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EMPLOYMENT CHANGE, Phase II: A Comparative Study of Employment Change in McCurtain County and Texas County by Firm Location and Size, January 2014 to June 2017



**Oklahoma Employment Security Commission
Economic Research and Analysis Division**

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Introduction

This is the second phase of our three phase research and reports, on the reasons for the large historical differences in two different Oklahoma geographical border county's employment change. As in all three phases of this investigation, in this phase McCurtain County and Texas County are the two counties compared. Using the findings of the previous Phase I of this study, two new hypotheses are formulated as determinates of the historical differences in these two counties employment change rates.

The first hypothesis postulated for Phase II of this investigation is that highly volatile McCurtain County construction employment, unrelated to season, might be driving the historical overall county unemployment rate. The second postulated hypothesis is that a few of the employers within McCurtain County, with highly volatile employment (also unrelated to season), might be driving the historical high overall county unemployment rate, perhaps through their laying off and then later rehiring employees in their normal course of business. A third sub-hypothesis to the second is that among these in-county employers, those of a larger size might be determining the county unemployment rate, rather than a smaller size.

Description of the Data and Methods

Three different sets of data are used to test these three hypotheses. The first is our own agency's administrative unemployment insurance (UI) claim records for the first quarters of 2015 and 2016. The second set of data is the Quarterly Census of Employment and Wages (QCEW) employment data for each of the two counties, over the time interval of the 42 months from January 2014 through June 2017. The third set of data used is the Local Area Unemployment Statistics (LAUS) workforce, employment and unemployment for the two comparison counties, and each of their surrounding and touching Oklahoma counties; for the same 42 months of January 2014 to June 2017.

The process of analysis was completed in five steps. The first step determined descriptive statistics for the employment and unemployment of each of the two areas' central counties (McCurtain and Texas counties) and their surrounding and bordering Oklahoma counties, with the results reported as ranges, means and standard deviations. These are provided in Tables 1 through 4 in Appendix C. Regional area maps of the two geographical areas are also provided in this same appendix, which is attached at the end of this report.

In the second step of Phase II of the methodological analysis, bivariate correlations are first determined between the county employment of each county in the two Oklahoma geographical areas and the central county area unemployment rate. Secondly, the unemployment rates of each surrounding county are correlated with their central counties' unemployment rates. The results are reported in Appendix D, Tables 5 through 8.

The third step of Phase II methodological process identified the location of each of the UI Claimant employers in the two Oklahoma geographical locations. This was accomplished by

linking them to their UI numbers, and afterward linking them with their QCEW workplace location(s). This determined if they are located in the central county (in-county) or out of the central county (out-county). The employers' locations are coded according to three categories: all work locations in county are coded as 1, all work locations out of county were coded as 2 and having work locations 'both in county and out' of the central county are coded as 9. After coding, the numbers for each of the two central counties are tabulated and the results are reported in Appendix E, Table 9. Bivariate correlations for these employers' employment of each of the three types of locations are determined with the unemployment rates of the area central county, then afterward with the rates of the surrounding counties. The results are reported in Appendix E, Tables 10 through 11.

In the fourth step of Phase II analysis involved identifying UI claimant employers with highly volatile or high flexing employment in each of the two Oklahoma geographical areas. This is achieved by creating and examining graphs of their employment over the 42 months of this analysis. In each of the two areas, bivariate correlations are determined for these highly volatile employers' employment, with their correlation with the unemployment rates of the Oklahoma counties in their areas. The results are tabulated and reported in Appendix E, Table 12 and Table 13.

In the fifth step of the Phase II analysis, the employment size of each of the UI claimant employers are identified by using SPSS analysis for the mean values of their employment over the 42 months of the analysis. The mean values of their employment are coded according to the five firm sizes of: Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 = 100 to 249 and Size5 = 250+ employees. These five firm-sized employers are selected into two groups by location: firms with all locations in-county and firms with all locations out-county. Bivariate correlations of the employment of these five employer firm sizes and by location are determined with the LAUS unemployment rates of the central county in the two Oklahoma geographical areas. Their correlations were also determined with the central county's surrounding and bordering Oklahoma counties' unemployment rates. The results of these correlations are given in Appendix E, Tables 14 through 17 at the end of this report.

The Findings of the Five Steps of Analysis

The first step of the analysis determined the descriptive employment and unemployment rate statistics for the counties in each of the two Oklahoma geographical areas, with the results identifying some of the similarities and differences of the areas; these are shown in the four tables in Appendix C. For example as shown in Table 1 below, when comparing the LAUS employment for the two areas' central counties, McCurtain County with a mean employment level of 13,530, is not the largest in its area. Le Flore County with a mean employment level of 18,236 is the largest.

**Table 1: McCurtain County Oklahoma and Surrounding Oklahoma Counties
Descriptive Monthly Employment Statistics - January 2014 to June 2017¹.**

Area	County	Minimum	Maximum	Mean	Std. Deviation
Oklahoma	McCurtain QCEW²	10,355	11,696	11,067	274.2
	McCurtain QCEW Construction	244	727	408	128.5
	McCurtain Laus³	12,656	14,251	13,530	398.0
	Choctaw Laus	5,166	5,568	5,346	105.8
	Le Flore Laus	17,673	18,531	18,236	230.3
	Pushmataha Laus	4,173	4,692	4,445	127.0

Note¹: Number of cases (months) in each of the counties is 42.

Note²: Quarterly Census of Employment and Wages.

Note³: Employment from Local Area Unemployment Statistics.

On the other hand, in the other geographical area, Table 2 below shows the central area Texas County does have the largest employment of 9,111 in its area. Comparing the unemployment rates of each area determines that all the counties in the McCurtain County area have similar high unemployment mean rates, while all the counties in the Texas County Oklahoma geographical area have similar low unemployment mean rates, over the 42 months examined.

**Table 2: Texas County Oklahoma and Surrounding Oklahoma Counties
Descriptive Monthly Employment Statistics - January 2014 to June 2017¹.**

Area	County	Minimum	Maximum	Mean	Std. Deviation
Oklahoma	Texas QCEW²	9,238	10,126	9,845	183.3
	Texas QCEW Construction	361	425	389	17.0
	Texas Laus³	8,683	9,672	9,111	250.3
	Beaver Laus	2,678	3,086	2,889	123.9
	Cimarron Laus	1,163	1,458	1,333	75.0

Note¹: Number of cases (months) in each of the counties is 42.

Note²: Quarterly Census of Employment and Wages.

Note³: Employment from Local Area Unemployment Statistics.

The descriptive unemployment rate statistics for the two areas are provided in Table 3 for McCurtain County and Table 4 for Texas County, below. The highest mean unemployment rate for the McCurtain County area was 7.7 percent in Choctaw County, and the highest mean unemployment rate for the Texas County area was 3.5 percent in Texas County.

**Table 3: McCurtain County Oklahoma and Surrounding Counties
Descriptive Monthly Unemployment Statistics - January 2014 to
June 2017¹.**

Area	County	Minimum	Maximum	Mean	Std. Deviation
Oklahoma	McCurtain Laus²	5.5	13.1	7.5	1.19
	Choctaw Laus	5.4	10.3	7.7	0.84
	Le Flore Laus	5.3	8.7	6.8	0.64
	Pushmataha Laus	5.8	9.0	7.4	0.69

Note¹: Number of cases (months) in each of the counties is 42.

Note²: Unemployment from Local Area Unemployment Statistics.

**Table 4: Texas County Oklahoma and Surrounding Oklahoma Counties
Descriptive Monthly Unemployment Statistics - January 2014 to
June 2017¹.**

Area	County	Minimum	Maximum	Mean	Std. Deviation
Oklahoma	Texas Laus²	2.8	4.3	3.5	0.42
	Beaver Laus	2.1	4.2	2.9	0.40
	Cimarron Laus	1.8	3.4	2.5	0.45

Note¹: Number of cases (months) in each of the counties is 42.

Note²: Unemployment from Local Area Unemployment Statistics.

In step two of the Phase II analysis, the bivariate employment and unemployment rate of each of the counties in each Oklahoma geographical area are correlated with the area's central county unemployment rate, with the results shown in the four tables of Appendix D. In the McCurtain County area, only the employment in Choctaw County is not significantly correlated with McCurtain County's unemployment rate, as shown in Table 5 below.

Table 5: McCurtain County Oklahoma and Surrounding Oklahoma Counties' Employment Correlations with McCurtain County's LAUS¹ Unemployment - Rates January 2014 to June 2017².

Area	County	Correlations with McCurtain County OK LAUS Unemployment ⁴
Oklahoma	McCurtain QCEW ³	-.531**
	McCurtain QCEW Construction	-0.064
	McCurtain LAUS ¹	-.514**
	Choctaw LAUS	0.180
	Le Flore LAUS	-.464**
	Pushmataha LAUS	-0.041

Note¹: Employment & Unemployment from Local Area Unemployment Statistics.

Note²: Number of cases (months) in each of the counties is 42.

Note³: Quarterly Census of Employment and Wages.

Note⁴: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

The Texas County area had two surrounding Oklahoma counties. One of the two, Cimarron County, is determined to have significant negative correlation with central Texas County's unemployment rate, while the other, Beaver County's employment, is not significantly correlated, as shown in Table 6 on the next page.

Table 6: Texas County Oklahoma and Surrounding Oklahoma Counties' Employment Correlations with McCurtain County's LAUS¹ Unemployment - Rates January 2014 to June 2017².

Area	County	Correlations ⁴ with Texas County OK LAUS Unemployment
Oklahoma	Texas QCEW³	-0.251
	Texas QCEW Construction	0.167
	Texas LAUS¹	-.577**
	Beaver LAUS	0.009
	Cimarron LAUS	-.495**

Note¹: Employment & Unemployment from Local Area Unemployment Statistics.

Note²: Number of cases (months) in each of the counties is 42.

Note³: Quarterly Census of Employment and Wages.

Note⁴: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

In neither area does the central county's QCEW construction employment have significant correlation with the central county's unemployment rate. The unemployment rates of all of the surrounding counties in each of the two geographic areas significantly correlate with their central counties unemployment rates, as seen in the following Table 7 and Table 8.

Table 7: McCurtain County Oklahoma and Surrounding Oklahoma Counties' LAUS¹ Unemployment Rate Correlations - January 2014 to June 2017².

Area	County	Correlations with McCurtain County OK LAUS Unemployment ⁴
Oklahoma	Choctaw LAUS	.706**
	Le Flore LAUS	.459**
	Pushmataha LAUS	.543**

Note¹: Employment & Unemployment from Local Area Unemployment Statistics.

Note²: Number of cases (months) in each of the counties is 42.

Note³: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Table 8: Texas County Oklahoma and Surrounding Oklahoma Counties' Unemployment Rate Correlations with Texas County's LAUS¹ Unemployment Rate - January 2014 to June 2017².

Area	County	Correlations ⁴ with Texas County OK LAUS Unemployment
Oklahoma	Beaver LAUS	.668**
	Cimarron LAUS	.861**

Note¹: Employment & Unemployment from Local Area Unemployment Statistics.

Note²: Number of cases (months) in each of the counties is 42.

Note³: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

The results of the third step of the Phase II are Tables 9 to 11 in Appendix E at the end of this report. Interestingly, Table 9 displayed below shows that a high number of the UI Claimant employers in each of the two Oklahoma geographical areas are out-county employers, indicating high rates of commuting to work in each area. Of the employers in the McCurtain County area, 39.4% are in-county, while 48.9% are located out-county, with 11.7% of their employer's location indeterminate. In the Texas County area, 42.0% are in-county, 39.5% are out-county, with 18.5% of their employer's location indeterminate.

Table 9: Oklahoma McCurtain & Texas Counties' UI Claimant Employers by Number, Percent and In, Out or Indeterminate County locations - First Quarter 2016.

Area	County	All Locations In County		All Locations Out of County		Locations both In & Out of County	
		Number	Percent	Number	Percent	Number	Percent
Oklahoma	McCurtain	74	39.4	92	48.9	22	11.7
	Texas	34	42.0	32	39.5	15	18.5

Comparing the two Oklahoma geographical areas in the third step of analysis additionally determined the exact number and percent of these UI claimant employers' employment which are significantly correlated with the unemployment rate of each county in their area; again according to their location. On the next page, Table 10 in the McCurtain County area shows in-county located employers are more often significantly negatively correlated with the county unemployment rates, while the out-county located employers are more often significantly positive correlated with the county unemployment rates.

Table 10: McCurtain County Oklahoma UI Claimant Employer' Employment Correlations with McCurtain and Surrounding Oklahoma Counties' Unemployment Rate by Number and Percent¹ - January 2014 to June 2017².

Area	County	All Locations In County				All Locations Out County				Total Correlated	
		Negative Correlated ⁴		Positive Correlated		Negative Correlated		Positive Correlated			
		No.	%	No.	%	No.	%	No.	%	No.	%
Oklahoma	McCurtain LAUS ³	19	25.7	11	14.9	14	15.2	17	18.5	61	36.7
	Choctaw LAUS	22	29.7	6	8.1	14	15.2	17	18.5	59	35.5
	Le Flore LAUS	16	21.6	5	6.8	13	14.1	12	13.0	46	27.7
	Pushmataha LAUS	12	16.2	6	8.1	13	14.1	12	13.0	43	25.9
		Possible In County Employers = 74				Possible Out County Employers = 92				All Possible =166	

Note¹: Total UI Claimant Employers is 166.

Note²: Number of cases (months) in each of the counties is 42.

Note³: Unemployment rates from Local Area Unemployment Statistics.

Note⁴: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

In the Texas County area, Table 11 (below) shows that in-county employers are more often significantly positive correlated with Texas and Cimarron counties' unemployment rates and they are more often significantly negative correlated with Beaver County's unemployment rate. However, out-county employers are more often significantly negatively correlated with all counties in the areas' unemployment rates.

Table 11: Texas County Oklahoma UI Claimant Employer' Employment Correlations with Texas and Surrounding Oklahoma Counties' Unemployment Rate by Number and Percent¹ - January 2014 to June 2017².

Area	County	All Locations In County				All Locations Out County				Total Correlated	
		Negative Correlated ⁴		Positive Correlated		Negative Correlated		Positive Correlated			
		No.	%	No.	%	No.	%	No.	%	No.	%
Oklahoma	Texas LAUS ³	3	8.8	4	11.8	6	18.8	5	15.6	18	27.3
	Beaver LAUS	10	29.4	3	8.8	5	15.6	4	12.5	22	33.3
	Cimarron LAUS	3	8.8	8	23.5	5	15.6	4	12.5	20	30.3
		Possible In County Employers = 34				Possible Out County Employers = 32				All Possible = 66	

Note¹: Total UI Claimant Employers is 166.

Note²: Number of cases (months) in each of the counties is 42.

Note³: Unemployment rates from Local Area Unemployment Statistics.

Note⁴: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

The fourth step of this Phase II analysis examines UI claimant employers who have highly volatile employment in the two Oklahoma geographical areas. This is achieved by correlating the employment of these employers with the unemployment rates of each area county by their firm location category. The results of these correlations are also provided in Appendix E, Table 12 and Table 13 at the end of this report. In the McCurtain County area, Table 12 below shows that the in-county highly volatile employers' workers are more often significantly negatively correlated than they are significantly positively correlated with county unemployment rates. On the other hand, the out-county employers' workers correlations with the area's county unemployment rates display almost equal numbers of significant negative and positive correlations. The exception is three employers significantly positively correlated in Pushmataha County.

Table 12: McCurtain County Oklahoma UI Claimant Employers' with Flexing Employment's Correlations with McCurtain and Surrounding Oklahoma Counties' Unemployment Rate by Number and Percent - January 2014 to June 2017³.

Area	County	All Locations In County				All Locations Out County				Total Correlated	
		Negative Correlated ⁵		Positive Correlated		Negative Correlated ⁵		Positive Correlated			
		No.	%	No.	%	No.	%	No.	%	No.	%
Oklahoma	McCurtain LAUS ⁴	9	37.5	4	16.7	2	8.0	2	8.0	17	34.7
	Choctaw LAUS	9	37.5	2	8.3	1	4.0	1	4.0	13	26.5
	Le Flore LAUS	6	25.0	1	4.2	1	4.0	2	8.0	10	20.4
	Pushmataha LAUS	5	20.8	3	12.5	2	8.0	3	12.0	13	26.5
		Possible In County Employers = 24				Possible Out County Employers = 25				All Possible =49	

Note¹: Total UI Claimant Employers is 166.

Note²: Employers with flexing employment were identified by graphs of employment, over the 42 months of the study's observation.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Note⁵: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Continuing the report of the findings of step four, Table 13 (shown on the next page) displays the Texas County geographical area results for highly volatile firms' employment correlations with each of the area's county unemployment rates, by in-county and out-county location. This table reveals that highly volatile in-county employers more often have employment which is significantly negatively correlated with Texas and Beaver counties' unemployment rates, while these same located employers more often have employment significantly positively correlated with Cimarron County's unemployment rate. On the other hand, looking at out-county highly volatile firms' employment for this area determines that they were most often significantly negatively correlated with the unemployment rates of each of the three counties in the area.

Table 13: Texas County Oklahoma UI Claimant Employers¹ with Flexing² Employment's Correlations with Texas and Surrounding Oklahoma Counties' Unemployment Rate by Number and Percent - January 2014 to June 2017³.

Area	County	All Locations In County				All Locations Out County				Total Correlated	
		Negative Correlated ⁴		Positive Correlated		Negative Correlated ⁴		Positive Correlated			
		No.	%	No.	%	No.	%	No.	%	No.	%
Oklahoma	Texas LAUS ⁴	2	15.4	1	7.7	3	27.3	1	9.1	7	29.2
	Beaver LAUS	4	30.8	1	7.7	4	36.4	2	18.2	11	45.8
	Cimarron LAUS	2	15.4	3	23.1	3	27.3	1	9.1	9	37.5
		Possible In County Employers = 13				Possible Out County Employers = 11				All Possible = 24	

Note¹: Total UI Claimant Employers is 166.

Note²: Employers with flexing employment were identified by graphs of employment, over the 42 months of the study's observation.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Note⁵: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

The fifth step of the Phase II analysis compares the two Oklahoma geographical areas by the UI claimant firm employment correlations with the unemployment rates of each area county, by both location and firm size. The results are displayed at the end of this report in Appendix E, Tables 14 through 17. Below, Table 14 shows that for the McCurtain County area, in-county employers of Size1 (0-19 employees) are significantly positively correlated with McCurtain and Choctaw counties' unemployment rate, while employers of Size2 (20 – 49 employees) are significantly negatively correlated with these same two counties' unemployment rates. The largest Size5 (250+ employees) in-county UI claimant firms' employment is significantly positively correlated only with McCurtain and Pushmataha counties' unemployment rates.

Table 14: McCurtain County Oklahoma UI Claimant Employer Employment Correlations¹ with McCurtain and Surrounding Oklahoma Counties' Unemployment Rate by In County Location and Firm Sizes² - January 2014 to June 2017³.

Area	County	All Firm Locations In McCurtain County				
		Firm Size1	Firm Size2	Firm Size3	Firm Size4	Firm Size5
Oklahoma	McCurtain LAUS ⁴	.386*	-.394**	-0.152	-0.162	-.418**
	Choctaw LAUS	.332*	-.540**	-0.107	-0.237	-0.260
	Le Flore LAUS	0.269	-0.247	-0.059	-0.130	-0.238
	Pushmataha LAUS	0.236	-0.057	-0.171	-0.150	-.507**

Note¹: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Note²: Firm sizes are Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 is 100 to 249 and Size5 is 250+ employees.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Seen below, Table 15 provides the Texas County geographical area results for UI claimant in-county firms' employment correlations with the unemployment rates of each of the area counties, by firm size and location. In-county Size1 (0-19 employees) employers and in-county Size3 (50 – 99 employees) employers have employment significantly negatively correlated with the unemployment rate of Beaver County. In-county Size4 (100-249 employees) firms' employment is also significantly positively correlated with Beaver County's unemployment rate. However, the only other in-county firm size that is significantly correlated with a county's unemployment rate in this area is Size5 (250+ employees) employers, which are significantly negatively correlation with the unemployment rate of Cimarron County. Amazingly, the unemployment rate of the area's central Texas County is not significantly correlated with any firm size.

Table 15: Texas County Oklahoma UI Claimant Employer Employment Correlations¹ with Texas and Surrounding Oklahoma Counties' Unemployment Rate by In County Location and Firm Sizes² - January 2014 to June 2017³.

Area	County	All Firm Locations In Texas County				
		Firm Size1	Firm Size2	Firm Size3	Firm Size4	Firm Size5
Oklahoma	Texas LAUS ⁴	0.124	0.032	-0.181	-0.051	-0.278
	Beaver LAUS	-0.341*	-0.237	-0.335*	.346*	-0.174
	Cimarron LAUS	0.280	0.102	-0.026	-0.146	-0.430**

Note¹: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Note²: Firm sizes are Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 is 100 to 249 and Size5 is 250+ employees.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

The two Oklahoma geographical areas' UI clamant out-county firms' employment correlations with county unemployment rates are additionally examined by firm or employer size. The results are provided in Appendix E, Tables 16 and 17, at the end of this report, and also following on the next page. For the McCurtain County area, Table 16 shows that out-county employer Size4 (100-249 employees) employment is significantly positively correlated with the unemployment rate of McCurtain County, and that Size3 (50-99 employees) firms' employment is significantly positively correlated with the unemployment rate of Pushmataha County. The unemployment rates of Choctaw County and Le Flore County is not significantly correlated with any UI claimant firm employment firm size.

Table 16: McCurtain County Oklahoma UI Claimant Employer Employment Correlations¹ with McCurtain and Surrounding Oklahoma Counties' Unemployment Rate by Out County Location and Firm Sizes² - January 2014 to June 2017³.

Area	County	Firm Size1	Firm Size2	Firm Size3	Firm Size4	Firm Size5
Oklahoma	McCurtain LAUS⁴	0.142	0.130	0.083	.390*	0.160
	Choctaw LAUS	0.118	0.005	0.004	0.294	0.275
	Le Flore LAUS	-0.066	-0.021	0.213	0.109	0.068
	Pushmataha LAUS	-0.061	0.150	.439**	0.178	0.008

Note¹: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Note²: Firm sizes are Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 is 100 to 249 and Size5 is 250+ employees.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

For the Texas County area, Table 17 below displays that out-county Size2 (20-49 employees) firms' employment is significantly negatively correlated with the unemployment rates of Oklahoma Texas and Beaver counties, while out-county Size4 (100-249 employees) firms' employment is significantly negatively correlated also with Texas County's unemployment rate. No significant correlations by firm size were found with the Cimarron County unemployment rate.

Table 17: Texas County Oklahoma UI Claimant Employer Employment Correlations¹ with Texas and Surrounding Oklahoma Counties' Unemployment Rate by Out County Location and Firm Sizes² - January 2014 to June 2017³.

Area	County	All Firm Locations Out of Texas County				
		Firm Size1	Firm Size2	Firm Size3	Firm Size4	Firm Size5
Oklahoma	Texas LAUS ⁴	0.168	-.493**	0.180	-.307*	0.122
	Beaver LAUS	0.258	-.389*	-0.053	-0.134	0.011
	Cimarron LAUS	0.156	-0.252	0.287	-0.144	0.173

Note¹: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Note²: Firm sizes are Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 is 100 to 249 and Size5 is 250+ employees.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Summary of the Findings: A comparison of two Oklahoma border counties' employment change, by "in county" or "out of county" firm location and firm size

The analysis in Phase II was completed in five steps, with findings as follows. Step one identified the similarities and differences in employment and unemployment rates of the two geographical Oklahoma border county areas and established and confirmed the historically high unemployment rates of McCurtain County and surrounding counties, and the historically low unemployment rates of Texas County and surrounding counties. Texas County is identified as having the largest employment of the counties in its region, while Le Flore County is recognized as having the largest employment of the McCurtain County region.

Step two of the Phase II analyses looked at employment and unemployment rate correlations of the counties in each of the two border county geographical areas. Interestingly, both areas had one Oklahoma surrounding county in each area with employment not significantly negatively correlated with the area's central county unemployment rate. In neither area did the central counties' construction employment correlate with its unemployment rate. Also of curiosity was the finding that the unemployment rates of all Oklahoma counties in each area were significantly positively correlated to the central counties' unemployment rate, indicating that the same factors likely led to employment change in all the counties in each of the two geographical areas.

In step three of the Phase II analysis it was determined that in the McCurtain County area, nearly half or 48.9% of the UI claimant employers were not located in the areas' central McCurtain County and that in the Texas County area also a large portion, (39.5%), of the UI claimant employers were not located in central Texas County. A second important finding in this analysis step was that the in-county McCurtain County located UI Claimant employers more often are significantly negatively correlated with all counties in the area's unemployment rate, and that their out-county firms' employment are most often significantly positively correlated with all area counties' unemployment rates. However, in the Texas County area UI claimant out-county firms' employment demonstrates no pattern of preference for significant correlations.

Step four of the Phase II analysis determined in the McCurtain County area that the in-county highly volatile UI claimant firms' employment was most often significantly negatively correlated with all of the area counties' unemployment rates. For the Texas County area considering location, the opposite was true: out-county highly volatile employment UI claimant firm's employment are most often significantly negatively correlated with all counties' unemployment rates.

Step five of the Phase II analysis discovered that when considering UI claimant firms' employment by firm size and location in the two Oklahoma geographical areas, the in-county firms' employment of various sizes more often display significant correlations with each areas' county unemployment rates, than is the case the for out-county located firms' employment of various sizes. It was also found that there are cases of in-county small size employers, cases of in-county medium size employers along with in-county large size employers' employment with significant correlations with most of the area counties' unemployment rates. However, this finding of correlation by multiple employer sizes is less often found for the out-county firm's employment. In addition, both of the two geographical areas have counties with unemployment rates not correlated with the employment of any of the five sizes of employers, either in-county or out-county located employers.

Conclusions

In conclusion, the first hypothesis of highly volatile McCurtain County construction employment, unrelated to season, might be driving the historical overall county high unemployment rates is not supported. On the other hand, in the other area, Texas County construction employment is also determined to be unrelated to the historically low unemployment rates of central Texas County. Of course this would not preclude the employment of other industries from affecting their unemployment rates. However, the previous findings of Phase I analysis, in which the firm industries were determined to be unrelated to employment change indicates this not being the case.

The second hypothesis, that of a few employers in McCurtain County having highly volatile employment might be driving the historical high overall county unemployment rate, was only partially upheld, due to it also being found that both in-county and out-county UI claimant highly volatile firms' employment were significantly correlated with the McCurtain County unemployment rate. This same finding determined for the Texas County geographical area means that the employment of these highly volatile employment firms are related to both high and low unemployment rates of counties. However, third variable factors are also likely involved. It is possible relatively low or high economic robustness in areas are working through these highly volatile firms' employment, with both factors together determining the final employment change. Moreover, in addition the finding that these same in-county and out-county UI claimant firms' employment in both geographical area were often significantly correlated with the unemployment change of the central county, they were often also correlated with this central counties' surrounding counties employment change, merits additional investigation.

The third hypothesis, that in-county larger-sized firms' employment is related to a county's unemployment rate, more often than smaller sized employers, was not upheld. Although

employer size is found to be correlated with unemployment rates, and more often true with in-county employers than out-county employers, these findings are also true for smaller-sized employers and also true in both Oklahoma border county geographical areas. While answering some questions, the originality and novelty of these important Phase I and Phase II research findings, together prompt additional questions and imply the need for additional research into the employment dynamics of these two interesting Oklahoma border county areas, hence the anticipated near future publication of Phase III findings.

**APPENDIX C: Tables for Phase II, County Employment and Employment Change –
Descriptive Statistics, with Maps**

**Table 1: McCurtain County Oklahoma and Surrounding Oklahoma Counties
Descriptive Monthly Employment Statistics - January 2014 to June 2017¹.**

Area	County	Minimum	Maximum	Mean	Std. Deviation
Oklahoma	McCurtain QCEW²	10,355	11,696	11,067	274.2
	McCurtain QCEW Construction	244	727	408	128.5
	McCurtain Laus³	12,656	14,251	13,530	398.0
	Choctaw Laus	5,166	5,568	5,346	105.8
	Le Flore Laus	17,673	18,531	18,236	230.3
	Pushmataha Laus	4,173	4,692	4,445	127.0

Note¹: Number of cases (months) in each of the counties is 42.

Note²: Quarterly Census of Employment and Wages.

Note³: Employment from Local Area Unemployment Statistics.

**Table 2: Texas County Oklahoma and Surrounding Oklahoma Counties
Descriptive Monthly Employment Statistics - January 2014 to June 2017¹.**

Area	County	Minimum	Maximum	Mean	Std. Deviation
Oklahoma	Texas QCEW²	9,238	10,126	9,845	183.3
	Texas QCEW Construction	361	425	389	17.0
	Texas Laus³	8,683	9,672	9,111	250.3
	Beaver Laus	2,678	3,086	2,889	123.9
	Cimarron Laus	1,163	1,458	1,333	75.0

Note¹: Number of cases (months) in each of the counties is 42.

Note²: Quarterly Census of Employment and Wages.

Note³: Employment from Local Area Unemployment Statistics.

**Table 3: McCurtain County Oklahoma and Surrounding Counties
Descriptive Monthly Unemployment Statistics - January 2014 to
June 2017¹.**

Area	County	Minimum	Maximum	Mean	Std. Deviation
Oklahoma	McCurtain Laus²	5.5	13.1	7.5	1.19
	Choctaw Laus	5.4	10.3	7.7	0.84
	Le Flore Laus	5.3	8.7	6.8	0.64
	Pushmataha Laus	5.8	9.0	7.4	0.69

Note¹: Number of cases (months) in each of the counties is 42.

Note²: Unemployment from Local Area Unemployment Statistics.

**Table 4: Texas County Oklahoma and Surrounding Oklahoma Counties
Descriptive Monthly Unemployment Statistics - January 2014 to
June 2017¹.**

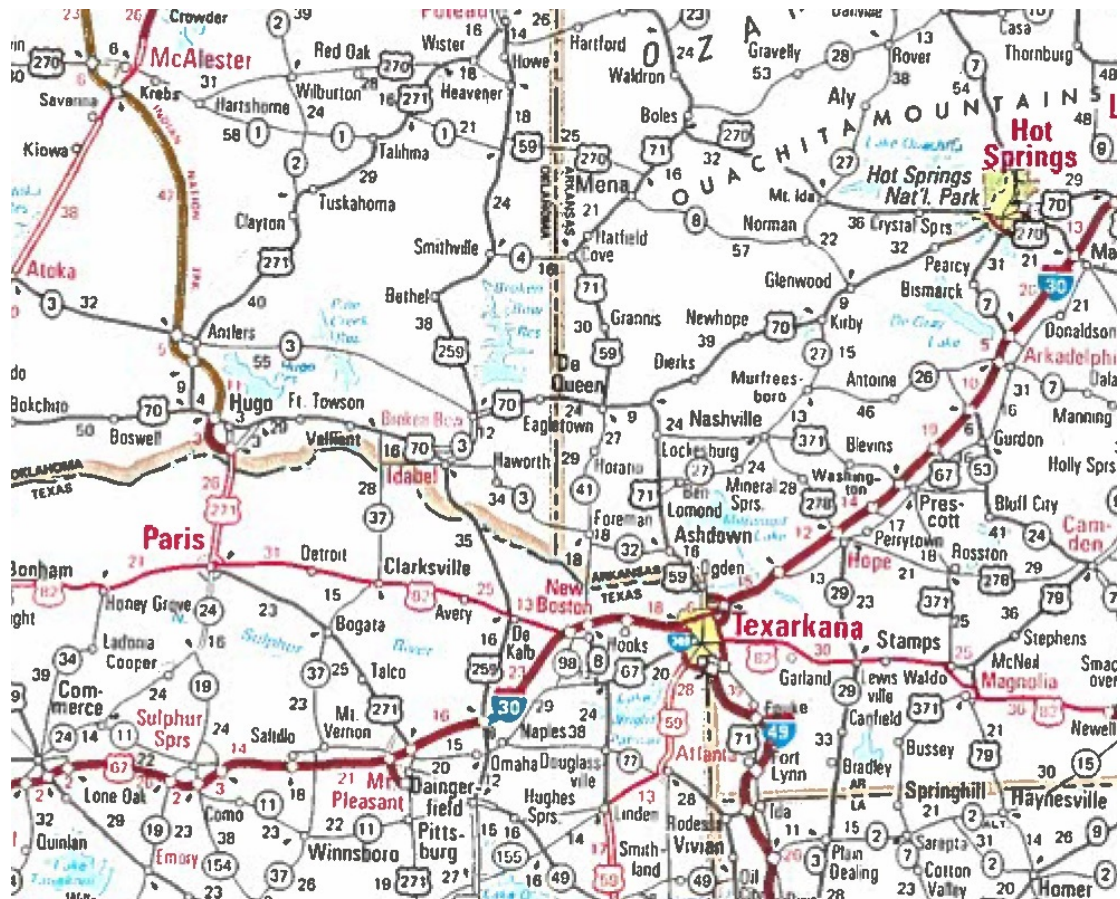
Area	County	Minimum	Maximum	Mean	Std. Deviation
Oklahoma	Texas Laus²	2.8	4.3	3.5	0.42
	Beaver Laus	2.1	4.2	2.9	0.40
	Cimarron Laus	1.8	3.4	2.5	0.45

Note¹: Number of cases (months) in each of the counties is 42.

Note²: Unemployment from Local Area Unemployment Statistics.

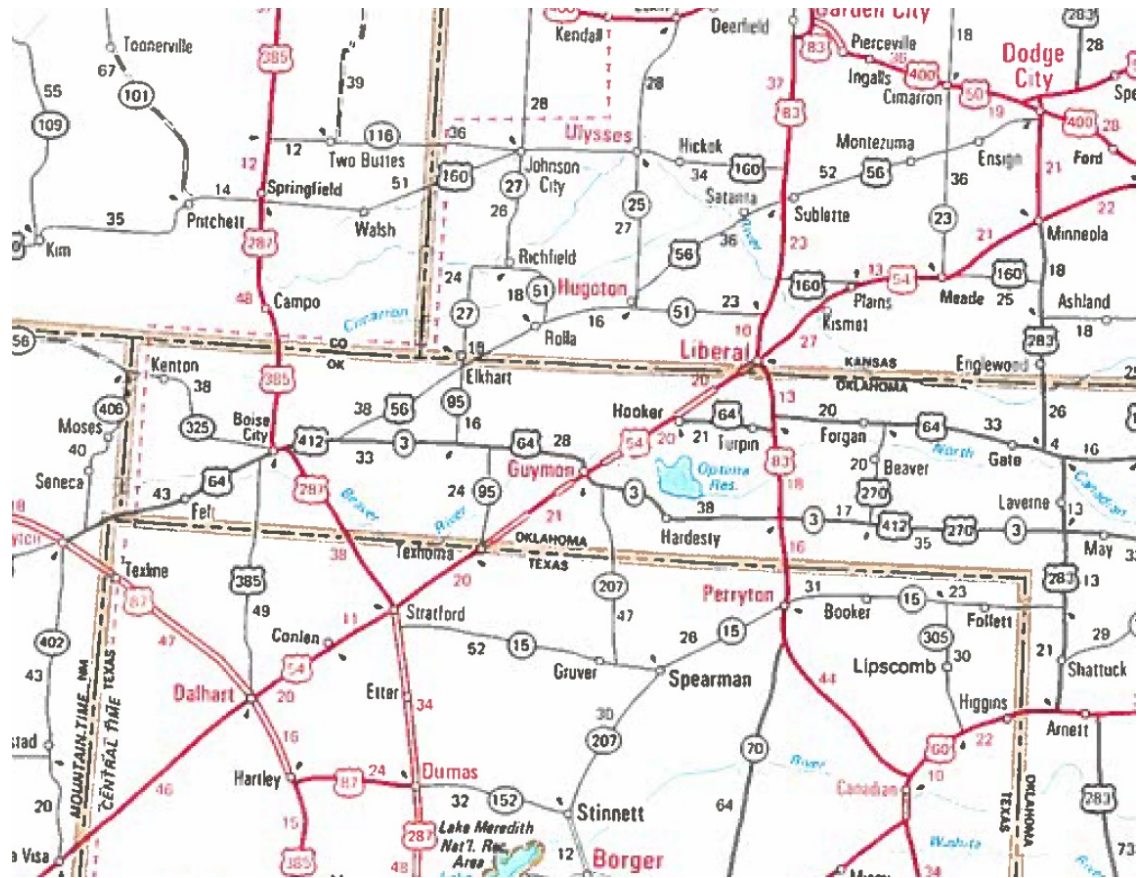
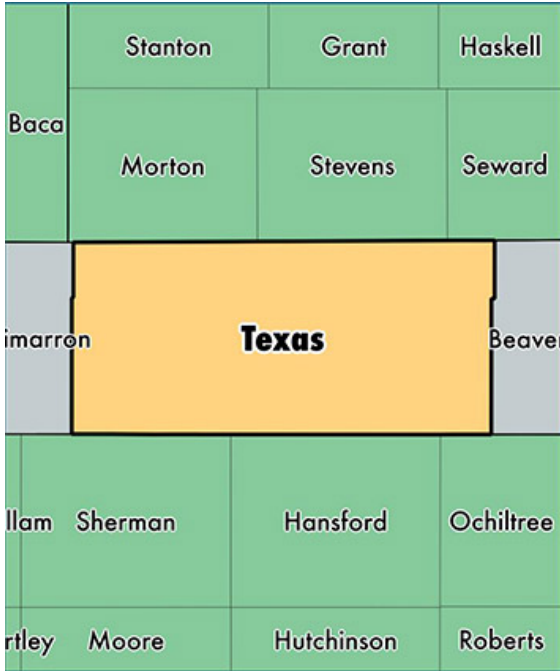
Note: Area maps are on the next two pages.

McCurtain County Oklahoma Maps



Road map courtesy of AAA of Oklahoma.

Texas County Oklahoma Maps



Road map courtesy of AAA of Oklahoma.

**APPENDIX D: Tables for Phase II, County Employment and Employment Change –
County Employment and Unemployment Correlations**

**Table 5: McCurtain County Oklahoma and Surrounding Oklahoma Counties'
Employment Correlations with McCurtain County's LAUS¹ Unemployment -
Rates January 2014 to June 2017².**

Area	County	Correlated ⁴ with McCurtain County OK LAUS Unemployment?
Oklahoma	McCurtain QCEW³	-.531**
	McCurtain QCEW Construction	-0.064
	McCurtain LAUS¹	-.514**
	Choctaw LAUS	0.180
	Le Flore LAUS	-.464**
	Pushmataha LAUS	-0.041

Note¹: Employment & Unemployment from Local Area Unemployment Statistics.

Note²: Number of cases (months) in each of the counties is 42.

Note³: Quarterly Census of Employment and Wages.

Note⁴: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

**Table 6: Texas County Oklahoma and Surrounding Oklahoma Counties'
Employment Correlations with McCurtain County's LAUS¹ Unemployment -
Rates January 2014 to June 2017².**

Area	County	Correlated ⁴ with Texas County OK LAUS Unemployment?
Oklahoma	Texas QCEW³	-0.251
	Texas QCEW Construction	0.167
	Texas LAUS¹	-.577**
	Beaver LAUS	0.009
	Cimarron LAUS	-.495**

Note¹: Employment & Unemployment from Local Area Unemployment Statistics.

Note²: Number of cases (months) in each of the counties is 42.

Note³: Quarterly Census of Employment and Wages.

Note⁴: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Table 7: McCurtain County Oklahoma and Surrounding Oklahoma Counties' LAUS¹ Unemployment Rate Correlations - January 2014 to June 2017².

Area	County	Correlated ³ with McCurtain County OK Unemployment?
Oklahoma	Choctaw LAUS	.706**
	Le Flore LAUS	.459**
	Pushmataha LAUS	.543**

Note¹: Employment & Unemployment from Local Area Unemployment Statistics.

Note²: Number of cases (months) in each of the counties is 42.

Note³: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Table 8: Texas County Oklahoma and Surrounding Oklahoma Counties' Unemployment Rate Correlations with Texas County's LAUS¹ Unemployment Rate - January 2014 to June 2017².

Area	County	Correlated ³ with Texas County OK Unemployment?
Oklahoma	Beaver LAUS	.668**
	Cimarron LAUS	.861**

Note¹: Employment & Unemployment from Local Area Unemployment Statistics.

Note²: Number of cases (months) in each of the counties is 42.

Note³: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

**APPENDIX E: Tables for Phase II, County Employment and Employment Change –
Tabulations and Correlations by Employer Location and Firm Size - Appendix E**

**Table 9: Oklahoma McCurtain & Texas Counties' UI Claimant Employers
by Number, Percent and In, Out or Indeterminate County locations -
First Quarter 2016.**

Area	County	All Locations In County		All Locations Out of County		Locations both In & Out of County	
		Number	Percent	Number	Percent	Number	Percent
Oklahoma	McCurtain	74	39.4	92	48.9	22	11.7
	Texas	34	42.0	32	39.5	15	18.5

**Table 10: McCurtain County Oklahoma UI Claimant Employer' Employment Correlations with
McCurtain and Surrounding Oklahoma Counties' Unemployment Rate by Number and
Percent¹ - January 2014 to June 2017².**

Area	County	All Locations In County				All Locations Out County				Total Correlated	
		Negative Correlated ⁴		Positive Correlated		Negative Correlated		Positive Correlated			
		No.	%	No.	%	No.	%	No.	%	No.	%
Oklahoma	McCurtain LAUS ³	19	25.7	11	14.9	14	15.2	17	18.5	61	36.7
	Choctaw LAUS	22	29.7	6	8.1	14	15.2	17	18.5	59	35.5
	Le Flore LAUS	16	21.6	5	6.8	13	14.1	12	13.0	46	27.7
	Pushmataha LAUS	12	16.2	6	8.1	13	14.1	12	13.0	43	25.9
		Possible In County Employers = 74				Possible Out County Employers = 92				All Possible =166	

Note¹: Total UI Claimant Employers is 166.

Note²: Number of cases (months) in each of the counties is 42.

Note³: Unemployment rates from Local Area Unemployment Statistics.

Note⁴: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Table 11: Texas County Oklahoma UI Claimant Employer¹ Employment Correlations with Texas and Surrounding Oklahoma Counties' Unemployment Rate by Number and Percent¹ - January 2014 to June 2017².

Area	County	All Locations In County				All Locations Out County				Total Correlated	
		Negative Correlated ⁴		Positive Correlated		Negative Correlated		Positive Correlated			
		No.	%	No.	%	No.	%	No.	%	No.	%
Oklahoma	Texas LAUS ³	3	8.8	4	11.8	6	18.8	5	15.6	18	27.3
	Beaver LAUS	10	29.4	3	8.8	5	15.6	4	12.5	22	33.3
	Cimarron LAUS	3	8.8	8	23.5	5	15.6	4	12.5	20	30.3
		Possible In County Employers = 34				Possible Out County Employers = 32				All Possible = 66	

Note¹: Total UI Claimant Employers is 166.

Note²: Number of cases (months) in each of the counties is 42.

Note³: Unemployment rates from Local Area Unemployment Statistics.

Note⁴: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Table 12: McCurtain County Oklahoma UI Claimant Employers¹ with Flexing²Employment's Correlations with McCurtain and Surrounding Oklahoma Counties' Unemployment Rate by Number and Percent - January 2014 to June 2017³.

Area	County	All Locations In County				All Locations Out County				Total Correlated	
		Negative Correlated ⁵		Positive Correlated		Negative Correlated ⁵		Positive Correlated			
		No.	%	No.	%	No.	%	No.	%	No.	%
Oklahoma	McCurtain LAUS ⁴	9	37.5	4	16.7	2	8.0	2	8.0	17	34.7
	Choctaw LAUS	9	37.5	2	8.3	1	4.0	1	4.0	13	26.5
	Le Flore LAUS	6	25.0	1	4.2	1	4.0	2	8.0	10	20.4
	Pushmataha LAUS	5	20.8	3	12.5	2	8.0	3	12.0	13	26.5
		Possible In County Employers = 24				Possible Out County Employers = 25				All Possible = 49	

Note¹: Total UI Claimant Employers is 166.

Note²: Employers with flexing employment were identified by graphs of employment, over the 42 months of the study's observation.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Note⁵: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Table 13: Texas County Oklahoma UI Claimant Employers¹ with Flexing² Employment's Correlations with Texas and Surrounding Oklahoma Counties' Unemployment Rate by Number and Percent - January 2014 to June 2017³.

Area	County	All Locations In County				All Locations Out County				Total Correlated	
		Negative Correlated ⁴		Positive Correlated		Negative Correlated ⁴		Positive Correlated			
		No.	%	No.	%	No.	%	No.	%	No.	%
Oklahoma	Texas LAUS ⁴	2	15.4	1	7.7	3	27.3	1	9.1	7	29.2
	Beaver LAUS	4	30.8	1	7.7	4	36.4	2	18.2	11	45.8
	Cimarron LAUS	2	15.4	3	23.1	3	27.3	1	9.1	9	37.5
		Possible In County Employers = 13				Possible Out County Employers = 11				All Possible = 24	

Note¹: Total UI Claimant Employers is 166.

Note²: Employers with flexing employment were identified by graphs of employment, over the 42 months of the study's observation.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Note⁵: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Table 14: McCurtain County Oklahoma UI Claimant Employer Employment Correlations¹ with McCurtain and Surrounding Oklahoma Counties' Unemployment Rate by In County Location and Firm Sizes² - January 2014 to June 2017³.

Area	County	All Firm Locations In McCurtain County				
		Firm Size1	Firm Size2	Firm Size3	Firm Size4	Firm Size5
Oklahoma	McCurtain LAUS ⁴	.386*	-.394**	-0.152	-0.162	-.418**
	Choctaw LAUS	.332*	-.540**	-0.107	-0.237	-0.260
	Le Flore LAUS	0.269	-0.247	-0.059	-0.130	-0.238
	Pushmataha LAUS	0.236	-0.057	-0.171	-0.150	-.507**

Note¹: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Note²: Firm sizes are Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 is 100 to 249 and Size5 is 250+ employees.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Table 15: Texas County Oklahoma UI Claimant Employer Employment Correlations¹ with Texas and Surrounding Oklahoma Counties' Unemployment Rate by In County Location and Firm Sizes² - January 2014 to June 2017³.

Area	County	All Firm Locations In Texas County				
		Firm Size1	Firm Size2	Firm Size3	Firm Size4	Firm Size5
Oklahoma	Texas LAUS ⁴	0.124	0.032	-0.181	-0.051	-0.278
	Beaver LAUS	-.341*	-0.237	-.335*	.346*	-0.174
	Cimarron LAUS	0.280	0.102	-0.026	-0.146	-.430**

Note¹: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Note²: Firm sizes are Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 is 100 to 249 and Size5 is 250+ employees.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Table 16: McCurtain County Oklahoma UI Claimant Employer Employment Correlations¹ with McCurtain and Surrounding Oklahoma Counties' Unemployment Rate by Out County Location and Firm Sizes² - January 2014 to June 2017³.

Area	County	Firm Size1	Firm Size2	Firm Size3	Firm Size4	Firm Size5
Oklahoma	McCurtain LAUS ⁴	0.142	0.130	0.083	.390*	0.160
	Choctaw LAUS	0.118	0.005	0.004	0.294	0.275
	Le Flore LAUS	-0.066	-0.021	0.213	0.109	0.068
	Pushmataha LAUS	-0.061	0.150	.439**	0.178	0.008

Note¹: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Note²: Firm sizes are Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 is 100 to 249 and Size5 is 250+ employees.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

Table 17: Texas County Oklahoma UI Claimant Employer Employment Correlations¹ with Texas and Surrounding Oklahoma Counties' Unemployment Rate by Out County Location and Firm Sizes² - January 2014 to June 2017³.

Area	County	All Firm Locations Out of Texas County				
		Firm Size1	Firm Size2	Firm Size3	Firm Size4	Firm Size5
Oklahoma	Texas LAUS ⁴	0.168	-.493**	0.180	-.307*	0.122
	Beaver LAUS	0.258	-.389*	-0.053	-0.134	0.011
	Cimarron LAUS	0.156	-0.252	0.287	-0.144	0.173

Note¹: * Correlation is significant to the .05, and ** correlation is significant to the .001 level (2-tailed).

Note²: Firm sizes are Size1 = 0 to 19 employees, Size2 = 20 to 49, Size3 = 50 to 99, Size4 is 100 to 249 and Size5 is 250+ employees.

Note³: Number of cases (months) in each of the counties is 42.

Note⁴: Unemployment rates from Local Area Unemployment Statistics.

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