2017

Oklahoma Job Quarterly Earnings Percentile Changes
All Industry, Mining, Manufacturing and Health for Years
2007 to 2017

Oklahoma Employment Security Commission
Economic Research and Analysis Division

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(An update of two previous 10-year reports)

I. Introduction

An important economic indicator of the relative health of Oklahoma's businesses, as well as our workforce well-being, is a time series analysis of earnings and earnings change. While we have always been able to measure the change in average earnings by using administrative records, we have not viewed these changes in earnings across the income spectrum. To address this we have used our agency administrative earnings records to construct a 10-year history and recent year changes in earnings as measured by percentiles. In short, this analysis uses percentile ranking of the job quarterly earnings of individual jobs, from lowest to highest to report job earnings changes and to determine important earnings changes by income level.

The data set is by job not individual. Consequently, if a person works two part-time jobs then the two part-time jobs would each show up separately. In addition we excluded any job with earnings of less than $300 for the reference quarter. The data for second job quarter earnings for the years 2007 and 2017 as well as a number of years in between are included. The data set does not include federal jobs.

This report is an update of two previous year 2005 to 2015 and 2006 to 2016 annual reports, and as such, provides new 10-year, 3-year and 1-year percentile earnings for the four NAICS industry sectors: NAICS 00 Total, All Industries, ('all industry'); NAICS 21 Mining, Quarrying, and Oil and Gas Extraction, ('mining'); NAICS 31-33 Manufacturing, ('manufacturing'); and NAICS 62 Health Care and Social Assistance, ('health'), comparing them with their two previous time series analysis earnings and earnings change findings and the findings of each category with the three others."

II. Industry Percentile Job Quarterly Earnings: 10-Year Changes - Years 2007 to 2017

Table 1 shows the job quarterly earnings and percentile change of an aggregate of all industries between the 2nd quarter 2007 and the 2nd quarter 2017.

Table 1. All Industry Percentage Change of Quarterly Job Earnings by Percentile, in 10-Year Interval: 2007 to 2017

Percentile	2007	2017	Numeric Change	Percent Change
5th	$567	$680	$113	19.9
10th	$902	$1,155	$253	28.0
20th	$1,784	$2,372	$588	33.0
25th	$2,347	$3,090	$743	31.7
30th	$2,985	$3,888	$903	30.3
40th	$4,276	$5,461	$1,185	27.7
50th	$5,543	$7,042	$1,499	27.0
60th	$6,950	$8,816	$1,866	26.8
70th	$8,715	$11,026	$2,311	26.5
75th	$9,853	$12,434	$2,581	26.2
80th	$11,258	$14,107	$2,849	25.3
90th	$14,437	$19,381	$4,944	34.2
95th	$15,501	$25,452	$9,951	64.2
99th	$19,745	$48,466	$28,721	145.5
Total Jobs	**1,637,273**	**1,716,953**	**79,680**	**4.9**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

On next page 2, Chart 1a shows the all industry percentile earnings' changes for the three 10-year intervals of 2005 to 2015, 2006 to 2016 and 2007 to 2017, in comparison.

Chart 1a. All Industry Job Quarterly Earnings Percentile Percent Change, Three 10-Year Interval Comparisons: 2005 to 2015, 2006 to 2016 and 2007 to 2017
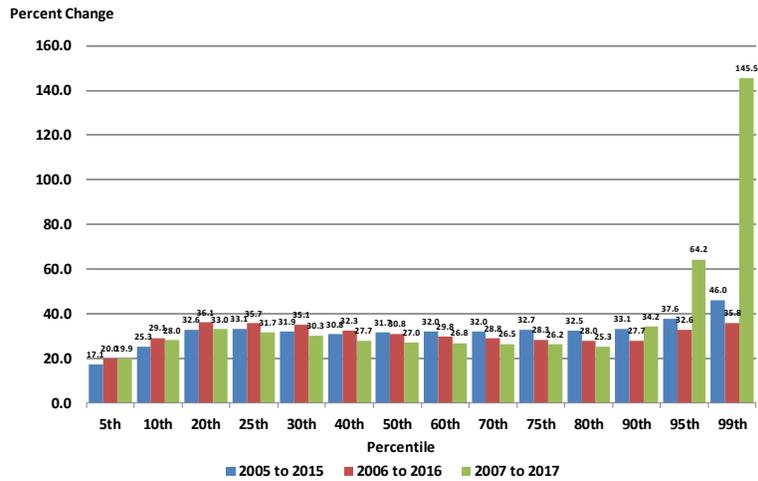
In the 10-year interval of 2005 to 2015, all industry had the larger size percent of earnings change in the higher 95th and 99th percentiles, with 37.6 and 46.0 percent change, respectively, while in the 2006 to 2016 10-year interval the larger size percent change was in the lower 20th percentile with 36.1 percent change and in the highest 99th percentile of 35.8 percent earnings change. The recent 2007 to 2017 10-year interval showed the two percentiles with the largest increases of all: a 145.5 percent in the 99th and a 64.2 percent increase in the 95th percentile. The 99th percentile earnings change for 2007-2017 is larger than for 2005-2015: 145.5 verses 46.0 percent. The difference is likely an arithmetic artifact, due to the "lower" $9,745 starting 2007 year earnings for the former vs the $33,000 (not shown) starting 2005 year earnings for the latter, with flat earnings gains to $48,466 in 2017 and to $48,176 in 2015.

Below, Table 2 shows the job quarterly percentile earnings and earnings change for mining between the 2nd quarter 2007 and the 2nd quarter 2017.

Table 2. Mining Percentage Change of Quarterly Job Earnings by Percentile, in 10-Year Interval: 2007 to 2017

Percentile	2007	2017	Numeric Change	Percent Change
5th	$1,309	$1,837	$528	40.3
10th	$2,420	$3,749	$1,329	54.9
20th	$5,130	$7,800	$2,670	52.0
25th	$6,471	$9,400	$2,929	45.3
30th	$7,573	$10,793	$3,220	42.5
40th	$9,500	$13,350	$3,850	40.5
50th	$11,484	$15,680	$4,196	36.5
60th	$13,605	$18,216	$4,611	33.9
70th	$15,945	$21,398	$5,453	34.2
75th	$17,446	$23,488	$6,042	34.6
80th	$19,500	$25,938	$6,438	33.0
90th	$26,178	$34,386	$8,209	31.4
95th	$35,671	$45,567	$9,897	27.7
99th	$77,557	$88,590	$11,033	14.2
Total Jobs	**50,772**	**52,292**	**1,520**	**3.0**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

Table 2 displays that for the 2007 to 2017 10-year interval the larger size percentile earnings changes occurred in the 50th percentile to 5th percentile lower half range, with the highest earnings change of 54.9

percent in the 10th percentile, the second highest of 52.0 percent in the 20th percentile and the third highest earnings percent change of 45.3 percent in the 25th percentile. This same mining 10-year interval is compared to the two 10-year intervals of 2005 to 2015 and 2006 to 2016 in Chart 2b, below.

Chart 2a. Mining Job Quarterly Earnings Percentile Percent Change, Three 10-Year Interval Comparisons: 2005 to 2015, 2006 to 2016 and 2007 to 2017
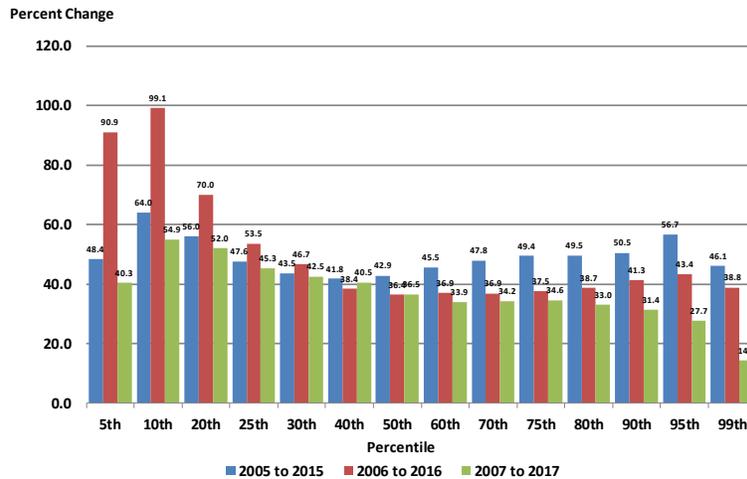
The first 10-year interval of 2005 to 2015 years had its larger size mining earnings change at both the high and low ends of the percentile range, while the 2006 to 2016 and 2007 to 2017 had their largest 10-year mining earnings change in the lower percentile ranges. The 2006 to 2016 10-year interval had its highest mining earnings change of 99.1 percent in the 10th percentile, the second highest of 90.9 percent in the 5th percentile and their third highest mining earnings change of 70.0 percent in the 20 percentile.

Table 3, below shows the percentile earnings and earnings change for manufacturing, for the 10-year interval of 2007 to 2017

Table 3. Manufacturing Percentage Change of Quarterly Job Earnings by Percentile, in 10-Year Interval: 2007 to 2017

Percentile	2007	2017	Numeric Change	Percent Change
5th	$1,188	$1,606	$418	35.2
10th	$2,357	$3,267	$910	38.6
20th	$4,483	$5,935	$1,452	32.4
25th	$5,152	$6,776	$1,624	31.5
30th	$5,736	$7,543	$1,807	31.5
40th	$6,835	$8,998	$2,163	31.6
50th	$7,872	$10,518	$2,646	33.6
60th	$9,191	$12,167	$2,976	32.4
70th	$10,833	$14,244	$3,411	31.5
75th	$11,864	$15,509	$3,645	30.7
80th	$13,037	$16,963	$3,926	30.1
90th	$16,800	$22,106	$5,306	31.6
95th	$21,347	$28,161	$6,814	31.9
99th	$36,270	$46,180	$9,910	27.3
Total Jobs	**166,901**	**140,377**	**-26,524**	**-15.9**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

Table 3 displays that in most percentiles the manufacturing 10-year change was of a larger size than the same percentile in all industry shown in Table 1 on page 1, but most percentiles had changed less than

those of the same percentile in mining in Table 2 on page 2. However of the three industry categories of all industry, mining and manufacturing, mining has the largest income of each industry when comparing the same percentile. On next page 4, Chart 3b shows manufacturing 2007 to 2017 percentile changes in comparison to 2005 to 2015 and 2006 to 2016.

Chart 3a. Manufacturing Job Quarterly Earnings Percentile Percent Change, Three 10-Year Interval Comparisons: 2005 to 2015, 2006 to 2016 and 2007 to 2017
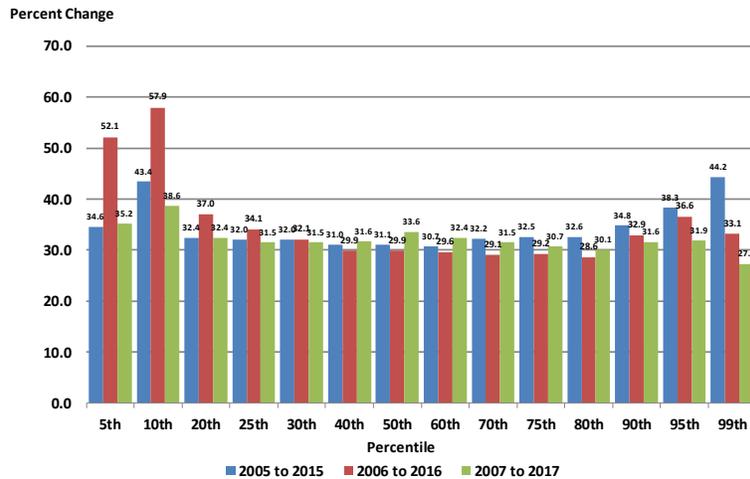
In each of the 10-year intervals, the manufacturing 20th to the 90th ranged percentiles had similar percent of change with the percentiles having magnitudes of 28.6 percent to 37.0 percent, a difference of 8.4 percent or less. The 10-year interval of 2006 to 2016 had the first and second largest earnings change in the lower two 5th and 10th percentiles, while the 2005 to 2015 interval also had their larger size earnings change in the lower 10th and the upper 95th percentiles. The 2007 to 2017 10-year interval had its largest two earnings change in the 10th and the 50th percentiles.

Table 4, below shows the percentile earnings and earnings change for Health, for the 10-year interval of 2007 to 2017

Table 4. Health Percentage Change of Quarterly Job Earnings by Percentile, in 10-Year Interval: 2007 to 2017

Percentile	2007	2017	Numeric Change	Percent Change
5th	$660	$817	$157	23.8
10th	$1,091	$1,436	$345	31.6
20th	$2,167	$3,000	$833	38.4
25th	$2,814	$3,869	$1,055	37.5
30th	$3,418	$4,662	$1,244	36.4
40th	$4,499	$6,045	$1,546	34.4
50th	$5,529	$7,372	$1,843	33.3
60th	$6,721	$9,009	$2,288	34.0
70th	$8,423	$11,449	$3,026	35.9
75th	$9,624	$13,032	$3,408	35.4
80th	$11,108	$14,894	$3,786	34.1
90th	$15,398	$20,643	$5,245	34.1
95th	$20,354	$29,097	$8,743	43.0
99th	$62,159	$87,622	$25,463	41.0
Total Jobs	**174,720**	**188,223**	**13,503**	**7.7**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

Table 4 reveals that in the majority of percentiles the health 10-year change was of a larger size than the same percentile in all industry shown in Table 1 on page 1, larger than manufacturing as shown in Table 3

on the previous page, but most cases less than those of the same percentile in mining as show in Table 2 on page 2. A comparison of the median 50th percentile earnings in Tables 1 though Table 4 determines the earnings rank by descending order for 2007 to be mining, manufacturing, all industry and health. However by 2017 the median 50th percentile descending order rank was mining, manufacturing, health and all industry. Chart 4b, below, compares health's 10-year 2005 to 2015, 2006 to 2016 and 2007 to 2017 interval percentile changes.

Chart 4a. Health Job Quarterly Earnings Percentile Percent Change, Three 10-Year Interval Comparisons: 2005 to 2015, 2006 to 2016 and 2007 to 2017
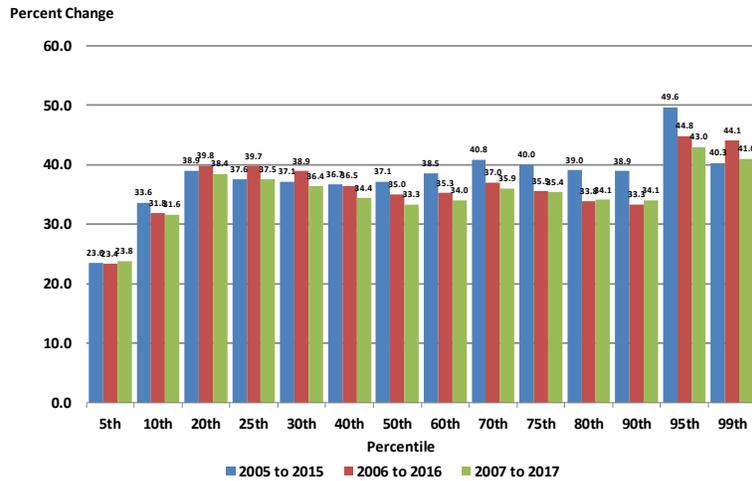
Chart 4a for the health industry illustrates a similar pattern as Chart 3a does for manufacturing on the previous page, in that the middle percentiles earnings change for health of the 20th through the 90th percentiles have a similar magnitude of change of 33.3 to 40.8 percent, with a 7.5 percent or less difference. The 5th percentiles show the lowest change for the three 10-year intervals, while the 95th and the 99th percentiles showed the highest earnings change.

III. Industry Percentile Job Quarterly Earnings: 3-Year Changes - Years 2008 to 2017

Table 5 shows the 3-year job quarterly earnings and earnings change by percentile of an aggregate of all industries between the 2nd quarter 2008 and the 2nd quarter 2017.

Table 5. All Industry Percentage Change of Quarterly Job Earnings by Percentile, in 3-Year Intervals: 2008 to 2017

Percentile	2008	2011	2014	2017	2008-2011 % Change	2011-14 % Change	2014-17 % Change
5th	$583	$655	$653	$680	12.3	-0.3	4.1
10th	$938	$1,095	$1,091	$1,155	16.7	-0.4	5.9
20th	$1,879	$2,200	$2,232	$2,372	17.1	1.5	6.3
25th	$2,487	$2,855	$2,932	$3,090	14.8	2.7	5.4
30th	$3,142	$3,515	$3,658	$3,888	11.9	4.1	6.3
40th	$4,505	$4,827	$5,150	$5,461	7.1	6.7	6.0
50th	$5,843	$6,200	$6,680	$7,042	6.1	7.7	5.4
60th	$7,309	$7,751	$8,389	$8,816	6.0	8.2	5.1
70th	$9,115	$9,708	$10,508	$11,026	6.5	8.2	4.9
75th	$10,325	$10,980	$11,918	$12,434	6.3	8.5	4.3
80th	$11,791	$12,533	$13,582	$14,107	6.3	8.4	3.9
90th	$16,217	$17,252	$18,702	$19,381	6.4	8.4	3.6
95th	$20,693	$22,286	$24,441	$25,452	7.7	9.7	4.1
99th	$39,807	$43,236	$47,709	$48,466	8.6	10.3	1.6
Total Jobs	**1,666,137**	**1,616,720**	**1,727,152**	**1,716,953**	**-3.0**	**6.8**	**-0.6**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

As shown above in Table 5, the first 3-year interval of 2008 to 2011 for all industry had the larger size percentile earnings increases in the 30th percentile and lower percentile range. The second 3-year interval of 2011 to 2014 had the larger size earnings changes in the 60th percentile and higher range, while the third 3-year interval of 2014 to 2017 had the largest percentile earnings increases in the 10th through the 60th percentile range. Below, Chart 5a illustrates these changes.

Chart 5a All Industry Percentage Change of Quarterly Job Earnings by Percentile, in 3-Year Intervals: 2008 to 2017

Percent Change

Percentile	2008 to 2011	2011 to 2014	2014 to 2017
5th	12.3	-0.3	4.1
10th	16.7	-0.4	5.9
20th	17.1	1.5	6.3
25th	14.8	2.7	5.4
30th	11.9	4.1	6.3
40th	7.1	6.7	6.0
50th	6.1	7.7	5.4
60th	6.0	8.2	5.1
70th	6.5	8.2	4.9
75th	6.3	8.5	4.3
80th	6.3	8.4	3.9
90th	6.4	8.4	3.6
95th	7.7	9.7	4.1
99th	8.6	10.3	1.6
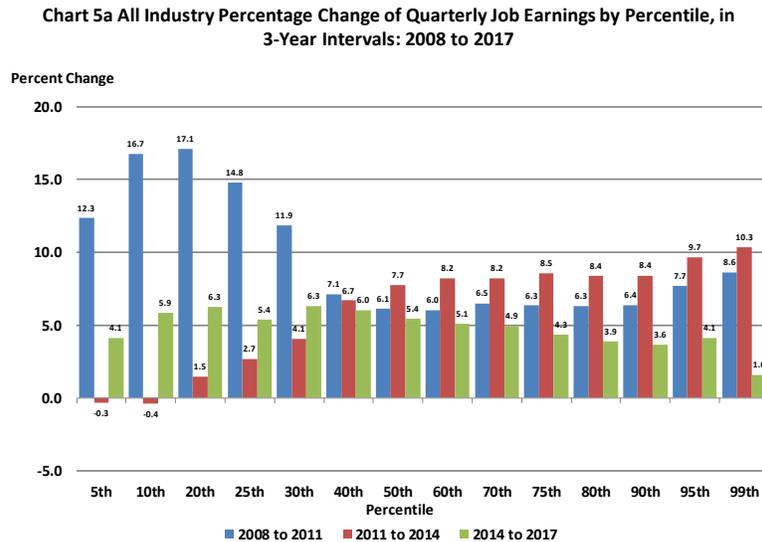
Chart 5a shows that different regions in the range of percentiles have the larger size earnings change increases for the different 3-year intervals. The 2008 to 2011 interval has the larger size earnings in its 30th percentile and lower, the 2011 to 2014 interval has the larger size increases in its 50th percentile and higher, and the 2014 to 2017 3-year interval has the largest earnings increases in the 10th thorough the 60th percentiles. Below, Table 6 shows the same 3-year intervals earnings and earnings change for mining.

Table 6. Mining Percentage Change of Quarterly Job Earnings by Percentile, in 3-Year Intervals: 2008 to 2017

Percentile	2008	2011	2014	2017	2008-2011 % Change	2011-14 % Change	2014-17 % Change
5th	$1,415	$1,538	$1,800	$1,837	8.7	17.0	2.1
10th	$2,720	$3,000	$3,510	$3,749	10.3	17.0	6.8
20th	$5,746	$6,346	$7,280	$7,800	10.4	14.7	7.1
25th	$7,000	$7,735	$8,718	$9,400	10.5	12.7	7.8
30th	$8,076	$8,898	$9,966	$10,793	10.2	12.0	8.3
40th	$10,033	$10,961	$12,233	$13,350	9.2	11.6	9.1
50th	$12,015	$13,011	$14,571	$15,680	8.3	12.0	7.6
60th	$14,226	$15,370	$17,151	$18,216	8.0	11.6	6.2
70th	$16,660	$18,337	$20,165	$21,398	10.1	10.0	6.1
75th	$18,228	$20,350	$22,143	$23,488	11.6	8.8	6.1
80th	$20,380	$22,811	$24,598	$25,938	11.9	7.8	5.4
90th	$27,506	$31,024	$33,078	$34,386	12.8	6.6	4.0
95th	$37,970	$41,449	$45,164	$45,567	9.2	9.0	0.9
99th	$94,592	$79,222	$82,009	$88,590	-16.2	3.5	8.0
Total Jobs	**56,960**	**56,146**	**66,214**	**52,292**	**-1.4**	**17.9**	**-21.0**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

Comparing the mining earnings changes in Table 6 with those for all industry in Table 5, reveals that the largest earnings changes for mining occurred in the 2011 to 2014, while for all industry the largest earnings changes was in the 3-year interval of 2008 to 2011. On the next page 7, Chart 6a illustrates

these 3-year earnings changes for mining.

**Chart 6a. Mining Percentage Change of Quarterly Job Earnings by Percentile,
3-Year Intervals: 2008 to 2017**
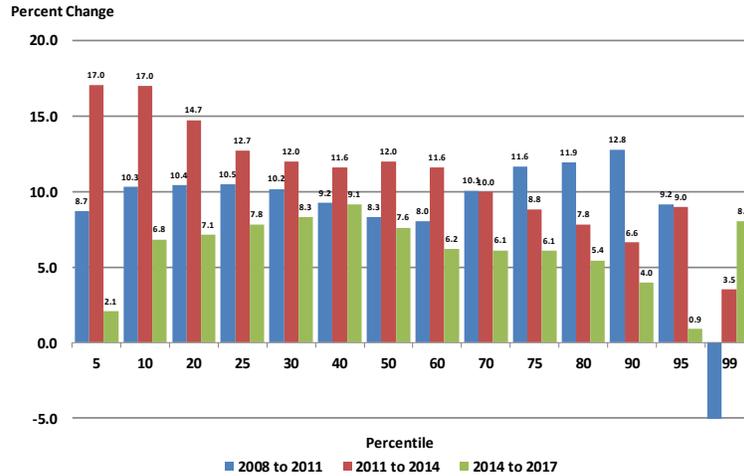
Chart 6a reveals that as in all industry, the different 3-year intervals have a different section of the percentile range with the higher earnings change. The 2008 to 2011 3-year interval has the higher earnings change in the 75th percentile to 90th percentiles with the 99th percentile showing a sharp decline in earnings. The 2011 to 2014 has the larger size earnings change in the 50th and lower percentiles, and the 2014 to 2017 3-year interval has the largest earnings change in the 30th and 40th middle percentiles and in the upper end 99th percentile. Below, Table 7 displays the 3-year earnings and earnings change for manufacturing.

Table 7. Manufacturing Percentage Change of Quarterly Job Earnings by Percentile, in 3-Year Intervals: 2007 to 2016

Percentile	2008	2011	2014	2017	2008-2011 % Change	2011-14 % Change	2014-17 % Change
5th	$1,248	$1,461	$1,503	$1,606	17.1	2.9	6.9
10th	$2,542	$2,958	$3,050	$3,267	16.4	3.1	7.1
20th	$4,695	$5,145	$5,541	$5,935	9.6	7.7	7.1
25th	$5,363	$5,840	$6,356	$6,776	8.9	8.8	6.6
30th	$5,976	$6,489	$7,099	$7,543	8.6	9.4	6.3
40th	$7,139	$7,741	$8,504	$8,998	8.4	9.9	5.8
50th	$8,262	$9,107	$9,982	$10,518	10.2	9.6	5.4
60th	$9,543	$10,625	$11,648	$12,167	11.3	9.6	4.5
70th	$11,227	$12,514	$13,749	$14,244	11.5	9.9	3.6
75th	$12,301	$13,732	$15,022	$15,509	11.6	9.4	3.2
80th	$13,571	$15,172	$16,483	$16,963	11.8	8.6	2.9
90th	$17,662	$19,478	$21,291	$22,106	10.3	9.3	3.8
95th	$22,312	$24,421	$26,855	$28,161	9.5	10.0	4.9
99th	$39,389	$43,962	$47,404	$46,180	11.6	7.8	-2.6
Total Jobs	**166,886**	**142,502**	**153,335**	**140,377**	**-14.6**	**7.6**	**-8.5**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

Comparing the 3-year earnings income change of manufacturing in Table 7 with all industry in Table 5 and with mining in Table 6 reveals that manufacturing and all industry had their largest earnings changes in the 2008 to 2011 interval, while mining had the largest 3-year earnings change in the 2011 to 2014 interval. On the next page 8, Chart 7a illustrates manufacturing's 3-year earnings changes.

Chart 7a. Manufacturing Percentage Change of Quarterly Job Earnings by Percentile, in 3-Year Intervals: 2008 to 2017
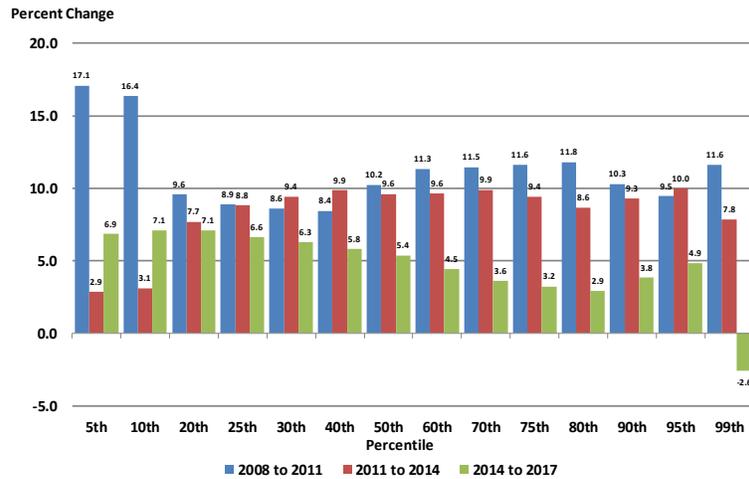
Percent Change

Chart 7a for manufacturing also displays that each of the three 3-year intervals has different sections of the percentile ranges with the larger size earnings change. For the 2008 to 2011 3-year interval the lower 5th and 10th percentiles of manufacturing had the largest percent change of all the percentiles in the 3-year intervals, with 17.1 percent and 16.4 percent earnings change, respectively. The 2011 to 2014 3-year interval had above 9 percent earnings change in the 30th percentile through the 75th percentile and in the 90th percentile and the 95th percentiles. The 2014 to 2017 3-year interval had the greater manufacturing earnings size change, in the 5th percentile to the 30th percentile, all of the latter showing above a 6 percent change in earnings. Table 8, below, shows the 3-year earnings and earnings change for health.

Table 8. Health Percentage Change of Quarterly Job Earnings by Percentile, in 3-Year Intervals: 2008 to 2017

Percentile	2008	2011	2014	2017	2008-2011 % Change	2011-14 % Change	2014-17 % Change
5th	$686	$763	$798	$817	11.2	4.6	2.4
10th	$1,158	$1,319	$1,409	$1,436	13.9	6.8	1.9
20th	$2,327	$2,672	$2,954	$3,000	14.8	10.6	1.6
25th	$2,996	$3,390	$3,732	$3,869	13.2	10.1	3.7
30th	$3,610	$4,027	$4,417	$4,662	11.6	9.7	5.5
40th	$4,715	$5,121	$5,607	$6,045	8.6	9.5	7.8
50th	$5,785	$6,263	$6,816	$7,372	8.3	8.8	8.2
60th	$7,042	$7,646	$8,320	$9,009	8.6	8.8	8.3
70th	$8,830	$9,639	$10,490	$11,449	9.2	8.8	9.1
75th	$10,089	$11,008	$11,885	$13,032	9.1	8.0	9.7
80th	$11,632	$12,625	$13,540	$14,894	8.5	7.2	10.0
90th	$16,072	$17,380	$18,655	$20,643	8.1	7.3	10.7
95th	$21,357	$23,528	$26,346	$29,097	10.2	12.0	10.4
99th	$65,681	$73,971	$80,210	$87,622	12.6	8.4	9.2
Total Jobs	**176,444**	**183,463**	**184,670**	**188,223**	**4.0**	**0.7**	**1.9**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

When comparing health earnings change with the other three industries discussed, Table 8 shows that health had their larger size percentile earnings change in the 2008 to 2011 3-year interval, the same 3-year interval that Table 9 shows that manufacturing did and Table 6 displays that all industry also did. Table 7 shows that mining had its larger size percentile earnings changes in the 2011 to 2014 3-year interval. The all industry 20th percentile earnings change of 17.1 percent ties for the highest earnings percent change in all four industry categories, with manufacturing's 5th percentile, while mining's 5th and 10th

percentiles have the second highest of 17.0 percent. A comparison of the median 50th percentile earnings in Tables 5 through Table 8 determines the earnings rank by descending order for 2008 to be mining, manufacturing, all industry and health. However by 2011, and in 2014 plus in 2017 the median 50th percentile descending earnings rank was mining, manufacturing, health and all industry.

IV. Industry Percentile Job Quarterly Earnings: 1-Year Changes - Years 2014 to 2017

Table 9 shows three 1-year job quarterly earnings and percentile change of an aggregate of all industries between the 2nd quarter 2014 and the 2nd quarter 2017.

Table 9. All Industry Percentage Change of Quarterly Job Earnings by Percentile, in 1-Year Intervals: 2014 to 2017

Percentile	2014	2015	2016	2017	2014-15 % Change	2015-16 % Change	2016-17 % Change
5th	$653	$656	$671	$680	0.5	2.3	1.3
10th	$1,091	$1,105	$1,140	$1,155	1.3	3.2	1.3
20th	$2,232	$2,262	$2,347	$2,372	1.3	3.8	1.1
25th	$2,932	$2,970	$3,068	$3,090	1.3	3.3	0.7
30th	$3,658	$3,708	$3,861	$3,888	1.4	4.1	0.7
40th	$5,150	$5,212	$5,408	$5,461	1.2	3.8	1.0
50th	$6,680	$6,750	$6,948	$7,042	1.0	2.9	1.4
60th	$8,389	$8,450	$8,639	$8,816	0.7	2.2	2.0
70th	$10,508	$10,554	$10,770	$11,026	0.4	2.0	2.4
75th	$11,918	$11,947	$12,127	$12,434	0.2	1.5	2.5
80th	$13,582	$13,608	$13,804	$14,107	0.2	1.4	2.2
90th	$18,702	$18,698	$18,884	$19,381	0.0	1.0	2.6
95th	$24,441	$24,641	$24,863	$25,452	0.8	0.9	2.4
99th	$47,709	$48,176	$48,000	$48,466	1.0	-0.4	1.0
Total Jobs	**1,727,152**	**1,730,040**	**1,701,877**	**1,716,953**	**0.2**	**-1.6**	**0.9**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

The above Table 9 displays the slow-down in all industry 1-year earnings change that has occurred in the last three years. Of the three 1-year intervals shown, the 2015 to 2016 interval had the largest earnings changes, with the 2016 to 2017 interval showing the second-highest earnings change. However in the same interval the 99th percentile shows a decrease in earnings. Below Chart 9a illustrates these percentile earnings changes.

Chart 9a. All Industry Percentage Change of Quarterly Job Earnings by Percentile, in 1-Year Intervals: 2014 to 2017
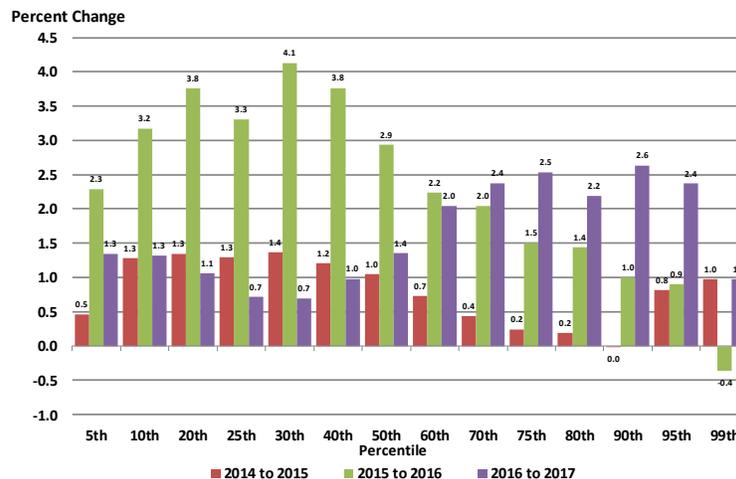
As discussed in the previous paragraph concerning Table 9, Chart 9a shows that the largest earnings change occurred in the 1-year interval of 2015 to 2016. In this interval the all industry 30th percentile had the largest 4.1 percent earnings change, and the second largest 3.8 percent tie change in the 20th and the 40th percentiles. This same interval also the third largest, (3.3 percent), earnings change of all the three 1-year interval, in the 25th percentile. Below Table 10 shows the three 1-year intervals for mining.

Table 10. Mining Percentage Change of Quarterly Job Earnings by Percentile, in 1-Year Intervals: 2014 to 2017

Percentile	2014	2015	2016	2017	2014-15 % Change	2015-16 % Change	2016-17 % Change
5th	$1,800	$1,794	$2,101	$1,837	-0.3	17.1	-12.6
10th	$3,510	$3,688	$4,182	$3,749	5.1	13.4	-10.3
20th	$7,280	$7,409	$7,832	$7,800	1.8	5.7	-0.4
25th	$8,718	$8,746	$9,100	$9,400	0.3	4.1	3.3
30th	$9,966	$9,900	$10,268	$10,793	-0.7	3.7	5.1
40th	$12,233	$12,200	$12,391	$13,350	-0.3	1.6	7.7
50th	$14,571	$14,510	$14,759	$15,680	-0.4	1.7	6.2
60th	$17,151	$17,160	$17,307	$18,216	0.1	0.9	5.2
70th	$20,165	$20,325	$20,363	$21,398	0.8	0.2	5.1
75th	$22,143	$22,414	$22,396	$23,488	1.2	-0.1	4.9
80th	$24,598	$25,007	$24,988	$25,938	1.7	-0.1	3.8
90th	$33,078	$34,079	$34,626	$34,386	3.0	1.6	-0.7
95th	$45,164	$47,060	$47,500	$45,567	4.2	0.9	-4.1
99th	$82,009	$91,840	$96,878	$88,590	12.0	5.5	-8.6
Total Jobs	**66,214**	**59,205**	**47,597**	**52,292**	**-10.6**	**-19.6**	**9.9**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

Mining also had the largest two percentile earnings change of the three 1-year intervals in the 2015 to 2016 interval lower 5th and 10th percentiles. However when compared to the same year interval of all industry in Table 9 on page 9, the 75th and the 80th percentiles had slight declines in earnings, as opposed to no percentiles declining in all industry. Chart 10a below illustrates these percentile earnings changes.

Chart 10a. Mining Percentage Change of Quarterly Job Earnings by Percentile, in 1-Year Intervals: 2014 to 2017
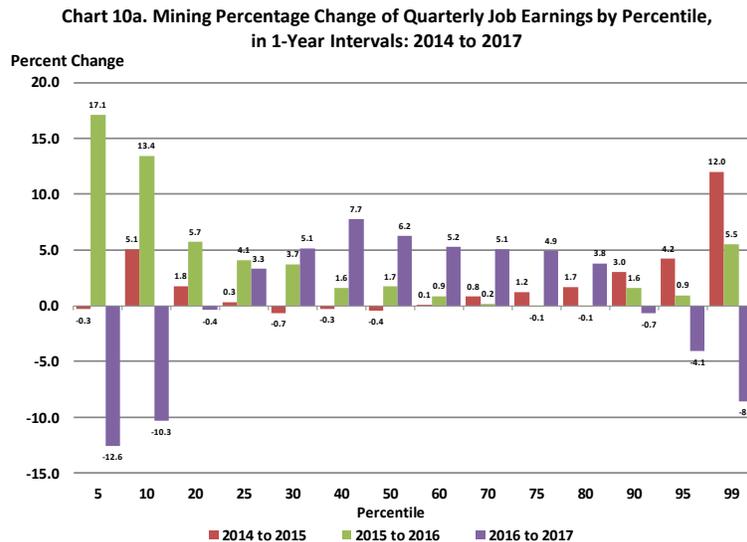
Chart 10a shows that mining earnings in the 1-year interval of 2015 to 2016 showed the first and second largest percent increase in the lower end 5th percentile and 10th percentiles. The last 1-year interval of 2016 to 2017 had the third-largest mining earnings increase in the 40 percentile and had its larger size percentile changes in the 30th to the 75th percentile range. This same 1-year interval had large decreases in earnings in the lower 5th and 10th percentiles and in the upper 95th and 99th percentiles. Table 11,

below, shows the earnings change in three 1-year intervals for manufacturing.

Table 11. Manufacturing Percentage Change of Quarterly Job Earnings by Percentile, in 1-Year Intervals: 2014 to 2017

Percentile	2014	2015	2016	2017	2014-15 % Change	2015-16 % Change	2016-17 % Change
5th	$1,503	$1,600	$1,704	$1,606	6.5	6.5	-5.8
10th	$3,050	$3,227	$3,502	$3,267	5.8	8.5	-6.7
20th	$5,541	$5,644	$5,843	$5,935	1.9	3.5	1.6
25th	$6,356	$6,410	$6,607	$6,776	0.8	3.1	2.6
30th	$7,099	$7,109	$7,271	$7,543	0.1	2.3	3.7
40th	$8,504	$8,394	$8,558	$8,998	-1.3	2.0	5.1
50th	$9,982	$9,835	$9,984	$10,518	-1.5	1.5	5.3
60th	$11,648	$11,442	$11,663	$12,167	-1.8	1.9	4.3
70th	$13,749	$13,579	$13,692	$14,244	-1.2	0.8	4.0
75th	$15,022	$14,915	$15,000	$15,509	-0.7	0.6	3.4
80th	$16,483	$16,444	$16,508	$16,963	-0.2	0.4	2.8
90th	$21,291	$21,399	$21,800	$22,106	0.5	1.9	1.4
95th	$26,855	$27,200	$27,853	$28,161	1.3	2.4	1.1
99th	$47,404	$46,730	$46,307	$46,180	-1.4	-0.9	-0.3
Total Jobs	**153,335**	**151,737**	**139,624**	**140,377**	**-1.0**	**-8.0**	**0.5**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

Table 11 reveals that manufacturing also had its largest earnings changes in the 1-year interval of 2015 to 2016, as did all industry and mining. However both manufacturing and mining had some percentiles in each of the three 1-year intervals that had declines in earnings, as shown in the above table and for mining in previous Table 10 on page 10. All industry, as shown in Table 9 on page 9, experienced no percentiles with earnings declines in any of the three 1-year intervals. Chart 11a below illustrates these earnings changes for manufacturing.

Chart 11a. Manufacturing Percentage Change Job Quarterly Earnings by Percentile, in 1-Year Intervals: 2014 to 2017
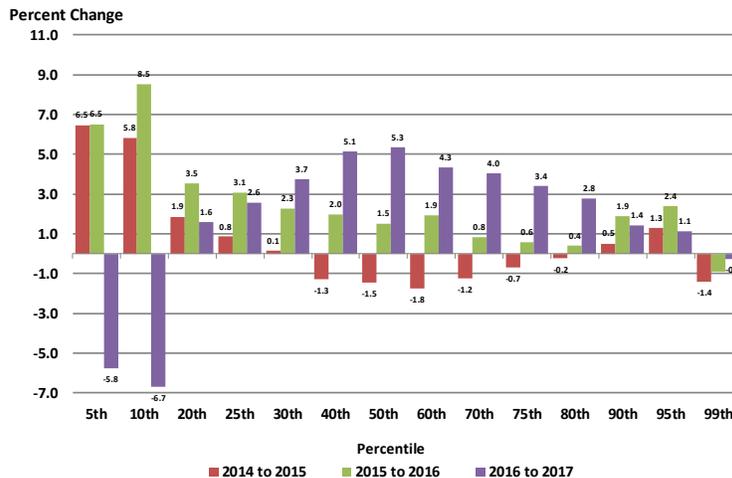
Chart 11a show that in the two 1-year intervals of 2014 to 2015 and 2015 to 2016 manufacturing had its largest earnings percentile increases in the lower end 5th and 10th percentiles. Manufacturing in the 2016 to 2017 1-year interval also had its largest percentile decline in these same two lower end percentiles, while in the other two 1-year intervals, it had earnings increases. The most recent 1-year interval of 2016 to 2017 had its largest earnings increase change in the mid-ranged 40th and 50th percentiles. On next page 12, Table 12 shows these same three 1-year interval earnings changes for health.

Table 12. Health Percentage Change of Quarterly Job Earnings by Percentile, in 1-Year Intervals: 2014 to 2017

Percentile	2014	2015	2016	2017	2014-15 % Change	2015-16 % Change	2016-17 % Change
5th	$798	$792	$808	$817	-0.8	2.0	1.1
10th	$1,409	$1,411	$1,441	$1,436	0.1	2.1	-0.3
20th	$2,954	$2,937	$3,018	$3,000	-0.6	2.8	-0.6
25th	$3,732	$3,732	$3,871	$3,869	0.0	3.7	-0.1
30th	$4,417	$4,455	$4,612	$4,662	0.9	3.5	1.1
40th	$5,607	$5,680	$5,877	$6,045	1.3	3.5	2.9
50th	$6,816	$6,905	$7,130	$7,372	1.3	3.3	3.4
60th	$8,320	$8,427	$8,694	$9,009	1.3	3.2	3.6
70th	$10,490	$10,671	$11,011	$11,449	1.7	3.2	4.0
75th	$11,885	$12,082	$12,447	$13,032	1.7	3.0	4.7
80th	$13,540	$13,813	$14,201	$14,894	2.0	2.8	4.9
90th	$18,655	$19,100	$19,662	$20,643	2.4	2.9	5.0
95th	$26,346	$27,342	$28,228	$29,097	3.8	3.2	3.1
99th	$80,210	$83,545	$86,451	$87,622	4.2	3.5	1.4
Total Jobs	**184,670**	**182,923**	**185,235**	**188,223**	**-0.9**	**1.3**	**1.6**

Note[1]: The unit of analyis is a job and earnings are second quarter job totals, excluding Federal jobs.

Note[2]: Cases where earnings are less than $300 removed.

Table 12 shows that health had the largest earnings percentile changes in the 2015 to 2016 1-year interval, as did all industry, mining and manufacturing. However health was the only one of the four industry categories examined in which none of the earnings percentiles in this 1-year interval declined. Health had earnings percentiles with declines in the 2014 to 2015 and in the 2016 to 2017 1-year intervals, as did both mining and manufacturing as shown in Table 10 on page 10 and Table 11 on page 11, respectively. Additionally as shown in Table 9 on page 9, all industry did not have earnings percentiles declines in these same two 1-year intervals, but did have one percentile with a decline in the 2015 to 2016 1-year interval, that of the 99th percentile.

A comparison of the median 50th percentile earnings in Tables 9 though Table 12 determines the earnings rank by descending order for 2014, 2015, 2016 and 2017 to be mining, manufacturing, health and all industry. Below, Chart 12b illustrates three 1-year interval earnings changes for health.

Chart 12a. Health Percentage Change of Quarterly Job Earnings by Percentile, in 1-Year Intervals: 2014 to 2017
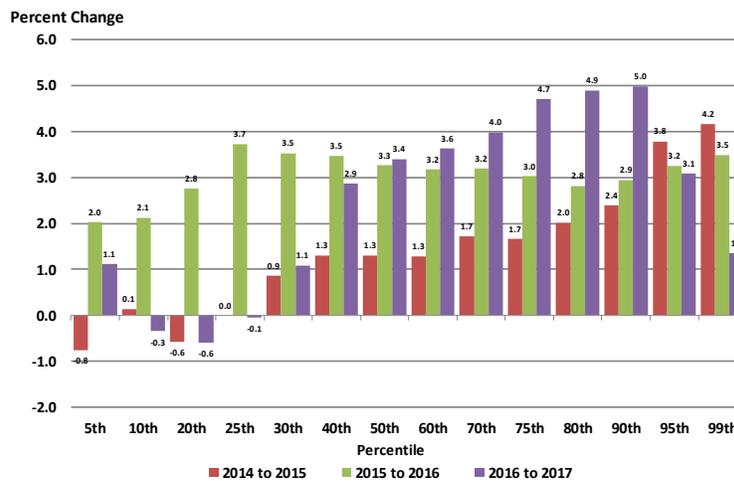
Chart 12a above illustrates that during the 2014 to 2015 1-year interval, the health lower four percentiles fared the worst of all the percentiles in earnings change, with the 5th percentile declining 0.8 percent, the

10th percentile gaining 0.1 percent, the 20th percentile remaining the same, and the 25th percentile gaining only .09 percent in earnings. Health earnings gained the most in this same interval in the 95th and 99th percentiles, with a change of 3.8 and 4.2 percent, respectively.   In the 2015 to 2016 1-year interval, health had its highest percentile earnings of 3.7 percent in the 25th percentile, with the 30th, 40th and the 99th percentiles tied for second at 3.5 percent.   Health in the 2016 to 2017 1-year interval the three percentiles with the highest earnings change were the 75th percentile with a 4.7 percent change, the 80th percentile with a 4.9 percent change, and the 90th percentile with a 5.0 percent earnings change.

V. Summary and Conclusions

The analysis in this report examined percentile earnings and earnings change by an aggregate of all industry, and the three industries of mining, manufacturing and health. These four industry categories were investigated for earnings and earnings change, by the 10-year, 3-year and 1-year intervals for the years 2007 through 2017. Each of the four industry categories' 10-year interval earnings changes were also compared for 2005 to 2015, 2006 and 2016 and 2007 to 2017; the former two 10-year intervals were in our previous two reports on percentile earnings and earnings change.

The assessment of the four industry categories of all industry, mining, manufacturing and health median 50th percentile earnings size for descending rank order determined that for years the 2007 and 2008 mining, manufacturing, all industry and health to be the earnings rank in descending size order. For the remaining years analyzed 2011, 2014, 2015, 2016 and 2017 the median 50th percentile earnings descending rank order was mining, manufacturing, health and all industry.

A comparison of all industry, mining, manufacturing and health earnings change for the three 10-year intervals of 2007 to 2017, with 2005 to 2015 and 2006 to 2016; the latter two 10-year intervals from our two previous analyses and reports established the following. For all four industry categories, the larger number of larger size earnings percentile changes were in the 2005 to 2015 10-year interval, mainly occurring in the upper half of their percentile ranges. The percentiles with the larger size earnings change tended to fall in their lower percentile ranges, with the exception of health, which had its larger size earnings increases in the upper 70th percentile and higher range. Mining earnings change size was greater than their counterparts in the other three industry categories for most percentiles in each of the three intervals, the outstanding exceptions was in the all industry upper 95th and 99th earnings percentiles in the 2007 to 2017 10-year interval.   Mining also had unusually large earnings percentile changes in the lower 5th, 10th and 20th earnings percentiles in the 2006 to 2016 10-year interval. All of the earnings percentiles compared had positive earnings changes.

The four industry categories of all industry, mining, manufacturing and health earnings change for the three 3-year intervals of 2008 to 2011, 2011 to 2014 and 2014 to 2017 were compared, with the findings summarized as follows. Manufacturing and health tied for largest number of larger size percent increases of 3-year interval earnings percentile change. This occurred in the years 2008 to 2011 with each having the largest number of eleven percentiles with large size earnings change, with these percentiles almost equally divided in the upper and lower ends of the earnings percentile range.   All industry and mining had their largest number of larger size earnings percentile change in the 2011 to 2014 3-year interval, with all industry having their larger number of higher earnings percentile change in the upper end, while mining's largest number of larger size earnings percentile changes occurred in the lower end of the percentile range.   When comparing the size of the earnings change of each percentile in the four industry categories, mining had the larger size percent change than their percentile counterparts in the other three industry category; which was determined as true for more percentiles. It was determined that the majority of earnings percentile changes for the four industry categories in the three 3-year intervals were positive, and that none of the four industry categories' earnings changed as much in the 2014 to 2017 interval as

they did in the other two 3-year intervals.

A comparison of all industry, mining, manufacturing and health earnings change for the three 1-year intervals of 2014 to 2015, 2015 to 2016 and 2016 to 2017 are summarized as follows. All industry and mining had their larger number of their larger size earnings percentile changes in the 2015 to 2016 1-year interval, with most of their larger size earnings changes occurring in the lower percentile range. On the other hand, manufacturing and health had their larger number of larger size earnings percentile changes in the 2016 to 2017 1-year interval, with most of their larger size earnings changes occurring in the upper percentile range. The majority of the earnings changes were positive in the three 1-year intervals examined and mining earnings percentile changes were more often larger size than their counterparts in the other three industry categories.

Two conclusions can be readily stated using the findings of this analysis of the all industry 2007 to 2017 10-year interval and comparisons with the previous two 10-year findings, as well as the comparisons made with the four industry categories of all industry, mining, manufacturing and health in their 10-year, 3-year and 1-year analysis comparison. Mining industry plays an important part in the vigor of Oklahoma economy and that an industry job percentile earnings and earnings change analysis provides much more information and specific detailed information, than does a normal evaluation using averages or median earnings.