Missouri State Census Data Center
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Missouri Outlook
1997

A Short Term Forecast of Employment and Earnings in

Missouri Regions, Cities, and Labor Market Areas

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INTRODUCTION

The Missouri forecasts contained in the following pages result from the application of time series estimation techniques to data from two sources. The data from both sources are the result of cooperation between the Missouri Division of Employment Security and the Federal Bureau of Labor Statistics (BLS). The first source is referred to by the BLS as Local Area (LA) estimates. The basic unit of analysis for this data source is the non-military, non-institutionalized *individual.* Estimates from this source are based on and benchmarked to the Current Population Survey (CPS), which is a survey of households. Henceforth we will refer to data from this source as LA data. The second source is referred to by the BLS as State and Area (SA) estimates. The basic unit of analysis for this data source is the ***non-farm payroll job.*** Estimates from this source are based on the Current Employment Statistics (CES) survey. Henceforth we will refer to data from this source as SA data.

These two data sources measure different phenomena and are not comparable. The differences are summarized by the Bureau of Labor Statistics:

> The payroll survey (SA data) excludes unpaid family workers, domestic workers in private homes, proprietors, and other self-employed persons, all of whom are covered by the household survey. Moreover, the payroll survey counts a person who is employed by two or more establishments at each place of employment, but the household survey (LA data) counts a person only once, and classifies him or her according to the major activity . . .[1]

For the state of Missouri, LA data consists of estimates for persons employed, persons unemployed, the labor force and the unemployment rate, which meet the BLS publication criterion, for the following geographic coverages: State, County, City over 25,000, and Labor Market Area.[2] In this volume we present forecasts for the LA series on persons employed.

For the state of Missouri, SA data consists of estimates for total payroll jobs, non-supervisory payroll jobs, hours and earnings of non-supervisory payroll jobs, by Standard Industrial Classification, which meet the BLS publication criterion, for the following geographic coverages: State, Metro Areas of Kansas City, St. Louis, and Springfield. In this volume we present forecasts for the SA series on total payroll jobs in twelve sectors and weekly earnings of non-supervisory payroll jobs in six sectors.

The text is organized regionally. The first section deals with the state as a whole. This is followed by eight sections, each devoted to an extension region. Within each section there is a separate subsection for Labor Market Areas (LMA), cities over 25,000 and metropolitan areas where applicable. Map 1 summarizes the geographic coverages in this volume.

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[1] *BLS HANDBOOK OF METHODS,* Bulletin 2414 (Bureau of Labor Statistics, 1992), p. 22

[2] This includes MSAs and non-MSA's. A Labor Market Area that is not a MSA is "an economically integrated geographic area within which individuals can reside and find employment within a reasonable distance or can readily change employment without changing their place of residence."

Map 1: Forecasting Geographies for Missouri Outlook

Map Legend

- Counties (not forecast individually)
- KC/St.Louis MSA/LMAs (MO parts)
- KC/St.Louis MSA/LMAs (KS/IL parts) *
- Other Labor Market Areas (LMAs)
- Springfield MSA
- Cities
- Regional Boundaries

Northwest (NW) Region

Northeast (NE) Region

Central (CE) Region

East Central (EC) Region

West Central (WC) Region

South Central (SC) Region

Southwest (SW) Region

Southeast (SE) Region
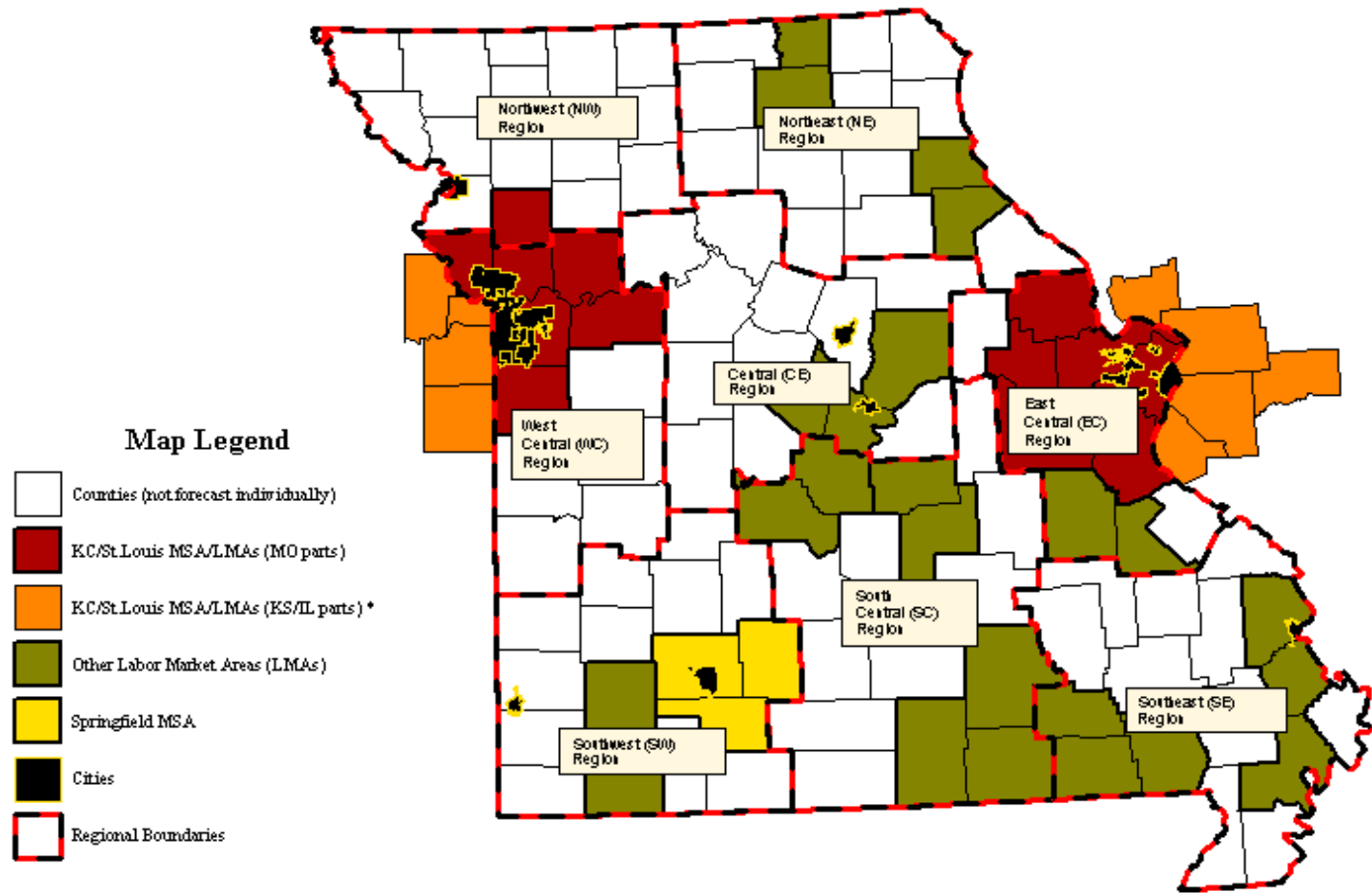
* These areas are included in sectoral forecasts for KC/St.Louis MSAs.

FORECASTING METHODOLOGY

For each of the 110 time series, the Winter's Additive Method[3] is used to estimate level, trend and seasonal smoothing coefficients. These coefficients are then used to generate 14 months of forecast data for each time series. The choice of the Winters Additive Method over other methods was made based on the performance of that method relative to other methods.

The forecasting module of the SAS statistical software package provides an expert system in time series forecasting methods within which thirty-two different time series models can be evaluated automatically, and a model chosen based upon a user specified criterion. The criterion we use is minimum root mean squared error (RMSE). By this criterion the Winter's Additive Method performed best for over 70% of the time series. This is probably due to the fact that the LA data is itself the product of a regression model which includes a trend and seasonal terms. For consistency, we use the same method for all time series.[4]

All LA time series begin in January, 1990, and end in April, 1997. Most SA time series for jobs begin in January of 1972. The exception is the state and local government jobs series which begin in 1988 for all geographies. All SA time series for jobs end in April, 1997. The SA time series for earnings of non-supervisory payroll workers in manufacturing jobs (both durable manufacturing and non-durable manufacturing) begin in January of 1972. The SA time series for earnings of non-supervisory payroll workers in jobs in other sectors begin in January of 1990. The SA series for earnings ends in May of 1997.

The forecasts are therefore based on sample sizes of either 88 monthly observations (all LA series and SA earnings in non-manufacturing jobs), 112 monthly observations (SA jobs in state, or local government), or 304 monthly observations (SA non-government jobs and earnings in manufacturing jobs). The first two sample sizes are on the small side, and results should therefore be viewed with some skepticism.

Each forecast is documented with a diagram of the relevant time series. The diagram contains both historical and forecast data. Figure 1 is a representation of the typical diagram which accompanies each forecast. We use this figure to assist the reader in the interpretation of the forecasts. To the left of the vertical dashed line, there are two sets of symbols. Actual data is portrayed with an asterisk and modeled data is portrayed by a cross. Modeled data means the value for the variable which is predicted by our model. In most cases modeled data will be close to actual data. The modeled data are connected by a line. The actual forecast is to the right of the vertical dashed line. There are three lines here. The middle line is the value for the variable which our model predicts. The other two lines form a 95% forecast interval for the variable. By following the procedures that we have followed, the interval we construct will contain the actual value of the variable 95% of the time.[5]

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[3] See Stephen A. DeLurgio, *Forecasting Principles and Applications,* (Irwin/McGraw Hill, 1998), pp. 224-231.

[4] There were no cases in which the Winter's Additive Method was not among the lowest three RMSE.

[5] The 95% intervals in the diagrams are for monthly data. A similar interval for annual data would be smaller in percentage terms, because the month to month variability is eliminated when forecasting annually.

Figure 1. Sample Forecast Diagram

Forecast for [SAS Variable Name]
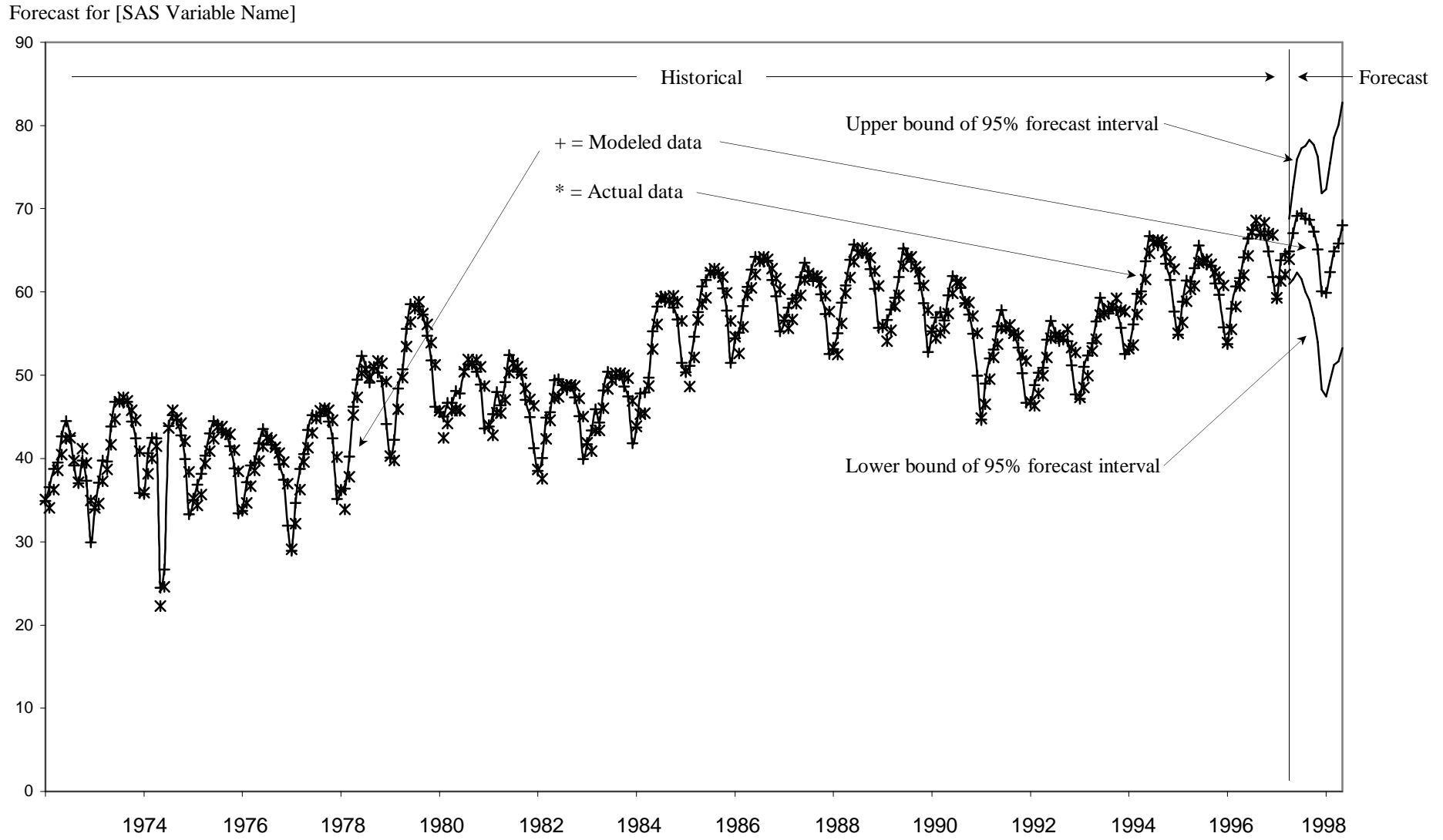
The reader will note that the size of this interval varies substantially across forecasts. The smaller the interval, the better, in general terms. A consistent pattern of variation in the time series will tend to produce smaller intervals. A longer time series will also tend to produce a smaller interval. The reader should also note the vertical scale when interpreting the forecast interval.

In addition to examining summary statistics for each forecast, we conducted an *a priori* test of the forecast methodology. We applied the Winter's Additive Method to a sample of 10 series for which the last twelve months of available data were omitted. We then compared the actual average results for the last twelve months with the forecast average results for the last twelve months. For three of the series, the forecast error was less than 1% of the actual value, for two of the series, the forecast error was between 1% and 2% of the actual value, for four of the series, the forecast error was between 2% and 3% of the actual value and for one series the forecast error was over 3% (3.83%) of the actual value. The mean absolute percentage forecast error was 1.8%. There was no appreciable difference in forecast error between LA data and SA data.

In some cases it is possible to forecast an aggregate number, such as total employment for the state of Missouri by either forecasting the components and then aggregating or by forecasting a series that has already been aggregated. In all cases we chose the former. This ensures consistency of forecasts among LA series and among SA series.

STATE RESULTS

For the state of Missouri as a whole our forecast calls for a decrease in the number of persons employed during the next twelve months. At the same time, the number of payroll jobs is forecast to increase. This set of results indicates that the combination of agricultural employment and self-employment should decrease substantially in the next twelve months.

Persons Employed

Graph 1: Actual and Forecast Growth of Persons Employed in Missouri Regions
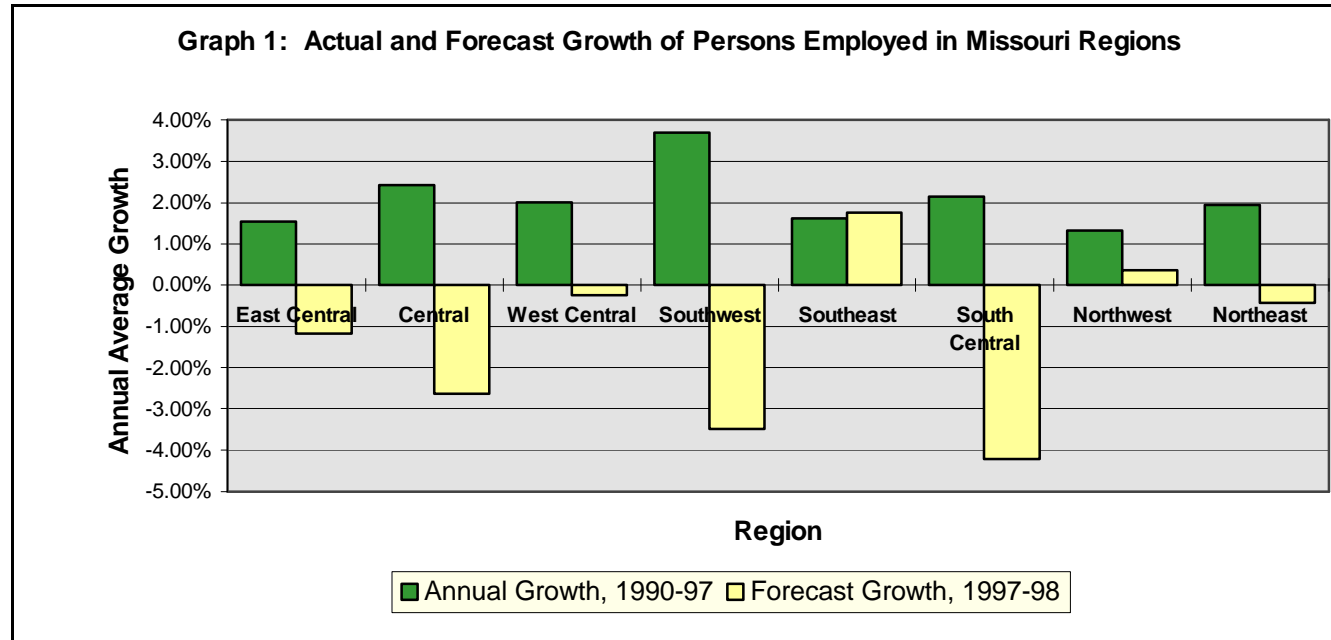
Graph 1 summarizes historical and forecast information for persons employed by region for the state of Missouri. (A list of counties included in each extension region is contained in Appendix 1). The graph shows the strong growth in persons employed that has occurred in every region of the state since 1990 The forecast of a decline in the next twelve months is not an alarming result. It is more a reflection of the demographics of the state.

Without strong in migration, there are simply not enough individuals of working age to keep up the growth that has occurred in the 90's. The rate of growth of persons employed in the state has declined in each of the last three years. For the twelve months ending April, 1995, average monthly employment grew by 4.5% over the previous twelve months. For the twelve months ending April, 1996, average monthly employment grew by 4.2% over the previous twelve months. For the twelve months ending April, 1997, average monthly employment grew by 1.4% over the previous twelve months. Our forecast for the twelve months ending in April, 1998 is for average monthly employment to decrease by 1.3% below the previous twelve months average. This corresponds to slightly over 35,000 persons.

Sectoral Jobs

Graph 2: Summary of Actual and Forecast Growth of Payroll Jobs in Missouri by Sector

Legend: ■ Annual Growth 1990-97 □ Forecast Growth 1997-98
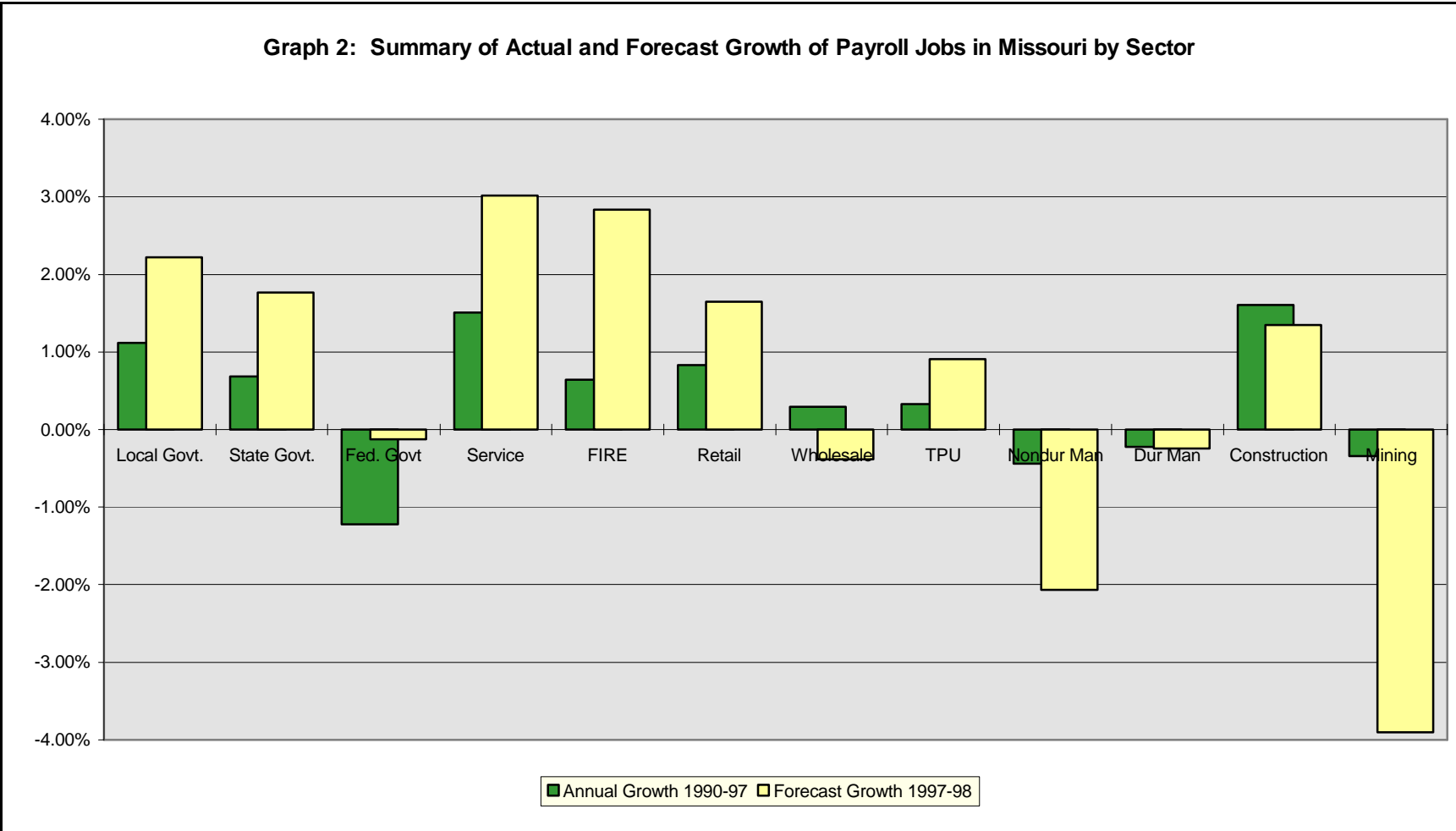
This section presents sector specific forecasts of payroll jobs for the state as a whole. Summary results are presented in Graph 2. For all sectors except wholesale trade, our forecast calls for the same direction of change as has occurred with the actual data from 1990-97. In most sectors, forecast growth is below the growth experienced in the 90's. Exceptions are in the sectors of state government,

FIRE (finance, insurance and real estate), and TPU (transportation and public utilities). Overall, our forecast calls for approximately 49,500 new payroll jobs in Missouri by June of 1998, bringing the total number of payroll jobs to approximately 2,680,000.

It is notable that manufacturing payroll jobs continue to decline, along with federal government jobs and mining jobs. These are typically jobs with higher than average pay, as we see in the next section.

Sectoral Earnings

Earnings data in the SA series is published for non-supervisory jobs only. It is not published for all sectors. We have earnings data for non-supervisory jobs in the following six sectors: services, wholesale trade, retail trade, durable manufactures, 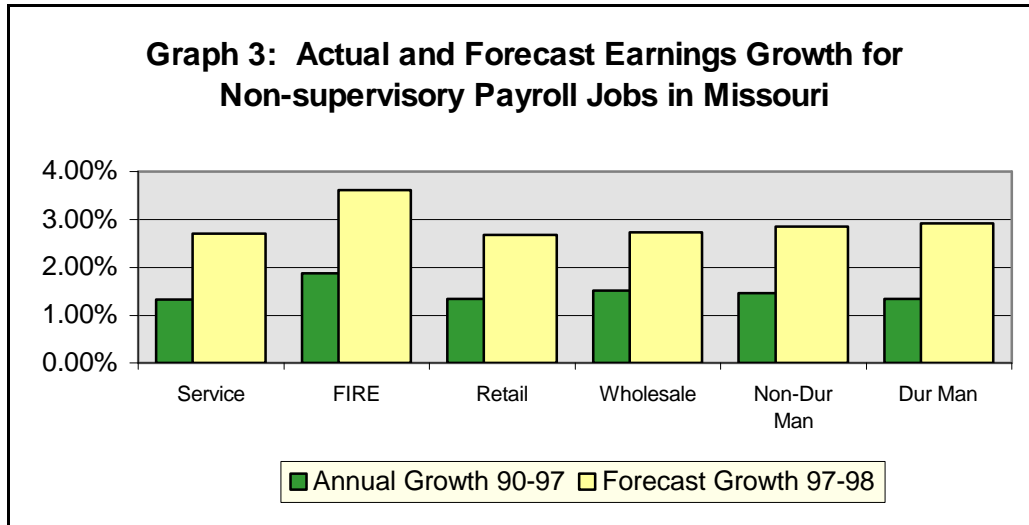non-durable manufactures, and FIRE (finance, insurance and real estate). We choose to conduct the forecast of earnings using nominal values, rather than adjusting for inflation prior to conducting the forecast. Thus the forecast numbers we produce are nominal values. Graph 3 summarizes the results of our forecast of earnings by sector for the state as a whole.

Graph 3: Actual and Forecast Earnings Growth for Non-supervisory Payroll Jobs in Missouri

For all sectors for which data is available, our model forecasts a higher growth of earnings during the next year than has occurred during the 1990's to this point. Recalling that these data are in nominal terms, it can be seen that the real earnings of non-supervisory labor have decreased in the state of Missouri through the 1990's.[6] That trend is predicted to change for the next year. Assuming that inflation will be on the order of 2.5% for the next twelve months, all sectors have predicted earnings increases which are larger than inflation. Many have noted the failure of blue collar labor to benefit substantially from the prolonged growth of the 1990's, despite substantial increases in productivity. With the tight markets that are apparent in these forecasts, some increase in real earnings should occur. Such increases are not necessarily inflationary. As long as productivity gains are at least as large as real wage gains, there is no additional inflationary pressure generated by increases of real wages.

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[6] Inflation has been between 2.3% and 3.8% in the 1990's. National forecasts for inflation in the next twelve months average 2.5%.

Map 2: East Central Region

Map Legend

- ☐ Counties (not forecast individually)
- ■ St. Louis MSA/LMA (MO part)
- ■ St. Louis MSA/LMA (IL part) *
- ■ St. Francois-Washington LMA
- ■ Cities
- ☐ Regional Boundary

Labels on map: Jersey, Lincoln, Montgomery, St. Charles, St. Peters, Warren, St. Charles, Florissant, University City, Madison, Clinton, Maryland Heights, St. Louis, Mo, St. Clair, Chesterfield, St. Louis, Kirkwood, Franklin, Monroe, Jefferson, Washington, Ste. Genevieve, St. Francois

* These areas are included in sectoral forecasts for the St. Louis MSA.

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EAST CENTRAL REGION

The East Central Region is dominated by the St. Louis Metropolitan Area. It is comprised of Montgomery, Lincoln, Warren, St. Charles, Franklin, St. Louis, Jefferson, Washington, St. Francois and Ste. Genevieve counties. As can be seen in Map 2, the St. Louis MSA also includes several Illinois counties. We use LA series data to forecast persons employed for the 10 county Missouri region as a whole, for 8 cities, and for 2 special labor market areas. We use SA series data to forecast payroll jobs and non-supervisory payroll earnings for the eleven county St. Louis MO/IL MSA.

Persons Employed

For the region as a whole, we forecast a decrease in persons employed of 1.00% for the period months ending in June, 1998. There are two special labor market areas defined by the BLS in this region.

Graph 4: 1997-98 Forecast Growth in Persons Employed for East Central Missouri Cities
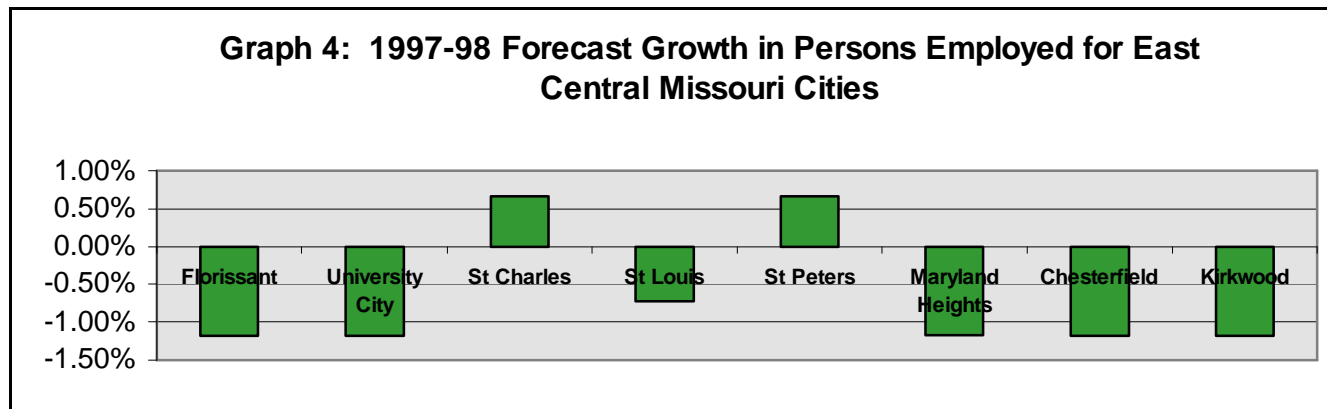
1. The St. Francois-Washington Counties LMA is relatively small, with approximately 31,000 persons employed in May of 1997. We forecast growth of 2.70% in persons employed in this LMA for the period ending June, 1998.

2. The St. Louis MSA Missouri Side LMA has over one million persons employed, making up over 37% of the persons employed in the state in May of 1997. We forecast a decline of 0.97% in persons employed in this LMA for the period ending June, 1998.

Graph 4 summarizes the forecasts for cities over with population over 25,000 in this region. The city of St. Louis, MO has experienced a decline in persons employed throughout the 90's. Both St. Charles and St. Peter's have experienced growth in persons em-

ployed of about 1.5% per year in the 90's. The other cities have all experienced growth of persons employed of about 0.5% in the same time period.

Payroll Jobs and Earnings

Graph 5: Summary of Actual and Forecast Growth of Payroll Jobs in the St. Louis MSA by Sector
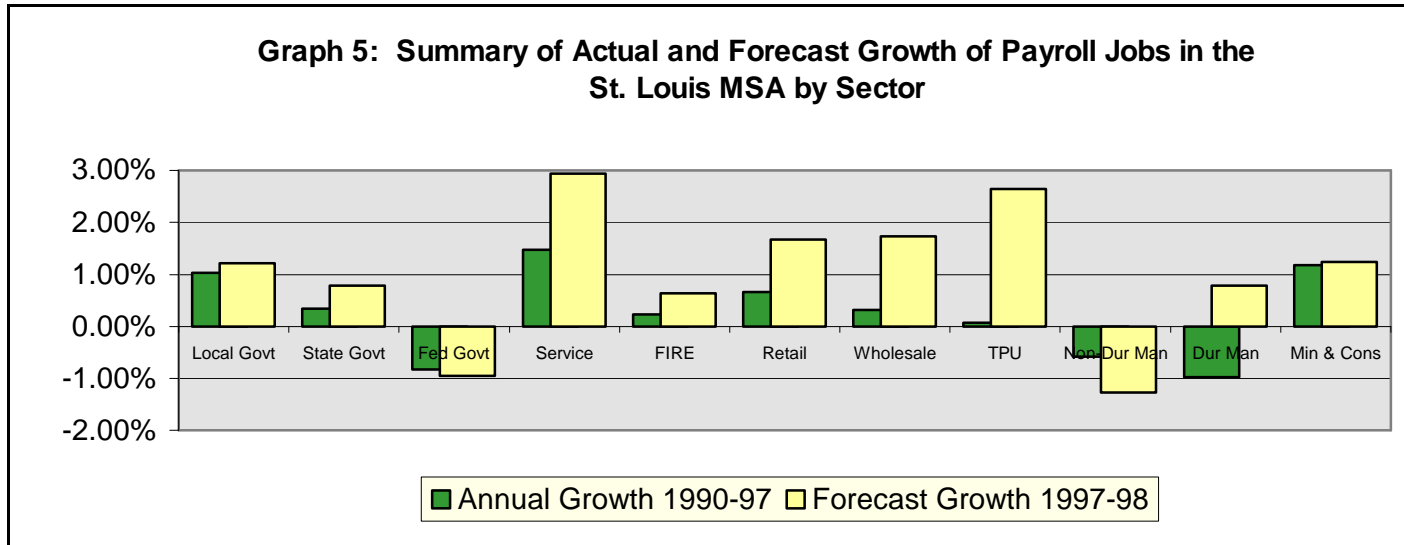
This section presents sector specific forecasts of payroll jobs for the St. Louis MO/IL MSA. Summary results are presented in Graph 5. For all sectors except durable goods manufacturing, our forecast calls for the same direction of change as has occurred with the actual data from 1990-97. In all sectors, forecast growth is above the growth experienced in the 90's. Overall, our forecast calls for approximately 21,500 new payroll jobs in the St. Louis MSA by June of 1998, bringing the total number of payroll jobs to approximately 1,300,000. It is notable that manufacturing payroll jobs continue to decline, along with federal government jobs. In the St. Louis MSA, there are now almost 24,000 fewer payroll jobs than in 1990-91, in the typically high paying payroll jobs in the manufacture of consumer durables and non-durables.

For the MSA's in Missouri, the BLS groups together the two categories of mining and construction. These two series are fundamentally different. Mining jobs are historically declining, while construction jobs follow the business cycle closely. Because of this lack of commonality, we place little confidence in the forecast of this combination of sectors.

Sectoral Earnings

Graph 6 Actual and Forecast Earnings for Non-supervisory Payroll Jobs in the St. Louis MSA

Earnings data in the SA series is published for non-supervisory jobs only. It is not published for all sectors. We have earnings data for non-supervisory jobs in the following six sectors: services, wholesale trade, retail trade, durable manufactures, non-durable manufactures, and FIRE (finance, insurance and real estate). We choose to conduct the forecast of earnings using nominal values, rather than adjusting for inflation prior to conducting the forecast. Thus the forecast numbers we produce are nominal values. Graph 6 summarizes the results of our forecast of earnings by sector for the St. Louis MSA.

For all sectors for which data is available, our model forecasts a higher growth of earnings during the next year than has occurred during the 1990's to this point. Recalling that these data are in nominal terms, it can be seen that the real earnings of non-supervisory labor have decreased in the St. Louis MSA through the 1990's. For services and durable manufactures, that trend continues in 1998. For the other sectors, earnings growth is forecast to be above inflation. Many have noted the failure of blue collar labor to benefit substantially from the prolonged growth of the 1990's, despite substantial increases in productivity. With the tight markets that are apparent in these forecasts, some increase in real earnings should occur. Such increases are not necessarily inflationary. As long as productivity gains are at least as large as wage gains, there is no additional inflationary pressure generated by increases in real earnings.

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Map 3: West Central Region

Map Legend

- ☐ Counties (not forecast individually)
- 🟥 KC MSA/LMA (MO part)
- 🟧 KC MSA/LMA (KS part) *
- ⬛ Cities
- 🔲 Regional Boundary

* These areas are included in sectoral forecasts for the KC MSA.

Clinton

Platte

Ray

Gladstone

Independence

Leavenworth

Clay

KC, Mo

Wyandotte

Lafayette

Blue Springs

Raytown

Jackson

Johnson

Lee's Summit

Grandview

Johnson

Miami

Cass

Henry

Bates

St. Clair

Vernon
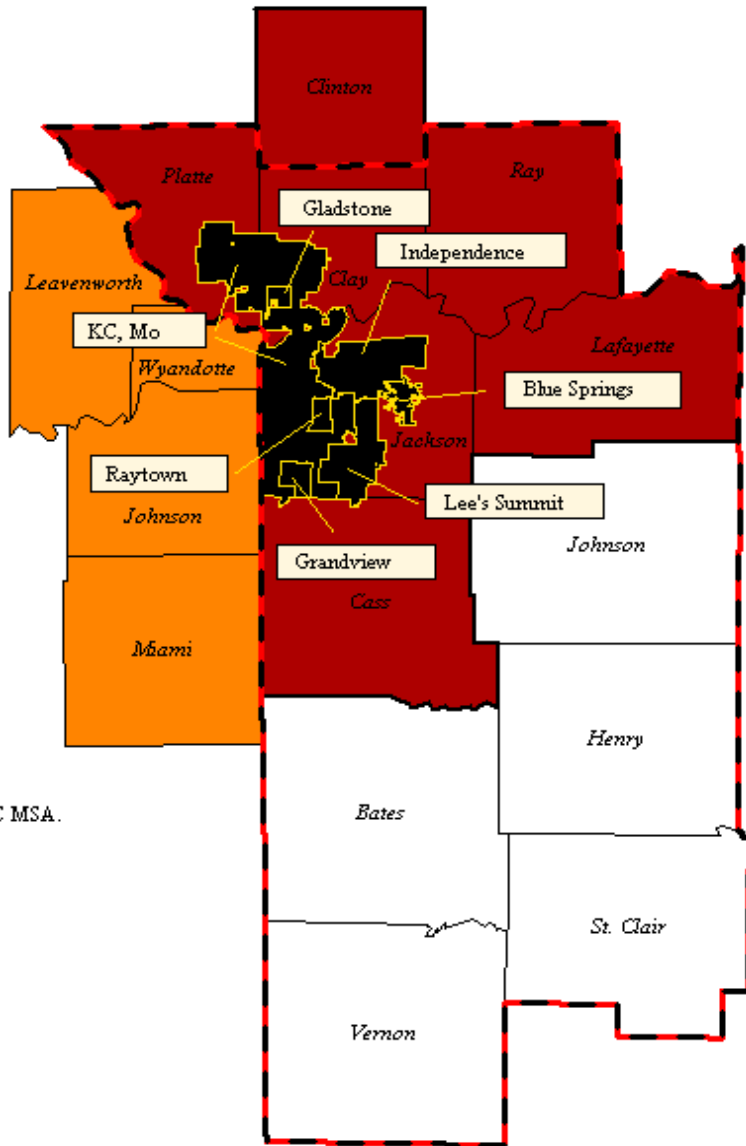
WEST CENTRAL REGION

The West Central Region is dominated by the Kansas City Metropolitan Area. It is comprised of Platte, Clay, Ray, Jackson, Cass, Lafayette, Johnson, Henry, Bates, St. Clair and Vernon counties. As can be seen in Map 3, the Kansas City MSA also includes several Kansas counties. We use LA series data to forecast persons employed for the 11 county Missouri region as a whole, for 7 cities, and for one special labor market area. We use SA series data to forecast payroll jobs and non-supervisory payroll earnings for the eleven county Kansas City MO/KS MSA. Notice that there is one county (Clinton) which is included in the MSA which is not in the extension region. We include Clinton in the regional forecast of the Northwest region, and in the Kansas City MSA forecast of payroll jobs and earnings.

Persons Employed

Graph 7: 1997-98   Forecast Growth in Persons Employed for West Central Missouri Cities
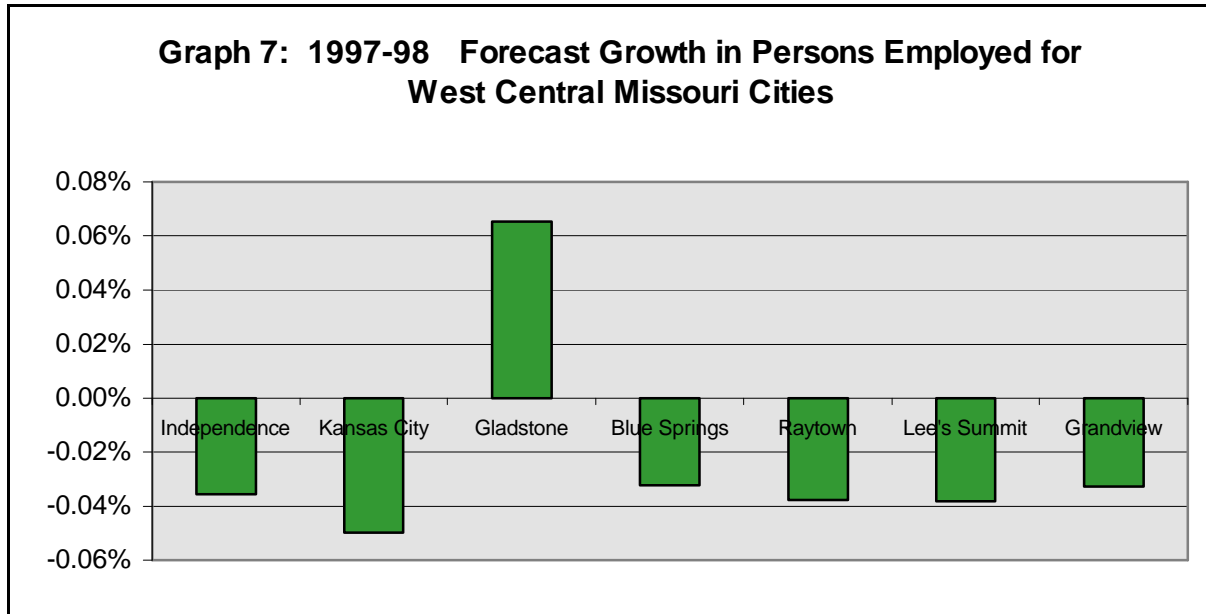
For the region as a whole, we forecast a decrease in persons employed of 0.04% for the period months ending in June, 1998. For all intents and purposes this is a forecast of no change. There is only one special labor market area defined by the BLS in this region. It is the Kansas City MSA Missouri Side LMA. There are 560,000 persons employed, making up over 20% of the persons employed in the state in May of 1997. We forecast a growth of 0.29% for this LMA by June of 1998.

Graph 7 summarizes the forecasts for cities over with population over 25,000 in this region. All of the cities on the Missouri side of the MSA have basically the same steady forecast. These are cities which have experienced growth in persons employed of between 0.7% per year and 1.15% per year. It is thus not surprising that their forecasts are similar.

Payroll Jobs and Earnings

Graph 8: Summary of Actual and Forecast Growth of Payroll Jobs in the Kansas City MSA by Sector
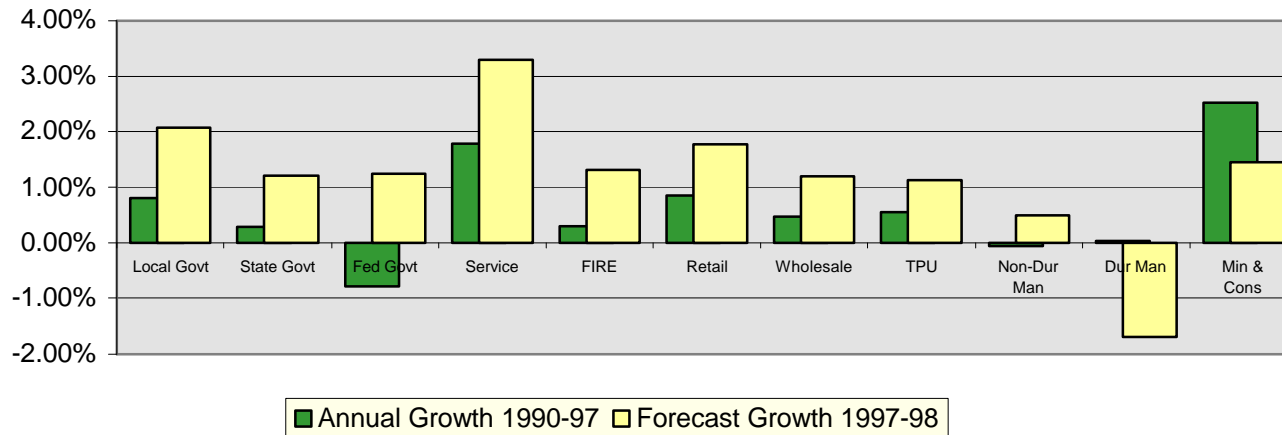
This section presents sector specific forecasts of payroll jobs for the Kansas City MO/KS MSA. Summary results are presented in Graph 8. The only sector for which a decline is forecast is payroll jobs in durable goods manufacturing. Growth in federal government jobs is forecast despite the consistent decline which has occurred since the early 90's. For the other sectors, our forecast calls for the same direction of change as has occurred with the actual data from 1990-97. In all sectors, forecast growth is above the growth experienced in the 90's. Overall, our forecast calls for approximately 19,000 new payroll jobs in the Kansas City MSA by June of 1998, bringing the total number of payroll jobs to approximately 930,000.   Once again the forecast decline in higher paying jobs in the manufacture of consumer durables should be noted.

For the MSA's in Missouri, the BLS groups together the two categories of mining and construction. These two series are fundamentally different. Mining jobs are historically declining, while construction jobs follow the business cycle closely. Because of this lack of commonality, we place little confidence in the forecast of this combination of sectors.

Sectoral Earnings

Graph 9: Actual and Forecast Earnings for Non-supervisory Payroll Jobs in the Kansas City MSA
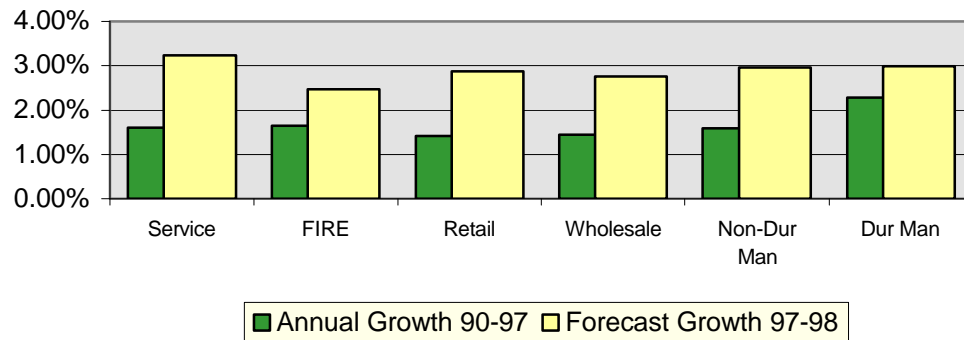
Earnings data in the SA series is published for non-supervisory jobs only. It is not published for all sectors. We have earnings data for non-supervisory jobs in the following six sectors: services, wholesale trade, retail trade, durable manufactures, non-durable manufactures, and FIRE (finance, insurance and real estate). We choose to conduct the forecast of earnings using nominal values, rather than adjusting for inflation prior to conducting the forecast. Thus the forecast numbers we produce are nominal values. Graph 9 summarizes the results of our forecast of earnings by sector for the Kansas City MSA.

In all sectors for which data is available, our model forecasts a higher growth of weekly earnings during the next year than has occurred during the 1990's to this point. Graph 9 also shows the average rate of growth of weekly earnings in these sectors. It can be seen that nominal growth in weekly earnings has been well below the rate of inflation, implying a reduction in real wages. The tightness of the labor market is more apparent in the Kansas City MSA, where the forecast of earnings growth for is well above the expected rate of inflation (2.5%) in all sectors except FIRE. This is especially notable in the services sector, where earnings in Kansas City are already well above those in any other region of the state.

Map 4: Southwest Region

Map Legend

	Counties (not forecast individually)
	Springfield MSA
	Lawrence-Barry LMA
	Cities
	Regional Boundary
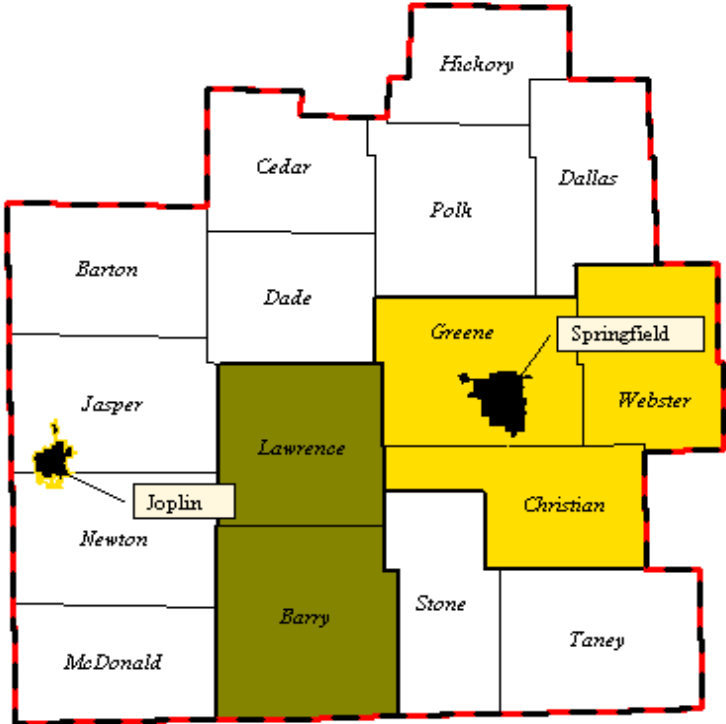
SOUTHWEST REGION

The Southwest Region contains the Springfield Metropolitan Area. Map 4 shows the region to be comprised of Hickory, Cedar, Polk, Dallas, Barton, Dade, Jasper, Lawrence, Greene, Webster, Newton, McDonald, Barry, Stone, Christian, and Taney counties. We use LA series data to forecast persons employed for the 16 county region as a whole, for 2 cities, and for one special labor market area. We use SA series data to forecast payroll jobs and non-supervisory payroll earnings for the three county Springfield, MO MSA. It should be noted that this region also contains Branson, which has grown substantially through the 90's.

Persons Employed

For the region as a whole, we forecast a decrease in persons employed of 3.17% for the period months ending in June, 1998. This relatively large decrease is one indication that the growth spurt for the region may be ending. From April, 1996 to April, 1997, there was a decrease of approximately 3% in the number of persons employed. From April, 1995 to April, 1996, there was an increase of over 4% in the number of persons employed in the region. The region can be seen to be relatively volatile in terms of this data series.

For the Lawrence-Barry County LMA, we forecast a decrease in the number of persons employed of 6.5%. This is probably due to strong out-migration to neighboring labor markets, such as Branson (in Taney county) or Springfield, although we have no numbers to substantiate this hypothesis.

Our forecast calls for a 2.09% decrease in persons employed in the city of Joplin, for the period ending in June of 1998. For the city of Springfield, our forecast calls for a 0.47% decrease in the number of persons employed for the period ending in June of 1998.

Payroll Jobs by Sector

This section presents sector specific forecasts of payroll jobs for the Springfield, MO MSA. Summary results are presented in Graph 10. Payroll employment is forecast to grow in all sectors. Notable growth is forecast to occur in the TPU (transportation and public utility) sector. For all sectors, there has been positive growth since 1990, and in all sectors growth is forecast to be above the growth experienced in the 90's. Overall, our forecast calls for approximately 3,700 new payroll jobs in the Springfield City MSA by June of 1998, bringing the total number of payroll jobs to approximately 162,000.

For the MSA's in Missouri, the BLS groups together the two categories of mining and construction. These two series are fundamentally different. Mining jobs are historically declining, while construction jobs follow the business cycle closely. Because of this lack of commonality, we place little confidence in the forecast of this combination of sectors.

Sectoral Earnings

Earnings data in the SA series is published for non-supervisory jobs only. It is not published for all sectors. We have earnings data for non-supervisory jobs in the following six sectors: services, wholesale trade, retail trade, durable manufactures, non-durable manufactures, and FIRE (finance, insurance and real estate). We choose to conduct the forecast of earnings using nominal values, rather than adjusting for inflation prior to conducting the forecast. Thus the forecast numbers we produce are nominal values. Graph 11 summarizes the results of our forecast of earnings by sector for the Springfield, MO MSA.

Graph 10: Summary of Actual and Forecast Growth of Payroll Jobs in the Springfield, MO MSA by Sector

■ Annual Growth 1990-97   □ Forecast Growth 1997-98
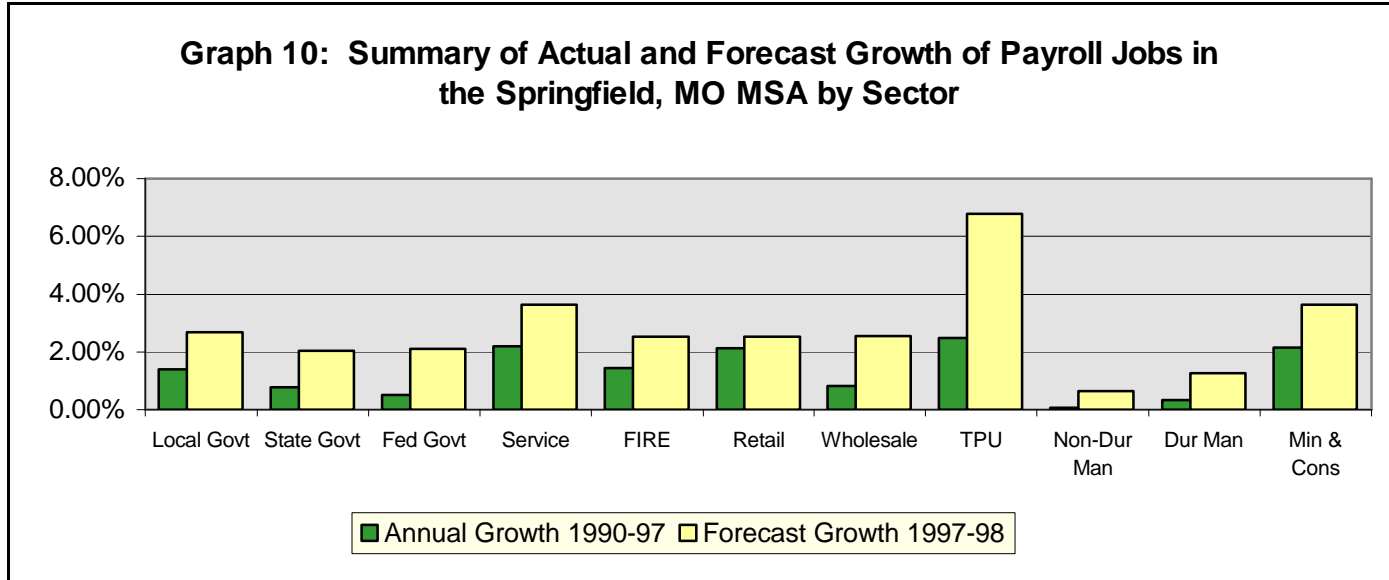
Graph 11: Actual and Forecast Earnings for Non-supervisory Payroll Jobs in the Springfield MSA

■ Annual Growth 90-97   □ Forecast Growth 97-98
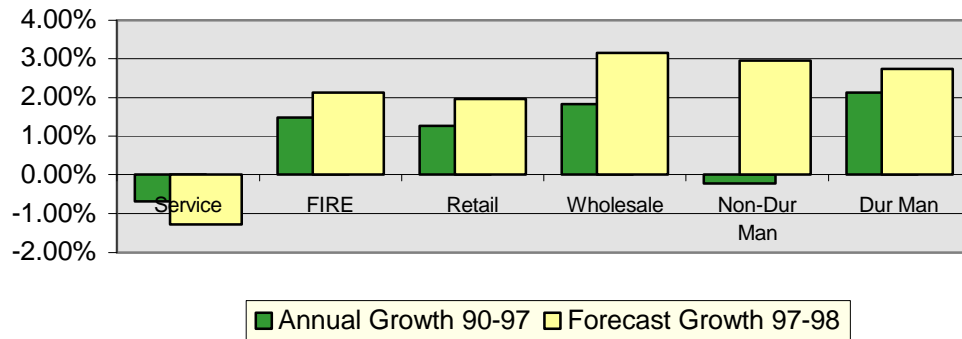
For payroll jobs in all sectors but services in the Springfield, MO MSA, our model forecasts growth in weekly earnings. However, the pattern in Springfield is different from that of the major metropolitan areas (St. Louis and Kansas City), in that the 90's trend of wage increases below the inflation rate is forecast to continue.   Assuming inflation of 2.5% in the next twelve months, earnings in non-supervisory jobs in the services, FIRE and retail trades are forecast to increase more slowly than inflation, implying a decrease in real wage earnings. In all sectors but services, the forecast

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growth of weekly earnings is higher than that which has occurred to this point in the 90's. The service sector in Springfield has low and decreasing earnings. The average weekly earnings from payroll jobs in services in Springfield was $195, compared to the Missouri average of $309 in April of 1997.

Map 5: Central Region

Map Legend

- Counties (not forecast individually)
- Cole-Callaway-Moniteau LMA
- Cities
- Regional Boundary

Carroll

Chariton

Audrain

Saline

Howard

Boone

Columbia

Callaway

Cooper

Pettis

Jefferson City

Moniteau

Cole

Osage
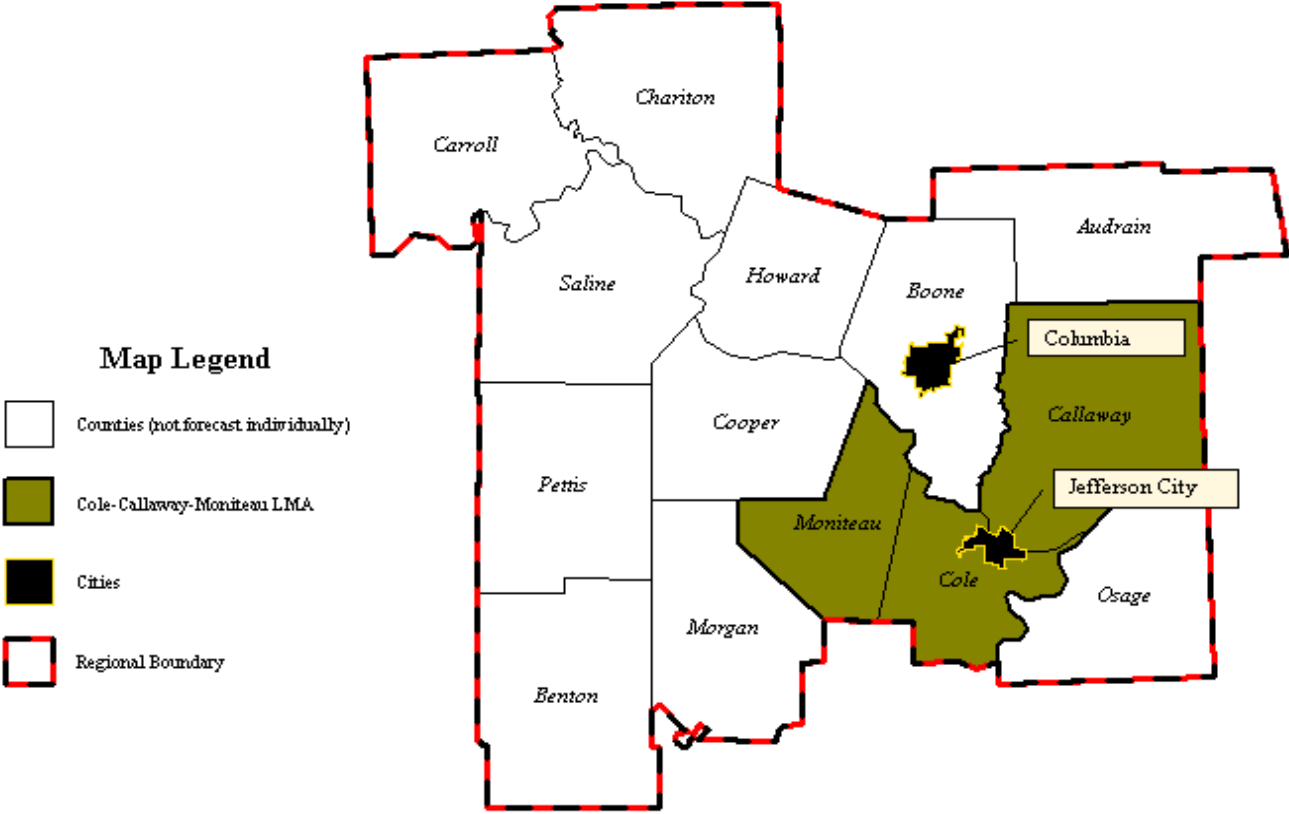
Morgan

Benton

CENTRAL REGION

The Central Region contains Jefferson City and Columbia. Map 5 shows this region to be comprised of Carroll, Chariton, Saline, Howard, Boone, Audrain, Pettis, Cooper, Callaway, Cole, Benton, Morgan, Moniteau and Osage counties. We use LA series data to forecast persons employed for the 14 county region as a whole, for 2 cities, and for one special labor market area. SA series data are not published for any area in this region.

Persons Employed

For the region as a whole, we forecast a decrease in persons employed of 2.41% for the period ending in June, 1998. This, in spite of the fact that this region ranked second of eight in terms of growth rate of persons employed from 1991 through 1997. The forecast is for a decrease because growth in persons employed has decreased for the last three years. From 1994 to 1995, persons employed increased by 5.4%. From 1995 to 1996, growth was 4.8%. From 1996 to 1997, growth was 0.79%. Given the relatively short time series, a trend such as this will have a relatively large weight.

For the Cole-Callaway-Moniteau County LMA, we forecast a decrease in the number of persons employed of 1.4%. This is consistent with the forecast for the region as a whole, with the more urbanized area showing more stability in terms of persons employed.

Our forecast calls for a decrease in persons employed in both cities of the region. For the city of Columbia, the number of persons employed is forecast to decrease by 0.56% for the period ending in June of 1998. For the city of Jefferson City, our forecast calls for a 1.68% decrease in the number of persons employed for the period ending in June of 1998.

Map 6: Southeast Region

Map Legend

- Counties (not forecast individually)
- Labor Market Areas (LMAs)
- Cities
- Regional Boundary

Perry

Iron

Madison

Cape Girardeau

Cape Girardeau

Reynolds

Bollinger

Scott

Wayne

Carter

Mississippi

Stoddard

Butler-Ripley-Carter LMA

Cape Girardeau-Scott-
New Madrid LMA

Butler

Ripley

New Madrid

Pemiscot

Dunklin

SOUTHEAST REGION

The Southeast Region contains Cape Girardeau. Map 6 shows this region to be comprised of Perry, Iron, Madison, Bollinger, Cape Girardeau, Reynolds, Wayne, Stoddard, Scott, Carter, Ripley, Butler, Dunklin, Pemiscot, New Madrid, and Mississippi counties. We use LA series data to forecast persons employed for the 15 county region as a whole, for one city, and for two special labor market areas. SA series data are not published for any area in this region.
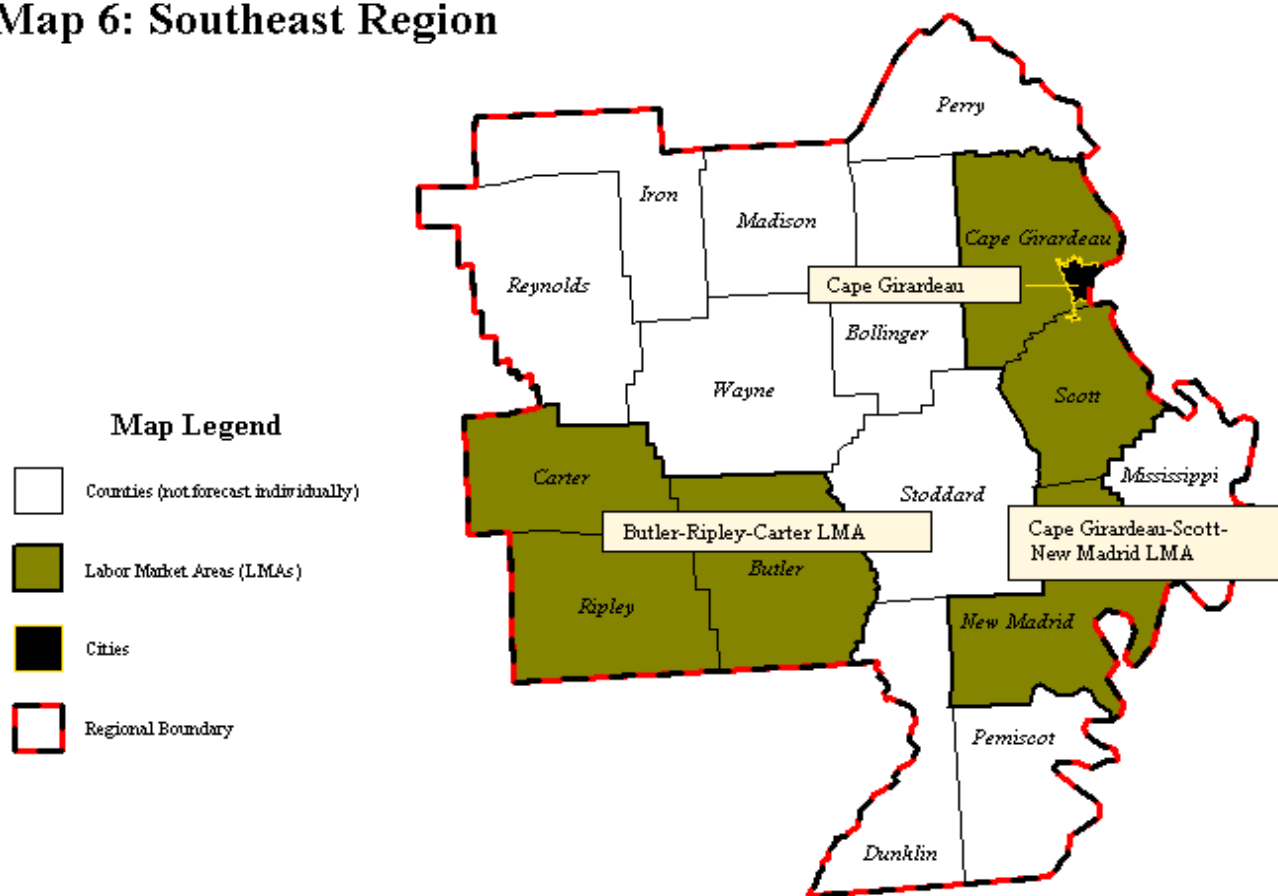
Persons Employed

For the region as a whole, we forecast an increase in persons employed of 1.52% for the period ending in June, 1998. Over the period 1991-97, the average annual growth in persons employed was approximately 1.6%. Most of the growth that occurred in this region happened between 1994 and mid-1996, after having been almost constant from 1990-94.

For the Cape Girardeau-Scott-New Madrid LMA, we forecast an increase in the number of persons employed by 1.21% for the period ending June, 1998. This is consistent with the forecast for the region as a whole. For the Butler-Ripley-Carter LMA, we forecast an increase in the number of persons employed by 2.66% for the period ending June, 1998. This is significantly more growth than is forecast for the rest of the region.

Our forecast calls for an increase in persons employed in the city of Cape Girardeau by 1.63%, a number which is very much in line with the region as a whole.

Map 7: South Central Region

Gasconade

Miller

Maries

Camden-Miller LMA

Phelps-Maries LMA

Crawford

Camden

Phelps

Pulaski

Dent

Map Legend

Laclede

Counties (not forecast individually)

Labor Market Areas (LMAs)

Regional Boundary

Texas

Wright

Shannon

Howell-Oregon-Shannon LMA

Douglas

Howell

Oregon

Ozark

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SOUTH CENTRAL REGION

The South Central Region contains no city with a population greater than 25,000. The region is mostly agricultural, with a strong recreational industry centered around the Lake of the Ozarks.   Map 7 shows this region to be comprised of Camden, Miller, Maries, Gasconade, Crawford, Phelps, Pulaski, Laclede, Wright, Texas, Dent, Douglas, Howell, Shannon, Ozark and Oregon counties. We use LA series data to forecast persons employed for the 16 county region as a whole, and for three special labor market areas. SA series data are not published for any area in this region.
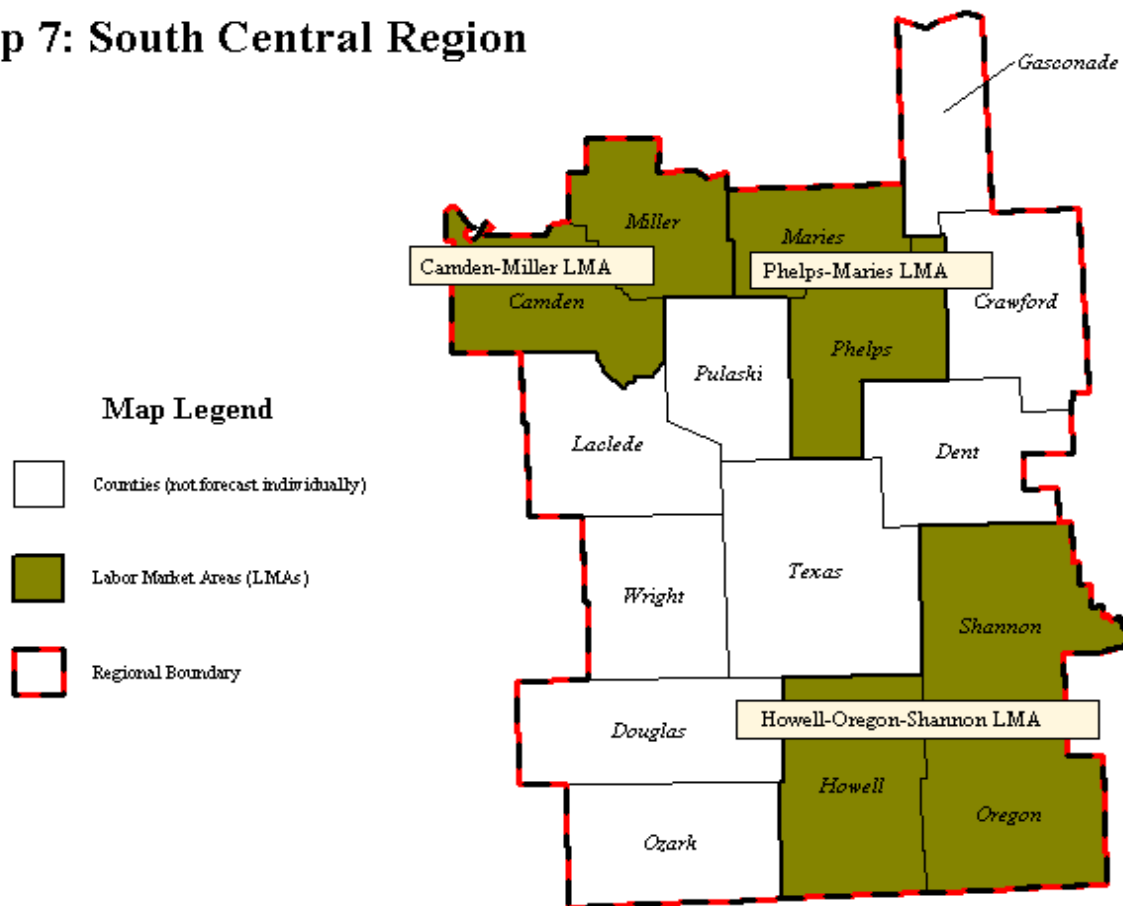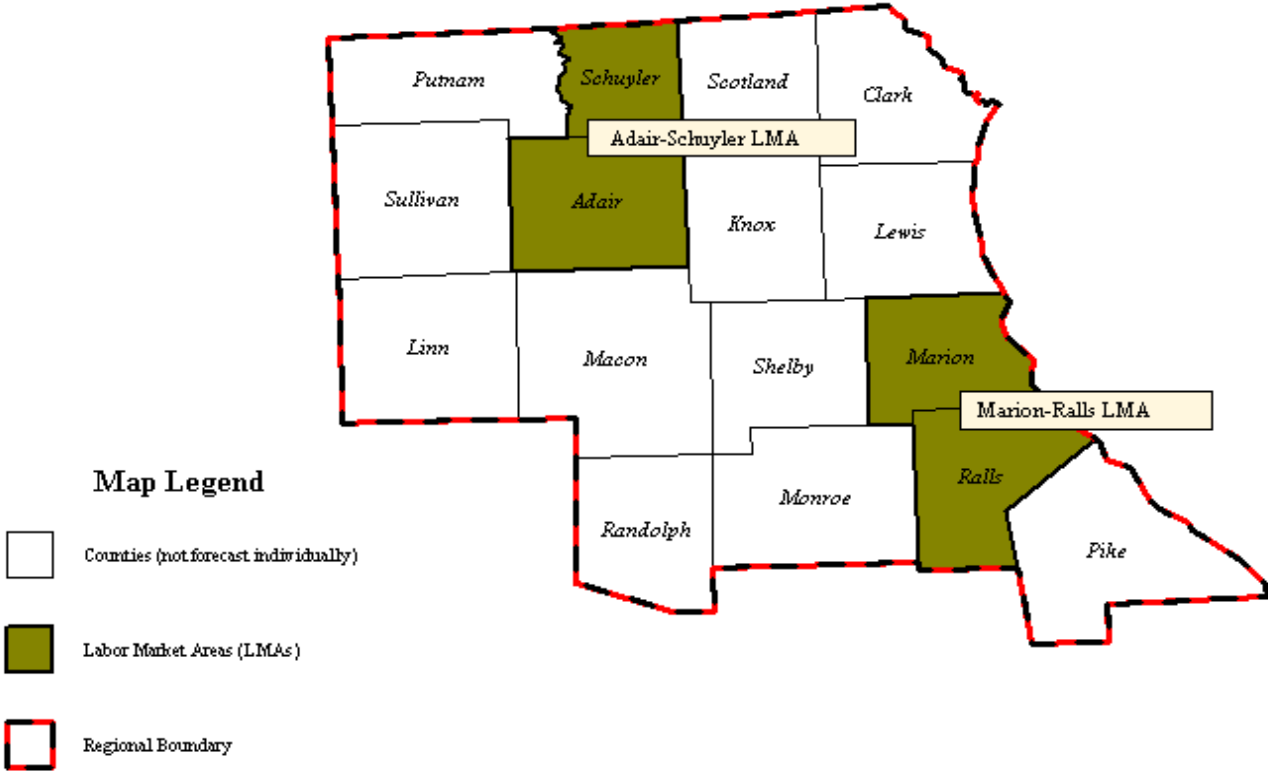
Persons Employed

For the region as a whole, we forecast a decrease in persons employed by 4.36% for the period ending in June, 1998. Over the period 1991-97, the average annual growth in persons employed was approximately 2%. Most of the growth that occurred in this region happened between 1994 and mid-1996, after having been almost constant from 1990-94. The seasonality of the series is stronger than for any other region, because of the seasonality of both major economic activities in the region.

Upon examination of the special labor market areas that are included in this region, we see that the Camden-Miller County LMA is in large part responsible for forecast decrease in persons employed. For that LMA, we forecast a decrease in the number of persons employed by 4.69% for the period ending June, 1998. It can be speculated that some part of this loss may be due to a loss of tourism activity to the Branson Area, or to the casinos in St. Louis and Kansas City. Both of the other two LMA's in the region are forecast to have a growing number of persons employed for the period ending in June of 1998. The Howell-Oregon-Shannon County LMA is forecast to grow at 0.39%, while the Phelps-Maries County LMA is forecast to grow at 0.8%.

Map 8: Northeast Region

Map Legend

Counties (not forecast individually)

Labor Market Areas (LMAs)

Regional Boundary

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NORTHEAST REGION

The Northeast Region contains no city with a population greater than 25,000. The region is mostly agricultural. Map 8 shows this region to be comprised of Putnam, Schuyler, Scotland, Clark, Sullivan, Adair, Know, Lewis, Linn, Macon, Shelby, Marion, Randolf, Monroe, Ralls, and Pike counties. We use LA series data to forecast persons employed for the 16 county region as a whole, and for two special labor market areas. SA series data are not published for any area in this region.

Persons Employed

For the region as a whole, we forecast a decrease in persons employed by 0.44% for the period ending in June, 1998. Over the period 1991-97, the average annual growth in persons employed was approximately 2%. Most of the growth that occurred in this region happened between 1994 and mid-1996, after having been almost constant from 1990-94. The seasonality of the series is relatively strong, due to the predominance of agricultural activity.

There is a substantial difference in the forecast for the two special labor market areas in this region. The Marion-Ralls County LMA is forecast to have an increase in the number of persons employed by 1.52% for the period ending June, 1998. The Adair-Schuyler County LMA, on the other hand, is forecast to decline by 4.28% in the same period.

Map 9: Northwest Region

Map Legend

☐ Counties (not forecast individually)

■ Cities

☐ Regional Boundary
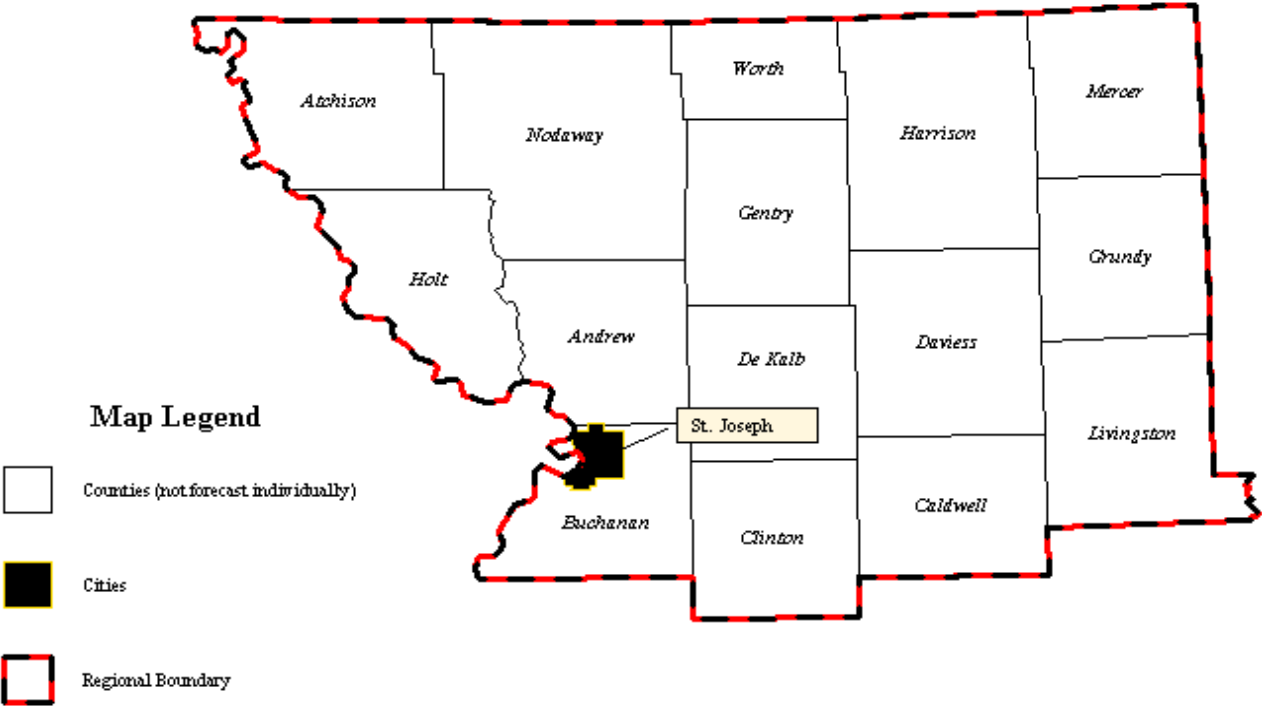
NORTHWEST REGION

The Northwest Region contains the city of St. Joseph. The region is mostly agricultural. Map 9 shows this region to be comprised of Atchison, Nodaway, Worth, Harrison, Mercer, Grundy, Livingston, Caldwell, Daviess, Clinton, DeKalb, Gentry, Buchanan, Andrew, and Holt counties. We use LA series data to forecast persons employed for the 15 county region as a whole, and for the city of St. Joseph. SA series data are not published for any area in this region.

Persons Employed

For the region as a whole, we forecast an increase of persons employed by 0.36% for the period ending in June, 1998. Over the period 1991-97, the average annual growth in persons employed was approximately 1.3%. Most of the growth that occurred in this region happened between 1994 and mid-1996, after having declined from 1990-94. The seasonality of the series is relatively strong, due to the predominance of agricultural activity.

Most of the growth in persons employed which is forecast for the region comes from the city of St. Joseph. The pattern of the series for the city is virtually a copy of the pattern for the region. A substantial decline occurred between 1990 and 1994, followed by substantial growth through mid-1996. The forecast for growth of persons employed for the city of St. Joseph is 0.61% by June of 1998.

Appendix 1: Missouri Extension Regions

FIP	NE County	FIP	NW County	FIP	SC County	FIP	SE County	FIP	SW County	FIP	WC County	FIP	CE County	FIP	EC County
29001	Adair	29003	Andrew	29029	Camden	29017	Bollinger	29009	Barry	29013	Bates	29007	Audrain	29071	Franklin
29045	Clark	29005	Atchison	29055	Crawford	29023	Butler	29011	Barton	29037	Cass	29015	Benton	29099	Jefferson
29103	Knox	29021	Buchanan	29065	Dent	29031	Cape Girardeau	29039	Cedar	29047	Clay	29019	Boone	29113	Lincoln
29111	Lewis	29025	Caldwell	29067	Douglas	29035	Carter	29043	Christian	29083	Henry	29027	Callaway	29139	Montgomery
29115	Linn	29049	Clinton	29073	Gasconade	29069	Dunklin	29057	Dade	29095	Jackson	29033	Carroll	29183	St. Charles
29121	Macon	29061	Daviess	29091	Howell	29093	Iron	29059	Dallas	29101	Johnson	29041	Chariton	29187	St. Francois
29127	Marion	29063	De Kalb	29105	Laclede	29123	Madison	29077	Greene	29107	Lafayette	29051	Cole	29186	Ste. Genevieve
29137	Monroe	29075	Gentry	29125	Maries	29133	Mississippi	29085	Hickory	29165	Platte	29053	Cooper	29189	St. Louis
29163	Pike	29079	Grundy	29131	Miller	29143	New Madrid	29097	Jasper	29177	Ray	29089	Howard	29510	St. Louis City
29171	Putnam	29081	Harrison	29149	Oregon	29155	Pemiscot	29109	Lawrence	29185	St. Clair	29135	Moniteau	29219	Warren
29173	Ralls	29087	Holt	29153	Ozark	29157	Perry	29119	McDonald	29217	Vernon	29141	Morgan	29221	Washington
29175	Randolph	29117	Livingston	29161	Phelps	29179	Reynolds	29145	Newton			29151	Osage		
29197	Schuyler	29129	Mercer	29169	Pulaski	29181	Ripley	29167	Polk			29159	Pettis		
29199	Scotland	29147	Nodaway	29203	Shannon	29201	Scott	29209	Stone			29195	Saline		
29205	Shelby	29227	Worth	29215	Texas	29207	Stoddard	29213	Taney						
29211	Sullivan			29229	Wright	29223	Wayne	29225	Webster						

Region Key: **NE** = northeast   **SE** = southeast   **CE** = central
                NW = northwest   **SW** = southwest   **EC** = east central
                SC = south central   **WC** = west central