

Employment **Growth** in America

Exploring Where Good Jobs Grow



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SUMMARY

Employment growth is one of the most fundamental aspects of a strong economy. Yet, not all jobs are created equal. Some pay generously and offer desirable working conditions while others do not. Nevertheless, most studies of employment growth in the United States do not address these differences, focusing instead on what causes the total number of jobs to change.

As shown in this study, the nature of jobs held by workers influences a variety of economic and social outcomes. Cities that experience rapid growth in high-wage employment also tend to see increasing incomes throughout the entire labor market, not just among those who happen to hold high-paying jobs. The growth of high-paying employment is also associated with lower rates of crime, higher property values and rising educational levels. Growth of low-paying employment or even employment in general tends to show a much weaker association with these outcomes.

This study examines the growth of high-paying (“good”) and low-paying (“bad”) jobs across a sample of 206 metropolitan areas in the United States between the years 1980 and 2000. The results can be summarized as follows:

- (1) The growth of good jobs is strongly associated with the education level of the work force. Higher fractions of a city’s labor force possessing some postsecondary education, but particularly a bachelor’s degree or higher, correspond to significantly higher rates of good-job growth.
- (2) Two measures of industrial composition display significant associations with rates of good-job growth: the share of total employment engaged in finance, insurance or real estate (FIRE) and the fraction of good jobs accounted for by manufacturing. Rates of good-job creation tend to be higher in metropolitan areas with a larger presence of FIRE, but lower in metropolitan areas with a larger fraction of good jobs in manufacturing.
- (3) In recent decades, good-job growth has tended to be faster in markets with lower rates of union membership and low wage levels, suggesting that producers have flocked to labor markets with relatively low labor costs, broadly defined.
- (4) There is some evidence that the presence of certain amenities—including bars, movie theaters, eating and drinking establishments, and live-performance venues—corresponds to faster rates of good-job growth, although the associations tend to be small. Similarly, cities with a large college or university community, quantified in terms of total employment in these institutions, also tend to display faster good-job growth. However, this association, too, tends to be small. The amenity that seems to be most important is a warm climate. Cities with higher average January and July temperatures grew faster between 1980 and 2000 than cities with colder climates.
- (5) Employment growth does not show a strong association with some basic measures of local government finance and expenditure, including total tax revenues, property tax revenues per capita and per-resident expenditures for highways, education, public welfare and police protection.

To illustrate these findings, the growth experiences of four metropolitan areas in the Eighth Federal Reserve District—Little Rock, Louisville, Memphis and St. Louis—are summarized. In terms of the growth of good jobs between 1980 and 2000, Little Rock’s performance was the best, followed by Louisville, then Memphis. St. Louis experienced the slowest growth during this period.

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INTRODUCTION

Employment growth is consistently viewed as one of the most important issues influencing the well-being of society. Indeed, surveys often find that among the many issues Americans deem important for the current and future well-being of the country, job growth ranks near the top.¹ This perspective is understandable in light of the fact that employment offers individuals both compensation—the most important component of which, income, is necessary to support oneself—as well as a sense of purpose, direction and accomplishment.

However, not all employment situations are the same. Some tend to be generous in terms of the income, benefits (e.g., health insurance, allowances for time off) and work environments they offer. Others are not. Therefore, there are substantive differences in the types of jobs that exist, which influence the well-being of the workers that hold them. In spite of these differences, employment growth is often discussed in broad terms, usually the total numbers of jobs created or lost during some time period. In fact, little attention is paid to the types of jobs that comprise these aggregate employment movements. For example, the monthly employment reports released by the Bureau of Labor Statistics concern total numbers of jobs rather than the composition of jobs created. Within the economics literature, there is a similar broad emphasis, whether the unit of observation is a county, city, state, region or the entire country.

However, the nature of the jobs that workers hold has important consequences, not only for the workers, but also for their communities. In particular, the growth of high-paying jobs tends to be associated with numerous economic and social benefits that are not associated with low-paying jobs. In light of the importance of high-paying employment, it is worthwhile to examine what underlies its growth. This report explores where, among a sample of 206 U.S. metropolitan areas, high-paying and low-paying jobs have grown within recent decades. It should be stressed that this study is by no means exhaustive or comprehensive in its coverage of the issues relevant to this topic. Nevertheless, it does offer an overview of some of the more widely considered aspects of job growth.

CATEGORIZING JOBS

Concepts and Implementation

Conceptually, the notion of a job is rather simple. It is merely an arrangement between a provider of some good or service (a producer) and an individual (a worker), whereby the individual supplies labor to the producer in return for compensation. Self-employed individuals, of course, also hold jobs. In these arrangements, one can simply view the

individual and the producer as the same entity.

Empirically, measuring aggregate employment figures is also a reasonably straightforward practice. A variety of surveys conducted by the Census Bureau, the Bureau of Labor Statistics and the Bureau of Economic Analysis attempt to identify the number of these work arrangements by collecting information from either producers or workers. While there is, unavoidably, some sampling error inherent in the estimates, reasonably accurate statistics about the total number of jobs in states, cities, counties, metropolitan areas and the United States as a whole are readily available at annual (or even quarterly and monthly) frequencies.

When it comes to categorizing jobs, however, measurement becomes much more difficult. That is, if one were to assign work arrangements to a series of groups that reflect the type of tasks undertaken by workers in the United States, how would one proceed? The answer is not straightforward because work arrangements tend to exhibit a massive degree of heterogeneity. Not only do the basic tasks that workers undertake differ (e.g., moving, writing, assembling, organizing), but so does the intended output of those tasks (e.g., newspapers, automobiles, office management, relocation services).

Following this observation, there are two basic approaches to classifying jobs: by occupation and by industry.² Occupations are largely based on the types of tasks conducted at work (e.g., file clerks, machine-operators, computer programmers, administrative assistants) regardless of the type of output or service being provided. Industries, by contrast, tend to reflect what the producer is generating (e.g., law firms, hospitals, food processing, retail stores) rather than the broad nature of the activities its workers conduct. For example, a producer that makes automobiles will likely employ people who hold very different occupations, such as design engineers, managers, assemblers and sales workers. At the same time, file clerks, for example, are employed across a wide array of industries.

On the surface, there is little reason to prefer one job classification scheme to the other. Both offer insight into the type of work being performed in the economy. One simply groups work based on inputs (occupations); the other does so based on outputs (industries).

This study defines jobs based on an industrial classification scheme for two primary reasons.

First, there are significant problems associated with tracking employment within detailed occupations over time. Occupational codes are changed periodically, most recently in 2000. This poses particular problems for studies like this one that focus on changes within the last 10 to 20 years. Because the fundamental means by which individuals are assigned to occupations may differ from one year to the next, this study focuses on industries, which have a more stable classification scheme over the time period considered.

Second, while workers may be described equally well by occupation or industry, employers are clearly better characterized by industry. Companies usually produce goods or services of a specific type, which corresponds well to an industrial classification scheme. Consider, for example,

several prominent employers in the St. Louis metropolitan area. Boeing's operations can be classified as the production of aircraft and weapons systems; Anheuser-Busch belongs to the beverage industry; Monsanto employs workers in the production of chemicals and in research laboratories; Edward Jones is an investment and financial services firm; and Ralston-Purina is involved in food processing. It is much more difficult to characterize these employers in terms of the occupations held by their workers. Because questions involving where jobs grow are often framed in the context of where specific producers choose to locate, this report uses a job classification scheme based on industries.

Jobs and Their Characteristics

A list of the 196 industries/jobs used in this study appears in Table 1 (see p. 34) along with their average hourly pay and an estimate of total U.S. employment, both for the year 2000. These job groupings are constructed from detailed industry categories identified in the decennial U.S. Census files, which are described in greater detail in the Appendix.³

Industries in the table have been ordered from highest to lowest by average hourly wage paid, again using data from the year 2000. As it turns out, the relative positions of jobs in the list is reasonably constant over time, so the ranking would be similar if jobs had been ordered based on 1980 or 1990 average wages.⁴ Jobs that are relatively high-paying in one year tend to be relatively high-paying in other years, too.

Using average wages to rank jobs reveals little about the underlying differences in earnings within these groups. Not all workers within any given industry earn the same amount. Therefore, within each job category, there is a distribution of hourly wages around the mean level reported in the table. Nevertheless, the use of a single summary statistic to categorize jobs of a particular industry makes the analysis in this study feasible and offers a comparison of what a "typical" or "average" worker within each sector earns.⁵

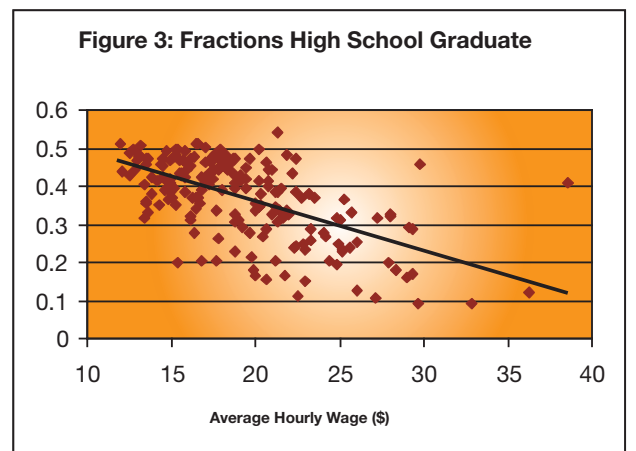
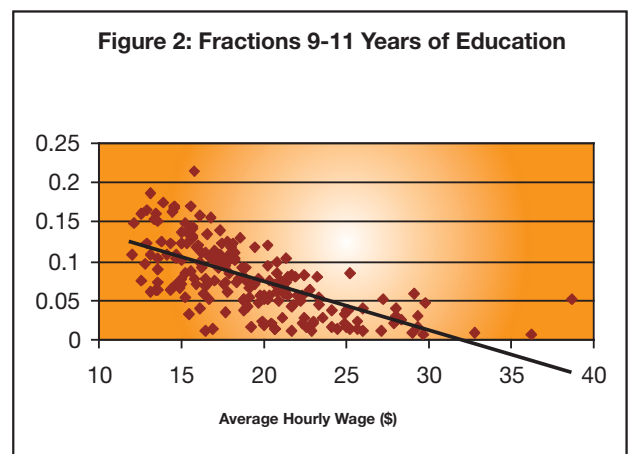
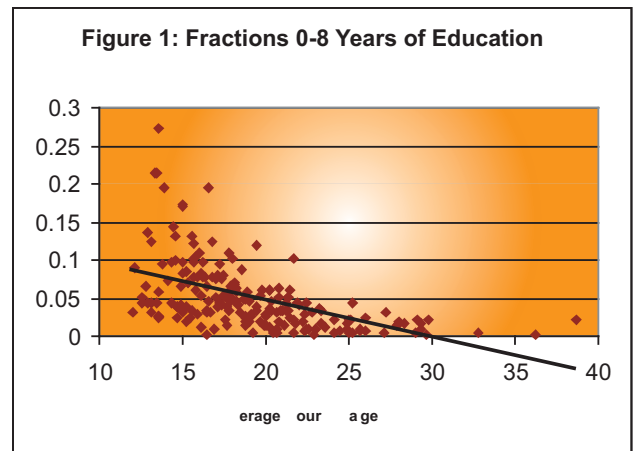
It is apparent in Table 1 that the average wages paid to workers employed in different jobs vary greatly. At the top end of the pay scale, jobs are primarily in business and professional services, such as security, commodity brokerage and investment companies (\$36.26); business management and consulting services (\$32.83); and computer and data processing services (\$29.70). However, mining and extraction jobs, such as metal mining (\$38.61), petroleum refining (\$29.35) and pipelines (\$28.01), are also represented at the top. In the middle of the wage distribution are positions in a variety of sectors, including newspaper publishing and printing (\$18.79); construction (\$18.55); bus service and urban transit (\$18.46); and the production of farm machinery and equipment (\$18.32). At the bottom of the pay scale, jobs are predominantly in personal services and retail trade, such as gasoline service stations (\$12.52); eating and drinking places (\$12.06); and bowling alleys, billiard and pool parlors (\$12.02).

What are the characteristics of workers in these industries? Based on data from the year 2000, a number of basic features are plotted against the corresponding average hourly wage (Figures 1 through 12). These plots begin

with educational attainment (Figures 1 through 5) defined by five broad levels of schooling:

- (1) no high school education (0 to 8 years)
- (2) some education at the high school level (9 to 11 years)
- (3) a high school degree (12 years)
- (4) some education at the college level or an associate's degree (13 to 15 years)
- (5) a bachelor's degree or higher (16 or more years).

Clearly, these figures indicate that higher-wage jobs tend to be held by more educated workers, which is consistent with the result that earnings and education are positively associated.⁶



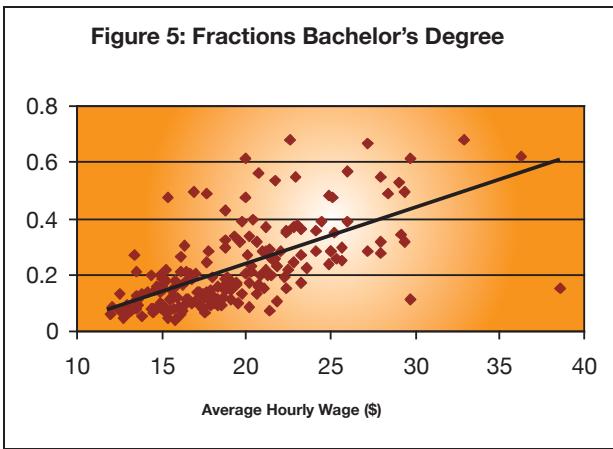
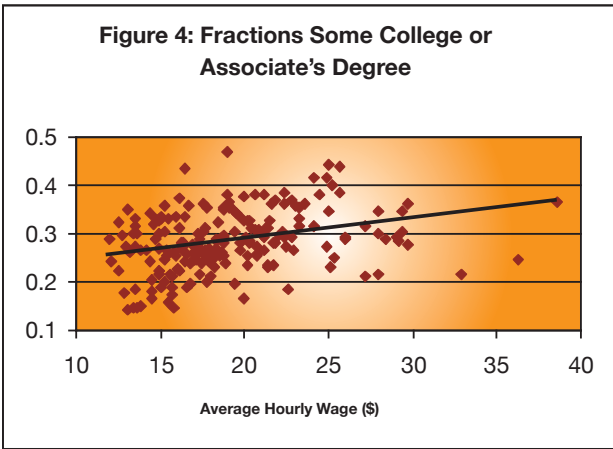


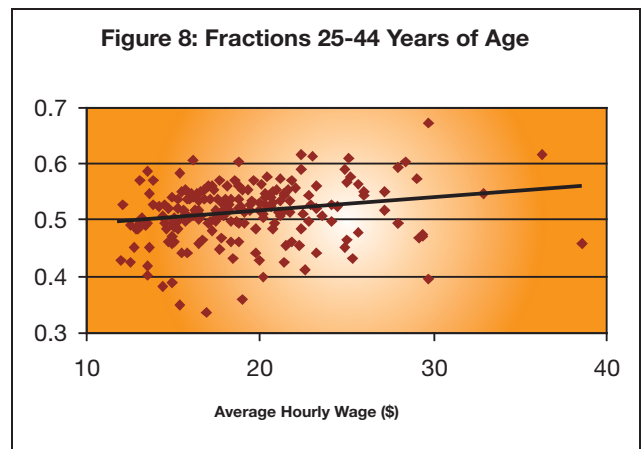
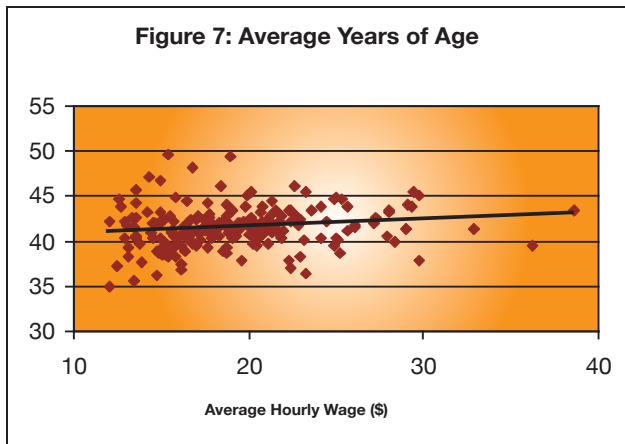
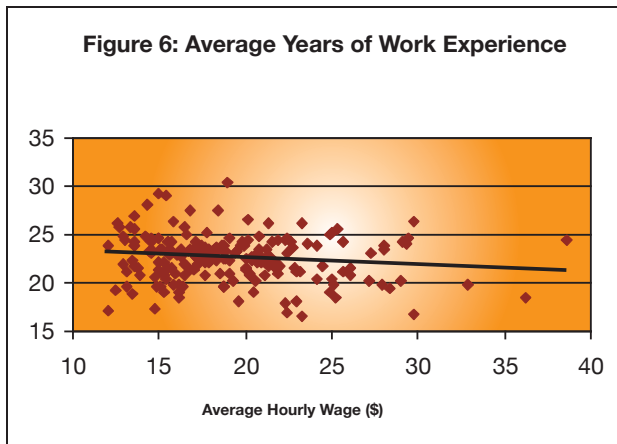
Table 2: Worker Characteristics by Job Type ●●●

Variable	Overall Association with Average Wage	Average among Good Jobs	Average among Bad Jobs
Fraction 0-8 Years of Education	-0.005* (0.0007)	0.01	0.07
Fraction 9-11 Years of Education	-0.006* (0.0006)	0.03	0.11
Fraction High School Graduate	-0.013* (0.002)	0.24	0.42
Fraction Some College or Associate's Degree	0.004* (0.001)	0.31	0.26
Fraction Bachelor's Degree	0.02* (0.003)	0.41	0.13
Average Years of Work Experience	-0.07* (0.04)	21.70	21.4
Average Years of Age	0.08* (0.04)	42.00	39.7
Fraction 25-44 Years of Age	0.002* (0.001)	0.53	0.50
Fraction Female	-0.008* (0.003)	0.45	0.56
Fraction Non-White	-0.005* (0.001)	0.18	0.27
Fraction Foreign-Born	-0.005* (0.001)	0.12	0.18
Fraction Married	0.006* (0.001)	0.65	0.54

* Denotes statistical significance at the 10 percent confidence level.
 Note: The first column reports regression coefficients corresponding to the lines superimposed on the plots in Figures 1 through 12. Heteroskedasticity-consistent standard errors are reported in parentheses. The next two columns give average values of each variable across the 49 highest-paying jobs (good) and the 49 lowest-paying jobs (bad). All calculations are based on year 2000 data only.

The estimated statistical associations that correspond to the lines superimposed on each plot appear in the first column of figures in Table 2.⁷ These can be interpreted as indicating that, on average, a \$1 increase in average hourly pay corresponds to decreases of 0.5, 0.6 and 1.3 percentage points in the fractions of workers with, respectively, 0 to 8, 9 to 11, and 12 years of education. At the same time, the results show that the same \$1 rise in average hourly wages is associated with a 0.4 percentage point increase in the proportion of workers with some education at the college level and a 2 percentage point rise in the share of workers holding a bachelor's degree.

Average work experience also changes with average hourly pay (Figure 6). Although the line in the graph is downward sloping, suggesting that higher-paying jobs involve less-experienced workers on average, the association implied by the statistic in Table 2 is small. That figure suggests that a \$1 rise in hourly earnings tends to be accompanied by 0.07 fewer years (or less than 1 month) of work experience. Therefore, although this association is important in a statistical sense (that is, we can conclude with a relatively high degree of certainty that there is some non-zero association between average hourly pay and average experience), it is not important in practical terms.



The next two plots show two measures of age: average years and the fraction of workers between 25 and 44 years of age (Figures 7, 8). There is a positive association between average age and hourly pay, although again, the association is small. A \$1 increase in hourly pay is only associated with a 0.08 year (again, less than 1 month) increase in average age.

The fraction of workers between 25 and 44 years of age seems to tell a slightly different story. Here, as hourly wages rise, so does the proportion of workers in the first half of their prime working years: a \$1 wage increase is associated with a 0.2 percentage point increase in the fraction of workers 25 to 44 years of age. This relationship seems to suggest that high-wage jobs are held by relatively young workers, not by older workers as Figure 7 appears to imply.

Likely, the discrepancy between these two results is due to the presence of workers between the ages of 18 and 24 who are more heavily represented in low-wage jobs than in high-wage jobs. As we move from low-wage to high-wage jobs, the fraction of workers in this age group decreases, allowing both average age and the fraction of workers 25 to 44 to rise. Still, the values of the estimates from Table 2 indicate that, with either age variable, there does not appear to be a strong correlation between worker age and hourly pay.

Figures 9 through 12 describe a few more basic demographic characteristics. Higher wage jobs tend to be held by, on average, fewer women (Figure 9). A \$1 increase in hourly earnings corresponds to a 0.8 percentage point decrease in the share of women in total employment. Similarly, high-paying jobs also tend to employ smaller fractions of nonwhite and foreign-born workers (Figures 10, 11). In each case, the shares drop by approximately 0.5 percentage points as wages rise by \$1. Finally, there is a positive association between marital status and the average pay of a job. In particular, greater fractions of workers in high-paying industries are married than in low-paying industries: A 0.6 percentage point increase in the proportion of workers who are married accompanies a \$1 rise in wages. Such a result matches well with studies reporting higher earnings among married workers.⁸

Figure 9: Fractions Female

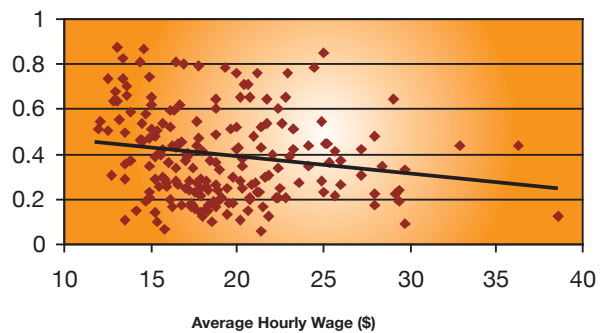


Figure 10: Fractions Non-White

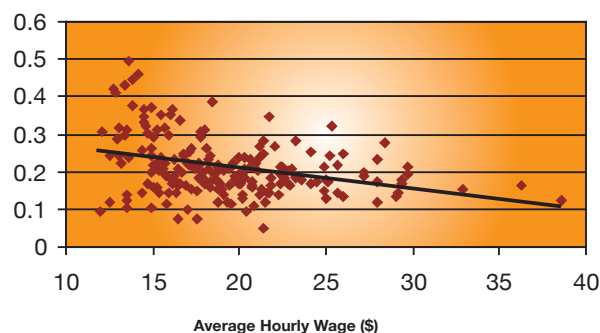


Figure 11: Fractions Foreign-Born

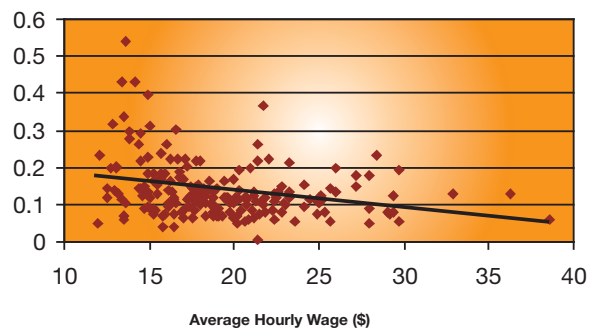
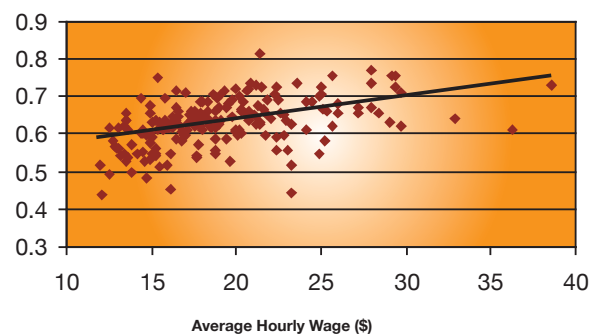


Figure 12: Fractions Married



To summarize these findings more simply, suppose that jobs are categorized into two groups: (1) “good” jobs, those in the top 25 percent (or quartile) of jobs by average hourly wage (i.e., the highest-paying 49 jobs) and (2) “bad” jobs, those in the bottom 25 percent of jobs (i.e., the lowest-paying 49 industries). To make use of data for all three census years, average hourly wages for this exercise are calculated using data from 1980, 1990 and 2000.⁹ The average values for each of the 12 characteristics considered above are given in the final two columns of results in Table 2. With the exception of average experience, a comparison of the averages across the two groups reveals the same conclusions drawn above from the plots.

Because they summarize 49 underlying industry series in a single figure, quartiles provide a useful way to track the growth of high- and low-paying jobs.¹⁰ The remainder of this study will focus on this particular definition of “good” and “bad” jobs. Although there need not be any particular relationship between employment shares and wage percentiles (i.e., the highest-paying 25 percent of jobs need not employ 25 percent of all workers), good and bad jobs collectively account for approximately 50 percent of total employment in the United States. In 2000, for example, good jobs accounted for approximately 24.2 percent of total employment, whereas bad jobs represented 25.1 percent of total employment. These figures are actually quite similar to those that were observed in 1980 when 24.7 percent of jobs were good and 24.1 percent were bad. Hence, there has been relative stability with respect to the shares of total employment allocated to these two groups.

The Scope of the Study

Although the growth of good jobs is certainly an important national concern, this study focuses on growth within metropolitan areas for two primary reasons. First, not all metropolitan areas experience the same rates of good- or bad-job growth. Nor do they all share the same characteristics. Exploring which areas grow, and which ones do not, allows inferences to be drawn about what causes job creation. Second, most individuals tend to be more concerned with local issues than larger regional and national issues because most people live and work in relatively confined areas. Residents, workers and leaders of a particular community are likely to find local patterns of job growth more relevant to their lives than job growth in larger areas such as states, regions and the United States as a whole.

Why not consider even smaller areas, such as cities, towns or even neighborhoods? There are two primary reasons to prefer metropolitan areas to these smaller entities. First, metropolitan areas provide a close approximation to the theoretical concept of a labor market.¹¹ That is, job growth in one part of a metropolitan area does not represent an increase in employment opportunities for only those individuals living in that particular area. Workers living within an “acceptable” commuting distance also have access to those jobs. Employers, therefore, frequently draw their employees from a host of different municipalities within the same metropolitan area. Second, detailed data on job

Table 3: Highest Rates of Good-Job Growth: 1980-2000 ●●●

Rank	Metropolitan Area	Good-Job Growth 1980-2000 (%)	Bad-Job Growth: Rank	Total Job Growth: Rank
1	Hickory-Morgantown-Lenoir, N.C.	302.8	6	2
2	Fayetteville-Springdale, Ark.	256.5	1	1
3	Raleigh-Durham, N.C.	207.4	2	4
4	Las Vegas	198.2	14	3
5	Austin, Tex.	190.2	18	7
6	Wilmington, N.C.	187.6	19	11
7	Rochester, N.Y.	182.0	55	30
8	Ocala, Fla.	166.2	5	9
9	Orlando, Fla.	154.8	4	6
10	Johnson-Kingsport-Bristol, Tenn.	153.4	7	12
11	Boise City, Idaho	147.1	3	5
12	Atlanta	143.9	9	8
13	Fort Myers-Cape Coral, Fla.	137.3	8	10
14	Phoenix-Mesa, Ariz.	131.7	16	14
15	St. Cloud, Minn.	131.4	23	15
16	Colorado Springs, Colo.	127.6	42	22
17	Fort Walton Beach, Fla.	125.9	29	18
18	Greenville-Spartanburg-Anderson, S.C.	124.7	203	109
19	West Palm Beach-Boca Raton, Fla.	120.6	20	17
20	Macon, Ga.	113.3	10	13
21	Tallahassee, Fla.	112.5	12	20
22	Charlotte-Gastonia-Rock Hill, N.C./S.C.	112.1	169	40
23	McAllen-Edinburg-Mission, Tex.	112.0	17	16
24	Providence, R.I.	110.6	106	68
25	Elkhart, Ind.	109.4	69	97

growth—including the characteristics of the workers holding these jobs—tends to be extremely limited at small geographic scales. An exploration of job growth along the lines pursued in this study is practically infeasible at levels below the metropolitan area.

Summary of Good-Job Growth in U.S. Metropolitan Areas: 1980-2000

Before beginning the formal analysis of the causes and consequences of good-job creation, this study will present a basic overview of the growth experiences of the metropolitan areas. This summary will also be useful for comparing the performance of four metropolitan areas from the Eighth Federal Reserve District—Little Rock, Louisville, Memphis and St. Louis—with the national average for all metropolitan areas.

The 25 fastest-growing metropolitan areas of the 206 in the sample are ranked according to their rates of good-job growth during the period 1980 to 2000 (Table 3). The

tables also show the corresponding positions in the rank ordering by bad-job growth and total employment growth. These last two sets of rankings are provided to show that the growth of one type tends to be associated with growth of another.¹² At the same time, they also indicate that these associations are not perfect. For instance, a metropolitan area that ranks among the 10 fastest in terms of good-job growth will not necessarily be among the 10 fastest in terms of growth in total employment or bad jobs.

What is immediately apparent from Table 3 is that the fastest-growing metropolitan areas tend to be located in the southern and western parts of the country. The fastest-growing cities in terms of good-job growth also tend to be some of the fastest-growing in terms of population and total employment, including Las Vegas; Austin, Tex.; Fayetteville-Springdale, Ark.; Orlando, Fla.; Atlanta; and Phoenix.¹³ This particular pattern of employment growth is underscored in the formal analysis below.

At the top of the rankings, interestingly, is a metropolitan area that usually does not rank near the top in terms of population or employment growth: Hickory-Morgantown-Lenoir, N.C. The massive rates of employment growth for this one particular metropolitan area stem primarily from changes in its geographic definitions over time. In 1980, it consisted of two counties. By 2000, it had four.¹⁴ As a result, there is nothing particularly special about this metropolitan area's growth experience. Fortunately, this type of rapid growth, induced by changing geographic boundaries, is relatively unusual in the sample used in this report.

Across the 206 metropolitan areas, the median rate of good-job growth (i.e., the 103rd fastest growth rate) was

43.3 percent during this period. Growth rates falling above this figure can be interpreted as better-than-average performance, whereas those below it indicate worse-than-average growth.

THE BENEFITS OF GOOD-JOB GROWTH

In general, the expansion of employment is fundamental to the rise of living standards in an economy. Greater numbers of jobs allow greater numbers of workers to enjoy the benefits, monetary or otherwise, associated with work. So,

Table 4: Statistical Associations of Metropolitan Area Characteristics with Job Growth ●●●

Variable	Rate of Good-Job Growth	Rate of Bad-Job Growth	Rate of Total Job Growth
Average City Wage	4.2* (1.2)	-3.3* (1.5)	2.4* (1)
Median City Wage	2.5* (0.22)	-1.97* (0.27)	1.15* (0.2)
Job Quartile 1 Average Wage	2.03* (0.9)	-0.76 (1.1)	1.6* (0.7)
Job Quartile 2 Average Wage	3.3* (0.97)	-3.1* (1.2)	1.3 (0.8)
Job Quartile 3 Average Wage	3.8 (2.6)	-3.7 (3.2)	2.2 (2.2)
Job Quartile 4 Average Wage	2.4* (1.1)	-0.3 (1.4)	2.6* (0.9)
Median Monthly Residential Rent	173.1* (25.9)	-148.8* (31.3)	78.2* (22)
Median House Value	41,705.5* (11,041)	-42,812.6* (13,310)	14,454.4 (9,103.1)
Crimes Per 100,000 in Population	-291 (404.2)	280.2 (498)	-250.3 (341.5)
Fraction 0-8 Years of Education	-0.013* (0.005)	0.024* (0.006)	0.008* (0.004)
Fraction 9-11 Years of Education	-0.023* (0.004)	0.03* (0.005)	0.003 (0.003)
Fraction High School Graduate	-0.001 (0.008)	0.008 (0.01)	0.008 (0.007)
Fraction Some College or Associate's Degree	0.006 (0.06)	-0.02* (0.008)	-0.01* (0.005)
Fraction Bachelor's Degree	0.031* (0.006)	-0.044* (0.007)	-0.006 (0.005)

* Denotes statistical significance at the 10 percent confidence level.

Note: Coefficient estimates from the regressions described in note 15. Standard errors are reported in parentheses.

why should one care about the nature of the jobs that an economy creates?

This section explores the benefits associated with the growth of good and bad jobs in an effort to illustrate some differences between the two. To this end, the analysis looks at the association between job growth of a particular type and a host of metropolitan area characteristics.¹⁵

Personal Income

Without doubt, the most obvious benefit that one would expect from the growth of good jobs, as opposed to bad jobs, is increased incomes. These job categories are, after all, based upon average hourly pay. One should expect that, as the number of high-paying jobs increases, average incomes should also increase.

Looking at the evidence, such a conclusion is strongly borne out. The estimates indicate that as the number of good jobs (i.e., industries in the top 25 percent of hourly wages) increases in a city, so does the average hourly wage of all workers in the city (Table 4). To be specific, the statistical associations indicate that a 10 percentage point increase in the rate at which good jobs are created over a decade (e.g., a rise from 5 percent growth to 15 percent growth) corresponds to a 42-cent increase in average hourly wages.¹⁶ At the same time, a 10 percentage point increase in the rate of growth of bad jobs tends to be accompanied by a 33-cent decrease in the city's average hourly wage.

Of course, since wage distributions tend to be skewed so that averages may be somewhat unrepresentative of an average wage earner, consider the association between job growth and a metropolitan area's median wage. Here, the estimates reveal smaller correlations, but similar qualitative conclusions. A 10 percentage point increase in the growth of good jobs tends to be associated with a 25-cent increase in the hourly wage of a worker at the middle of the wage distribution, whereas the same increase in bad jobs tends to decrease the wage of this worker by roughly 20 cents.

Again, these results should not come as a surprise. As an economy experiences large increases in the number of high-paying jobs it has, a larger fraction of its workers (including, quite possibly, the median worker) will tend to be employed in these high-paying sectors. Therefore, one would expect there to be a direct connection between the growth of good jobs and both of the wage measures just considered.

The benefits of jobs in high-paying sectors, however, extend beyond the individuals who happen to hold them. Consider the association between the creation of good jobs and the average hourly earnings received by workers belonging to different categories of jobs. These relationships tend to be positive and statistically important. Among job holders in the bottom 25 percent of hourly wages, for example, a 10 percentage point rise in the rate of good-job growth corresponds to a 20-cent increase in average hourly wages. For workers in the second and third quartiles of the hourly wage distribution (i.e., those falling between the 25th and 75th percentiles), the associations are even larger. Average hourly wages for these two groups increase by more than 30 cents given a 10 percentage point rise in the rate of good-job cre-

ation. Interestingly, the average wage among workers in the top quartile of jobs also rises, gaining 25 cents per hour as good-job growth rises by 10 percentage points.

Bad jobs, on the other hand, tend to have uniformly negative associations with the average wages of all quartiles. A 10 percentage point rise in the rate of bad-jobs tends to be accompanied by decreases of 31 cents, 37 cents and 3 cents in the hourly wages of workers in the second, third and fourth (i.e., the good-jobs category) quartiles, respectively. It should be noted that the association with the wages of good jobs is rather small and not statistically important. Holders of good jobs do not seem to be negatively influenced (in a financial sense) by bad-job growth.

As one might expect, the association between bad-job growth and the average wages of bad-job holders is also negative. The implied association with a 10 percentage point increase in the growth of these jobs is an 8-cent decrease in hourly wages. Interestingly, this association is also small and does not differ statistically from zero, which may reflect a demand effect, whereby bad-job growth is driven by rising demand (hence, earnings) for workers in these jobs. Still, the fact that the associations with wages of all four job categories are negative suggests that bad-job growth may be a drag on an economy's earnings growth.

Property Values

An individual's economic well-being can also be quantified by wealth (i.e., the value of one's assets) in addition to the flow of income he or she receives. In the United States, real estate represents one of the most important components of individual assets. A study by the Federal Reserve Bank of New York found that, in aggregate, real estate accounted for approximately 27 percent of all household wealth in 1998.¹⁷ However, since the underlying distribution of wealth tends to be heavily skewed by the wealthiest 10 percent of all households who hold massive quantities of corporate stock, this figure actually understates the importance of real estate holdings for the typical U.S. household. For the household at the midpoint of the wealth distribution, real estate represents close to two-thirds of all personal assets.

Does job growth influence real estate values? The U.S. Census reports two measures that may shed some light on this matter: monthly rent on residential structures and house value. Monthly rent refers to the amount that households have contractually agreed to pay for their housing units, or, in the case of vacant units, the amount for which landlords expect to be able to rent the units.¹⁸ House values are determined by estimates made by homeowners about the current market value of their residences (including land).¹⁹ As summary measures of the residential real estate market for each metropolitan area, the median values of these two variables are used.

Job growth as a whole tends to relate positively to both of these quantities. A 10 percentage point rise in the rate of total employment growth over 10 years corresponds to, on average, an \$8 increase in median monthly rent and a \$1,445 increase in median house value. Such correlations are certainly understandable in light of the fact that growing



markets tend to see rising incomes, populations and, as a consequence, demand for a relatively fixed supply of land.

Yet, these correlations also miss the fact that the extent to which residential rents and house values change depends on the types of jobs created. Consider good-job growth. Statistically, estimates suggest that a 10 percentage point rise in the rate of good-job creation is accompanied by a \$17 increase in monthly rents and a nearly \$4,200 increase in median house values. Given the rationale sketched above, it is not surprising that these values are larger than for total employment growth. Good-job growth, after all, tends to be associated with larger increases in local incomes than overall job growth. This feature then helps to produce higher residential real estate values since more income is spent on the local housing stock.

Now consider how the growth of bad jobs correlates with these two quantities. Looking again at a 10 percentage point rise in the rate of bad-job creation, the corresponding changes in both median rents and median house values are negative: minus \$15 per month in rent and minus \$4,300 in house value. Again, this result likely relates to the findings regarding income. If bad-job growth tends to have a negative association with worker earnings, it should also translate into lower real estate values.

Crime

Another potential benefit associated with the growth of high-paying employment is reduced crime. There are a number of reasons to suspect there to be a significant relationship between crime rates and employment growth. Most obviously, since economists view an individual's decision to commit a crime as depending upon the attractiveness of alternative activities, crime rates should be influenced by the presence of employment opportunities.²⁰ In particular, individuals with high-paying jobs ought to be less inclined to engage in criminal activity than either those who do not work or those with low-pay jobs.

On the other hand, it is also often pointed out that an expanding economy may actually generate higher crime rates if correlates of criminal activity (e.g., alcohol consumption and increased purchases of items that criminals may wish to steal, such as automobiles) rise with employment and income. From a theoretical perspective, then, the connection between job growth and crime is ambiguous.

Empirical evidence on this matter tends to be somewhat mixed. A recent study of states finds a strong positive association between a state's unemployment rate and its level of property crime (e.g., burglary and auto theft).²¹ However, a survey of this literature by University of Chicago professor

Steven Levitt suggests that, if there is an effect of economic activity on crime, it is small. The decade of the 1960s, after all, was characterized by strong economic growth, yet steadily increasing crime rates.²²

This study employs crime data from the FBI's Unified Crime Reports, which provide information about reported criminal activity throughout the country. Specifically, the variable of interest is the Crime Index, which reports the total number of crimes across a wide array of categories.²³ Looking first at total employment growth, the estimates suggest a negative association with crime (Table 4). A 10 percentage point increase in employment growth correlates with a decrease of 25 crimes per 100,000 in population.

When the growth rates of good and bad jobs are considered, the estimates reveal a negative association with good-job growth and a positive association with bad-job growth. A 10 percentage point rise in the rate of good-job creation over a decade tends to be accompanied by a decrease of 29 crimes per 100,000 residents, whereas the same increase in the rate of bad-job creation is associated with an increase of roughly 28 crimes per 100,000 residents.

These results should be interpreted with caution since none are statistically important. Hence, while the estimated correlations certainly suggest that good-job growth is accompanied by lower crime, and bad-job growth tends to be associated with higher crime, neither association is strong enough to draw these conclusions confidently.

Education

One of the most significant benefits associated with the growth of good (as opposed to bad) jobs is the rise in education levels accompanying good-job creation. There is a strong positive association between an industry's average hourly rate of pay and the fraction of its workers with a

bachelor's degree (Figures 1 through 5). More than 70 percent of workers in the top quartile of jobs had completed some post-secondary schooling in the year 2000, whereas fewer than 40 percent of workers in the bottom quartile of jobs had done so (Table 2).

All else constant, then, an increase in the rate at which high-paying jobs are created can be expected to increase the general level of education among the population. Bad-job growth, on the other hand, should accomplish precisely the opposite.

This conclusion is strongly supported by the data. Estimated correlations suggest that a 10 percentage point increase in a metropolitan area's rate of good-job growth over a 10-year period corresponds to a 0.3 percentage point increase (e.g., 15 percent to 15.3 percent) in the total fraction of the city's workers with a four-year college degree. The same increase in the rate of bad-job creation, on the other hand, is associated with a 0.4 percentage point decrease in the share of college graduates in the work force. Both are highly significant in a statistical sense.

Why is the general level of education so important? Economies with high levels of educational attainment among the work force (or, more generally, population) experience a variety of benefits that economies populated by less-educated individuals do not. As noted, education is positively associated with earnings. The labor market in the United States tends to pay sizable returns to educational attainment. Therefore, as individuals complete more schooling, they can expect to earn more.

This rise in income, however, extends beyond the individuals with high levels of education. A number of recent studies have found that as the general level of education within a city rises, the average labor earnings of workers of all levels of educational attainment tend to rise.²⁴ These effects have been shown to be quite sizable.

One study suggests that a 1 percentage point increase in the share of workers with a college degree raises the earnings of high school dropouts by 1.9 percent and those of high school graduates by 1.6 percent.²⁵ These types of effects are consistent with the evidence shown previously linking the growth of good jobs to the average hourly wages received by workers of all job categories, good or bad.

Several recent studies have also suggested that increased education among the population is associated with greater civic participation. That is, voter participation, support for free speech and the degree to which voters are informed (as measured by newspaper readership) all tend to rise substantially with educational attainment.²⁶ These types of outcomes are clearly desirable for the well-being of democratic societies because a more



engaged population is likely to enhance the effectiveness of government more so than an inactive, uninformed population.

Another study has argued that rising education levels may also deter crime.²⁷ The argument is related to, although still somewhat distinct from, the one connecting criminal behavior to employment growth. Individuals with more education will tend to have more desirable labor market outcomes (e.g., higher wages) than less-educated workers. Hence, more educated workers will also have more to lose (in terms of income) from committing crimes and being caught. In addition, education may diminish an individual's inclination to commit crimes or increase risk aversion, say by creating a larger stigma.

This conclusion is consistent with the evidence documented above showing a positive association with bad-job creation and a negative association with good-job creation. However, since the results above were not important in a statistical sense, this particular conclusion cannot be drawn with much certainty from the evidence reported here.

One additional benefit of a more educated work force concerns the potential for future job growth. As demonstrated below, the level of education among a city's population is strongly associated with subsequent rates of growth among high-paying sectors. Thus, there is also a "virtuous cycle" aspect to the growth of good jobs: their presence helps to ensure that such jobs will continue to grow in the future.

GOOD-JOB GROWTH DETERMINANTS

Given that the expansion of high-paying work is desirable from a number of different perspectives, where do these jobs grow? This section looks at a variety of metropolitan area characteristics in an attempt to identify what might drive the growth of good jobs. While not intended to be exhaustive, the list is reasonably inclusive of determinants that have been considered in previous studies of urban growth.²⁸

Local Market Scale

The vast majority of workers in the United States works and resides in metropolitan areas. In the year 2000, for example, 82 percent of all jobs were located in a metropolitan area. It is therefore not surprising that the majority of both good and bad jobs are also located in metropolitan areas. However, the extent of these majorities differs by job type.

Relative to total employment, bad jobs tend to be under-represented in the nation's cities. Among the total supply of jobs in the bottom quartile of hourly pay, only 80 percent were located in a metropolitan area in 2000. At the same time, good jobs tend to be over-represented (again, relative to total employment) in metropolitan labor markets: 86.5 percent of the good jobs in the United States were located in an urban area.

Evidently, there is some aspect of large, dense urban markets that attracts jobs in the highest-paying sectors. To be sure, there are some obvious differences between urban and

rural markets: numbers of potential consumers and workers, the size and sophistication of the local physical infrastructure, the sheer diversity of economic activity that takes place, big city amenities and attractions, congestion, land rents and wages. All of these may influence the types of jobs that are present.

There are also some important differences in the basic characteristics of the workers located in each type of area. In particular, urban workers tend to be somewhat younger and more educated than their nonurban counterparts. In 2000, for example, 29.3 percent of urban workers between the ages of 18 and 65 held a bachelor's degree, and nearly 60 percent had some schooling at the college level. In rural areas, only 16.3 percent held a four-year college degree and only 45 percent had some post-secondary education. What is more, 55 percent of urban workers (again, between the ages of 18 and 65) were between 25 and 44 years of age (i.e., in the "first half" of their careers) whereas only 51 percent of rural workers were. To get a better sense of the potential relevance of each of these characteristics, the analysis below considers the statistical importance of each one individually.²⁹

Education

Based on the characteristics of workers holding good and bad jobs given in Table 2, one would expect that education would play a large role in the extent to which good jobs grow in a metropolitan area. Indeed, given that workers in good jobs tend to have relatively high levels of education, one should expect the growth of good jobs to be faster in cities with more educated labor forces.

Anecdotally, education is certainly among the most cited influences in employers' decisions to locate in a particular area. A recent story in *The Washington Post*, for example, gives the following summary of recent trends in Richmond, Va:

When Fred Agostino moved to suburban Richmond to head the Henrico County Economic Development Authority in the mid-1980s, employers wanted semiskilled workers they could train for half a day and hire for life at a decent wage with benefits. Now companies looking to relocate to Richmond just want to know what percentage of the local population has a Ph.D. "They have to have educated, skilled, world-class people," Agostino said.³⁰

Such a perspective certainly matches well with recent evidence on the importance that employers place on formal education in the labor market. As a fraction of total employment, workers with a four-year college degree or more accounted for roughly 18 percent of total employment in the United States in 1980. By 2000, they accounted for 27 percent. Among the 196 industries examined in this study, 190 saw increases in their shares of college graduates in total employment between 1980 and 2000.

Underlying this rise, some have argued, is the change in the technologies used at the workplace in the past few decades, especially information technology. Data on 1984 from the Bureau of Labor Statistics' Current Population Survey indicates that 30 percent of workers reported direct use of a computer at work. In 1997, the figure was 53 percent.³¹

Why do these technologies change the type of labor that employers demand? One recent study suggests that computer equipment tends to provide a substitute for labor engaged in routine tasks (i.e., those that involve following explicit, well-defined rules) while increasing the demand for labor that is engaged in problem-solving and tackling

cent). Interestingly, education also appears to have a strong positive association with the growth of bad jobs, which rises by 5 percentage points given the same 10 percentage point rise in the initial college fraction. This result may reflect the increased demand for many of the goods and services provided by low-pay sectors as an economy expands. Greater



complex, nonroutine tasks.³² Although there need not be any direct relationship between the ability to perform such nonroutine tasks and formal education, education is often viewed as a signal of these types of abilities. A recent study by Philip Moss and Chris Tilly reports that, although many employers' demands involve high school-level mathematics and writing skills, "employers are relying more and more on college completion as a screen to get the people who are more likely to have them."³³

What does the evidence suggest about the importance of education for good-job growth? Consider the association between the fraction of workers with a four-year college degree and the subsequent rate of growth of good jobs over the next 10 years (e.g., the college fraction in 1980 and the growth of good jobs between 1980 and 1990). The estimate, which appears in Table 5, indicates that a 10 percentage point rise in the share of college degree holders in the work force (e.g., 15 percent to 25 percent) corresponds to a 5.3 percentage point increase in the rate of good-job creation over the next decade (e.g., 10 percent to 15.3 per-

cent). numbers of good jobs, as demonstrated previously, tend to increase a metropolitan area's average wage and salary income which, in turn, may fuel the demand for retail trade, recreation and personal services. Whatever the reason, the correlations between the college fraction and both types of employment growth are statistically significant.

Consider next the association between the fraction of workers with no more than a high school diploma and the subsequent rate of growth of good and bad jobs. A 10 percentage point rise in the share of high school graduates in a metropolitan area's work force corresponds to a decrease in the rate of good-job growth of 6.7 percentage points over the next decade. This association is statistically quite strong. The rate of bad-job creation is also negatively associated with the initial high school fraction, but the magnitude of the association is much smaller and statistically unimportant. The same 10 percentage point rise in the share of high school graduates among the labor force correlates with only a 2.5 percentage point decrease in the rate of bad-job growth over the next 10 years (Table 5).

**Table 5: Statistical Associations of Job Growth
with Various Initial City Characteristics ●●●**

Initial Characteristic	Rate of Good- Job Growth	Rate of Bad- Job Growth	Rate of Total Job Growth
Fraction 0-8 Years Education	-0.20 (0.36)	0.36 (0.3)	-0.22 (0.29)
Fraction 9-11 Years of Education	-0.05 (0.5)	-1.2* (0.4)	-0.78* (0.4)
Fraction High School Graduate	-0.67* (0.243)	-0.25 (0.2)	-0.46* (0.2)
Fraction Some College or Associate's Degree	0.63 (0.4)	0.52 (0.32)	0.64* (0.33)
Fraction Bachelor's Degree	0.53* (0.24)	0.5* (0.19)	0.51* (0.2)
Fraction Manufacturing	0.14 (0.15)	-0.22* (0.12)	-0.13 (0.12)
Fraction of Good Jobs in Manufacturing	-0.24* (0.09)	-0.06 (0.08)	-0.12 (0.08)
Fraction Trade	0.05 (0.5)	0.1 (0.4)	0.2 (0.4)
Fraction Finance, Insurance, Real Estate	1.47* (0.5)	0.67 (0.42)	1* (0.43)
Fraction Business-Repair Services	0.64 (0.8)	1.55* (0.7)	1.4* (0.7)
Fraction Other Services	0.22 (0.24)	0.24 (0.2)	0.3 (0.2)
Union Membership Fraction	-0.74* (0.3)	-0.5* (0.2)	-0.71* (0.2)
Mean City Wage	-0.008* (0.004)	-0.0001 (0.003)	-0.006* (0.003)
Median City Wage	-0.025* (0.01)	0.0004 (0.008)	-0.016* (0.008)
Eating and Drinking Establishments	0.019* (0.011)	0.005 (0.009)	0.014 (0.009)
Movie Theaters	0.023* (0.01)	0.009 (0.009)	0.019* (0.01)
Live Entertainment Venues	0.017* (0.009)	0.007 (0.007)	0.012 (0.007)
Museums, Botanical Gardens, Zoos	0.014 (0.01)	0.001 (0.01)	0.009 (0.01)
Elementary Schools	0.012 (0.009)	0.002 (0.007)	0.008 (0.008)
Colleges and Universities	0.016 (0.01)	0.006 (0.009)	0.014 (0.009)
Employment in Colleges and Universities	0.011* (0.006)	0.004 (0.005)	0.009* (0.005)

Table 5 (continued from p. 13)

Initial Characteristic	Rate of Good-Job Growth	Rate of Bad-Job Growth	Rate of Total Job Growth
Hospitals	0.016 (0.011)	0.004 (0.009)	0.011 (0.009)
Average January Temperature	0.007* (0.002)	0.007* (0.001)	0.008* (0.001)
Average July Temperature	0.012* (0.004)	0.013* (0.003)	0.014* (0.003)
Fraction of Workers 25-44	0.67 (0.54)	0.32* (0.14)	0.22 (0.44)
Per Capita Tax Revenue	-0.008 (0.009)	-0.009 (0.007)	-0.007 (0.007)
Per Capita Property Tax Revenue	0.006 (0.01)	-0.002 (0.008)	0.003 (0.008)
Per Capita Education Expenditures	-0.006 (0.01)	-0.001 (0.009)	-0.003 (0.009)
Per Capita Public Welfare Expenditures	-0.008 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Per Capita Highway Expenditures	-0.05 (0.04)	-0.01 (0.02)	-0.01 (0.02)
Per Capita Police Expenditures	-0.10 (0.06)	-0.07 (0.05)	-0.05 (0.05)

* Denotes statistical significance at the 10 percent confidence level.

Note: Coefficient estimates from the regressions described in note 29. Standard errors are reported in parentheses.



Such figures indicate that higher levels of education among a city's work force correspond to greater job growth over the next 10 years. Interestingly, while this job growth occurs among both high- and low-paying industries, the estimates indicate that the growth of good jobs is somewhat more responsive to variation in education. That is, increases in the level of education, as measured by the college and high-school fractions, tend to have a larger influence on the creation of good jobs than bad jobs.

Industrial Composition

Where employers choose to locate might also depend on the basic industrial composition of a city. This composition may reflect the types of workers available in the local labor market or may influence the productivity of doing business in a particular locale.

Five basic industry groupings, accounting for on average more than 85 percent of metropolitan employment, are considered in this study: manufacturing, trade, finance-insurance-real estate, business-repair services, and all other services. The first, manufacturing, has historically employed a large fraction of workers in this country, but that fraction has steadily eroded over time. In 1970, manufacturing accounted for more than 25 percent of total U.S. employment. By 2000, it had dropped to below 15 percent.³⁴

Because manufacturing has shown gradual declines over

time, one might expect cities with large manufacturing shares to have experienced slow job growth during that same time period. The results only show partial support for this conclusion (Table 5). Bad-job growth and total employment growth do indeed tend to be lower in cities with larger initial fractions of employment engaged in manufacturing, whereas the growth of good jobs tends to be slightly higher in these cities. Of these three correlations, only the result for bad-job growth, which suggests that a 10 percentage point rise in manufacturing's share corresponds to a 2 percentage point drop in the rate of bad-job creation, is statistically important.

A very different conclusion, however, emerges from the consideration of an alternative measure of manufacturing's importance: the share of good jobs accounted for by manufacturing industries. In this case, there is a significantly negative association between a metropolitan area's manufacturing presence and its rate of good-job growth over the next decade. The estimate in Table 5 indicates that, on average, a 10 percentage point increase in the share of good jobs accounted for by manufacturing reduces the rate of good-job creation by 2.4 percentage points over the next 10 years. Although they are also negative, the associations between this particular measure of manufacturing's scale and both bad-job growth and total employment growth are not statistically important.

This particular result may reflect a mismatch between the

labor demands of producers offering good jobs and the types of skills that workers employed in manufacturing tend to possess. To begin, average educational attainment is lower in manufacturing than across all other sectors combined. In 2000, there were 17 percent of manufacturing workers with bachelor's degrees, while 24.5 percent of nonmanufacturing workers held bachelor's degrees. The differential is similar among just those workers in high-paying sectors: 28 percent of manufacturing workers held a college degree in 2000 compared with 36 percent of nonmanufacturing workers.

Additionally, workers who are displaced from manufacturing jobs tend to find new jobs in either the same industry or a different one at a lower rate than other workers. The Bureau of Labor Statistics recently reported that, between 2001 and 2003, the re-employment rate for displaced manufacturing workers was 60 percent, compared with an overall mean of 65 percent for all displaced workers.³⁵ This result may imply that the demand for manufacturing workers' skills has decreased more rapidly than it has for workers employed in other industries. Possibly for these reasons, producers offering high-paying employment may perceive a large fraction of good jobs accounted for by manufacturing industries as a large presence of relatively unsuitable labor.

The remainder of the industrial composition results shows a general lack of significance among the rest of the industrial composition variables listed above, although there are a few instances in which statistically important associations emerge (Table 5). The presence of workers concentrated in finance-insurance-real estate (FIRE), for example, correlates positively (and significantly) with good-job growth: a 10 percentage point rise in the FIRE share of total employment is accompanied by a 15 percentage point increase in good-job growth over the next 10 years. On the other hand, greater shares of workers in business-repair services correspond to significantly faster growth of bad jobs: a 10 percentage point increase in the share of workers in this sector corresponds to a 15.5 percentage point increase in bad-job growth.

Additional Labor Force Characteristics

There are several characteristics of a metropolitan area's work force, other than education and industrial composition, that may also influence the growth of good jobs. Two that relate to the cost of operating in a given locale are the union membership rate and a measure of labor costs.

Unions actively engage in bargaining with employers over work conditions and compensation. Accordingly, workers who belong to a union tend to earn significantly higher wages than those who do not. Estimates suggest that the union wage premium is at least 10 to 15 percent.³⁶ Higher wages, however, represent only one cost that employers associate with unionized labor forces. Unions also negotiate with employers over hours, benefits and other job aspects that, from the perspective of an employer, can present significant economic constraints.

The evidence indicates that higher rates of union membership correlate negatively with subsequent employment growth. Interpreting the results presented in Table 5, a

10 percentage point increase in union membership is associated with a 7.4 percentage point decrease in the rate of good-job growth over the next decade. The association with bad-job growth is also negative, although not as large. The same 10 percentage point increase in the rate of union membership correlates with a 5 percentage point drop in bad-job growth. Both results are statistically significant.

Because unionization only provides an indirect measure of labor costs, this study also looked at two direct measures: the average and median wage levels in a metropolitan area. Statistically, both are negatively associated with the growth of both total employment and good jobs. A \$1 increase in a city's average hourly wage, for example, corresponds to a 0.8 percentage point reduction in good-job growth over the next 10 years, whereas a \$1 rise in a city's median wage is associated with a 2.5 percentage point decrease in the rate of good-job growth. Bad-job growth, by contrast, is not significantly associated with either of these measures.

Such results are certainly reasonable from a purely intuitive perspective. After all, if one assumes that producers attempt to minimize their production costs, one should expect producers to operate in cities with lower labor costs (other things being held equal). Hence, cities with lower wage levels and rates of unionization tend to exhibit faster good-job growth than those with higher wages and rates of union activity.

Possibly for this reason, the South and West regions of the United States have exhibited faster job growth over the past several decades.³⁷ On average, good jobs grew by more than 50 percent in the metropolitan areas of the West between 1980 and 2000. The figure was nearly 60 percent in the South. By contrast, the corresponding rates of good-job creation in the Midwest and the Northeast were below 30 percent. As it turns out, the metropolitan areas of the West and South both have lower union membership rates than those in the Midwest and Northeast. The average in the West in 1980 was 23 percent, whereas it was 15 percent in the South. In the cities of the Midwest and Northeast, union membership averaged close to 30 percent in 1980. The South also had another cost advantage. In 1980, metropolitan areas of the South had a median wage that was more than \$1 below that of either the Midwest or Northeast.

The fact that wage levels themselves seem to act as a deterrent to good-job growth illustrates an interesting economic mechanism. Recall, the growth of good jobs tends to boost labor income, both for the holders of these jobs as well as for those holding lower-paying jobs. So, as good jobs are created, wage levels tend to rise which, assuming all else is held constant, tends to slow future rates of good-job growth. Any advantage that a particular metropolitan area might have with respect to labor costs will therefore tend to erode over time as employment grows. This process may help to explain why wage levels in different parts of the country have shown a tendency to "converge" to similar levels in the past several decades.³⁸

It should be underscored that these results do not imply that income growth is necessarily harmful with respect to a city's potential for future good-job growth. These results

merely suggest that, all else being held constant, job growth tends to be faster in markets with initially less costly labor (quantified either by rates of union activity or wage levels). Indeed, good-job growth also tends to be associated with rising education which, in turn, helps to boost future growth.

Amenities

Where workers are willing to live, and, thus, where producers are likely to locate, may also depend upon a variety of personal amenities, such as schools, warm weather and entertainment outlets. All else equal, high-amenity cities should be preferable to (and, therefore, should grow faster than) low-amenity cities. Recent research has documented some evidence to support this idea, finding that metropolitan areas that offer a wide array of consumer goods and services exhibit faster population growth.³⁹

To assess the importance of amenities with respect to employment growth, this study examined the following city-level features: the number of zoos, museums, hospitals, movie theaters, botanical gardens, live entertainment venues, eating and drinking establishments, average January and July temperatures, elementary schools, colleges and universities, as well as the total employment in these post-secondary institutions.⁴⁰ Total employment may capture more accurately the magnitude of a college or university community and the true amenity value it provides to residents. Large universities, for example, likely provide greater educational and entertainment-related opportunities than small colleges. One final characteristic is also considered: the fraction of workers between the ages of 25 and 44. This variable is intended to capture the extent to which life in a city is perceived to be active and vibrant.

The formal statistical associations between these characteristics and rates of job growth over the following decade appear in Table 5. They show that, in general, a greater number of each type of amenity is associated with a higher rate of good-job growth. In a statistical sense, three of the entertainment-related outlets—movie theaters, live entertainment venues and eating and drinking establishments—correlate significantly with good-job growth. The magnitudes are somewhat small: a 10 percent increase in the number of each of these types of establishments is associated with only a 0.2 percentage point rise in the rate of good-job creation over the next 10 years. Nevertheless, these results do suggest that there is some non-negligible effect of these types of amenities on the growth of high-paying jobs. Good-job growth is also significantly associated with the size of the local college/university community, quantified by the total number of workers employed by post-secondary educational institutions. In part, this association may be driven by the fact that jobs at colleges and universities are considered good jobs in this study. Given the rapid expansion of this sector nationwide (growth averaged in excess of 20 percent during the 1980s and 1990s), a large university presence may correlate with large numbers of subsequent job gains. At the same time, this association is also quite small, suggesting only a 0.1 percentage point increase in good-job growth as university employment rises

by 10 percent. None of these characteristics is significantly related to bad-job growth.

By far the most consistent predictor of all types of employment growth out of this set of amenities is average temperature. Cities characterized by warmer weather, as quantified by both average January and July temperatures, tended to grow faster between 1980 and 2000. This result undoubtedly reflects the fact that the South and West regions of the United States have grown faster than the Midwest and Northeast over the past several decades. Other than differences in unionization rates and wage levels, this pattern may reflect preferences among workers (and, therefore, among employers) for warmer climates.

Local Government Taxation and Expenditure

Employment growth may also be influenced by the activities of local governments, especially their policies with respect to taxation and expenditure. Cities with high tax rates may chase businesses and residents away, leading to slower job growth over time. At the same time, high levels of taxation may also be indicative of a high level of public-good provisions, such as parks, good roads and police protection or generous spending on education, something relatively well-educated or high-income individuals might value. In the latter case, high tax revenues would fuel job growth rather than deter it.

This section considers a few general measures of government finance to see if this particular aspect of government activity helps to explain the growth of good and bad jobs. There are two categories of taxation considered: total tax revenue (from all sources) per capita and total property tax revenue per capita. Four expenditure categories are then examined: per capita expenditures on education, public welfare (for example, administration of medical and cash assistance and social services to the physically disabled), police protection and highways.⁴¹

What the estimates indicate, however, is a uniform lack of importance among these quantities (Table 5). None offer much insight into patterns of job growth. With respect to the creation of good jobs, the majority of the associations tend to be negative, suggesting that higher per capita tax revenues—and, consequently, expenditures—tend to be associated with lower rates of growth over the following decades. However, in a statistical sense, none of these estimates carries much meaning. Hence, general government finances are not an important predictor of job growth.

A LOOK AT SOME EIGHTH DISTRICT METROPOLITAN AREAS

This section looks at the experiences of four major metropolitan areas of the Eighth Federal Reserve District: Little Rock, Ark.; Louisville, Ky.; Memphis, Tenn.; and St. Louis. Between 1980 and 2000, these four metropolitan areas saw increases in their employment totals, including gains in both

Table 6A: Rapidly Growing Industries – Little Rock ●●●

Good Jobs					
Industry	Growth 1980-1990 (%)	Job Increase 1980-1990	Industry	Growth 1990-2000 (%)	Job Increase 1990-2000
Real Estate	35.7	742	Aircraft and Parts	105.2	1,047
Offices of Physicians	100.0	1,162	Offices of Physicians	117.7	2,735
Legal Services	128.0	1,335	Colleges and Universities	129.1	2,982
Computer and Data Processing	158.0	1,043	Engineering, Architectural, and Surveying Services	64.9	1,270
Security, Commodity Brokerage, Investment	177.3	993	Computer and Data Processing	201.1	3,424
Bad Jobs					
Industry	Growth 1980-1990 (%)	Job Increase 1980-1990	Industry	Growth 1990-2000 (%)	Job Increase 1990-2000
Eating and Drinking Establishments	36.5	1,635	Department Stores	72.4	3,292
Hotels and Motels	44.4	542	Eating and Drinking Establishments	77.9	4,767
Grocery Stores	46.5	1,434	Auto Repair Shops	81.3	1,111
Auto Repair Shops	51.7	466	Social Services	104.6	3,275
Meat Products	68.0	503	Furniture and Fixtures	187.0	1,455

good and bad jobs. There were, however, significant differences among them. Most notably, Little Rock displayed the fastest employment growth (64.6 percent), followed by Louisville (52.2 percent), Memphis (50.8 percent), and St. Louis (29 percent). Given a national employment increase of nearly 37 percent between 1980 and 2000, only St. Louis did not keep up with the country as a whole.

This same ordering also applies to the growth of both good and bad jobs. This result is evident from Figures 13 and 14, which show the evolution of good- and bad-job employment in each of these four metropolitan areas, as well as for the entire United States, indexed to their 1980 levels. Employment growth rates can be found by subtracting 100 from the employment level of interest. So, the total number of good jobs in Little Rock in 2000, shown in Figure 13 to be 165.4, was 65.4 percent higher than the number in 1980. In St. Louis, the number of good jobs in the year 2000 stood only 20.1 percent higher than the 1980 level. What accounts for these differences? The discussion below takes a closer look at each of these metropolitan areas.

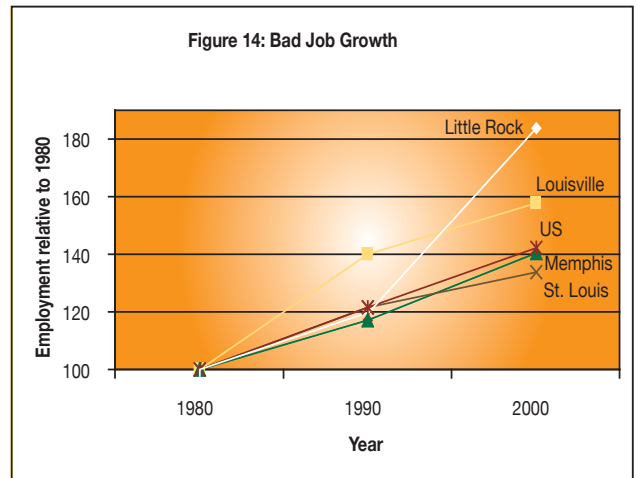
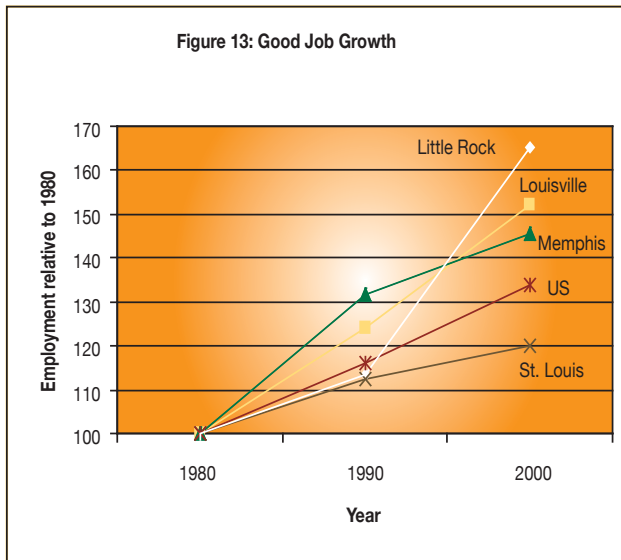
Little Rock

Among these four metropolitan areas of the Eighth District, Little Rock experienced the highest rate of job growth between 1980 and 2000. Based on the employment data used in this analysis, Little Rock experienced an increase of nearly 95,000 jobs, or approximately 64.6 percent, over this period. However, much of that growth occurred during the 1990s, when more than 78,000 jobs were added, rather than the 1980s when fewer than 20,000 were created (Figures 13, 14).

Some of the major job creators over both of these decades are shown in Table 6A. Among those listed in the good-jobs category are the same industries that exhibited strong growth nationally: legal services, offices of physicians, computer and data processing, colleges and universities, and security and commodity brokerage and investment. During the 1990s, Little Rock also experienced robust job growth in the aircraft and parts industry. In all, Little Rock created 10,204 jobs in high-paying sectors between 1980 and 1990 and 20,551 between 1990 and 2000. At the same time,

Table 6B: Selected Characteristics of Little Rock ●●●

	1980	1990
Fraction High School Graduate	0.438	0.38
Fraction Some College or Associate's Degree	0.171	0.278
Fraction Bachelor's Degree	0.177	0.235
Fraction Manufacturing	0.207	0.148
Fraction of Good Jobs in Manufacturing	0.203	0.122
Fraction Finance, Insurance, Real Estate	0.078	0.09
Fraction Business-Repair Services	0.044	0.062
Union Membership Fraction	0.117	0.105
Mean City Wage (\$)	14.70	15.49
Median City Wage (\$)	10.50	10.97
Eating and Drinking Establishments	471	761
Movie Theaters	19	12
Live Entertainment Venues	9	15
Employment in Colleges and Universities	1,800	2,309



losses of good jobs were relatively limited: 5,368 between 1980 and 1990 and 1,969 between 1990 and 2000. This implies that the net rate of good-job growth over this 20-year period was quite strong. Of the 206 metropolitan areas examined in this study, Little Rock's rate of good-job growth between 1980 and 2000 ranked 63rd.

As suggested previously, since many of the jobs in the bottom quartile of average hourly pay involve retail trade and personal services—which depend upon disposable income—good-job growth tends to be accompanied by bad-job growth. Some of the major job creators among the bad-jobs category are also listed in Table 6A. As with good jobs, many of these mimic the national trends, with sizable employment increases in auto repair, department stores, hotels

and motels, eating and drinking establishments, and social services, including job training and vocational rehabilitation services, child day care, and residential care facilities.

In Little Rock, the growth of bad jobs between 1980 and 2000 was more than 83 percent, or nearly 30,000 jobs. As a consequence of this growth, the number of workers employed in bad jobs surpassed the number employed in good jobs during this period. In 1980, bad-job employment was nearly 1,500 lower than good-job employment. By 2000, bad-job employment was nearly 4,000 higher than good-job employment.

Some characteristics of Little Rock appear in Table 6B, including those quantities that were previously shown to exhibit statistically important relationships with good-job growth. For the sake of comparison, the average across all metropolitan areas used in this study appears in Table A3 of

the Appendix. A number of these features may help to rationalize why Little Rock showed relatively strong growth, particularly during the 1990s.

Beginning with education, Little Rock's fractions of workers with a high school degree and some college (or an associate's degree) were very similar to the average across all metropolitan areas in the United States. Yet, its fraction of workers with a bachelor's degree was higher in both 1980 (0.177 versus 0.175) and especially in 1990 (0.235 versus 0.214). Little Rock has also shown comparatively low rates of union membership, average wage levels (defined either by mean or median wages) and fractions of good jobs accounted for by manufacturing, but high fractions of employment in finance, insurance and real estate. Given its location in the South, Little Rock also tends to have a fairly warm climate: January and July temperatures average, respectively, 39.1 and 81.9 degrees. Collectively, these characteristics have likely contributed to the creation of good jobs in Little Rock over these years.

Counterbalancing these features, of course, is the fact that Little Rock is still reasonably small and so lacks the draw associated with large metropolitan areas. Data on four ameni-

ties (movie theaters, live entertainment venues, eating and drinking establishments, and total employment in colleges and universities) demonstrate this point. Of course, since the estimated association of these particular characteristics was rather small, they likely did not hinder Little Rock's growth by much. It should also be pointed out that Little Rock's "advantage" with respect to inexpensive labor has eroded, probably as a result of the employment growth that has taken place. The average wage in Little Rock was \$1.01 less than the national average in 1980. In 1990, the gap had decreased to 62 cents and by 2000, it stood at 40 cents. Medians show a similar trend.

Louisville

Between 1980 and 2000, Louisville's total employment gains were somewhat larger than Little Rock's in absolute numbers—136,892 as opposed to 94,692—but smaller as a percentage change from the 1980 level, 52.2 percent. The rate of good-job growth was very similar, 52.1 percent, placing Louisville second among the four metropolitan areas under consideration and 81st out of the 206 metropolitan areas in the total sample.

Table 7A: Rapidly Growing Industries – Louisville ●●●

Good Jobs					
Industry	Growth 1980-1990 (%)	Job Increase 1980-1990	Industry	Growth 1990-2000 (%)	Job Increase 1990-2000
Insurance	42.4	2,989	Legal Services	36	1001
Colleges and Universities	59.1	2,141	Motor Vehicles and Equipment	84.9	5,046
Legal Services	135.7	1,601	Computer and Data Processing	104	1,975
Air Transportation	220.5	1,149	Offices of Physicians	124.4	4,577
Computer and Data Processing	227.4	1,319	Offices of Dentists	136.5	1,209
Bad Jobs					
Industry	Growth 1980-1990 (%)	Job Increase 1980-1990	Industry	Growth 1990-2000 (%)	Job Increase 1990-2000
Grocery Stores	41.8	2,240	Eating and Drinking Establishments	13.7	2,403
Eating and Drinking Establishments	53.3	6,076	Social Services	39.3	2,476
Nursing and Personal Care	79.1	2,282	Misc. Retail Stores	39.9	1,018
Social Services	81.8	2,833	Nursing and Personal Care	44.1	2,279
Apparel and Accessories	148.8	1,608	Misc. Wood Products	214.7	1,288

Table 7B: Selected Characteristics of Louisville ●●●

	1980	1990
Fraction High School Graduate	0.424	0.388
Fraction Some College or Associate's Degree	0.156	0.274
Fraction Bachelor's Degree	0.158	0.204
Fraction Manufacturing	0.285	0.208
Fraction of Good Jobs in Manufacturing	0.305	0.221
Fraction Finance, Insurance, Real Estate	0.074	0.079
Fraction Business-Repair Services	0.04	0.064
Union Membership Fraction	0.229	0.158
Mean City Wage (\$)	16.72	16.62
Median City Wage (\$)	11.97	11.27
Eating and Drinking Establishments	1145	1493
Movie Theaters	27	23
Live Entertainment Venues	33	28
Employment in Colleges and Universities	3,624	5,765

Table 7A lists some of the major job creators among both good- and bad-job categories over both decades. Many industries listed—computer and data processing, colleges and universities, and offices of physicians among the good jobs and social services and eating and drinking places among the bad—are the same as those for Little Rock. In total, there were roughly 4,000 more bad jobs created than good jobs during this period. Therefore, while good- and bad-job totals were approximately the same in 1980, Louisville's total employment among bad-job categories exceeded that of its employment among good-job categories by the year 2000.

What characteristics might have influenced Louisville's growth of good jobs? Most of the features described in Table 7B actually suggest that Louisville should have grown more slowly than the national average. Educational attainment, measured by the proportions of workers with education at the college level, was below the average for all metropolitan areas in 1980 and 1990, although the difference was small. A total of 47.8 percent of all workers in Louisville had some college education in 1990 whereas, across all metropolitan areas, the average was 49.1 percent. Union membership was also somewhat higher in Louisville in both 1980 and 1990 than the national average, although the differentials were again small (i.e., 1 to 2 percentage points). This aspect of the Louisville labor market may help to explain why average wages were higher in 1980 and 1990 than across the remainder of the country's metropolitan areas. Additionally, Louisville's good jobs were somewhat more concentrated in manufacturing in 1980 than the average across

all other metropolitan areas (30.5 percent compared with 22.1 percent).

In spite of these characteristics, Louisville's rate of good-job creation was higher than the national average in both decades: 24 percent compared with 16 percent during the 1980s, 23 percent compared with 15 percent during the 1990s. Evidently, the characteristics identified above do not provide a complete description of why cities grow. They only offer partial insight into some of the basic characteristics that correlate with high-wage employment.

What industries have accounted for Louisville's relatively strong growth? Industries that have grown nationally, such as insurance (during the 1980s), physicians' offices, and colleges and universities, also grew rapidly in Louisville. In addition, between 1990 and 2000, employment in the motor vehicle industry added more than 5,000 jobs to the Louisville area. This increase alone accounted for more than 20 percent of all good jobs created during this decade. Very likely, this growth is associated with the operations of the Ford Motor Co., whose plants in Louisville produce trucks and sport utility vehicles. The latter of these two, of course, have experienced tremendous increases in demand over the past decade.⁴²

Table 8A: Rapidly Growing Industries – Memphis ●●●

Good Jobs

Industry	Growth 1980-1990 (%)	Job Increase 1980-1990	Industry	Growth 1990-2000 (%)	Job Increase 1990-2000
Colleges and Universities	28.1	1,518	Security, Commodity Brokerage and Investment	47.4	1,047
Real Estate	40.3	1,798	Engineering, Architectural and Surveying Services	118.1	1,651
Offices of Physicians	46.5	1,257	Offices of Physicians	125.6	4,972
Security, Commodity Brokerage and Investment	97.0	1,087	Computer and Data Processing	145.4	2,333
Air Transportation	289.3	11,064	Electric Light and Power	547.7	1,906

Bad Jobs

Industry	Growth 1980-1990 (%)	Job Increase 1980-1990	Industry	Growth 1990-2000 (%)	Job Increase 1990-2000
Hotels and Motels	26.1	1,111	Eating and Drinking Establishments	17.0	2,495
Eating and Drinking Establishments	38.8	4,102	Department Stores	19.1	1,254
Nursing and Personal Care Facilities	44.7	887	Detective and Protective Services	38.7	949
Social Services	56.2	1,609	Auto Repair Shops	35.2	858
Detective and Protective Services	126.9	1,371	Social Services	81.4	3,637

Memphis

The experience of Memphis was quite similar to that of Louisville, as it gained roughly 135,000 jobs or nearly 51 percent of its 1980 total during this 20-year period. Although not quite as high as Louisville in percentage terms, the 46 percent rate of good-job growth between 1980 and 2000 surpassed that of the nation as a whole, which was 33.9 percent. This growth was driven by expansions in a variety of industries that, again, had shown robust growth throughout the country: physicians’ offices, colleges and universities, and security and commodity brokerage and investment (Table 8A). Memphis also experienced a tremendous amount of growth from a single sector, air transportation, which accounted for more than 45 percent of all good-job creation between 1980 and 1990. The growth of Federal Express was probably the driving mechanism behind this trend.

Based purely on its characteristics, Memphis would seem a decent candidate for better-than-average good-job growth.

Memphis has a relatively well-educated labor force, with 23.4 percent of its workers possessing a bachelor’s degree or higher in 1990 (Table 8B). This compares favorably with the average across all metropolitan areas, which was 21.4 percent in that year. Memphis has also had relatively low rates of union membership and low fractions of its good-jobs employment engaged in manufacturing. What is more, labor costs, measured by average and median wages, were also below the average across all metropolitan areas.

Given these features, one would expect Memphis to have grown somewhat faster than the average during this time period, which is exactly what happened. Recall from before, out of the 206 metropolitan areas considered in this study, the median growth rate during the period 1980 to 2000 was 43.3 percent. Given a growth rate of 46 percent, Memphis ranked 96th in terms of good-job growth, putting it seven places above the median.

Table 8B: Selected Characteristics of Memphis ●●●

	1980	1990
Fraction High School Graduate	0.407	0.349
Fraction Some College or Associate's Degree	0.171	0.293
Fraction Bachelor's Degree	0.182	0.234
Fraction Manufacturing	0.204	0.144
Fraction of Good Jobs in Manufacturing	0.193	0.166
Fraction Finance, Insurance, Real Estate	0.07	0.07
Fraction Business-Repair Services	0.049	0.071
Union Membership Fraction	0.206	0.116
Mean City Wage (\$)	15.55	15.59
Median City Wage (\$)	10.89	11.41
Eating and Drinking Establishments	946	1,274
Movie Theaters	27	11
Live Entertainment Venues	23	21
Employment in Colleges and Universities	5,403	6,921

Table 9A: Rapidly Growing Industries – St. Louis ●●●

Good Jobs

Industry	Growth 1980-1990 (%)	Job Increase 1980-1990	Industry	Growth 1990-2000 (%)	Job Increase 1990-2000
Insurance	26.9	5,126	Colleges and Universities	34.4	5,242
Real Estate	31.2	3826	Security, Commodity Brokerage and Investment	75.4	5,702
Offices of Physicians	59.3	4,049	Offices of Physicians	80.9	8,797
Legal Services	103.9	4,495	Computer and Data Processing	113.3	7,555
Guided Missiles, Space Vehicles and Parts	110.3	5,078	Engineering, Architectural and Surveying Services	138.4	7,051

Bad Jobs

Industry	Growth 1980-1990 (%)	Job Increase 1980-1990	Industry	Growth 1990-2000 (%)	Job Increase 1990-2000
Grocery Stores	19.7	3,462	Department Stores	13.7	2,831
Eating and Drinking Establishments	29.3	9,790	Eating and Drinking Establishments	14.9	6,427
Nursing and Personal Care Facilities	53.2	5,680	Social Services	41.2	7,520
Services to Dwellings and Other Buildings	114.9	3,981	Horticultural Services	47.4	1,673
Social Services	120.5	9,986	Auto Repair Shops	61.3	4,542

St. Louis

Between 1980 and 2000, the St. Louis metropolitan area created more jobs than any of the three just discussed. Total employment in 2000 exceeded that seen in 1980 by nearly 250,000. Yet, in percentage terms, this change only represented a 29 percent increase, putting St. Louis below the nation's growth rate of 37 percent. Focusing just on high-paying jobs, the St. Louis metropolitan area gained nearly 50,000 good jobs during these two decades. This figure is substantially higher than that observed for Little Rock (23,418), Louisville (30,777) and Memphis (27,632). In percentage terms, however, St. Louis had the slowest rate of good-job creation of the four.

What industries accounted for the growth of good jobs in St. Louis? During the 1980s, there were strong increases in insurance, real estate and legal services as well as in the defense sector. In the 1990s, the largest gains were registered by colleges and universities, computer and data processing, and securities and commodity brokerage and investment.

As was true nationally, employment in health care (i.e., offices of physicians) rose substantially in St. Louis in both decades. These trends can be seen in Table 9A. However, in percentage terms, the actual amount of growth in these sectors was below the national average, placing St. Louis 146th out of 206 metropolitan areas in terms of good-job growth between 1980 and 2000.

Some of the reasons for the rather sluggish rate of good-job growth in St. Louis can be seen in Table 9B. Compared with national averages, for example, labor costs and rates of union membership in St. Louis have been high. Moreover, the fraction of good jobs in St. Louis accounted for by the manufacturing sector has been strikingly large. In 1980, nearly 40 percent of all high-paying jobs in the St. Louis metropolitan area were engaged in manufacturing. In 1990, the figure was 31.6 percent. As shown in Table A3 of the Appendix, the average across all metropolitan areas in the United States was 26.2 percent in 1980 and 22.1 percent in 1990.

Table 9B: Selected Characteristics of St. Louis ●●●

	1980	1990
Fraction High School Graduate	0.42	0.363
Fraction Some College or Associate's Degree	0.16	0.284
Fraction Bachelor's Degree	0.18	0.235
Fraction Manufacturing	0.277	0.211
Fraction of Good Jobs in Manufacturing	0.387	0.316
Fraction Finance, Insurance, Real Estate	0.067	0.08
Fraction Business-Repair Services	0.047	0.062
Union Membership Fraction	0.258	0.156
Mean City Wage (\$)	17.10	17.94
Median City Wage (\$)	12.96	12.68
Eating and Drinking Establishments	3,133	4,251
Movie Theaters	84	55
Live Entertainment Venues	91	97
Employment in Colleges and Universities	15,038	21,535

St. Louis does have a relatively well-educated work force, at least when compared with all other metropolitan areas. The fraction of workers in St. Louis with a bachelor's degree was 23.5 percent in 1990 as opposed to 21.4 percent for all metropolitan areas. However, this figure lags behind those of other major metropolitan areas in the country. Consider, for example, the college fractions in the following metropolitan areas: Denver-Boulder, 30.1 percent; Seattle, 27.8 percent; Minneapolis-St. Paul, 29.7 percent; Chicago, 26.8 percent; New York, 30 percent; Houston, 26.2 percent; Atlanta, 30.5 percent; Washington, D.C., 32.6 percent; and Boston, 33.9 percent. Overall, the 1990 average taken across all metropolitan areas with at least 1 million residents, which seems an appropriate reference group for St. Louis, was 26.1 percent. This feature too may have contributed to the comparatively slow growth experienced by St. Louis between 1980 and 2000.

CONCLUSION

The importance of good jobs to community development cannot be understated. Good jobs offer significant economic and social benefits to individuals and their municipalities. It is, therefore, worthwhile to examine what basic features of local areas are associated with the creation of good jobs.

This study has explored the growth of high-paying and low-paying employment across 206 U.S. metropolitan areas between 1980 and 2000. Among the most important

findings is that a highly educated labor force is one of the most successful predictors of good-job growth. The evidence documented in this report indicates that employers in nearly all industries, but particularly in high-pay sectors, have increasingly sought highly educated workers in recent decades. Cities with educated labor forces, therefore, are better able to attract employers with high-pay jobs.

What is more, a broadly skilled labor force offers an additional advantage for continued good-job growth over long run-time horizons. Highly educated workers tend to be more flexible, at least in the sense that they adjust relatively well to economic/industrial restructuring, than less-educated workers.⁴³ Because the future cannot be predicted with any real certainty, it is not possible to say which industries will grow and which ones will deteriorate during the next century. A city that attempts to focus its attention on narrow ranges of industries and worker skills risks economic stagnation in the event that those industries decline. A broad set of skills held by a highly-educated workforce, by contrast, offers greater assurance of continued economic growth. ●●●

Appendix ●●●

Data Sources

The primary source of industry-level data used in this study is the decennial U.S. Census of Population and Housing for 1980, 1990 and 2000.⁴⁴ There are numerous data sources that could be used, including county-level data available from the Census Bureau's County Business Patterns files or various series reported by the Bureau of Labor Statistics.⁴⁵ The Census of Population and Housing offers the following two advantages. First, the census industrial classification system allows me to construct a consistent set of industry definitions across all three census years. Other data sets switch from the Standard Industrial Classification (SIC) scheme to the North American Industry Classification System (NAICS) at some point between 1990 and 2000.⁴⁶ Because the correspondence between the SIC and NAICS is inexact, creating a consistent set of detailed industry employment figures over a reasonably long period of time, such as 1980 to 2000, is difficult with these data files. Second, the decennial U.S. census also identifies many of the characteristics of the workers in these industries, such as age, race, gender and education. This allows for a rich analysis of job growth. Not only do these data identify the types of industries that grow or decline, they also identify some basic characteristics of the workers employed in them. Alternatives to the individual-level data provided by the decennial U.S. census do not offer as extensive an array of detail.

Because the industry codes are not exactly the same in all three years, a few alterations (i.e., aggregations) have been made according to the inter-year crosswalks provided by the Census Bureau.⁴⁷ Doing so helps to maintain a consistent set of jobs from one year to the next.

An hourly wage is constructed for each individual by dividing annual wage and salary income by the product of the number of weeks worked in the past year and usual hours worked per week. Where annual wage and salary income is topcoded (i.e., individuals earning more than \$75,000 in 1980, \$140,000 in 1990, and \$175,000 in 2000 are assigned these values instead of their actual earnings), their income is imputed as 1.5 times the topcode. This procedure, which is designed to estimate the average of the upper tail of the income distribution, is common in studies of labor earnings that use topcoded data.⁴⁸ Because the calculation of hourly wages sometimes produces implausibly low values, this study eliminates all individuals whose calculated hourly wage falls below \$1. All hourly wages are converted to real terms (year 2000 dollars) using the Personal Consumption Chain Type Price Index of the National Income and Product Accounts available at <http://research.stlouisfed.org/fred2/series/PCECTPI/21>.

The set of industries are primarily nonfarm, private industries. Since I am interested in studying the labor market outcomes of workers during their "prime" working years, I limited the sample to workers between the ages of 18 and 65 who were not enrolled in school. In spite of these limitations, the implied total employment counts generated from the final samples are 80,480,753 in 1980; 93,366,098 in 1990; and 110,239,147 in 2000. These figures represent

approximately 80 percent of the total private employment reported by the U.S. Bureau of Economic Analysis, including all agriculture.⁴⁹

Data for the calculation of median house values and monthly rents on residential structures come from these same census samples. Crime data are originally derived from the FBI's Unified Crime Reports and are reported on the USA Counties 1998 on CD-ROM produced by the U.S. Census Bureau. Data on the numbers of zoos, museums, hospitals, movie theaters, botanical gardens, elementary schools, live entertainment venues, eating and drinking establishments and colleges and universities (including employment) are taken from County Business Patterns for the years 1980 and 1990. Temperature data are taken from the County and City Data Book, 2000, which reports data collected by the U.S. National Oceanic and Atmospheric Administration.

Composition of U.S. Regions

West: Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Utah, Colorado, Arizona, New Mexico, Alaska and Hawaii

Midwest: North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Michigan, Indiana and Ohio

Northeast: Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania and New Jersey

South: Texas, Oklahoma, Arkansas, Louisiana, Kentucky, Tennessee, Mississippi, Alabama, West Virginia, Delaware, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia and Florida

Table A1: Good Jobs ●●●

Overall Ranking	Industry	Average Hourly Wage (\$)
1	Security, Commodity Brokerage and Investment Companies	30.93
2	Business Management and Consulting Services	27.00
3	Metal Mining	26.14
4	Petroleum Refining	25.91
5	Guided Missiles, Space Vehicles and Parts	25.86
6	Legal Services	24.85
7	Railroads	24.79
8	Air Transportation	24.72
9	Theaters and Motion Pictures	24.58
10	Pipelines (except natural gas)	24.43
11	Industrial and Misc. Chemicals	24.12
12	Electronic Computing Equipment	24.09
13	Drugs	23.99
14	Crude Petroleum and Natural Gas Extraction	23.86
15	Engineering, Architectural and Surveying Services	23.80
16	Computer and Data Processing Services	23.55
17	Offices of Physicians	23.44
18	Commercial Research, Development and Testing Labs	23.38
19	Electric and Gas, and other combinations	23.16
20	Water Transportation	23.12
21	Electric Light and Power	22.85
22	Advertising	22.28
23	Aircraft and Parts	22.12
24	Offices of Dentists	21.75
25	Blast Furnaces, Steelworks, Rolling and Finishing Mills	21.58
26	Tobacco	21.55
27	Telegraph and Misc. Communication Services	21.52
28	Telephone	21.45
29	Coal Mining	21.42
30	Office and Accounting Machines	21.33
31	Radio, TV and Communication Equipment	21.24
32	Colleges and Universities	21.18
33	Drugs, Chemicals and Allied Products Trade	21.10
34	Gas and Steam Supply Systems	20.96
35	Motor Vehicles and Equipment	20.92
36	Metals and Minerals Trade (except petroleum)	20.81
37	Real Estate	20.74
38	Paper and Paper Products Trade	20.68
39	Primary Aluminum Industries	20.68

Overall Ranking	Industry	Average Hourly Wage (\$)
40	Pulp, Paper and Paperboard Mills	20.65
41	Radio and Television Broadcasting	20.54
42	Engines and Turbines	20.52
43	Offices of Health Practitioners (not classified elsewhere)	20.40
44	Petroleum Products Trade	20.36
45	Fishing, Hunting, Trapping	20.22
46	Tires and Inner Tubes	20.21
47	Insurance	20.03
48	Soaps and Cosmetics	19.99
49	Machinery, Equipment and Supplies Trade	19.94

Table A2: Bad Jobs ●●●

Overall Ranking	Industry	Average Hourly Wage (\$)
148	Pottery and Related Products	14.69
149	Toys, Amusement and Sporting Goods	14.60
150	Libraries	14.54
151	Detective and Protective Services	14.49
152	Agricultural Services (except horticultural)	14.45
153	Misc. Retail Stores	14.41
154	Automotive Repair Shops	14.30
155	Misc. Textile Mill Products	14.16
156	Misc. Wood Products	14.07
157	Dyeing, Finishing Textiles (except wool and knit goods)	13.97
158	Furniture and Fixtures	13.94
159	Liquor Stores	13.89
160	Floor Coverings (except hard surface)	13.84
161	Vending Machine Operators	13.70
162	Religious Organizations	13.67
163	Meat Products	13.53
164	Leather Products (except footwear)	13.53
165	Sporting Goods, Bicycles and Hobby Stores	13.45
166	Auto and Home Supply Stores	13.40
167	Food Stores not elsewhere classified	13.37
168	Yarn, Thread and Fabric Mills	13.37
169	Retail Nurseries and Garden Stores	13.28
170	Horticultural Services	13.26
171	Apparel and Accessory Stores, except shoes	13.20
172	Services to Dwellings and Other Buildings	13.16
173	Shoe Stores	13.13
174	Taxicab Services	13.09
175	Misc. Fabricated Textile Products	13.00
176	Hardware Stores	12.86
177	Grocery Stores	12.84
178	Shoe Repair Shops	12.74
179	Misc. General Merchandise Stores	12.74
180	Social Services	12.63
181	Retail Bakeries	12.61
182	Footwear (except rubber and plastic)	12.57
183	Laundry, Cleaning and Garment Services	12.50
184	Nursing and Personal Care Facilities	12.41
185	Department Stores	12.34
186	Hotels and Motels	12.18

Overall Ranking	Industry	Average Hourly Wage (\$)
187	Sewing, Needlework and Piece Goods Stores	12.14
188	Lodging Places (except hotels and motels)	12.10
189	Knitting Mills	12.07
190	Gasoline Service Stations	12.00
191	Barber Shops	11.90
192	Bowling Alleys, Billiard and Pool Parlors	11.86
193	Apparel and Accessories (except knit)	11.72
194	Beauty Shops	11.38
195	Retail Florists	11.30
196	Eating and Drinking Places	10.85

Table A3: Average of Selected Characteristics Across All Metropolitan Areas ●●●

	1980	1990
Fraction High School Graduate	0.426	0.376
Fraction Some College or Associate's Degree	0.171	0.277
Fraction Bachelor's Degree	0.175	0.214
Fraction Manufacturing	0.253	0.197
Fraction of Good Jobs in Manufacturing	0.262	0.221
Fraction Finance, Insurance, Real Estate	0.066	0.07
Fraction Business-Repair Services	0.041	0.057
Union Membership Fraction	0.207	0.144
Mean City Wage (\$)	15.71	16.11
Median City Wage (\$)	11.54	11.39
Eating and Drinking Establishments	813.2	1,175.2
Movie Theaters	24.9	19.1
Live Entertainment Venues	20.3	33.1
Employment in Colleges and Universities	4,932.9	6,295.4

ENDNOTES

- 1 Results from recent opinion polls are summarized at www.pollingreport.com.
- 2 Information about the construction of industry and occupation codes is available from the U.S. Census Bureau at www.census.gov/hhes/www/ioindex/ioindex.html.
- 3 Census industry codes are summarized at www.ipums.umn.edu.
- 4 The persistence of an industry's ranking over time can be summarized by a Spearman rank correlation, which quantifies the association between an industry's rank in one year with its rank in another. See <http://mathworld.wolfram.com/SpearmanRankCorrelationCoefficient.html> for a definition. The Spearman correlation between an industry's wage rank between adjacent Census years is, roughly, 0.9 in these data.
- 5 Instead of using mean wages, one could also use median wages (i.e., the 50th percentile) to describe the pay received by a typical worker in an industry. Doing so generates different figures from those reported in Table 1, but does not alter the ranking of industries much. The Spearman correlation between the ranking based on mean wages and the ranking based on median wages exceeds 0.9.
- 6 David Card. "The Causal Effect of Education on Earnings." In *Handbook of Labor Economics*, Vol. 3, O. Ashenfelter and D. Card eds. Amsterdam: Elsevier 1999.
- 7 These are the estimated slopes from regressions of each characteristic on a constant and average hourly wage. All slopes are estimated by ordinary least squares.
- 8 See Kate Antonovics and Robert Town. "Are All the Good Men Married? Uncovering the Sources of the Marital Wage Premium." *American Economic Review Papers and Proceedings*, May 2004. pp. 317-321.
- 9 Using average wages calculated across all three years ensures that a constant ranking is used in the employment growth analysis. That is, the actual industries that comprise the top and bottom 25 percent of jobs do not change from year to year. So, the growth of good jobs between 1980 and 2000 is given by the growth of 49 specific industries. Good and bad jobs are identified in Tables A1 and A2 of the Appendix.
- 10 One could also choose other groupings, such as the top half and bottom half or the top 10 percent (decile) and bottom 10 percent, when defining good and bad jobs. The former scheme, however, seems too broad (98 jobs per category), whereas the latter is overly narrow (roughly, 20 jobs per category). Quartiles provide a useful medium between these two.
- 11 Metropolitan area definitions are set by the Office of Management and Budget based on the concept of a unified economic area. For a discussion of the relevant issues, see www.census.gov/population/www/estimates/metrodef.html.
- 12 The correlation between good-job growth and total employment growth is 0.9. The correlation between good-job growth and bad-job growth is 0.72.
- 13 See a list of the fastest growing metropolitan areas in terms of total population at www.census.gov/Press-Release/www/1999/cb99-240.html.
- 14 Because the census data used in this study do not permit for the construction of metropolitan areas with consistent geographic definitions, the effects of changing city borders cannot be eliminated. Nonetheless, these effects do not have a strong impact on the results. Similar results to those presented in this report were found when the estimation was repeated, dropping all small metropolitan areas (i.e., those with fewer than 150,000 in total employment), whose growth rates may be strongly affected by changing borders.
- 15 Formally, all of the results from this section are based upon the estimation of the following statistical model:

$$\Delta y_{c,t} = \alpha + \delta_t + \beta_1 (GJGrowth_{c,t}) + \beta_2 (BJGrowth_{c,t}) + \epsilon_{c,t}$$
 where $\Delta y_{c,t}$ is the change in the characteristic of interest (e.g., wages, property values, crime) for city c over decade t (1980-1990 or 1990-2000); α is an overall constant; δ_t is a decade-specific constant; $GJGrowth_{c,t}$ ($BJGrowth_{c,t}$) is the rate of good (bad) job growth for city c over decade t ; and $\epsilon_{c,t}$ is a residual term. Results referring to the association of some characteristic with overall employment growth are based upon

$$\Delta y_{c,t} = \alpha + \delta_t + \beta (Growth_{c,t}) + \epsilon_{c,t}$$
 where $Growth_{c,t}$ is the rate of total employment growth.
- 16 The standard deviation of the 10-year growth rates of overall jobs, good jobs and bad jobs are all approximately 0.2 (or roughly 20 percent). The 10 percent benchmark used throughout the text can be interpreted as approximately one half of a standard deviation. Recall, for a normal distribution, approximately 95 percent of all observations lie within 2 standard deviations of the mean, so one half of a standard deviation is not a large change, given the amount of variation in the distribution of growth rates.
- 17 Joseph Tracy, Henry Schneider, and Sewin Chan. "Are Stocks Overtaking Real Estate in Household Portfolios?" Federal Reserve Bank of New York. *Current Issues in Economics and Finance*, Vol. 5, No. 5, April 1999.
- 18 Contract rents may, for example, include fuel, utilities and other services. For a more detailed description of this variable, consult the documentation at www.ipums.umn.edu.
- 19 For a description of what types of units are counted as "houses" in each year, see www.ipums.umn.edu.
- 20 Gary Becker. "Crime and Punishment: An Economic Approach." *Journal of Political Economy*. Vol. 76, No. 2, pp. 169-217, 1968.
- 21 Stephen Raphael and Rudolph Winter-Ebmer. "Identifying the Effect of Unemployment on Crime." *Journal of Law and Economics*. Vol. 44, No. 1, pp. 259-284, 2001.
- 22 Steven Levitt. "Understanding Why Crime Fell in the 1990s: Four Factors that Explain the Decline and Six that Do Not." *Journal of Economic Perspectives*. Vol. 18, No. 1, pp. 163-190, Winter 2004.
- 23 The FBI's Crime Index includes murder and non-negligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft and motor vehicle theft. See www.fbi.gov/ucr/ucr.htm.
- 24 The first major study of this issue is James Rauch's "Productivity Gains from Geographic Concentration of Human Capital: Evidence from the Cities." *Journal of Urban Economics*. Vol. 34, No. 1, pp. 380-400, 1993.
- 25 Enrico Moretti. "Estimating the Social Return to Higher Education: Evidence from Longitudinal and Repeated Cross-Sectional Data." *Journal of Econometrics*. Vol. 121, No. 1-2, pp. 175-212, 2004.
- 26 Thomas Dee. "Are There Civic Returns to Education?" *Journal of Public Economics*. Vol. 88, No. 9-10, pp. 1697-1720, 2004.
- 27 Lance Lochner and Enrico Moretti. "The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports." *American Economic Review*. Vol. 94, No. 1, pp. 155-189.
- 28 See, for example, Edward Glaeser, Jose Scheinkman, and Andrei Shleifer. "Economic Growth in a Cross Section of Cities." *Journal of Monetary Economics*. Vol. 36, pp. 117-143, 1995.
- 29 Formally, these results are based upon the following statistical model:

$$GJGrowth_{c,t} = \alpha + \delta_t + \gamma R_c + \beta y_{c,t} + \epsilon_{c,t}$$
 where $GJGrowth_{c,t}$ is the rate of good-job growth in city c during decade t ; α is an overall constant; δ_t is an intercept for decade t ; R_c is a region indicator variable (West, Midwest, Northeast, South) for city c ; $y_{c,t}$ is some characteristic of interest (e.g., education) of city c at the beginning of decade t ; and $\epsilon_{c,t}$ is a residual term. The region indicators are designed to capture the fact that, in the past several decades, workers and employers in the U.S. have moved south and west. Results concerning bad job growth or total employment growth are based on the

- same model where one of these two variables replaces $GJGrowth_{ct}$.
- 30 Griff Witte. "As Income Gap Widens, Uncertainty Spreads." *The Washington Post*. Monday, Sept. 20, 2004, p. A01.
 - 31 Author's calculations from data available at www.nber.org.
 - 32 David Autor, Frank Levy, and Richard Murnane. "The Skill Content of Recent Technological Change: An Empirical Exploration." *Quarterly Journal of Economics*. Vol. 118, No. 4, pp. 1279-1333, 2003.
 - 33 Philip Moss and Chris Tilly. *Stories Employers Tell: Race, Skill, and Hiring in America*. New York: Russell Sage Foundation. p. 47. 2001.
 - 34 Congressional Budget Office's Economic and Budget Issue Brief, *What Accounts for the Decline in Manufacturing Employment?* Feb. 18, 2004. See www.cbo.gov.
 - 35 See www.bls.gov/news.release/disp.nr0.htm.
 - 36 See Richard Freeman and James Medoff. *What Do Unions Do?* New York: Basic Books. 1984.
 - 37 The state-level composition of U.S. regions is provided in the Appendix.
 - 38 See, for example, J. Bishop, J. Formby, and P. Thistle, "Convergence and Divergence of Regional Income Distributions and Welfare." *Review of Economics and Statistics*. Vol. 76, pp. 228-235, 1994.
 - 39 E. Glaeser, J. Kolko and A. Saiz. "Consumer City." *Journal of Economic Geography*. Vol. 1, pp. 27-50, 2001.
 - 40 Associations between job growth and the numbers of each entertainment outlet per capita were also explored. Similar to the results reported here, these correlations were largely positive, although none were important statistically.
 - 41 For a description of each of these categories, see www.census.gov/govs/www/classexpdef.html.
 - 42 General Motors reports that sport utility vehicles accounted for 10 percent of all new vehicle sales in the U.S. in 1994. By 2000, this figure had doubled to 20 percent. See www.gm.com/automotive/vehicle_shopping/suv_facts/200_choice/3_market_share.html.
 - 43 See, for example, Lori Kletzer. "Job Displacement," *Journal of Economic Perspectives*. Vol. 12, No. 1, pp. 115-136, 1998.
 - 44 Specifically, the 5 percent public use samples, available at www.ipums.umn.edu, are used in the analysis.
 - 45 The BLS, for example, produces the Current Employment Statistics and Quarterly Census of Employment and Wages. Both are available at www.bls.gov.
 - 46 A description of the correspondence between the SIC and NAICS codes can be found at www.census.gov/epcd/www/naicstab.htm.
 - 47 These are summarized by Barry Hirsch at his web site: www.trinity.edu/bhirsch. For the most part, changes to industry codes represent the division of industries into smaller groupings to reflect the growing diversity of production. There are also code changes to reflect the creation of new industry groupings. These new industries are either aggregated into older industry groups (where appropriate) or removed from the sample.
 - 48 See, for example, David Card and John DiNardo. "Skill-Biased Technological Change and Rising Wage Inequality: Some Problems and Puzzles." *Journal of Labor Economics*. Vol. 20, No. 4, pp. 733-783, 2002.
 - 49 Other than the fact that the Census data used in this study are limited to workers 18 to 65 and do not include most agricultural workers, part of the discrepancy between the Bureau of Economic Analysis totals and those here is likely due to multiple job holders. The Census data counts workers whereas the Bureau of Economic Analysis data counts jobs. If workers hold more than one job, the total number of jobs in the economy will exceed the total number of workers. The national data are available at www.bea.doc.gov/bea/regional/reis/#download.

Table 1: Jobs in the U.S.: Average Hourly Pay and Total Employment ●●●

2000 Rank	Industry	Average Hourly Wage (\$)	Employment
1	Metal Mining	38.61	22,813
2	Security, Commodity Brokerage and Investment Companies	36.26	991,548
3	Business Management and Consulting Services	32.83	825,480
4	Railroads	29.73	291,944
5	Computer and Data Processing Services	29.70	1,385,009
6	Guided Missiles, Space Vehicles and Parts	29.38	230,628
7	Petroleum Refining	29.35	137,550
8	Crude Petroleum and Natural Gas Extraction	29.14	66,631
9	Legal Services	29.02	1,235,193
10	Electronic Computing Equipment	28.34	423,429
11	Pipelines (except natural gas)	28.01	31,589
12	Industrial and Misc. Chemicals	28.01	497,970
13	Drugs	27.93	359,777
14	Office and Accounting Machines	27.21	155,938
15	Commercial Research, Development and Testing Labs	27.15	422,654
16	Radio, TV and Communication Equipment	26.04	272,928
17	Engineering, Architectural and Surveying Services	26.04	1,112,319
18	Electric Light and Power	25.67	668,099
19	Air Transportation	25.64	675,771
20	Tobacco	25.28	42,147
21	Telegraph and Misc. Communication Services	25.19	400,374
22	Drugs, Chemicals and Allied Products Trade	25.13	204,716
23	Aircraft and Parts	25.00	450,402
24	Offices of Dentists	24.99	607,137
25	Electric and Gas, and other combinations	24.87	45,637
26	Advertising	24.85	504,543
27	Offices of Physicians	24.43	2,048,841
28	Scientific and Controlling Instruments	24.12	249,965
29	Telephone	24.12	945,988
30	Gas and Steam Supply Systems	23.57	140,075
31	Theaters and Motion Pictures	23.30	317,695
32	Real Estate	23.28	1,729,038
33	Misc. Personal Services	23.22	203,135
34	Radio and Television Broadcasting	22.97	570,649
35	Offices of Health Practitioners (not classified elsewhere)	22.95	191,720
36	Insurance	22.86	2,353,616
37	Water Transportation	22.77	55,745
38	Colleges and Universities	22.58	2,152,188
39	Plastics, Synthetics and Resins	22.43	61,603

2000 Rank	Industry	Average Hourly Wage (\$)	Employment
40	Household Appliances, TV and Radio Stores	22.40	886,691
41	Pulp, Paper and Paperboard Mills	22.39	294,720
42	Credit Agencies (not classified elsewhere)	22.36	831,051
43	Engines and Turbines	22.25	100,453
44	Electrical Machinery, Equipment and Supplies	22.03	1,442,769
45	Blast Furnaces, Steelworks, Rolling and Finishing Mills	21.87	353,858
46	Electrical Goods Trade	21.82	380,353
47	Accounting, Auditing and Bookkeeping Services	21.72	727,637
48	Apparel, Fabrics and Notions Trade	21.69	127,941
49	Machinery, Equipment and Supplies Trade	21.64	943,228
50	Construction and Material Handling Machines	21.50	131,518
51	Soaps and Cosmetics	21.40	126,,311
52	Coal Mining	21.37	85,045
53	Misc. Wholesale Trade, Durable Goods	21.34	209,279
54	Metals and Minerals Trade (except petroleum)	21.32	91,720
55	Agricultural Chemicals	21.18	35,067
56	Beverage Industries	21.17	184,992
57	Hospitals	21.15	5,150,542
58	Motor Vehicles and Equipment	21.03	1,548,212
59	Optical and Health Services and Supplies	20.94	442,841
60	Petroleum Products Trade	20.80	167,147
61	Lumber and Construction Materials Trade	20.77	192,931
62	Misc. Petroleum and Coal Products	20.74	34,183
63	Educational Services (not classified elsewhere)	20.70	200,585
64	Tires and Inner Tubes	20.67	106,667
65	Banking	20.62	1,815,943
66	Offices of Chiropractors	20.42	82,473
67	Paints, Varnishes and Related Products	20.31	76,581
68	Paper and Paper Products Trade	20.31	121,536
69	Furniture and Home Furnishings Trade	20.24	102,930
70	Drug Stores	20.21	574,009
71	Ordnance	20.19	31,800
72	Nonmetallic Mining and Quarrying (except fuel)	20.17	130,171
73	Printing and Publishing (except newspapers)	20.04	1,266,249
74	Business, Trade and Vocational Schools	20.01	111,532
75	Services Incidental to Transportation	19.99	904,031
76	Elementary and Secondary Schools	19.93	7,453,099
77	Forestry	19.79	41,474
78	Primary Aluminum Industries	19.71	106,948
79	Business Services (not classified elsewhere)	19.66	1,356,461

Table 1 (continued from p. 35)

2000 Rank	Industry	Average Hourly Wage (\$)	Employment
80	Metalworking Machinery	19.50	241,843
81	Fishing, Hunting, Trapping	19.45	41,831
82	Machinery (except electrical)	19.41	669,499
83	Offices of Optometrists	19.27	74,230
84	Motor Vehicle Dealers	19.10	1,147,240
85	Water Supply and Irrigation	19.09	220,765
86	Electrical Repair Shops	19.02	155,165
87	Funeral Services and Crematories	18.98	145,353
88	Grain Mill Products	18.86	119,974
89	Misc. Paper and Pulp Products	18.81	157,141
90	Alcoholic Beverages Trade	18.79	131,019
91	Hardware, Plumbing and Heating Supplies Trade	18.79	183,784
92	Newspaper Publishing and Printing	18.79	474,782
93	Mail Order Houses	18.77	278,207
94	Membership Organizations	18.77	931,743
95	Other Primary Metal Industries	18.65	75,174
96	Construction	18.55	8,285,922
97	Bus Service and Urban Transit	18.46	505,027
98	Farm Machinery and Equipment	18.32	105,902
99	Fabricated Structural Metal Products	18.27	452,929
100	Ship and Boat Building and Repairing	18.27	195,664
101	Paperboard containers and boxes	18.22	171,325
102	Misc. Fabricated Metal Products	18.16	484,659
103	Sanitary Services	18.09	432,928
104	Misc. Food Preparation	17.98	170,524
105	Cement, Concrete, Gypsum and Plaster Products	17.94	184,162
106	Glass and Glass Products	17.90	179,188
107	Misc. Nonmetallic Mineral and Stone Products	17.89	86,834
108	Metal Forgings and Stampings	17.87	131,952
109	Railroad Locomotives and Equipment	17.84	40,317
110	Health Services (not classified elsewhere)	17.82	1,275,561
111	Sugar and Confectionery Products	17.80	95,336
112	Museums, Art Galleries and Zoos	17.69	157,320
113	Misc. Entertainment and Recreation Services	17.65	1,737,514
114	Cycles and Misc. Transportation Equipment	17.62	38,111
115	Screw Machine Products	17.53	413,436
116	Misc. Vehicle Dealers	17.52	139,497
117	Cutlery, Hand Tools and Other Hardware	17.49	75,006
118	Iron and Steel Foundries	17.48	196,439
119	Trucking Services	17.37	2,066,563

2000 Rank	Industry	Average Hourly Wage (\$)	Employment
120	Structural Clay Products	17.36	44,373
121	Groceries and Related Products Trade	17.24	877,752
122	Motor Vehicles and Equipment Trade	17.17	261,979
123	Misc. Manufacturing	17.07	454,405
124	Household Appliances	17.07	125,957
125	Misc. Plastics Products	17.00	690,183
126	Farm Supplies Trade	16.98	83,717
127	Libraries	16.85	208,219
128	Toys, Amusement and Sporting Goods	16.83	132,209
129	Scrap and Waste Materials Trade	16.80	109,505
130	Jewelry Stores	16.70	160,228
131	Dairy Products	16.59	114,639
132	Canned and Preserved Fruits and Vegetables	16.57	180,882
133	Furniture and Home Furnishings Stores	16.49	568,727
134	Fuel and Ice Dealers	16.48	65,398
135	Savings and Loan Associations	16.46	201,567
136	Other Rubber Products	16.41	113,609
137	Agricultural Services (except horticultural)	16.35	271,326
138	Misc. Wholesale Trade, Nondurable Goods	16.23	212,359
139	Misc. Repair Shops	16.21	295,179
140	Wood Buildings and Mobile Homes	16.14	90,731
141	Book and Stationery Stores	16.12	297,725
142	Personnel Supply Services	16.11	922,969
143	Bakery Products	15.99	166,456
144	Lumber and Building Material Retailing	15.91	759,068
145	Automotive Services (except repair)	15.87	285,243
146	Farm Products - Raw Materials Trade	15.83	43,323
147	Logging	15.77	109,654
148	Furniture and Fixtures	15.69	697,898
149	Footwear (except rubber and plastic)	15.67	43,165
150	Dyeing and Finishing Textiles (except wool and knit goods)	15.64	82,554
151	Pottery and Related Products	15.63	42,596
152	Detective and Protective Services	15.53	513,212
153	Floor Coverings (except hard surface)	15.52	79,364
154	Religious Organizations	15.41	978,268
155	Automotive Repair Shops	15.38	1,166,303
156	Warehousing and Storage	15.29	295,200
157	Sawmills, Planing Mills and Millwork	15.27	218,123
158	Sporting Goods, Bicycles and Hobby Stores	15.25	279,198
159	Liquor Stores	15.21	92,130

Table 1 (continued from p. 37)

2000 Rank	Industry	Average Hourly Wage (\$)	Employment
160	Misc. Retail Stores	15.02	896,100
161	Direct-Selling Establishments	15.02	154,692
162	Leather Products (except footwear)	14.98	44,370
163	Shoe Repair Shops	14.98	6,432
164	Food Stores (not classified elsewhere)	14.97	171,508
165	Misc. Wood Products	14.97	270,858
166	Retail Nurseries and Garden Stores	14.94	185,614
167	Apparel and Accessory Stores (except shoes)	14.88	523,104
168	Shoe Stores	14.71	104,798
169	Auto and Home Supply Stores	14.70	406,536
170	Nursing and Personal Care Facilities	14.63	1,624,081
171	Yarn, Thread and Fabric Mills	14.52	272,018
172	Misc. Textile Mill Products	14.52	208,137
173	Services to Dwellings and Other Buildings	14.48	805,235
174	Retail Bakeries	14.38	136,411
175	Sewing, Needlework and Piece Goods Stores	14.33	49,333
176	Taxicab Services	14.17	155,729
177	Meat Products	13.87	470,073
178	Hotels and Motels	13.81	1,351,461
179	Department Stores	13.58	2,075,104
180	Misc. Fabricated Textile Products	13.57	72,484
181	Lodging Places (except hotels and motels)	13.55	61,707
182	Hardware Stores	13.54	166,755
183	Vending Machine Operators	13.53	54,149
184	Horticultural Services	13.48	652,238
185	Social Services	13.41	2,421,027
186	Apparel and Accessories (except knit)	13.39	436,649
187	Grocery Stores	13.16	2,420,850
188	Beauty Shops	13.09	631,373
189	Knitting Mills	13.07	87,228
190	Misc. General Merchandise Stores	12.94	120,955
191	Laundry, Cleaning and Garment Services	12.90	352,708
192	Barber Shops	12.73	44,509
193	Retail Florists	12.57	152,538
194	Gasoline Service Stations	12.52	392,666
195	Eating and Drinking Places	12.06	5,151,237
196	Bowling Alleys, Billiard and Pool Parlors	12.02	49,759

