

Evaluating the ACT NCRC as a Signal of the Skills Needed for Labor Market and Educational Success in Missouri

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Since 2002, the Missouri Division of Workforce Development has offered ACT® WorkKeys® through job centers as a way to evaluate work readiness and assist individuals in their job searches. Examinees who achieve certain scores on the WorkKeys Assessments receive a National Career Readiness Certificate® (NCRC) at the Bronze, Silver, Gold, or Platinum level.¹ The NCRC is a nationally-recognized, non-degreed credential of foundational workplace skills used by employers to support decisions about hiring, training, and promotion. This report describes a study conducted through collaboration between the Missouri Department of Economic Development—Missouri Economic Research Information Center (MERIC) and ACT Research. The goal of this study was to evaluate the NCRC as a signal of the skills needed for success in the labor market and in postsecondary education. Specifically, this study examined the relationships between NCRC level and unemployment claim duration, employment status, wages, and postsecondary grades.

Data

For this study, ACT gathered WorkKeys performance data for Missouri examinees from 2012–2014, and MERIC merged those data with demographic information, unemployment insurance records, postsecondary degree attainment, and cumulative grade point average (GPA). Quarterly wage records from the unemployment insurance database were provided nine months before and 15 months after taking WorkKeys. The complete data set, which included 27,475 records, was 44.7% female, 14.8% African American, and 80.9% White. In terms of age, 41.7% of the sample was aged 14–25, 31.6% was 26–40, 21.7% was 41–54, and 5.0% was 55 or older. The majority of the sample (60.6%) earned a Silver NCRC. An additional 12.9% earned a Bronze NCRC, and 24.7% earned a Gold or Platinum NCRC. Note that Gold and Platinum NCRC earners were combined because only 0.2% of examinees achieved the Platinum level.

Employment

Figure 1 shows percentages of job seekers with wage records in the unemployment insurance database before and after WorkKeys testing. Individuals with higher NCRC levels were more likely to have wage records in the database, which indicates that people earning higher NCRC levels were more likely to be employed. Despite this trend, higher NCRC levels were not associated with shorter periods of unemployment. The mean unemployment claim duration for each NCRC level differed little from the overall average of 19.5 weeks (Table 1). A variety of factors influencing unemployment claim duration could have masked the effect of earning higher NCRC levels. For example, jobs may have been scarcer for highly skilled workers, or those workers sought jobs with lengthier application, interview, and hiring processes. Another possibility was that employers hiring more skilled workers were less likely to recognize the NCRC.



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Figure 1. Percentage with Wage Records in the Unemployment Insurance Database

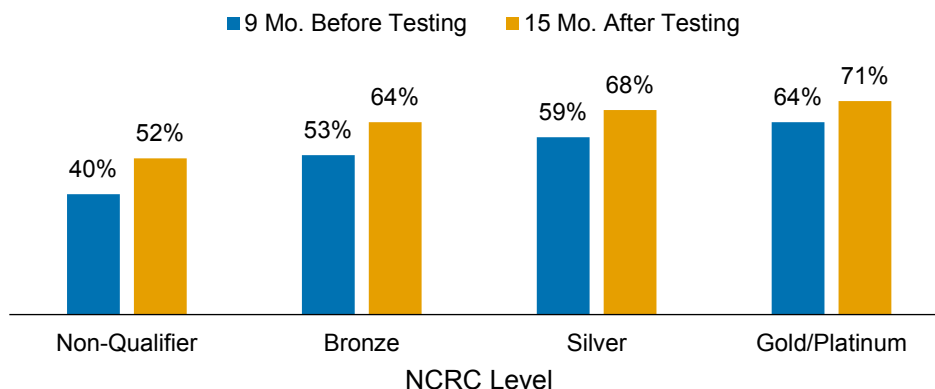


Table 1. Outcome Distributions by NCRC Levels

Outcome	NCRC Level	Freq.	Mean	SD	25th %ile	Median	75th %ile	<i>d</i> [*]
Unemployment Claim Duration	Non-Qual.	79	18.7	11.4	9	21	24	
	Bronze	903	18.9	11.2	9	20	25	0.02
	Silver	4997	19.7	11.4	11	21	25	0.07
	Gold/Plat.	2116	19.2	10.5	12	21	24	-0.04
Post-Test Wages	Non-Qual.	262	\$3,600	\$3,286	\$1,084	\$2,717	\$5,121	
	Bronze	2288	\$4,800	\$4,209	\$1,889	\$3,832	\$6,301	0.29
	Silver	11258	\$5,640	\$4,535	\$2,333	\$4,714	\$7,652	0.19
	Gold/Plat.	4797	\$6,549	\$4,872	\$2,975	\$5,655	\$8,945	0.20
Wage Differences	Non-Qual.	150	\$904	\$3,580	-\$670	\$621	\$2,347	
	Bronze	1468	\$1,534	\$4,293	-\$731	\$934	\$3,344	0.15
	Silver	7676	\$1,149	\$4,610	-\$1,075	\$854	\$3,123	-0.08
	Gold/Plat.	3401	\$1,148	\$4,759	-\$1,167	\$930	\$3,367	0.00
Postsecondary GPA	Non-Qual.	89	2.56	0.75	2.00	2.65	3.00	
	Bronze	825	2.74	0.70	2.22	2.77	3.22	0.25
	Silver	5184	2.99	0.67	2.57	3.00	3.50	0.37
	Gold/Plat.	2693	3.21	0.64	2.83	3.31	3.71	0.33

* Effect sizes reflect average differences in standard deviation units. Each effect size was calculated in reference to the next lower NCRC level.

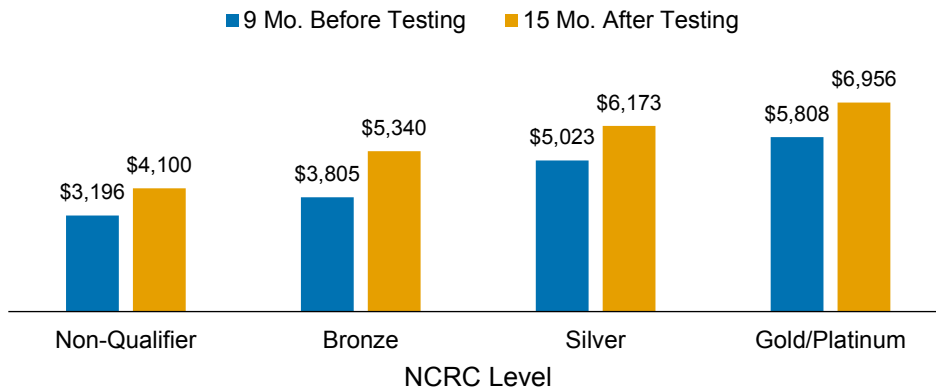
Wages

For the 18,605 individuals with post-test quarterly wage records, average quarterly wages increased steadily from \$3,600 for non-qualifiers to \$6,549 for Gold/Platinum NCRC earners (see Post-Test Wages in Table 1). Each increase in NCRC level was associated with an average increase in post-test wages of \$841–\$1,200. The strong, positive association between NCRC level and post-test wages reveals that individuals earning higher NCRC levels tended to secure higher paying jobs. The same pattern is apparent in Figure 2, which shows average wages before and after WorkKeys testing for the 12,695 individuals with wage data at both time points. Given this trend, a higher NCRC level may be helpful

for securing a higher paying job. However, results could also reflect the fact that WorkKeys examinees earning higher NCRC levels are generally more likely to pursue higher paying careers requiring postsecondary studies and having greater skills requirements.

Average wage differences were smallest for non-qualifiers (\$904), were nearly identical for Silver and Gold/Platinum NCRC earners (\$1,149 and \$1,148), and were greatest for Bronze NCRC earners (\$1,534; see Wage Differences in Table 1). This finding suggests that the NCRC may have been an especially valuable differentiator when comparing job candidates with similar qualifications for occupations with lower skills requirements.

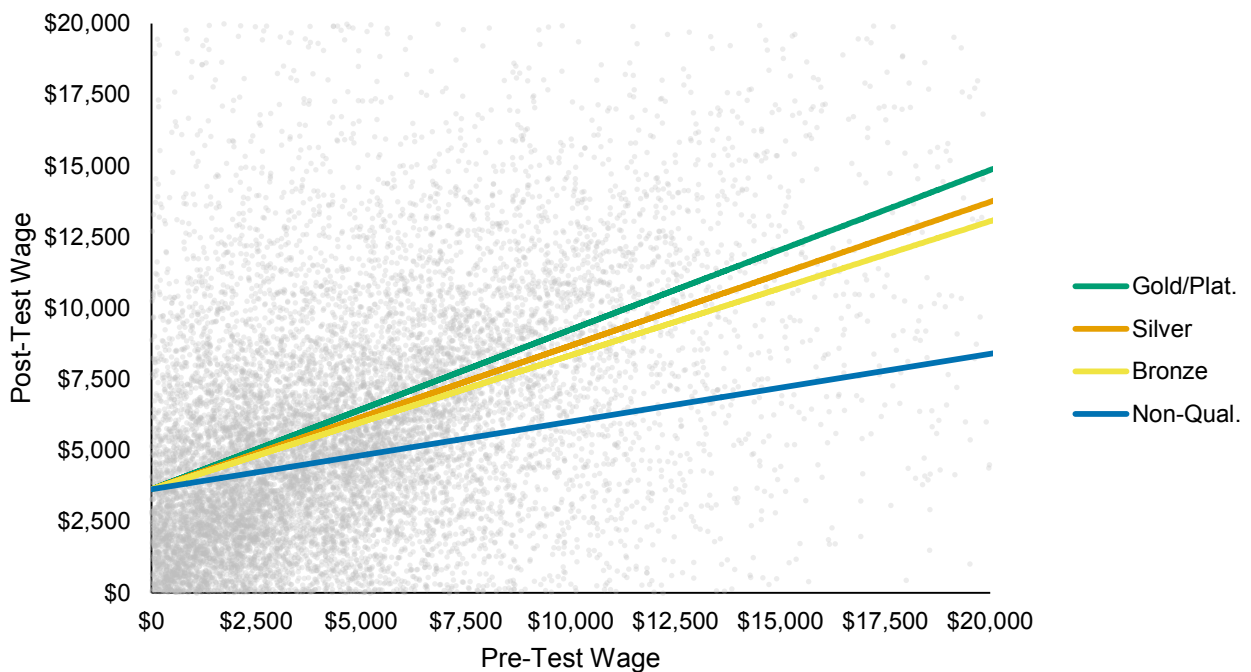
Figure 2. Average Pre-test and Post-test Quarterly Wages



Subsequent analyses applied linear regression to estimate the expected effect of earning an NCRC on post-test wages while controlling for pre-test wages, age group, ethnicity, and gender. Results indicated significant main effects for age group, ethnicity, and gender; significant negative interactions between pre-test wages and age group; and significant positive interactions between pre-test wages and NCRC levels. Thus, when comparing people with the same ethnicity, age group, gender, and pre-test wages, those who earned a higher NCRC level tended to earn higher post-test wages. The basic pattern of

results was similar for all demographic groups, so Figure 3 shows expected post-test wages for all groups combined.² The gradual divergence of the regression lines illustrates the positive interactions between pre-test wages and NCRC levels. In other words, those with higher NCRC levels and higher pre-test wages were expected to earn higher post-test wages. Controlling for other variables, post-test wages tended to be greater for 26–40 year olds, African Americans, and males. These differences likely reflected factors such as industry and geography (urban vs. rural).

Figure 3. Scatter Plot of Post-test vs. Pre-test Wages with Regression Lines Showing Expected Post-test Wages



Postsecondary Attainment

The merged dataset included degree attainment and postsecondary cumulative GPA during the study period. Among the 2,868 individuals who earned postsecondary degrees during the study period, the highest degrees earned were distributed as follows: 25.1% certificate, 72.3% associate degree, 2.4% bachelor's degree, and 0.2% post-baccalaureate or master's degree. Those who earned higher NCRC levels were slightly more likely to earn higher degrees during the study period. Between the Bronze, Silver, and Gold/Platinum NCRC levels, the percentage earning an associate degree increased from 66.0% to 71.1% to 75.6%, and the corresponding certificate attainment decreased from 33.0% to 26.9% to 20.5%. The highest percentages of Gold or Platinum NCRCs were observed for the following major families: Computer and Information Sciences, Engineering, Biological and Biomedical Sciences, Multi/Interdisciplinary Studies, Physical Sciences, Psychology, and Parks, Recreation, Leisure, and Fitness Studies. The major families with the highest percentages of Bronze NCRCs included Communications Technologies/Technicians, Family and Consumer Sciences/Human Sciences, and Public Administration and Social Services.

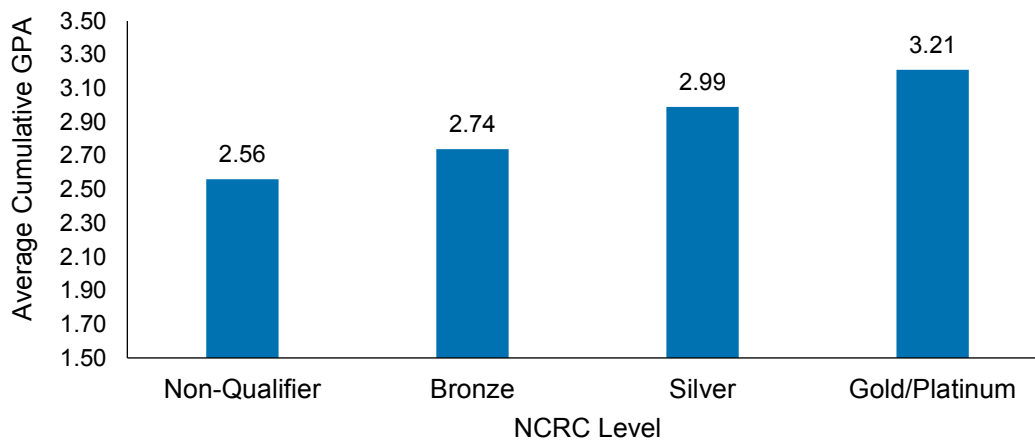
This study detected a significant positive relationship between WorkKeys performance and postsecondary cumulative GPA (Figure 4). Each increase in NCRC level was associated with an approximate 0.22

increase in cumulative GPA on a 0.00–4.00 scale. The average GPA was 2.74 (B–) for those who earned a Bronze NCRC, 2.99 (B) for Silver NCRC, and 3.21 (B+) for Gold/Platinum NCRC (see Postsecondary GPA in Table 1). Only the difference between non-qualifiers and Bronze was not statistically significant.

Conclusions

Overall, results from this study were consistent with the NCRC as a signal of the skills needed for success in the labor market and postsecondary education in Missouri. Individuals who earned higher NCRC levels were more likely to find employment, though they did not necessarily find it faster. When comparing wages before and after taking WorkKeys, those who earned a Bronze NCRC exhibited the greatest average wage increases, perhaps because the NCRC was particularly beneficial for those seeking jobs with lower skills requirements. Subsequent regression analyses revealed that, when comparing workers with similar pre-test wages, those earning higher NCRC levels were expected to have higher post-test wages. Finally, students who earned higher NCRC levels tended to achieve higher cumulative GPAs in postsecondary education. Future studies of this kind would benefit from additional information about individuals (e.g., highest degree attained, occupational field, and training during employment) to better isolate the possible benefit of earning an NCRC.

Figure 4. Average Postsecondary Cumulative Grade Point Average



Notes

1. ACT. (2014). *ACT National Career Readiness Certificate*. Iowa City, IA: ACT. Retrieved from <http://forms.act.org/certificate/pdf/NCRC-InformationFlyer.pdf>
2. Some points plotted in Figure 3 indicate very low quarterly wages, which could have resulted from brief periods of employment (e.g., due to quitting, layoffs, or termination). Overall regression results were unchanged when individuals with low wages (< \$1,000 and < \$2,000) were removed from the data. Figure 3 also shows that workers with higher pre-test wages (> \$7,500) were expected to have lower wages after testing. This result possibly reflected modeling error in a region where data were sparse. Another explanation is that many workers laid off from higher paying jobs took lower paying jobs, which is consistent with prior studies.

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