Ohio | Department of Job and Family Services

To Strengthen Ohio's Families through the Delivery of Integrated Solutions to Temporary Challenges

2010 Economic Analysis

A New Beginning

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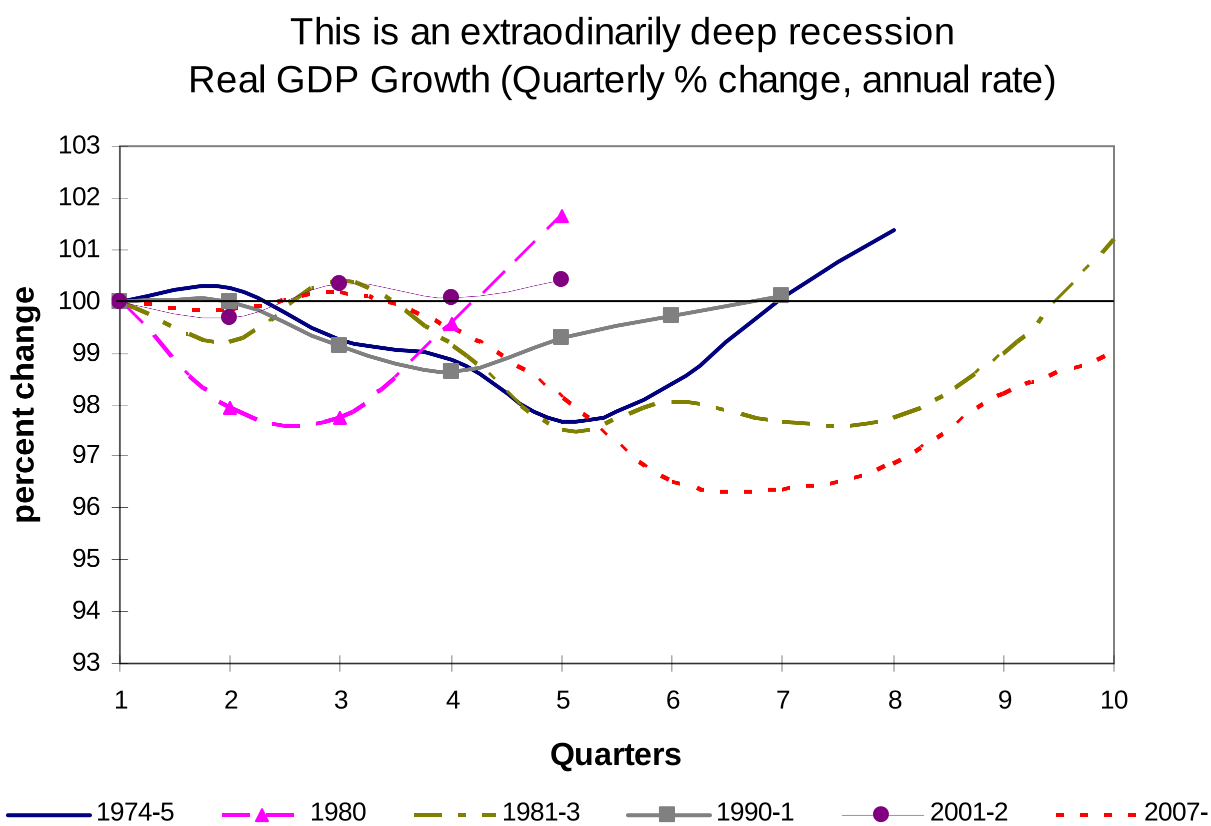
Preface

From a causal perspective, there is very little about the poor state of the current economy that can be attributed directly to the states. The fundamentals are not a matter of state management and policy. The economy is suffering from an unprecedented debt crisis of national and international scope. The crisis was built on the overly zealous and optimistic trading of paper and electronic financial products. These lacked transparency and in the end collapsed because they did not have true or real capital wealth to support them. The market adjustment that followed was extreme, incomparable to any economic cycle since the Great Depression. A few charts on the national economy bear this out.[1] The first chart shows that gross domestic product dropped sharply compared to the last five recessions.



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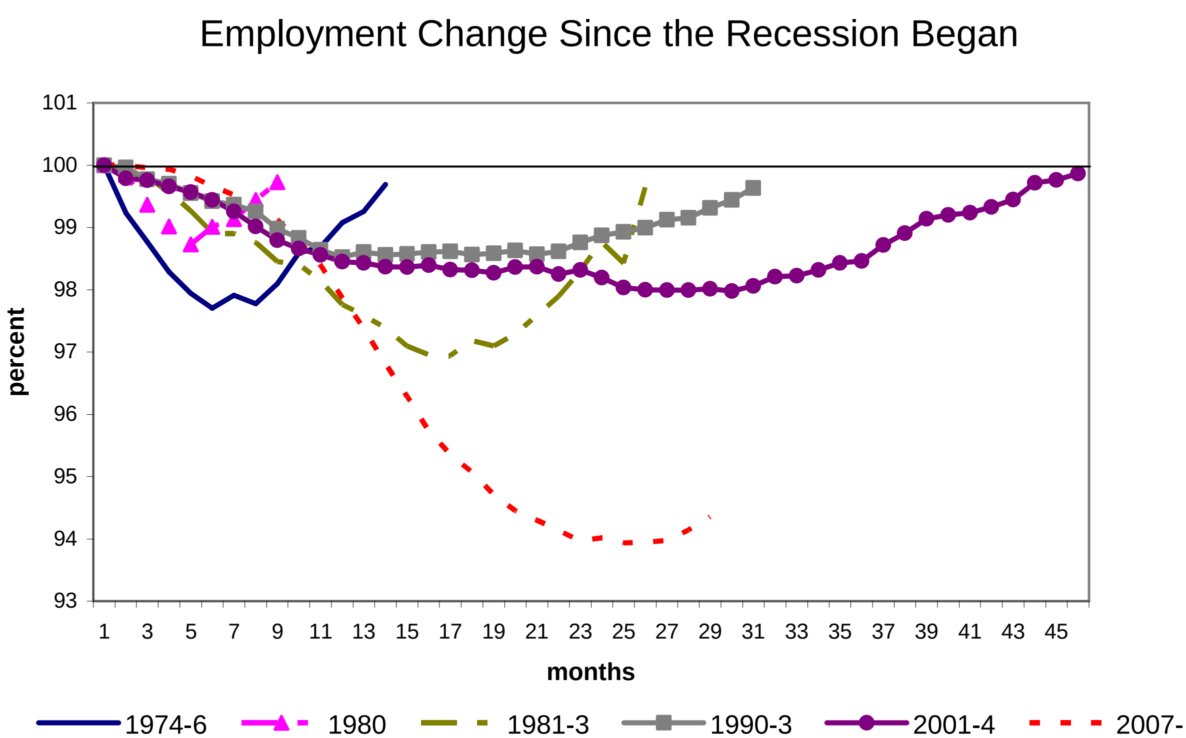
[1] Jesse Rothstein. "Prospects for the Recovery of the Labor Market," Bureau of Labor Statistics Labor Market Information Conference, Minneapolis, May 2010.

The second chart shows the unprecedented employment loss compared to the past recessions.



Ohio had little direct connection to the "toxic assets" that drove the economic downturn. However, it was adversely impacted by the recession. Industry was in the process of restructuring manufacturing; applying technologies and production efficiency; reducing underlying cost structures; and modifying product lines to meet competitors' and global market realities. The recession adversely impacted these efforts, virtually eliminating business and consumer expenditures compared to the immediate past. One impact was for major auto-related manufactures to become insolvent overnight, with ripple effects across all of manufacturing and the general economy of Ohio. This economic downturn is not just a traditional business cycle but rather a fundamental resizing of the economy. This report is primarily a reality check, indicating that the Ohio economy is at a fundamentally different place and cannot return from where it came but must restructure and build anew. Thus the subtitle *a New Beginning*. Although much of this report characterizes the nature of the recession, its goal is to encourage thought about building the future of Ohio.

Executive Summary

- According to the Cleveland Federal Reserve Bank, "significant damage has been done to Ohio's economy during the recession." The recession only added to Ohio's structural employment losses. From March 2000 to March 2010, Ohio total nonfarm employment declined more than 618,000 jobs.

- By March 2010, Ohio total nonfarm employment was approximately 4.9 million, a decline of 8.3 percent from March 2006 and 11.3 percent below Ohio's all-time employment peak in May 2000.

- Ohio's seasonally adjusted unemployment rate rose from 5.8 percent in March 2006 to 11.0 percent in March 2010.

- Among the eight largest Metropolitan Statistical Areas (MSAs), the Toledo MSA had the greatest relative job losses with a 12.6 percent decline and the Columbus MSA had the smallest decline at 4.1 percent from March 2006 to March 2010.

- In March 2010, the Youngstown MSA had the highest seasonally unadjusted unemployment rate at 14.0 percent, while the Cleveland and Columbus MSAs had the lowest unadjusted unemployment rates at 9.8 percent. The statewide seasonally unadjusted rate was 11.5 percent in March 2010.

- From March 2006 to March 2010, employment in goods-producing industries declined by 24.4 percent compared to a 4.2 percent employment decline for service-providing industries.

- Approximately 58 percent of the total employment decline from March 2006 to March 2010 were from goods-producing industries, although they accounted for only 19 percent of all jobs in 2006.

- Employment in educational services increased 9.6 percent and health care and social assistance increased 6.6 percent.

- Pre-recession 2006-2016 Ohio industry projections predicted total employment growth of 5.0 percent between 2006 and 2016, but 2008-2010 industry projections predict an employment decline of 4.6 percent over the two-year period.

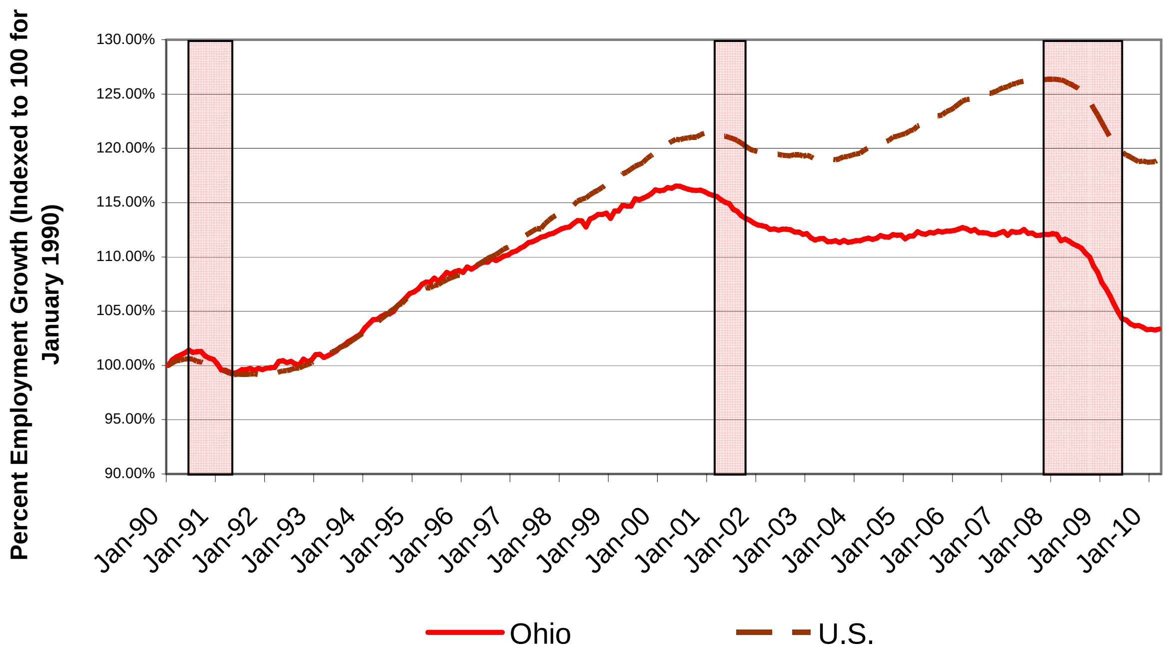
- The five occupational groups expected to have the highest growth from 2006 to 2016 are healthcare support (24.5%); community and social services occupations (20.6%); computer and mathematical occupation (17.8%); healthcare practitioners and technical occupations (17.3%); and personal care and service occupations (13.9%).

Ohio employment 1990 to 2010

The "Great Recession," as it is has been called, began in December 2007, according to the National Bureau of Economic Research (NBER).[2] Although the NBER has not officially declared an endpoint to the recession, some economists are arguing that it ended in July 2009.[3] IHS Global Insight called the recession the worst of the post World War II period.[4] During this recession, the national seasonally adjusted unemployment rate climbed to more than 10 percent, a rate not seen since the 1981-1982 recession.

The 2007-2009 recession has taken an extremely heavy toll on Ohio employment. A report by the Cleveland Federal Reserve Bank said, "labor market data indicate significant damage has been done to Ohio's economy during the recession."[5] This damage is in addition to that from structural problems affecting Ohio's economy.[6] The figure below shows how Ohio's employment growth has lagged behind the U.S. since the mid-1990s.

Figure 1. U.S. and Ohio Employment Growth, January 1990-March 2010.



Source: Current Employment Statistics

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[2] National Bureau of Economic Research. "*NBER Committee Confers: No Trough Announced.*" April 12, 2010. (http://www.nber.org/cycles/april2010.html)
[3] Pedro Amaral. "*The Recovery So Far*," Economics Trends, Federal Reserve Bank of Cleveland. May 11, 2010. (http://www.clevelandfed.org/research/trends/2010/0510/01gropro.cfm)
[4] IHS Global Insight. "Economic Predictions for 2009—How Accurate were We?" (http://www.ihsglobalinsight.com/publicDownload/genericContent/2009_How_Accurate.pdf)
[5] Kyle Fee. "*Ohio's Labor Market Cycles*," Economics Trends, Federal Reserve Bank of Cleveland. March 9, 2010. (http://www.clevelandfed.org/research/trends/2010/0310/ET_mar10.pdf)
[6] *Ibid.*

Figure 1 shows U.S. and Ohio seasonally adjusted monthly employment growth from January 1990 to March 2010. Employment levels were indexed to 100 percent for January 1990 to put the U.S. and Ohio on the same scale. The shaded areas mark recessions, with the most recent recession presumed to have ended in July 2009. From 1991 to 2001, U.S. employment grew steadily, peaking in February 2001, the month before the beginning of the 2001 recession. U.S. employment recovered from the 2001 recession by 2005, and it continued to grow until the start of the recession in December 2007.

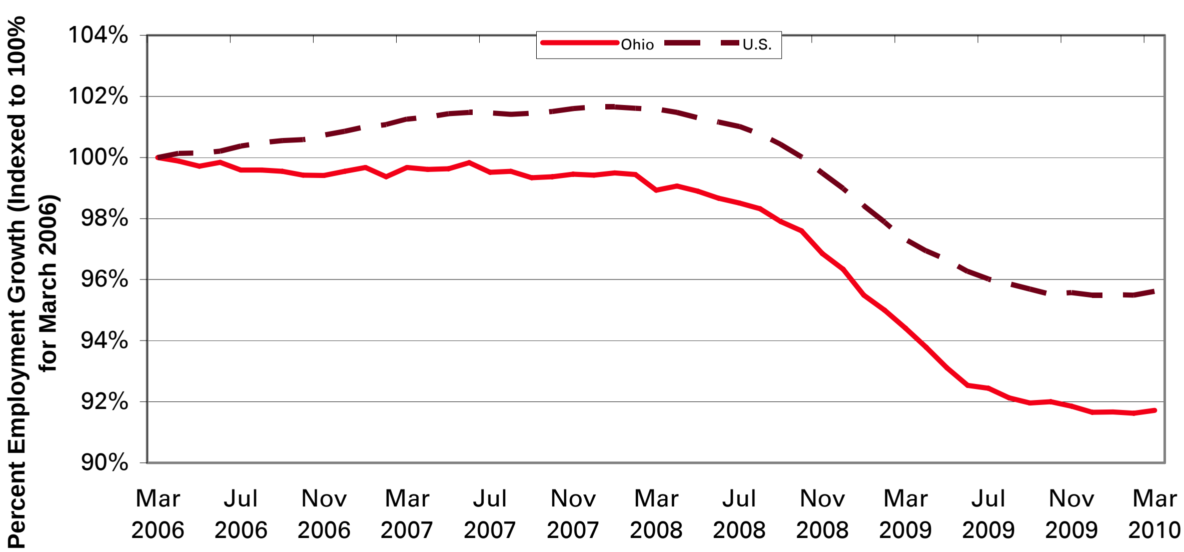
Ohio's employment growth closely mirrored the U.S. until late 1996 when Ohio's growth began to slow. Ohio employment peaked in May 2000, almost a year before the start of the 2001 recession. Unlike the U.S., however, Ohio never fully recovered from the 2001 recession. Ohio's weak recovery peaked in March 2006, more than 184,000 jobs below the all-time Ohio employment peak of May 2000. Ohio employment slowly declined from March 2006 until February 2008 when the pace of the decline picked up.

Statewide employment, March 2006 to March 2010

Total Employment

Figure 2 below compares monthly employment trends in Ohio with those for the entire country from March 2006 to March 2010. Employment levels were was indexed to 100 percent for March 2006 to put the U.S. and Ohio on the same scale. By March 2010, Ohio total nonfarm employment was approximately 4.9 million, a decline of 8.3 percent from March 2006 and 11.3 percent below its all-time employment peak in May 2000. In comparison, by March 2010 U.S. employment declined 6.0 percent from its all-time peak in December 2007.

Figure 2: Seasonally Adjusted Total Nonfarm Employment in Ohio and the U.S., March 2006 to March 2010

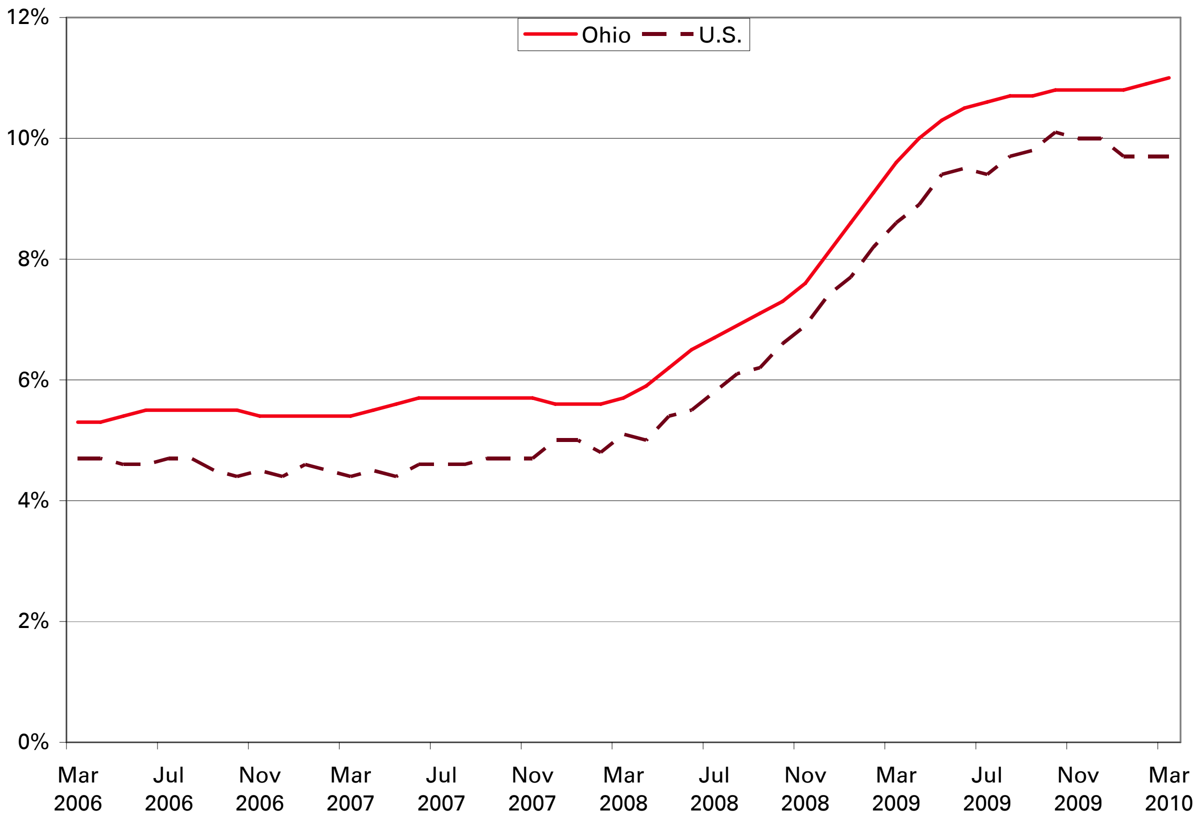


Sources: Current Employment Statistics

Unemployment Rates

Unemployment rates have reached levels not seen since the recession of the early 1980's. Figure 3 below compares seasonally adjusted U.S. and Ohio unemployment rates from March 2006 to March 2010. Ohio's seasonally adjusted rate rose from 5.8 in March 2006 to 11.0 percent in March 2010. The seasonally adjusted national unemployment rate climbed from 4.8 in March 2006 to 10.1 percent at its peak in October 2009. By March 2010, the U.S. unemployment rate had dropped to 9.7 percent.

Figure 3: Seasonally-Adjusted Unemployment Rates in Ohio and the U.S., March 2006 to March 2010

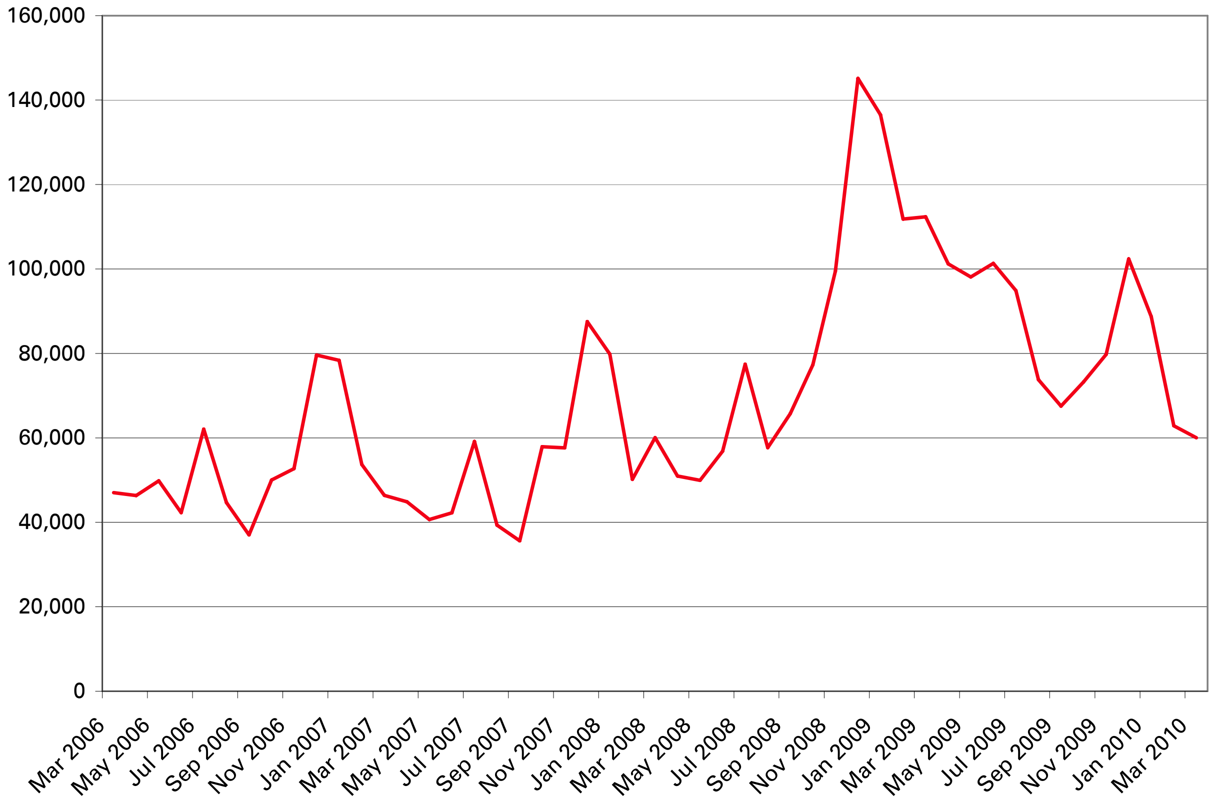


Source: Labor Force Statistics from the Current Population Survey and Local Area Unemployment Statistics

Unemployment Compensation Claims

Claims for unemployment compensation are an indicator of business closings and layoffs, permanent and temporary. Figure 4 on the next page shows the number of initial claims filed in Ohio from March 2006 to March 2010. These numbers are not seasonally adjusted and show typical seasonal spikes in July, December, and January. Increases in initial claims are noticeable in 2007, with substantial increases in 2008. In December 2008 and January 2009, more than 281,000 initial claims for unemployment compensation were filed. The December 2009 peak was down 29.5 percent from the previous December, indicating a slowing of the recession.

Figure 4: Monthly Initial Unemployment Compensation Claims under Regular Ohio Law, March 2006 to March 2010



Source: Ohio Department of Job and Family Services

Local employment, March 2006 to March 2010

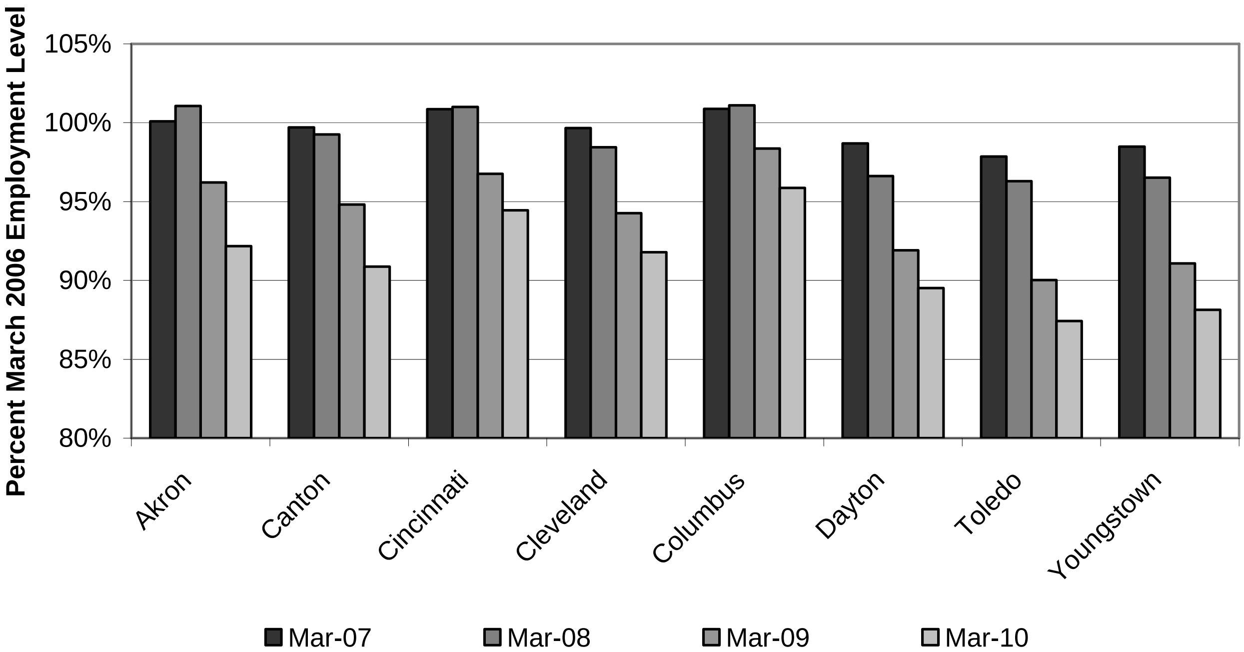
Employment conditions vary across the state depending on the mix of industries in an area. This section presents data from the eight largest Metropolitan Statistical Areas (MSAs), which cover more than 80 percent of jobs in the state, and the 12 Economic Development Regions, which cover the entire state.

Metropolitan Statistical Areas

The eight most populous MSAs in Ohio are: Akron, Canton-Massillon, Cincinnati-Middletown, Cleveland-Elyria-Mentor, Columbus, Dayton, Toledo, and Youngstown-Warren-Boardman. The Cincinnati and Youngstown MSAs contain counties in adjacent states. See Appendix A for a map of the MSAs.

Figure 5 on the next page shows total nonfarm employment for March 2007, 2008, 2009, and 2010 as a percentage of March 2006 employment. Three metropolitan areas saw employment growth of about one percent between March 2006 and March 2008: Akron , Cincinnati-Middletown, and Columbus.

Figure 5: Total Nonfarm Employment, Selected Metropolitan Statistical Areas, March 2006 to March 2010

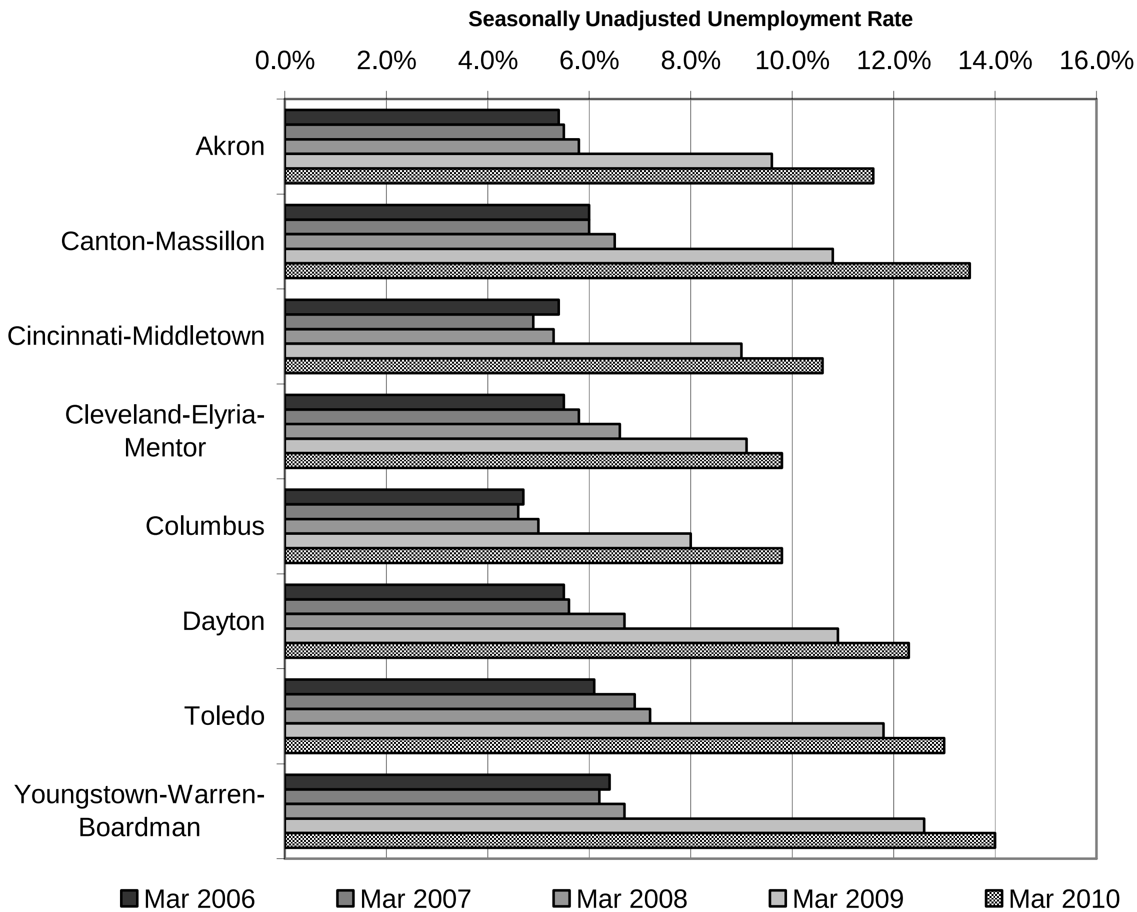


Source: Current Employment Statistics

By March 2010, all the MSAs had experienced job losses, but the size of the declines varied . The Toledo MSA experienced the greatest relative job losses: -12.6 percent from March 2006 to March 2010. This was followed by the Youngstown (-11.9%), Dayton (-10.5%), Canton (-9.1%), Cleveland (-8.2%), Akron (-7.8%), Cincinnati (-5.6%), and Columbus (-4.1%) MSAs. Ohio as a whole lost 8.3 percent of its jobs between March 2006 and March 2010. The Cleveland MSA had the greatest absolute job losses: 88,300 jobs during this period.

Figure 6 on the next page shows seasonally unadjusted unemployment rates by MSA for March 2006, 2007, 2008, 2009, and 2010. The Youngstown MSA had the highest seasonally unadjusted unemployment rate in March 2010 with 14.0 percent followed by Canton (13.5%), Toledo (13.0%), Dayton (12.3%), Akron (11.6%), Cincinnati (10.6%) and Cleveland and Columbus at 9.8 percent. Only three metro areas—Cincinnati, Cleveland, and Columbus—had unemployment rates below the statewide seasonally unadjusted rate of 11.5 percent.

Figure 6: March Unemployment Rates by Metropolitan Statistical Area, 2006 to 2010 (Seasonally Unadjusted)



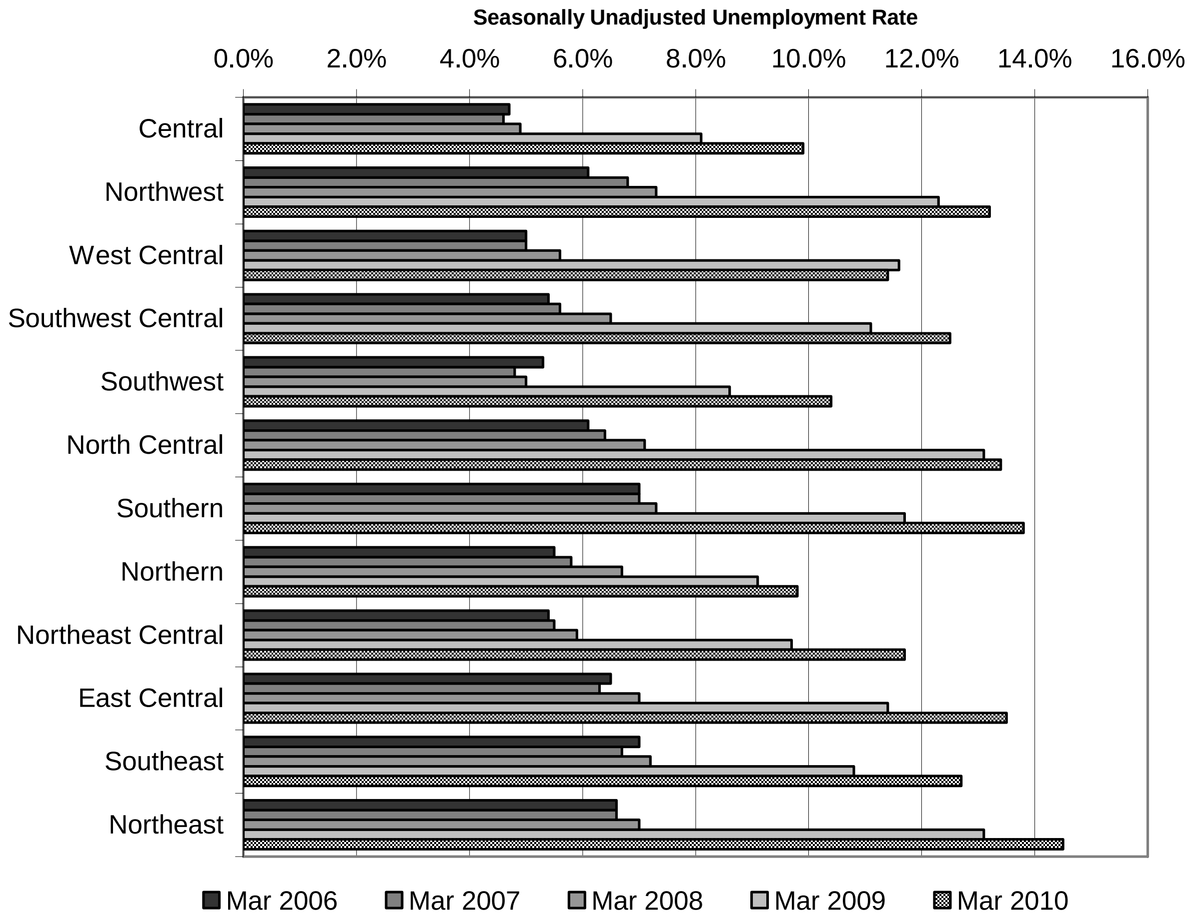
Source: Current Employment Statistics

Economic Development Regions

Ohio is divided into twelve Economic Development Regions (EDRs), which encompass all counties and do not extend into adjacent states. See Appendix B for a map of the EDRs.

Current employment data are not available for the EDRs, but unemployment rates are available. Figure 7 on the next page shows seasonally unadjusted unemployment rates in the EDRs for March 2006, 2007, 2008, 2009, and 2010. In March 2010, the Northeast EDR had the highest seasonally unadjusted unemployment rate at 14.5 percent. This was followed by East Central (13.5%), Southern (13.8%), North Central (13.4%), Northwest (13.2%), Southeast (12.7%), Southwest (12.5%), Northeast (11.7%), West Central (11.4%), Southwest (10.4%), Central (9.9%), and Northern (9.8%) Ohio. Three regions—Central, Southwest, and Northern Ohio—had unemployment rates below the statewide average 11.5%. These regions partially overlap the Columbus, Cincinnati, and Cleveland MSAs.

Figure 7: March Unemployment Rates by Economic Development Region, 2006 to 2010 (Seasonally Unadjusted)



Source: Current Employment Statistics

Industry Employment

Industries varied in their recovery from the 2001 recession and their resistance to the 2007-2009 recession. Figure 8 on the next page shows the percent change in industry employment from March 2000 to March 2006, March 2006 to March 2010, and March 2000 to March 2010. The first period includes the 2001 recession and the recovery through 2006. The second period includes the slow decline after the 2006 employment peak and the 2007-2009 recession.

Total Ohio nonfarm employment dropped 3.2 percent for March 2000-2006 and 8.3 percent for March 2006-2010. This shows the lack of full recovery after the 2001 recession and the steep decline of the of the 2007-2009 recession. Because the 2006-2010 period is shorter, its rate of decline is much steeper than for the 2000-2006 period. This can be seen in the graph in Figure 1.

Fig 8. Percent Change in Industry Employment, March 2000-March 2006, March 2006-March 2010, and March 2000-March 2010.

	Percent Employment Change, Mar.-Mar.		
Industry	**2000-2006**	**2006-2010**	**2000-2010**
Total Nonagricultural	-3.2%	-8.1%	-11.0%
Goods-Producing Industries	-18.7%	-24.4%	-38.6%
Mining and Logging	-12.2%	-2.6%	-14.5%
Construction	-5.7%	-27.7%	-31.8%
Manufacturing	-21.9%	-23.8%	-40.5%
Durable Goods	-23.9%	-26.5%	-44.1%
Nondurable Goods	-17.3%	-17.9%	-32.1%
Service-Providing Industries	1.5%	-4.2%	-2.8%
Trade, Transportation and Utilities	-6.4%	-9.1%	-14.9%
Wholesale Trade	-3.9%	-11.2%	-14.7%
Retail Trade	-10.0%	-7.3%	-16.6%
Transportation, Warehousing, and Utilities	2.8%	-11.9%	-9.4%
Information	-16.5%	-13.7%	-27.9%
Financial Activities	0.2%	-13.3%	-13.1%
Finance and Insurance	2.0%	-11.5%	-9.8%
Real Estate and Rental and Leasing	-5.5%	-19.4%	-23.8%
Professional and Business Services	2.2%	-5.7%	-3.6%
Professional and Technical Services	0.7%	-2.2%	-1.5%
Management of Companies and Enterprises	25.8%	4.0%	30.9%
Administrative, Support, and Waste Services	-2.7%	-11.5%	-13.9%
Educational and Health Services	14.7%	7.0%	22.8%
Educational Services	10.7%	9.6%	21.3%
Health Care and Social Assistance	15.3%	6.6%	23.0%
Leisure and Hospitality	3.5%	-4.5%	-1.2%
Arts, Entertainment, and Recreation	-3.9%	-1.7%	-5.5%
Accommodation and Food Services	4.7%	-4.9%	-0.5%
Other Services	0.5%	-5.4%	-4.9%
Government	2.9%	-2.3%	0.5%
Federal Government	-8.6%	3.0%	-5.8%
State Government	3.5%	-3.7%	-0.2%
Local Government	4.5%	-2.6%	1.7%

Source: Current Employment Statistics

The 2000-2006 period is important because it set the stage for the next recession. Industries that recovered well from the 2001 recession could better resist the 2007-2009 recession. Employment in goods-producing industries declined by 18.7 percent from March 2000 to March 2006, while service-providing industries increased by 1.5 percent. The decline in goods-producing industries was concentrated in durable goods manufacturing—a loss of more than 226,000 jobs out of a loss of 242,000 jobs for all goods-producing industries. Because these losses occurred during a recovery period, it suggests there were structural changes in durable goods manufacturing, such as automation, product shifts, outsourcing, and increased competition.

Recovery from the 2001 recession varied widely among service providing industries. A few industries saw employment declines during the recovery. Information saw a decline of 16.5 percent for 2000-2006, reflecting a national trend. Retail trade declined 10.0 percent and wholesale trade declined 3.9 percent. These declines were larger than national trends for the same period. Real estate and rental and leasing declined by 5.5 percent, while this industry grew nationally. Other industries grew strongly in the 200-2006 period. Educational and health services industries grew 14.7 percent on average, below the national growth rate of 18.0 percent. Management of companies and enterprises grew 25.8 percent, below the national growth of 31.8 percent. The remaining industries tended to have modest employment growth or losses through the 2000-2006 period.

Total Ohio employment peaked in March 2006 and then declined slowly until February 2008, when employment began to decline quickly as the recession deepened. Goods-producing industries are more sensitive to recessions because consumers and businesses can often defer big-ticket expenses such as appliances, machinery, cars, and homes. The steepness of the employment decline among the goods-producing industries indicates the severity of the recession. From March 2006 to March 2010, goods-producing industries declined by 24.4 percent compared to a 4.2 percent employment decline for service-providing industries. Construction and durable goods manufacturing declined by 27.7 and 26.5 percent respectively. Approximately 58 percent of the total employment decline from March 2006 to March 2010 came from goods-producing industries although they accounted for only 19 percent of all jobs in 2006.

Employment among service-providing industries declined 4.2 percent from March 2006 to March 2010. Service industries that did poorly in the 2000-2006 period continued to do poorly in 2006-2010. Information; retail and wholesale trade; and real estate and rental and leasing all continued to decline, with drops ranging from -7.3 percent in retail sales to -19.4 percent in real estate and rental and leasing. Service industries that grew strongly during the 2000-2006 period continued to grow during the 2006-2010 period, although at a slower pace. Employment in management of companies and enterprises increased by 4.0 percent and educational and health services increased by 7.0 percent. Employment in most other service industries declined, some more than others. Financial activities declined by 13.3 percent. This is not surprising since the 2007-2009 recession started with problems in the banking and credit industries. Transportation, warehousing and utilities declined by 11.9 percent. This large decline is probably tied to the decline in goods-producing industries—decreased production leads to decreased transportation and warehousing. Administrative, support, and waste services declined 11.5 percent, possibly also tied to the decline in goods production. That industry includes employment services, which many employers use to fill short-term employment needs.

The total decline over both periods is staggering. From March 2000 to March 2010, total employment declined 11.0 percent—more than 618,000 jobs. The majority of losses were concentrated in the goods-producing industries. Goods producing industries declined 38.6 percent or almost 499,000 jobs. Manufacturing accounted for most of that. Manufacturing declined 40.5 percent or 418,000 jobs. Service-providing industries declined 2.8 percent or more than 119,000 jobs.

Looking Ahead

Long-term employment projections are preferred for workforce planning because they better account for industry growth or contraction than do short-term projections. Unfortunately, projections are based on long-term trends in data and cannot predict severe business cycle changes, such as the recent recession. The severity of the 2007-2009 recession may have altered long-term trends, but if that is the case it may not be apparent for some time. Both long and short-term projections are presented here to provide a better picture of future employment.

Industry Employment Projections

Figure 9: Industry Employment Projections, 2006 – 2016

Industry Sector	2006 Empl.	2016 Proj.	Net Growth, 2006-16	Percent Growth, 2006-16
Total, All Industries	**5,842.1**	**6,132.8**	**290.7**	**5.0%**
Goods-Producing Industries	**1,123.3**	**997.0**	**-126.3**	**-11.2%**
Agriculture, forestry, fishing and hunting	86.6	79.4	-7.2	-8.3%
Mining	11.0	11.2	0.2	1.8%
Construction	230.2	251.7	21.5	9.3%
Manufacturing	795.5	654.7	-140.8	-17.7%
Service-Providing Industries	**4,338.6**	**4,744.7**	**406.1**	**9.4%**
Wholesale trade	237.8	253.2	15.4	6.5%
Retail trade	604.6	598.7	-5.9	-1.0%
Transportation and warehousing	183.0	204.5	21.5	11.7%
Utilities	20.6	19.0	-1.6	-7.8%
Information	88.7	86.3	-2.4	-2.7%
Finance and insurance	238.8	255.7	16.9	7.1%
Real estate and rental and leasing	68.1	77.3	9.2	13.5%
Professional and technical services	239.1	282.6	43.5	18.2%
Management of companies and enterprises	101.9	117.2	15.3	15.0%
Administrative and waste services	314.7	356.7	42.0	13.3%
Educational services	86.5	101.0	14.5	16.8%
Health care and social assistance	677.8	829.0	151.2	22.3%
Arts, entertainment and recreation	66.1	79.3	13.2	20.0%
Accommodation and food services	434.7	470.0	35.3	8.1%
Other services, except public administration	224.4	246.4	22.0	9.8%
Government	751.8	767.8	16.0	2.1%
Self-employed, private household and unpaid family workers	**380.2**	**391.1**	**10.9**	**2.9%**

Employment figures in thousands.

Source: 2016 Ohio Job Outlook, ODJFS, 2008

The long-term, 2006-2016 Ohio industry projections, which were made prior to the start of the 2007-2009 recession, predicted total employment to grow 5.0 percent between 2006 and 2016. Almost all of this growth is expected to be in service-providing industries; construction is the only goods-producing industry expected to have significant job growth (9.3%). Health care and social assistance is expected to have the greatest growth during this period: about 151,200 jobs (22.3%), followed by professional and technical services with 43,500 jobs (18.2%); accommodation and food services with 35,300 (8.1%), and other services with 22,000 (9.8%). Manufacturing, on the other hand, is expected to shed an additional 140,800 jobs (-17.7%).

Figure 10. Industry Employment Projections, 3rd qtr 2008 – 3rd qtr 2010

Industry Sector	3rd Qtr. 2008 Empl.	Forecast 3rd Qtr 2010	Net Growth	Percent Growth
Total, All Industries	**5,798.3**	**5,534.0**	**-264.3**	**-4.6%**
Goods-Producing Industries	**1,068.4**	**917.4**	**-151.0**	**-14.1%**
Agriculture, forestry, fishing and hunting	92.1	91.1	-1.0	-1.1%
Mining	12.1	12.5	0.4	3.3%
Construction	224.6	202.6	-22.0	-9.8%
Manufacturing	739.7	611.2	-128.5	-17.4%
Service-Providing Industries	**4,347.5**	**4,232.0**	**-115.5**	**-2.7%**
Wholesale trade	237.8	229.6	-8.2	-3.4%
Retail trade	589.7	549.5	-40.2	-6.8%
Transportation and warehousing	187.6	167.8	-19.8	-10.6%
Utilities	21.7	22.4	0.7	3.2%
Information	84.5	78.9	-5.6	-6.6%
Finance and insurance	225.7	217.5	-8.2	-3.6%
Real estate and rental and leasing	64.3	59.7	-4.6	-7.2%
Professional and technical services	249.0	245.3	-3.7	-1.5%
Management of companies and enterprises	110.6	114.9	4.3	3.9%
Administrative and waste services	302.3	279.3	-23.0	-7.6%
Educational services	86.0	91.0	5.0	5.8%
Health care and social assistance	707.0	731.0	24.0	3.4%
Arts, entertainment and recreation	78.3	72.7	-5.6	-7.2%
Accommodation and food services	437.9	427.1	-10.8	-2.5%
Other services, except public administration	222.6	214.2	-8.4	-3.8%
Government	728.7	718.5	-10.2	-1.4%
Self-employed, private household and unpaid family workers	**382.4**	**384.6**	**2.2**	**0.6%**

Employment figures in thousands.
Source: *2008 to 2010 Employment Forecast, ODJFS , 2009.*

The short-term, 3rd quarter 2008 to 3rd quarter 2010 industry projections predict total employment will decline 4.6 percent over the two-year period. This, of course, could significantly attenuate long-term growth and accelerate declines. Some losses, however, may be temporary. Industries that were expected to decline in the long term are also expected to decline in the short term. Manufacturing is predicted to decline 17.4 percent over 2008-2010. Many industries expected to grow in the long term are predicted to decline in the short term. These include: construction (-9.8%); wholesale trade (-3.4%); transportation and warehousing (-10.6%); finance and insurance(-3.6%); real estate and rental and leasing (-7.2%); professional and technical services (-1.5%); administrative and waste services (-7.6%); arts, entertainment and recreation (-7.2%); accommodation and food services (-2.5%); and other services (-3.8%). Finally, a few industries that were expected to grow strongly in the long term were expected to continue to grow in the short term: educational services (5.8%); health care and social assistance (3.4%); and management of companies and enterprises (3.9%).

Occupational Employment Projections

Figure 11. Occupational Employment Projections, 2006 – 2016

Occupational Group	2006 Empl.	2016 Proj.	Net Growth, 2006-16	Percent Growth, 2006-16	Avg. Ann. Op.
Total, All Occupations	**5,842,100**	**6,132,800**	**290,700**	**5.0%**	**173,718**
Management	310,360	310,830	470	0.2%	7,027
Business and Financial Operations	246,360	271,160	24,800	10.1%	6,859
Computer and Mathematical	108,650	127,990	19,340	17.8%	4,504
Architecture and Engineering	92,610	94,490	1,880	2.0%	2,466
Life, Physical, and Social Science	38,420	41,600	3,180	8.3%	1,215
Community and Social Services	93,590	112,850	19,260	20.6%	3,508
Legal	38,720	42,310	3,590	9.3%	1,060
Education, Training, and Library	314,720	338,670	23,950	7.6%	9,246
Arts, Design, Ent., Sports, & Media	81,290	85,560	4,270	5.3%	2,496
Healthcare Practitioners & Technical	313,030	367,330	54,300	17.3%	11,340
Healthcare Support	182,430	227,180	44,750	24.5%	6,405
Protective Service	113,540	123,530	9,990	8.8%	4,349
Food Preparation & Serving Related	470,720	517,750	47,030	10.0%	20,518
Bldg. & Grounds Cleaning & Maint.	202,440	216,360	13,920	6.9%	4,856
Personal Care and Service	162,810	185,430	22,620	13.9%	6,063
Sales and Related	613,280	627,850	14,570	2.4%	21,182
Office and Administrative Support	917,670	943,850	26,180	2.9%	24,944
Farming, Fishing, and Forestry	14,770	14,770	0	0.0%	424
Construction and Extraction	246,120	263,130	17,010	6.9%	9,185
Installation, Maintenance, & Repair	230,240	237,360	7,120	3.1%	4,474
Production	597,180	526,700	-70,480	-11.8%	12,201
Transportation & Material Moving	453,190	456,080	2,890	0.6%	12,171

Source: *2016 Ohio Job Outlook*

Figure 11 above shows the 2006-2016 employment projections for major occupational groups. This table is similar to the industry employment projections tables, but also shows average annual openings. Occupational openings occur for two reasons: job growth, wherein new jobs are created, and replacement needs, wherein workers leave an occupation and need to be replaced. About three quarters of the total average annual openings are from replacement needs and not growth. The percentage varies across occupations and occupational groups, but even occupations that are expected to decline will have replacement needs.

The five occupational groups expected to have the highest growth are: healthcare support (24.5%); community and social services occupations (20.6%); computer and mathematical occupations (17.8%); healthcare practitioners and technical occupations (17.3%); and personal care and service occupations (13.9%). Other groups are expected to have very low growth: farming, fishing, and forestry occupations (0.0%); management (0.2%); and transportation and material moving occupations (0.6%). Only production occupations are expected to decline as a group, with a projected loss of more than 70,000 jobs from 2006 to 2016. Despite this projected decline, there are expected to be more than 12,000 annual openings in production occupations because of replacement needs. Replacement needs can lead to a large number of annual openings even when an occupation is not growing. The five occupational groups with the largest number of annual openings are: office and administrative support (24,944); sales and related occupations (21,182); food preparation and serving related occupations (20,518); production occupations (12,201); and transportation and material moving occupations (12,171).

Of course, the outlook for individual occupations can vary widely. Appendix C has a list of approximately 240 'high prospect' occupations for he 2006-2016 period. These are occupations that had an average wage higher than the State median average wage ($14.85 per hour in 2007) and more than 50 annual openings statewide.

Figure 12. Occupational Employment Projections, 3rd qtr 2008 – 3rd qtr 2010

Occupational Group	3rd Qtr 2008 Employment	Forecasted 3rd Qtr 2010	Net Growth	Percent Growth	Avg. Ann. Openings
Total, All Occupations	5,798,300	5,534,000	-264,300	-4.6%	128,831
Management	309,190	299,740	-9,450	-3.1%	5,168
Business and Financial Operations	249,990	244,200	-5,790	-2.3%	3,819
Computer and Mathematical	124,100	123,510	-590	-0.5%	2,557
Architecture and Engineering	92,110	85,510	-6,600	-7.2%	1,932
Life, Physical, and Social Science	40,020	39,260	-760	-1.9%	858
Community and Social Services	98,930	100,400	1,470	1.5%	2,216
Legal	38,620	37,980	-640	-1.7%	584
Education, Training, and Library	295,720	299,160	3,440	1.2%	7,682
Arts, Design, Ent., Sports, & Media	81,450	79,210	-2,240	-2.8%	1,941
Healthcare Practitioners & Technical	328,090	336,220	8,130	2.5%	9,482
Healthcare Support	198,930	205,640	6,710	3.4%	5,078
Protective Service	120,080	116,610	-3,470	-2.9%	3,960
Food Preparation & Serving Related	481,300	471,450	-9,850	-2.0%	18,188
Bldg. & Grounds Cleaning & Maint.	195,730	188,830	-6,900	-3.5%	3,087
Personal Care and Service	166,820	164,050	-2,770	-1.7%	4,135
Sales and Related	608,070	576,040	-32,030	-5.3%	21,250
Office and Administrative Support	885,970	844,190	-41,780	-4.7%	18,729
Farming, Fishing, and Forestry	14,550	14,300	-250	-1.7%	363
Construction and Extraction	229,900	211,980	-17,920	-7.8%	3,799
Installation, Maintenance, & Repair	227,910	209,690	-18,220	-8.0%	3,304
Production	554,870	472,060	-82,810	-14.9%	10,248
Transportation & Material Moving	455,920	413,930	-41,990	-9.2%	10,331

Source: *2008 to 2010 Employment Forecast*

Figure 12 shows the short-term (3rd quarter 2008 to 3rd quarter 2010) occupational employment forecast. An overall decline of 4.6 percent was predicted for the two-year period. Only four occupational groups were expected to see modest growth: community and social service occupations (1.5%); education, training, and library occupations (1.2%); healthcare practitioners and technical occupations (2.5%); and healthcare support occupations (3.4%). All other occupational groups were predicted to have some decline in employment, but seven groups were expected to decline more than the overall average. Production occupations were expected to have the largest decline at -14.9 percent followed by transportation and material moving (-9.2%); installation, maintenance, and repair occupations (-8.0%); construction and extraction (-7.8%); architecture and engineering (-7.2%); sales and related occupations (-5.3%); and office and administrative support (-4.7%).

A New Beginning

This review and description of the recession may initially appear dark and pessimistic. However, that is not the goal. Pessimism and nostalgia are not the path for a realistic assessment of where our economy stands nor a basis for workforce policy and strategic planning. We need to remember that economies always move forward and never stand still. Furthermore, there are signs of recovery with recent shoring up of manufacturing and modest employment gains generally. Most economic forecasts suggest that we are turning the corner and are poised for recovery. At the same time, it would be a mistake to simply assume this is a traditional economic cycle where everything will return as it once was. Rather, the point of this review about the recession's impacts on Ohio is to indicate that in a number of ways the economy has been permanently altered and that we need to build anew. It is not merely an ending and cyclical return, but rather a new beginning. There are four key points for workforce and economic development policy and strategic planning as we build for the future.

First, there is a lock-step relationship between technology advancement and the economy. Technology is a primary driver of structural change in our economy and the "Great Recession" has only quickened the pace. "Most job decline comes from technology change and automation, not from declining demand for products and services."[7] Increasingly, productivity and efficiency have been a challenge in our global economy and for Ohio, particularly for auto-related manufacturing. The recession quickened the pace of structural adjustments and the harsh economic realities that followed for industry and the workforce alike.

Second, the primary issue facing workforce development is a growing mismatch between the education or training attainment of adult workers and the jobs that will be created over the decade.[8] This is an educational/knowledge shortage as opposed to a labor shortage. The high prospect occupations presented earlier are predominantly characterized as requiring postsecondary education or training. The spread of technology favors professional and technical skills and knowledge.

Third, blue collar occupations, as a path to middle-class status, are becoming fewer or altogether eliminated. Technology has been driving a polarization of income in the United States, with this recession acerbating the trend.[9] Many occupations will not return to prior levels in numbers or pay. Rather, the jobs of the future, with middle-class

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[7] Anthony P. Carnevale; Nicole Smith; Jeff Strohl. Help Wanted: Projections of Jobs and Education Requirements through 2018 at http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/FullReport.pdf, page 69.
[8] Ibid, page 109
[9] The Polarization of Job Opportunities in the U.S. Labor Market: Implications for Employment and Earnings, David Autor, Working Paper, Center for American Progress and The Hamilton Project, April 2010

aspirations, will be of a very different kind. Business and industry will require different kinds of preparation expanding the need for postsecondary education and training.

Fourth, the nature of the structural/technological changes occurring in the economy combined with the depth of this recession, suggest that employment and wage recovery will be relatively prolonged. The structural mismatch between the adult workforce and the skill requirements by industry will not be remedied quickly, but will require time and dollar investments in education and training.

These realities are the fundamental components of a new beginning to Ohio's economy and the focal point of workforce development.

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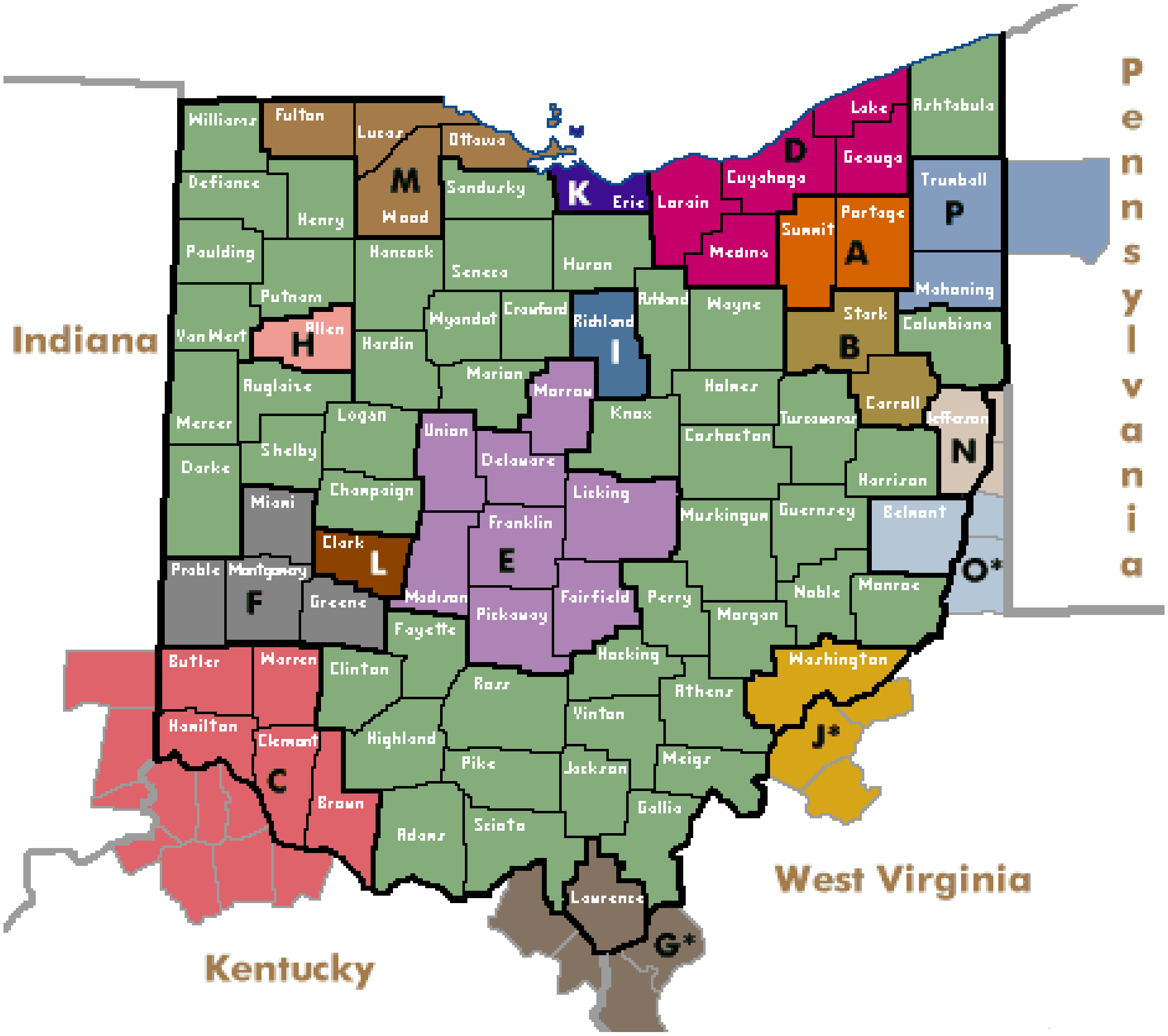
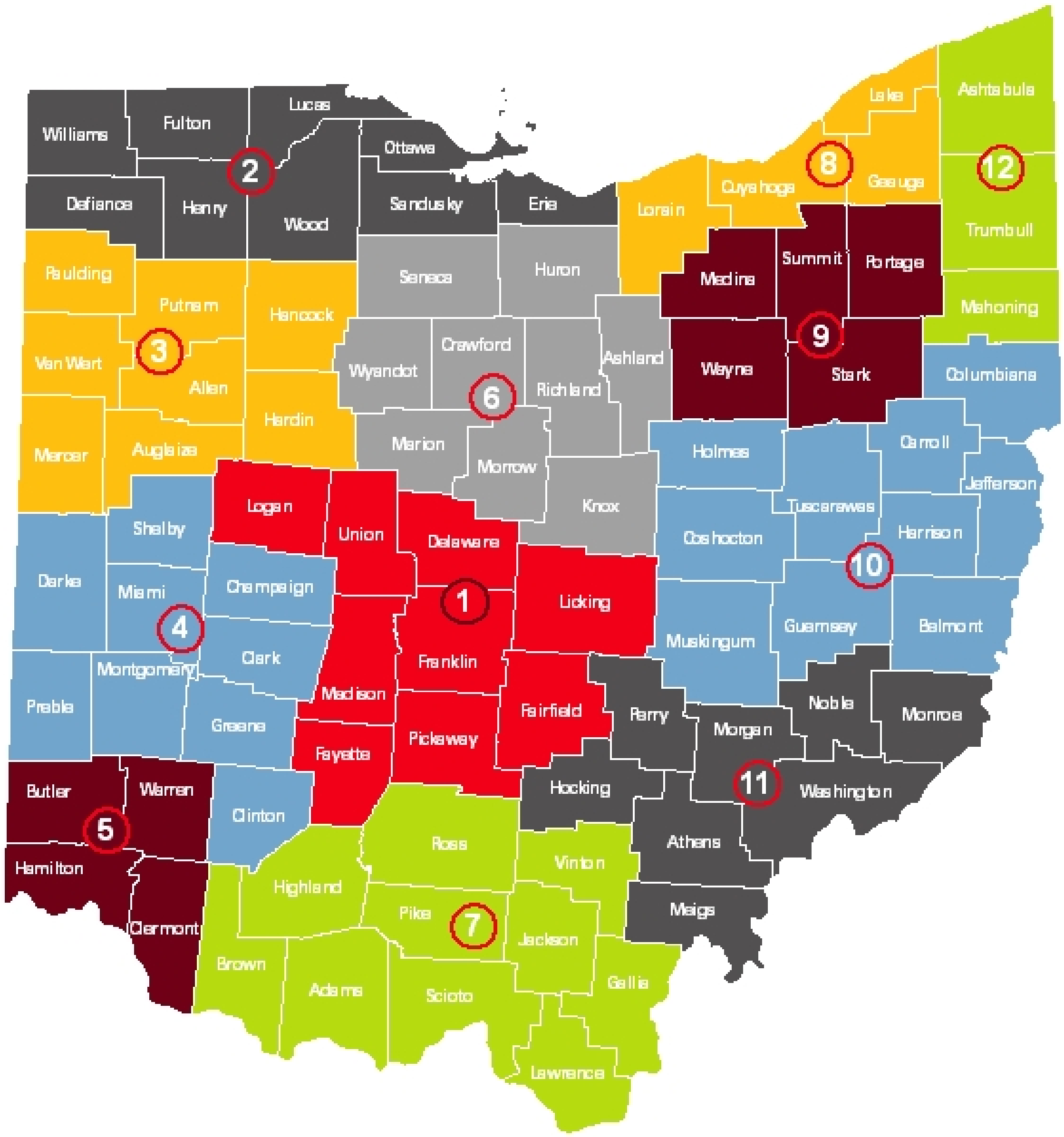
Appendix A: Map of Ohio Metropolitan Statistical Areas



A. Akron
B. Canton-Massillon
C. Cincinnati-Middletown
D. Cleveland-Elyria-Mentor
E. Columbus
F. Dayton
G. Huntington-Ashland
H. Lima
I. Mansfield
J. Parkersburg-Marietta
K. Sandusky
L. Springfield
M. Toledo
N. Weirton-Steubenville
O. Wheeling
P. Youngstown-Warren-Boardman

Appendix B: Map of Ohio Economic Development Regions



1. Central Ohio
2. Northwest Ohio
3. West Central Ohio
4. Southwest Central Ohio
5. Southwest Ohio
6. North Central Ohio
7. Southern Ohio
8. Northern Ohio
9. Northeast Central Ohio
10. East Central Ohio
11. Southeast Ohio
12. Northeast Ohio

Appendix C: Occupations with High Employment Prospects in Ohio

(Occupations paying at least $14.85 an hour and having at least 50 annual openings)

($14.85 was Ohio's median wage in May 2007, which means half of all occupations paid $14.85 an hour or more.)

Code	Occupational Title*	Employment 2006 Annual	Employment 2016 Projected	Change in Employment 2006 - 2016	Change in Employment Percent	Total Annual Openings	Average Wage May 07
Occupations Requiring Short-Term On-the-Job Training (up to one month)							
43-4031	Court, Municipal, and License Clerks	4,960	5,310	350	7.1%	148	$15.58
43-4041	Credit Authorizers, Checkers and Clerks	2,500	2,190	-310	-12.4%	77	$14.99
43-4161	Human Resources Assis., ex. Payroll & Timekp	5,970	6,390	420	7.0%	86	$16.53
43-4181	Reservation/Trans. Ticket Agents & Travel Clerks	3,270	3,190	-80	-2.4%	72	$15.38
43-5051	Postal Service Clerks	2,720	2,710	-10	-0.4%	61	$21.50
43-5052	Postal Service Mail Carriers	14,110	14,050	-60	-0.4%	413	$21.23
43-5053	Postal Service Mail Sorters/Proc/Proc Mach. Op.	7,860	7,090	-770	-9.8%	84	$19.62
51-2031	Engine and Other Machine Assemblers	3,540	2,880	-660	-18.6%	85	$19.17
53-7011	Conveyor Operators and Tenders	3,360	3,210	-150	-4.5%	58	$16.40
Occupations Requiring Moderate-Term On-the-Job Training (one to twelve months combined experience/training)							
17-3031	Surveying and Mapping Technicians	1,890	2,040	150	7.9%	51	$17.22
31-9091	Dental Assistants	10,040	12,130	2,090	20.8%	383	$14.93
41-3011	Advertising Sales Agents	5,720	6,480	760	13.3%	176	$21.15
43-3031	Bookkeeping, Accounting, and Auditing Clerks	77,380	83,220	5,840	7.5%	1,795	$15.15
43-3051	Payroll and Timekeeping Clerks	7,750	7,510	-240	-3.1%	196	$16.09
43-3061	Procurement Clerks	3,150	2,970	-180	-5.7%	63	$15.62
43-4011	Brokerage Clerks	1,580	1,720	140	8.9%	65	$18.47
43-4051	Customer Service Representatives	87,330	102,590	15,260	17.5%	3,958	$15.00
43-4061	Eligibility Interviewers, Government Programs	4,190	4,010	-180	-4.3%	73	$18.34
43-5011	Cargo and Freight Agents	1,730	2,010	280	16.2%	75	$16.45
43-5031	Police, Fire, and Ambulance Dispatchers	4,390	4,790	400	9.1%	151	$17.07
43-5032	Dispatchers, except Police, Fire and Ambulance	6,910	6,890	-20	-0.3%	175	$17.15
43-5061	Production, Planning, and Expediting Clerks	13,910	13,560	-350	-2.5%	379	$19.04
43-9011	Computer Operators	4,860	3,470	-1,390	-28.6%	78	$17.34
43-9022	Word Processors and Typists	5,650	5,040	-610	-10.8%	107	$14.99
43-9041	Insurance Claims and Policy Processing Clerks	15,700	15,350	-350	-2.2%	189	$16.26
43-9111	Statistical Assistants	1,270	1,390	120	9.4%	68	$16.18
47-2051	Cement Masons and Concrete Finishers	6,610	7,340	730	11.0%	264	$19.54
47-2061	Construction Laborers	32,330	35,270	2,940	9.1%	537	$17.77
47-2073	Operating Engineers & Other Con. Equip. Op.	12,080	12,950	870	7.2%	321	$22.53
47-2141	Painters, Construction and Maintenance	12,620	13,970	1,350	10.7%	359	$17.12
47-2181	Roofers	5,400	6,230	830	15.4%	207	$17.37
47-4051	Highway Maintenance Workers	9,420	9,930	510	5.4%	223	$15.85
49-9042	Maintenance and Repair Workers, General	61,470	62,630	1,160	1.9%	268	$16.82
49-9043	Maintenance Workers, Machinery	3,920	3,630	-290	-7.4%	63	$18.60
51-2041	Structural Metal Fabricators and Fitters	3,340	2,950	-390	-11.7%	58	$15.71
51-4011	Computer-Controlled Machine Tool Oper., M/P	12,450	11,250	-1,200	-9.6%	149	$16.08
51-4021	Extruding & Drawing Machine Setters, O/T, M/P	9,130	7,600	-1,530	-16.8%	248	$15.35
51-4022	Forging Mach. Setters/Operators/Tenders, M/P	2,480	1,550	-930	-37.5%	78	$17.04
51-4023	Rolling Machine Setters/Operators/Tenders, M/P	3,070	2,430	-640	-20.8%	63	$15.76
51-4032	Drilling & Boring Machine Tool Setters, O/T, M/P	5,160	3,720	-1,440	-27.9%	104	$18.60
51-4033	Grind/Lapping/Polish/Buff Mach.Tool S/O/T, M/P	9,050	7,150	-1,900	-21.0%	89	$15.25
51-4034	Lathe & Turning Machine Tool Setters, O/T, M/P	5,030	3,650	-1,380	-27.4%	98	$15.56
51-4081	Multiple Machine Tool Setters, O/T, M/P	7,290	6,860	-430	-5.9%	147	$17.18
51-5023	Printing Machine Operators	7,850	7,210	-640	-8.2%	174	$15.45

*See last page for abbrevations.

**Annual earnings, typically 9 1/2 months for school

Appendix C: Occupations with High Employment Prospects in Ohio

(Occupations paying at least $14.85 an hour and having at least 50 annual openings)

($14.85 was Ohio's median wage in May 2007, which means half of all occupations paid $14.85 an hour or more.)

Code	Occupational Title*	Employment 2006 Annual	Employment 2016 Projected	Change in Employment 2006 - 2016	Change in Employment Percent	Total Annual Openings	Average Wage May 07
51-9011	Chemical Equipment Operators and Tenders	3,230	2,890	-340	-10.5%	74	$19.77
51-9012	Sep./Filter/Clarify/Precipitating/Still Mach. S/O/T	2,460	2,220	-240	-9.8%	56	$18.62
51-9023	Mixing/Blending Mach. Setter/Operator/Tenders	9,400	8,730	-670	-7.1%	154	$16.76
51-9051	Furnace/Kiln/Oven/Drier/Kettle Oper./Tenders	1,860	1,480	-380	-20.4%	51	$16.09
51-9061	Inspectors/Testers/Sorters/Samplers/Weighers	27,650	23,730	-3,920	-14.2%	410	$16.33
53-3032	Truck Drivers, Heavy and Tractor-Trailer	74,170	81,020	6,850	9.2%	2,001	$18.25
53-7032	Excavating & Loading Machine & Dragline Oper.	2,580	2,770	190	7.4%	60	$18.01
Occupations Requiring Long-Term On-the-Job Training (twelve months or more combined experience/training)							
13-1022	Wholesale & Retail Buyers, ex. Farm Products	4,410	4,230	-180	-4.1%	99	$23.31
13-1023	Purchasing Agents, ex. Whole., Retail, & Farm	12,270	11,470	-800	-6.5%	262	$26.49
13-1031	Claims Adjusters, Examiners and Investigators	9,520	10,160	640	6.7%	306	$27.43
13-1041	Compl. Off., ex. Agric, Con, Hlth/Safety, & Trans.	6,310	6,390	80	1.3%	82	$25.22
27-2042	Musicians and Singers	8,320	9,300	980	11.8%	267	$29.15
29-2081	Opticians, Dispensing	3,200	3,170	-30	-0.9%	102	$15.74
33-2011	Fire Fighters	19,830	21,630	1,800	9.1%	903	$19.08
33-3051	Police and Sheriff's Patrol Officers	24,700	26,640	1,940	7.9%	854	$22.55
47-2021	Brickmasons and Blockmasons	6,510	7,180	670	10.3%	203	$22.66
47-2031	Carpenters	41,220	44,930	3,710	9.0%	929	$18.37
47-2111	Electricians	30,190	30,400	210	0.7%	798	$22.81
47-2152	Plumbers, Pipefitters and Steamfitters	18,120	19,110	990	5.5%	473	$23.04
47-2211	Sheet Metal Workers	5,770	5,750	-20	-0.3%	140	$22.30
47-2221	Structural Iron and Steel Workers	2,690	2,780	90	3.3%	96	$24.87
49-3021	Automotive Body and Related Repairers	7,410	7,550	140	1.9%	189	$18.22
49-3022	Automotive Glass Installers and Repairers	1,220	1,310	90	7.4%	53	$16.87
49-3042	Mobile Heavy Equip. Mechanics, ex. Engines	3,340	3,600	260	7.8%	91	$20.39
49-9021	Heating, AC, & Refrigeration Mechanics/Installers	9,860	10,690	830	8.4%	256	$18.84
49-9041	Industrial Machinery Mechanics	11,060	11,560	500	4.5%	235	$23.18
49-9044	Millwrights	5,410	4,550	-860	-15.9%	68	$27.14
49-9051	Electrical Power-Line Installers and Repairers	3,300	3,380	80	2.4%	112	$25.10
49-9052	Telecommunications Line Installers & Repairers	5,540	5,780	240	4.3%	168	$20.03
51-4041	Machinists	29,190	26,340	-2,850	-9.8%	451	$16.74
51-4111	Tool and Die Makers	12,280	10,270	-2,010	-16.4%	163	$22.65
51-8031	Water/Liquid Waste Treatment Plant/System Op.	6,000	6,580	580	9.7%	163	$18.66
51-8091	Chemical Plant and System Operators	1,800	1,560	-240	-13.3%	50	$23.28
Occupations Requiring Work Experience in a Related Occupation							
11-3051	Industrial Production Managers	7,890	6,880	-1,010	-12.8%	272	$41.65
11-3071	Transportation, Storage, & Distribution Managers	3,130	3,390	260	8.3%	119	$40.03
11-9051	Food Service Managers	16,160	16,590	430	2.7%	425	$21.22
25-3021	Self-Enrichment Education Teachers	6,600	7,960	1,360	20.6%	207	$16.31
33-1012	First-Line Superv./Mgrs of Police & Detectives	3,940	4,250	310	7.9%	154	$31.09
33-1021	FL Sup/Mgrs of Fire Fighting & Prev. Workers	2,790	3,040	250	9.0%	112	$27.95
33-3021	Detectives and Criminal Investigators	2,130	2,380	250	11.7%	72	$28.67
35-1011	Chefs and Head Cooks	3,270	3,380	110	3.4%	52	$20.14
37-1011	FL Sup/Mgrs of Housekping & Janitorial Workers	8,190	8,800	610	7.4%	182	$16.41
37-1012	FL Sup/Mgrs of Lndscap./Lawn Ser/Groundskp	6,480	7,250	770	11.9%	121	$19.21
39-1021	First-Line Sup/Mgrs of Personal Serv. Workers	7,160	8,010	850	11.9%	240	$16.87

*See last page for abbrevations.

**Annual earnings, typically 9 1/2 months for school

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($14.85 was Ohio's median wage in May 2007, which means half of all occupations paid $14.85 an hour or more.)

Code	Occupational Title*	Employment 2006 Annual	Employment 2016 Projected	Change in Employment 2006 - 2016	Percent	Total Annual Openings	Average Wage May 07
41-1011	First-Line Superv./Mgrs of Retail Sales Workers	63,570	63,280	-290	-0.5%	1,334	$18.39
41-1012	First-Line Sup./Mgrs of Non-Retail Sales Workers	21,170	21,380	210	1.0%	326	$37.39
41-4011	Sales Rep., Wholesale & Mfg, Tech./Sci. Prod.	11,930	13,110	1,180	9.9%	381	$36.90
41-4012	Sales Rep., Wholesale/Mfg, ex. Tech./Sci. Prod.	71,280	74,310	3,030	4.3%	1,876	$30.12
41-9021	Real Estate Brokers	3,080	3,390	310	10.1%	80	$26.64
43-1011	First-Line Sup/Mgrs of Office & Admin. Support	45,250	45,540	290	0.6%	963	$21.67
43-6011	Executive Secretaries & Administrative Assistants	58,810	64,890	6,080	10.3%	1,545	$18.67
47-1011	First-Line Sup/Mgrs of Con. Trades/Extract. Work	21,050	22,720	1,670	7.9%	461	$28.69
47-4011	Construction and Building Inspectors	4,490	4,880	390	8.7%	122	$20.79
49-1011	FL Sup/Mgrs of Mechanics/Installers/Repairers	18,910	19,120	210	1.1%	465	$27.04
51-1011	FL Sup/Mgrs of Production/Operating Workers	40,000	35,320	-4,680	-11.7%	669	$24.49
53-1021	FL Sup/Mgrs of Help/Labor/Mat. Movers, Hand	9,190	9,820	630	6.9%	250	$21.07
53-1031	FL Sup/Mgr of Trans/Mat.-Mov. Mach & Veh Op	8,810	9,620	810	9.2%	261	$25.30
53-6051	Transportation Inspectors	1,020	1,240	220	21.6%	56	$24.19
Occupations Requiring Postsecondary Vocational Award							
17-3011	Architectural and Civil Drafters	3,010	2,820	-190	-6.3%	86	$20.82
17-3013	Mechanical Drafters	3,760	3,590	-170	-4.5%	107	$19.70
29-2055	Surgical Technologists	3,440	4,210	770	22.4%	182	$17.36
29-2061	Licensed Practical & Licensed Vocat. Nurses	38,690	44,070	5,380	13.9%	1,593	$18.57
31-9011	Massage Therapists	3,970	4,740	770	19.4%	122	$15.04
41-9022	Real Estate Sales Agents	7,920	8,580	660	8.3%	193	$27.34
49-2011	Computer, ATM, & Office Machine Repairers	5,990	5,880	-110	-1.8%	70	$17.99
49-2022	Telecomm. Equip. Install/Repair, ex. Line Install	6,840	6,390	-450	-6.6%	168	$24.83
49-2094	Electrical/Electronics Repair, Comm/Indus Equip.	2,450	2,500	50	2.0%	88	$22.38
49-3011	Aircraft Mechanics and Service Technicians	3,690	3,880	190	5.1%	57	$23.15
49-3023	Automotive Service Technicians and Mechanics	29,280	31,420	2,140	7.3%	801	$17.03
49-3031	Bus & Truck Mechanics & Diesel Engine Spec.	12,740	13,860	1,120	8.8%	389	$18.31
51-4121	Welders, Cutters, Solderers, and Brazers	17,860	17,120	-740	-4.1%	378	$16.23
51-4122	Welding/Soldering/Brazing Machine Setters, O/T	4,110	3,790	-320	-7.8%	87	$16.14
51-5022	Prepress Technicians and Workers	3,600	2,680	-920	-25.6%	57	$16.74
Occupations Requiring an Associate Degree							
11-9061	Funeral Directors	1,550	1,690	140	9.0%	51	$28.92
15-1041	Computer Support Specialists	16,970	18,250	1,280	7.5%	652	$19.70
17-3023	Electrical & Electronic Engineering Technicians	4,750	4,730	-20	-0.4%	93	$23.55
17-3025	Environmental Engineering Technicians	1,520	1,740	220	14.5%	52	$21.39
17-3026	Industrial Engineering Technicians	3,390	3,390	0	0.0%	66	$22.89
17-3027	Mechanical Engineering Technicians	3,280	3,370	90	2.7%	73	$22.20
19-4031	Chemical Technicians	3,110	3,010	-100	-3.2%	104	$20.05
19-4091	Environ. Science & Protection Tech., inc. Health	1,080	1,280	200	18.5%	61	$17.81
23-2011	Paralegals and Legal Assistants	6,320	7,560	1,240	19.6%	207	$21.04
27-1025	Interior Designers	2,630	2,820	190	7.2%	89	$19.24
27-4012	Broadcast Technicians	1,280	1,400	120	9.4%	54	$17.56
29-1111	Registered Nurses	113,050	138,640	25,590	22.6%	4,425	$27.56
29-1126	Respiratory Therapists	5,350	6,540	1,190	22.2%	198	$22.76
29-2012	Medical and Clinical Laboratory Technicians	5,280	6,030	750	14.2%	155	$17.03
29-2021	Dental Hygienists	6,320	7,640	1,320	20.9%	253	$29.45

*See last page for abbrevations.

**Annual earnings, typically 9 1/2 months for school

Appendix C: Occupations with High Employment Prospects in Ohio

(Occupations paying at least $14.85 an hour and having at least 50 annual openings)

($14.85 was Ohio's median wage in May 2007, which means half of all occupations paid $14.85 an hour or more.)

Code	Occupational Title*	Employment 2006 Annual	Employment 2016 Projected	Change in Employment 2006 - 2016	Change in Employment Percent	Total Annual Openings	Average Wage May 07
29-2031	Cardiovascular Technologists and Technicians	1,720	2,110	390	22.7%	62	$22.98
29-2032	Diagnostic Medical Sonographers	1,890	2,210	320	16.9%	58	$27.18
29-2034	Radiologic Technologists and Technicians	9,740	11,040	1,300	13.3%	262	$22.87
29-2071	Medical Records & Health Info. Technicians	6,600	7,550	950	14.4%	274	$14.98
31-2011	Occupational Therapist Assistants	2,370	2,970	600	25.3%	96	$22.92
31-2021	Physical Therapist Assistants	4,590	6,050	1,460	31.8%	205	$22.64
43-6012	Legal Secretaries	9,100	9,910	810	8.9%	226	$17.25
49-9062	Medical Equipment Repairers	1,290	1,510	220	17.1%	58	$23.64
Occupations Requiring a Bachelor's Degree							
11-9021	Construction Managers	11,290	12,860	1,570	13.9%	332	$44.80
11-9141	Property, Real Estate & Community Assn Mgrs	2,870	3,210	340	11.8%	74	$30.86
11-9151	Social and Community Service Managers	3,350	4,170	820	24.5%	146	$27.95
13-1051	Cost Estimators	10,770	12,360	1,590	14.8%	379	$27.92
13-1071	Employment, Recruitment & Placement Specialists	5,790	6,640	850	14.7%	210	$23.31
13-1072	Comp., Benefits & Job Analysis Specialists	3,780	4,200	420	11.1%	123	$26.46
13-1081	Logisticians	2,430	2,630	200	8.2%	56	$32.43
13-2011	Accountants and Auditors	49,080	54,020	4,940	10.1%	1,357	$28.41
13-2021	Appraisers and Assessors of Real Estate	2,880	3,700	820	28.5%	140	$23.52
13-2041	Credit Analysts	2,210	2,090	-120	-5.4%	85	$25.56
13-2051	Financial Analysts	6,920	8,550	1,630	23.6%	202	$33.63
13-2052	Personal Financial Advisors	4,700	6,300	1,600	34.0%	202	$41.04
13-2053	Insurance Underwriters	4,640	4,960	320	6.9%	156	$27.71
13-2072	Loan Officers	11,650	12,610	960	8.2%	221	$24.92
13-2081	Tax Examiners, Collectors & Revenue Agents	2,200	2,130	-70	-3.2%	56	$27.10
15-1021	Computer Programmers	13,910	12,430	-1,480	-10.6%	290	$30.70
15-1031	Computer Software Engineers, Applications	16,440	22,840	6,400	38.9%	880	$37.29
15-1032	Comp. Software Engineers, Systems Software	7,330	8,920	1,590	21.7%	266	$39.17
15-1051	Computer Systems Analysts	15,490	18,680	3,190	20.6%	730	$34.21
15-1061	Database Administrators	4,960	6,170	1,210	24.4%	174	$32.47
15-1071	Network and Computer Systems Administrators	12,020	14,510	2,490	20.7%	523	$29.98
15-1081	Network Systems & Data Comm. Analysts	7,970	11,790	3,820	47.9%	544	$34.32
17-1011	Architects, except Landscape and Naval	3,660	3,840	180	4.9%	87	$36.02
17-1022	Surveyors	1,500	1,670	170	11.3%	63	$27.84
17-2011	Aerospace Engineers	4,330	4,450	120	2.8%	98	$43.02
17-2051	Civil Engineers	5,990	6,460	470	7.8%	205	$32.88
17-2071	Electrical Engineers	4,440	4,500	60	1.4%	109	$33.59
17-2072	Electronics Engineers, except Computer	3,390	3,280	-110	-3.2%	79	$39.70
17-2081	Environmental Engineers	1,850	2,300	450	24.3%	99	$37.03
17-2112	Industrial Engineers	12,990	14,670	1,680	12.9%	481	$33.87
17-2141	Mechanical Engineers	11,350	10,630	-720	-6.3%	246	$31.97
19-2031	Chemists	3,490	3,540	50	1.4%	97	$30.17
19-3021	Market Research Analysts	6,970	7,890	920	13.2%	139	$30.66
19-4021	Biological Technicians	2,350	2,710	360	15.3%	120	$16.70
21-1011	Substance Abuse & Behavioral Dis. Counselors	2,470	3,310	840	34.0%	134	$18.52
21-1021	Child, Family and School Social Workers	8,200	9,760	1,560	19.0%	330	$17.08
21-1022	Medical and Public Health Social Workers	5,970	7,430	1,460	24.5%	272	$20.68

*See last page for abbrevations.

**Annual earnings, typically 9 1/2 months for school

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(Occupations paying at least $14.85 an hour and having at least 50 annual openings)

($14.85 was Ohio's median wage in May 2007, which means half of all occupations paid $14.85 an hour or more.)

Code	Occupational Title*	Employment 2006 Annual	Employment 2016 Projected	Change in Employment 2006 - 2016	Percent	Total Annual Openings	Average Wage May 07
21-1091	Health Educators	1,610	2,030	420	26.1%	61	$20.63
21-2021	Directors, Religious Activities and Education	6,570	7,860	1,290	19.6%	280	$19.32
25-2012	Kindergarten Teachers, ex. Special Education	5,950	6,600	650	10.9%	163	$49,430**
25-2021	Elementary School Teachers, ex.Special Ed.	54,320	58,770	4,450	8.2%	1,631	$51,880**
25-2022	Middle School Teachers, ex. Special & Voc. Ed.	30,100	31,830	1,730	5.7%	830	$53,290**
25-2031	Secondary Sch. Teachers, ex. Spec. & Voc. Ed.	52,540	52,750	210	0.4%	1,586	$53,420**
25-2041	Special Ed. Teachers, Pre./Kinder./Elem. Sch.	8,470	9,630	1,160	13.7%	304	$50,780**
25-2042	Special Education Teachers, Middle School	6,220	6,870	650	10.5%	203	$53,350**
25-2043	Special Education Teachers, Secondary School	9,990	10,280	290	2.9%	251	$52,230**
27-1014	Multi-Media Artists and Animators	2,070	2,460	390	18.8%	87	$23.14
27-1021	Commercial and Industrial Designers	2,620	2,710	90	3.4%	79	$24.93
27-1024	Graphic Designers	10,560	11,050	490	4.6%	330	$19.70
27-3022	Reporters and Correspondents	2,480	2,380	-100	-4.0%	78	$19.90
27-3031	Public Relations Specialists	6,740	7,470	730	10.8%	124	$25.83
27-3041	Editors	3,660	3,420	-240	-6.6%	109	$22.90
27-3042	Technical Writers	1,490	1,590	100	6.7%	55	$26.78
27-3043	Writers and Authors	3,310	3,380	70	2.1%	67	$23.77
29-1031	Dietitians and Nutritionists	2,630	2,780	150	5.7%	82	$23.64
29-2011	Medical and Clinical Laboratory Technologists	6,580	7,290	710	10.8%	170	$23.65
29-9011	Occupational Health and Safety Specialists	1,920	2,060	140	7.3%	51	$32.54
41-3021	Insurance Sales Agents	28,040	30,980	2,940	10.5%	903	$25.99
41-3031	Securities/Commodities/Fin. Serv. Sales Agents	13,960	15,800	1,840	13.2%	542	$32.62
Occupations Requiring Work Experience plus a Bachelor's or Higher Degree							
11-1011	Chief Executives	16,930	16,310	-620	-3.7%	463	$71.66
11-1021	General and Operations Managers	56,770	54,430	-2,340	-4.1%	1,369	$47.17
11-2021	Marketing Managers	3,800	4,080	280	7.4%	112	$49.66
11-2022	Sales Managers	9,160	9,580	420	4.6%	246	$50.46
11-3011	Administrative Services Managers	6,300	6,750	450	7.1%	212	$38.01
11-3021	Computer and Information Systems Managers	8,620	9,440	820	9.5%	221	$51.23
11-3031	Financial Managers	13,930	14,690	760	5.5%	279	$49.10
11-3061	Purchasing Managers	2,780	2,680	-100	-3.6%	80	$38.95
11-9031	Education Admin., Pre & Child Care Center/Prog.	2,040	2,330	290	14.2%	86	$19.21
11-9032	Education Admin., Elem. & Secondary School	10,900	11,160	260	2.4%	330	$88,550**
11-9033	Education Administrators, Postsecondary	2,650	2,880	230	8.7%	97	$48.38
11-9041	Engineering Managers	6,350	6,350	0	0.0%	129	$49.04
11-9111	Medical and Health Services Managers	10,910	12,550	1,640	15.0%	368	$37.40
13-1073	Training and Development Specialists	7,860	8,930	1,070	13.6%	276	$24.03
13-1111	Management Analysts	23,600	26,630	3,030	12.8%	706	$36.75
25-2032	Vocational Education Teachers, Secondary Sch.	6,890	6,240	-650	-9.4%	205	$57,030**
27-1011	Art Directors	2,560	2,690	130	5.1%	73	$38.96
27-2012	Producers and Directors	1,980	2,080	100	5.1%	69	$28.01
27-2041	Music Directors and Composers	2,110	2,420	310	14.7%	74	$39.65
Occupations Requiring a Master's Degree							
19-2041	Environmental Scientists/Specialists, inc. Health	2,720	3,070	350	12.9%	105	$28.93
21-1012	Educational, Vocational, & School Counselors	8,320	8,850	530	6.4%	218	$28.04
21-1014	Mental Health Counselors	2,780	3,610	830	29.9%	138	$19.85

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Code	Occupational Title*	Employment 2006 Annual	Employment 2016 Projected	Change in Employment 2006 - 2016	Change in Employment Percent	Total Annual Openings	Average Wage May 07
21-1015	Rehabilitation Counselors	3,740	4,170	430	11.5%	117	$19.25
21-1023	Mental Health & Substance Abuse Social Work.	5,200	6,750	1,550	29.8%	265	$17.15
25-9031	Instructional Coordinators	6,110	7,150	1,040	17.0%	188	$29.64
29-1071	Physician Assistants	1,580	1,950	370	23.4%	59	$38.12
29-1122	Occupational Therapists	4,210	5,180	970	23.0%	159	$33.95
29-1123	Physical Therapists	6,820	8,510	1,690	24.8%	251	$34.80
29-1127	Speech-Language Pathologists	5,040	5,410	370	7.3%	134	$35.57
Occupations Requiring a Doctoral Degree							
15-1011	Computer and Information Scientists, Research	1,570	1,750	180	11.5%	60	$45.84
19-1042	Medical Scientists, except Epidemiologists	1,560	1,780	220	14.1%	70	$29.14
19-3031	Clinical, Counseling and School Psychologists	4,600	5,020	420	9.1%	113	$38.23
25-1000	Postsecondary Teachers	45,900	53,690	7,790	17.0%	1,547	$66,157**
Occupations Requiring a First Professional Degree							
23-1011	Lawyers	22,570	24,710	2,140	9.5%	642	$48.42
29-1011	Chiropractors	2,070	2,380	310	15.0%	54	$50.88
29-1021	Dentists, General	4,820	4,940	120	2.5%	106	$76.14
29-1051	Pharmacists	10,010	11,540	1,530	15.3%	326	$46.04
29-1062	Family and General Practitioners	6,240	6,850	610	9.8%	174	$77.33
29-1063	Internists, General	3,240	3,520	280	8.6%	86	$73.59
29-1065	Pediatricians, General	2,230	2,440	210	9.4%	61	$70.87
29-1067	Surgeons	2,430	2,620	190	7.8%	63	$96.52
29-1131	Veterinarians	1,920	2,500	580	30.2%	96	$43.56

*Abbreviations

FL Sup/Mgrs = First-Line Supervisors/Managers

M/P = Metal and Plastic

O/T = Operators and Tenders

S/O/T = Setters, Operators and Tenders

PS = Postsecondary

Source: Ohio Department of Job and Family Services, Bureau of Labor Market Information, November 2008.

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**Annual earnings, typically 9 1/2 months for school

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