



**The Evolution of Indiana's Labor Force
1968-1997
A Comparative Analysis**

December 1998

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**The Evolution of Indiana's Labor Force
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Foreword

The Indiana Human Capital Retention Project Series

Physical capital was dominant in the economic life of the nineteenth and early twentieth centuries. Machines “made things” and the economy of the United States became the largest and most successful precisely because of its ability to manufacture the products that could be sold around the world. In the last 40 years, economists have increasingly understood that human capital is important to the growth of a country’s economy. The education and experience of the labor force being utilized within a region’s economy makes a very significant difference in the rates of return on business investment and on the quality of life within the region. Human capital, therefore, represents a strategic advantage in the increasingly competitive international economy in which we all participate.

One measure of human capital is the educational attainment of a region, state, or nation, defined as the percentage of the population with a certain level of schooling. Indiana is a state with historically low educational attainment at the collegiate level. In 1970 Indiana ranked 44th among the 50 states in terms of population with a four-year college degree; by 1997 the state’s ranking had fallen to 48th. This statistic is even more troubling in a state like Indiana with higher education institutions that are generally regarded as excellent.

The stock of human capital within a state is difficult to affect. It is a function of the jobs within a state’s economy which is in turn affected by the human capital available to the investors who wish to locate new productive enterprises within that economy. The Indiana Human Capital Retention Project was formulated as a research response to Indiana’s perceived human capital problem. It consists of six research initiatives, each of which looks at a different part of the human capital issue.

The Indiana Human Capital Retention Project is funded by a grant from the Lilly Endowment, Inc., and receives additional funding from the Indiana Commission for Higher Education and the Indiana State Chamber of Commerce. The research for the project is being carried out by a number of experienced academic and independent researchers under the direction of the Indiana Fiscal Policy Institute.

The Evolution of Indiana’s Labor Force 1968-1997, A Comparative Analysis is the first of the six reports to be published. It is the work of Patrick M. Barkey, Ph.D., Director of the Bureau of Business Research at Ball State University. The study directs policymakers and all others interested in the future of Indiana to the trends that have shaped our current labor force.

Executive Summary

This is a descriptive statistical analysis of the labor force of the State of Indiana and that of six peer states. Using data collected over the thirty year period 1968-1997 from the March supplement to the Current Population Survey (CPS), this study has analyzed the rates of participation, the occupational structure, and the earnings of the Indiana workforce, in an attempt to comprehensively document and understand the areas in which the state economy has exceeded, equaled, or fallen short of the performance of other states.

These comparisons take place over a period that saw much change in labor markets nationwide. The data for all states reflect many of these trends: the increasing participation of women in the labor market, the continued shrinkage of the farm economy, and the rising importance of the services producing side of the economy are evident in the data for every state.

But the study has also found numerous, striking differences between the makeup of the Indiana labor force and that of its neighbors, which will uniquely affect the performance of the state economy in the coming years. The main findings of this report are:

- *Indiana's labor force is significantly behind its Midwest neighbors in jobs in two high-paying occupational categories: Professional and Specialty occupations, and Executive, Administrative and Managerial occupations. These two categories have accounted for three out of every four net new jobs created nationwide since 1989, but a significant, widening gap exists between the concentration of these kinds of jobs in our state compared to our peer states.*
- *The Indiana labor force is more concentrated in the two middle-paying occupations that have ranked last in growth nationwide during the 1990's. The state's share of jobs in the Precision, Craft, and Repair occupations and Machine Operators occupations is higher than peer states.*
- *While similar overall to other states, the rates of participation in the labor force of certain subgroups of the Indiana population differs markedly from those of other states. Rates of participation of blacks have fallen in the 1990's, an experience not found elsewhere, while the involvement of young adults in the full time labor force in Indiana is higher than some of its peers.*
- *Indiana's occupational mix cannot be explained solely on the basis of compensation. While earnings here do generally fall short of some of our neighbor states, in some job categories, notably Professional and Specialty job occupations, workers in Indiana may even be paid a premium to remain in the state.*

The Evolution of Indiana's Labor Force 1968-1997 A Comparative Analysis

I. Introduction

The Founding Fathers of this country viewed the states as laboratories, where different systems of laws and government could be tested and improved. The State of Indiana has embodied this spirit of experimentation as much as any other state in the nation. Throughout its history, Hoosiers have followed their own timetable in the adoption of laws and practices that have found acceptance elsewhere. As a consequence of the unique aspects of its political structure and important differences in its historical development, Indiana has traced a path that has always been distinctly different from that of its Midwest neighbors.

But recently concerns have been voiced that some parts of the Indiana experiment are producing poor results, especially those that impact the growth of the Indiana economy. The state economy, historically concentrated in highly cyclical durable manufacturing industries, has traditionally outpaced the nation in expansionary times, and plummeted further down when times turned bad.

But the last two years have broken the mold, with Indiana's job growth ranked near the bottom (42nd in job growth in 1997) while the rest of the nation has enjoyed vigorous growth. With the evidence of the fast-paced "information revolution" all around us, the question being asked is, how is Indiana—and, specifically, Indiana's labor force—positioned to compete with other states in attracting and retaining the new kinds of jobs that the economy is creating?

This study can be viewed as a fact-finding mission to address this question. But while the concern is for our future growth, the current state of the Indiana labor force is a product of policies and events of the past. Thus, we examine the evolution of the state's labor force over the last thirty years to measure and understand the trends that will play a major role in shaping our immediate future.

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Research Questions

The purpose of this study is to inform the debate on the policy questions that relate to the development of the state's labor force. Using data collected from the Current Population Survey (CPS) and aggregated to the state level, we will examine the following questions:

- ① *To what extent does Indiana's experience differ from that of its peer states in the rate at which its adult population participates in the workforce? How do rates here compare to other states by age, by sex, or by race? Have differences converged over time or have they widened?*
- ② *How does the mix of occupations in Indiana's labor force compare with those in peer states? What is the state's share in those occupational categories that have been highest paying, fastest growing in the 1990's? In what occupations are those with a college degree likely to be employed? Has the growth in these occupations kept up with growth in other states?*
- ③ *How do Indiana earnings, by occupation, by industry, and by level of educational attainment compare to those of peer states? Has the growth in earnings for the college educated in Indiana exceeded or lagged that of other states?*

To the degree that the CPS data accurately describe the economic conditions of the labor force within states, these questions are all matters of fact. What remains to be determined are:

- ✓ the precise mechanisms that produced this set of outcomes, and
- ✓ recommendations for policy that should be pursued to produce a more favorable set of outcomes.

On its own, this study pulls up short of this goal. We will attempt in every section of the report to speculate, when appropriate, on the possible causes that could have contributed to the labor market outcomes we detail. But a specific set of policy recommendations, let alone a definitive analysis of the process that produced the level of training and preparedness of our current workforce, are beyond the scope of this study.

Methodology

The Current Population Survey (CPS) is a monthly statistical "snapshot" of the population of the United States. Using a sample of roughly 50,000 households nationwide, the CPS is used as the basis for a number of important economic time series, including the unemployment rate. This analysis will rely most heavily on the March supplement to the CPS. Included in the supplement are a number of questions about labor force history, occupational status, and educational attainment.

This study will use the CPS data to make comparisons of the populations and the labor force of seven different states. Even though there are undoubtedly differences in labor markets within each

state, this study will only analyze data at the state level, for two reasons. First, since the laws, taxes and programs that impact the business, labor, and educational environment of each area are formulated largely at the state level, there is ample reason to expect the labor force development of each state to be unique.

The second reason is more pragmatic. The CPS, our main resource for information, does not allow analysis at the sub-state level. There is no tabulation of geography below the level of state in the data, as the number of responses for geographies smaller than this level falls too low to give reliable statistical results.

Overview of Study

The remainder of this study proceeds as follows. We begin the analysis in the next section by examining the proportion of the adult population that participates in the labor force, or the labor force participation rate, for Indiana and its peer states. Trends in these rates indicate the strengths and capacity of the state economy, as well as the match between labor force skills and employer needs. This is followed by section four, which examines the composition of the labor force, by occupation, in detail. Conclusions are presented in the final section.

II. Rates of Participation in the Labor Force: A Comparative Analysis

The first empirical question to be examined by this report is the degree to which the populations of Indiana and several peer states participate in the workforce. The tool used to measure this concept is the Labor Force Participation Rate, derived from the Current Population Survey by the Bureau of Labor Statistics. This is the ratio of those working, plus those actively looking for work, divided by the population. The latter is generally restricted to those aged 16 years or older, defined as adult participation, which is what we will use in this section.

The first empirical question to be examined by this report is the degree to which the populations of Indiana and several peer states participate in the workforce.

Labor force participation rates can vary between cities, states, and even countries, for a variety of reasons. These reasons can be classified into a few major categories: economic/cyclical, population mix, and cultural.

The economic/cyclical explanations have to do with the changes in the economic rewards of work, versus not working. High wages and hot job prospects tend to pull people into the labor market, whereas low wages do the opposite. A booming stock market can convince people to retire early. Taxes affect the return on working, as does the relative generosity of a state's social welfare programs.

The mix of population can also have an important influence on an area's participation rate. A population that is, on average, older can be expected to have a lower participation rate, as can a

state with a large number of women of childbearing age. Occupational concentrations can also have an effect; with areas concentrated in jobs that offer opportunities for the youngest workers often having higher participation rates.

. . . attitudes and traditions about the labor force can have an important effect. Indeed, the major story of the last thirty years' labor force history is the increased participation rates of women.

Finally, attitudes and traditions about the labor force can have an important effect. Indeed, the major story of the last thirty years' labor force history is the increased participation rates of women. To the degree that this transformation has not been equally felt in all areas of the country, differences will show up in participation rates.

The relationship between labor force participation and the level of human capital of a state labor force is indirect. The former can be thought of as a rate of utilization of a state's work force. Extremely low rates indicate unused capacity, possibly due to an economic downturn or a mismatch in skills demanded by employers and those available in a state's workforce. For younger people, however, lower rates coincide with acquisition of human capital through formal education. Thus, very high rates of labor force utilization, to the extent that they lure young people away from college and other educational opportunities, may also be undesirable.

Labor Force Participation Since 1968

The labor force participation experience of Indiana since 1968 has been quite similar to its Great Lakes region neighbors, as shown in Chart 1. During the years 1992-1996, 69 percent of the population aged 16 and older in the state were counted as being in the labor force, a fraction that was exceeded only by Wisconsin for the same time period. With the exception of Wisconsin, Indiana and its neighbors had labor force participation rates all within a roughly three percentage point range during all of the time periods shown.

All the states shown in the chart also display rising rates of participation over the decades, primarily due to the rising prominence of women in the workforce over the years shown. In Indiana, this boosted the participation rate from an average of 64.2 percent during the 1968-1982 period, to 69 percent in the 1990's. Changes of this magnitude were seen in all the Great Lakes states, whereas North Carolina, the only southern state included in the comparison group, saw a much smaller increase.

The outlier in terms of overall labor force participation is the state of Wisconsin, particularly in the 1990's. The 73 percent participation rate of its population during the years 1992-1996 in the labor force is four percentage points higher than Indiana, the next highest state. Minnesota, a state not shown in Chart 1, also has very high labor force participation rates. Whether these differences are due to the cultural heritage of these states, the population mix, or economic factors, cannot be said with certainty.

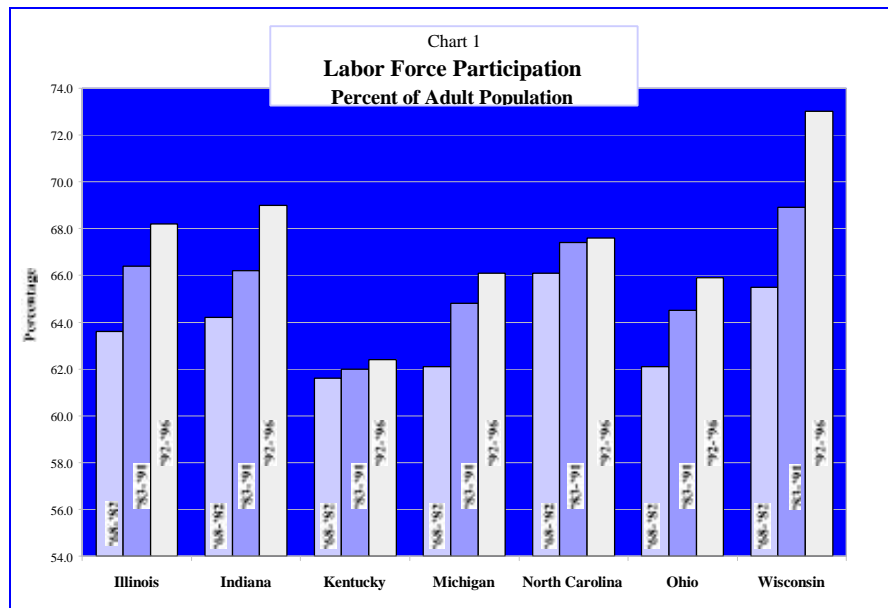
What the data in Chart 1 do not reveal is the year-to-year variability in participation rates of the state populations. This variability, particularly for Indiana, is sizable, as can be seen from Figure 1,

which displays participation rates by year for Indiana and five other states, during the years 1989-1996. Compared to Illinois, Michigan, and Ohio, which had relatively stable rates during this period, Indiana's labor force participation rate dipped below 66 percent in 1991, and climbed beyond 71 percent in 1995.

The direction of these changes is easy to explain. The year 1991 was a recession year, and with employment prospects worsening, it is natural to expect a decline in the rate of participation, as those with less attachment to the labor force leave it to pursue other opportunities. Similarly, the years after 1991 were ones of expansion, with improving opportunities drawing people back into the labor force.

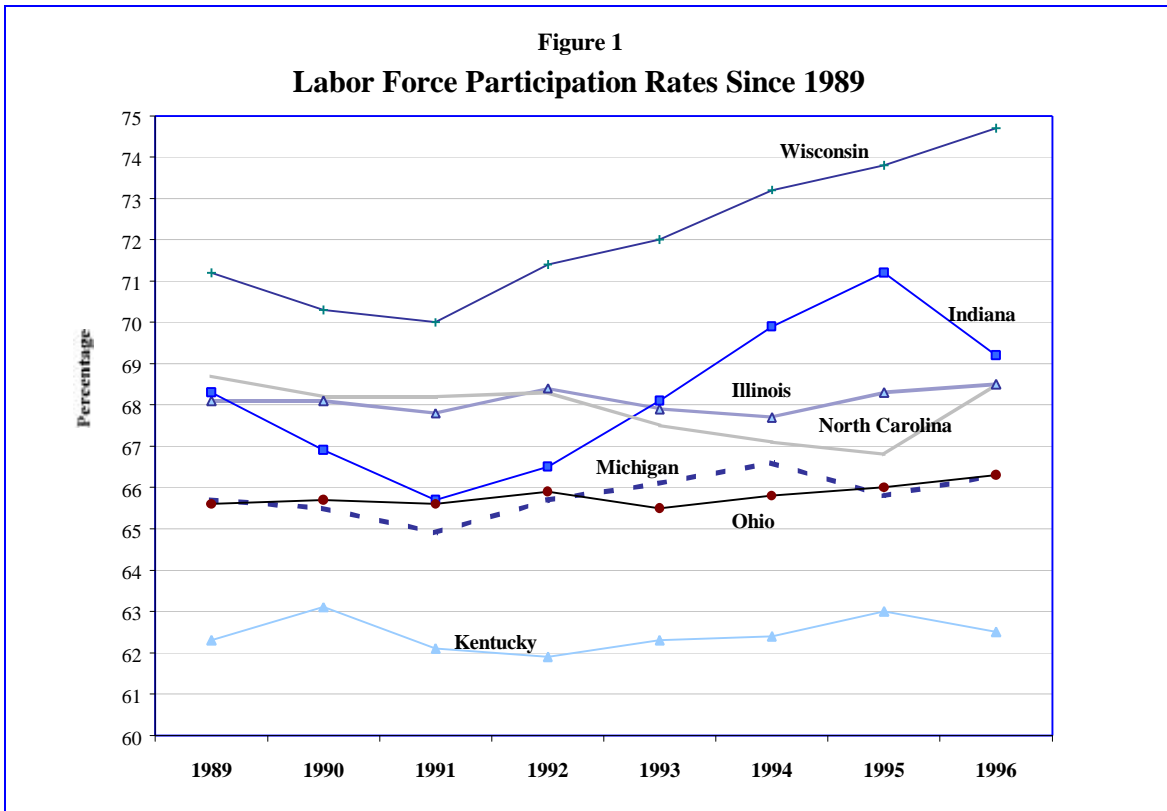
If this simple economic explanation were the whole story, then it would appear that Indiana and Wisconsin experienced a more pronounced

economic rebound from the 1991 recession than the other states under review, as the participation rates for both these states grew more rapidly following this year. It would also say that employment opportunities shrunk significantly in Indiana in 1996, the last year for which data are available, as the state's labor force participation shrunk by two percentage points in



that single year. This contraction was not experienced in any other state under review in this study.

Indiana's total labor force participation over the last 30 years closely follows the gradually rising pattern of other Great Lakes states (Figure 1). In the 1990's its average rate was second to Wisconsin, but it fell faster in the recession of 1991, and rose faster in the subsequent years, than most of its peers. The two percentage point decline in Indiana's labor force participation rate during 1996 stands out in contrast to the experience of any other state.



Labor Force Participation by Sex and by Race

The patterns of male and female participation in the labor force over the last thirty years converge for all of the states we examine, as can be seen from Table 1. For men, rates have gradually fallen

State	68-'82		83-'91		92-96	
	Males	Females	Males	Females	Males	Females
Illinois	79.6	51.9	77.8	56.0	77.1	60.0
Indiana	79.4	52.3	76.6	56.9	77.8	61.2
Kentucky	76.8	48.6	74.3	51.2	70.8	54.8
Michigan	77.8	50.1	75.5	54.9	75.0	57.9
North Carolina	79.0	55.7	77.0	58.9	75.4	60.7
Ohio	78.3	49.6	75.8	54.4	74.9	57.7
Wisconsin	80.4	55.5	78.2	60.0	79.0	67.2

back from the 1968-1982 period, when nearly 8 out of every 10 aged 16 and older was working or looking for work. Two of the six states, Indiana and Wisconsin, recovered some of that loss in the 1990's, with male participation rebounding slightly. None of the changes in male participation, either

across states or in the same states over time, is large.

The picture for female labor force participation, in contrast, is one of dramatic

The picture for female labor force participation is one of dramatic change in every state

change in every state, as can be seen in Table 1. Over the thirty-year period, rates for women have risen by as many as ten percentage points or more. While they remain lower than male rates, the percentage point differential has been nearly cut in half, from nearly 30 percentage points in the 1970's to just over 15 points in the current decade.

The experience of Indiana's female participation rates is indistinguishable from that of other Great Lakes states. For men, the rise in rates in the 1990's, while slight, contrasts with every other state but Wisconsin.

Differences in labor participation rates also exist by race, although those differences are smaller, as can be seen in Table 2. For both whites and blacks, participation rates have been gradually increasing over time in almost every state, reflecting the rise in female participation rates shown in Table 1. In most of the states, the participation rates are about five percentage points higher for whites than blacks.

The exception to this trend is in Indiana, where black participation rates were 1.3 percentage points higher than that of whites during the years 1968-1982, and have declined steadily since. In 1992-1996, 59 percent of the working age black population were in the labor force, a fraction similar to that found in other Great Lakes states. In Indiana, however, rates of participation for whites and blacks have been moving in opposite directions over the twenty-nine year period, and this pattern is not seen in any other state.

State	68-82		83-91		92-96	
	Black	White	Black	White	Black	White
Illinois	59.1	65.9	59.8	67.4	60.5	69.4
Indiana	66.3	65.0	61.7	66.5	59.0	69.8
Kentucky	56.5	62.4	57.9	62.3	62.7	62.4
Michigan	59.9	64.0	57.3	66.0	58.8	67.2
North Carolina	62.9	67.5	65.6	67.9	65.9	68.1
Ohio	60.6	63.4	61.2	64.9	60.6	66.5
Wisconsin	62.4	67.7	63.9	69.3	62.8	73.6

It is difficult to speculate on what circumstances could give rise to this difference between Indiana and its neighbor states. Whether it is economic opportunity, age mix, or other distinguishing characteristic of Indiana that has led to the decline—albeit from a relatively high level—in the labor force participation of its black population, we cannot determine.

Labor Force Participation by Age

The degree to which younger people participate in the labor force, or choose to enroll in college or other formal educational training, is central to the entire project that includes this study. Thus, we focus on rates of participation of those aged 18-25 for Indiana and its peer states. The data suggest that a larger fraction of young people in Indiana bypass college in favor of full-time employment than in other states.

The data in Table 3 show that the overall increase in labor force participation rates over the last thirty years have not excepted the college-aged generations. In every state, labor force participation rates have steadily drifted upwards since the late 1960's. Of course, many of these jobs may be

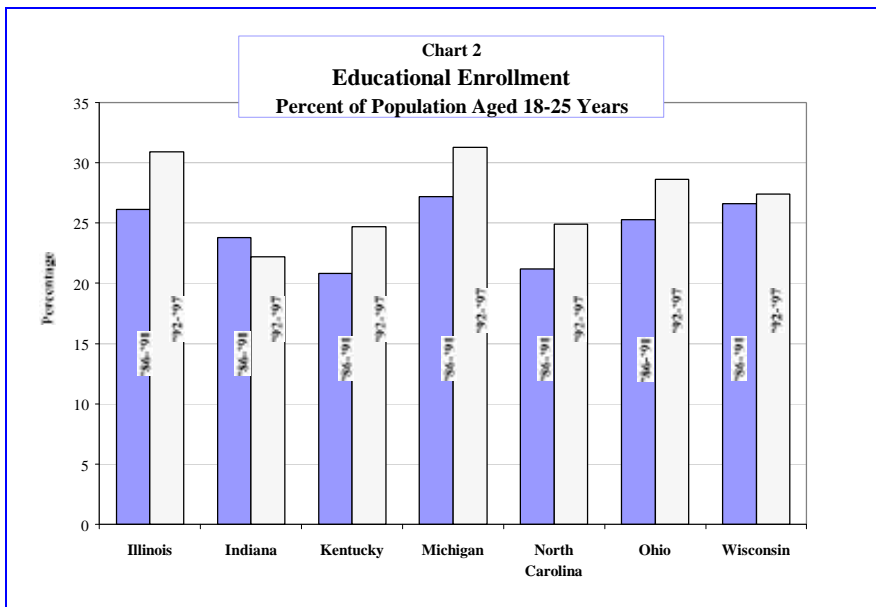
part-time, and may be held simultaneously with attendance at a college or other advanced training institution.

State	1968-82	1983-91	1992-97
Illinois	62.8	65.9	67.8
Indiana	63.1	65.9	68.1
Kentucky	58.7	61.3	61.7
Michigan	61.7	64.0	65.3
North Carolina	64.3	66.4	67.4
Ohio	61.1	63.8	65.7
Wisconsin	66.8	68.2	73.4

Of all seven states, however, Indiana had the second highest fraction of 18-25 year olds working during the years 1992-1997, at 68.1 percent.

Wisconsin is higher, at 73.4 percent, and North Carolina and Illinois are close. Kentucky, Michigan, and Ohio have significantly lower rates of participation. To the extent that employment and college enrollment or other formal training are competing or even mutually exclusive activities, it would appear that fewer young people, proportionately speaking, choose the latter in Indiana than in most other nearby states.

As a check on this conclusion, we briefly examine a different kind of participation rate for Indiana and its peer states, namely, participation in education. Because educational status information was not part of the CPS before 1986, we can only report on rates for the last twelve years.



There are wide disparities between states in the college enrollment status of their young adult population, as shown in Chart 2. Two of the states with a relatively high fraction of their young population in the full time workforce, Indiana and North Carolina, do have a relatively low percentage of this same population enrolled in college in the 1990's.

But the most dramatic result of Chart 2 is the fact that Indiana's rate of enrollment in college actually fell in the 1990's, while every other peer state's rate rose. In all states but Wisconsin, the rise in enrollment rates was three percentage points or more. Indiana, ranked fifth among the seven states under review in the chart, slipped to last in the 1990's, averaging only 22.2 percent of its

population aged 18-25 years old enrolled in college.

Conclusion

This section has analyzed the differences in rates of participation in the labor force between Indiana and six other peer states since 1968. While most of the states have been affected by the larger trends in the overall job market over this thirty-year period, some important differences have been noted.

Overall, Indiana's rates of participation have been slightly higher than those found in neighboring states, although the differences with most states are slight. The fraction of the population included in the workforce has also shown much more volatility here in the 1990's than elsewhere, including a decline in 1996 that defies explanation. Another difference is in the participation rates in Indiana for blacks, which fell from relatively high levels in the 1970's, at the same time as rates in other states rose. Finally, the participation of younger people in the full time work force is larger in Indiana than in other states, a fact that is consistent with its lower rate of college enrollment in young adults.

III. The Occupational Structure of the Labor Force

We now turn to an analysis of the occupational structure of the labor force of Indiana and that of six peer states. Our focus is on:

- ↳ how, if at all, the composition, earnings, and educational attainment of the Indiana labor force differs from that of its neighbors, and
- ↳ how those differences might affect the state's future development.

Background and Methodology

Government data classify the workforce in two important ways. The first is according to the industry of their employer. Thus, all who work for General Motors, for example, are counted as manufacturing, even if they work as accountants or executive jet pilots. The evolution of the industry employment data is examined in a companion report.

The second classification, which is the subject of this section, is according to the occupation of the individual worker. This captures the different nature of jobs, whether they are within the same industry or not. The CPS classifies all jobs into fourteen major categories, which we carry through this entire analysis. The definitions have been modified often over time, with a major modification occurring in 1983 that make the data before and after that year hard to directly compare for some categories. These issues, as well as a full description of the occupational categories, are included in the Appendix.

Government data classify the workforce in two important ways. The first is according to the industry of their employer. The second is according to the occupation of the individual worker.

What makes the occupation classification so important is the wide variation in earnings levels, and in employment growth, that different categories have experienced. Thus, information on industry classification alone is not sufficient to assess the earning power, or the future prospects, for a state labor force.

The wide variation along both of these dimensions can be seen from Table 4, which describes the

U.S. experience of the nine largest categories over the first half of the 1990's, ranked by job growth. The table reveals an astounding fact that will surface many times in this section. From the first column of the table, one can see that two occupation groups account for almost three out of every four net new jobs created nationwide from 1989 to 1995. These categories are Professional Specialty occupations, and Executive, Administrative and Managerial occupations.

Table 4 U. S. Employment Change 1989-95 and 1993 Median Usual Weekly Earnings by Occupation (Numbers in Thousands)			
Occupation	Change in total employment 1989-95		Median Weekly Earnings 1993
	Number	Percent of Total	
Total.....	6,679	100.0	394
Professional specialty	2,599	38.9	617
Executive, administrative, and managerial.....	2,389	35.8	635
Service occupations.....	1,101	16.5	215
Sales occupations.....	975	14.6	314
Technicians and related support.....	240	3.6	495
Farming, forestry, and fishing.....	180	2.7	234
Administrative support, including clerical.....	-143	-2.1	349
Operators, fabricators, and laborers	-278	-4.2	328
Precision production, craft, and repair.....	-384	-5.7	490

Not only is the growth in employment skewed toward these two groups, but the earnings for these two groups are higher than any other category. The right column of the table shows that in 1993 these higher skill jobs paid more than 50 percent higher wages than the \$394 median weekly earnings for all jobs. Thus, we see that, in the 1990's at least, the fastest growing job categories have been those that have the highest earnings.

But the lower paying occupations have been growing relatively fast as well. As can be seen from the table, Service occupations, which pay only 54 percent of the overall median wage, added more than a million jobs in the seven years 1989-1995. Sales occupations, which pay better than services but still below the overall midpoint, also saw good growth.

This is the astounding fact about job growth since the beginning of the decade.¹ The fastest job growth nationally has occurred in occupations at the top, and at the bottom, of the earnings distribution. Occupations in the mid-range of earnings have declined in importance. The latter can be seen from the last three lines of the table, with the three occupational categories paying wages in the middle of the distribution, all suffering substantial net job losses.

The fastest job growth nationally has occurred in occupations at the top, and at the bottom, of the earnings distribution.

¹ Ilg, Randy, "The Nature of Employment Growth," *Monthly Labor Review*, U.S. Department of Labor, Vol. 119, No. 6 (June 1996), pp. 29-36.

We should keep these national trends in mind as we examine the occupational structure of Indiana and its peer states. While trends in the nation do not necessarily dictate the experience of any individual state, the distribution of new jobs by occupation nationally is so skewed towards the top two job categories that there is a strong expectation that this particular trend should be important.

Occupational Structure of Indiana and Its Peer States

We now turn to a detailed examination of the occupational structure of Indiana and six other states. Four of the states are from the Great Lakes region: Illinois, Michigan, Ohio, and Wisconsin. A fifth, Kentucky, lies across the border to the south. The final state, North Carolina, is included to contrast with the industrial cycle of growth and decline that is found in the Great Lakes region.

We will examine the occupational categories in the order which they have contributed to national economic growth, starting with the fastest growing.

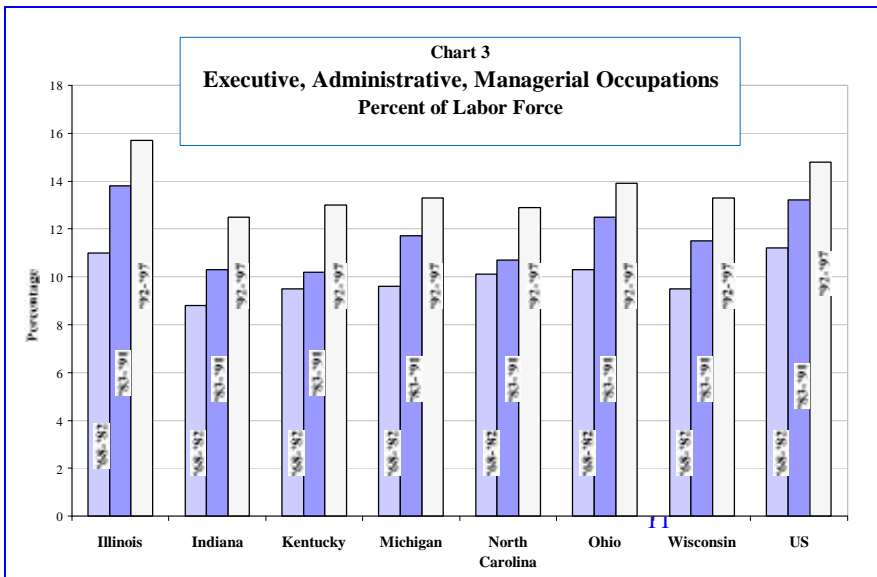
1. Executive, Administrative, and Managerial Occupations

The Executive, Administrative, and Managerial occupations category encompasses a wide range of job classifications that all share in common their direct link to the top management of an organization. Thus, besides the directors, chief executives, and top brass of companies and agencies, the category also includes buyers, financial personnel, underwriters and other management related occupations. Not surprisingly, such jobs command earnings considerably higher than the overall average. In 1993, the median weekly earnings for these jobs was \$635.

Perhaps due to its more urban nature, Illinois had a higher percentage of its labor force in these occupations than any other state in our comparison group, as can be seen in Chart 3. The chart shows that for each of the three time periods analyzed in this study—1968-1982, 1983-1991, and 1991-1997, Illinois had almost a two percentage point lead on its nearest competitor in its share of these high paying jobs. Ohio was second, followed by North Carolina, Michigan and Wisconsin. Only Illinois, however, had a larger share of jobs in this category than the national average.

Indiana's share ranked last among all seven states for almost all of the periods considered, although the margin of difference between it and the next higher state was usually small, usually less than three tenths of a percentage point. The sole exception was the one tenth of a percentage point share lead that Indiana enjoyed over Kentucky during the years

Indiana's share ranked last among all seven states for almost all of the periods considered . . .



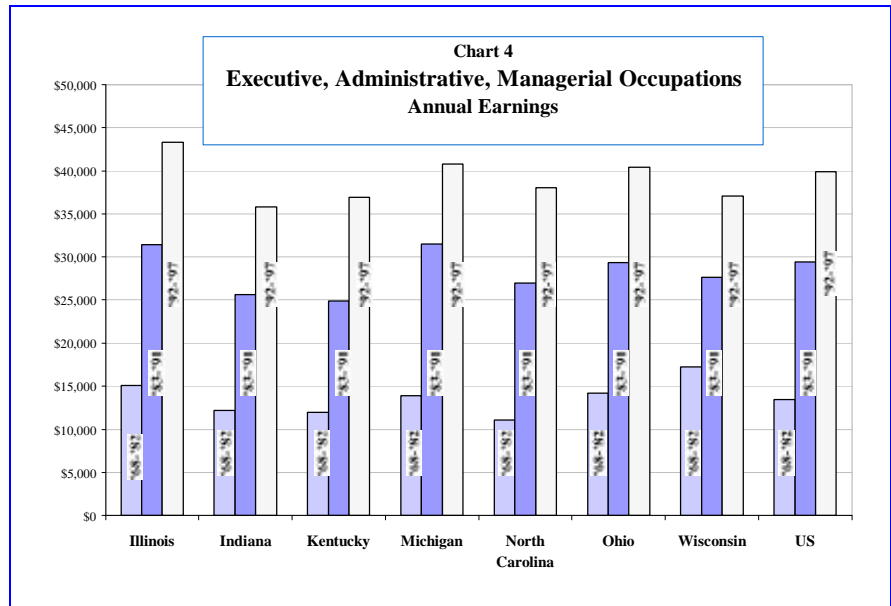
1983-1991, which was replaced by a half percentage point gap in the 1990's.

The differences between executive/managerial employment shares here and in the peer states are small, with the exception of Illinois, which has

enjoyed a two or three point higher share though most of the last thirty years. Unfortunately, the differences are all in one direction, and this fact undoubtedly contributes to lower overall income per job in Indiana than in other Great Lakes and neighbor states.

The latter is reinforced by the fact that executive/managerial jobs in Indiana appear to pay slightly lower than those jobs do in other states. This can be seen in Chart 4. Illinois leads in this category as well, with an average annual pay of \$43,322 in 1992-1997 that is nearly 21 percent higher than that of Indiana, the lowest ranked state.

The rankings on pay and number of jobs are undoubtedly related, but we can only speculate as to why. Illinois's lead in executive jobs probably stems from the status of Chicago as a headquarters site for countless major companies. To the extent that executive pay is related to size of a company, Indiana's ranking with states like Illinois, Ohio and Michigan in earnings is understandable.



What is more difficult to understand is why Indiana is ranked lower than both Kentucky and North Carolina in the earnings of executive/managerial class jobs. It would appear from Chart 4 that these states overtook Indiana in executive/managerial pay only in recent years.

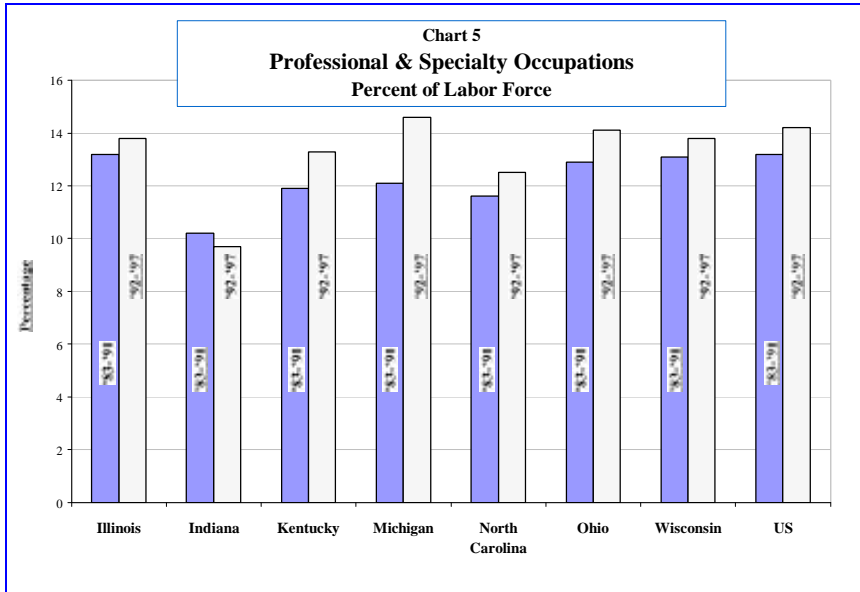
2. Professional and Specialty Occupations

Professional and specialty occupations comprise one of the fastest growing, highest paying, job classifications in the entire economy. This diverse category includes engineers, scientists, teachers at all levels, health care professionals, lawyers, and other occupations that share in common the need for professional credentials of some kind. Not surprisingly, this occupational category absorbs a large fraction of college graduates, as we show at the end of this section. In 1993 Professional and Specialty occupations paid median weekly wages of \$617 nationally, second only to Executive/Managerial jobs, and 56 percent above the median of all jobs.

The gap between Indiana and its peer states in job creation and retention in this thriving job category is so pronounced that it practically leaps off the page. In Chart 5 it can be seen that only 9.7 percent of the Indiana labor force were engaged in these occupations during the years 1992-1997, a share that is nearly four percentage points lower than that of any other Great Lakes state for the same time period.

Indiana's poor performance in this thriving job category is so pronounced that it practically leaps off the page.

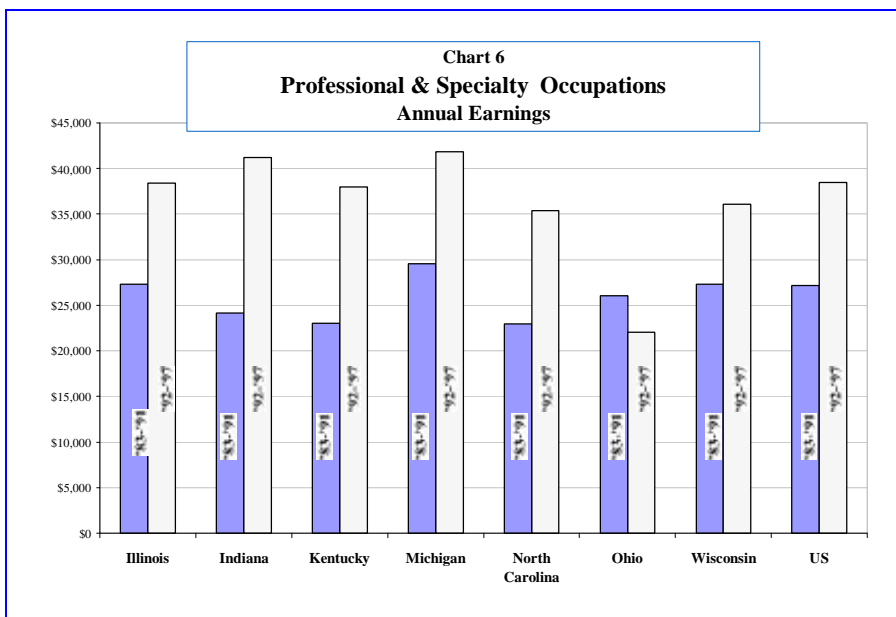
Not only is the share of professional jobs significantly smaller here, but it has actually shrunk slightly from the 1980's. During a period when other Great Lakes states were adding at least a full percentage point (and as many as two and a half, in Michigan) to their shares of jobs in the Professional and Specialty category, Indiana's share slipped by a half percentage point. Given the growth and the earnings power of these kinds of jobs, this is an especially alarming trend.



Note that due to technical changes in the CPS since 1982 that particularly affect this occupational category, the declines in the shares of all states' labor forces between the period 1968-1982 and 1983-1991 shown in Chart 5 cannot be considered as accurate indicators of the true change in composition of the labor force during those periods.

The fact that Indiana is going in a different

direction from its peer states in its reliance on jobs classified as professional demands an explanation. While we cannot give one here, Chart 6 shows that Indiana's compensation of its professional employees cannot, by itself, be regarded as the reason for its poor ranking. Indiana is second only to Michigan in pay for its workers in professional jobs. Moreover, the increase in earnings between the 1983-91 and 1992-1997 periods in Indiana was 77 percent, highest of any state.



The composition and annual earnings data shown in Chart 6 are consistent with the notion that the demand for those with professional credentials in Indiana exceeds the supply. Earnings have risen rapidly at the same time as the share of employees has declined. This raises the possibility that a wage "premium" is being paid to those professionals who have remained. Other, more complex,

explanations are also possible. These involve a shift in the composition of professionals in the state, towards those groups with higher earnings (doctors, lawyers, and engineers), and away from those with relatively lower earnings (teachers), at the same time as the ranks of all professionals were thinning.

The wide divergence between Indiana and other states in this labor force category stands out as one of the most important results of this entire study.

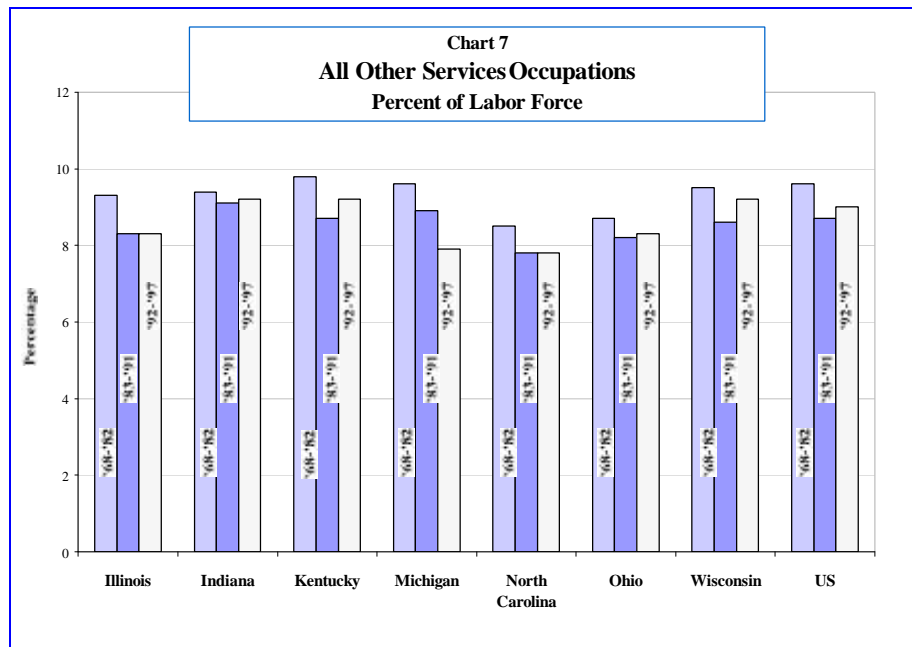
We cannot distinguish between these, or any other explanations for the perplexing differences between Indiana's professional labor force and that of its peer states. The wide divergence between Indiana and other states in this labor force category, however, stands out as one of the most important results of this entire study.

3. Service Occupations

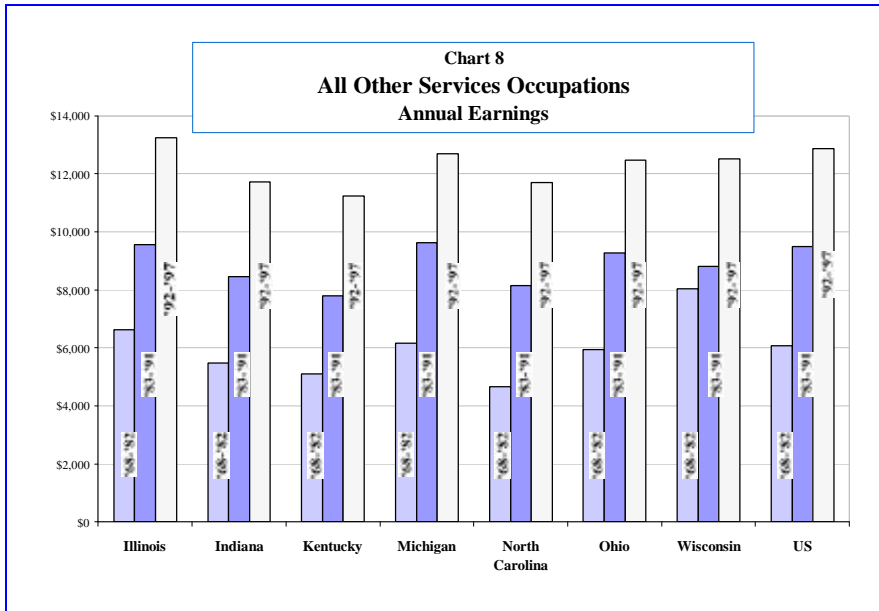
Ranked third in growth nationally since 1989 is the broad category of Service occupations, accounting for 16.5 percent of net new jobs created since that year. Not to be confused with Services industry jobs, Service occupations jobs encompass a broad range of job types, ranging from restaurant work, the lower skilled health care services, building services, and a wide range of personal services. Its median weekly earnings of \$215 in 1993 put these jobs at the bottom of the earnings ranking, reflecting both the part time status of many of its workers, as well as the lesser job skill requirements.

Indiana's share of Services jobs has ranked at or near the top of the shares in peer states, as can be seen from Chart 7. 9.2 percent of Indiana's labor force were in these occupations during the years 1992-1997, tied with Wisconsin for the highest share among the states analyzed. Michigan, the state with the lowest share, had 7.9 percent of its labor force in Services occupations in the same period. The national average in the 1990's was 9.0 percent.

The remarkable facet represented in Chart 7 is the fact that the employment shares for all states have remained relatively constant over time. Illinois and Michigan have seen their shares drift downward by a percentage point since the 1960's, but the other five states' shares have remained in a very narrow range, implying that their growth has closely matched that of the overall labor force.



Earnings for these jobs, as shown in Chart 8, are significantly lower than the overall average, which in turn contributes to the smaller dispersion across states. Indiana's average of \$11,713 per job in the 1992-1997 period places it ahead of Kentucky and North Carolina, but behind all of the other Great Lakes states. The rate of growth in earnings has been roughly the same for all states except Wisconsin, which had a slightly faster rate of growth.



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Services occupations jobs, with their low pay

and part-time commitments, are not the kinds of jobs that are generally coveted by economic developers. The two-headed nature of job growth nationally, however, has produced larger than average job gains for both the highest-paying, and the lowest-paying occupations. It would appear from the CPS data that Indiana and the Midwest's experience in Services occupations growth has not been dramatically different than that of the nation.

Services occupation jobs, with their low pay and part-time commitments, are not the kinds of jobs that are generally coveted by economic developers.

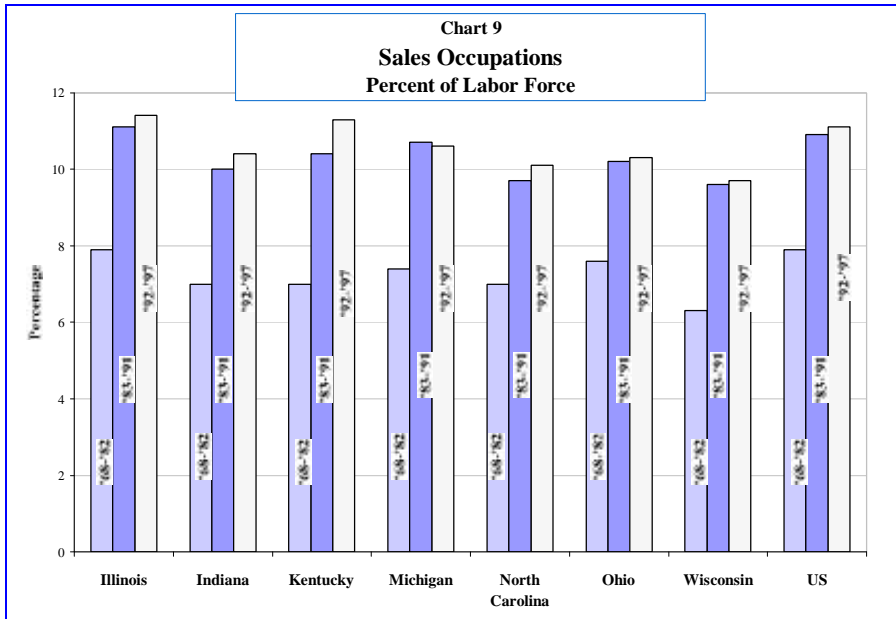
4. Sales Occupations

Growth in Sales occupations rank fourth in job growth among the major occupational categories, with just under a million net new jobs created between 1989 and 1995. The nature of these jobs demands public contact; thus, this classification is almost self-explanatory. Sales people sell things: real estate, furniture, cars, and thousands of other items. In 1983 the category definition was changed to include cashiers and sales counter clerks, making comparisons before and after that year problematic.

Median weekly earnings in Sales occupations were \$314 in 1993, about 80 percent of the average for all occupations.

The definitional change in the category shows up clearly in the comparisons of Indiana and its peer state's shares of employment shown in Chart 9. For all of the states, the shares during the period 1968-1982 are markedly smaller than in the succeeding years. This is an unfortunate artifact of the data and cannot be said to accurately reflect the actual labor market.

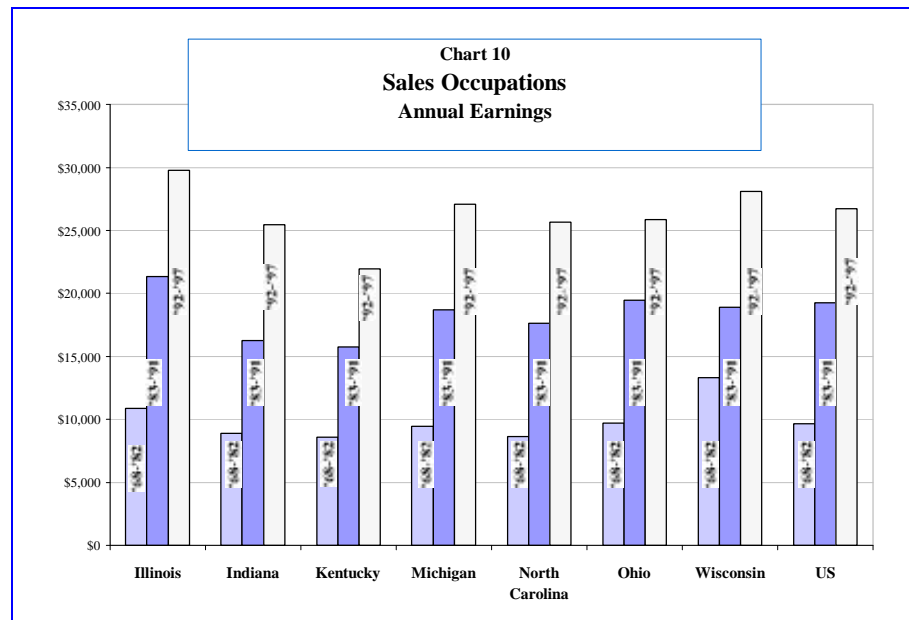
The absolute size of the shares in Chart 9 reveals the large number of workers who work in the



sales professions. For all states except Michigan and Wisconsin, which saw very tiny declines, all states in the comparison group had rising employment shares for this classification between the years 1982-1992 and 1992-1997. Indiana's seven-tenths percentage point gain during this period was the largest of any state, giving it a share second only to Illinois in the 1990's.

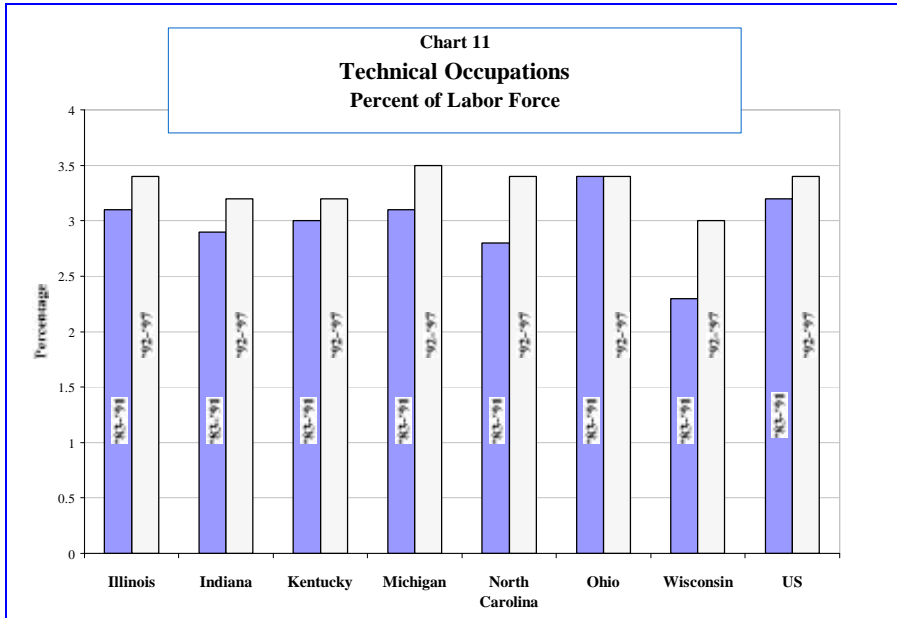
Indiana's employment share gain coincided with an unusually large increase in average earnings (Chart 10). Between the two periods 1983-1991 and 1992-1997, Indiana sales workers saw their average wages increase by about 80 percent, significantly faster than the other states, which grew at rates between 50 and 70 percent over the same period. These data suggest that the Indiana sales force has become relatively more concentrated in lines of merchandise where their expertise adds more value to each transaction.

Indiana's experience in growth of its Sales occupations jobs is not significantly different from those of the peer states. A slightly more rapid increase in wages during the 1990's has brought the state's sales force closer to the midpoint of all states' earnings. Likewise, the share of the Indiana labor force engaged in sales occupations is similar to those of nearby states.



5. Technicians and Farming, Forestry, and Fishing Occupations

There are two remaining major occupational classifications that produced positive net new job creation during the 1990's nationally, Technicians and Related Support occupations, and Farming, Forestry and Fishing occupations. Since neither category accounts for a large share of employment in Indiana or its peer states, we will combine the discussion of both into this single sub-section.

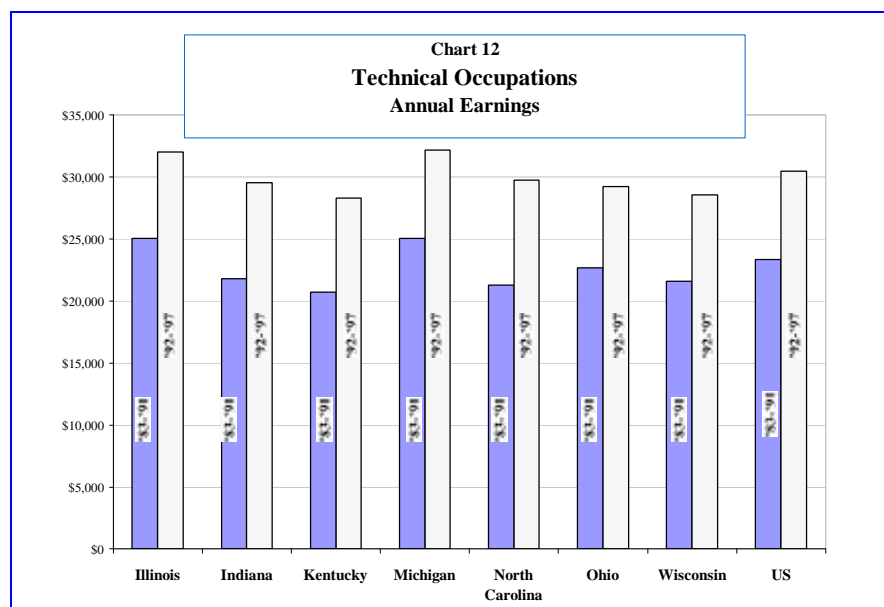


The Technicians job category added 240,000 net new jobs nationally during the year 1989-1995. These jobs, whose median weekly earnings of \$495 in 1993 was 26 above the overall average, encompass a broad spectrum of skilled positions. The common theme across these varied jobs is the fact that these jobholders typically perform the role of assistant to professionals with higher qualifications.

Thus, the category includes nurses, dental hygienists, and other mid-range medical specialists, computer programmers, engineering and science technicians, and legal assistants. The category did not exist before 1983, hence no data are available prior to that year.

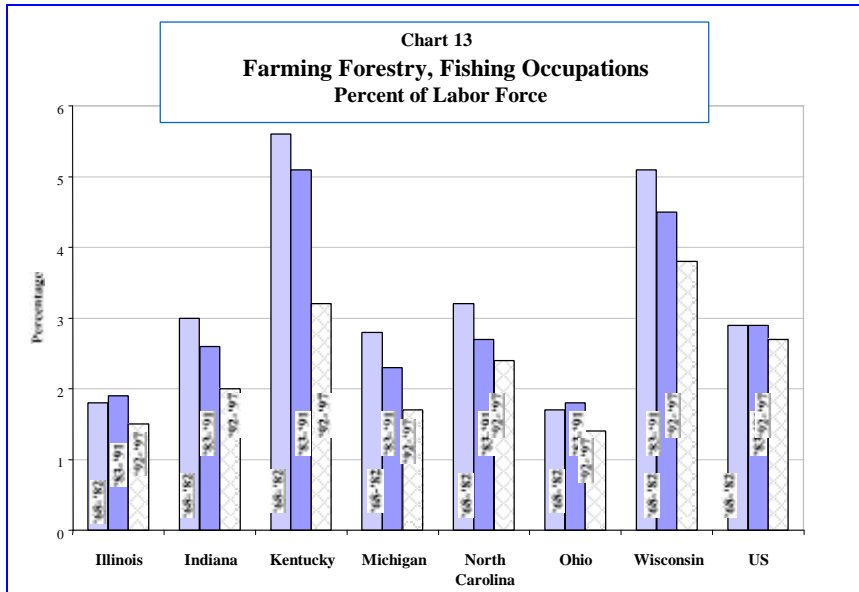
The Farming, Fishing and Forestry occupations are better described by their title. There was a net gain of 180,000 of these jobs nationwide between the years 1989-1995. At \$234, their median weekly earnings in 1993 exceeded only the Services occupations.

The share of employment in Technicians occupations, as one might expect, rose during the 1990's, as shown in Chart 11. The size of the employment shares in this category, however, is small for all states, with no share larger than four percent. The pattern across states for Technicians is similar

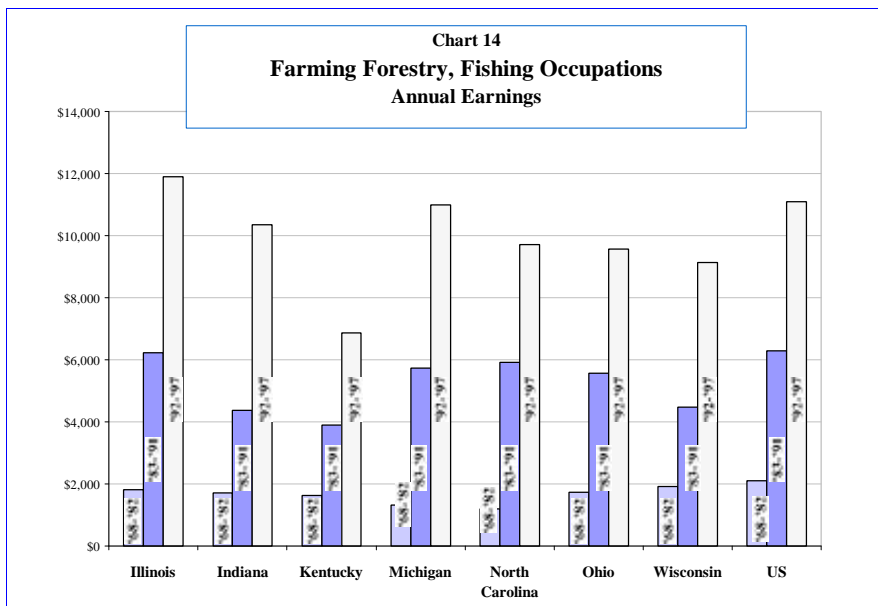


to the larger Professional Specialty occupational category discussed above, except that the share of the former have grown in Indiana in the 1990's, instead of falling.

The pattern in growth in Farming and other occupations, in contrast, is one of contraction. These shares are shown for Indiana and its peer states in Chart 13. Clearly these occupations have declined in importance



across the Midwest, although they continue to account for more than three percent of all jobs in Kentucky and Wisconsin during the years 1992-1997. The shares are smaller on the northern bank of the Ohio River, with little to distinguish Indiana from its neighbors to the east, west, and north.



Our conclusion is that the Indiana experience in both Technicians and Farming occupations classifications is only modestly different from that of other states, and that their relatively small shares make these differences of lesser importance for the overall labor force.

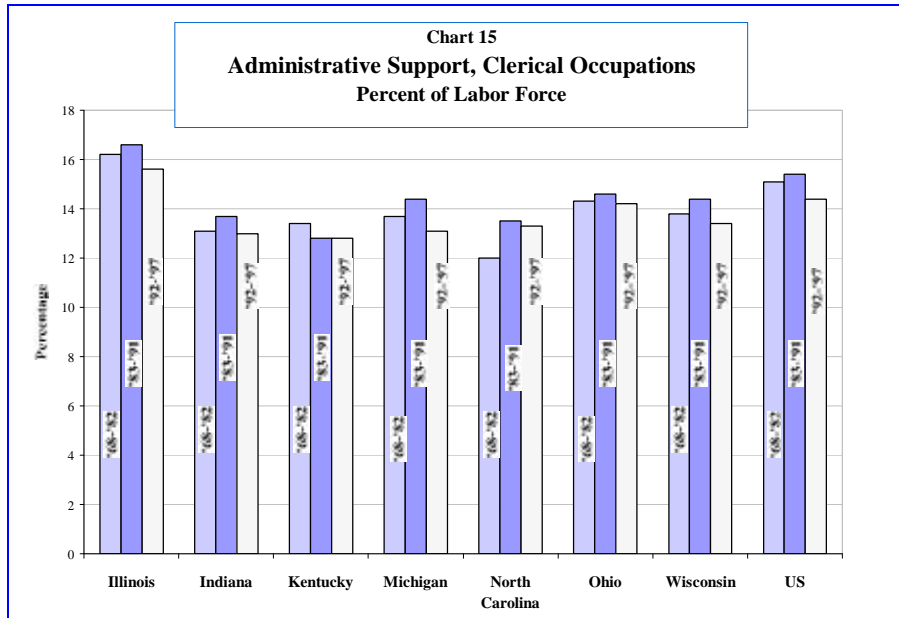
6. Administrative Support Occupations

The remainder of the occupational categories that we discuss in detail all produced negative net job

creation nationally during the years 1989-1995. The first of these is the Administrative Support occupations, which include most clerical workers. This category posted a loss of 143,000 jobs in the U.S. during the years 1989-1995. These jobs represent what might be termed the “production workers” of the white-collar world. Clerks, secretaries, bookkeepers, and mail carriers are all included in the broad classification, as are meter readers, insurance adjusters, and teachers aides. The category had median weekly earnings of \$349 in 1993, about 88 percent of the overall average.

The presence in the labor force of workers in these occupations peaked in the 1980's, as can be seen in Chart 15. This fact is consistent with the negative growth in this occupational category

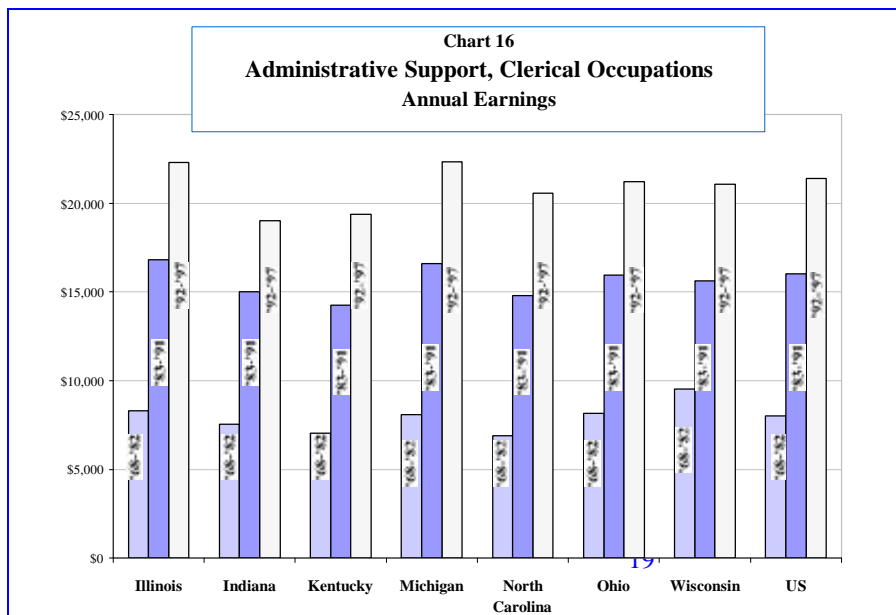
nationally. The size of the shares does vary between states, however.



Illinois share, at 15.6 percent in the 1992-1997 period, is two percentage points higher than every other state except Ohio. Since Illinois also had the largest share of workers in the Executive/Managerial and the Professional/Specialty categories, it could be argued that the Land of Lincoln is significantly more “white collar” than other Midwest states.

Indiana's share of Administrative Support occupations is lowest among the Great Lakes states, but excepting Illinois, the gaps between states are not large. Moreover, every state but Illinois has an employment share in this category less than the national average. The difference between the share of Ohio, second to Illinois, and Indiana is 1.4 percentage points. North Carolina and Kentucky have smaller shares of Administrative Support occupations jobs than Indiana does.

In terms of earnings per job, however, Indiana ranks last of all seven states in the 1990's (Chart 16). That ranking comes about in part due to a smaller than average increase in wages since the 1980's. At \$18,998 during the 1992-1997 period, Indiana average annual earnings for Administrative Support jobs were 18 percent lower than Illinois and Michigan.



This difference could come about in at least two ways. One is that Indiana may have a higher share of the lower paying job classifications within the broad category of Administrative Support. The second is that Indiana workers in identical classifications of job could earn lower

wages. The latter could occur if Indiana workers were less productive, due either to more limited training, education, and skills, or due to a more limited scope and set of responsibilities of their jobs, or both.

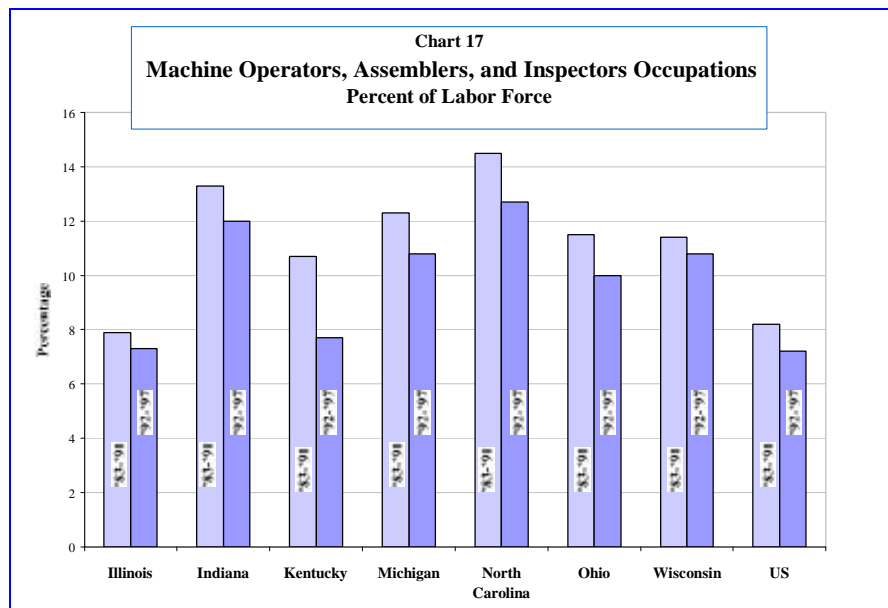
The pattern of growth in Administrative Support occupations in Indiana closely resembles that of other states. The importance of these jobs, however, is slightly less in Indiana than in other Great Lakes states, notably Illinois. Also, the earnings of Indiana workers in this important category rank last among all peer states, for reasons that we can only speculate about.

7. Machine Operators, Assemblers, and Inspectors Occupations

The last two occupational categories that we will consider in detail fit the term “blue collar” very well. While very important to Indiana, we treat these classifications at the end of this section because they have finished at the bottom in the rankings by job growth. The Machine Operators, Assemblers and Inspectors occupational category posted a net loss of 278,000 jobs during the period 1989-1995 nationally.

These declines are actually slower than those experienced in the previous decade. As can be seen in

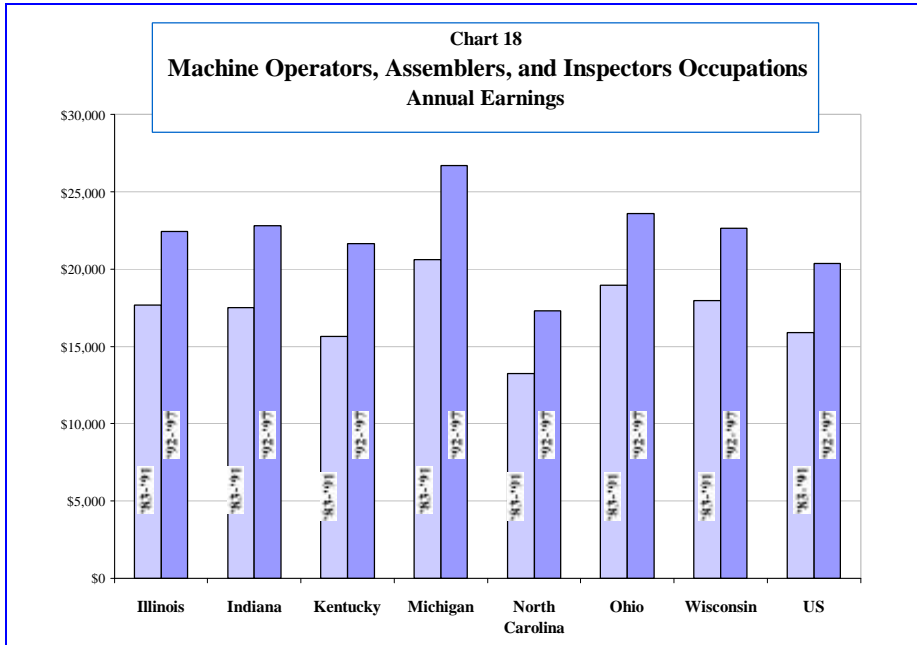
Chart 17, Machine Operators occupations in Indiana constituted a fifth of the labor force during the 1968-1982 period, second only to North Carolina among peer groups during the same period. These jobs paid well, also. The \$8,505 annual earnings during 1968-1982 was 13 percent higher than the state’s overall average of \$7,271 earnings per year across all occupations.



Since those years, the cutbacks in these jobs have been sharp, both in their number and in their relative wage. Indiana’s machine operators accounted for twelve percent of the labor force during the period 1992-1997, down only slightly from the 1983-1991 period. The pay for these occupations during the 1990's was \$22,793, a figure that was only 91 percent of the \$24,766 average across all jobs for the state (Chart 18).

Cutbacks in these jobs have been sharp, both in their number and in the relative wage.

While all of the states being analyzed obeyed this overall pattern of contraction, there were some notable differences in magnitude between them. Illinois and Kentucky, for example, saw the most drastic reductions in Machine Operator occupations since 1968, with shares being cut by more than half in each state.



Wisconsin saw the lowest drop in its share, falling 5.3 percent since 1968-1982. North Carolina's share remained higher than the Midwest states in every period.

Wisconsin and Indiana share another common attribute as well—between the 1980's and the 1990's, these two states suffered the

smallest declines in Machine Operator shares of any of the seven states. The fall in shares was so small for each that, in absolute number, the number of Machine Operator jobs actually rose from the 1980's, bucking the national trend.

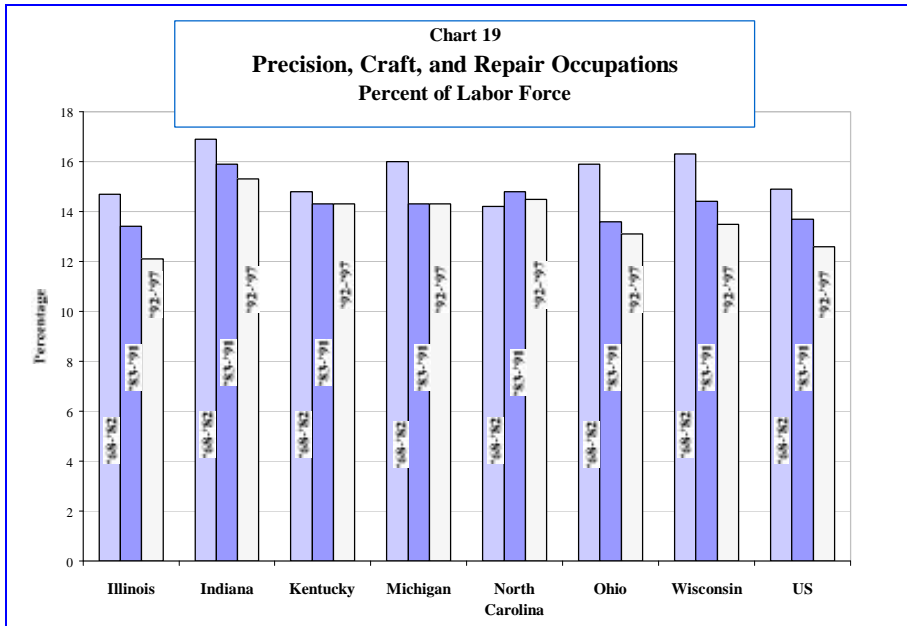
Some differences in magnitude in earnings are also striking across states. Michigan, for example, paid its Machine Operator category workers an astounding 53 percent more during the years 1992-1997 than did North Carolina. This doubtless reflects the high value added durable goods flavor of the Michigan economy, compared to the non-durable-intensive nature of North Carolina's, as well as the higher rate of unionization in the former.

After North Carolina and Michigan, however, earnings differences between states are considerably reduced. Indiana, Illinois, and Wisconsin are very similar, a bit higher than Kentucky and somewhat lower than Ohio. All seven states saw Machine Operator jobs go from above average pay during the 1968-1982 period, to below average in 1992-1997.

Indiana's reliance on Machine Operator occupations jobs has greatly diminished from the 1960's, an experience shared by all the states examined. Indiana is one of only two states in our sample, however, that bucked the national trend and actually added jobs in this category during the 1990's. Its reliance on these blue-collar jobs is second only to North Carolina, and higher than any of its neighbor states. As a job category that can be expected to see continued declines nationally, any future growth for the state in this category would require it to continue to swim against this national current.

8. Precision, Craft, and Repair Occupations

The final occupational category we examine in detail is the Precision, Craft and Repair occupations classification. These jobs encompass a broad spectrum of construction, services, and manufacturing



related occupations, each of which relies on specialized skills or learned trades. They include carpenters, electricians, millwrights, upholsterers, and die-makers, and countless others. Their work is almost entirely devoted to what economists refer to as the goods-producing sector of the economy.

These jobs have long paid wages commensurate with their higher skill requirements. In 1993 their median weekly earnings were \$490, some 24 percent higher than the overall average. But their numbers have thinned appreciably, beginning in the 1980's and continuing into the present decade. In the years 1989-1995, Precision, Craft and Repair occupations jobs declined by 384,000 nationwide, the largest absolute loss of any major category.

The Midwest, and in particular, Indiana and Michigan, have managed to outperform the national economy in retaining jobs in this category, especially in the 1990's. As can be seen in Chart 19, the employment shares of both these states changed minimally during the current decade, while those of other states slipped by a half a percentage point or more. In absolute terms, jobs in this category actually increased slightly for both Indiana and Michigan in the 1990's, with the latter even managing a slight increase in its share of employment in these higher skilled blue collar occupations during this time. North Carolina also bucks the national trend. Its share of Precision, Craft and Repair occupations jobs actually increased during the 1980's, reflecting its ascendancy into the ranks of states with the largest manufacturing shares of employment during that period.

In terms of magnitude, however, no other state in our analysis depends on Precision, Craft, and Repair occupations to the degree that Indiana does. Its share of 15.3 percent of the total labor force during the years 1992-1997 is two to three percentage points higher than that of any other Great Lakes state but Michigan, where the gap is one percent. The only state that is close is North Carolina.

This fact is very relevant for the future growth of the state labor force, because national trends clearly threaten the future prospects of many of these workers. To the extent that their skills are tied up in the specific

No other state in our analysis depends on Precision, Craft, and Repair occupations to the degree that Indiana does.

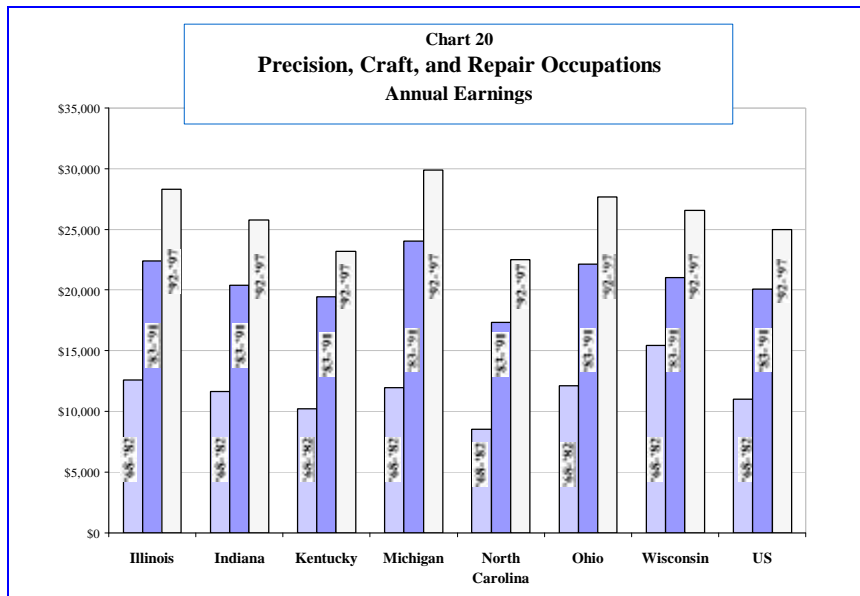
National trends clearly threaten the future prospects of many of these workers.

... hardly a comforting thought for the state's

companies they work for, and do not transfer well to other companies or other industries, any disruption caused by plant closing, layoffs, or job elimination will be very painful. To begin the next decade with a labor force concentrated in those occupations most threatened by technology, international trade, and other unfavorable trends is hardly a comforting thought for the state's economic development.

Despite its larger size, Indiana's Precision, Craft and Repair occupations workers rank last among Great Lakes states in annual earnings in 1992-1997 (Chart 20). The next closest state, Wisconsin, pays its workers only three percent more than Indiana's average of \$25,760 during the 1990's, but Michigan's wage rates are fully 15 percent higher.

Kentucky and North Carolina are significantly lower than any of the Great Lakes states. The relative rankings between all seven states in earnings has been quite stable over time.

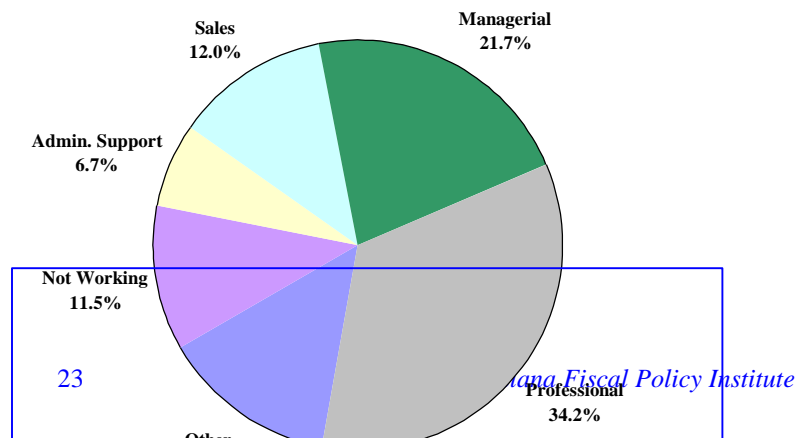


The bottom line is that Indiana has remained more concentrated in higher skilled blue collar occupations, as represented by the Precision, Craft, and Repair occupational category, than any of the states in the comparison group. These jobs have figured prominently in the state's growth for decades, but the odds of them continuing that role much longer are in grave doubt.

Occupational Structure and Educational Attainment

This section has presented a detailed examination of the trends in composition and earnings of the labor forces of seven states. While it can be inferred from the descriptions of the jobs within each occupational category, the connection between the level of human capital each job requires, and the job itself, has not been precisely spelled out. For formal educational training, at least, this subsection tries to make this connection more apparent.

Figure 2
Occupational Distribution of Bachelor's Degreed and Above Persons in Indiana 1992-1997



We do this by tracking the occupations that college graduates, to take the most prominent example, sort themselves into for the different states. In doing so, it will become clear that Indiana's lower than average level of educational attainment of its adult population, and its lower than average proportion of its labor force in Executive/Managerial and Professional/Specialty occupations are two sides of the same coin. That is because, to an astounding degree, college graduates are concentrated into these two occupational categories.

That concentration can clearly be seen from Figure 2, which shows the distributions of those with at least a four-year degree for Indiana during the years 1992-1997. As can be seen from the figure, 11.5 percent of this population was not in the workforce, a proportion that is in line with that of other Midwest states.

The largest pieces of the pie, however, belong to the Executive/Managerial and the Professional/Specialty occupations. Although these two occupations only comprised 19.7 percent of the labor force, they captured fully 55.9 percent of those with college degrees. The only other occupations with a share greater than ten percent were sales, with a 12.0 percent share in the 1992-1997 period was almost four percentage points higher than the 1980's.

Conclusion

It is evident that Indiana's labor force is positioned more towards the middle-paying blue collar jobs—Precision, Craft and Repair, and Machine Operators—than any other peer state. Despite the fact that these jobs pay slightly less in Indiana than in some of its neighbors, their higher-than-average share in the total employment mix is one of the factors that has contributed historically to Indiana's overall comfortable standard of living.

These jobs, however, have very poor long-term growth prospects. They ranked last among all major categories for net job creation nationwide since 1989. The two job categories responsible for three out of every four jobs created nationally since that year—Professional/Specialty and Executive/Managerial occupations—have a dramatically lower presence in our state. Indeed, since almost 56 percent of college graduates end up working in these two categories, it can be seen that Indiana's relatively poor standing in educational attainment, and the shortage of these types of jobs, are directly related.

IV. Conclusions

This study has presented a series of statistical profiles of the Indiana labor force, and the labor forces of six other states, for the last thirty years. Our purpose in preparing and analyzing these profiles was to isolate and measure any important differences between Indiana and its peer states that may have bearing on the state's future economic development.

Our major finding is that there are several, significant differences in the composition, patterns of growth, and participation rates in the Indiana labor force that raise serious concerns over the state's capacity for future growth. Specifically we find that:

- *Rates of participation in the labor force suggest that more college-aged*

young people in Indiana opt for full time jobs, and fewer choose college, than the similar aged population of most neighboring states.

- *Indiana's labor force is less concentrated in higher-paying white-collar occupations where national job growth has been strongest since 1989.*
- *Conversely, Indiana's labor force is more concentrated in middle-paying, skilled and semi-skilled occupations that have ranked last, nationwide, in job growth in the 1990's.*

What makes these results so significant is that the basis of comparison is not the nation as a whole, or states in other regions of the country. Indiana's labor force, when measured by occupation, is significantly more "blue collar" when compared to industrial states in our own region, including Michigan, Ohio, and Wisconsin. These data suggest that even though the industry composition of Indiana is similar to that of its neighbors, it receives a disproportionately high share of the production and assembly jobs within each industry, with the executive and technical jobs locating elsewhere.

In the overall debate on the educational and human capital attainment of Indiana's labor force vis-a-vis other Midwest states, this study answers some questions, but raises others. The statistics bear out the notion that Indiana has fewer college-educated adults because the jobs that typically employ those with college degrees—higher skill white collar jobs—are less plentiful in our state.

But knowing this still leaves two important questions unanswered. How did it happen that Indiana developed in a manner that did not support or attract higher skill managerial and professional jobs? Secondly, how could the state initiate, or accelerate, the process of changing the economy, and the workforce, to claim a greater share of this fast-growing slice of the national labor market?

We cannot offer any definitive answers to these questions. Our hope, however, is that confronting the fruits of thirty years of development in the Indiana labor force will motivate us to find answers to these and other important questions, so that the next thirty years will be productive ones.

Appendix A

Is Indiana a Branch Plant State?

Data like those portrayed in Figures 4.2 and 4.3 support the frequently asserted notion that Indiana captures a disproportionate share of lower skill, “production,” jobs, while the higher skill, technology and management jobs go to other states. Even within the manufacturing industries, it is said, the higher paying research, design, and administration assignments are, more often than not, housed outside the state borders.

Data derived from the annual SEC filings of publicly traded companies give some insights as to the truth of this assertion. To the extent that companies identify states other than Indiana as housing their headquarters, Indiana may indeed be said to be a “branch plant” state.

As one might expect, when 9,141 of the domestic companies traded on the major stock exchanges were asked to identify the state of their “primary operation,” the largest share was captured by the more populous states: California, New York, Texas alone accounted more than a third of the total number. The only Midwest state in the upper rankings was Illinois, home to 452 companies.

But such simple counts do not correct for state size, nor do they recognize the wide variation in the size of companies. The data in Table A1.1, which rank states of primary operation according to sales per capita, attempts to accomplish both of these objectives. The data appear to support, to a limited degree, the notion that Indiana has done a poorer job than its neighbors in hosting company headquarters.

When company size and state population are taken into account, Michigan vaults to third place among the fifty states and the District of Columbia, with companies headquartered there posting sales of \$93.1 million for every 1,000 of population. Looking at Indiana’s neighbors we find Illinois in the top ten of the national rankings, followed by Ohio in fifteenth place, and Wisconsin in 25th place.

Indiana, home to companies who sold \$13.6 million per 1,000 population in 1997, is in 30th place nationally, just ahead of Kentucky in the national rankings. Every other Great Lakes states is ranked higher, with our neighbors to the north, east and west having substantially better success in attracting and retaining corporate headquarters.

Does this condemn Indiana’s labor force to a second tier status relative to our neighbors? That is a conclusion that is much too strong to be supported by these data. For many companies, headquarters operations represent a very small portion of overall company operations. Further, private companies and those public companies too small to be listed on the major exchanges are completely excluded from the analysis.

But in most organizations, higher paying jobs are close to headquarters, and the data in Table A1.1 do suggest that its lack of headquarters may explain at least part of the earnings differentials that exist between our state and its immediate neighbors.

Table A1.1			
Sales of Publicly Traded Companies			
Grouped by State of Primary Operation			
Ranked by Sales (millions \$) per 1,000 Population			
State	1997 Sales (in mill of \$)	Sales (m) per 1,000 Population	Rank
District of Columbia	119,639	226.2	1
Connecticut	479,805	146.7	2
Michigan	909,731	93.1	3
Delaware	64,350	88.0	4
New York	1,080,223	59.6	5
Arkansas	149,105	59.1	6
Illinois	619,863	52.1	7
Minnesota	195,985	41.8	8
New Jersey	320,686	39.8	9
Texas	770,120	39.6	10
Rhode Island	39,057	39.6	11
Nebraska	59,684	36.0	12
Virginia	237,144	35.2	13
Georgia	248,690	33.2	14
Ohio	360,485	32.2	15
Missouri	160,255	29.7	16
Washington	157,288	28.0	17
Massachusetts	169,463	27.7	18
Colorado	100,625	25.9	19
Pennsylvania	309,798	25.8	20
Idaho	29,372	24.3	21
California	734,643	22.8	22
Maryland	88,154	17.3	23
North Carolina	125,516	16.9	24
Utah	32,338	15.7	25
Tennessee	82,102	15.3	26
Wisconsin	76,042	14.7	27
Oklahoma	47,507	14.3	28
New Hampshire	16,672	14.2	29
Indiana	79,864	13.6	30
Kentucky	52,193	13.4	31
Oregon	41,104	12.7	32
Alabama	50,929	11.8	33
Florida	166,355	11.4	34
South Dakota	8,105	11.0	35
Nevada	16,261	9.7	36
Maine	10,652	8.6	37
Iowa	22,298	7.8	38
Arizona	32,945	7.2	39
Louisiana	29,696	6.8	40
Kansas	15,217	5.9	41
	12,939	4.7	44
Vermont		3.9	45
New Mexico	4,310	2.5	46
Montana	2,056	2.3	47
North Dakota	1,431	2.2	48
West Virginia	3,439	1.9	49
Alaska	1,072	1.8	50
Wyoming	23	0.0	51

Appendix B

Proportion of Labor Force in Professional Specialty Occupations, 1983-1997					
Source: Current Population Survey, Annual Demographic File, 1983-97					
State	1983-1991	1992-1997	Rank 1992-1997	Change 1992-1997	Rank of Change
Massachusetts	15.50%	17.70%	1	2.20%	3
Maryland	15.90%	16.70%	2	0.80%	35
Connecticut	14.70%	16.30%	3	1.60%	14
New York	14.70%	15.90%	4	1.20%	22
Colorado	14.20%	15.40%	5	1.20%	22
Vermont	14.40%	15.00%	6	0.60%	42
New Jersey	13.80%	14.80%	7	1.00%	30
New Mexico	13.60%	14.80%	7	1.20%	26
Rhode Island	12.70%	14.80%	7	2.10%	8
Washington	13.00%	14.80%	7	1.80%	10
Alaska	13.60%	14.60%	11	1.00%	30
Virginia	13.90%	14.60%	11	0.70%	40
New Hampshire	12.30%	14.50%	13	2.20%	3
Kansas	12.40%	14.20%	14	1.80%	10
California	13.40%	14.10%	15	0.70%	40
Utah	12.30%	14.10%	15	1.80%	10
Wyoming	11.60%	13.80%	17	2.20%	2
Oregon	12.40%	13.70%	18	1.30%	20
Georgia	10.40%	13.60%	19	3.20%	1
Delaware	12.40%	13.50%	20	1.10%	27
Montana	12.00%	13.50%	20	1.50%	15
Illinois	12.50%	13.40%	22	0.90%	32
Minnesota	12.50%	13.40%	22	0.90%	32
Ohio	12.20%	13.40%	22	1.20%	22
Texas	11.30%	13.40%	22	2.10%	6
Michigan	11.20%	13.30%	26	2.10%	6
Missouri	11.80%	13.30%	26	1.50%	15
Pennsylvania	12.50%	13.30%	26	0.80%	35
Wisconsin	11.90%	13.20%	29	1.30%	20
Kentucky	11.00%	12.90%	30	1.90%	9
Hawaii	12.40%	12.80%	31	0.40%	44
Maine	11.50%	12.70%	32	1.20%	25
Florida	11.20%	12.60%	33	1.40%	19
Iowa	11.10%	12.60%	33	1.50%	17
Arizona	12.50%	12.50%	35	0.00%	48
Louisiana	11.60%	12.50%	35	0.90%	34
North Dakota	12.30%	12.20%	37	-0.10%	49
Nebraska	11.00%	12.00%	38	1.00%	29
Alabama	9.70%	11.90%	39	2.20%	3
Idaho	10.70%	11.80%	40	1.10%	28
North Carolina	11.00%	11.80%	40	0.80%	39
South Dakota	11.60%	11.80%	40	0.20%	47
Oklahoma	11.20%	11.70%	43	0.50%	43
South Carolina	10.30%	11.70%	43	1.40%	18
Mississippi	10.70%	11.50%	45	0.80%	35
West Virginia	11.00%	11.30%	46	0.30%	45
Tennessee	9.50%	11.20%	47	1.70%	13
Arkansas	9.10%	9.90%	48	0.80%	35
Nevada	9.40%	9.70%	49	0.30%	45
Indiana	9.90%	9.30%	50	-0.60%	50

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