

## **Getting Students on Track for Graduation: Impact of the Early Warning Intervention and Monitoring System After One Year**

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## Abstract

### Background and Context

The national high school graduation rate reached its highest level in U.S. history—82 percent—during the 2013/14 school year (Kena et al., 2016)—but dropout remains a persistent problem in the Midwest and nationally. Early warning systems that use research-based warning signs to identify students at risk of dropping out have emerged as one strategy for improving graduation rates. These warning signs can include indicators of engagement, behavior, and course performance during middle and high school (Allensworth & Easton, 2005, 2007; Balfanz, Herzog, & Mac Iver, 2007; Silver, Saunders, & Zarate, 2008). More robust, comprehensive early warning systems also emphasize matching and assigning identified students with interventions to help them get on track for graduation (Neild, Balfanz, & Herzog, 2007) and continued monitoring of students' progress in these interventions (O'Cummings, & Therriault, 2015; O'Cummings, Therriault, Heppen, Yerhot, & Hauenstein, 2011).

However, little is known about the impact of the use of early warning systems on students and schools. This study examined the impact and implementation of one early warning system—the Early Warning Intervention and Monitoring System (EWIMS)—on student and school outcomes in three Midwestern states.

### Research Questions

The study examined the following research questions after the first year of EWIMS adoption:

1. What is the impact of EWIMS on indicators of student risk?
2. What is the impact of EWIMS on student progress in school?

To provide context for the impact findings, the study also documented schools' implementation of EWIMS.

### Intervention

EWIMS is a systematic approach to using data to identify students who are at risk of not graduating on time, assigning interventions to students flagged as at risk, and monitoring their response to intervention. EWIMS provides schools guidance and site-based support to implement a seven-step process, supported by use of an early warning data tool (see Figure 1). The tool incorporates validated indicators of attendance, course performance, and behavior, based on prior research (see Table 1), to flag students who are at risk of not graduating on time (Heppen & Therriault, 2008; Therriault, Heppen, O'Cummings, Fryer, & Johnson, 2010) and to allow schools to assign students to interventions and monitor progress through multiple reporting features. The EWIMS model intends to help schools efficiently and effectively use data to identify at-risk students and provide targeted supports to get students back on track for graduation (see Figure 2 for the theory of action).

### Research Design, Setting, and Sample Sizes

The study included 73 high schools from three Midwest states that were randomly assigned within matched pairs to implement EWIMS during the 2014–15 school year (37 EWIMS schools) or

continue business as usual (36 control schools).<sup>1</sup> Students in Grades 9 and 10 were the focus of the study (with a total of 37,671 students; 18,634 students in treatment and 19,037 students in control). There were no statistically significant differences between treatment and control schools on any measured baseline characteristics.

### **Data Collection and Measurement**

Extant student records were collected from the 2012–13 school year through spring 2015 from both treatment and control schools. Student outcomes were binary variables coded 1 or 0, reflecting whether the student was above or below the threshold for each risk indicator (missed 10 percent or more of instructional time, failed one or more courses, grade point average [GPA] of 2.0 or lower, and one or more suspensions) or, for progress in school, whether the student earned sufficient credits to be on track to graduate within four years.

Implementation measures included extant documents from the 2014–15 school year, monthly logs of content and frequency of EWIMS team meetings, reports from the early warning data tool that measured tool use, and interviews with EWIMS team members.

### **Analytic Methods**

Multilevel logistic and linear regression models with students (Level 1) nested in schools (Level 2) and a treatment indicator at Level 2 were used to estimate the impact of EWIMS on students. Student-level covariates and fixed effects for matched pairs were included in these models to increase the precision of the impact estimates.

### **Preliminary Findings and Results**

Findings (see Figure 3) show that:

- The percentage of students who were chronically absent (that is, missed 10 percent or more of instructional time) was lower in EWIMS schools (10 percent) than in control schools (14 percent). This 4 percentage point difference is statistically significant.
- The percentage of students who failed one or more courses was lower in EWIMS schools (21 percent) than in control schools (26 percent). This 5 percentage point difference is statistically significant.
- There was no statistically significant difference in the percentage of students who had a GPA of 2.0 or lower between EWIMS schools (17 percent) and control schools (19 percent) or in the percentage of students who were suspended once or more (9 percent in both).

EWIMS also did not have an impact on student progress in school (having insufficient credits).

The impact of EWIMS on chronic absence and course failures was larger for the Grade 9 cohort than the Grade 10 cohort.

Implementation of the EWIMS seven-step process was low, and implementing EWIMS was challenging for participating schools.

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<sup>1</sup> Control schools were offered EWIMS during the following school year (2015–16).

## **Conclusions**

This study provides rigorous initial evidence that, even with limited implementation during the first year of adoption, using a comprehensive early warning system can reduce the percentage of students who are chronically absent or fail one or more courses. These short-term results are promising because chronic absence and course failures in Grades 9 and 10 are two key indicators that students are off track for graduation. The study also provides evidence that EWIMS is challenging to implement in the first year of adoption. Future research should focus on the mechanisms through which EWIMS had an impact on chronic absences and course failures, why it did not affect other outcomes, and whether (and how) after more time or with stronger implementation, the observed impacts fade, grow larger, or expand to the other outcomes.

## Appendix A. References

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## Appendix B. Tables and Figures

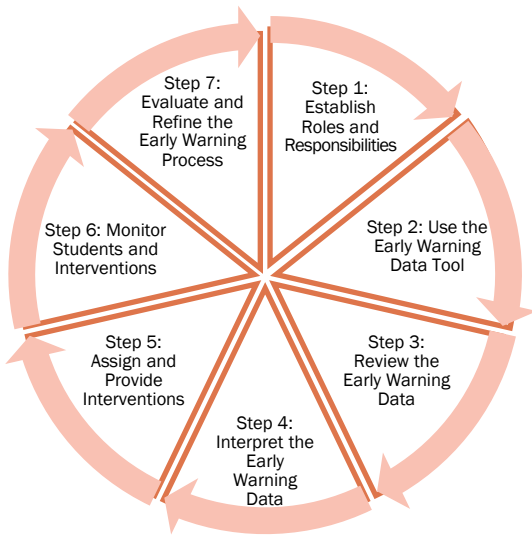
**Table 1. Definitions of the Flags Used by the EWIMS Tool to Identify Students at Risk for High School Dropout**

<b>Flag</b>	<b>Definition</b>
Chronic absence flag	One flag for the first 20 or 30 days, one flag per grading period, and a cumulative flag for the year: Missing 10 percent of instructional time.
Course failure flag	One flag per grading period and a cumulative flag for the year: Failed one or more semester or trimester courses in any subject.
Grade-point average flag	One flag per grading period and a cumulative flag for the year: Earned a 2.0 or lower on a 4.0 scale or equivalent on a different scale.
Behavior flag	One flag per grading period and a cumulative flag for the year: Suspended once or more.
Off-track flag	One cumulative flag for year: Failed two or more semester-long or three or more trimester-long core courses (English, math, science, social studies) or accumulated fewer credits than required for promotion to the next grade.

Source. EWIMS Implementation Guide. For more information about EWIMS implementation, see <http://www.earlywarningsystems.org/wp-content/uploads/documents/EWSHSImplementationguide2013.pdf> or Therriault et al. (2010).

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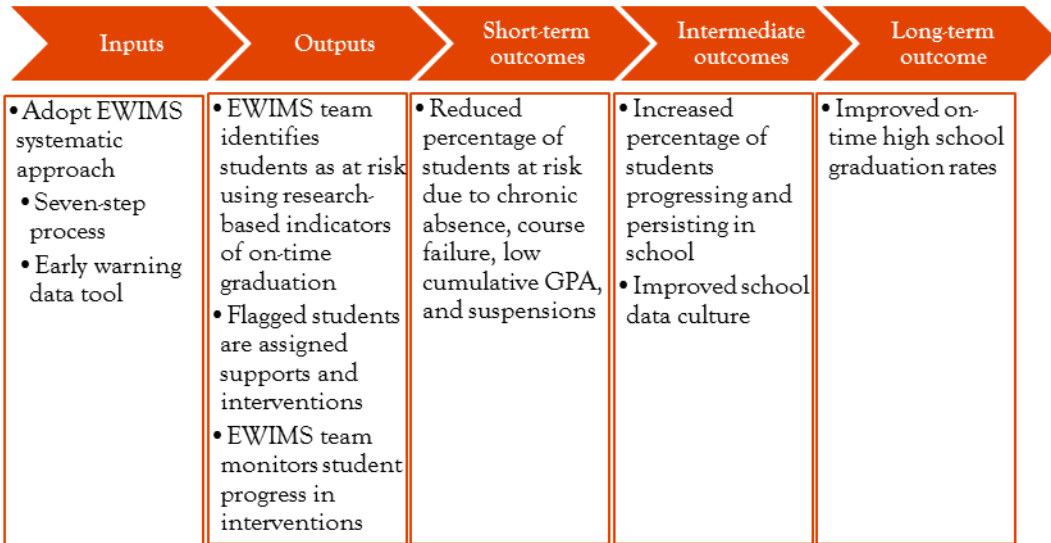
**Figure 1. The EWIMS Seven-Step Implementation Process**



Source: EWIMS Implementation Guide. For more information about EWIMS implementation, see <http://www.earlywarningsystems.org/wp-content/uploads/documents/EWSHSImplementationguide2013.pdf> or Therriault et al. (2010).

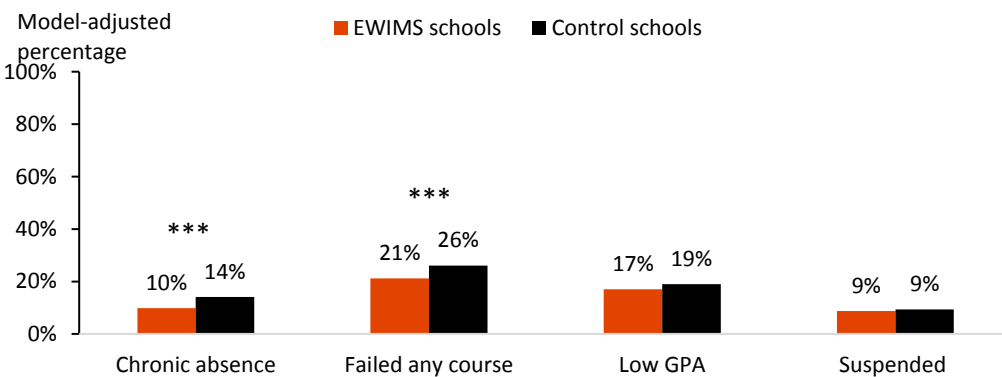
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**Figure 2. Theory of Action for How the Early Warning Intervention and Monitoring System Improves School and Student Outcomes**



Source: Authors' theory.

**Figure 3. Compared to Students in Control schools, a Lower Percentage of Students in EWIMS Schools Were at Risk Due to Chronic Absence and Course Failure, but Not Due to Low GPA or Behavior, at the End of the 2014–15 School Year**



GPA is grade point average.

\*\*\* Significant at  $p < .001$ .

Note: This figure presents model-adjusted percentage of students identified as at-risk in EWIMS and control schools, controlling for school and student covariates. Higher values indicate a larger percentage of students at risk.

Sample included 65 schools and 35,888 students for chronic absence; 65 schools and 35,133 students for failed any course; 57 schools and 30,080 students for low GPA; and 63 schools and 35,501 students for suspended.