Making Connections:
The State Role in Early Warning Systems

Dropout Prevention Research Alliance

March 24, 2015
American Institutes for Research (AIR), through its merger with Learning Point Associates, has operated the Midwest’s regional educational laboratory for more than 25 years.
REL Midwest provides education research and technical support services to educators and policymakers in Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin.
Our charge is to **improve academic outcomes** for students by:

- Helping states, school districts, and schools systematically use data and research
- Conducting and supporting high-quality research and evaluation
- Promoting evidence-based decision making
Research Alliances

- REL Midwest conducts its work primarily through Research Alliances
- Research alliances comprise practitioners, policymakers, and other education stakeholders
- Researchers and alliance members work together to develop and carry out a research agenda that addresses a shared problem of practice
Research Alliances

- College and Career Success Research Alliance
- Dropout Prevention Research Alliance
- Early Childhood Education Research Alliance
- Educator Effectiveness Research Alliance
- Rural Research Alliance
- School Turnaround Research Alliance
- Urban Research Alliance
- Virtual Education Research Alliance
Resources on our Website

www.relmidwest.org

- Links to resources and publications
- Research alliances and members
- Information about upcoming events
- Access to archived events
- Follow us on Twitter @RELMidwest
Hearing From You: Using the Chat Pods

Chat pods allow you to communicate.

Type your message or question in the narrow rectangular box on the bottom of the Chat pod.

Click the dialogue bubble to the right of your message or hit your return key to post your message.
Webinar Features

**Hearing From You:** Differentiating the Chat Pods

**Technical Assistance Chat pod** – Post your questions regarding sound, webinar tool assistance, and other technical concerns. These issues will be addressed immediately.

**Question (Q&A) Chat pod** – Post your questions for the presenter

**Comments and Insights pod** – Share your stories and insights
Anticipated Goals

- Increase awareness of EWS development and implementation across the U.S., and specifically in the REL Midwest region
- Provide relevant and practical guidance for states to effectively support the use of EWS in schools and districts
- Engage education stakeholders in a conversation about the challenges, successes, and importance of state involvement with EWS development and implementation
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter(s)</th>
</tr>
</thead>
</table>
| 1:10–1:30 p.m. | The Current Landscape of Early Warning Systems            | Susan Therriault, Ed.D.  
*American Institutes for Research* |
| 1:30–1:45 p.m. | State Perspective: Wisconsin                             | Jared Knowles  
*Wisconsin Department of Public Instruction* |
| 1:45–2:00 p.m. | State Perspective: Minnesota                             | John Gimpl  
*Minnesota Department of Education (MDE)* |
| 2:00–2:10 p.m. | Practical Lessons from Implementation: A School Perspective | Timothy Conboy, Ed.D.  
*Rosemount High School (Minnesota)* |
| 2:10–2:25 p.m. | Q&A with Panelists                                        | Moderated by Mindee O’Cummings, Ph.D.  
*REL Midwest* |
| 2:25–2:30 p.m. | Wrap-Up & Closing                                         | Mindee O’Cummings, Ph.D.  
*REL Midwest* |
The Current Landscape of Early Warning Systems

Susan Therriault, Ed.D.
Principal Researcher, REL Midwest
State EWS Implementation Challenges

- Local control
- State and LEA capacity to use data and support the use of data in schools
- Availability and allocation of resources (funding, time, and people)
- Dropout prevention is not a state or district priority
Benefits of Validating Indicators

- Based on available data that is applicable to the state context (e.g., state assessments or other data collected)
- Increases legitimacy of the indicators if validated in your state’s schools
- State-determined priority outcomes (e.g., reading by the end of third grade, high school graduation)
Challenges for Validating Indicators

- Validation is time and resource intensive (and ongoing)
- There are limitations in the data elements collected
- Timing of data availability is critical
- A system is needed to share early warning indicator data with districts and schools
Launch and Implementation

Technical assistance/support

- Many states provide links to state or nationally developed EWS tool and implementation guidance
- Support provided in the form of data analysis (validating indicators)
- Local districts and schools can decide to participate
Launch and Implementation

Programmatic mandates

- Grants or programs require reporting or monitoring aligned with EWS indicators
- Texas: Ninth Grade Transition Grantees use the EWS High School Tool to monitor students
Launch and Implementation

Legislative mandates

- Virginia: Accreditation linked to high school graduation rates
Implementation Strategies

Voluntary participation (e.g., Wisconsin, Minnesota, Massachusetts)

- Tools and validated indicators
- Implementation guidance
- Professional development
Implementation Strategies

Pilot EWS in schools and districts (e.g., Virginia, California)

- Coalition of the willing
- Active members and feedback
- Continuous support
Integrate indicators between state, district, school data systems (e.g., Massachusetts and Louisiana)
State Implementation Incentives

- Improving graduation rates is a priority
- Entry costs are low in terms of risk and resources
- Reporting is simplified by using EWS Tool
- Monitoring of school improvement is linked to the indicators at the school or district level
A State Perspective: Wisconsin

Jared Knowles
Research Analyst
Wisconsin Department of Public Instruction
Dropout Early Warning System (DEWS)

- Provides on-time graduation predictions for all students in grades 6, 7, 8, and 9 statewide (225,000 students in approximately 1,000 schools)
- Secure reports available to school and district staff online, updated twice annually in August and April
- 2\textsuperscript{nd} full year of implementation
DEWS in Action

Orientation video:
http://www.youtube.com/watch?v=4C2F8zhHV8w&hd=1

DEWS support page:
www.dpi.wi.gov/dews
DEWS was identified as a strategy to meet Wisconsin’s goal of reducing graduation gaps

- Goal is to reduce graduation gaps for race/ethnicity and FRL status by 50% by 2017
- DEWS linked to data literacy professional development
Wisconsin – DEWS Theory

STATE DATA
- Assessments
- Demographics
- Attendance
- Disciplinary Events
- Location
- Mobility

LOCAL KNOWLEDGE
- Teacher / program context
- Parent input
- Special circumstances

CONTEXT

Student Risk Identification

Intervention Strategies
Wisconsin – What makes DEWS different?

- DEWS does not use a checklist system, but instead gives students risk scores from 0-100
- DEWS is early – available at start of grades 6-9
- DEWS includes a margin of error
- DEWS provides subscores focusing on *malleable factors* that influence student risk
Wisconsin – DEWS Accuracy

Comparing EWIs in Literature and Machine Learning Algorithms on Test Data ROC

True Positive Proportion

False Alarm Proportion

EWI Type
- Other EWI
- Balfanz ABC
- Bowers GPA GMM
- Chicago On-Track
- Muthén Math GMM

Model
- 5 test bestEns
- 5 test dissimEns
- 6 test bestEns
- 6 test dissimEns
- 7 test bestEns
- 7 test dissimEns
- 8 test bestEns
- 8 test dissimEns
Wisconsin – DEWS IT Workflow

DEWS Workflow for Training and Scoring

Data Subroutines
- Get Data
- Transform
- Access DB
- Query
- Impute?
- Combine
- Reshape
- Drop
- Center & Scale
- Recode

Model Subroutines
- Train
- Search
- Select
- Ensemble
- Export
- Score
- Load
- Predict
- Test
- Export
Wisconsin - Rollout

- DEWS was developed during the 2012-13 school year
- Pilot group of 34 schools identified in early 2013
- Pilot materials delivered electronically in mid-April 2013; participation in follow-up survey too
  - Interpretative guide
  - Student reports for all current 7th graders
  - School report and school roster
- Pilot materials mimic dashboard, September 2013 rollout to statewide dashboard
Resources

- Training materials available on the Wisconsin Department of Public Instruction (DPI) website include DPI produced materials and links to other high quality resources
- Website: [www.dpi.wi.gov/dews](http://www.dpi.wi.gov/dews)
- Goal is to provide resources that reduce burden on local implementers in using and explaining DEWS
- Transparency through technical documents describing DEWS, data used, and methodology
Wisconsin – How to Use DEWS?

Professional development

- DPI employees present on DEWS to various statewide networks such as RSN, Title I, School Counselors, etc.
- State provides DEWS training alongside ongoing dashboard and data literacy training project known as WISEexplore http://wise.dpi.wi.gov/wisexplore
- Trainings are available to districts at their request and are provided by staff at regional service areas
DEWS Usage

- **Depth**
  - Districts are deepening their engagement with WISEdash

- **Breadth**
  - Almost all districts have visited DEWS reports at least once in each year, 2013 and 2014

- **Growth**
  - DPI and regional service agencies have increased the usage of DEWS and WISEdash by districts over time

- **Metrics**
  - WISEdash and DEWS usage is looked at to make sure the tool provides value where it is needed, with local staff
All data is fictitious and for demonstration purposes only.
All data is fictitious and for demonstration purposes only.
### DEWS Screenshot – Student Roster

All data is fictitious and for demonstration purposes only.

<table>
<thead>
<tr>
<th>Name</th>
<th>Student ID</th>
<th>Gender</th>
<th>Race/Ethnicity</th>
<th>School</th>
<th>Current Indicator</th>
<th>DEWS Outcome</th>
<th>DEWS Score</th>
<th>DEWS ± Margin of Error</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td>Amer Indian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td>Two or More</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>Hispanic</td>
<td>Active</td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>White</td>
<td>Active</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total of 111 row(s) with 10000 Row Limit
All data is fictitious and for demonstration purposes only.
All data is fictitious and for demonstration purposes only.
• Lessons learned?
  ▪ Be transparent about your predictive accuracy – validated measures are more likely to be used
  ▪ Build a diverse internal workgroup of different teams with a need for EWS (Title I, Wellness, IDEA, etc.)
  ▪ Find school, district, or regional leaders – champion user bases and potential trainers who are excited about the idea
  ▪ Communicate
  ▪ Do a pilot and get feedback
  ▪ Use feedback
Learn more about Wisconsin DEWS

- Pre-print of research paper on DEWS methodology, to be published in the Journal of Education Data Mining, available now at http://goo.gl/XEj8U2
- DEWS homepage has many EWS resources and DEWS specific guides (www.dpi.wi.gov/dews)
A State Perspective: Minnesota

John Gimpl
State Implementation Specialist
Minnesota Department of Education
Minnesota Early Indicator and Response System (MEIRS)

A tool for use by interested schools – voluntary.

Two Components:

1. An early warning data system to screen for students in grades 6 and grade 9 who are at risk of not completing high school in four years.

2. A corresponding process to a) review data for students at risk of not completing high school in four years, b) select, c) provide and d) monitor supports to help get students back on track to graduation.
Objective of MEIRS

Raise rates of graduation AND engage children in school giving them the knowledge and skills necessary to successfully meet the challenges life brings after completing high school.
Categories of data that influence graduation rates

- Fidelity of Implementation Data
- Student Non-Academic Data
- Program Data
- Perception Data
- Student Academic Achievement Data
Definitions of MEIRS Variables

- State level research confirmed that these variables distinguish between students who drop out and those who complete high school in four years:
  - Attendance
  - Mathematics Accountability Test performance
  - Reading Accountability Test performance
  - Suspension and Expulsion
  - Multiple Enrollments
Definitions of MEIRS Variables

• Groups identified as being at greater risk typically requiring or receiving additional support services:
  – Limited English Proficient
  – Special Education
  – Migrant
  – Homeless
  – Free and Reduced Price Lunch
Professional Development

- Schools must designate one staff person to receive an initial MEIRS training.
- MDE designed and delivers MEIRS trainings in collaboration with the Regional Centers of Excellence.
- Upon completion of MEIRS training, schools are granted access to the system by district superintendents.
Overview: MEIRS Secure Report

- Secure report with aggregated data and list of students with risk factors
- Requires a team problem solving process to analyze data, determine root cause and match potential supports and interventions at universal, targeted or intensive level
- State report provides a snapshot in time (based on October 1 Child Count Data) – goal is to promote tracking of risk factors in “real time”
Overview: MEIRS Secure Report

Minnesota Early Indicator and Response System (MEIRS)

What Percentage of Students Are Predicted At Risk Of Not Graduating From High School In Four Years?
6th Grade in 2015

100%  
At Risk | 20,369  
Identified | 61,583  
Percent | 33.1%

80%  
At Risk | 38  
Identified | 137  
Percent | 27.7%

60%  
At Risk | 38  
Identified | 137  
Percent | 27.7%

40%  
At Risk | 20  
Identified | 60

Note:
The MOCK-UP MIDDLE SCHOOL 6th Grade Cohort Anticipating High School Graduation in 2021 included a total of 139 students.

• Analysis was completed for 137 students.
• 38 were identified at risk of not graduating on time.
Overview: MEIRS Secure Report

What Risk Factor(s) Are Most Prevalent?

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>At Risk</th>
<th>Identified</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>21</td>
<td>30</td>
<td>70.0%</td>
</tr>
<tr>
<td>Reading</td>
<td>22</td>
<td>33</td>
<td>66.7%</td>
</tr>
<tr>
<td>Multiple Enrollment</td>
<td>10</td>
<td>17</td>
<td>58.8%</td>
</tr>
<tr>
<td>Suspension/Expulsion</td>
<td>6</td>
<td>7</td>
<td>85.7%</td>
</tr>
<tr>
<td>Attendance</td>
<td>2</td>
<td>3</td>
<td>66.7%</td>
</tr>
</tbody>
</table>

Note:
Students who have one or more of these risk factors are at increased risk of not graduating in four years.

- Math: The student received a "D" achievement level (does not meet standards) on at least one mathematics state accountability test in 3rd-5th grades.
- Reading: The student received a "D" achievement level (does not meet standards) on at least one reading state accountability test in 3rd-5th grades.
- Multiple Enrollment: The student attended more than 1 school in the same fiscal year in 3rd-5th grades, excluding dual enrollment and summer school.
- Suspension or Expulsion: The student was suspended (in school or out), expelled, or excluded at least once in 3rd-5th grades.
- Attendance: The student had less than an average of 85% attendance in 3rd-5th grades.

How Prevalent is Risk Within These Groups?

<table>
<thead>
<tr>
<th>Group</th>
<th>At Risk</th>
<th>Identified</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Learner</td>
<td>19</td>
<td>25</td>
<td>76.0%</td>
</tr>
<tr>
<td>Free Reduced Priced Lunch</td>
<td>38</td>
<td>66</td>
<td>57.6%</td>
</tr>
<tr>
<td>Special Education Status</td>
<td>7</td>
<td>21</td>
<td>33.3%</td>
</tr>
<tr>
<td>Migrant</td>
<td>1</td>
<td>1</td>
<td>100.0%</td>
</tr>
<tr>
<td>Homeless</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Note:
Research suggests that students in these groups, on average, are at increased risk of not completing high school in four years.
The homeless indicator is not used in analysis for 6th grade.
Practical Lessons from Implementation: Rosemount-Apple Valley-Eagan Public Schools

Timothy Conboy, Ed.D.
Assistant Principal
Rosemount High School, Minnesota
Seven-Step MEIRS Implementation Cycle

- Evaluate and Refine (Monitor and Adjust)
- Establish Team Roles and Responsibilities
- Select, Implement and Monitor Interventions
- Provide Orientation
- Dig Deeper
- Run MEIRS Report
- Review and Interpret Data
Q&A with Panelists

Moderated by Mindee O’Cummings, Ph.D.
Principal Researcher, REL Midwest
Wrap-Up & Closing Remarks

Mindee O’Cummings, Ph.D.

Principal Researcher, REL Midwest
Please complete the feedback survey and provide us with valuable information about how to improve our events.

Click here: 
Stakeholder Feedback Survey
Emily Loney

P: 202-403-5515
E-Mail: eloney@air.org

REL Midwest
1120 East Diehl Road, Suite 200
Naperville, IL 60563-1486

General Information: 866-730-6735
Website: www.relmidwest.org