

# An Analysis of the Possible Correlation Between Occupational Mean Wage Levels and the Total Employment of a Metropolitan Statistical Area

Michael Soloy

The Occupational Employment Statistics (OES) program collected occupational wage data for approximately 800 occupations in 337 Metropolitan Statistical Areas (MSAs) in 1999. This article uses those data to examine whether there is a correlation between the total number of workers in all occupations within an MSA and the overall occupational wages.

## Advantages of OES comparisons

Unlike other data sources, which can provide only an all-occupation MSA wage, the OES program provides data for specific occupations, ensuring that comparisons will be made only among workers who perform the same duties. For example, a city with a large population might have a higher all-occupation wage than a smaller city because it has a greater percentage of high-wage occupations (such as doctors or engineers), or because it has overall higher individual mean wages for the same group of detailed occupations. This article examines whether MSAs with a higher amount of employment have higher occupational wages overall for the same occupations than do MSAs with a lower level of employment.

## Methodology

Each of the 337 MSAs were assigned to 1 of 5 size groups according to their total MSA employment. The groups are shown in text table 1 below.

The OES program does not include in its employment self-employed workers, owners of nonincorporated businesses, military, or workers in farm establishments. Refer to appendix B at the end of this publication for a full description of the OES survey methodology. In addition, the total OES MSA employment represents the number of workers that work in that MSA; it does not represent the population of the MSA.

The following procedure was used to analyze the data: (1) Five MSAs were selected at random from each of the five MSA size groups for a total selection of 25 MSAs; (2) All occupations that were found in all 25 of the MSAs were selected—approximately 80 occupations fit this criterion for each 25-MSA sample; (3) The selected area/occupation cells were sorted first by occupation and then by the annual mean wage; (4) The area wage for each occupation was ranked from 1 (representing the highest area wage) to 25 (representing the lowest area wage), and this ranking was repeated for each of the selected occupations; and (5) The area/occupation ranks were averaged for each of the five MSA size groups. This procedure was repeated five times for five separate 25-MSA samples.

## Results

The results for each of the five samples are shown in the following five text tables.

Text table 1. MSA size groups

Group designation letter	Total OES MSA employment requirements for size group	Number of MSAs that qualify (out of 337 total)	Percent of total number of MSAs
A	Equal to or more than 2,000,000 workers	9	2.7
B	Equal to or more than 1,000,000 workers, but fewer than 2,000,000	16	4.7
C	Equal to or more than 500,000 workers, but fewer than 1,000,000	35	10.4
D	Equal to or more than 100,000 workers, but fewer than 500,000	128	38.0
E	Fewer than 100,000 workers	149	44.2

Text table 2: **Sample 1 results**

MSA size group	Average rank
B	9.51
A	10.14
C	12.16
D	15.12
E	18.07

Text table 3: **Sample 2 results**

MSA size group	Average rank
A	8.00
B	8.53
C	14.45
D	16.59
E	17.43

Text table 4: **Sample 3 results**

MSA size group	Average rank
A	9.80
B	9.92
D	12.99
C	14.57
E	17.71

Text table 5: **Sample 4 results**

MSA size group	Average rank
A	7.89
B	9.11
D	12.94
C	13.67
E	18.97

Text table 6: **Sample 5 results**

MSA size group	Average rank
A	7.38
B	8.83
C	11.21
D	17.93
E	19.66

As described earlier, a lower numerical rank value for a given MSA/occupation cell corresponds to a higher MSA occupational mean wage compared with other selected areas for that same occupation. Therefore, a lower average numerical rank value for an MSA size group represents higher overall occupational wages for the given MSA size group compared with the other MSA size groups.

### Conclusions

The expected result is for the MSA size groups to appear in order from A to E when sorted by lowest average rank to highest. This would correspond to the idea that MSAs with higher total employment have higher occupational wages overall than do MSAs with lower total employment.

Two of the five samples, sample 2 and sample 5, show the expected results. The other three samples show results that are close to the expected results, but each have two MSA size groups that are in a different order than expected. However, the two largest MSA size groups, A and B, always have the lowest two average ranks in all five samples examined. Also, the smallest MSA size group, E, always has the highest average rank in all five samples examined. Even though the five samples do not provide an exact match with the expected results, they provide support for the hypothesis that MSAs with large total employment have higher occupational wages overall for the same occupations than do MSAs with smaller total employment.