

Research Brief:

The Impact of Risk Score Changes on Recidivism Among Youth in Juvenile Rehabilitation

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A number of recent studies have shown the importance of changes in criminogenic risk scores as a predictor for juvenile offender success. Specifically, Baglivio et al. (2017) found that change in 6 of the 17 domains in the Positive Achievement Change Tool (PACT) significantly affected rates of recidivism. They found that a 10% reduction in risk domains of school status, use of time, relationships, alcohol and drugs, attitudes/behaviors, and aggression, translated into 4-7% reductions in reoffending. This type of information is important for a couple of reasons. First, it will highlight the importance of routine re-assessment to identify changes in risk and protective factors. Second, it is the initial step in understanding how programming can impact a youths offending patterns after release. Currently, we do not know how changes in risk score impact offending for youth in Juvenile Rehabilitation (JR) in Washington State. This research intends to better understand the impact that change in risk and protective factor domain scores have, and how we can utilize them to identify specific programs and services that reduce the risk of reoffending most significantly.

Methods

This analysis was designed to study the impact of change in Integrated Treatment Assessment (ITA) domain risk scores on recidivism². A change in a dynamic risk score represents either the increase or decrease in risk while the youth was in a JR secure facility. The sample was derived from the 2014 JR Release cohort (n = 597), and consisted only of youth with 2 or more completed ITAs (n = 337, 56%). The primary dependent variable is recidivism and is defined as an adjudication for a new offense within 18 months of residential release from JR. All ten dynamic risk domains were included. Static domains were excluded as they should not vary considerably over time. Change scores were calculated by subtracting an individual's percent of max score at the initial ITA assessment from the percent of max score at the final ITA assessment. The more negative a change score, the more the risk for that particular domain was reduced. The more positive a change score, the more the risk for that particular domain increased during residential placement. Percent of max scores for each domain were calculated using the maximum risk score attributed to a youth in the sample and dividing each individual risk score (initial and final) by that maximum value (range from 0 – 100%). Once percent change was calculated, individual logistic regression models were used for each ITA domain with recidivism (0, 1) as the outcome and percent change as the primary predictor. Models were adjusted for gender, race, release age, age at first offense, initial domain risk score and prior criminal history as measured by the initial risk score for record of referrals. Collinearity was analyzed using variance inflation factors (VIF) and all variables were found to have a VIF below 5.

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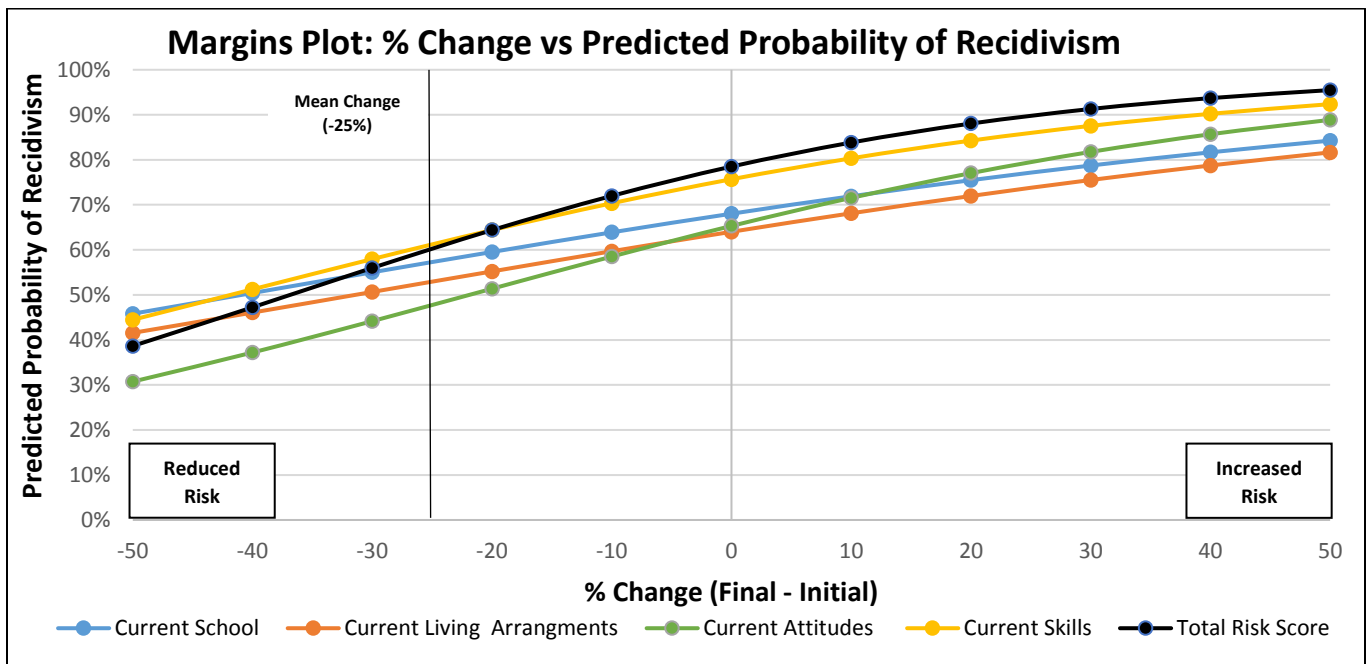
² ITA questionnaire (<https://www.dshs.wa.gov/sites/default/files/FSA/forms/pdf/20-271.pdf>)

Results

Odds ratios for each ITA dynamic domain are presented in Figure 1. As can be seen in the figure, significant effects were found for 3 of the 10 domains including living arrangements (p= .020), attitudes (p = .022) and skills (p = .006), in addition to marginally significant effects for school (p= .061). Change in total ITA score was also found to significantly impact recidivism (p= .018). Changes in the other six domains are not significantly related to recidivism in this release cohort. Marginal effects for percent change on recidivism are presented in Figure 2, with steeper lines representing greater effects on recidivism. As illustrated by the figure, a 10% reduction in overall risk score translates to approximately a 15% reduction in the probability of reoffending. More specifically, youth who reduce their overall ITA risk score by 50% while in JR would be expected to recidivate at a rate of approximately 39%.

| Odds Ratios for ITA Domains | | | | | |
|-----------------------------|-----------------------------|-----------------|----------------------|----------------------|--------------|
| Domain Number | Domain Name | Change Score OR | Lower Bound (95% CI) | Upper Bound (95% CI) | P-Value |
| 3 | School Current | 1.019 | 0.999 | 1.039 | 0.061 |
| 4 | Free Time Current | 1.008 | 0.995 | 1.022 | 0.211 |
| 5 | Employment Current | 1.004 | 0.991 | 1.018 | 0.513 |
| 6 | Relationships Current | 1.009 | 0.996 | 1.023 | 0.174 |
| 7 | Living Arrangements Current | 1.019 | 1.003 | 1.034 | 0.020 |
| 8 | Drug/Alcohol Current | 0.990 | 0.975 | 1.004 | 0.177 |
| 9 | Mental Health Current | 1.018 | 0.988 | 1.050 | 0.241 |
| 10 | Attitudes Current | 1.029 | 1.004 | 1.055 | 0.022 |
| 11 | Aggression | 1.009 | 0.997 | 1.021 | 0.136 |
| 12 | Skills | 1.028 | 1.008 | 1.048 | 0.006 |
| Total ITA Score | | 1.036 | 1.006 | 1.066 | 0.018 |

Notes: Odds ratios (OR) presented here represent the odds for a one-unit increase in percent change within each domain. P-values presented with bold values represent significance at the p<.05 level.



Discussion and Future Directions

This study represents the first stage in identifying the impacts of changes in ITA domain risk scores on recidivism in JR. Using a sample of youth with 2 or more ITAs from the 2014 JR release cohort, 4 of 10 risk domains (school, living arrangements, attitudes, skills) were found to have at least marginally significant effects on the probability of recidivism, as well as change in overall ITA risk score. Furthermore, this study found that a 10% reduction in overall ITA risk score corresponds to a 15% reduction in the probability of reoffending. Additional efforts to identify the specific ITA domains that correspond to the greatest reductions in reoffending, as well as the specific programs and services which impact the identified domains most significantly, will be needed in order to ensure JR is providing youth with the resources needed to successfully reenter the community.

As this represents the first phase in analyzing the impact of change scores in JR, it is important to note the limitations of the data. First, 260 (44%) youth in the 2014 JR release cohort did not have two ITAs. Given that change scores require assessments at two distinct time points, removing youth without two assessments significantly reduced the size of our sample. While improvements to the ITA process have been made since 2014, continued efforts to ensure that youth are at minimum being assessed at intake and release from JR are needed. As evidence of this continued need, of youth released from JR residential supervision in 2017, 85 of the 462 identified youth had only the initial ITA administered during their residential obligation (18%). *Importantly, an automated ACT report should be developed that lists the youth who have not completed their initial ITA, and those who will be released in the next 30 days and have not completed their second ITA.* This report should be made available to the ITA QA Specialists to ensure that all youth receive an initial and second ITA. Second, because of this reduce sample size, effects on specific subpopulations within the 2014 release cohort were not possible to study. Subgroups such as females, specific racial/ethnic groups, and high risk youth should be studied separately, as the specific domains which reduce reoffending for these groups may differ from the general population.

As we continue to examine the relationship between changes in risk and recidivism, there are many questions that remain unanswered. Future analyses will include, do the important risk domains vary by subpopulation? How do protective factors relate to recidivism? What programs/services are most strongly associated with reductions in the domains identified by this analysis? Are the impacts of change scores the same for misdemeanor recidivism? Felony recidivism? Violent felony recidivism?

The change score analysis presented here represents a new approach for utilizing the data collected through risk assessments at JR. As JR widely uses assessments to identify individual risks for youth as they enter and exit residential supervision, further efforts to identify the specific components of these assessments most strongly tied to outcomes of interest are necessary. Refining assessments to include only the most relevant predictors can reduce the workload for staff, reduce the burden on youth, and improve the quality of data collected through these assessments.

References:

1. Baglivio, M. T., Wolff, K. T., Jackowski, K., and Greenwald, M. A. (2017). A multilevel examination of risk/need change scores, community context, and successful reentry of committed juvenile offenders. *Youth Violence and Juvenile Justice*, 15(1), 38-61.