Relationship between Skills and Wages

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Introduction

For years we have heard that high skilled jobs pay relatively high wages and low skilled jobs pay relatively low wages. We, at Smart Solutions Group (SSG), set out to see if occupations requiring high skills pay higher wages than jobs that require fewer skills. We also wanted to determine the relationship between skills and education/training. At the end of this report SSG will present the implications of the findings from this study on economic developers.

The occupations in the Department of Labor's Standard Occupational Classification (SOC) System were used in this study. The data for jobs and wages came from Economic Modeling Specialists Int'l (EMSI), a leader in economic analysis and databases. We used EMSI's 2015 second quarter dataset that includes data from the Bureau of Labor Statistics and the Census Bureau. The skills data came from ACT, a worldwide leader in workforce and education assessments. The total score of the skill levels for the three major ACT WorkKeys assessments (Reading for Information, Applied Mathematics, and Locating Information) were used to determine the skills required for each occupation. These three WorkKeys skills form the foundation of the National Career Readiness Certificate (NCRC), which is the leading work skills measurement system. The skill levels for each of the occupations were determined by ACT based on thousands of job analyses conducted over the past five years that are shown in ACT's Occupational Profiles. Degree of preparedness data from the Bureau of Labor Statistics' ONet occupation database was used for the education and training data in this study.

Skills and Wages

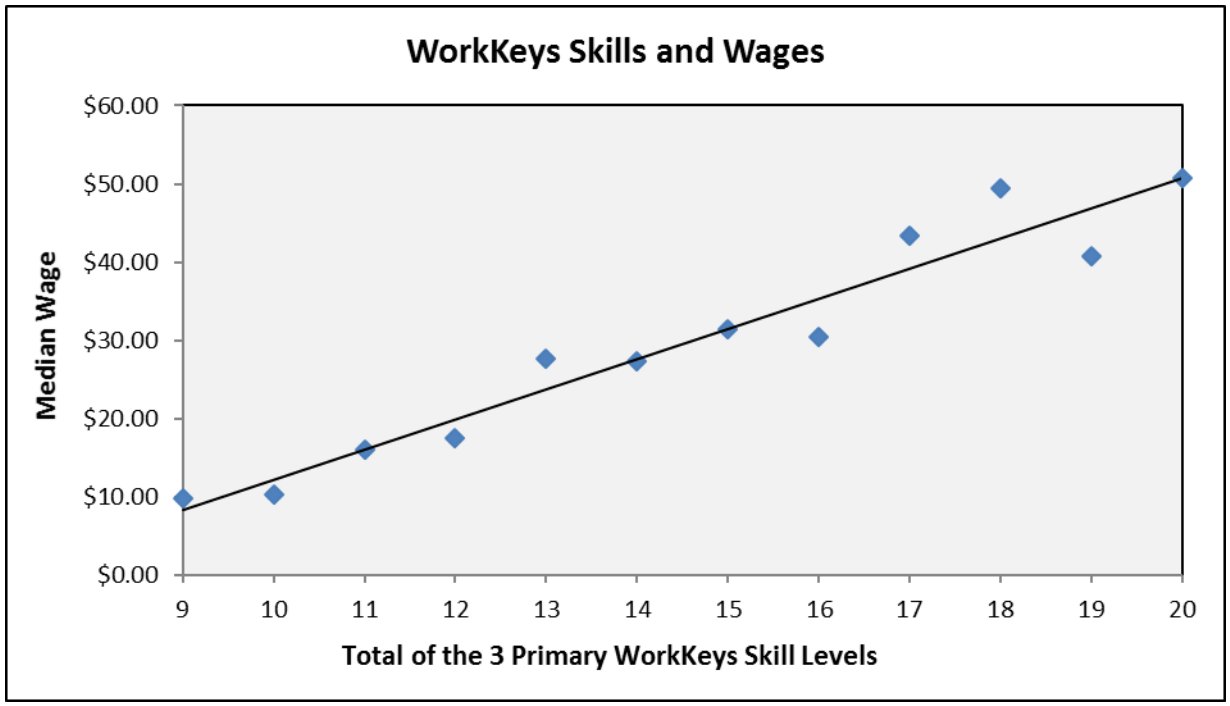
There are 690 occupations in the EMSI database that have Occupational Profiles that include the three WorkKeys in the NCRC. In this study, 676 occupations were used because 14 occupations were excluded because they would distort the study results because they have very high wages and require extensive education and training (doctors and dentists) or extensive high level experience (chief executives). These 676 occupations, which included over 142 million jobs, were grouped by the sum of the score levels for each of the WorkKeys assessment and these groups ranged from a low combined score of 9 to a high score of 20. The following table shows the number of occupations and jobs for each of the combined score levels.

Combined WKs Score Level	No. of Occupations	No. of Jobs
9	49	17,594,420
10	110	31,617,119
11	105	27,159,310
12	154	23,643,859
13	72	15,881,887
14	57	9,746,692

Combined WKs Score Level	No. of Occupations	No. of Jobs
15	69	8,772,234
16	30	4,406,620
17	16	2,815,288
18	8	447,730
19	5	516,161
20	1	71,192

As can be seen in this table, there are many more jobs and occupations at the low skill levels than at the high levels. According to the Bureau of Labor Statistics, the job skills required in the future will be greater than those needed today.

The following exhibit shows the comparison of Skills (as represented by the different total score levels for the 3 WorkKeys) and Median Wages.



There is a very strong correlation between Skills Levels and Wages – as expected, higher skills levels have higher wages and low skill levels have lower wages. For those interested in statistics, the correlation coefficient for this relationship (R^2) is .936, which is close to a perfect correlation of 1.000. While the correlation between these skill levels and wages is high, it must be noted that there is a wide variation in wages for each of the combined skill levels for the three WorkKeys. This wide variation is due to supply/demand and educational preparation needed for each occupation in the combined skill level. In addition, combining the three WorkKeys scores into one aggregated score does put somewhat different skill levels into one score. For example, the combined WorkKeys Skill Level of 12 is comprised of twelve different combinations of the score levels on Applied Mathematics (AM), Reading for Information (RI), and Locating Information (LI). A skill level of 12 can be made up of AM = 4, RI = 4, and LI = 4, or it can be 5-4-3, 3-4-5, or nine other combinations. However, based on the correlation between skills and wages shown above, the methodology of combining the 3 WorkKeys scores has little impact on the skills – wages relationship.

Skills and Education & Training Preparedness

ONet provides an estimate of the degree of education and training that is needed for most occupations by categorizing occupations by zones of preparation:

- Zone 1: Little or no preparation needed
- Zone 2: Some preparation needed
- Zone 3: Medium preparation needed

- Zone 4: Considerable preparation needed
- Zone 5: Extensive preparation needed

The following graph shows a strong correlation (R^2 = .985) between skills needed in an occupation and the education and training preparedness needed.

Since education and training preparedness is highly correlated to skills, it is not surprising that there is a very strong correlation between preparedness and wages (R^2 = .987).

Summary

The strong relationship between skills and wages is well known to many economic developers. However, many politicians and the general public may not know this. Therefore, the data in this report can be useful in showing others that there is a system, albeit informal, that supports the wage structure in our nation and it is based on skills that are typically developed through education and training.

This strong relationship shows that the way for workers to increase their wages is to increase their skills. To increase their skills, workers need additional education or training.

Since there is this relationship between skills and wages, an increase in the minimum wage will have a ripple effect through the entire wage structure. This will result in the median wages for all skill levels increasing such that in the long-term the increase in minimum wage will have limited impact on the buying power of the low-wage workers. To improve the standard of living for low wage workers, it would be more effective to offer education and training programs to these workers so that they can obtain a higher skill and qualify for higher paying job.