Occupational Employment in the State of Missouri

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Summary

The occupational structure of employment in Missouri, while roughly consistent with that of the U.S. economy as a whole, does exhibit some significant variation. Additionally, projections of change in the structure of occupational employment in Missouri from base year 1994 to projected year 2005 show significant variation from national level projections. Within the state, growth rates in the Kansas City metropolitan area generally outpace those for both the St. Louis metropolitan area and for the state as a whole. Finally, analysis of occupational structure, growth rates, and mean wages among major and minor occupational classes offers an interesting perspective on the prevailing wisdom concerning trends in economic structure and income distribution.

Measuring Occupational Employment

This is an analysis of trends in occupational employment in the state of Missouri. It is based on estimated employment in base year 1994, and projections to the year 2005.

At least two distinct sources exist for the measurement of occupational employment in Missouri and the United States. One is the *Census Bureau*[1], which regularly collects and reports employment data by occupational category in each decennial census, and in the *Current Population Survey.*[2] The other primary source is the *Bureau of Labor Statistics (BLS),*[3] in collaboration with the Missouri *Department of Labor and Industrial Relations (DOLIR).*[4] Unlike the measurement of economic activity by industrial category, which is nearly universally standardized with the use of the Standard Industrial Classification (SIC) coding system,[5] the complexity of occupational variation has given rise to multiple occupational classification systems designed for the variety of their uses. Thus, the Census Bureau has over time developed its own unique system, different from but related to the Standard Occupational Classification (SOC) system, while the BLS, beginning in 1971, has developed the *Occupational Employment Statistics (OES)*[6] program.

The variety of different occupational classification systems in use can be confusing for the lay reader, and is also problematic for the comparison of data obtained from different sources and programs. Data used in this study are classified according to the OES system of the BLS; some alternative aggregation categories are employed, however, which will be referenced and described in context.

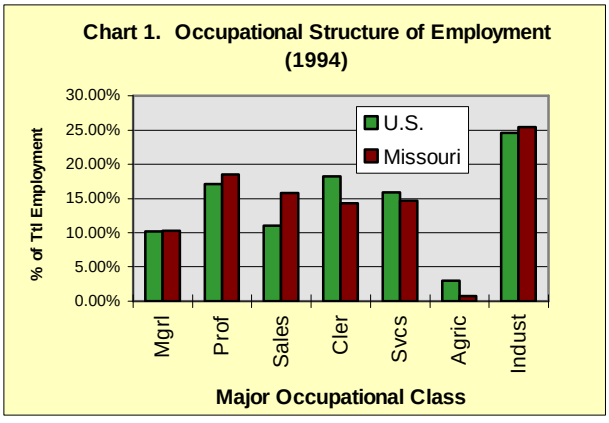
The role of federal and state agencies in the provision of occupational education, training, and placement for the labor force mandates a broad scope for planning activity in this area, including the measurement of current conditions, trend analysis, projections of future change, and policy analysis, evaluation, and implementation. Success is dependent on the coordinated activity of a wide variety of public and private sector administrative entities at federal, state, and local levels. This is accomplished through the *NOICC/SOICC network. (National/State Occupational Information Coordinating Committees).*[7] Extensive national-level occupational information is available from the BLS as part of its *Employment Projections*[8] program.

Data used in this study are from the Missouri Occupational Information System (MOOIS), provided by the *Missouri Occupational*

Information Coordinating Committee (MOICC),[9] which includes estimates of occupational employment in base year 1994, projections to 2005, and wage survey data. Employment estimates and projections are provided by DOLIR and MOICC, using the BLS National Industry/Occupation Matrix methodology and framework. Wage survey data are aggregated by MOICC from periodic county surveys conducted by DOLIR. While the MO-OIS is not a publicly accessible database, the summary dataset generated by the CEI from MO-OIS, which provides the basis for this analysis, is available for download in both text and generic worksheet formats. Specific figures on the accuracy of survey data, estimates and projections are not available. Some more general additional information concerning methodology and accuracy may be obtained from MOICC, DOLIR, and BLS.

The Structure of Occupational Employment in Missouri

The Occupational Employment Statistics program aggregates occupations into seven major occupational classes: 1) managerial and administrative, 2) professional, para-professional and technical, 3) sales and related, 4) clerical and administrative support, 5) service, 6) agriculture, forestry, and fishing, and 7) production, construction, operating, maintenance, and material handling. Percentages of total employment for both Missouri and the U.S. constituted by these seven major classes are presented in Chart 1.[10]



Data sources: MOICC and Bureau of Labor Statistics, *Occupational Projections and Training Data*, 1996

The occupational structure of employment in Missouri, with some minor variation, roughly parallels that of the nation as a whole. Blue-collar industrial occupations are clearly the largest component, constituting very close to 25% of the workforce, while executive/ managerial occupations constitute only 10%, and service occupations, 15%. Professional/ para-professional and clerical occupations range from 15% to 20%, and sales occupations from 10% to 15%.

Low figures for agricultural employment must be interpreted with care, since they represent "agricultural" employment only in the context of the strict BLS definition of agriculture. While that definition includes the two-digit SIC categories for agricultural services, forestry, and fishing, it excludes SIC classifications for agricultural production in crops and livestock. In short, the BLS doesn't count farmers, or farm workers--except in some limited cases, one of which this case is not. Thus, the BLS measure of agricultural employment is not a particularly useful one for our purposes, and we will largely disregard it.

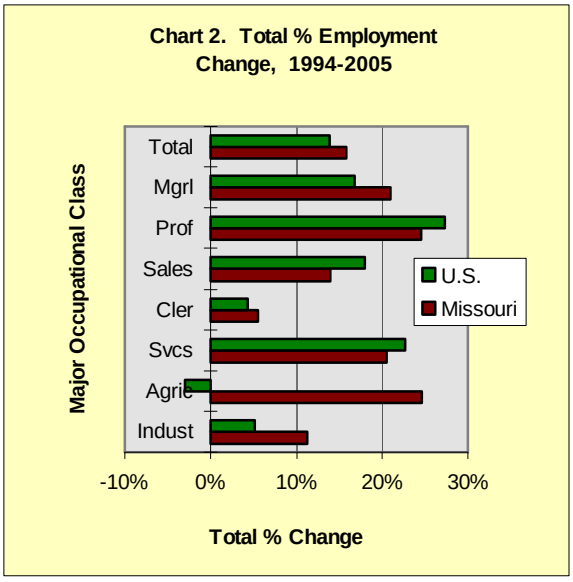
Projections of Change in Occupational Structure

Detailed figures for total projected growth in Missouri and U.S. occupational employment appear in Table 1. These figures are presented graphically in Chart 2. Interesting comparisons can be made between growth rates for different major classes, as well as between state and national rates.

In Missouri, total projected growth in the professional/para-professional class (24.58%) leads all others, including services (20.55%) by a substantial margin. Managerial class growth (21.01%) ranks second. Nationally, professional/para-professional growth is even

Table 1. Employment by Major Occupational Class, Ttl % change, 1994-2005		
	Missouri	**U.S.**
Total	15.82%	13.93%
Mgrl	21.01%	16.80%
Prof	24.58%	27.35%
Sales	13.99%	18.00%
Cler	5.49%	4.30%
Svcs	20.55%	22.70%
Agric	24.66%	-3.00%
Indust	11.32%	5.10%

Data sources: MOICC, BLS, *Occupational Projections and Training Data*, 1996



stronger (27.35%), while services place second (22.70%), followed by sales (18.00%), then by managerial (16.80%). The projected growth rate for industrial occupations in Missouri (11.32%) is more than double that of the U.S. (5.10%), while clerical occupations have the slowest projected growth both nationally (4.30%), and at the state level (5.49%).

It is of interest to note that, while growth rates in service occupations are relatively high, they are not the highest of all groups. In Missouri, growth rates for both professional/ para-professional and managerial occupations exceed that of services. For the U.S. as a whole, professional/para-professional growth exceeds services by almost 5%. This finding runs somewhat counter to the popular wisdom that job growth is occurring primarily in the low-pay service sector. Job loss trends in manufacturing industries[11] are indeed offset by growth in service industries, but the service occupations for which growth is highest both in absolute (total jobs) and relative (rate of growth) terms fall in the relatively high-pay professional/para-professional occupational class. Numbers for the two classes (professional/para-professional and services) are actually fairly close to one another, but the professional class enjoys a small advantage in terms of both absolute numbers and in rate of growth. This holds true for both Missouri and the U.S., with the U.S. leading Missouri slightly across the board.

Intra-state trends: comparing the Kansas City and St. Louis metropolitan areas

Projected total employment growth by major occupational class in Missouri overall is presented in Chart 3. The projected annual growth rates for Missouri calculated from these figures appear in the first data column of Table 2. Although comparable totals for the Kansas City and St. Louis metropolitan areas are not illustrated in the chart, comparable annual growth rates appear in the second and third data columns of Table 2. The annual growth rate data from Table 2 is presented graphically in Chart 4.

A brief study of Chart 3 confirms our earlier observation that the largest component of occupational growth in the state is in professional/para-professional occupations, followed by service and industrial occupations, where total growth is actually about equal, but the growth rates vary due to the levels of employment against which they are calculated. Study of Table 2 and Chart 4 shows us that while projected annual growth rates for

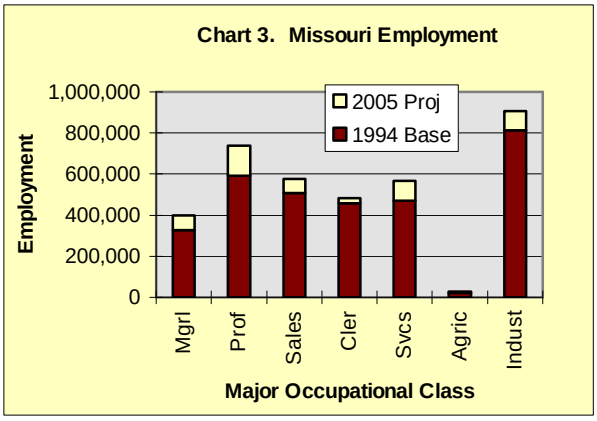
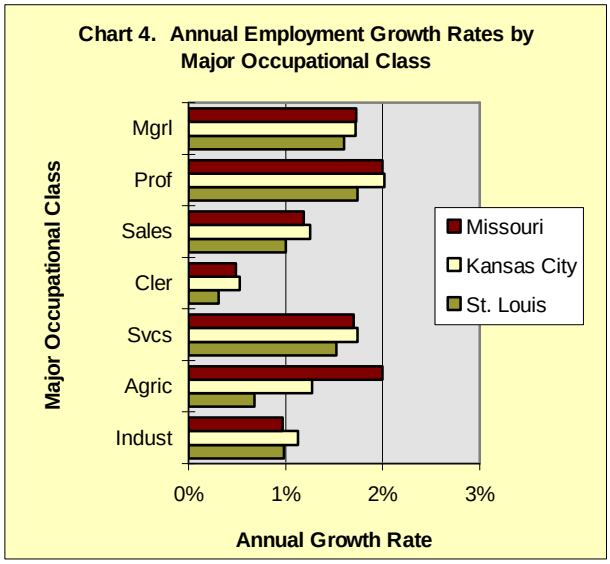


Table 2. Employment by major occupupational class -- proj. annual growth rate, 1994-2005

	Missouri	Kansas City	St. Louis
Total	1.34%	1.38%	1.18%
Mgrl	1.73%	1.72%	1.60%
Prof	2.00%	2.02%	1.74%
Sales	1.19%	1.25%	1.00%
Cler	0.49%	0.53%	0.31%
Svcs	1.70%	1.74%	1.52%
Agric	2.00%	1.27%	0.68%
Indust	0.97%	1.13%	0.98%

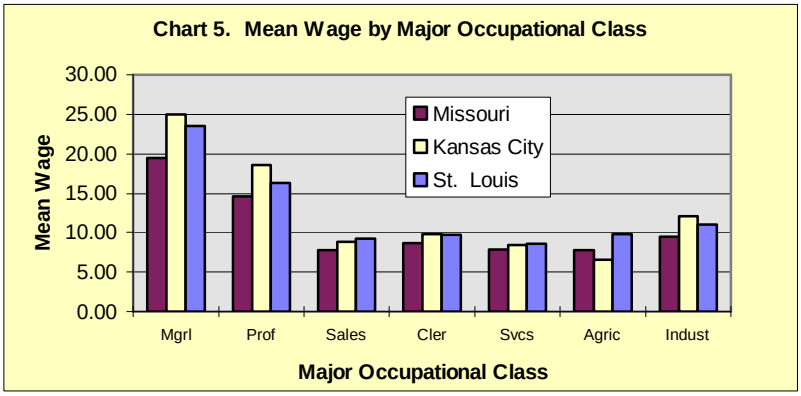
Data sources: MOICC

Kansas City and St. Louis are roughly comparable to those for the entire state, a pattern of variation does exist. With the exception of agriculture (which we disregard for reasons already discussed) projected growth rates for Kansas City are higher across the board than those for either the state or for St. Louis, while those for St. Louis are uniformly lower than those for Kansas City and the whole state.



The Occupational Structure of Employment and Income Distribution

Mean wages for the seven major occupational classes are displayed in Chart 5 by state and major metropolitan area. Not surprisingly, we find that mean wages in both metropolitan areas exceed those for the state as a whole. Mean wages in Kansas City exceed those in St. Louis for the occupational classes with relatively higher overall mean wages (managerial, professional, industrial).



Mean wages as presented in Chart 5 display a clear pattern of variation among the major occupational classes. Managerial wages are clustered around $20 per hour, professional wages around $15, and occupations in sales, clerical, services, and industrial classes--all largely working class occupations--are uniformly at or just under $10. This represents a rather straightforward conformance of wages to the familiar hierarchical categorization of managerial,

professional, and working class occupations.

Study of Chart 5 in conjunction with Charts 3 and 4 will allow us to explicitly quantify an earlier parenthetical observation regarding the effect of projected occupational employment growth on distributional trends. Changes in the distribution of earnings, i.e. labor income, will be jointly affected by the proportion of total employment, growth rate, and relative wages of the major occupational classes.

In 1994, for example, professional/para-professional occupations constituted the highest percentage (18.57%) of the Missouri workforce other than that of industrial occupations (25.47%), accounting for 593,272 and 813,708 jobs, respectively, out of total employment of 3,194,885.[12] Service occupations accounted for 471,590 jobs, or 14.76% of total employment.[13] Projected annual growth rates for these occupational classes are 2.00% for professional/para-professional occupations, .97% for industrial occupations, and 1.70% for service occupations. Those annual rates translate into projected 1994-2005 total job growth of 145,804, 92,088, and 96,904, respectively. The Missouri mean wage for professional/para-professional occupations is $14.66/hour, $9.50/hour for industrial occupations, and $7.81/hour for service occupations.

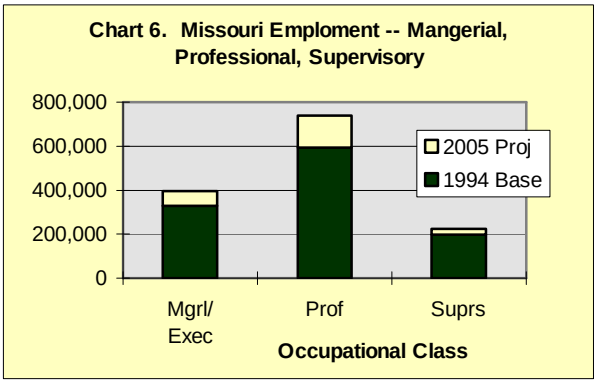
Some interesting and useful observations can be drawn just from this small subset of highlighted data. Although the projected growth rate for industrial occupations is relatively quite low, the proportion of the workforce it constitutes is relatively much higher; thus, total projected growth for industrial jobs is nearly equal to that for service occupations, which have a significantly higher projected rate of growth, but constitute a correspondingly smaller proportion of the workforce. Given the wage differential between these two groups, we would expect a small but relatively negligible negative (i.e. more skewed, or "unequal") shift in the earnings distribution. In contrast, the growth rate for professional/para-professional occupations, which constitute the second highest proportion of the workforce (exceeded only by industrial occupations), together with the second-highest mean wage (exceeded only by executive/managerial occupations) is the highest among all groups. These relations, absent another eually significant offsetting shift, would lead us to expect a substantial positive shift (i.e. less skewed, or "more equal") in the distribution of earnings. Such a scenario, net, contradicts the commonly popular perception that job losses in relatively high-wage manufacturing and other industrial occupations are being replaced primarily by growth in relatively low-wage service occupations. Further, it could suggest a possible reversal of the recent historical trend toward more unequal distribution of income. More of this story, however, remains to be told.

Analysis in the Trenches: Looking at the Subdivisions of Major Groups

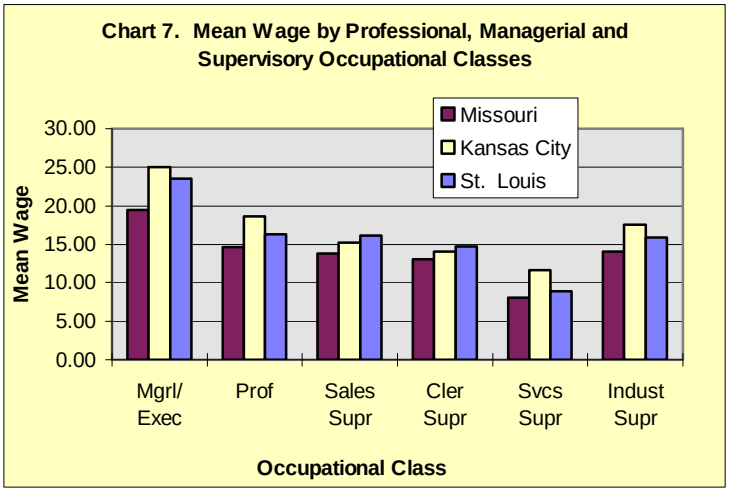
Our analysis so far has been conducted exclusively in terms of total employment divided into seven major occupational classes. Although we may find considerable utility to be derived from this level of analysis, we will also find its extension into occupational subdivisions of the major classes to be of considerable additional value. While an exhaustive analysis at that level is well beyond the scope of this brief, we may readily illustrate its additional utility with a few of the more obvious and dramatic examples.

One primary advantage to be derived from subdivisional analysis is a significant improvement in certain kinds of relevant categorical homogeneity. Two primary dimensions of concern may be readily identified. First, occupational aggregation in the OES at the major class level separates executive/managerial occupations from the rest, but aggregates super-

visory and non-supervisory occupations in all other major classes. Secondly, the OES "professional/para-professional/technical" major class aggregates "professional" with "vocational" occupations,[14] resulting in a significant loss of homogeneity along the education/training/skills dimension. We will see that a disaggregated analysis and judicious re-aggregation of major class subdivisions can provide considerable improvement in the overall homogeneity of occupational analysis



Data Sources: MOICC



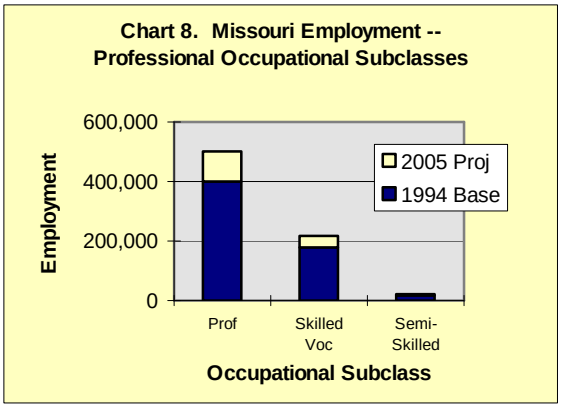
along both of those dimensions.

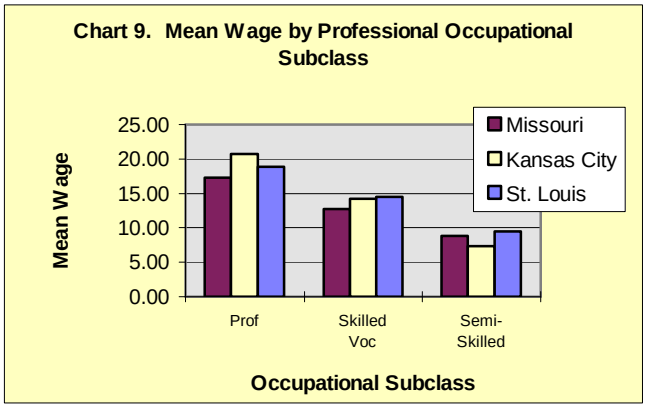
One problem with the major groups is that the non-managerial classes include supervisory occupations. If supervisory occupations are separated for analysis from non-managerial classes, we obtain some interesting results in terms of our wage analysis.

Chart 6 displays the total employment of supervisory occupations relative to the managerial and professional groups. In Chart 7, mean wages for supervisory occupations in non-managerial classes are compared to those for managerial and professional classes. An interesting pattern emerges from this exercise. Note the consistency across the board of supervisory mean wages with professional class mean wages, which remain below that for executive/managerial occupations, re-emphasizing their conformance with workplace hierarchies. The single exception to this pattern occurs in service occupations, where the familiar "low-wage" character of working class service occupations apparently continues to assert itself.

Our second problem involves disaggregation of the professional and vocational occupations which are aggregated by major class. The professional, skilled, and semi-skilled vocational components of the professional/para-professional/technical major class are displayed in Chart 8, where we see that professional occupations dominate this group both in terms of total employment, and of growth. Semi-skilled occupations in this class are a negligible element. The effect on mean wages, Chart 9, is to push the professional wage closer to the executive/managerial, while that for skilled vocational occupations falls nearer the level of that for working class occupations in the other major classes.

Domination of this class by professional vs. vocational occupations is again interesting in terms of distributional trends. We have noted that projected growth in the high-wage professional/para-professional (services) occupational category significantly exceeds that in the low wage (working class) service occupations, thus providing a measure of compen-



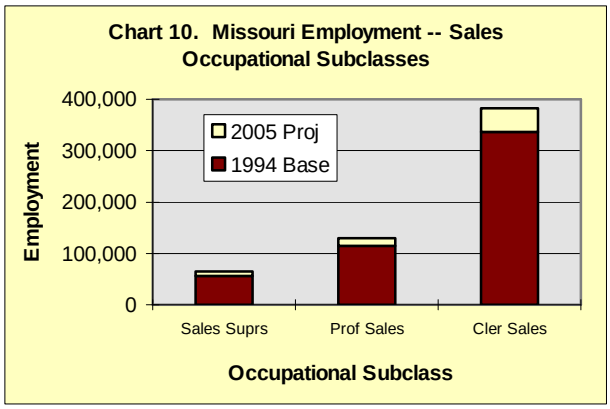


Data Sources: MOICC

sation for losses in the relatively high-wage manufacturing sectors of the economy. But we now also see that the growth in high-wage professional service occupations also exceeds that for lower-wage skilled vocational occupations within this class. This represents the source of concern for the "vanishing middle class" and polarization of the income distribution, occurring primarily in terms of the ability of individuals in the labor force to obtain higher educational credentials.

Additionally, in terms of the education/ training/skills dimension, an examination of the "sales" major class at the level of detailed occupations reveals the aggregation of a significant element of what might be called professional vs. clerical sales, strongly dominated by the clerical sales occupations (Chart 10). Separation of these elements reveals a mean wage pattern (Chart 11) in conformance with what we have already seen, with the possible exception that the mean wage for working class clerical sales is relatively quite low compared to what we have seen in working class mean wages across the board. Note, however, that it does fall in line more closely with the semi-skilled mean wage in the professional/paraprofessional class, suggesting a more polarized occupational structure in the sales category than exists in the professional/ paraprofessional group.

Subdivisional analysis up to this point has been largely employed in the context of improved categorical homogeneity along the managerial/supervisory and education/ training/skills dimensions, although that process has allowed us to derive some additional information concerning wages and distributional effects. In the process of that analysis, we have examined the subdivisional structure of two major classes, and the supervisory com-



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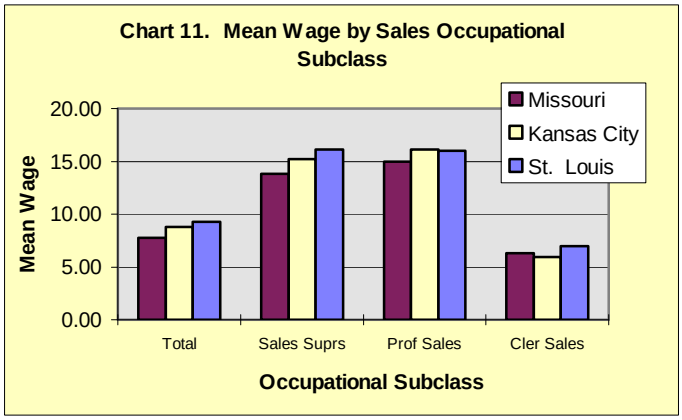

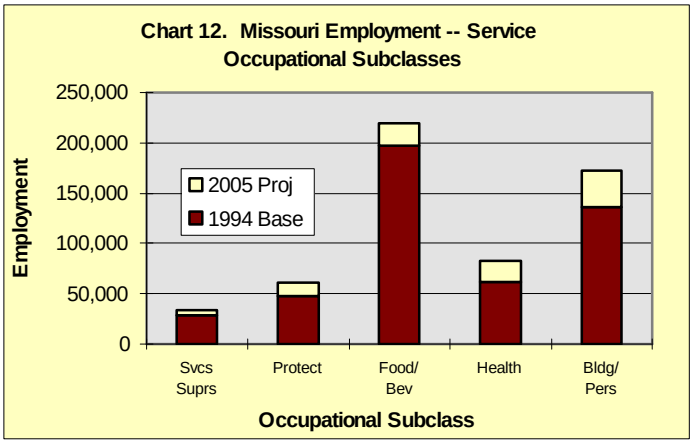

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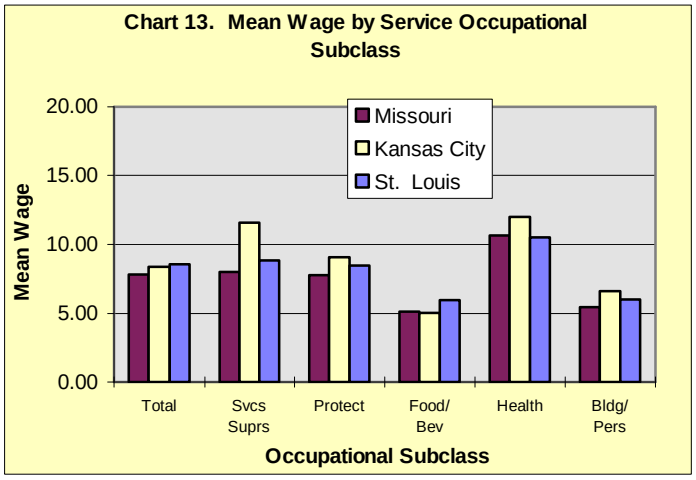
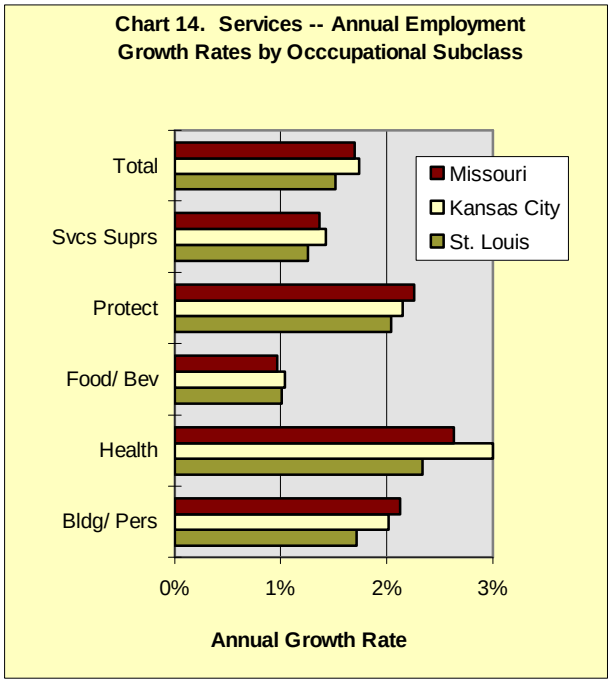
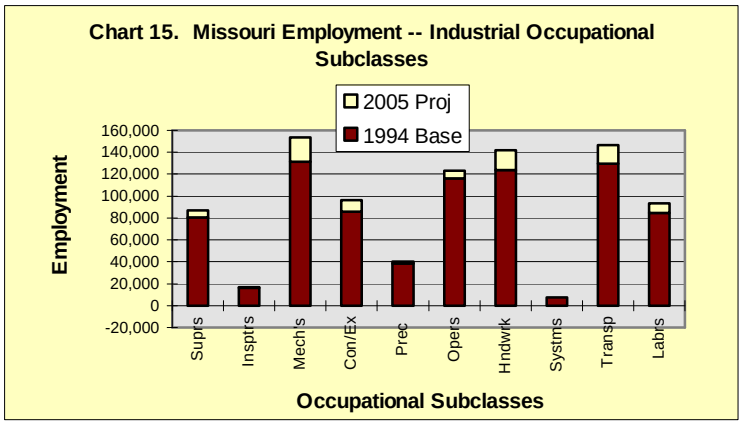




ponents of them all. This examination, however, has not emphasized the different projected growth rates for subdivisional groupings, because for the major groups of interest in the context of homogeneity, the subdivisional growth rates do not display particularly significant variation, and are therefore largely uninteresting. Application of the proportional total employment, mean wage, and growth rate analysis to the "services" major class, however, does give us some interesting results. This application is presented in Charts 12, 13, and 14.

Here we note that food and beverage services constitute the largest component in this category, with the lowest mean wage. But we also note that it exhibits the slowest growth rate. In contrast, health services, constituting a relatively small percentage of total service occupational employment, have both the highest mean wage and the fastest growth rate. Thus, we can say that even within the relatively low-pay (i.e. working class) services, projected growth does not necessarily entail the unremittingly negative consequences with which it is associated in popular perceptions.

Finally, Charts 15, 16, and 17 present a similar analysis for subdivisions of the industrial category. No dramatic insights leap out from a cursory examination of these charts. They are included to give the reader a feeling for the broad range of occupational groups aggregated in this class. However, all three elements of the analysis--total proportion, mean wage, and growth rate--exhibit a pattern of broad variation, making the subdivisions of this group an interesting subject for study. That exercise is now left to the educated reader.



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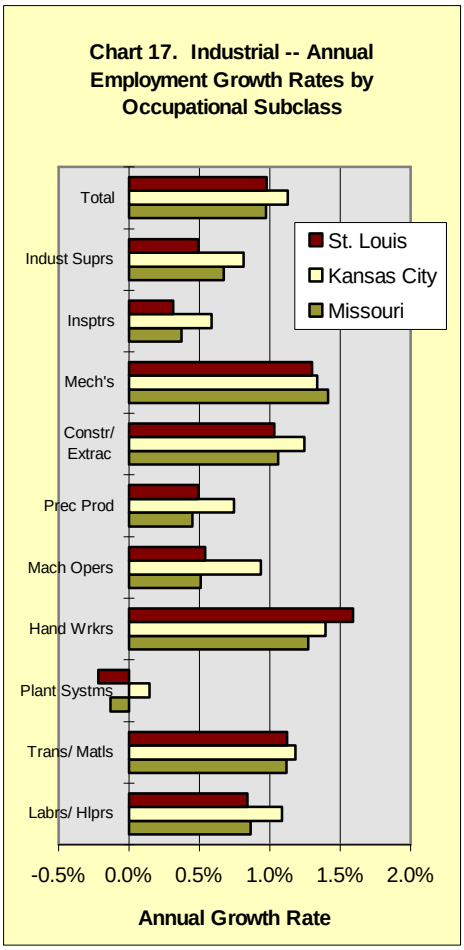


Notes

[1] *www.census.gov*

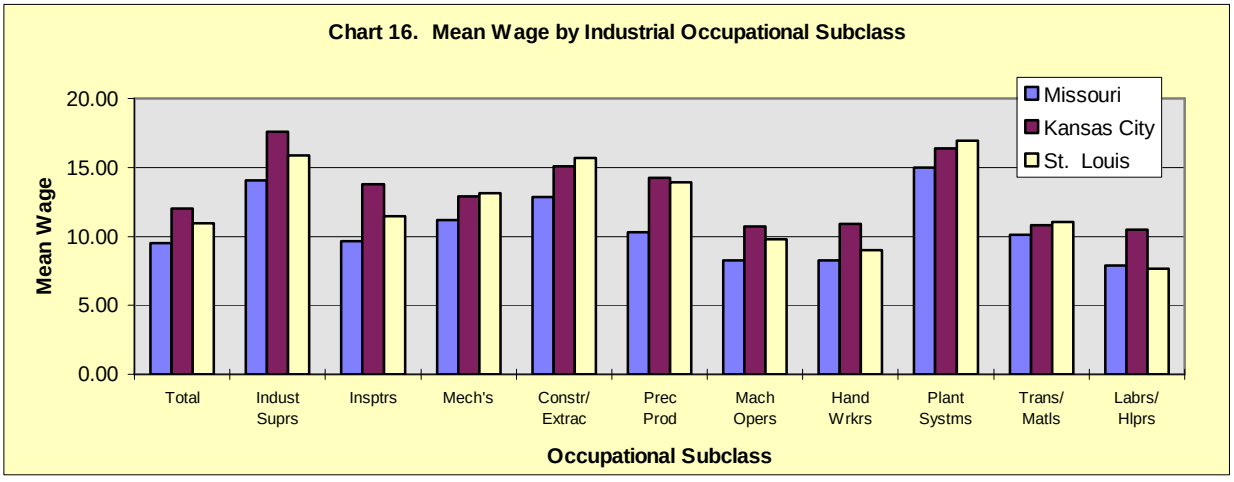
[2] *www.bls.census.gov/cps/cpsmain.htm*

[3] *stats.bls.gov*

[4] *www.dolir.state.mo.us*

[5] The venerable SIC is of course scheduled to be superseded this year in the 1997 Economic Census conducted by the Census Bureau, by the new North American Industrial Classification System (NAICS), developed in collaboration with Canada and Mexico.

[6] *stats.bls.gov:80/oeshome.htm*. Yet another synthesis of occupational classification systems is underway among federal and state agencies. Information on this project can be found at the *O*Net* site *(www.doleta.gov /programs/onet)*.



[7] *www.noicc.gov*

[8] *stats.bls.gov:80/emphome.htm*

[9] *www.works.state.mo.us/moicc*

[10] While chart labels for the seven major occupational classes are abbreviated for ease of handling, abbreviations for all but the last group are straightforward. The seventh major class is an aggregation of such diverse occupations that it was difficult to select a descriptive abbreviation. The collective term "blue-collar industrial," or just "industrial" for short, was finally settled on. That label is used consistently throughout this report for that aggregated category.

[11] In the analysis of structural employment, it is important to keep in mind the distinction between industrial

sector and occupational class. While some occupations may be found primarily in one industrial sector or another (e.g. medical occupations will be found primarily in the medical services industrial sector), others (such as clerical or professional) are found spread through many or most industrial sectors.)

[12] All referenced data not presented in tabular or charted format may be found in the summary dataset which is available as a hypertext document, or in downloadable spreadsheet format.

[13] Implying non-professional, i.e. working class, service occupations. The para-professional/technical component of the "professional" occupational class renders this an oversimplification which we will duly address

[14]"Professional" occupations are typically defined in terms of their requirement for a bachelor's degree or higher. By comparison, the skilled and semi-skilled "vocational" occupations are typically considered to require more or less extensive post-secondary education and/or training, and a high school degree, respectively.