

# Dayton Public Schools & Chronic Absenteeism

Health Policy Institute of Ohio



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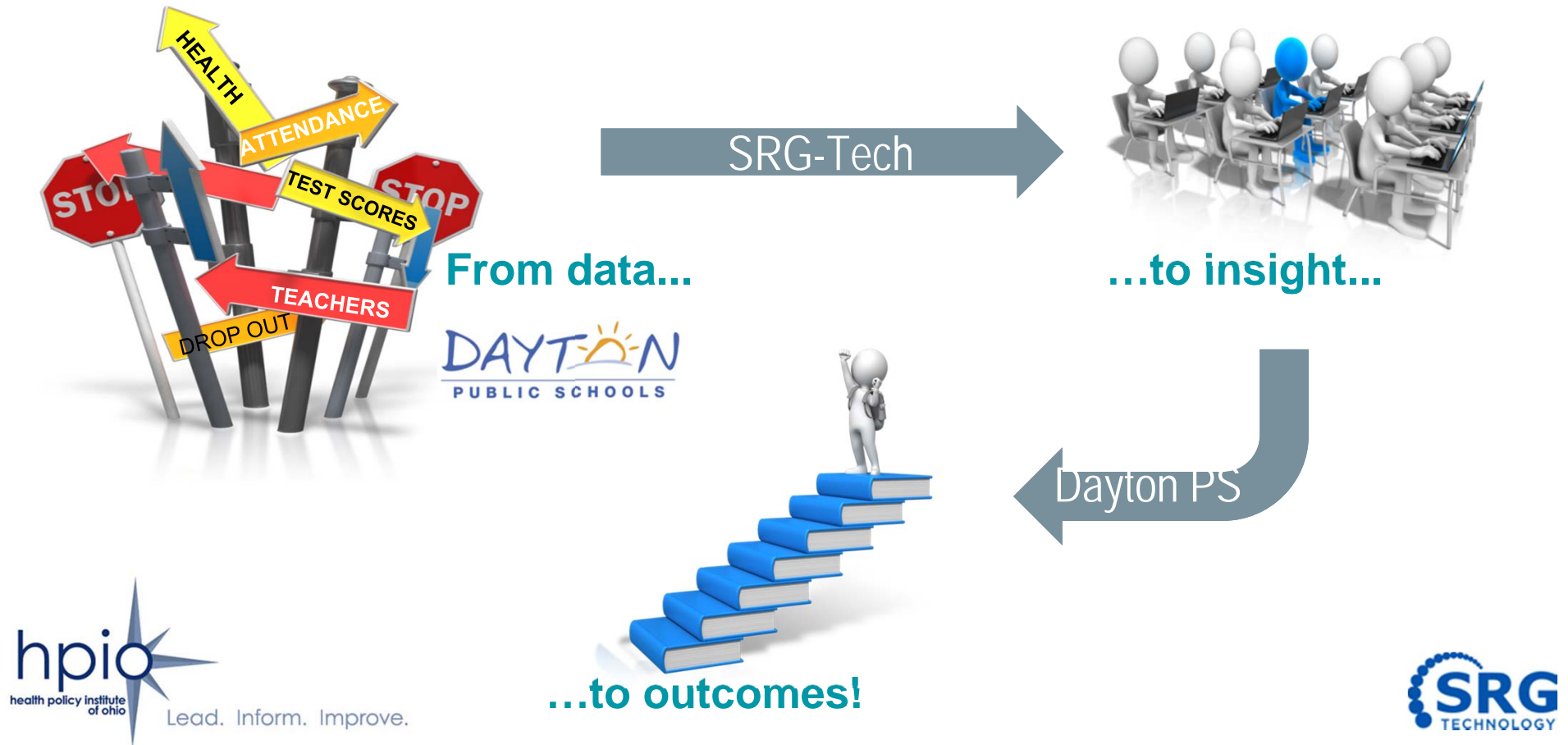
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# What is the Dayton PS / SRG-Tech relationship?



## Our objectives are...

For DPS to identify which students will become at-risk for chronic absenteeism



For DPS to intervene and impact outcome BEFORE student becomes chronically absent



## But the challenge is...

Can we develop a predictive model to identify which students will become chronically absent?



This is what we do



# Data Science

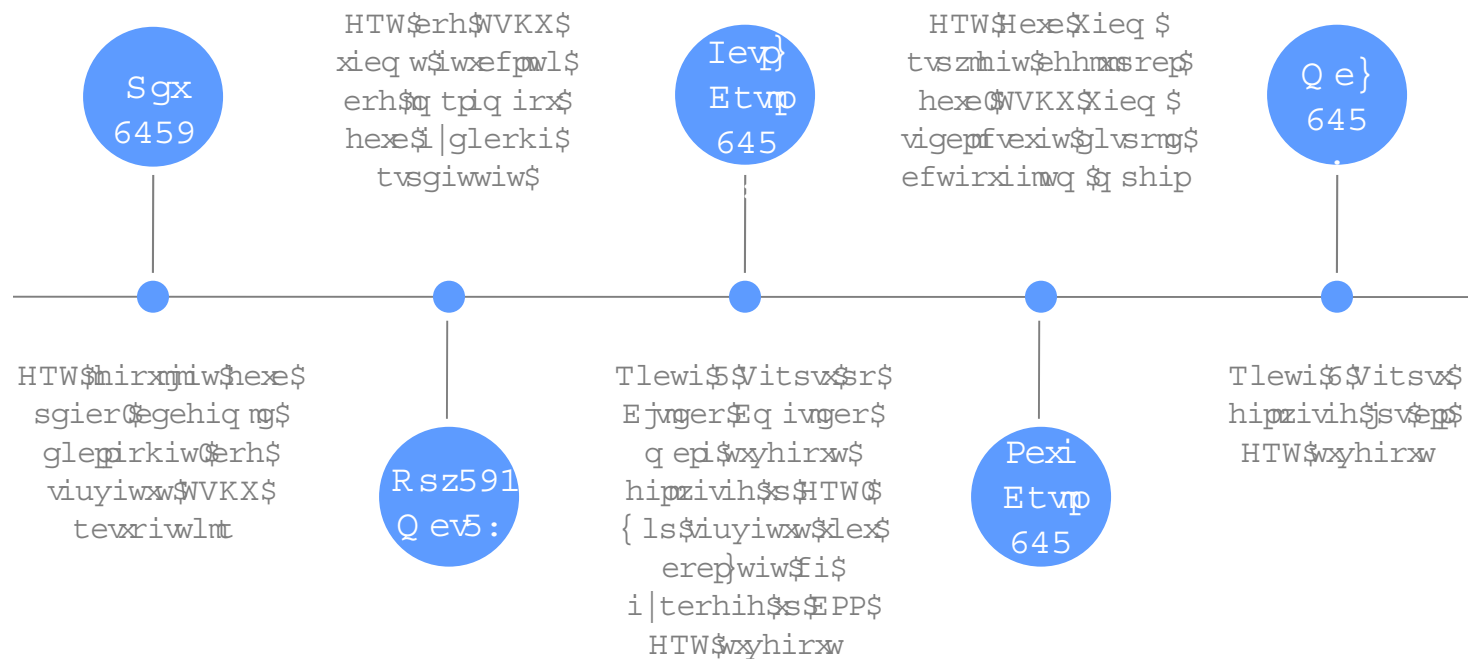
- Our experience:
  - SRGT was founded as an education IT firm
  - >10 years of change management projects
  - Data Science Team with published results
- Our software:
  - Created from the ground up to drive outcomes
  - Developed by the MGH Laboratory of Computer Science
  - Based on 10 years of HIT research

**PROVEN**



# Timeline

Analyzing educational & clinical data for ALL students in the DPS student body



# Our Analytics

## Chronic Absenteeism Prediction Model\*

- Predicts Lost Instructional Days  $\geq 18$
- Strong Accuracy (AUC = 0.80)
- Feasible to implement
- Includes entire DPS student body

## Additional Analyses\*\*

- Clinical Conditions (diabetes, ADHD, asthma)
- 6th Grade grades (reading, math, soc sci, lang)
- Extracurriculars
- 4th - 7th Grade Test Scores
- High School GPA
- 9th Grade 1st Quarter Fs vs. Dropouts
- Teacher Attendance
- Nursing Visits
- Geo Mapping



\*See report for details of prediction model

\*\*Analyses are exploratory only and do not imply causality



# Selected Findings...

- Chronic absenteeism is:
  - 66% more likely for student with diabetes
  - 39% for ADHD
  - 19% for asthma compared to students without any medical conditions
- Lost instructional days for 6th grade students are associated with a decrease in math, reading, social science and language art grades
  - For example, every 10 lost instructional days are associated with a 4.5% drop in their math grade (i.e., from 93% to 88.5%)
- High school students involved in 1 extracurricular activity have 36% fewer lost instructional days than students with no activities





## More Findings...

Factors NOT associated with Chronic Absenteeism:

Teacher Attendance vs. Test Scores	(1)Not statistically significant (2)Needs further analysis
Excused Absences vs. Nursing Visits	(1)No relationship at all
Mapping	(1)No asthma pattern (2)No absenteeism pattern

Teacher  
attendance is  
an ESSA focus



# Conclusion

**Chronic absenteeism touches both health and education**, with causal factors, and potential solutions, in each. A best case scenario, however, taps both institutions.

A deeper understanding of the **causes of chronic absenteeism** in specific schools and districts is required to most effectively align interventions to causal factors.

This understanding is most efficiently achieved through the **use of data analytics** - descriptive, predictive, prescriptive.

ESSA requires academic and non-academic measures of public schools. One non-academic measure is the Indicator of school quality, which must be research-based and linked to achievement. **Chronic absenteeism can be an ESSA measure.**

Policy efforts that recognize the **privacy and security concerns** of health and education data, while facilitating integrated approaches to tackle the challenges to each institution, are the next step for students and their academic achievement and health.



# A sample of clinical studies supported by TopCare & Data Science

1. Non-visit-based cancer screening using a novel population management system  
[Journal of the American Board of Family Medicine : JABFM. 07/2014; 27\(4\):474-85](#)
2. The longitudinal impact of patient navigation on equity in colorectal cancer screening in a large primary care network  
[Cancer. 2014 Jul 1;120\(13\):2025-31](#)
3. Decreasing Disparities in Breast Cancer Screening in Refugee Women Using Culturally Tailored Patient Navigation  
[Journal of General Internal Medicine. 2013 Nov;28\(11\):1463-8](#)
4. Population-based breast cancer screening in a primary care network  
[The American Journal of Managed Care. 2012 Dec;18\(12\):821-9.](#)
5. Applying Operations Research to Optimize a Novel Population Management System for Cancer Screening  
[Journal of the American Medical Informatics Association. 01/2014; 21:e129-e135.](#)
6. Assessing Hospital Readmission Risk Factors in Heart Failure Patients Enrolled in a Telemonitoring Program  
[International Journal of Telemedicine and Applications 01/2013; 2013:305819](#)
7. Efficacy and cost-effectiveness of an automated screening algorithm in an inpatient clinical trial  
[Clinical Trials. 02/2012; 9\(2\):198-203](#)
8. Linking electronic health record-extracted psychosocial data in real-time to risk of readmission for heart failure  
[Psychosomatics. 01/2011; 52\(4\):319-27](#)
9. Lessons from implementing a combined workflow-informatics system for diabetes management.  
[Journal of the American Medical Informatics Association 01/2008; 15\(4\):524-33](#)
10. Is this "my" patient? Development and validation of a predictive model to link patients to primary care providers  
[Journal of General Internal Medicine. 2006 Sep;21\(9\):973-8](#)
11. Development and Implementation of a Real-Time 30-Day Readmission Predictive Model  
Published in the 8/14 AMIA Proceedings



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