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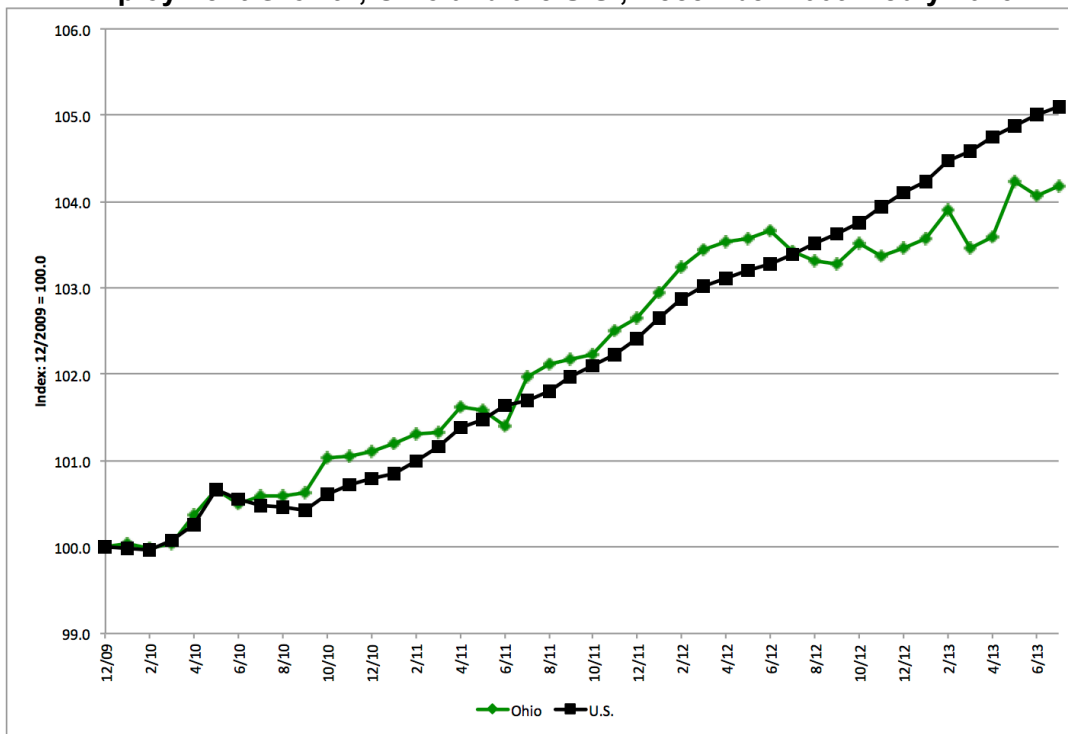
Ohio in the Recovery

We are nearing the fourth anniversary of the resumption of employment growth nationally and in Ohio following the 2007-2009 recession. Ohio's job growth was slightly above average in the first two years of the recovery, but seems to have weakened more recently. This article explores employment growth in the recovery both statewide and regionally, and includes a brief examination of the initial employment impact of shale oil and gas exploration.

Statewide Trends

Ohio employment reached its bottom in December 2009 with total nonfarm employment of 5,002,000 – its lowest level in 16 years. Since then, net growth has been 203,600, just shy of half of the 416,200 jobs lost in the preceding two years. Exhibit 1 compares net Ohio

Exhibit 1
Employment Growth, Ohio and the U.S., December 2009 – July 2013



Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

employment growth to U.S. growth from that trough through July 2013. As the graph shows, Ohio's employment growth tracked slightly above the U.S. average through June 2012 before weakening markedly. As a result, Ohio's cumulative employment growth over the course of the recovery has been 4.2 percent compared to 5.1 percent nationally.

However, an important caveat is that recent estimates from the Current Employment Statistics (CES) series on which this analysis is based are preliminary and subject to possibly significant revision. Initial CES estimates are based solely on the results of a relatively small national sample and are revised in each of the following two years as more reliable data become available. The fact that the Ohio employment trend breaks in July 2012 is significant: estimates for that month and later are particularly tentative. In fact, it may be that Ohio's employment growth weakened less than these estimates imply. We will get more accurate information when revised 2012 and 2013 employment estimates are released in March 2014.

Exhibit 2 on the following page compares year-over-year employment percentage changes by nonfarm¹ industry sector in Ohio to changes at the national level. Sectors are shown in descending order of their 2010 Ohio employment. Changes for 2010-2011 and 2011-2012 are calculated from the Quarterly Census of Employment and Wages (QCEW). As its name implies, this is a census, not an estimate, and is highly accurate. Changes for 2012-2013 are computed from CES estimates through July of each year.

One important implication of these growth rates is that, contrary to the point above, the monthly CES employment totals for 2012 are not likely to be significantly revised. The annual employment growth for 2012 implied by the monthly CES estimates is 1.5 percent, close to the 1.6 percent calculated from the QCEW employment totals. In other words, unfortunately, the weakening growth trend shown in Exhibit 1 is probably fairly accurate. The largest adjustments to the 2012 CES estimates are likely to be within sectors. The CES estimates may have overstated employment in education and health, and understated that in business services, leisure, construction, and transportation. But again, if adjustments are made to the employment totals in these sectors in the March 2014 revisions, they should approximately offset.

Examining growth rates across the rows of Exhibit 2 helps to identify the reasons for the recent growth slowdown. Because the sectors are listed in order of employment size, those listed first generally have the largest impact on total growth. Employment growth in professional and business services was 25,000 jobs in 2011 and more than 21,000 jobs in 2012, but sank to only about 3,000 this year. Growth stalled in each of the three subsectors (professional, scientific, and technical services; management of companies; and administrative support and waste services) while the upward trend in each continued unbroken at the national level.

Government employment has declined throughout the recovery – a net loss of 33,500 jobs between December 2009 and July 2013, according to CES. The federal government has shed 3,500 of these jobs. Federal employment is declining nationally, but the rate of decline in Ohio since 2010 has been at a rate slightly faster than average. State government employment has been volatile, but stood in July 3,400 jobs higher than its December 2009 level. All these gains – and more – occurred in the Columbus Metropolitan Statistical Area (MSA) which enjoyed a net gain of 7,000 (11.2 percent) over the period. The share of total Ohio government employment

¹ Farm employment totals are available – both proprietors and workers – from the Regional Economic Accounts of the Bureau of Economic Analysis, but currently only through 2011.

Exhibit 2
Annual Employment Changes by Sector, Ohio and the U.S., 2010-2013
 Percentages in green (red) indicate Ohio growth more than 0.2 percentage points higher (lower) than U.S. growth.

Sector	Share of Ohio emp., 2010		Year 2010-11	Year 2011-12	Jan-Jul 2012-13*
Total nonfarm	100.0%	Ohio	1.2%	1.6%	0.5%
		U.S.	1.2%	1.8%	1.6%
Education and health services	16.7%	Ohio	1.2%	1.3%	1.7%
		U.S.	2.0%	1.9%	1.8%
Government	15.1%	Ohio	-2.4%	-1.4%	-1.4%
		U.S.	-1.8%	-0.8%	-0.3%
Professional and business services	12.7%	Ohio	4.2%	3.3%	0.4%
		U.S.	3.5%	3.4%	3.3%
Manufacturing	12.6%	Ohio	2.8%	2.9%	1.3%
		U.S.	1.9%	1.7%	0.6%
Retail trade	11.2%	Ohio	0.6%	0.8%	0.2%
		U.S.	1.3%	1.3%	1.8%
Leisure & hospitality	9.7%	Ohio	1.7%	3.5%	1.7%
		U.S.	2.2%	3.3%	2.9%
Financial activities	5.4%	Ohio	-0.1%	0.5%	0.4%
		U.S.	0.2%	1.2%	1.4%
Wholesale trade	4.4%	Ohio	0.8%	2.6%	1.9%
		U.S.	1.5%	2.0%	1.6%
Construction	3.4%	Ohio	4.3%	2.6%	-3.6%
		U.S.	-0.3%	2.1%	2.9%
Transportation and warehousing	3.1%	Ohio	2.7%	2.5%	-0.1%
		U.S.	2.8%	2.5%	1.6%
Other services	3.0%	Ohio	0.5%	1.1%	0.5%
		U.S.	1.4%	3.1%	1.0%
Information	1.6%	Ohio	-2.1%	-1.9%	-1.7%
		U.S.	-1.1%	0.1%	0.6%
Natural resources & mining	0.5%	Ohio	2.5%	5.2%	1.2%
		U.S.	5.1%	5.1%	2.2%
Utilities	0.4%	Ohio	-3.3%	-1.1%	-0.6%
		U.S.	-0.2%	0.0%	0.7%

Source: Quarterly Census of Employment and Wages and *Current Employment Statistics, U.S. Bureau of Labor Statistics.

in the Columbus MSA has gradually increased over the past two decades; the 41.5 percent share in 2012 represents its highest level since 1966.

Nearly all government employment declines have been in local governments. Local employment across the state has fallen 33,400 – 6.2 percent. Local governments have faced continuing challenges from recession-driven declines in their key revenue sources: income taxes for municipalities, sales taxes for counties, and property taxes for school districts. There have also been significant declines in payments from the state’s Local Government Fund, which traditionally served as a key revenue source for these governments. Franklin County, for example, has suffered a \$14.3 million (54 percent) decline in this revenue stream since 2008 – a loss amounting to 5.1 percent of its total general fund revenues. County leaders are as a result contemplating a sales tax increase.

Manufacturing employment continues to grow at a faster-than-average rate, but its 2012-2013 growth rate is less than half that of the previous year. This sector is often the key to whether the economies of Ohio and most of its regions rise or fall. The December 7, 2012, edition of *On the Money* (Vol. 129, No. 50) featured a detailed analysis of the central role that manufacturing plays in the Ohio economy. As pointed out in that article, manufacturers trade off between labor and technology in producing their output. Early in the recovery, manufacturers hired at the fastest pace since the early 1990s, but that wave of hiring has ebbed. This is particularly true at the national level, where the small employment increase reported in August represents the first gain since February. Manufacturing firms themselves are continuing to grow: the Institute for Supply Management reported a better-than-expected uptick in its August purchasing managers' index. This was the third consecutive gain after a small drop in May; its reading above 50 indicates that the sector continues to expand. This suggests that the productivity of manufacturing workers is increasing. The fact that Ohio employment has thus far not declined is probably a function of the high concentration of automotive manufacturing; nationally, automotive employment has continued to increase this year and average weekly hours are firming. But automotive employment growth is likely to slow eventually as it has in other manufacturing industries. We must therefore expect eventual stagnation and possibly declines in manufacturing employment in Ohio as has been the case elsewhere.

Although it is a relatively small sector, the reversal of the strong growth in transportation and warehousing has had a significant impact. The sector contributed more than 4,000 jobs to the state's total employment gain in 2011 and 2012; the current year's gain suggested by the CES statistics is zero. The available CES statistics are not detailed enough to indicate what transportation-related industries are suffering, but they do indicate that the important truck transportation industry has continued to grow in 2013 at a 1.7 percent year-over-year rate.

One striking feature of Exhibit 2 is the large number of underperforming sectors, even in the earlier years. Ohio employment grew at a rate equal to the national average in 2011 and 2012 because of the strength of only a few sectors. This lack of balance in economic growth is not healthy, and leaves the economy vulnerable to reversals of those sectors' fortunes, which happened this year to professional and business services, and is likely eventually to happen to manufacturing. The continuing recovery in the economy and business investment gives sectors such as business services and transportation and warehousing the prospect of better growth. Other sectors, such as retail, construction, and to some extent healthcare are limited by Ohio's slow population growth. Because of this and the likely continuation of slower manufacturing employment growth, it is quite possible that Ohio's below-average employment growth trend will continue.

Regional Trends

As noted repeatedly in these articles, Ohio's economy is not monolithic, but rather is composed of a number of distinct urban and rural regional economies, each with different economic characteristics and economic performance. Thus, no survey of Ohio's economic recovery is complete without examining the pace of that recovery at a regional level.

These regions are mapped in Exhibit 3. These regions include each of the six large MSAs², and seven other regions composed of the remaining 60 counties including Ohio's smaller MSAs and

² New MSA delineations were released on February 28, 2013; see the April 5 edition of *On the Money* (Vol. 130, No. 7). Preble County was dropped from Dayton, Ottawa County was dropped from Toledo,

rural areas. These seven regions were first analyzed in the October 12, 2012, edition of *On the Money* (Vol. 129, No. 46). As explained there, these regions combine roughly similar counties based on employment concentrations primarily for farming and manufacturing.

**Exhibit 3
Ohio Regions**

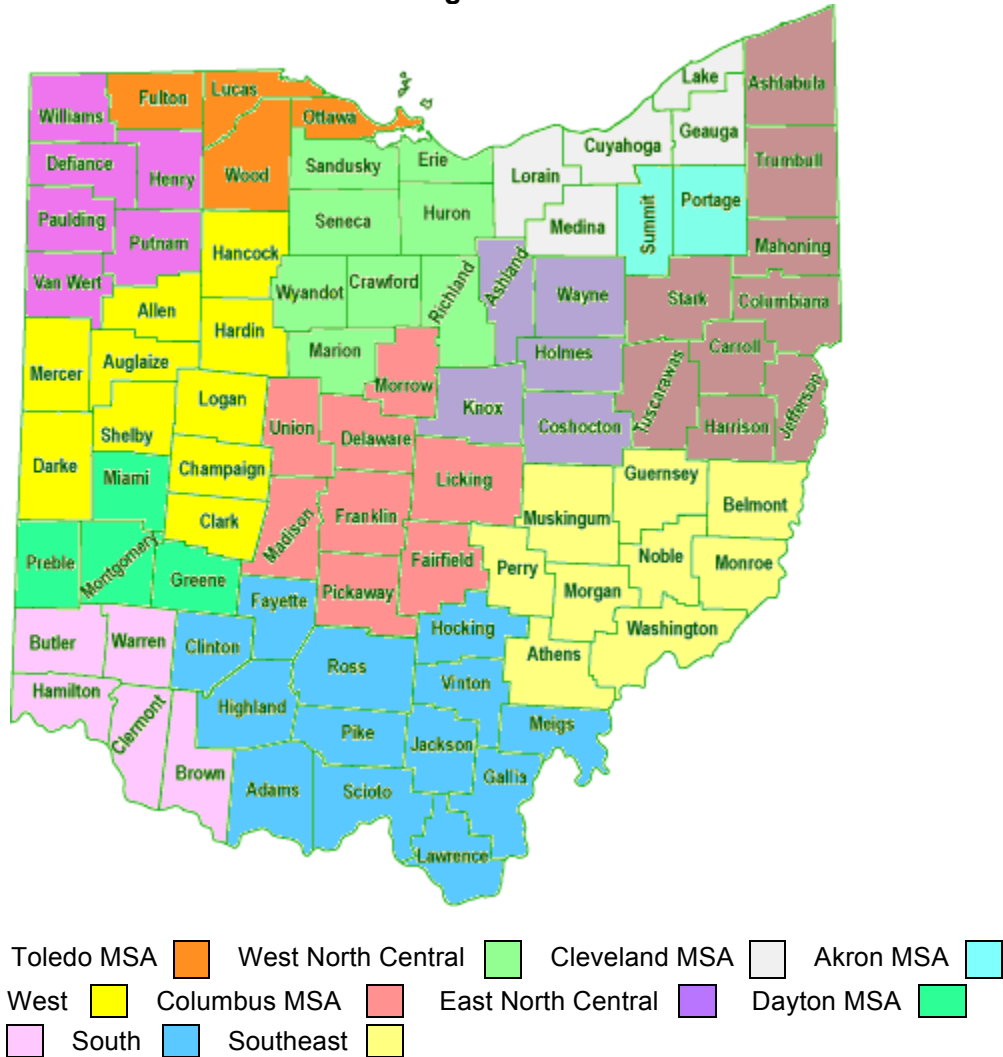


Exhibit 4 presents the post-recession employment growth of these 13 regions. Economic performance does indeed differ significantly among these regions. Ohio’s large MSAs as a class behaved very similarly to the state as a whole – not surprising, considering that these areas account for more than 70 percent of total statewide employment. However, two-year manufacturing employment growth was only 4.9 percent versus 7.2 percent growth for areas outside the six large MSAs. Of the individual MSAs, however, only Columbus exceeded the state average growth (and the national average as well) while Toledo matched it. Cincinnati’s 1.5 percent two-year growth includes only the five Ohio counties of this three-state region; including the Kentucky and Indiana counties, however, yields an only marginally higher 1.6 percent. The reasons for the weakness vary from one MSA to the next. Manufacturing was

and Hocking and Perry Counties were added to Columbus. This analysis uses the previous (2003) delineations to maintain comparability between this analysis and those in previous articles.

especially weak in Cincinnati, with two-year growth of only 0.7 percent. Business service growth was weaker than average in Akron, Dayton, and Toledo; financial services declined 3.1 percent in Cleveland; private education and healthcare experienced subpar growth in all MSAs except for Cleveland and Columbus (where the sector grew 7.6 percent); and government suffered unusually large declines in Cincinnati and Cleveland.

Exhibit 4
Post-Recession Employment Growth of Ohio Regions

Area	Employment, 2012		Percentage changes		
	Number	% of Ohio	2010-2011	2011-2012	2010-2012
Ohio*	5,047,097	100.0%	1.2%	1.6%	2.8%
Large MSAs	3,608,504	71.5%	1.0%	1.6%	2.6%
Akron MSA	307,772	6.1%	0.9%	0.9%	1.8%
Cincinnati MSA**	765,713	15.2%	0.4%	1.0%	1.5%
Cleveland MSA	979,391	19.4%	0.6%	1.6%	2.3%
Columbus MSA	903,960	17.9%	1.8%	2.5%	4.3%
Dayton MSA	360,090	7.1%	1.1%	0.6%	1.7%
Toledo MSA	291,578	5.8%	1.3%	1.6%	2.8%
Northwest	68,733	1.4%	1.5%	1.5%	3.1%
West North Central	197,252	3.9%	2.8%	-0.5%	0.9%
East North Central	107,741	2.1%	1.0%	2.0%	3.0%
Northeast	447,900	8.9%	1.4%	1.1%	2.5%
West	256,146	5.1%	1.2%	1.9%	3.1%
South	146,961	2.9%	-0.4%	0.2%	-0.2%
Southeast	127,154	2.5%	1.1%	0.5%	1.5%

*Includes 86,706 positions whose specific location within Ohio is unknown. **Ohio portion only.

Source: Quarterly Census of Employment and Wages, U.S. Bureau of Labor Statistics.

Exhibit 4 also reveals that outside of the large MSAs, the Northwest, West, and East North Central regions outperformed the statewide average, and either matched or marginally outperformed the 3.0 percent national average. These three regions all enjoyed above-average two-year growth in manufacturing – 8.9 percent in the West, 9.2 percent in the Northwest, and 7.7 percent in the East North Central region. This was offset by weaker-than-average performance in government and education and health services.

In contrast, growth was far below average in the West North Central region and slightly negative in the South. Despite 6.3 percent West North Central manufacturing growth, trade, transportation, and utilities employment grew only 0.2 percent, and the region suffered declines of around one percent in financial services, business services, and education and healthcare, and 5.9 percent in government.

In contrast, manufacturing growth in the South was a below-average 2.1 percent. Business services and education and healthcare both had above-average employment growth (11.2 percent and 4.5 percent, respectively) but growth in trade, transportation, and utilities was zero. Financial activities declined 1.6 percent and government declined 8.1 percent.

Oil and Gas Extraction Activity in Eastern Ohio

The tapping of the Utica and Marcellus shale deposits in Ohio's eastern counties has recently gotten underway. Early leases were signed in 2010 and drilling began in 2012. This activity creates *direct* jobs in the natural resources and mining sector, *indirect* jobs among suppliers in the mining sector and other sectors, and *induced* jobs as employees of the companies and their suppliers spend their earnings on household goods and services. It is fair to count the indirect and induced jobs as part of the economic impact because without the original activity taking place, the indirect and induced impact would not have occurred and the employment in those industries would not have been supported.

Enormous employment impacts from this activity have been predicted for the impacted counties, which are in both the Northeast and South regions; these may have indirect and induced impacts in other areas of the state as well. Mark Partridge and Amanda Weinstein of Ohio State University's Department of Agricultural, Environmental, and Development Economics cite a 2012 study commissioned by the Ohio Shale Coalition predicting that 66,000 direct, indirect, and induced jobs will be created by 2014 as a result of this activity.³ Partridge and Weinstein sharply criticize this study, arguing that the employment impacts are likely to be closer to 20,000 through 2015 – still a substantial total.

The question is whether there was a measurable impact on the mining sector and broader economies of the impacted counties during the 2010-2012 period (recalling that activity was only beginning to get underway). Answering this question is more difficult than it may seem. First, detailed employment totals are suppressed in the QCEW whenever disclosing them would reveal the employment of an individual establishment; this is a concern if there are only one or two establishments in an industry or one large establishment and several much smaller ones. As a result, county-level employment is generally not available for the oil and gas extraction industry but only for the broader mining subsector, obviously including other forms of mining as well. For two of the counties in the analysis, not even mining employment is available for both years, so natural resources and mining employment is used instead. This is an even broader sector including hunting, fishing, logging, and agricultural support in addition to mining. A more fundamental difficulty is that positive growth in the sector and especially the broader economy does not necessarily indicate an impact from oil and gas extraction; other beneficial activities may have been occurring at the same time.

With these points in mind, Exhibits 5 and 6 explore employment growth in the nine counties identified in a recent *Akron Beacon Journal* article as being the most active in terms of drilling leases and exploration.⁴ The first columns of Exhibit 5 show total and mining employment in 2012. The following columns present the natural resources and mining location quotients for 2010 and 2012. A location quotient is the percentage of total local employment in a specific industry (in this case, mining) divided by the percentage of total national employment in that industry. Thus, a location quotient greater than one indicates an employment concentration greater than average, and an increasing location quotient implies increasing relative concentration. The final two columns include the 2010-2012 numerical and percentage growth for each area.

³ See http://aede.osu.edu/sites/aede/files/publication_files/Response%20to%20The%20Ohio%20Shale%20Coalition.pdf. My thanks to Bob Gitter of Ohio Wesleyan University for bringing this note to my attention. The Ohio Shale Coalition study seems to be no longer online.

⁴ Bob Downing, "Gas Drillers Fly South in Ohio, Exchange Assets," *Akron Beacon Journal*, September 4, 2013, p. B1.

Exhibit 5
Mining Employment Growth and Concentration in Counties Impacted by
Oil and Gas Exploration Activity

	Employment, 2012		Location quotient		Change, 2010-2012	
	Total	Mining	2010	2012	Number	Percentage
United States	131,684,961	797,692	---	---	189,111	22.4%
Ohio	5,047,097	12,230	0.437	0.400	1,296	11.9%
Belmont	22,574	1,747	12.725	12.776	287	19.7%
Carroll	5,948	150	2.217	4.163	88	141.9%
Columbiana	30,243	149	1.279	0.813	-40	-21.2%
Guernsey*	13,943	230	1.026	1.093	35	17.9%
Harrison	3,426	369	19.645	17.780	41	12.5%
Monroe	3,701	107	2.896	4.773	55	105.8%
Noble*	2,890	178	3.846	4.080	17	10.6%
Portage	51,912	185	1.154	0.588	-107	-36.6%
Stark	153,940	461	0.278	0.494	250	118.5%

*Industry employment and location quotients are for natural resources and mining.

Source: Quarterly Census of Employment and Wages, U.S. Bureau of Labor Statistics.

Ohio's mining employment growth was only about half of the U.S. average, but this is not an entirely fair comparison because oil and gas drilling was more established elsewhere during this period, while metal ore mining in Western states including Arizona and Nevada has been growing significantly. Nevertheless, Exhibit 5 reveals that mining employment concentrations are very high and stable in Belmont and Harrison Counties, and increasing significantly in Carroll, Monroe, and Stark Counties. The *Beacon Journal* article cited above noted that oil and gas activity in Ohio has been shifting south, which is consistent with the employment declines in Columbiana and Portage Counties.

Exhibit 6 presents what little QCEW data are available on oil and gas extraction specifically. Statewide employment in the industry increased 11.6 percent, compared to the 18.7 percent national average. Ohio's employment growth in oil and gas accounted for only 25 percent of total statewide mining employment growth and 38 percent of growth in Stark County – the one county for which complete data are available. The net growth of 13 oil and gas extraction establishments in the nine counties constituted the bulk of establishment growth statewide. Belmont and Harrison Counties received their first oil drilling establishments during the period, and Portage County lost an establishment. Oil and gas extraction activity is nothing new in this region, however; earlier QCEW data reveal that Belmont and Harrison Counties were the only counties that had none of these establishments a decade ago.

Exhibit 6
**Oil and Gas Extraction Employment and Number of Establishments in Counties
Impacted by Oil and Gas Exploration Activity**

	Number of Employees			Number of Establishments		
	2010	2012	Change	2010	2012	Change
United States	158,423	187,985	29,562	9,096	9,676	580
Ohio	2,759	3,079	320	193	210	17
Belmont	0	n/a	n/a	0	1	1
Carroll	n/a	n/a	n/a	1	1	0
Columbiana	n/a	n/a	n/a	2	3	1
Guernsey	n/a	83	n/a	3	7	4
Harrison	0	n/a	n/a	0	2	2
Monroe	26	n/a	n/a	5	5	0
Noble	n/a	n/a	n/a	2	3	1
Portage	62	64	2	8	7	-1
Stark	28	203	175	11	16	5

Source: Quarterly Census of Employment and Wages, U.S. Bureau of Labor Statistics.

Because these statistics refer to a period in which oil and gas extraction activity was only beginning, the real purpose of this analysis is to establish a baseline. It will be repeated annually in future articles to track the ongoing development of oil and gas exploration in Eastern Ohio.

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