MONTANA EARLY WARNING SYSTEM FOR DROPOUTS

PRESENTED BY
ERIC MEREDITH
DATA ANALYST
MONTANA OCHE
WHAT IS THE MONTANA EWS?

• A statistical model that can use readily available school, student, and other live data to identify students who are at risk of dropping out of school before they drop out.
HOW IS THE EWS DEVELOPED?

- Compare data from dropouts to the data from high school graduates from the school years 2007-2018

- Model is found using Logistic Regression

\[ 
\pi(x) = \frac{e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n}}{1 + e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n}} 
\]

- \( \pi(x) \) is the percent chance a student will drop out of school

- Separate model is developed for each grades 6, 7, 8 and for each year of high school.
VARIABLES IN THE EWS MODEL

Collected by OPI
- Moved this school year (Y or N)
- Moved from out of state (Y or N)
- Repeated a grade in K-8 (Y or N)
- Age Difference (July 15 cutoff date)*
- Number of School systems attended since 2007
- Gender

Not Collected by OPI
- Attendance Rate
- # of Previous Term F’s
- # of Previous Term A’s
- # of Behavior Events in last 120 days
- # of Out of School Suspension Events in last 3 years
- On Track (Y or N)
- # of Credits per year
- # of Absences in last 90 days
- # of Absences in last 60 days

About 300 Variables have been analyzed.
GEMS EWS RESULTS

- [http://gems.opi.mt.gov/StudentCharacteristics/Pages/EarlyWarningSystemOverview.aspx](http://gems.opi.mt.gov/StudentCharacteristics/Pages/EarlyWarningSystemOverview.aspx)

- EWS Results only available in GEMS Secure
  - Must get a login and access rights to the page.

- 3 Reports in GEMS
  - School Report
  - Student Summary Report
  - Student Detail Report
SCHOOL LEVEL REPORT

• Available for every school/district you have access to
  • School or district wide results to see numbers of students being identified.
• Can compare results by Grade
• Can compare to Statewide average results
• Will display results for the last 2 EWS runs
### STUDENT SUMMARY REPORT

<table>
<thead>
<tr>
<th>SC</th>
<th>School Name</th>
<th>Last Name</th>
<th>First Name</th>
<th>StateID</th>
<th>HS Years</th>
<th>Grade</th>
<th>Dropout Prob.</th>
<th>Change</th>
<th>Attendance</th>
<th>Grades</th>
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<th>Previous Prob.</th>
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</tbody>
</table>

- Lists EWS results for every student in your district/school in an excel file (other formats available)
- Names, School, and Data provided in the report is fictitious
STUDENT LEVEL REPORT

• Available for every student enrolled in your school
• Displays all data used by the EWS Model
• Graphically displays the following
  • Dropout Probability
  • Grades Risk Factor
  • Attendance Risk Factor
  • Behavior Risk Factor
  • Mobility Risk Factor
• Will display results for up to the last 12 EWS results
• Attendance Risk Factor Example
  • Based on grades alone, the odds of this student dropping out is 11.18 times the odds of an average student, with all other factors held constant
  • Above 1.25 all risk factors are flagged
• * All names and data in report are fictitious *