



Early warning systems can increase educators' capacity to identify students at the highest risk of dropping out of high school. Information from early warning systems can help educators target resources and interventions toward students with the greatest risk of not graduating on time. Research consistently shows that indicators based on attendance rates, suspensions, and course performance are predictive of dropout.

The accuracy of these indicators — in terms of their ability to correctly identify students as on or off track for graduation — is likely to differ across districts.

## Early warning indicators are intended to identify students who are off track for graduation.



**A Ninth-Grade Class**



Imagine there are **36 future dropouts** within a class of 100 ninth-grade students.



**A Perfect Indicator**



**A perfect early warning indicator** would correctly identify all 36 nongraduates as off track for graduation and all 64 graduates as on track for graduation.



**A Perfectly Useless Indicator**



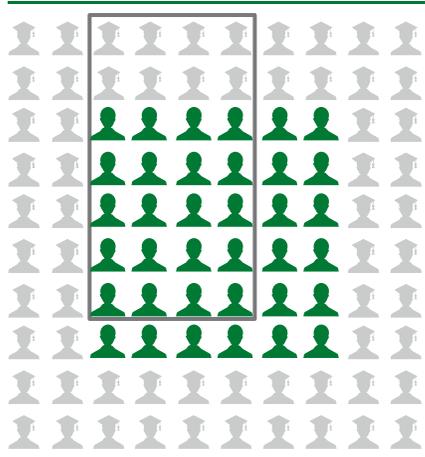
**A perfectly useless early warning indicator** is no better than random guessing. The chance of graduates and nongraduates being identified as being on track or off track for graduation would be the same.

Graduates Nongraduates Flagged as off track

## Identification of students who are off track can be improved by using multiple indicators.



**One Indicator**

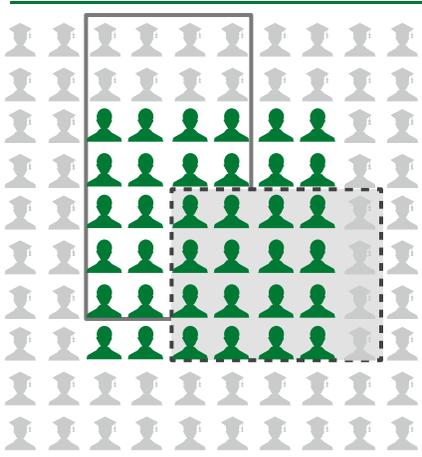


In reality, **no early warning indicator perfectly predicts whether students will be on track or off track** for graduation. Using one indicator is a good start.

This indicator correctly identifies 20 out of 36 students and incorrectly identifies 8 on-track students.



**Two Indicators**

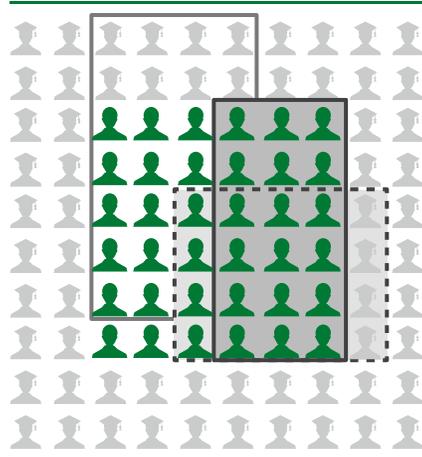


**Using two or more indicators can increase accuracy** of identifying students who are off track for graduation.

A second indicator correctly identifies an additional 10 off-track students and adds certainty to 6 students who were identified with one indicator.



**Three Indicators**



Identifying students who are off track on **multiple indicators allows you to target resources to a subset of off-track students** who are most severely at risk.

A third indicator correctly identifies an additional 4 off-track students who were not identified with two indicators. In this example, 12 students are incorrectly identified and 2 off-track students are not identified.

NOTE: Indicators are not perfect, and all indicators have the potential to miss or misidentify students.

Indicator 1 Indicator 2 Indicator 3 Students off track on multiple indicators

# The Best Indicators of Students at Risk Vary by District

The table below presents results from a study that examined data from three school districts. The purpose of this study was to develop a set of locally tailored early warning indicators for students at different grade levels in each school district and examine the accuracy of the indicators for predicting failure to graduate on time. Read more about this study in this report: <http://tinyurl.com/EWSIndicators>.



**Best<sup>1</sup>** indicator that consistently predicts nongraduation



**Second best<sup>1</sup>** indicator that consistently predicts nongraduation



**Third best<sup>1</sup>** indicator that consistently predicts nongraduation

Optimal Grade 9 Indicator Cut Points*	District A	District B	District C**
End-of-year attendance rates	< 90% 	< 95% 	< 95% 
Grade point average	< 1.9 	< 2.1	< 2.2 
Total credits earned	< 7	< 7 	***
Total number of failing grades in core courses	≥ 1 	≥ 1	***
Total number of suspensions	≥ 1	≥ 1 	≥ 1
Total number of failing grades	≥ 1	≥ 1	≥ 1

\* Optimal cut point: a specific value on the original scale of an indicator that separates students who are at risk of nongraduation from those who are not at risk.

\*\* District C has two indicators (not three) because only two indicators were consistent predictors of nongraduation.

\*\*\* District did not provide student data on indicator or student characteristic, or data were incomplete or unusable in the analysis.

## Takeaway for School Districts: Assess Indicator Accuracy

For districts implementing early warning systems, it is important to assess the accuracy of the indicators used to identify students who are at risk of dropping out of high school.

### Key points



- Analyzing longitudinal data on prior cohorts can help districts identify the early warning indicators that most accurately predict whether or not a student will drop out of high school.
- An indicator that is predictive of dropping out in one district may not be predictive in another district.
- Using multiple indicators can help districts identify students who are most at risk of dropping out in order to provide the intensive support they need to get back on track to graduate.

To learn more about how your district can identify the best indicators for your students, see <http://tinyurl.com/EWSIndicators>.

## Endnote

<sup>1</sup> According to Stuit et al. (2016), the three “best” indicators for each district were determined based on the degree to which they maximize the percentage of ninth-graders who are correctly predicted to not graduate on time and minimize the percentage of ninth-graders who are incorrectly predicted to graduate on time.

## Data Sources

Allensworth, E. M., & Easton, J. Q. (2005). *The on-track indicator as a predictor of high school graduation*. Chicago, IL: Consortium on Chicago School Research. Retrieved from <http://ccsr.uchicago.edu/sites/default/files/publications/p78.pdf>

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Neild, R. C., & Balfanz, R. (2006). An extreme degree of difficulty: The educational demographics of the urban neighborhood high school. *Journal of Education for Students Placed at Risk*, 11(2), 123–141. Retrieved from [http://repository.upenn.edu/gse\\_pubs/26/](http://repository.upenn.edu/gse_pubs/26/)

Roderick, M. (1993). *The path to dropping out: Evidence for intervention*. Westport, CT: Auburn House.

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Stuit, D., O’Cummings, M., Norbury, H., Heppen, J., Dhillon, S., Lindsay, J., & Zhu, B. (2016). *Identifying early warning indicators in three Ohio school districts* (REL 2016–118). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Midwest. Retrieved from <http://ies.ed.gov/ncee/edlabs>

## Additional information

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