

Methodology for ACT WorkKeys® as a Predictor of Worker Productivity

The analysis examined the predictive potential of ACT WorkKeys® with regard to two elements. The first is “time to employment.” People taking WorkKeys were either completing schooling or actively in the job market and looking for employment. The time to employment was measured as the number of weeks from the date of the test until the individual appeared on a wage record. The observation count for this was 200,044. Not everyone taking the exam had a wage record, as some individuals may have never found work, retired or moved out of state.

Wages were also of interest. Ideally, if this were a longitudinal dataset, an assessment could have been made examining the score on the test versus wage growth over a five- or 10-year horizon. Assuming wages as a proxy for performance, a relationship between WorkKeys’ scores and on the job performance would be properly ascertained. Unfortunately, such a longitudinal series was not available so two different wage measures were used.

The first, “wage after test,” reflects the average wage collected in the second and third quarters from the date of initial employment (this compensates for mid-quarter hiring or the potential influence of signing bonuses). The observation count for this was 265,229. However, this variable may be detrimentally influenced by selection bias. Highly productive employees likely score well on the assessment and find a more highly paid position in reemployment. The high wage on reemployment might be a function of the exam, but it might also be an indication of prior wage. To accommodate this potential, an additional “wage difference” variable was created. It is based on the difference between wages after reemployment with those before the test (using a similar collection method). The observation count for this was 64,642.

The analysis additionally looked at individuals age 19 and older and those between ages 16 and 18. Most individuals took WorkKeys during a phase of unemployment and as a result of applying for jobs with specific employers. This self-selection has the potential to bias results. However, some school districts provided these assessments to students prior to graduation from high school and the student pool would be less likely to suffer from self-selection. The results were run against both groups to determine if any detectable difference could be ascertained.

A standard ordinary least squares (OLS) model was utilized to assess the data. As the tests were taken in such short time proximity, the potential influence of time was discounted in this preliminary study.

$$\begin{aligned} \text{Time to Employment}_i &= \beta_0 + \beta_1(\text{Gender}_i) + \beta_2(\text{Age}_i) + \sum_{k=3}^8 \beta_{k,i}(X_{k,i}) + \sum_{n=9}^{17} \beta_{n,i}(Y_{n,i}) + \varepsilon \\ \text{Wage Difference}_i &= \beta_0 + \beta_1(\text{Gender}_i) + \beta_2(\text{Age}_i) + \sum_{k=3}^8 \beta_{k,i}(X_{k,i}) + \sum_{n=9}^{17} \beta_{n,i}(Y_{n,i}) + \varepsilon \end{aligned}$$

Where

i = individual

X_k = Tests: Reading for Information, Locating Information, Observation, Teamwork, Applied Mathematics, Applied Technology

Y_n = Highest Educational Attainment: 8th Grade or Less, Grades 9-11, H.S. Graduate or Equivalent, 1 Yr College, 2 Yr College or Associates, 3 Yr College, Bachelor's, Master's, Doctorate

The results provided below indicate no statistical influence on the choice of test taken with time to employment or wage.

The next set of tests examined the influence of score on the tests with regard to time to employment and wages, while controlling for the additional variables. These tests were run independently on the young cohort and older cohort.

$$\text{Time to Employment}_i = \beta_0 + \beta_1(\text{Gender}_i) + \beta_2(\text{Age}_i) + \beta_3(\text{Level}_i) + \sum_{n=4}^{12} \beta_{n,i}(Y_{n,i}) + \varepsilon$$

$$\text{Wage After Test}_i = \beta_0 + \beta_1(\text{Gender}_i) + \beta_2(\text{Age}_i) + \beta_3(\text{Level}_i) + \sum_{n=4}^{12} \beta_{n,i}(Y_{n,i}) + \varepsilon$$

$$\text{Wage Difference}_i = \beta_0 + \beta_1(\text{Gender}_i) + \beta_2(\text{Age}_i) + \beta_3(\text{Level}_i) + \sum_{n=4}^{12} \beta_{n,i}(Y_{n,i}) + \varepsilon$$

Where

Level: Level score individual achieved on the WorkKeys Assessment Test

The results of the analysis indicate little difference between younger and older groups. Either the influence of selection bias as a result of mandated employer participation by applicants is not large enough to be detected or the method of splitting age groups to isolate the bias was insufficient.

Tables

| Observation Count Test | Wage After Test | | |
|---------------------------|------------------------|----------|----------|
| | Total | above 18 | 16 to 18 |
| Reading for Information | 51445 | 46283 | 5162 |
| Locating Information | 76294 | 70482 | 5812 |
| Observation | 55464 | 54315 | 1149 |
| Teamwork | 18451 | 18027 | 424 |
| Applied Mathematics | 55372 | 49914 | 5458 |
| Applied Technology | 7497 | 7274 | 223 |

| Observation Count Test | Time (Weeks) to Employment | | |
|---------------------------|-----------------------------------|----------|----------|
| | Total | above 18 | 16 to 18 |
| Reading for Information | 38434 | 34669 | 3765 |
| Locating Information | 57771 | 53480 | 4291 |
| Observation | 42468 | 41567 | 901 |
| Teamwork | 13811 | 13486 | 325 |
| Applied Mathematics | 41533 | 37543 | 3990 |
| Applied Technology | 6027 | 5851 | 176 |

| Observation Count Test | Wage Difference | | |
|---------------------------|------------------------|----------|----------|
| | Total | above 18 | 16 to 18 |
| Reading for Information | 13011 | 11614 | 1397 |
| Locating Information | 18523 | 17002 | 1521 |
| Observation | 12996 | 12748 | 248 |
| Teamwork | 4640 | 4541 | 99 |
| Applied Mathematics | 13839 | 12371 | 1468 |
| Applied Technology | 1470 | 1423 | 47 |

| | |
|--------------|--------|
| # of Obs. | 265229 |
| F(20,265208) | 568.46 |
| Prob>F | 0.0000 |
| R-Sqr Adj. | 0.0411 |

| Variable | Coef | Std Err | t | p |
|---------------------------|-----------|---------|-------|---------|
| Reading for Information | -86.02 | 3198.5 | 0.03 | 0.979 |
| Locating Information | -93.01 | 3198.5 | 0.03 | 0.977 |
| Observation | -7.89 | 3198.5 | 0.00 | 0.998 |
| Teamwork | -110.91 | 3198.8 | 0.03 | 0.972 |
| Applied Mathematics | -112.00 | 3198.5 | 0.04 | 0.972 |
| Applied Technology | -72.05 | 3199.3 | 0.02 | 0.982 |
| Listening and Writing | -182.11 | 3207.6 | 0.06 | 0.955 |
| Locating Information | 461.06 | 4523.5 | 0.10 | 0.919 |
| Business Writing | (omitted) | | | |
| Workplace Observation | -2678.58 | 5539.9 | 0.48 | 0.629 |
| Gender (M) | -344.38 | 26.91 | 12.80 | 0.000** |
| Age at Test | -96.17 | 0.98 | 98.16 | 0.000** |
| 8th Grade or less | -688.28 | 80.21 | 8.58 | 0.000** |
| Grades 9-11 | -1377.09 | 73.12 | 18.83 | 0.000** |
| H.S. Grad. or Equiv. | -1204.99 | 48.94 | 24.62 | 0.000** |
| 1 yr. College/Tech./Voc. | -1233.43 | 62.22 | 19.82 | 0.000** |
| 2 yrs. College or Assoc. | -1232.24 | 58.22 | 21.17 | 0.000** |
| 3 yrs. College/Tech./Voc. | -1382.26 | 100.00 | 13.82 | 0.000** |
| Bachelor's Degree | -1364.78 | 70.12 | 19.46 | 0.000** |
| Master's Degree | -2811.28 | 173.18 | 16.23 | 0.000** |
| Doctorate | -1712.16 | 232.31 | 7.37 | 0.000** |
| Intercept | 4842.51 | | | |

Statistical Significance: 1% **, 5% *

| | |
|--------------|--------|
| # of Obs. | 200587 |
| F(19,200567) | 78.56 |
| Prob>F | 0.0000 |
| R-Sqr Adj. | 0.0073 |

| Variable | Coef | Std Err | t | p |
|---------------------------|-----------|---------|-------|---------|
| Reading for Information | 1.29 | 51503.1 | 0.00 | 1.000 |
| Locating Information | 0.60 | 51503.1 | 0.00 | 1.000 |
| Observation | -2.08 | 51503.1 | 0.00 | 1.000 |
| Teamwork | -3.38 | 51503.1 | 0.00 | 1.000 |
| Applied Mathematics | 1.34 | 51503.1 | 0.00 | 1.000 |
| Applied Technology | -1.68 | 51503.1 | 0.00 | 1.000 |
| Listening and Writing | -1.31 | 51503.1 | 0.00 | 1.000 |
| Locating Information | (omitted) | | | |
| Business Writing | -1.28 | 51503.1 | 0.00 | 1.000 |
| Workplace Observation | (omitted) | | | |
| Gender (M) | -0.02 | 0.12 | 0.21 | 0.835 |
| Age at Test | 0.08 | 0.00 | 18.88 | 0.000** |
| 8th Grade or less | -2.11 | 0.45 | 4.73 | 0.000** |
| Grades 9-11 | -0.88 | 0.42 | 2.08 | 0.037 |
| H.S. Grad. or Equiv. | -3.49 | 0.35 | 10.00 | 0.000** |
| 1 yr. College/Tech./Voc. | -3.64 | 0.38 | 9.48 | 0.000** |
| 2 yrs. College or Assoc. | -4.10 | 0.37 | 10.94 | 0.000** |
| 3 yrs. College/Tech./Voc. | 4.42 | 0.51 | 8.66 | 0.000** |
| Bachelor's Degree | -4.35 | 0.41 | 10.58 | 0.000** |
| Master's Degree | -6.02 | 0.79 | 7.60 | 0.000** |
| Doctorate | -5.79 | 1.04 | 5.59 | 0.000** |
| Intercept | 16.71 | | | |

Statistical Significance: 1% **, 5% *

| Test: Reading for Information Time to Employment Age: 19 and older | | | | Test: Reading for Information Time to Employment Age: 16 to 18 | | | | Test: Locating Information Time to Employment Age: 19 and older | | | | Test: Locating Information Time to Employment Age: 16 to 18 | | | | Test: Observation Time to Employment Age: 19 and older | | | | Test: Observation Time to Employment Age: 16 to 18 | | | | |
|--|-------|---------|--------|--|-----------|---------|------|---|-------|---------|-------|---|-----------|---------|------|--|-------|---------|------|--|-----------|---------|------|---------|
| Variable | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p |
| Level Score | -0.63 | 0.12 | 5.25 | 0.000* | -0.57 | 0.36 | 1.59 | 0.112 | -0.48 | 0.11 | 4.40 | 0.000* | -0.28 | 0.43 | 0.64 | 0.521 | -0.56 | 0.10 | 5.81 | 0.000** | 0.28 | 0.54 | 0.53 | 0.600 |
| Gender (M) | -0.62 | 0.29 | 2.19 | 0.029 | 2.17 | 0.98 | 2.22 | 0.027 | -0.24 | 0.23 | 1.02 | 0.308 | 1.95 | 0.91 | 2.15 | 0.031 | 1.55 | 0.23 | 6.49 | 0.000** | 3.78 | 1.26 | 2.99 | 0.003 |
| Age at Test | 0.12 | 0.01 | 10.69 | 0.000* | -4.93 | 1.12 | 4.40 | 0.000 | 0.10 | 0.01 | 10.84 | 0.000** | -4.74 | 1.08 | 4.37 | 0.000** | 0.08 | 0.01 | 8.52 | 0.000** | 1.79 | 2.72 | 0.66 | 0.510 |
| 8th Grade or less | -0.27 | 1.36 | 0.20 | 0.841 | -3.51 | 1.69 | 2.07 | 0.038 | 0.05 | 1.05 | 0.05 | 0.962 | -2.94 | 1.63 | 1.81 | 0.071 | 0.32 | 1.09 | 0.29 | 0.769 | -12.66 | 4.75 | 2.66 | 0.008 |
| Grades 9-11 | 3.55 | 1.24 | 2.85 | 0.004 | -6.26 | 2.05 | 3.05 | 0.002 | 2.02 | 0.98 | 2.06 | 0.039 | -5.79 | 1.89 | 3.07 | 0.000** | -0.79 | 1.07 | 0.74 | 0.460 | -10.33 | 3.87 | 2.67 | 0.008 |
| H.S. Grad. or Equiv. | -0.66 | 1.11 | 0.06 | 0.55 | -4.14 | 1.32 | 3.15 | 0.002 | -0.98 | 0.85 | 1.15 | 0.249 | -4.37 | 1.25 | 3.49 | 0.000** | -0.10 | 0.90 | 0.11 | 0.914 | -13.48 | 3.48 | 3.87 | 0.000** |
| 1yr. College/Tech./Voc. | -0.73 | 1.18 | 0.62 | 0.536 | -6.22 | 2.52 | 2.47 | 0.014 | -0.91 | 0.91 | 1.00 | 0.318 | -4.91 | 2.30 | 2.13 | 0.033 | 0.26 | 0.95 | 0.27 | 0.784 | -10.41 | 4.17 | 2.50 | 0.013 |
| 2yrs. College or Assoc. | 1.33 | 1.16 | 1.14 | 0.252 | 1.70 | 3.16 | 0.54 | 0.59 | -1.31 | 0.89 | 1.47 | 0.142 | 0.97 | 2.92 | 0.33 | 0.739 | 0.00 | 0.94 | 0.00 | 0.997 | -14.05 | 5.17 | 2.72 | 0.007 |
| 3yrs. College/Tech./Voc. | -1.16 | 1.45 | 0.80 | 0.422 | -4.95 | 8.30 | 0.60 | 0.551 | -1.71 | 1.11 | 1.54 | 0.123 | -4.64 | 7.60 | 0.61 | 0.542 | -0.75 | 1.14 | 0.66 | 0.508 | -4.09 | 16.8 | 0.24 | 0.807 |
| Bachelor's Degree | -1.55 | 1.23 | 1.26 | 0.208 | 9.33 | 8.30 | 1.12 | 0.261 | -1.52 | 0.94 | 1.61 | 0.108 | 6.66 | 7.60 | 0.88 | 0.381 | 0.38 | 0.99 | 0.38 | 0.702 | -18.94 | 10.1 | 1.88 | 0.061 |
| Master's Degree | -3.50 | 1.97 | 1.78 | 0.075 | (omitted) | | | | -3.17 | 1.59 | 1.99 | 0.046 | (omitted) | | | | -1.02 | 1.67 | 0.72 | 0.473 | (omitted) | | | |
| Doctorate | -3.13 | 2.57 | 1.22 | 0.224 | (omitted) | | | | -3.01 | 2.04 | 1.47 | 0.141 | (omitted) | | | | -2.16 | 2.00 | 1.08 | 0.280 | (omitted) | | | |
| Intercept | 17.07 | | 112.39 | | | | | 15.94 | | | | 107.07 | | | | 12.61 | | | | -12.04 | | | | |

Statistical Significance: 1% **, 5% *

| Test: Teamwork Time to Employment Age: 19 and older | | | | Test: Teamwork Time to Employment Age: 16 to 18 | | | | Test: Applied Mathematics Time to Employment Age: 19 and older | | | | Test: Applied Mathematics Time to Employment Age: 16 to 18 | | | | Test: Applied Technology Time to Employment Age: 19 and older | | | | Test: Applied Technology Time to Employment Age: 16 to 18 | | | | |
|---|-------|---------|------|---|-----------|---------|------|--|-------|---------|------|--|-----------|---------|------|---|-------|---------|------|---|-----------|---------|------|-------|
| Variable | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p |
| Level Score | -0.30 | 0.16 | 1.90 | 0.058 | 1.53 | 0.87 | 1.75 | 0.081 | -0.66 | 0.11 | 6.28 | 0.000** | -0.67 | 0.36 | 1.85 | 0.065 | -0.27 | 0.17 | 1.59 | 0.112 | -3.12 | 1.33 | 2.35 | 0.200 |
| Gender (M) | 0.91 | 0.38 | 2.36 | 0.018 | 5.91 | 2.49 | 2.37 | 0.018 | -0.77 | 0.28 | 2.71 | 0.007 | 2.18 | 0.95 | 2.29 | 0.022 | 1.55 | 0.89 | 1.74 | 0.082 | 12.63 | 10.03 | 1.26 | 0.210 |
| Age at Test | 0.12 | 0.01 | 8.15 | 0.000** | 0.85 | 5.35 | 0.16 | 0.874 | 0.10 | 0.01 | 9.18 | 0.000** | -4.62 | 1.11 | 4.18 | 0.000** | 0.10 | 0.02 | 4.03 | 0.000** | 1.93 | 7.56 | 0.25 | 0.799 |
| 8th Grade or less | -1.55 | 1.79 | 0.87 | 0.387 | -21.92 | 8.0 | 2.74 | 0.007 | -0.45 | 1.29 | 0.35 | 0.726 | -3.25 | 1.66 | 1.96 | 0.050 | -3.48 | 2.46 | 1.41 | 0.157 | 16.77 | 9.75 | 1.72 | 0.087 |
| Grades 9-11 | -0.93 | 1.68 | 0.55 | 0.581 | -12.09 | 6.35 | 1.90 | 0.058 | 2.17 | 1.19 | 1.83 | 0.067 | -6.72 | 1.99 | 3.38 | 0.001 | -4.61 | 2.81 | 1.64 | 0.101 | -5.51 | 10.28 | 0.54 | 0.593 |
| H.S. Grad. or Equiv. | -0.71 | 1.48 | 0.48 | 0.631 | -19.98 | 5.85 | 3.42 | 0.001 | -1.74 | 1.05 | 1.66 | 0.097 | -4.25 | 1.29 | 3.29 | 0.001 | -3.12 | 1.87 | 1.67 | 0.096 | 0.78 | 6.65 | 0.12 | 0.907 |
| 1yr. College/Tech./Voc. | -0.63 | 1.56 | 0.40 | 0.688 | -13.08 | 7.10 | 1.84 | 0.067 | -1.88 | 1.12 | 1.68 | 0.092 | -5.44 | 2.46 | 2.22 | 0.027 | -0.68 | 2.03 | 0.34 | 0.736 | 10.56 | 10.07 | 1.05 | 0.296 |
| 2yrs. College or Assoc. | -1.48 | 1.54 | 0.96 | 0.336 | -25.28 | 11.0 | 2.29 | 0.023 | -2.44 | 1.10 | 2.22 | 0.026 | 0.96 | 3.05 | 0.31 | 0.753 | -1.99 | 1.96 | 1.01 | 0.310 | -2.54 | 12.5 | 0.20 | 0.839 |
| 3yrs. College/Tech./Voc. | -1.31 | 1.86 | 0.70 | 0.481 | (omitted) | | | | -2.19 | 1.38 | 1.59 | 0.111 | -5.78 | 7.50 | 0.77 | 0.441 | -3.34 | 2.63 | 1.27 | 0.204 | 10.48 | 29.3 | 0.36 | 0.721 |
| Bachelor's Degree | -0.88 | 1.64 | 0.54 | 0.591 | -27.12 | 12.9 | 2.11 | 0.036 | -2.82 | 1.17 | 2.41 | 0.016 | 11.79 | 8.64 | 1.36 | 0.172 | -2.23 | 2.19 | 1.02 | 0.307 | (omitted) | | | |
| Master's Degree | -5.69 | 2.71 | 2.10 | 0.036 | (omitted) | | | | -3.67 | 1.95 | 1.88 | 0.060 | (omitted) | | | | -3.49 | 4.5 | 0.77 | 0.439 | (omitted) | | | |
| Doctorate | -4.20 | 3.77 | 1.11 | 0.265 | (omitted) | | | | -3.51 | 2.53 | 1.39 | 0.166 | (omitted) | | | | -5.27 | 5.2 | 1.01 | 0.31 | (omitted) | | | |
| Intercept | 9.95 | | 3.88 | | | | | 18.94 | | | | 107.57 | | | | 12.85 | | | | -24.35 | | | | |

Statistical Significance: 1% **, 5% *

| Test: Reading for Information Wage After Test Age: 19 and older | | | | Test: Reading for Information Wage After Test Age: 16 to 18 | | | | Test: Locating Information Wage After Test Age: 19 and older | | | | Test: Locating Information Wage After Test Age: 16 to 18 | | | | Test: Observation Wage After Test Age: 19 and older | | | | Test: Observation Wage After Test Age: 16 to 18 | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------|-----------|----------|---|-----------|-----------|-------|--|---------|-----------|-------|--|-----------|------------|-------|---|---------|------------|-------|---|-----------|------------|-------|---------|--------|--------|--------|--------|--------|--------|--------|------------|--------|------------|--------|------------|--------|------------|-------|------------|-------|------------|-------|
| # of Obs. | 46283 | # of Obs. | 5162 | # of Obs. | 70482 | # of Obs. | 5812 | # of Obs. | 54315 | # of Obs. | 1149 | F(12,46270) | 145.72 | F(10,5151) | 70.38 | F(12,70469) | 160.71 | F(10,5801) | 77.99 | F(12,54302) | 88.69 | F(10,1138) | 10.17 | Prob>F | 0.0000 | Prob>F | 0.0000 | Prob>F | 0.0000 | Prob>F | 0.0000 | R-Sqr Adj. | 0.0362 | R-Sqr Adj. | 0.1185 | R-Sqr Adj. | 0.0265 | R-Sqr Adj. | 0.017 | R-Sqr Adj. | 0.019 | R-Sqr Adj. | 0.074 |
| Variable | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | | | | | | | | | | | | | | | | | | | |
| Level Score | 204.12 | 16.99 | 12.01 | 0.000** | 27.81 | 16.33 | 1.70 | 0.089 | 354.47 | 20.34 | 17.42 | 0.000** | 74.11 | 21.86 | 3.39 | 0.001 | 349.63 | 24.21 | 14.44 | 0.000** | 245.29 | 71.13 | 3.45 | 0.001 | | | | | | | | | | | | | | | | | | | |
| Gender (M) | 713.45 | 41.17 | 17.33 | 0.000** | 351.43 | 47.69 | 7.37 | 0.000** | 868.50 | 45.38 | 19.14 | 0.000** | 447.32 | 48.52 | 9.22 | 0.000** | 959.44 | 61.12 | 15.70 | 0.000** | 695.61 | 165.05 | 4.21 | 0.000** | | | | | | | | | | | | | | | | | | | |
| Age at Test | 10.94 | 1.57 | 6.94 | 0.000** | 200.03 | 53.52 | 3.74 | 0.000** | 16.72 | 1.74 | 9.67 | 0.000** | 231.93 | 56.54 | 4.10 | 0.000** | 21.19 | 1.23 | 9.12 | 0.000** | -56.2 | 349.85 | 0.15 | 0.880 | | | | | | | | | | | | | | | | | | | |
| 8th Grade of less | 2236.66 | 140.15 | 15.96 | 0.000** | 741.29 | 78.42 | 9.45 | 0.000** | 2366.15 | 146.33 | 16.17 | 0.000** | 755.49 | 82.21 | 9.19 | 0.000** | 2462.02 | 202.06 | 12.18 | 0.000** | 1567.82 | 525.06 | 2.99 | 0.003 | | | | | | | | | | | | | | | | | | | |
| Grades 9-11 | 1593.97 | 116.81 | 13.65 | 0.000** | 505.44 | 94.17 | 5.37 | 0.000** | 1496.84 | 129.50 | 11.56 | 0.000** | 529.92 | 94.82 | 5.59 | 0.000** | 1077.10 | 191.69 | 5.62 | 0.000** | 1311.56 | 364.94 | 3.59 | 0.000** | | | | | | | | | | | | | | | | | | | |
| H.S. Grad. or Equiv. | 2314.11 | 83.42 | 27.74 | 0.000** | 1287.33 | 56.05 | 22.97 | 0.000** | 2314.82 | 89.54 | 25.85 | 0.000** | 1318.96 | 57.49 | 22.94 | 0.000** | 2171.31 | 129.81 | 16.73 | 0.000** | 2039.74 | 282.80 | 7.21 | 0.000** | | | | | | | | | | | | | | | | | | | |
| 1 yr. College/Tech./Voc. | 2397.85 | 104.00 | 23.06 | 0.000** | 1391.46 | 132.72 | 10.48 | 0.000** | 2393.87 | 110.20 | 21.72 | 0.000** | 1509.21 | 131.37 | 11.49 | 0.000** | 2204.14 | 153.14 | 14.39 | 0.000** | 2772.08 | 437.34 | 6.24 | 0.000** | | | | | | | | | | | | | | | | | | | |
| 2 yrs. College or Assoc. | 2759.00 | 97.27 | 28.36 | 0.000** | 1622.79 | 173.99 | 9.33 | 0.000** | 2774.74 | 103.44 | 26.82 | 0.000** | 1613.43 | 175.04 | 9.22 | 0.000** | 2766.18 | 145.39 | 19.03 | 0.000** | 2492.18 | 638.81 | 3.90 | 0.000** | | | | | | | | | | | | | | | | | | | |
| 3 yrs. College/Tech./Voc. | 2451.10 | 160.06 | 15.31 | 0.000** | 1640.03 | 472.40 | 3.47 | 0.001 | 2632.09 | 167.39 | 15.72 | 0.000** | 1808.99 | 472.82 | 3.83 | 0.000** | 2424.04 | 222.71 | 10.88 | 0.000** | 6238.35 | 2468.1 | 2.53 | 0.012 | | | | | | | | | | | | | | | | | | | |
| Bachelor's Degree | 3104.36 | 113.54 | 27.34 | 0.000** | 11189.08 | 426.23 | 2.79 | 0.005 | 3180.63 | 120.80 | 26.33 | 0.000** | 1363.70 | 432.06 | 3.16 | 0.002 | 2928.97 | 167.48 | 17.49 | 0.000** | 1891.81 | 1257.5 | 1.50 | 0.133 | | | | | | | | | | | | | | | | | | | |
| Master's Degree | 3069.72 | 250.95 | 12.23 | 0.000** | (omitted) | | | | 3133.22 | 280.23 | 11.18 | 0.000** | (omitted) | | | | 2655.74 | 398.79 | 6.66 | 0.000** | (omitted) | | | | | | | | | | | | | | | | | | | | | | |
| Doctorate | 2367.08 | 351.46 | 6.74 | 0.000** | (omitted) | | | | 2383.39 | 376.22 | 6.34 | 0.000** | (omitted) | | | | 2558.47 | 492.29 | 5.20 | 0.035* | (omitted) | | | | | | | | | | | | | | | | | | | | | | |
| Intercept | -977.22 | | -3088.44 | | | | | -1429.83 | | | | -3857.52 | | | | -1539.07 | | | | -184.34 | | | | | | | | | | | | | | | | | | | | | | | |

Statistical Significance: 1% **, 5% *

Statistical Significance: 1% **, 5% *

| Test: Reading for Information Wage Difference Age: 19 and older | | | | Test: Reading for Information Wage Difference Age: 16 to 18 | | | | Test: Locating Information Wage Difference Age: 19 and older | | | | Test: Locating Information Wage Difference Age: 16 to 18 | | | | Test: Observation Wage Difference Age: 19 and older | | | | Test: Observation Wage Difference Age: 16 to 18 | | | | |
|---|----------|---------|-------|---|---------|---------|-------|--|----------|---------|-------|--|---------|---------|-------|---|----------|---------|-------|---|----------|---------|------|---------|
| Variable | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p |
| Level Score | -115.27 | 21.62 | 5.33 | 0.000** | -7.76 | 16.40 | 0.47 | 0.636 | -47.22 | 23.79 | 1.98 | 0.047* | 14.53 | 21.93 | 0.66 | 0.508 | -45.36 | 28.00 | 1.62 | 0.105 | 170.36 | 70.74 | 2.41 | 0.016* |
| Gender (M) | -537.38 | 52.39 | 10.26 | 0.000** | 379.46 | 47.91 | 7.92 | 0.000** | -310.55 | 53.06 | 5.85 | 0.000** | 481.41 | 48.67 | 9.89 | 0.000** | -292.26 | 70.67 | 4.14 | 0.000** | 694.99 | 164.13 | 4.23 | 0.000** |
| Age at Test | -94.43 | 2.00 | 47.12 | 0.000** | 53.61 | 53.76 | 1.00 | 0.319 | -93.53 | 2.03 | 46.00 | 0.000** | 91.30 | 56.71 | 1.61 | 0.107 | -89.32 | 2.69 | 33.23 | 0.000** | 255.88 | 347.90 | 0.74 | 0.462 |
| 8th Grade or less | -1557.63 | 178.35 | 8.73 | 0.000** | 426.58 | 78.78 | 5.42 | 0.000** | -939.82 | 171.13 | 5.49 | 0.000** | 429.13 | 82.46 | 5.20 | 0.000** | -782.68 | 233.65 | 3.35 | 0.000** | 1079.03 | 522.14 | 2.07 | 0.039* |
| Grades 9-11 | -1768.25 | 148.65 | 11.90 | 0.000** | 213.38 | 94.59 | 2.26 | 0.024* | -1802.81 | 151.44 | 11.90 | 0.000** | 230.58 | 95.11 | 2.42 | 0.150* | -1918.30 | 221.66 | 8.65 | 0.000** | 925.19 | 362.91 | 2.55 | 0.011* |
| H.S. Grad. or Equiv. | -1847.25 | 106.16 | 17.40 | 0.000** | 842.81 | 56.31 | 14.97 | 0.000** | -1556.82 | 104.71 | 14.87 | 0.000** | 858.23 | 57.66 | 14.88 | 0.000** | -1460.49 | 150.11 | 9.73 | 0.000** | 1320.78 | 281.23 | 4.70 | 0.000** |
| 1yr. College/Tech./Voc. | -1814.07 | 132.35 | 13.71 | 0.000** | 823.79 | 133.32 | 6.18 | 0.000** | -1493.36 | 128.88 | 11.59 | 0.000** | 981.70 | 131.77 | 7.45 | 0.000** | -1474.51 | 177.09 | 8.33 | 0.000** | 1645.40 | 434.91 | 3.78 | 0.000** |
| 2yrs. College or Assoc. | -1808.01 | 123.78 | 14.61 | 0.000** | 1003.11 | 174.77 | 5.74 | 0.000** | -1473.94 | 120.97 | 12.18 | 0.000** | 953.11 | 175.57 | 5.43 | 0.000** | -1350.21 | 168.12 | 8.03 | 0.000** | 1282.53 | 635.26 | 2.02 | 0.044 |
| 3yrs. College/Tech./Voc. | -2097.88 | 203.69 | 10.30 | 0.000** | 1364.33 | 474.51 | 2.88 | 0.004** | -1582.47 | 195.75 | 8.08 | 0.000** | 1598.76 | 474.26 | 3.37 | 0.000** | -1494.00 | 257.54 | 5.80 | 0.000** | 6307.79 | 2454.4 | 2.57 | 0.010** |
| Bachelor's Degree | -2133.53 | 144.49 | 14.77 | 0.000** | 399.87 | 428.14 | 0.93 | 0.350 | -1595.81 | 141.27 | 11.30 | 0.000** | 603.67 | 433.37 | 1.39 | 0.164 | -1157.98 | 193.66 | 5.98 | 0.000** | 977.67 | 1250.5 | 0.78 | 0.434 |
| Master's Degree | -3863.09 | 319.35 | 12.10 | 0.000** | omitted | | | | -3211.15 | 327.72 | 9.80 | 0.000** | omitted | | | | -1791.26 | 461.14 | 3.88 | 0.000** | omitted | | | |
| Doctorate | -2401.29 | 447.25 | 5.37 | 0.000** | omitted | | | | -2077.01 | 439.97 | 4.72 | 0.000** | omitted | | | | -1203.28 | 569.26 | 2.11 | 0.035* | omitted | | | |
| Intercept | 5936.64 | | | | 939.90 | | | | 5085.61 | | | | 138.63 | | | | 4905.12 | | | | -4245.19 | | | |

Statistical Significance: 1% **, 5% *

| Test: Teamwork Wage Difference Age: 19 and older | | | | Test: Teamwork Wage Difference Age: 16 to 18 | | | | Test: Applied Mathematics Wage Difference Age: 19 and older | | | | Test: Applied Mathematics Wage Difference Age: 16 to 18 | | | | Test: Applied Technology Wage Difference Age: 19 and older | | | | Test: Applied Technology Wage Difference Age: 16 to 18 | | | | |
|--|----------|---------|-------|--|---------|---------|------|---|----------|---------|-------|---|---------|---------|-------|--|----------|---------|-------|--|-----------|---------|------|---------|
| Variable | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p | Coef | Std Err | t | p |
| Level Score | -29.99 | 36.43 | 0.82 | 0.410 | -183.18 | 125.03 | 1.47 | 0.144 | -101.44 | 24.27 | 4.18 | 0.000** | -1.84 | 17.43 | 0.11 | 0.916 | -5.89 | 61.62 | 0.10 | 0.924 | -12.34 | 122.34 | 0.10 | 0.920 |
| Gender (M) | -399.23 | 91.10 | 4.38 | 0.000** | 1010.23 | 341.59 | 2.96 | 0.003** | -430.85 | 67.36 | 6.40 | 0.000** | 459.67 | 49.00 | 9.38 | 0.000** | -367.73 | 317.70 | 1.16 | 0.247 | 2721.77 | 984.55 | 2.76 | 0.006** |
| Age at Test | -85.22 | 3.40 | 25.02 | 0.000** | 1220.11 | 788.49 | 0.15 | 0.879 | -98.34 | 2.53 | 38.87 | 0.000** | 78.34 | 55.76 | 1.40 | 0.160 | -90.57 | 8.73 | 10.37 | 0.000** | 1551.35 | 625.96 | 2.48 | 0.014* |
| 8th Grade or less | -784.58 | 300.14 | 2.61 | 0.009** | -236.63 | 1008.6 | 0.23 | 0.815 | -1079.21 | 221.18 | 4.88 | 0.000** | 450.97 | 80.84 | 5.58 | 0.000** | -703.68 | 689.78 | 1.02 | 0.308 | 63.55 | 774.03 | 0.08 | 0.935 |
| Grades 9-11 | -1689.52 | 262.62 | 6.43 | 0.000** | 282.01 | 630.80 | 0.45 | 0.655 | -1951.95 | 186.57 | 10.46 | 0.000** | 211.21 | 96.25 | 2.19 | 0.028* | -1682.91 | 832.87 | 2.02 | 0.043* | -52.20 | 949.79 | 0.05 | 0.956 |
| H.S. Grad. or Equiv. | -1035.57 | 184.06 | 5.63 | 0.000** | 923.73 | 511.60 | 1.81 | 0.072 | -1750.49 | 131.38 | 13.32 | 0.000** | 879.93 | 57.71 | 15.25 | 0.000** | -994.06 | 402.36 | 2.47 | 0.014* | 1498.66 | 536.59 | 2.79 | 0.006** |
| 1yr. College/Tech./Voc. | -1041.72 | 219.36 | 4.75 | 0.000** | 1206.18 | 790.84 | 1.53 | 0.128 | -1668.80 | 163.34 | 10.22 | 0.000** | 961.03 | 136.03 | 7.07 | 0.000** | -1079.37 | 495.01 | 2.18 | 0.029* | 1818.62 | 905.58 | 2.01 | 0.046* |
| 2yrs. College or Assoc. | -1270.95 | 210.12 | 6.05 | 0.000** | 1715.68 | 1599.7 | 1.07 | 0.284 | -1721.45 | 153.55 | 11.21 | 0.000** | 1083.64 | 177.20 | 6.12 | 0.000** | -533.95 | 453.37 | 1.18 | 0.239 | 1918.99 | 1228.6 | 1.56 | 0.120 |
| 3yrs. College/Tech./Voc. | -581.77 | 332.45 | 1.75 | 0.080 | omitted | | | | -1985.84 | 255.54 | 7.77 | 0.000** | 1647.14 | 450.23 | 3.66 | 0.000** | -1261.19 | 788.42 | 1.60 | 0.110 | 5076.51 | 3016.7 | 1.68 | 0.094 |
| Bachelor's Degree | -1127.46 | 250.43 | 4.50 | 0.000** | 2440.24 | 1929.9 | 1.26 | 0.207 | -1932.16 | 181.29 | 10.66 | 0.000** | 468.00 | 464.87 | 1.01 | 0.314 | -1128.21 | 575.25 | 1.96 | 0.050* | omitted | | | |
| Master's Degree | -1495.01 | 606.76 | 2.46 | 0.014* | omitted | | | | -4144.84 | 413.12 | 10.03 | 0.000** | omitted | | | | -1623.65 | 1606.2 | 1.01 | 0.312 | omitted | | | |
| Doctorate | -1609.40 | 795.44 | 2.02 | 0.043 | omitted | | | | -2825.82 | 570.90 | 4.95 | 0.000** | omitted | | | | -188.07 | 1887.7 | 0.01 | 0.921 | omitted | | | |
| Intercept | 4345.92 | | | | -535.68 | | | | 5786.91 | | | | 370.36 | | | | 4297.77 | | | | -27852.89 | | | |

Statistical Significance: 1% **, 5% *