

## High-Level Engineering Skills for Aviation Manufacturing Communities

In the modern business world, having a highly skilled workforce has become increasingly important to economic success. The Center for Economic Development and Business Research (CEDBR), with funding from the Greater Wichita Economic Development Coalition, recently conducted a study to estimate the skill levels of the employed workforce in the Wichita metropolitan statistical area<sup>1</sup> (MSA) and other MSAs. Data on the occupations of the employed workforce for each MSA were matched to the skill and knowledge levels required to adequately perform each occupation. Using this data, which was provided by the national Occupational Information Network Database, the skills of each MSA's workforce were compared to the national workforce to estimate the fraction of the MSA's workers who ranked in the top quartile (75<sup>th</sup> percentile and above) nationally in each skill and knowledge category.

This study focused on the engineering occupations in ten aviation manufacturing MSAs. The table on the following page ranks each community in terms of what fraction of the employed workers in the engineering occupations were estimated to rank in the top quartile nationally for select skill and knowledge categories.

Some highlights:

- Among these ten MSAs, Wichita is the only metropolitan area with engineers who rank in the top 5 in every skill and knowledge category selected.
- Seattle had the most first place rankings, with four top rankings out of ten categories. Wichita had the most second place rankings, with six.
- Wichita has the highest average ranking of the ten MSAs; Seattle and Savannah had the second and third highest average rankings, respectively. Tulsa had the lowest average ranking of the ten MSAs.

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<sup>1</sup> The Wichita metropolitan area is defined as Sedgwick, Butler, Harvey, Kingman, and Sumner counties.



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Rankings of Engineering Occupations in Select Skill and Knowledge Categories for Major Aviation Manufacturing MSAs  
Ranking the Fraction of Engineering Workers in the Top National Quartile for Skill and Knowledge Categories

	Wichita	Seattle	Savannah	Los Angeles	Greensboro	Charleston	Mobile	Oklahoma City	Phoenix	Tulsa
Complex Problem Solving	2	1	7	4	6	3	5	9	8	10
Quality Control Analysis	3	7	6	2	8	10	9	1	5	4
Science	1	2	3	4	6	7	5	9	8	10
Systems Analysis	2	1	8	4	6	3	5	9	7	10
System Evaluation	2	4	1	5	6	7	3	9	8	10
Computers and Electronics	5	7	4	3	6	2	9	8	1	10
Mathematics	2	1	8	5	4	7	3	6	10	9
Mechanical	2	1	3	10	6	7	5	8	9	4
Physics	4	8	1	6	2	5	9	3	7	10
Production and Processing	2	10	1	6	3	5	9	4	7	8
Average Ranking	2.5	4.2	4.2	4.9	5.3	5.6	6.2	6.6	7	8.5

Source: CEDBR analysis, using data from U.S. Bureau of Labor Statistics and ONET

## Methodology

The skill categories of the employed Wichita workforce were derived from a combination of the Bureau of Labor Statistics (BLS) occupation data and the Occupational Information Network (ONET) database. The BLS occupation data provides the number of workers employed in each occupation in each metropolitan area in the United States. The data only includes currently employed workers and the occupations that they hold. This study included the May 2013 dataset, the most recent information available at the time the study was conducted.

The ONET database has entries for each occupation, detailing the skills, knowledge, workload, education level, and other characteristics required of each occupation. ONET contains 35 different skill categories and 33 knowledge categories, and the database assigns a level for each skill and knowledge category required by each job. The skill categories include worker abilities that could be applied to a wide variety of tasks, such as persuasion, writing or equipment maintenance. The knowledge categories include worker knowledge of a broad topic, such as engineering, communications, or accounting.

For this study, the ONET database provided the required skills and knowledge categories for each occupation, which was then matched to the BLS occupation data for the Wichita MSA, to provide a database of skills and knowledge levels of the Wichita workforce. A small number of occupation identifiers in the BLS data used for miscellaneous jobs are not described in the ONET database since there are not consistent job characteristics within that occupation identifier. These occupations were dropped from the dataset.

Each skill and knowledge category is given a numerical score in the ONET database to represent the level of the skill required for each occupation. To identify a high level of a skill or knowledge category, the top quartile of the national workforce in that skill level was used to create a uniform standard across all knowledge and skill categories. Using national occupation data, merged with the ONET database, the value of each knowledge and skill level at the 25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup> percentile was determined, and these were used as the cutoff for being considered moderately low, moderately high, or highly skilled in that skill or knowledge category. Those workers with a skill level between the 25<sup>th</sup> and 50<sup>th</sup> percentile were considered to be at a moderately high skill level, workers between the 50<sup>th</sup> and 75<sup>th</sup> percentile were considered to have a moderately low skill level, and workers with a skill level below the 25<sup>th</sup> percentile were considered to have a low skill level.