

Indexes of Financial Performance for Public Companies in The Largest Metropolitan Statistical Areas of Texas

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Project Purpose

- The aim of this CFSI initiative is to develop indexes that track the economic evolution of all publicly traded companies that are headquartered in the largest metropolitan areas of Texas, each taken as a unique group. Specifically, the indexes track financial performance, by quarter, of the publicly traded companies in the states' largest metropolitan areas – the three nodes of the Texas Triangle: Dallas-Fort Worth, Houston, and San Antonio and Austin. Data and indexes are reported from 2011 forward. The indexes are comparative, not absolute - most index components compare performance with that of the previous year – the higher the index number, the more improved is the financial performance of companies taken as a metropolitan area's grouping.
- At present, the Center reports the financial performance of companies headquartered in the largest metropolitan regions of Texas in summary fashion and tracks how the indexes change over time. The individual components of the indexes are also reported by metropolitan area.

First Purpose of Tracking

- The first purpose of tracking is to index how financial performance of each metropolitan area's public companies evolve over time. As the state continues to attract and domicile the headquarters of publicly traded companies, it is appropriate and helpful to keep track of the percentage of reporting companies showing improvement or degradation of performance over time. The index and its components are tracked by quarter starting in 2011.
- Better financial performance of the corporations headquartered in an area and in the state can be expected to lead to further growth and investment, better economic activity for smaller, non-public companies, better employment prospects, higher tax revenues to support public needs and higher levels of philanthropy. This holds true even if a significant proportion of the operations for many companies are located outside the state. Similarly, weakened financial performance is likely to produce slowdowns or negatives in the aspects discussed above.
- Financial performance is not the same as investment performance. Financial performance here includes components of improved financial position that are followed by managers, the press and the public. It does not include such recognized investment measures as stock price or return on equity. Similarly, the reference point is not an absolute level as it might be in discussing risk-adjusted return rates. All comparisons are to the same quarter of the year previous. An increase in sales over a year is an important financial indicator to a manager, the press or the public. It is not of ultimate interest to an outside investor concerned about financial performance relative to industry competitors.

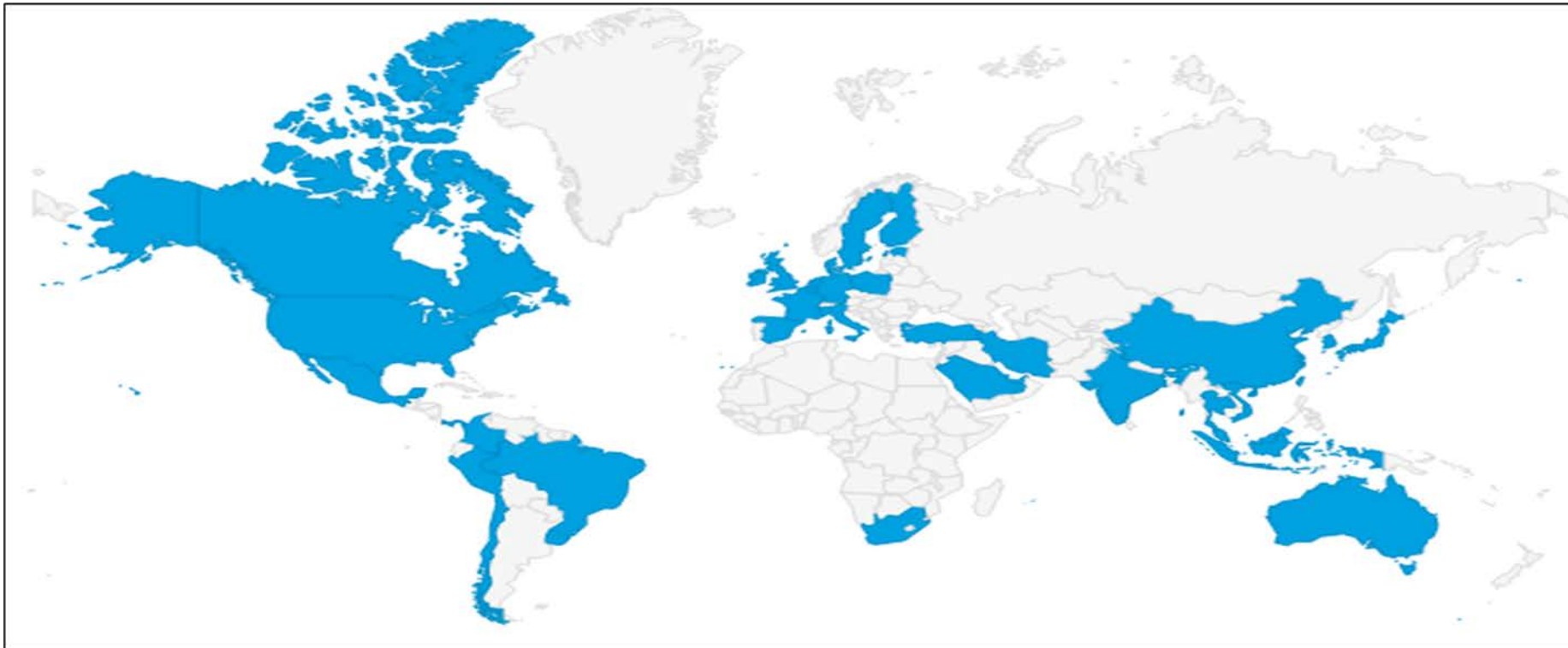
Second Purpose of Tracking

- The second purpose of tracking is to allow comparisons between the results in different metropolitan areas. The comparisons are not between individual companies. They are between the percentage of companies headquartered in one area showing positive financial evolution and the corresponding percentage in a second metropolitan area.
- That there can be differences in operational and financial results for operations located in different areas and geographies is well established. The banks of the Federal Reserve System and the Department of Commerce report on these differences regularly.
- This project reports on differences in results attributable to location of headquarters. No position is taken here as to why these differences occur. It could be industrial structures, tax policy, availability of managerial services, ability of local executives, transportation, and many other plausible explanations. There is no attempt to allow for such differences here. This project simply reports results for an area's collection of public companies.
- The project reports the correlation between each area's financial indexes over time, a summary of the rank order of each metropolitan area's index over time, and measures of the variability of the financial performance index for each metropolitan statistical area.

- All publicly traded companies on New York Stock Exchange, NYSE Arca, NYSE American, NASDAQ, and Over-The-Counter which list their head office as being in one of the four largest Metropolitan Statistical Areas of Texas, as defined by the US Office of Management and Budget. The metropolitan areas include
 - Dallas - Fort Worth - Arlington Metropolitan Statistical Area (19100)
 - Houston – The Woodlands – Sugar Land Metropolitan Statistical Area (26420)
 - San Antonio – New Braunfels Metropolitan Statistical Area (41700)
 - Austin – Round Rock Metropolitan Statistical Area (12420)The San Antonio and Austin MSA's are considered as one combined area in this project due to their geographic proximity. By doing so, the Center is able to track the evolution of the three nodes of the Texas Triangle.
- Companies must have been in business for at least one year, must have filed 10K and 10Q information with the Securities and Exchange Commission, and must have complete data for at least four quarters, for the indexes tracked. These companies must have reported using XBRL (eXtensible Business Reporting Language) from 2010 forward.

- US Securities and Exchange Commission data is used as the authoritative source for filings
- The SEC provides four datasets under the Annual and Quarterly Financial Statements (AQFS) subsystem and assigns a unique primary key for each individual corporation known as a CIK (Central Index Key) <https://www.sec.gov/cgi-bin/browse-edgar?action=getcompany&CIK=0000034088&owner=exclude&count=40&hidefilings=0>
- These datasets (sub, tag, num, pre) are flattened extracts from the EX-101 corporate submissions containing forms 10-K, 10-K/A, 10-KT, 10-Q, 10-Q/A, 10-QT, 20-F, 20-F/A, 40-F, 40-F/A, 6-K and/or 6-K/A
- Datasets contain primary financial statements (Balance Sheet, Income Statement, Cash Flow, Changes in Equity, and Comprehensive Income Statement and page footnotes from these statements
- This project tracks data quarter-by-quarter. As of March 2019 updated information for all companies was available only for the period 2011 to third quarter of 2018.

- The project uses data that complies with International Financial Reporting Standards. Adopting countries shown in blue below.
- XBRL (eXtensible Business Reporting Language) is used as the language standard. This restriction has limited results to the period 2010 forward



- Initially, the index was naively constructed as the unweighted average of six Indicators of Financial Performance (specified below) in the relevant quarter multiplied by 100. If the financial performance of businesses headquartered in a region is, on average, getting better than a year prior, the index rises in a quarter. If business financial performance is, on average, getting worse than a year prior, the index falls in a quarter.
- These six indicators, which are tracked by quarter from 2011 to 2018 are:
 - Percent of corporations in the metropolitan area experiencing net profit in present quarter
(Net income for current quarter as positive or negative)
 - Percent of corporations in the metropolitan area experiencing a year to year increase in sales from previous year's same quarter result
(Net Revenues current year, quarter – Net Revenues previous year, same quarter)
 - Percent of corporations in the metropolitan area experiencing same or higher year to year (same quarter) operating profit as a percentage of sales revenue
[(Operating Profit this quarter / Net Revenues this quarter) – (Operating Profit previous Year, same quarter / Net Revenues previous Year, same quarter)]

- Percent of corporations in the metropolitan area experiencing the same or higher return on assets in current quarter compared to returns in same quarter a year ago

$$\frac{[(\text{Net Income this quarter} / \text{Total Assets this quarter}) - (\text{Net Income previous year, same quarter} / \text{Total Assets previous year, same quarter})]}{1}$$

- Percent of corporations in the metropolitan area experiencing same or higher operating cash flows than same quarter last year

$$\frac{\text{Cash Provided by Operations, current quarter} - \text{Cash Provided by Operations last year, same quarter}}{1}$$

- Percent of corporations in the metropolitan area with less inventory as percentage of sales revenue, year to year, same quarter

$$\frac{[(\text{Inventory, this quarter} / \text{Net Revenues, this quarter}) - (\text{Inventory, previous year, same quarter} / \text{Net Revenues, previous year, same quarter})]}{1}$$

In an idealized world any particular business would experience a positive answer for all the above results in the examined quarter. The Index of Financial Performance was designed to track percentages of companies achieving each result (expressed positively) and average these tracked percentages. The Index is scaled to be between 0 and 100.

- To improve the construction and interpretation of the Index for each (combined) area, Principal Component Analysis was used.
- The idea here is that certain indicators are more significantly related to the initially constructed index than others. Other indicators do not affect the index as much and do not explain the variability of the index as efficiently. A simpler index, more intuitively obvious, can thus be constructed using the actually observed data.
- Analysis showed that for each metropolitan statistical area the three indicators on next slide were most important in determining index value. These indicators explained at least 80 percent of the movement of the Index. They were chosen as the final components and used to construct the Index of Financial Performance.
- Example for data relating to one calendar quarter for all companies in DFW MSA:

$$\text{Index value}_{\text{DFWq}} = 41.615 * \text{Sales Increase \%}_{\text{DFWq}} + 30.021 * \text{Net Profit \%}_{\text{DFWq}} + 28.364 * \text{ROA Increase \%}_{\text{DFWq}}$$

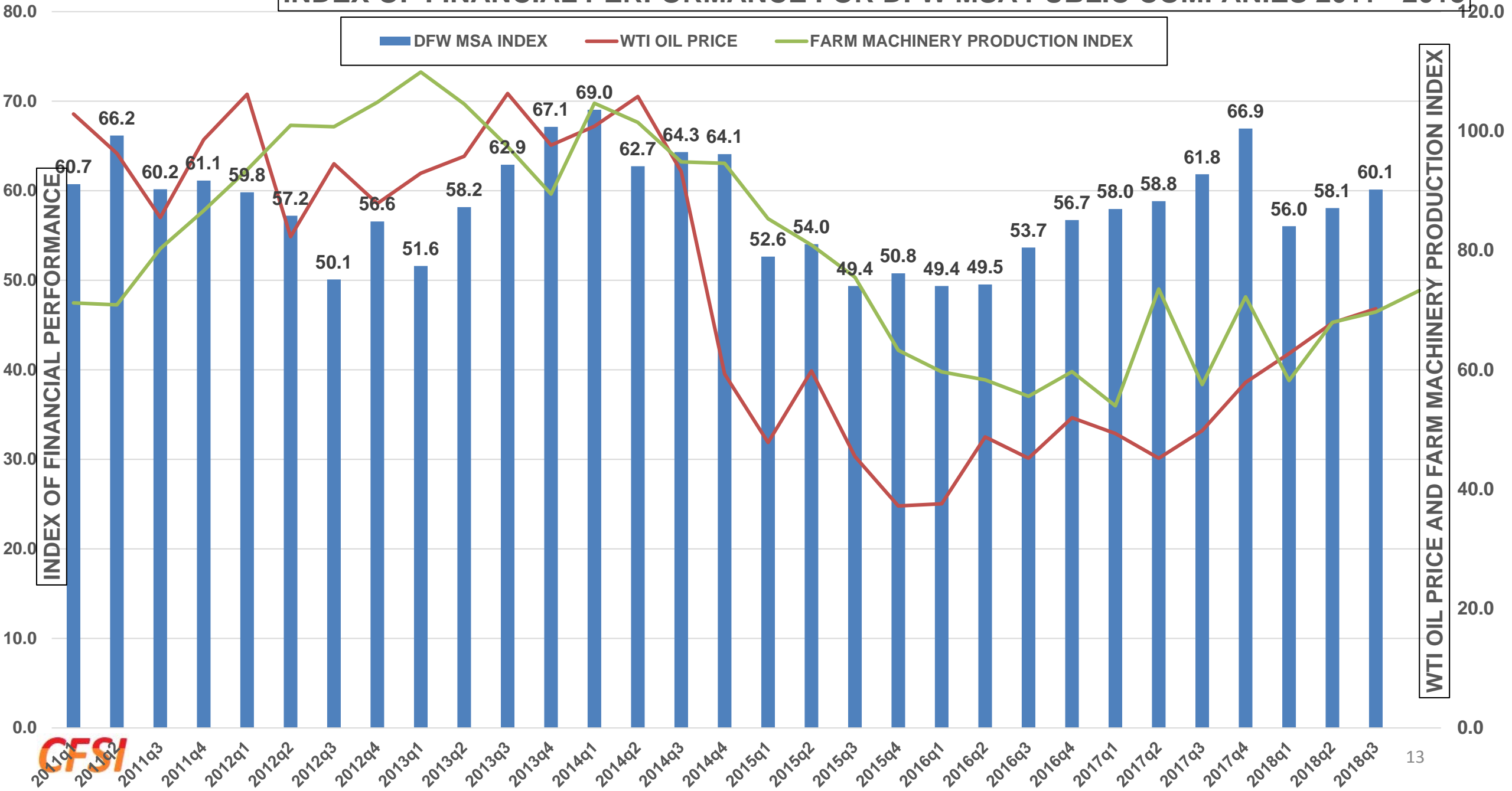
INDICATOR WEIGHTS CHOSEN FOR INDEX OF FINANCIAL PERFORMANCE BY METROPOLITAN AREA

INDICATOR	DFW MSA COMPANIES	HOUSTON MSA COMPANIES	SAN ANTONIO AND AUSTIN MSA COMPANIES
Percent of corporations in the metropolitan area experiencing a year to year <u>increase in sales</u> from previous year's same quarter result	41.615	46.560	35.719
Percent of corporations in the metropolitan area experiencing a <u>net profit</u> in present quarter	30.021	26.546	33.665
Percent of corporations in the metropolitan area experiencing the same or higher <u>return on assets</u> in current quarter compared to returns in same quarter a year ago	28.364	26.894	30.616

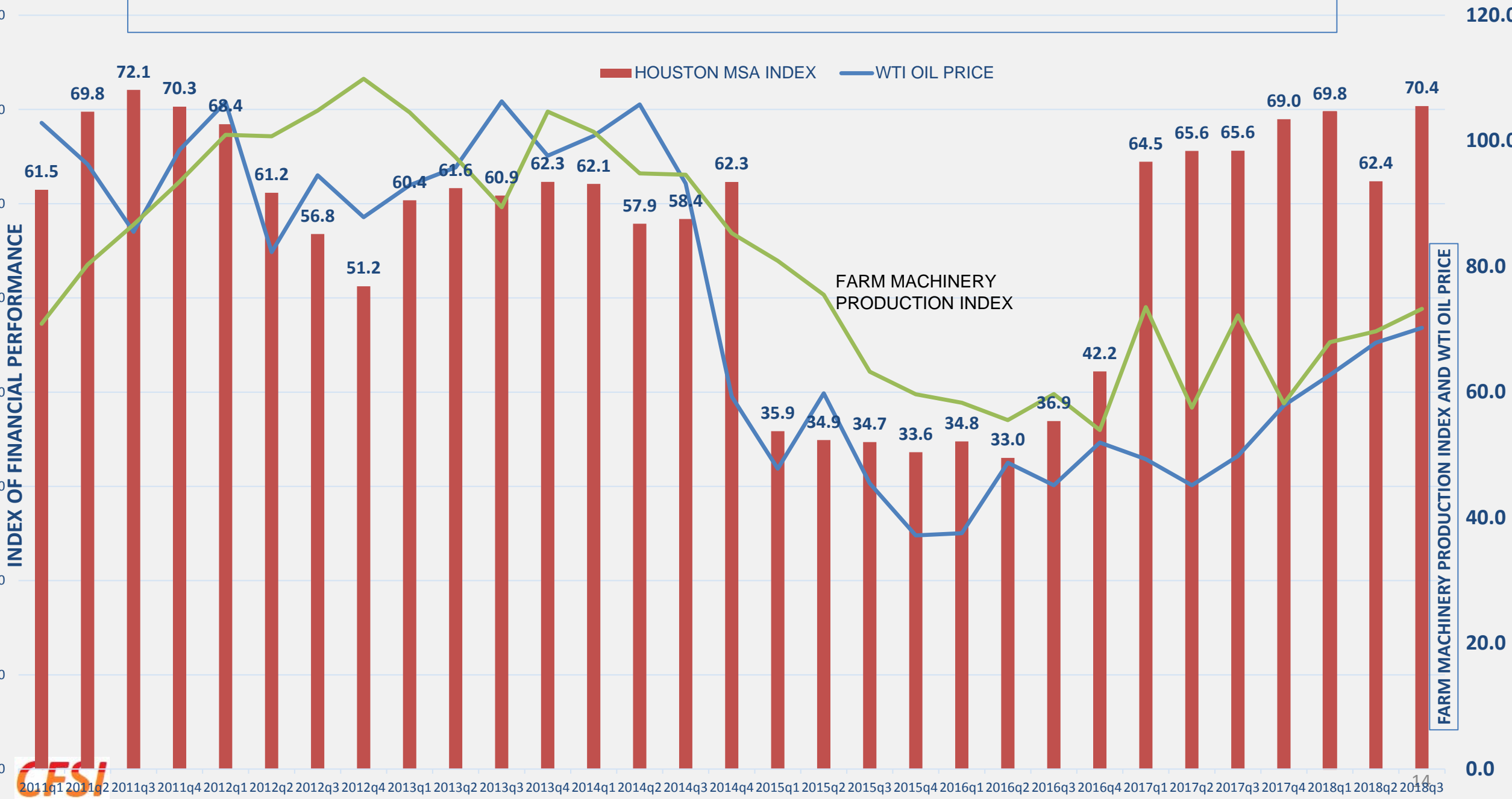
- The indexes for DFW MSA, Houston MSA and the combined San Antonio + Austin MSA's over the period 2011 to 2018 follow
- Also shown are two economic references:
 - a end-of-quarter tracking price for a barrel of oil (West Texas Intermediate, Cushing Oklahoma)
 - an quarterly index (end of quarter) of national farm machinery and equipment production published by the Federal Reserve Bank of St. Louis
- The data from which these charts were constructed follows the presentation of the indexes

INDEX OF FINANCIAL PERFORMANCE FOR DFW MSA PUBLIC COMPANIES 2011 - 2018

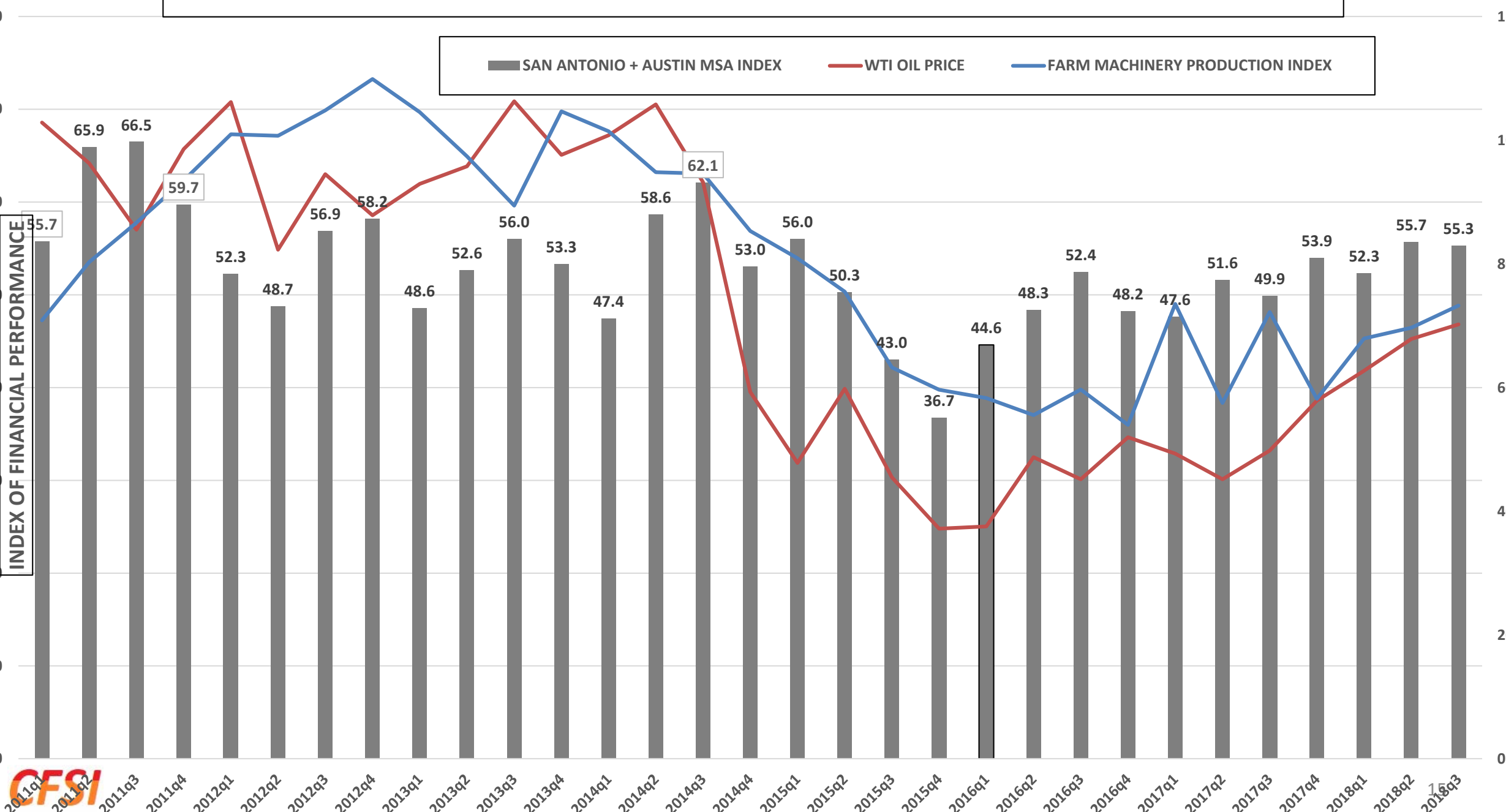
DFW MSA INDEX WTI OIL PRICE FARM MACHINERY PRODUCTION INDEX



INDEX OF FINANCIAL PERFORMANCE FOR HOUSTON MSA PUBLIC COMPANIES 2011 - 2018



INDEX OF FINANCIAL PERFORMANCE FOR SAN ANTONIO + AUSTIN MSA PUBLIC COMPANIES 2011 - 2018



- Texas MSA's do not show the same Financial Performance Indexes for any given date. Companies headquartered in the metro areas of the Texas Triangle respond differently over time.
- Current index values for the three MSA's tracked are shown below. The Houston MSA has been the area showing the most improvement recently.

INDEX OF FINANCIAL PERFORMANCE – CURRENT VALUES BY METROPOLITAN STATISTICAL AREA				
	2017q4	2018q1	2018q2	2018q3
DFW MSA	66.9	56.0	58.1	60.1
HOUSTON MSA	69.0	69.8	62.4	70.4
SAN ANTONIO + AUSTIN MSA	53.9	52.3	55.7	55.3

- Correlation of the Financial Performance Indexes between metropolitan areas differs and is greatest between the DFW MSA and Houston MSA Indexes. The correlation coefficient is 0.70. Between DFW MSA and San Antonio/Austin MSA, correlation is 0.48. Between Houston and San Antonio/Austin, it is 0.54. The industrial composition of different companies would probably be informative.
- We can see the decline in the financial performance during the period 2014-2016 of companies headquartered in Texas reflected in the three Indexes. In this period the agricultural, commodity and energy industries experienced a substantial decline even though the national GDP continued to rise and the national unemployment rate continued to drop.

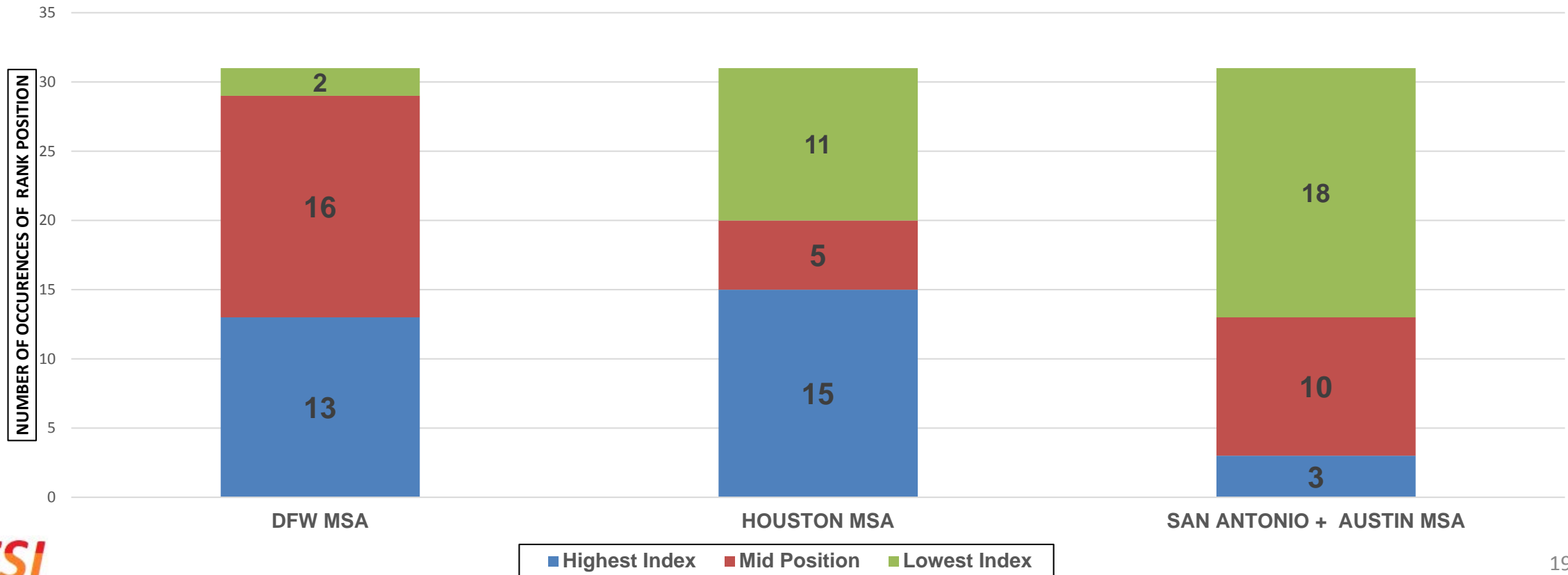
- Companies in the DFW MSA showed the least index variation in the period 2011 to 2018. There was greater average variation for Houston companies and San Antonio/Austin companies. Variability of each MSA index is shown below both as the average percent change in the index quarter to quarter and as the standard deviation of the percentage change. These are measures of the “steadiness” of the index, not a measure of the difference from an average value over the time period reported.

2011-2018		
	Average Percent Quarterly Change In Index	Standard Deviation of Quarterly Change in Index
DFW MSA	0.1%	8.1%
HOUSTON MSA	1.3%	14.3%
SAN ANTONIO + AUSTIN MSA	1.7%	12.8%

Ranking of Texas MSA's By Index Value Over Time

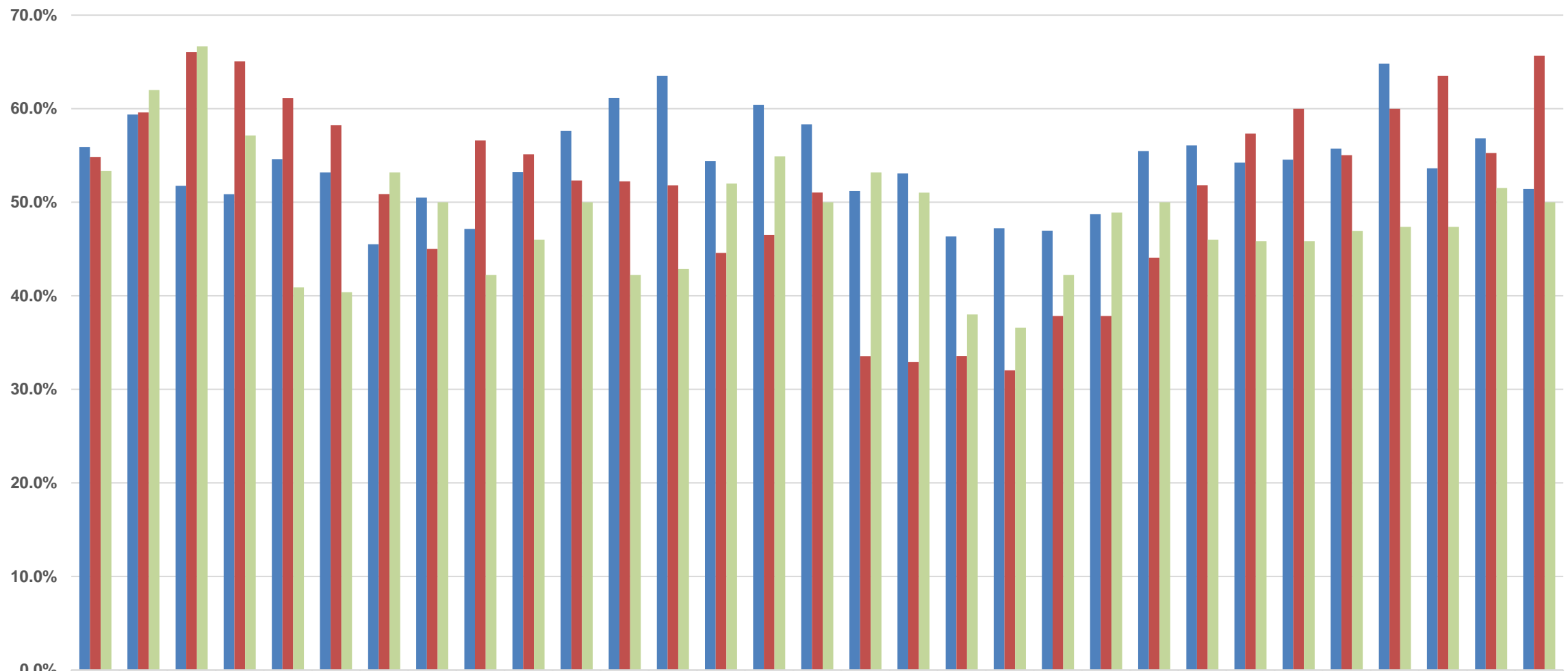
- The Indexes for the three MSA's were ranked by quarter based on Index value (highest to lowest) as a test to see if there was consistency in ranking over time. DFW and Houston MSA companies tend to be higher ranked in the 31 quarters examined 2011-2018.

FREQUENCY OF RANKED INDEX POSITION BY MSA



- Component data follows on three slides
- Profitability is the most significant indicator of financial performance. Interestingly, negative profitability is a real concern for companies headquartered in Texas metropolitan regions. As shown on the graph to follow, the average percentage of companies that are profitable is around 50%. The lowest percentage of companies with positive quarter profitability was experienced in the Houston area in 2015. The percentage was 32%. The highest figure was in San Antonio/Austin at 66.7% in 2011

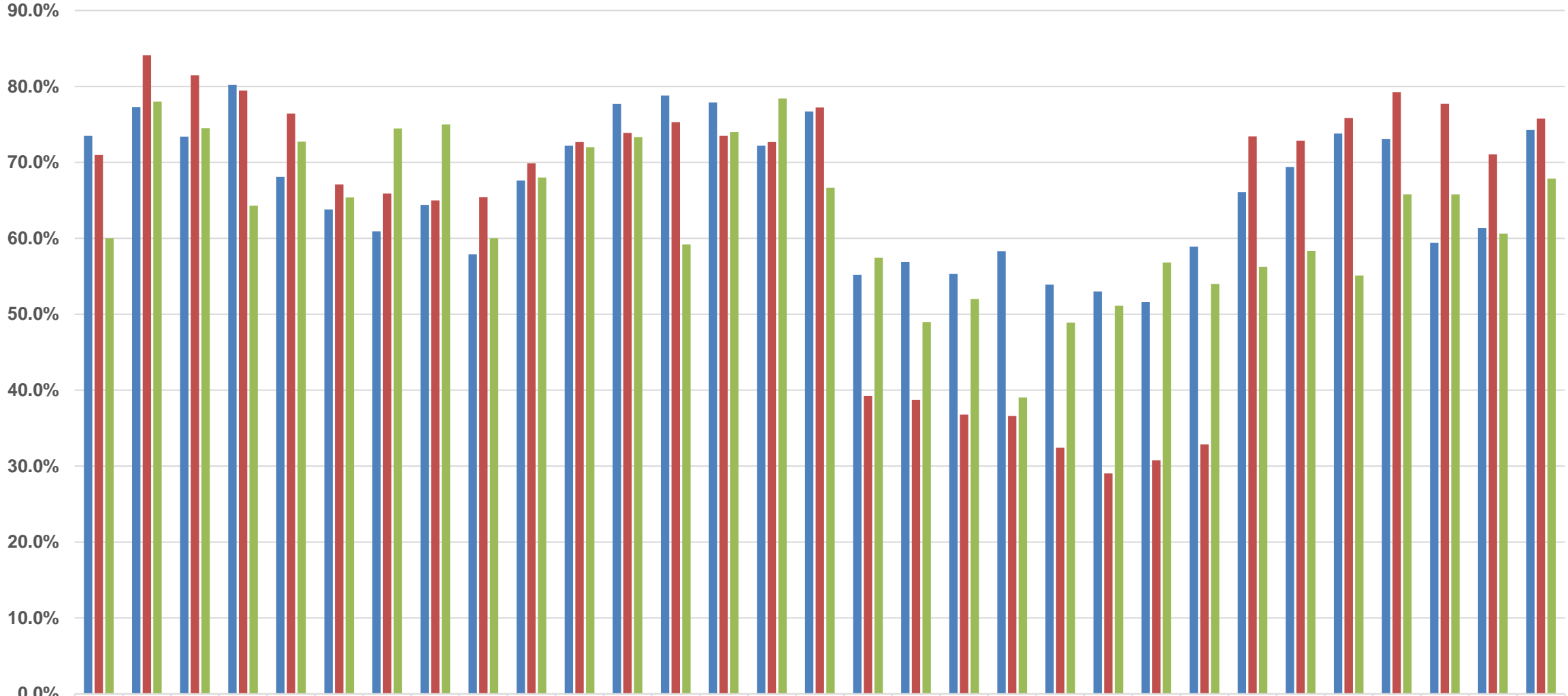
PERCENT OF COMPANIES WITH POSITIVE QUARTER PROFITABILITY BY METROPOLITAN AREA 2011 -2018



	2011q 1	2011q 2	2011q 3	2011q 4	2012q 1	2012q 2	2012q 3	2012q 4	2013q 1	2013q 2	2013q 3	2013q 4	2014q 1	2014q 2	2014q 3	2014q 4	2015q 1	2015q 2	2015q 3	2015q 4	2016q 1	2016q 2	2016q 3	2016q 4	2017q 1	2017q 2	2017q 3	2017q 4	2018q 1	2018q 2	2018q 3
DFW MSA	55.9%	59.4%	51.7%	50.9%	54.6%	53.2%	45.5%	50.5%	47.1%	53.2%	57.6%	61.2%	63.5%	54.4%	60.4%	58.3%	51.2%	53.1%	46.3%	47.2%	47.0%	48.7%	55.5%	56.1%	54.2%	54.5%	55.7%	64.8%	53.6%	56.8%	51.4%
HOUSTON MSA	54.8%	59.6%	66.0%	65.1%	61.1%	58.2%	50.9%	45.0%	56.6%	55.1%	52.3%	52.2%	51.8%	44.6%	46.5%	51.0%	33.5%	32.9%	33.5%	32.0%	37.8%	37.8%	44.1%	51.8%	57.3%	60.0%	55.0%	60.0%	63.5%	55.3%	65.7%
SAN ANTONIO + AUSTIN MSA	53.3%	62.0%	66.7%	57.1%	40.9%	40.4%	53.2%	50.0%	42.2%	46.0%	50.0%	42.2%	42.9%	52.0%	54.9%	50.0%	53.2%	51.0%	38.0%	36.6%	42.2%	48.9%	50.0%	46.0%	45.8%	45.8%	46.9%	47.4%	47.4%	51.5%	50.0%

■ DFW MSA
 ■ HOUSTON MSA
 ■ SAN ANTONIO + AUSTIN MSA

PERCENT OF COMPANIES WITH YEAR TO YEAR SALES INCREASE BY METROPOLITAN AREA 2011 - 2018



	2011q 1	2011q 2	2011q 3	2011q 4	2012q 1	2012q 2	2012q 3	2012q 4	2013q 1	2013q 2	2013q 3	2013q 4	2014q 1	2014q 2	2014q 3	2014q 4	2015q 1	2015q 2	2015q 3	2015q 4	2016q 1	2016q 2	2016q 3	2016q 4	2017q 1	2017q 2	2017q 3	2017q 4	2018q 1	2018q 2	2018q 3
DFW MSA	73.5%	77.3%	73.4%	80.2%	68.1%	63.8%	60.9%	64.4%	57.9%	67.6%	72.2%	77.7%	78.8%	77.9%	72.2%	76.7%	55.2%	56.9%	55.3%	58.3%	53.9%	53.0%	51.6%	58.9%	66.1%	69.4%	73.8%	73.1%	59.4%	61.4%	74.3%
HOUSTON MSA	71.0%	84.1%	81.5%	79.5%	76.4%	67.1%	65.9%	65.0%	65.4%	69.9%	72.7%	73.9%	75.3%	73.5%	72.7%	77.2%	39.2%	38.7%	36.8%	36.6%	32.4%	29.1%	30.8%	32.8%	73.4%	72.9%	75.8%	79.3%	77.7%	71.1%	75.8%
SAN ANTONIO + AUSTIN MSA	60.0%	78.0%	74.5%	64.3%	72.7%	65.4%	74.5%	75.0%	60.0%	68.0%	72.0%	73.3%	59.2%	74.0%	78.4%	66.7%	57.4%	49.0%	52.0%	39.0%	48.9%	51.1%	56.8%	54.0%	56.3%	58.3%	55.1%	65.8%	65.8%	60.6%	67.9%



PERCENT OF COMPANIES WITH SAME OR HIGHER RETURN ON ASSETS IN CURRENT QUARTER COMPARED TO A YEAR AGO BY METROPOLITAN AREA 2011 - 2018

