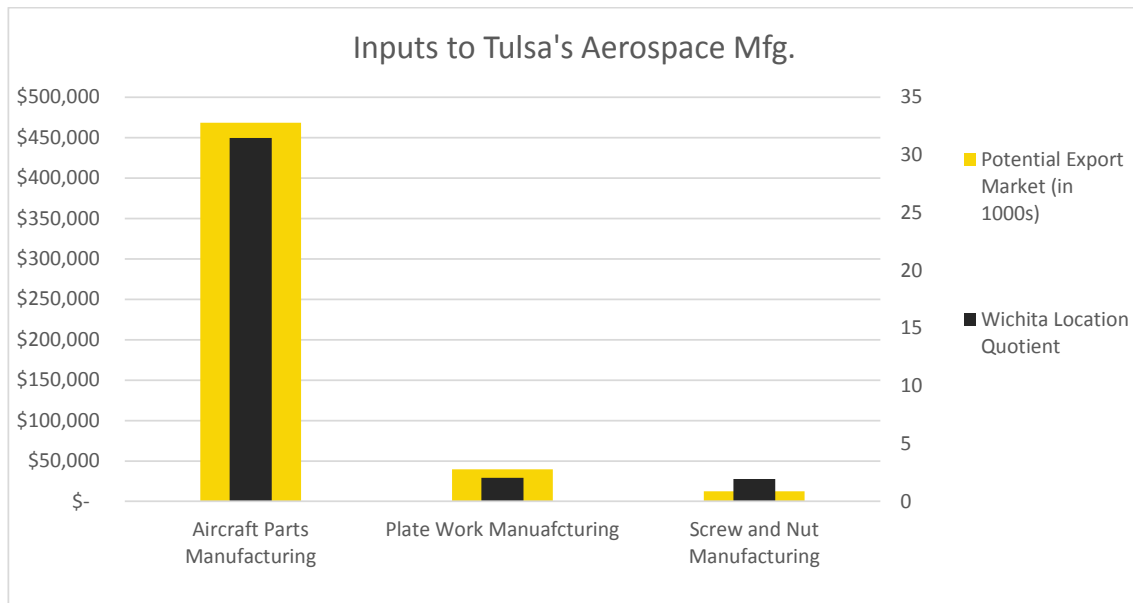
***“The largest of these sectors is oil and gas extraction, which has an LQ of 11.7 and sales of \$7.7 billion.”***

The highly concentrated industries in Tulsa are largely focused in durable goods manufacturing and oil and gas production, leading to a large number of potential opportunities for Wichita manufacturing firms to supply Tulsa’s concentrated industries. The largest of these sectors is oil and gas extraction, which has an LQ of 11.7 and sales of \$7.7 billion. Wichita can supply this sector with its oil and gas extraction and pipeline transportation sectors. The oil and gas extraction sector, with an input share of 15 percent, could have a potential export market of \$1.2 billion. The pipeline transportation sector has an input share of 1.7 percent, which creates a \$130 million potential export market. Apache Corp., Chaparral Energy LLC, and Flint Energy Svc. are the major companies in Tulsa’s oil and gas extraction sector.

### Inputs to Tulsa's Oil and Gas Extraction

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Oil and Gas Extraction	1.94	15.0%	\$ 1,168,299
Pipeline Transportation	2.14	1.7%	\$ 130,163

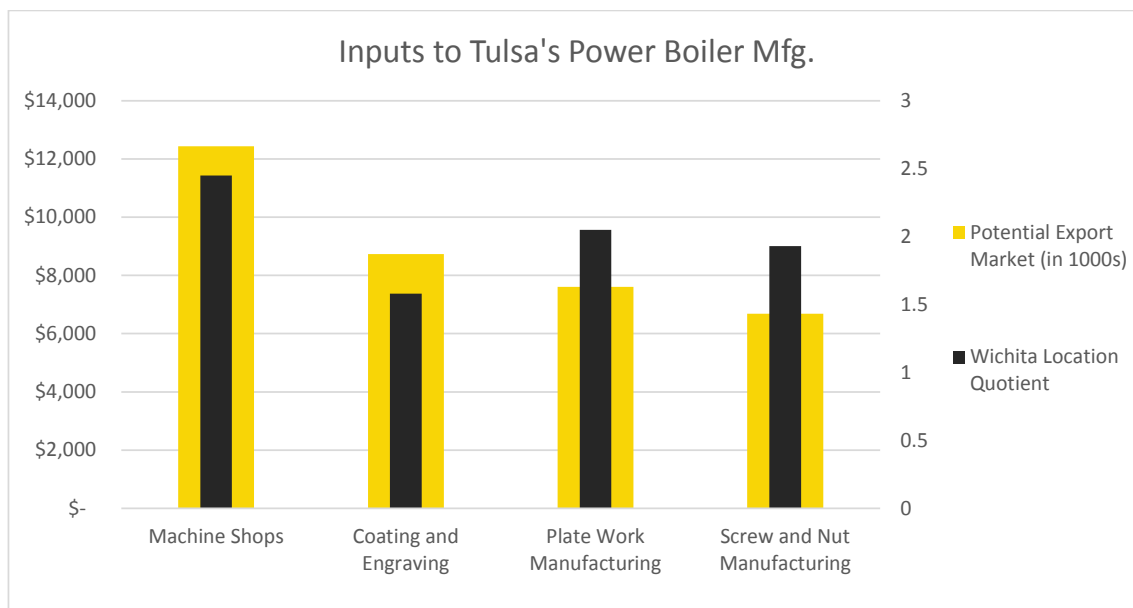
The next largest potential export markets are in Tulsa’s aerospace manufacturing sector. The sector has an LQ of 3.3 and sales of \$1.7 billion. Plate work manufacturing, screw and nut manufacturing, and aircraft parts manufacturing can all potentially be supplied by Wichita’s industries. With an input share of 2.9 percent, plate work manufacturing could potentially export \$39.8 million in sales to Tulsa’s aerospace manufacturing. Screw and nut manufacturing could potentially export \$12.4 million to this market, based on an input share of 0.9 percent. The aircraft parts manufacturing sector has an input share of 34.4 percent, for a potential export market of \$468 million. The largest aerospace manufacturing firms in Tulsa are Accurus Aerospace, Helicomb International, and Precision Components.



## Inputs to Tulsa's Aerospace Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Aircraft Parts Manufacturing	31.46	34.4%	\$ 468,353
Plate Work Manufacturing	2.05	2.9%	\$ 39,804
Screw and Nut Manufacturing	1.93	0.9%	\$ 12,403

The Tulsa sector with the highest location quotient is power boiler manufacturing, with a location quotient of 29.9 and sales of \$577 million. The primary potential exports from Wichita would be goods from the machine shop, coating and engraving, plate work, and screw and nut manufacturing sectors. The machine shop sector has an input share of 2.2 percent into the power boiler manufacturing sector, creating a potential export market of \$12 million. The coating and engraving, plate work, and screw and nut manufacturing have respective input shares of 1.5, 1.3, and 1.2 percent. This creates the potential for an \$8.7 million export market for coating and engraving, a \$7.6 million export market for plate work manufacturing, and a \$6.7 million export market for screw and nut manufacturing. The major companies in the power boiler manufacturing sector in Tulsa are Amercool and Chart Energy & Chemicals Inc.



Inputs to Tulsa's Power Boiler Manufacturing			
Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	2.2%	\$ 12,437
Coating and Engraving	1.58	1.5%	\$ 8,737
Plate Work Manufacturing	2.05	1.3%	\$ 7,606
Screw and Nut Manufacturing	1.93	1.2%	\$ 6,681

The mining and oil field machinery manufacturing sector in Tulsa also has the potential for Wichita exports. The mining and oil field machinery sector has an LQ of 7.7 and sales of \$341 million. With an input share of 2.2 percent, the machine shop sector could have a potential \$10.9 million export market. The major companies in the Tulsa's mining and oil field machinery manufacturing sector are Baker Hughes and Natural Gas Svc. Group Inc.

Inputs to Tulsa's Mining and Oil Field Machinery Manufacturing			
Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	2.2%	\$ 10,854
Coating and Engraving	1.58	1.1%	\$ 5,585

The other industrial machinery manufacturing sector is highly concentrated in Tulsa, with an LQ of 14.6 and sales of \$354 million. The other industrial machinery manufacturing sector includes all industrial manufacturing that is not included in any other more specific NAICS code. With an input share of 2.9 percent, the machine shop sector could have a potential \$10.1 million export market to Tulsa's other industrial machinery manufacturing sector. The plate work sector has an input share of 1.6 percent, which makes for a potential export market of \$5.7 million. Additionally, the screw and nut manufacturing sector has an input share of 1 percent, creating a potential export market of \$3.7 million.

## Inputs to Tulsa's Other Industrial Machinery Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	2.9%	\$ 10,125
Plate Work Manufacturing	2.05	1.6%	\$ 5,689
Screw and Nut Manufacturing	1.93	1.0%	\$ 3,688

The pump and pumping equipment manufacturing sector has an LQ of 14 and sales of \$514 million in Tulsa. With an input share of 1.8 percent, the plate work manufacturing sector has a potential export market of \$9.1 million to the pump manufacturing sector. There is also export potential for the screw and nut manufacturing and aerospace manufacturing sectors, with input shares of 1.5 and 0.5 percent creating potential export markets of \$7.5 million and \$4.6 million, respectively.

## Inputs to Tulsa's Pump and Pumping Equipment Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Plate Work Manufacturing	2.05	1.8%	\$ 9,071
Screw and Nut Manufacturing	1.93	1.5%	\$ 7,500
Aerospace Manufacturing	31.46	0.5%	\$ 4,560

Tulsa's steel product manufacturing sector has a location quotient of 5.3 and \$341 million in sales, creating a potential export market of \$2 million for Wichita's machine shop sector, which has a 0.6 percent input share for the sector. Tmk Ipsco Tubulars Inc. is the largest company in Tulsa's steel product manufacturing sector, with almost \$90 million in sales.

## Inputs to Tulsa's Steel Product Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	0.6%	\$ 2,039

With an LQ of 5.4 and sales of \$341 million, glass and glass product manufacturing is the final Tulsa industry with the potential for Wichita exports. The two potential export markets for Wichita are in the machine shop and coating and engraving manufacturing sectors, with export markets of \$2.2 and \$1.9 million, respectively. The major Tulsa companies in the glass and glass product manufacturing sector are Ardagh Group and Zeladyne.

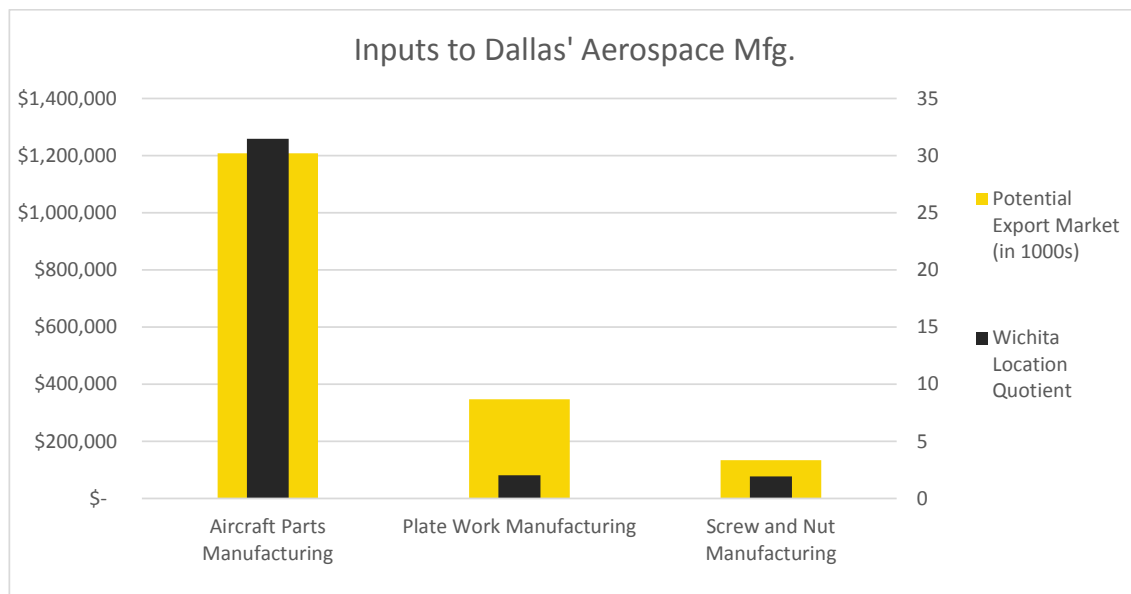
## Inputs to Tulsa's Glass and Glass Product Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Coating and Engraving	1.58	0.6%	\$ 2,216
Machine Shops	2.45	0.6%	\$ 1,964



***“Aerospace manufacturing is a major export opportunity...local sales of \$11.5 billion in Dallas.”***

Dallas’ heavily concentrated industries include a wide variety of nondurable and durable manufacturing, as well as resource extraction and services. The two largest opportunities for Wichita firms are in supplying Dallas’ oil and gas extraction and aerospace manufacturing sectors. Aerospace manufacturing is a major export opportunity for Wichita firms, with a location quotient of 3.3 and local sales of \$11.5 billion in Dallas. The biggest potential suppliers are aircraft parts manufacturing firms, with an input share of 10.5 percent, creating an export market of \$1.2 billion. Aerospace manufacturing also requires an input share of 3 percent from the plate work manufacturing sector, generating a potential export market of \$347 million, and an input share of 1.2 percent from screw and nut manufacturing for a potential export market of \$135 million. Pratt & Whitney and CAE USA Inc. are among Dallas’ largest aerospace manufacturing firms.



## Inputs to Dallas' Aerospace Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Aircraft Parts Manufacturing	31.46	10.5%	\$ 1,207,821
Plate Work Manufacturing	2.05	3.0%	\$ 347,445
Screw and Nut Manufacturing	1.93	1.2%	\$ 134,532

Dallas' oil and gas extraction sector has a location quotient of 3.4 and sales of \$15.6 billion. The oil and gas extraction sector has an input share of 15 percent into the production of Dallas' oil and gas extraction, which would create a potential export market of \$2.3 billion. Additionally, the pipeline transportation sector has a 1.7 percent input share into the oil and gas extraction market, creating a \$261 million potential export market. Dallas' largest firms in the oil and gas extraction sector include Encana Oil & Gas, Keystone Inc., and Roc Service Co.

## Inputs to Dallas' Oil and Gas Extraction

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Oil and Gas Extraction	1.94	15.0%	\$ 2,342,461
Pipeline Transportation	2.14	1.7%	\$ 260,979

The other, smaller export opportunity for Wichita's concentrated industries is in Dallas' ophthalmic goods manufacturing sector, which has a location quotient of 3.9 and \$477 million in sales. The input share of the machine shop sector into ophthalmic goods manufacturing is 0.5 percent, creating the potential for a \$2.6 million export market. The largest firms in Dallas' ophthalmic goods sector are Omega Optical and Alcon Laboratories.

## Inputs to Dallas' Ophthalmic Goods Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	0.5%	\$ 2,557





**“Oil and gas extraction has an input share of 66.4 percent and a potential export market of \$43.5 billion”**

Houston’s high-location-quotient industries are heavily concentrated in resource extraction and durable goods manufacturing, which opens many opportunities for Wichita manufacturing firms to supply them. The sector with the highest sales is Houston’s petroleum refinery sector, with sales of \$65.5 billion and a location quotient of 5.9. The key inputs that could potentially be supplied by Wichita firms are oil and gas extraction and pipeline transportation. Oil and gas extraction has an input share of 66.4 percent and a potential export market of \$43.5 billion, and pipeline transportation has an input share of 0.9 percent with a potential export market of \$615.3 million. Houston’s largest petroleum refinery firms include Phillips 66 Sweeny Refinery and Anadarko Petroleum Corp.

### Inputs to Houston's Petroleum Refineries

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Oil and Gas Extraction	1.94	66.4%	\$ 43,511,966
Pipeline Transportation	2.14	0.9%	\$ 615,336

Houston’s oil and gas extraction industry has \$27.7 billion in sales and a location quotient of 7. The largest input is the oil and gas extraction sector, which has an input share of 15 percent, leading to a potential export market of \$4.2 billion. The pipeline transportation sector is also a major input, with a 1.7 percent input share and a \$464 million potential export market. The largest firms in Houston’s oil and gas extraction industry are Phillips Petroleum Co. and Shell Deepwater Development Inc.

### Inputs to Houston's Oil and Gas Extraction

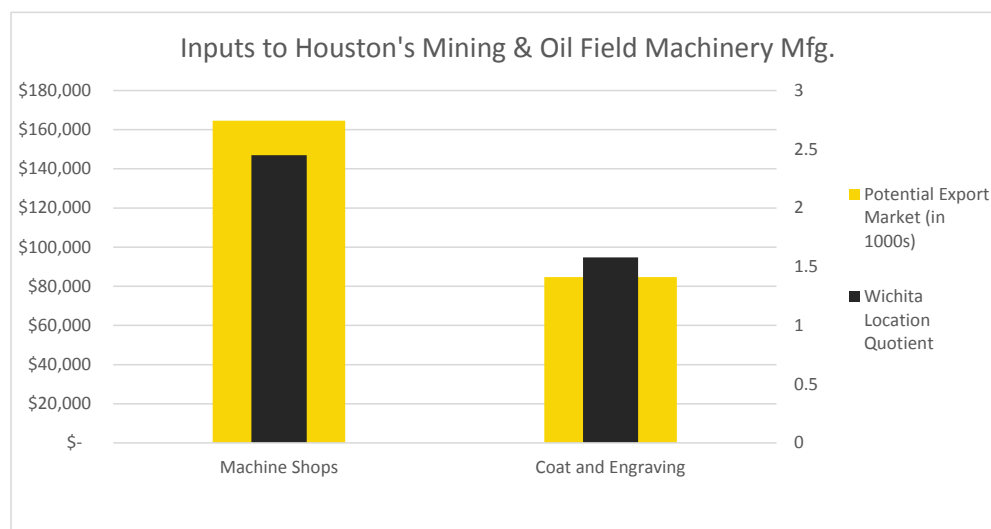
Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Oil and Gas Extraction	1.94	15.0%	\$ 4,162,959
Pipeline Transportation	2.14	1.7%	\$ 463,804

The pipeline transportation sector in Houston generates more than \$7.5 billion in sales a year, for a location quotient of 9.1. The potential inputs that Wichita could supply include the oil and gas extraction and the plate work manufacturing sectors. Oil and gas extraction has an input share of 15.5 percent, for a potential input market of \$892.7 million. Plate work manufacturing, with an input share of 3.3 percent, has a potential export market of \$191.9 million. Houston's largest pipeline transportation firms are Enterprise Products and Sea Robin Pipeline Co.

## Inputs to Houston's Pipeline Transportation

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Oil and Gas Extraction	1.94	15.5%	\$ 892,712
Plate Work Manufacturing	2.14	3.3%	\$ 191,881

The primary Houston manufacturing sector to which Wichita could export is the mining and oil field machinery manufacturing sector, which has a location quotient of 19.8 and local sales of \$7.6 billion. With an input share of 2.2 percent, the machine shop sector has a potential export market of \$164.6 million to Houston's mining and oil field machinery manufacturing sector. The coating and engraving sector's potential export market to this sector is \$84.7 million, due to its 1.1 percent input share. Major firms in Houston's mining and oil field machinery manufacturing sector include Flotation Technologies and Forum Energy Technologies.



## Inputs to Houston's Mining and Oil Field Machinery Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	2.2%	\$ 164,611
Coating and Engraving	1.58	1.1%	\$ 84,710

Another Houston manufacturing sector with the potential to receive Wichita exports is measuring and controlling device manufacturing. The measuring and controlling device manufacturing sector in Houston has sales of \$723.5 million and a 4.5 location quotient. With an input share of 2.9 percent, the screw and nut manufacturing sector could potentially export \$20.9 million to supply Houston's measuring and controlling device manufacturing sector. Additionally, the machine shop and architectural metal products manufacturing sectors have input shares of 1.7 and 1 percent and potentially export markets of \$12.6 and \$6.9 million, respectively. Geospace Technologies Corp. is the largest Houston measuring and controlling device manufacturer.

## Inputs to Houston's Measuring and Controlling Device Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Screw and Nut Manufacturing	1.93	2.9%	\$ 20,894
Machine Shops	2.45	1.7%	\$ 12,603
Architectural Metal Products Mfg.	1.63	1.0%	\$ 6,882

Air and gas compressor manufacturing in Houston has a location quotient of 4.2, and sales of \$623 million, making it another potential export opportunity for Wichita businesses. The plate work manufacturing sector has an input share of 2.2 percent, creating a \$13.5 million potential export market, and the screw and nut manufacturing sector has an input share of 1.4 percent, for an \$8.6 million export market. The largest firms in Houston in the air and gas compressor manufacturing sector are Dresser-Rand Co and Hoerbiger Service Inc.

## Inputs to Houston's Air and Gas Compressor Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Plate Work Manufacturing	2.05	2.2%	\$ 13,530
Screw and Nut Manufacturing	1.93	1.4%	\$ 8,567

Houston's fabricated pipe and pipe fitting manufacturing, with a location quotient of 8.2, has sales of \$1 billion. An input share of 1.1 percent for the machine shop sector has the potential for an \$11.6 million export market to the fabricated pipe manufacturing sector. The coating and engraving sector also has an input share of 0.8 percent, creating a \$7.9 million potential export market. Texas Pipe and Bocard Pipe Fabricators are the largest firms in Houston's fabricated pipe and pipe fitting manufacturing sector.

## Inputs to Houston's Pipe and Pipe Fitting Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	1.1%	\$ 11,638
Coating and Engraving	1.58	0.8%	\$ 7,948

The metal valve manufacturing sector in Houston has more than \$437,000 in sales and a location quotient of 5.2. The potential export market of the screw and nut manufacturing sector to Houston's metal valve manufacturing sector is \$7.7 million based on an input share of 1.8 percent. The machine shop sector has a 1.2 percent input share, creating an export market of \$5.2 million. The largest firms in Houston's metal valve manufacturing sector are Hoerbiger Service Inc. and Valvtechnologies Inc.

## Inputs to Houston's Metal Valve and Pipe Fitting Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Screw and Nut Manufacturing	1.93	1.8%	\$ 7,745
Machine Shops	2.45	1.2%	\$ 5,232



***“motor vehicle interior manufacturing sector has...\$325 million in sales”***

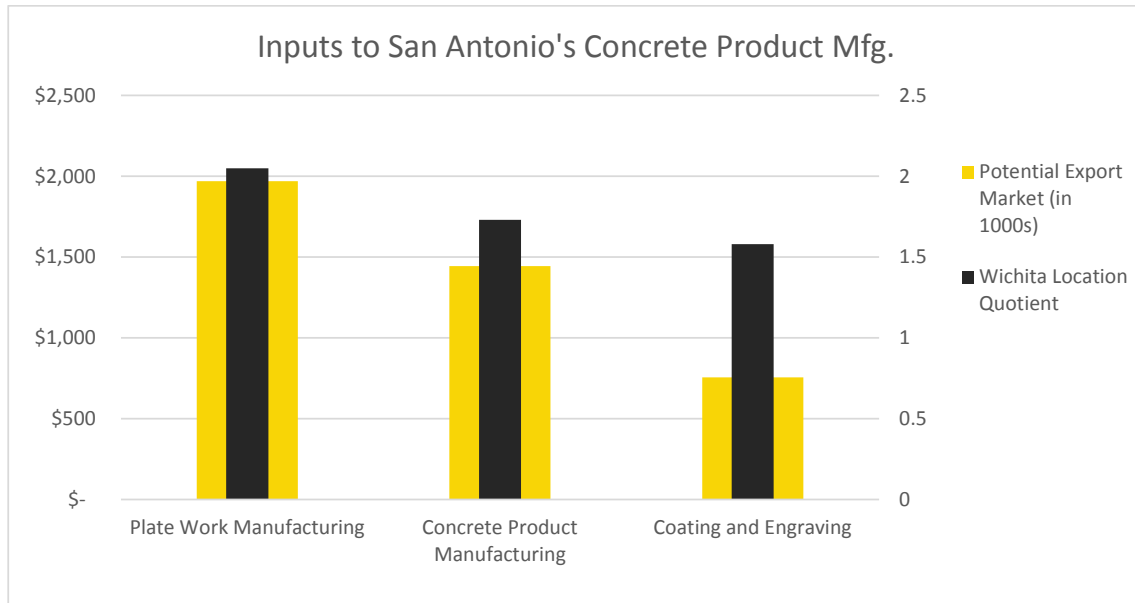
San Antonio’s highly concentrated industries are largely focused on support service sectors and light manufacturing. The motor vehicle interior manufacturing sector has the largest export potential for Wichita firms, with a location quotient of 3.1 and \$325 million in sales.

The machine shop sector has an input share of 1.8 percent for supplying the motor vehicle interior manufacturing sector, creating a potential export market of \$6 million. The largest firm in San Antonio’s motor vehicle interior manufacturing sector is T K Holdings.

### Inputs to San Antonio's Motor Vehicle Interior Manufacturing

Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Machine Shops	2.45	1.8%	\$ 5,968

The other export opportunity to San Antonio is in the concrete product manufacturing sector. Plate work manufacturing has an input share of 1.7 percent, creating an export market of \$2 million, and the coating and engraving sector has an input share of 0.7 percent, for a potential export market of \$755,000. Bexar Concrete Works and Manco Structures are the largest firms in San Antonio’s concrete product sector.



Inputs to San Antonio's Concrete Product Manufacturing			
Input	Wichita LQ	Input Share	Potential Export Market (in 1000s)
Plate Work Manufacturing	2.05	1.7%	\$ 1,970
Concrete Product Manufacturing	1.73	1.3%	\$ 1,444
Coating and Engraving	1.58	0.7%	\$ 755

# Conclusion



In this report we have identified a number of potential opportunities for Wichita's highly concentrated manufacturing sectors to become more integrated into the supply chains of the highly concentrated industries in nearby metropolitan and megapolitan regions. Wichita has a diverse set of goods-producing sectors that are in demand as inputs to these nearby metropolitan areas, and two sectors in Wichita that are demanded consistently across metropolitan regions are the coating and engraving sector and the machine shop sector. Maps of the relative demand by each major metropolitan area for each of those sectors are presented in the appendix.

Wichita can potentially supply a variety of additional goods to each of the metropolitan and megapolitan areas discussed in this report. The markets with the most diverse demands from Wichita are Houston and Tulsa, each with eight different sectors potentially demanding Wichita inputs from its top ten most concentrated industries.

As the American economy becomes more integrated and globalized, an increasing share of the economic growth of the country is being experienced in the megapolitan regions. Wichita has the potential to become a more important economic partner to several of these regions and be better able to share that economic growth.



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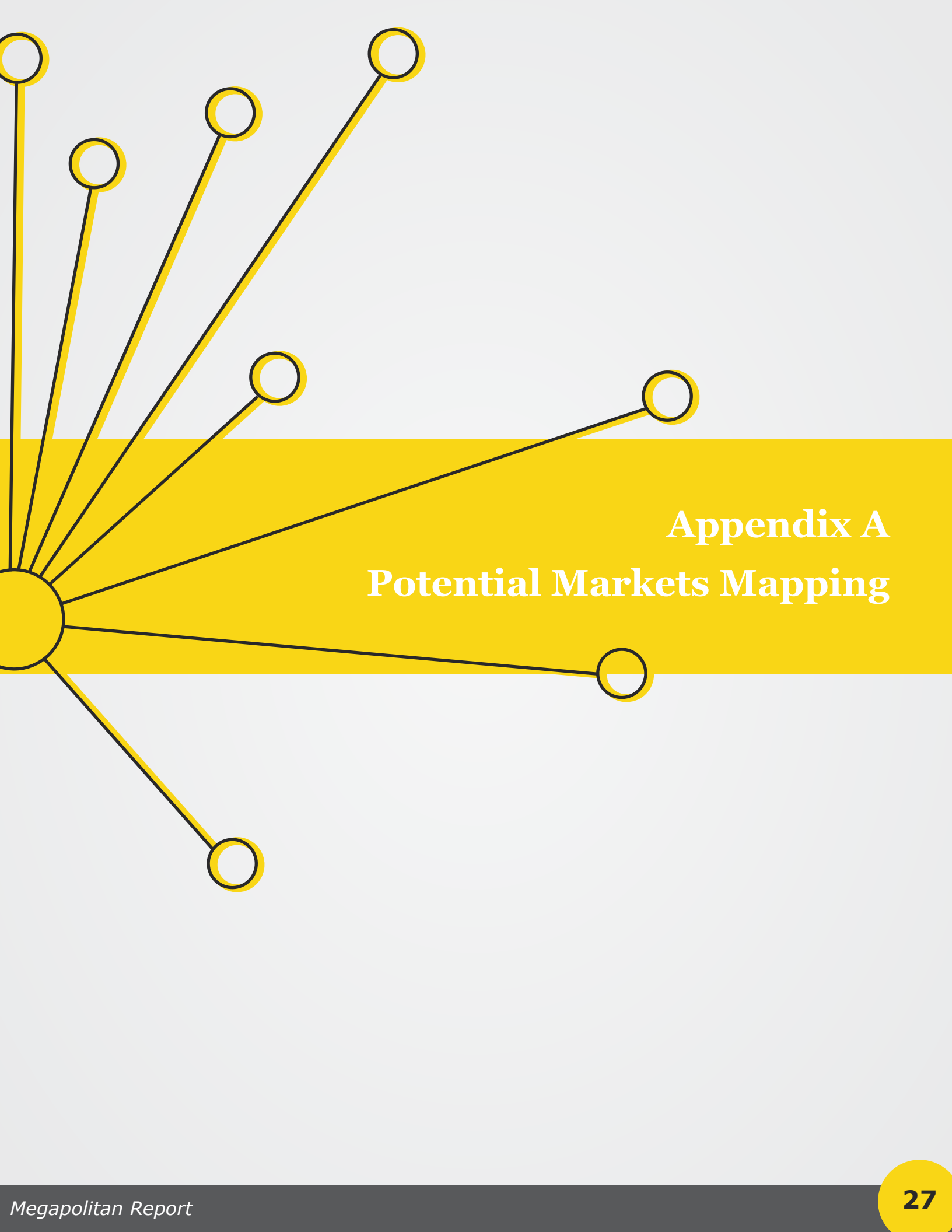
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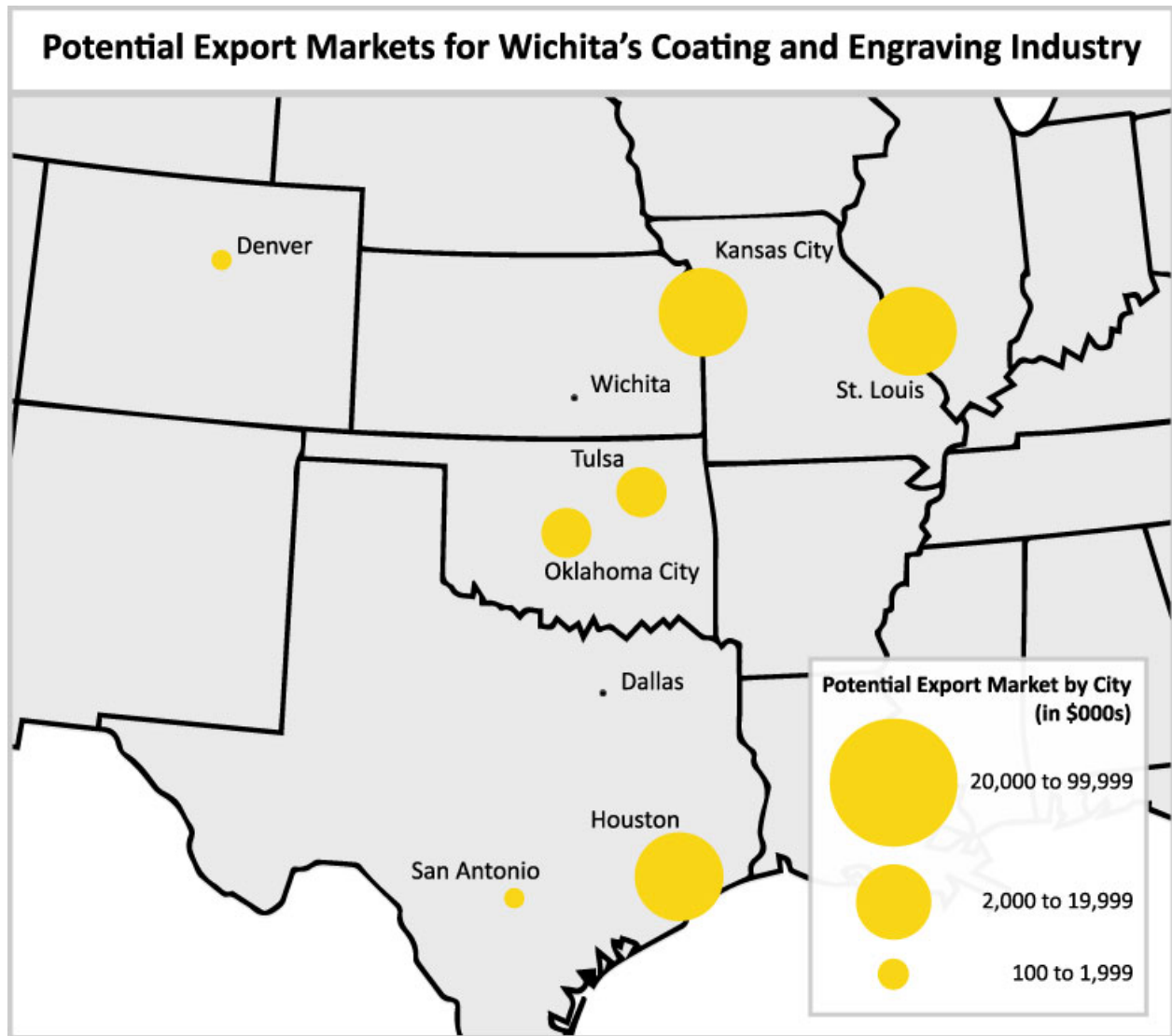




**Appendix A**  
**Potential Markets Mapping**

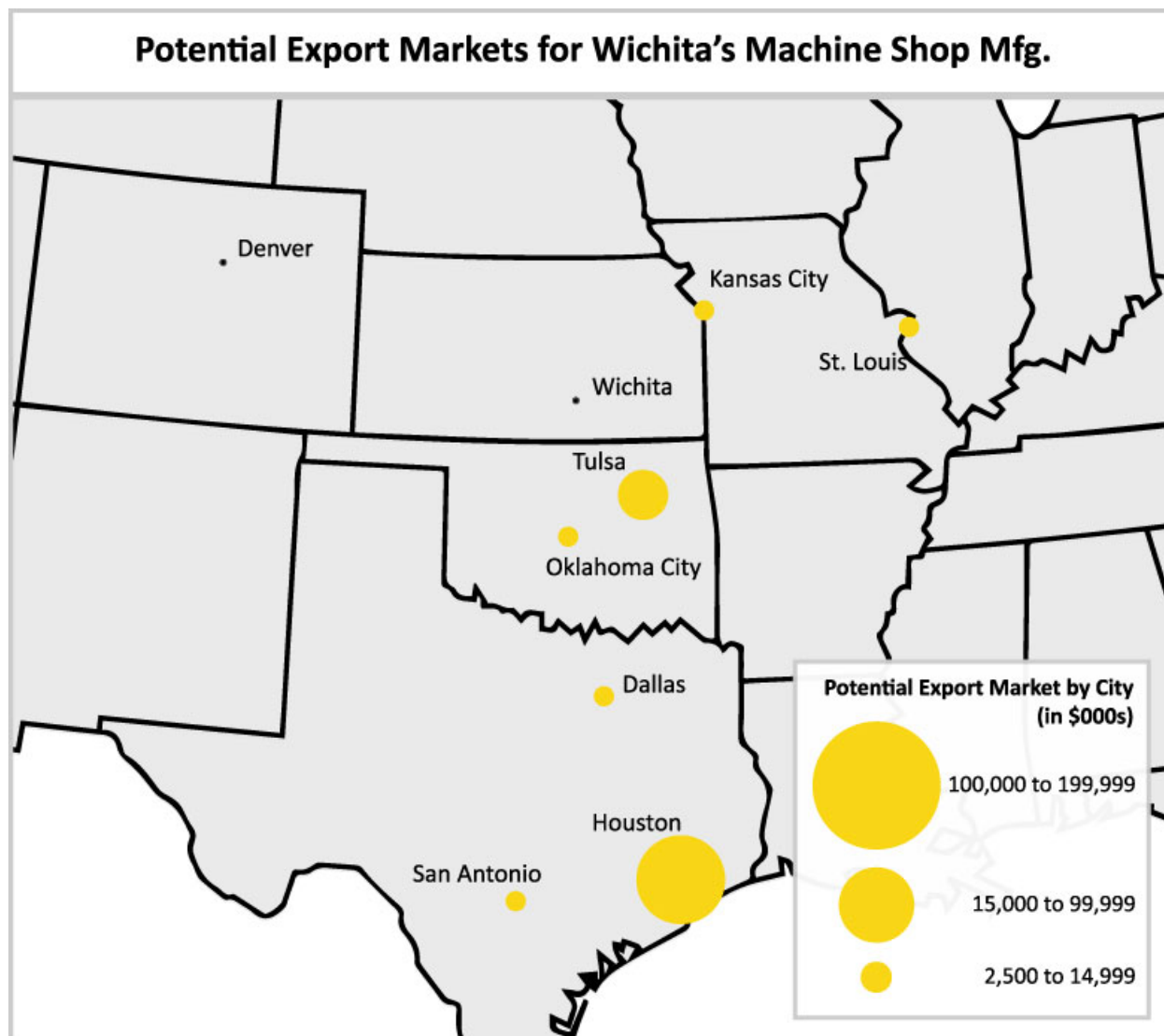
# Appendix A

## Potential Markets Mapping



# Appendix A

## Potential Markets Mapping





**Appendix B**  
**Most Concentrated Industries**  
**for Select Metro Areas**

## Appendix B

### Most Concentrated Industries for Select Metro Areas

Most Concentrated Denver Industries			
Industries	Denver LQ	Estimated Sales (in 1000s)	Employees
Wired Telecom Carriers	3.63	\$ 8,832,833	26,896
Computer Related Services	3.42	\$ 937,007	5,226
Air Transportation	3.41	\$ 4,106,252	13,420
Oil and Gas Extraction	3.11	\$ 5,802,655	3,422
Promoters of Arts & Sports	2.93	\$ 466,428	3,512
Environmental Consulting Services	2.82	\$ 304,398	1,968
Credit Intermediaries	2.81	\$ 1,228,258	6,328
Concrete Pipe Manufacturing	2.61	\$ 142,585	540

Most Concentrated Kansas City Industries			
Industries	Kansas City LQ	Estimated Sales (in 1000s)	Employees
Wireless Telecom Carriers	7.23	\$ 7,956,042	13,461
Navigation and Guidance System Mfg.	3.89	\$ 1,302,703	4,232
Soap & Cleaning Compound Mfg.	3.73	\$ 1,207,930	1,181
Cracker & Pasta Manufacturing	2.6	\$ 400,954	1,083
Ground Passenger Transportation	2.45	\$ 492,801	8,285
Medical & Diagnostic Laboratories	1.91	\$ 598,497	3,599
Printing	1.86	\$ 1,037,791	6,349
Financial Investment Activities	1.65	Withheld	5,625

Most Concentrated St. Louis Industries			
Industries	St. Louis LQ	Estimated Sales (in 1000s)	Employees
Soap and Cleaning Compound Mfg.	5.29	\$ 2,346,310	2,294
Air Conditioning and Heating Mfg.	5.11	\$ 1,306,888	4,416
Photographic Services	3.92	\$ 245,350	3,228
Service Industry Machinery Mfg.	2.67	\$ 288,243	1,128
Gambling Industries	2.54	\$ 656,780	4,438
Plate Work Manufacturing	2.08	\$ 778,428	3,053
Nonferrous Metal Foundries	2.07	\$ 225,882	1,129
Soft Drink and Ice Manufacturing	2.05	\$ 906,225	1,347
Rubber Product Manufacturing	1.98	\$ 266,444	1,178
Colleges & Universities	1.96	\$ 2,988,070	35,869

## Appendix B

### Most Concentrated Industries for Select Metro Areas

#### Most Concentrated Oklahoma City Industries

Industries	OKC LQ	Estimated Sales (in 1000s)	Employees
Oil and Gas Extraction	14.95	\$ 12,297,152	7,252
Industrial Valve Manufacturing	10.74	\$ 427,350	1,505
Pump & Pumping Equipment Mfg.	8.22	\$ 374,448	1,058
Support Activities for Oil & Gas Operat	5.7	\$ 984,227	5,112
Mining and Oil Field Machinery Mfg.	3.88	\$ 310,374	871
Wireless Telecom Carriers	2.75	\$ 1,628,326	2,755
Miscellaneous Manufacturing	2.5	\$ 241,979	1,240
Ready-Mix Concrete Manufacturing	2.42	\$ 214,526	672

#### Most Concentrated Tulsa Industries

Industries	Tulsa LQ	Estimated Sales (in 1000s)	Employees
Power Boiler Manufacturing	29.97	\$ 577,030	2,256
Other Industrial Machinery Mfg.	14.57	\$ 354,295	1,565
Pump & Pumping Equipment Mfg.	13.98	\$ 514,246	1,453
Oil and Gas Extraction	11.7	\$ 7,773,048	4,584
Mining & Oil Field Machinery Mfg.	7.73	\$ 499,592	1,402
Glass & Glass Product Manufacturing	5.44	\$ 341,471	1,447
Steel Product Manufacturing	5.33	\$ 341,042	722
Aerospace Manufacturing	3.3	\$ 1,658,497	4,123

#### Most Concentrated Dallas Industries

Industries	Dallas LQ	Estimated Sales (in 1000s)	Employees
Tortilla Manufacturing	4.46	\$ 272,126	1,661
Nondepository Credit Intermediaries	4.15	\$ 32,493,901	49,021
Ophthalmic Goods Manufacturing	3.95	\$ 477,842	2,033
Directory & Mailing List Publishing	3.66	\$ 898,778	2,933
Explosives Manufacturing	3.51	\$ 133,041	498
Oil and Gas Extraction	3.41	\$ 15,585,096	9,191
Aerospace Manufacturing	3.33	\$ 11,478,746	28,536



# Appendix B

## Most Concentrated Industries for Select Metro Areas

Most Concentrated Houston Industries			
Industries	Houston LQ	Estimated Sales (in 1000s)	Employees
Mining & Oil Field Machinery Mfg.	19.76	\$ 7,576,901	21,263
Pipeline Transportation	9.07	\$ 5,756,650	8,274
Pipe & Pipe Fitting Manufacturing	8.2	\$ 1,018,002	4,300
Oil & Gas Extraction	7.02	\$ 27,697,418	16,334
Plastics Material & Resin Mfg.	6.39	\$ 483,255	7,823
Petroleum Refineries	5.93	\$ 65,490,308	7,321
Metal Valve & Pipe Fitting Mfg.	5.23	\$ 437,005	1,501
Measuring & Controlling Device Mfg.	4.49	\$ 723,486	2,635
Air & Gas Compressor Mfg.	4.18	\$ 623,045	1,579

Most Concentrated San Antonio Industries			
Industries	San Antonio LQ	Estimated Sales (in 1000s)	Employees
Cement Manufacturing	6.27	\$ 303,558	515
Amusement Parks	4.86	\$ 459,014	4,541
Motor Vehicle Seating Manufacturing	3.08	\$ 325,028	831
Business Support Services	2.48	\$ 906,855	12,031
Home Health Care Services	2.27	\$ 442,535	18,309
Concrete Product Manufacturing	2.19	\$ 113,096	638
Air Conditioning & Heating Mfg.	2.03	\$ 322,875	1,091

### References

Nelson, Arthur and Robert Lang (2011). *Megapolitan America: A New Vision for Understanding America's Metropolitan Geography*. Chicago: Planners Press.



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