

# Updating the Progress Toward the ACT National Career Readiness Certificate Indicator

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The Progress Toward the ACT NCRC indicator provides students who take the ACT with some academic-based information about their level of career readiness. The purpose of this study is to update the indicator so it corresponds to the certification level that is likely to be obtained on the most recent version of the ACT WorkKeys NCRC assessments. These new cut scores will be reported on ACT score reports beginning in fall 2018.

The Progress Toward the ACT® National Career Readiness Certificate® (NCRC) indicator was first included on ACT score reports in fall 2015. This indicator provides an estimate of students' likely performance on the ACT WorkKeys® NCRC based on their ACT Composite scores.<sup>1</sup> The ACT WorkKeys NCRC is an assessment-based credential that certifies foundational skills important for job success across a broad range of industries and occupations. It provides evidence that individuals possess the skills employers deem essential to workplace success. The Progress Toward the ACT NCRC indicator is not a substitute for an actual NCRC obtained by taking the ACT WorkKeys assessments; instead, it serves to encourage students who took the ACT to reflect upon and possibly develop the knowledge and skills needed for career readiness and workplace success.

In 2017, the ACT WorkKeys assessments underwent a significant refresh to ensure ongoing relevance and content alignment to the skill requirements of today's jobs. The ACT NCRC is now based on examinees' level scores on the following three updated WorkKeys assessments: Applied Math, Graphic Literacy, and Workplace Documents (ACT, 2018a, 2018b, 2018c).<sup>2</sup> NCRCs are awarded at the Platinum, Gold, Silver, and Bronze levels in the following manner:

**Platinum is achieved by earning a level score of 6 or higher on all three tests.<sup>3</sup>**

**Gold is achieved by earning a level score of 5 or higher on all three tests.**

**Silver is achieved by earning a level score of 4 or higher on all three tests.**

**Bronze is achieved by earning a level score of 3 or higher on all three tests.**

Achieving a higher certification level indicates that the examinee would be qualified for a larger share of the 20,000 jobs profiled and included in the ACT JobPro database: 16% for Bronze, 67% for Silver, 93% for Gold, and 99% for Platinum (LeFebvre & Mattern, 2018).<sup>4</sup>

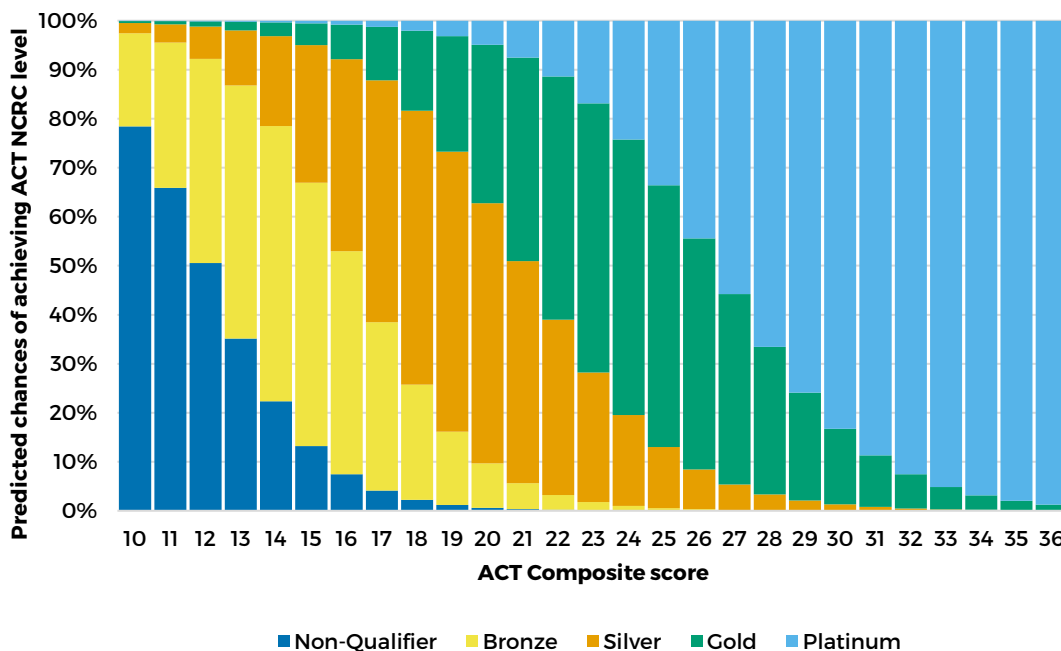
The purpose of this study is to update the Progress Toward the ACT NCRC indicator so that it corresponds to the certification level that is likely to be obtained on the version of the ACT WorkKeys

NCRC assessments released in 2017. The cut scores for the indicator identified in this study will be reported on ACT score reports beginning in fall 2018. For comparison purposes, the Progress Toward the ACT NCRC indicator derived for the former ACT WorkKeys assessments—Applied Mathematics, Locating Information, and Reading for Information—classified students into one of four categories: (1) unlikely to obtain an ACT NCRC for those with an ACT Composite score below 13, (2) likely to obtain a Bronze level NCRC for those with an ACT Composite score of 13 to 16, (3) likely to obtain a Silver level NCRC for those with an ACT Composite score of 17 to 24, and (4) likely to obtain a Gold level NCRC for those with an ACT Composite score of 25 or above. The highest NCRC level reported on ACT score reports prior to fall 2018 was Gold because of the small percentage of WorkKeys examinees earning a Platinum NCRC and the small percentage of ACT examinees earning an ACT Composite score of 35 or higher—the score associated with a reasonable chance of achieving a Platinum NCRC (see Allen, LeFebvre, & Mattern, 2016).

Data for the current study were available for nearly 79,000 11th and 12th graders who took the ACT and all three updated WorkKeys NCRC assessments in the 2017–2018 academic year. These data were used to identify the ACT Composite score associated with at least a 50% chance of achieving each NCRC level or higher. Ninety percent of students in this sample took the ACT and the ACT WorkKeys assessments within three months of each other; the remaining 10% took the assessments no more than seven months apart.<sup>5</sup> Seven percent of the sample did not earn a WorkKeys NCRC, 21% earned a Bronze NCRC, 30% earned a Silver NCRC, 25% earned a Gold NCRC, and 17% earned a Platinum NCRC.<sup>6</sup> The average ACT Composite score for the sample was 20.2 with a standard deviation of 5.2. More details about the study sample are provided in Table A1 in Appendix A.

Based on binary logistic regression prediction models, the minimum ACT Composite score associated with at least a 50% chance of earning a Bronze or higher NCRC on the updated ACT WorkKeys assessments was 13, Silver or higher was 17, Gold or higher was 22, and Platinum was 27 (see Table B1 in Appendix B for more information on the prediction models).<sup>7</sup> These findings are illustrated in Figure 1, which shows the predicted chances of students earning each NCRC level by ACT Composite score (see also Table B2 in Appendix B).

**Figure 1. Predicted chances of achieving each ACT NCRC level by ACT Composite score**



For example, according to the prediction models, students with an ACT Composite score of:

- 13 have a 35.2% chance of being a non-qualifier, 51.6% chance of earning a Bronze NCRC, 11.3% chance of earning a Silver NCRC, 1.7% chance of earning a Gold NCRC, and a 0.2% chance of earning a Platinum NCRC.
- 17 have a 4.1% chance of being a non-qualifier, 34.4% chance of earning a Bronze NCRC, 49.4% chance of earning a Silver NCRC, 10.9% chance of earning a Gold NCRC, and a 1.3% chance of earning a Platinum NCRC.
- 22 have a 0.2% chance of being a non-qualifier, 3.0% chance of earning a Bronze NCRC, 35.8% chance of earning a Silver NCRC, 49.6% chance of earning a Gold NCRC, and an 11.4% chance of earning a Platinum NCRC.
- 27 have a 0.0% chance of being a non-qualifier, 0.2% chance of earning a Bronze NCRC, 5.2% chance of earning a Silver NCRC, 38.9% chance of earning a Gold NCRC, and a 55.8% chance of earning a Platinum NCRC.

These results indicate that, as the ACT Composite score increases, a larger percentage of students are predicted to achieve the Gold or Platinum level on the ACT NCRC. More specifically, students who earn an ACT Composite score of:

- < 13 are unlikely to obtain an ACT NCRC
- 13 to 16 are most likely to obtain a Bronze NCRC
- 17 to 21 are most likely to obtain a Silver NCRC
- 22 to 26 are most likely to obtain a Gold NCRC
- 27 to 36 are most likely to obtain a Platinum NCRC

Because this study revealed sizeable percentages of WorkKeys examinees earning a Platinum NCRC and ACT examinees scoring in the associated ACT Composite range (27-36), a Platinum NCRC level will be reported as part of the Progress Toward the ACT NCRC indicator on ACT score reports beginning in fall 2018.

When interpreting the Progress Toward the ACT NCRC indicator, it is important to treat the indicator as an estimate of students' likely performance on the ACT WorkKeys NCRC since it is based on their ACT Composite scores. Given the probabilistic nature of the indicator (illustrated in Figure 1) and the corresponding uncertainty in the predictions, actual performance on the ACT WorkKeys NCRC can often differ from the predicted performance based on the ACT. Moreover, there are differences in the constructs being measured and the content being assessed between the ACT and the ACT WorkKeys assessments. That being said, the Progress Toward the ACT NCRC indicator does provide students who take the ACT with some academic-based information about their level of career readiness.

## References

ACT. (2016). *Technical manual supplement: The ACT*. Iowa City, IA: ACT.

ACT. (2017). *ACT technical manual*. Iowa City, IA: ACT.

ACT. (2018a). *ACT WorkKeys Applied Math technical manual*. Iowa City, IA: ACT.

ACT. (2018b). *ACT WorkKeys Graphic Literacy technical manual*. Iowa City, IA: ACT.

ACT. (2018c). *ACT WorkKeys Workplace Documents technical manual*. Iowa City, IA: ACT.

Allen, J., LeFebvre, M., & Mattern, K. (2016). *Predicted attainment of ACT National Career*

*Readiness Certificates for the 2016 ACT-tested high school cohort*. Iowa City, IA: ACT.

LeFebvre, M., & Mattern, K. (2018). *Ready for what? Development of a hierarchical framework linking college readiness and career readiness*. Iowa City, IA: ACT. Retrieved from

<https://www.act.org/content/dam/act/unsecured/documents/Ready-for-What-May-2018.pdf>.

## Notes

1. This indicator initially provided an estimate of the ACT WorkKeys NCRC level students were likely progressing toward based on their ACT Composite score (see section 2.3 of the ACT Technical Manual Supplement, 2016). Beginning in fall 2017, the indicator was changed to provide an estimate of students' likely performance on the ACT WorkKeys NCRC to be consistent with the methodology and interpretation employed in deriving the ACT College Readiness Benchmarks (see section 7.3.4 of the ACT Technical Manual; ACT, 2017). See also Allen, LeFebvre, and Mattern (2016) for more details on the comparison between the two definitions and results generated from the two definitions.
2. The Applied Math test replaced the former Applied Mathematics test, the Graphic Literacy test replaced the former Locating Information test, and the Workplace Documents test replaced the former Reading for Information test. The Applied Math and Workplace Documents tests were updated to reflect the way people work and the way math and reading are used in the workplace (ACT, 2018a, 2018c). The most significant change was the Graphic Literacy test. The original Locating Information assessment measured examinees' ability to locate, compare, summarize, and analyze information presented in graphical format. The Graphic Literacy assessment was designed to measure these skills as well as the ability to create and evaluate the effectiveness of graphics (ACT, 2018b). Additionally, a new score scale was introduced for the WorkKeys Graphic Literacy test. For more information on the changes that were made, see the Technical Manual for each of these WorkKeys assessments.
3. For each of the WorkKeys assessment, the possible level scores include: below 3, 3, 4, 5, 6, and 7.
4. The ACT JobPro database includes 20,000 job profiles that identify the ACT WorkKeys skill levels required for specific jobs and groups of jobs.
5. Nearly three-fourths of the students (73%) took the ACT and WorkKeys assessments on the same day.

6. For comparison, the corresponding percentages based on the data set including more than 100,000 11th graders that was used to establish a link between ACT Composite scores and the former WorkKeys NCRC levels included: 12% of the sample did not earn a WorkKeys NCRC, 21% earned a Bronze NCRC, 44% earned a Silver NCRC, 22% earned a Gold NCRC, and 1% earned a Platinum NCRC
7. These same cut scores were obtained when the sample was restricted to students who had taken the ACT and the ACT WorkKeys assessments within two months of each other. The ACT Composite cut scores associated with the Gold and Platinum levels have been lowered because there are more students achieving the Gold and Platinum levels on the updated ACT NCRC. This can be seen by comparing Figure 1 from Allen et al. (2016) that shows the observed percentage of students earning each NCRC level by ACT Composite score to Figure 1 in this report, as well as by comparing the score distributions between the individual former and updated WorkKeys assessments (see Figure 9.9 in each of the ACT WorkKeys Technical Manuals, especially for Graphic Literacy vs. Locating Information). For the prior version of the ACT NCRC, examinees' NCRC levels were almost always determined by their level scores on the challenging Locating Information test. With the current ACT NCRC, it is more likely that examinees' NCRC levels will be determined by their weakest skill.

## Appendix A

**Table A1. Description of the Study Sample**

| Student Characteristic                                       | N      | Percent |
|--|--------|---------|
| <b>Gender<sup>1</sup></b>                                    |        |         |
| Female   | 40,396 | 51.2    |
| Male   | 38,509 | 48.8    |
| <b>Race/ethnicity</b>  |        |         |
| American Indian/Alaska Native                                | 785    | 1.0     |
| Asian  | 2,762  | 3.5     |
| African American   | 8,893  | 11.3    |
| Hispanic/Latino  | 7,451  | 9.4     |
| Native Hawaiian/Other Pacific Islander                       | 102    | 0.1     |
| Prefer not to respond/Missing                                | 1,868  | 2.4     |
| Two or more races  | 2,787  | 3.5     |
| White  | 54,263 | 68.8    |
| <b>Grade level</b>   |        |         |
| 11   | 61,674 | 78.2    |
| 12   | 17,237 | 21.8    |
| <b>Census region</b>   |        |         |
| Northeast  | 0      | 0.0     |
| Midwest  | 60,067 | 76.1    |
| South  | 18,811 | 23.8    |
| West   | 33     | 0.1     |
| <b>Received ACT-approved accommodations or extended time</b> |        |         |
| Yes  | 7,702  | 9.8     |
| No   | 71,209 | 90.2    |
| <b>ACT NCRC level</b>  |        |         |
| No certificate   | 5,462  | 6.9     |
| Bronze   | 16,327 | 20.7    |
| Silver   | 23,911 | 30.3    |
| Gold   | 19,800 | 25.1    |
| Platinum   | 13,411 | 17.0    |

<sup>1</sup> Six students did not indicate their gender.

## Appendix B

**Table B1.** Parameter Estimates and Minimum Cut Scores for Achieving a Specific NCRC Level or Higher

| Model            | Parameter Estimate (Standard Error) <sup>1</sup> |                               | Minimum cut score <sup>2</sup> |
|------------------|--|-------------------------------|--------------------------------|
|                  | Intercept  | Slope for ACT Composite score |                                |
| Bronze or higher | -7.640 (0.118)                                   | 0.635 (0.008)                 | 13                             |
| Silver or higher | -9.527 (0.077)                                   | 0.588 (0.005)                 | 17                             |
| Gold or higher   | -10.227 (0.070)                                  | 0.485 (0.003)                 | 22                             |
| Platinum         | -12.110 (0.094)                                  | 0.457 (0.004)                 | 27                             |

<sup>1</sup> Based on four separate binary logistic regression models of the relationship between ACT Composite score and the probability of earning a specific NCRC level or higher. A cumulative logistic model was not used because there was evidence suggesting that the proportional odds assumption for the predictor was not satisfied.

<sup>2</sup> Minimum ACT Composite score associated with at least a 50% chance of achieving the specific NCRC level or higher.

**Table B2. Predicted Chances for Achieving a Specific NCRC Level by ACT Composite score**

| ACT Composite score | Predicted chances for achieving <sup>1</sup> |        |        |      |          |
|---------------------|--|--------|--------|------|----------|
|                     | No certificate                               | Bronze | Silver | Gold | Platinum |
| 10                  | 78.5   | 19.0   | 2.1    | 0.4  | 0.1      |
| 11                  | 65.9   | 29.6   | 3.7    | 0.7  | 0.1      |
| 12                  | 50.6   | 41.6   | 6.6    | 1.1  | 0.1      |
| 13                  | 35.2   | 51.6   | 11.3   | 1.7  | 0.2      |
| 14                  | 22.3   | 56.2   | 18.4   | 2.8  | 0.3      |
| 15                  | 13.2   | 53.7   | 28.1   | 4.5  | 0.5      |
| 16                  | 7.5  | 45.5   | 39.2   | 7.0  | 0.8      |
| 17                  | 4.1  | 34.4   | 49.4   | 10.9 | 1.3      |
| 18                  | 2.2  | 23.5   | 55.9   | 16.3 | 2.0      |
| 19                  | 1.2  | 15.0   | 57.1   | 23.6 | 3.2      |
| 20                  | 0.6  | 9.0    | 53.1   | 32.3 | 4.9      |
| 21                  | 0.3  | 5.3    | 45.3   | 41.5 | 7.5      |
| 22                  | 0.2  | 3.0    | 35.8   | 49.6 | 11.4     |
| 23                  | 0.1  | 1.7    | 26.4   | 54.9 | 16.8     |
| 24                  | 0.1  | 1.0    | 18.5   | 56.2 | 24.2     |
| 25                  | 0.0  | 0.5    | 12.4   | 53.4 | 33.6     |
| 26                  | 0.0  | 0.3    | 8.1    | 47.2 | 44.4     |
| 27                  | 0.0  | 0.2    | 5.2    | 38.9 | 55.8     |
| 28                  | 0.0  | 0.1    | 3.3    | 30.1 | 66.6     |
| 29                  | 0.0  | 0.1    | 2.0    | 22.0 | 75.9     |
| 30                  | 0.0  | 0.0    | 1.3    | 15.4 | 83.2     |
| 31                  | 0.0  | 0.0    | 0.8    | 10.5 | 88.7     |
| 32                  | 0.0  | 0.0    | 0.5    | 7.0  | 92.5     |
| 33                  | 0.0  | 0.0    | 0.3    | 4.6  | 95.1     |
| 34                  | 0.0  | 0.0    | 0.2    | 2.9  | 96.9     |
| 35                  | 0.0  | 0.0    | 0.1    | 1.9  | 98.0     |
| 36                  | 0.0  | 0.0    | 0.1    | 1.2  | 98.7     |

<sup>1</sup> Predicted chances for a specific NCRC level were estimated by subtracting the predicted chances for achieving the specific NCRC level or higher from the predicted chances for achieving the next lower NCRC level or higher (based on parameter estimates presented in Table B1).



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