

# The West Virginia School Climate Index:

---

Validity and Associations with  
Academic Outcome Measures.

Andy Whisman, Ph.D.

WV Department of Education

Office of Research

# Objectives

---

1. Describe the development of the WV School Climate Index (WVSCI)
2. Describe steps toward evaluating the validity of the index
3. Explore associations between the WVSCI and school-level academic outcomes

# USED Safe and Supportive Schools (S3) Grant Program

---

- Provide grants to support measurement of, and targeted programmatic interventions to improve, conditions for learning
- Conditions for learning ➡ School Climate

# Federal S3 Priorities

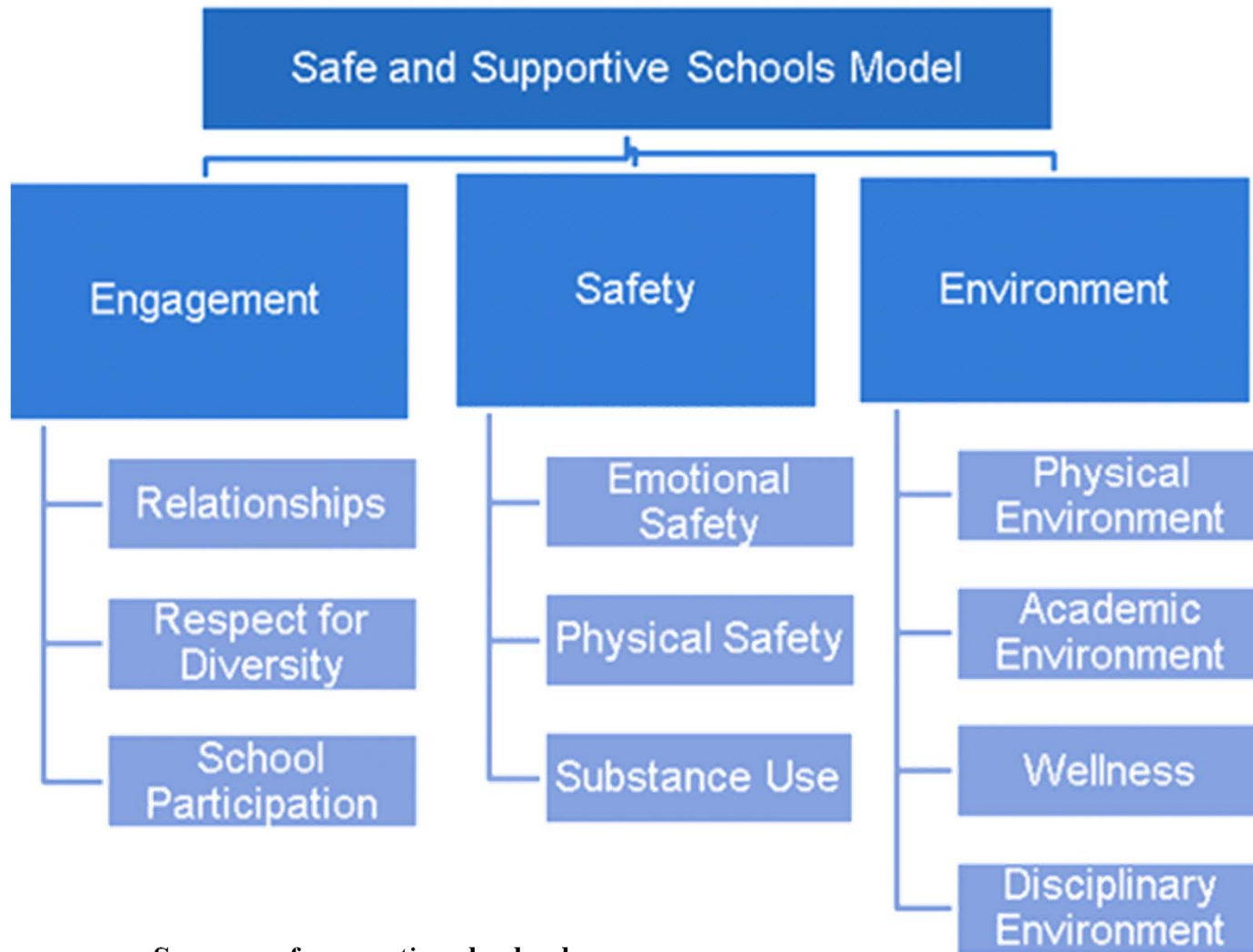
---

**Absolute :** Must use a systematic approach to improve conditions for learning through measurement systems that must include school safety

**Competitive Preference:** Must use valid and reliable instruments to gather data from students related to school engagement and school environment

**Invitational Preference:** Encouraged to gather data from school staff and students' families to assess school engagement.

# Proposed Federal Model for School Climate Measurement



Source: [safesupportiveschools.ed.gov](https://safesupportiveschools.ed.gov)

## Limited Lit Review

- 56 Studies
- Few measured school climate globally
- 11 Focused on multiple subdomains
- 12 reported academic performance as outcome

# S3 School *Safety Score* Requirement

---

- Each year grantees are required to publish a “school safety score” for each S3 intervention school
- Federally defined to mean a figure calculated with a formula developed by the State and applied uniformly to all schools
- Uses both survey data and incident data collected by a measurement system
  - Student and staff surveys <sup>1</sup>
  - Discipline referral reporting system

<sup>1</sup> Adapted from the California School Climate, Health, and Learning Surveys

# Who is involved in WV?

---

- 22 low performing high schools in 18 districts selected as intervention schools
- 20 remaining high schools in those districts serve as “comparison” schools.

# WV School Climate Index Development

---

## Self-imposed conditions:

1. The index should be comprehensive and provide a global measure of school climate
2. The index should be constructed on a straight forward, easily understood scale that can be readily interpreted.
3. One must be able to deconstruct the index into its component parts that serve to identify specific school climate issues at which interventions can be targeted.
4. The index should distinguish between favorable and unfavorable school climate conditions.
5. The index should correlate with and be predictive of school-level academic outcomes



# Addressing Conditions 1 through 3

---

- Started by cross-walking WV's three primary data sources against data sources reported in *Indicators of School Crime and Safety: 2010*
- Mapped selected survey and incident data items onto remaining school climate domains and subdomains
- Resulted in the specification of 20 indicators of school climate
  - Consisting of 56 measures drawing from 87 specific survey or incidents data items
  - At least one indicator per school climate subdomain

---

Robers, S., Zhang, J., and Truman, J. (2010). *Indicators of school crime and safety: 2010* (NCES 2011-002/NCJ 230812). Washington, DC: U.S. Department of Education National Center for Education Statistics; and U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

# Addressing Conditions 1 through 3

---

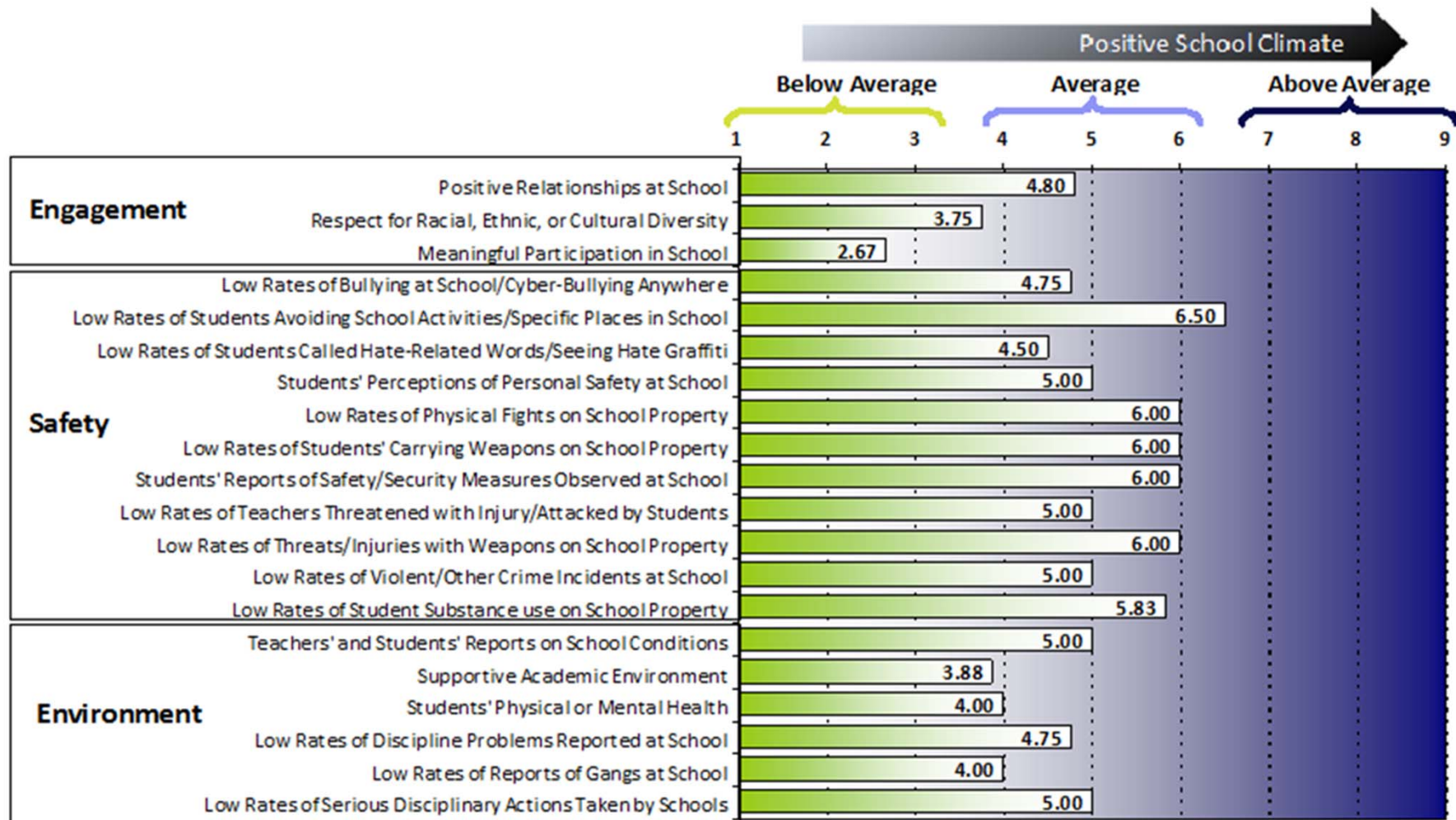
- Followed a process described by Bobbitt et al. (2005) for an county level index of well-being
- Used stanine scale scoring whereby scores are assigned to each school based on how it compared to all schools combined
- Asset Based—Higher index scores indicate positive or desirable school climate conditions

---

Bobbitt, L., Green, S., Candura, L., Morgan, G. (2005). The development of a county level index of well-being. *Social Indicators Research*, 73(1), pp. 19-42.

# Addressing Conditions 1 through 3

For this school the overall WVSCI is 4.92.



11

# Addressing Conditions 4 and 5

---

Does the WV School Climate Index have face validity?

“I am surprised by how much the School Climate Index and supporting data is aligning with what I know about our schools so far. There are some instances where a school scored higher on certain indicators or scored lower in certain areas than I would have guessed.

...I think that overall I can see that the reports meet with reality.”

# Addressing Conditions 4 and 5

---

The index should distinguish between favorable and unfavorable school climate conditions; and should correlate with and be predictive of school-level academic outcomes

“Positive and sustained school climate is associated with and/or predictive of positive youth development, effective risk prevention and health promotion efforts, student learning and academic achievement, increased student graduation rates, and teacher retention”  
(Cohen & Geier, 2010, p. 6).

---

Cohen, J. & Geier, V. K. (2010). School climate research summary: January 2010. *School Climate Brief*, 1(1), New York: Center for Social and Emotional Education. Retrieved from [http://www.schoolclimate.org/climate/documents/SCBrief\\_v1n1\\_Jan2010.pdf](http://www.schoolclimate.org/climate/documents/SCBrief_v1n1_Jan2010.pdf).

13

# Distinguishing Between Favorable & Unfavorable School Climate Conditions

---

## *Assumption 1:*

Given that intervention schools were selected on the basis of being low performing, they should present with lower school climate scores than comparison schools.

# Distinguishing Between Favorable & Unfavorable School Climate Conditions

Descriptive Statistics for the WV School Climate Index.

	N	Mean	Median	Std. dev.	Min.	Max.
Intervention	22	4.72	4.74	0.88	3.11	5.86
Comparison	20	5.27	5.29	0.85	3.60	6.51
Overall	42	4.98	5.00	0.90	3.11	6.51

## Analysis of Variance

	Sums of Squares	df	Mean Square	F	p
Between	3.15	1	3.15	4.199	0.047
Within	29.97	40	.0749		
Total	33.12	41			

15



# Correlating with Academic Outcomes

---

## *Assumption 2:*

Given the NSCC conclusion that a positive school climate is associated with and/or predictive of academic achievement, the WVSCI should correlate with and be predictive of school-level measures of academic performance.

## **Measures**

School-level proficiency rates in four primary content areas

- Math
- Reading/Language Arts (RLA)
- Science
- Social Studies



# Correlating with Academic Outcomes

---

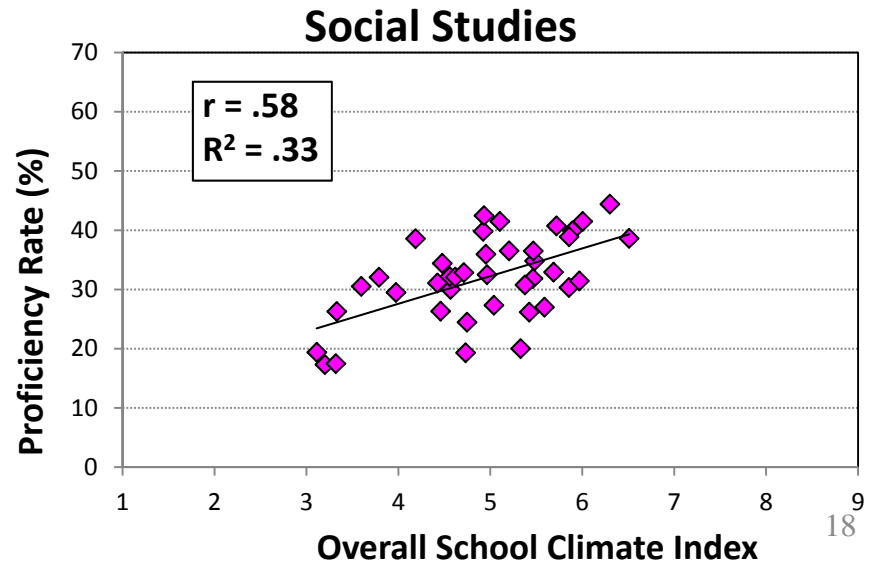
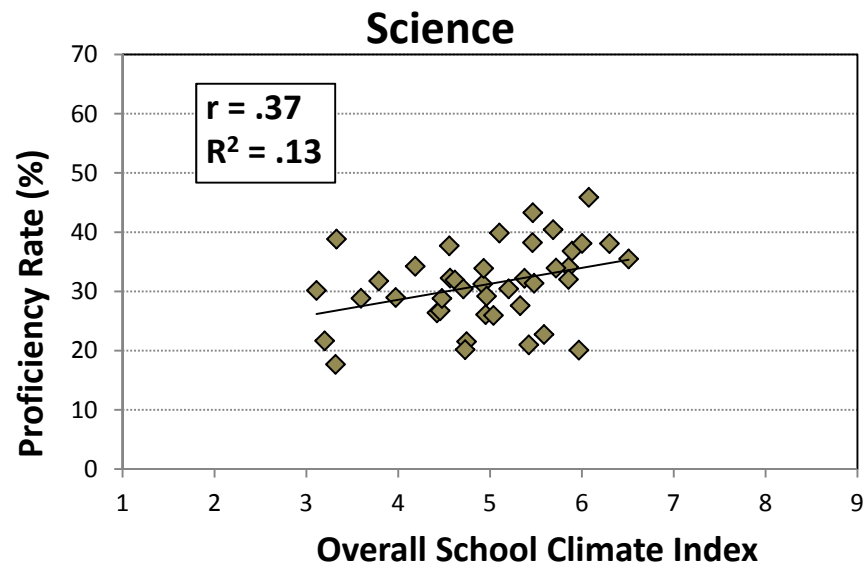
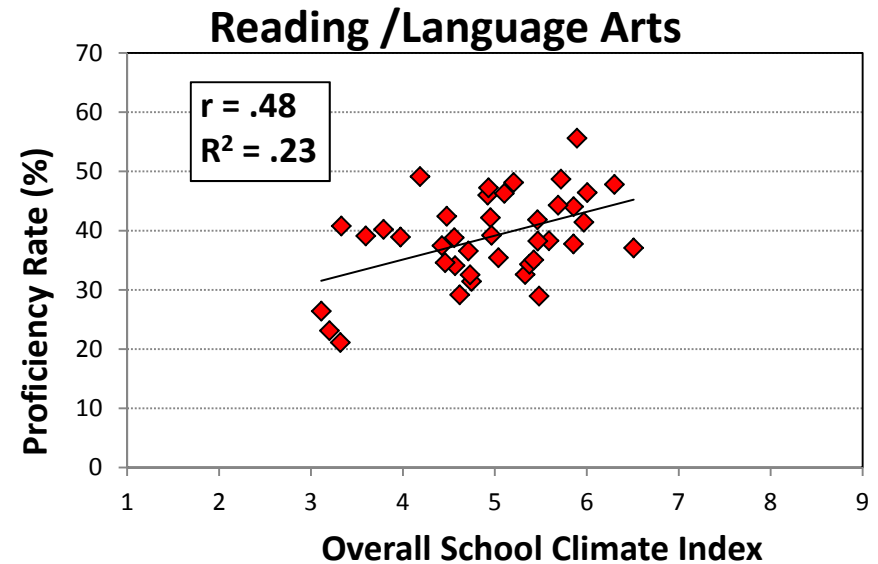
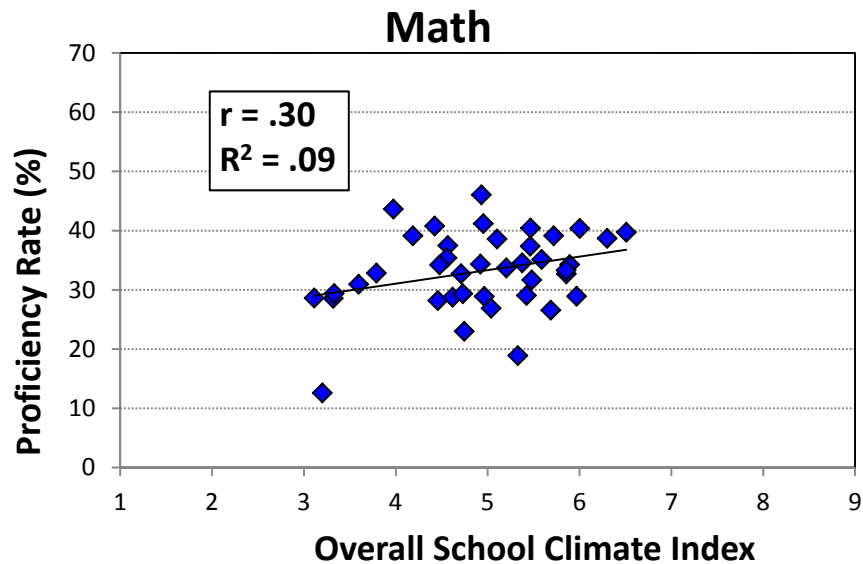
## Analytic Approach <sup>1</sup>

1. Bivariate scatter plots and OLS regression to explore associations between the WVSCI and outcome measures.
2. Followed with multiple linear regressions incorporating other structural/demographic factors known to strongly influence academic achievement.
  - School Size (Enrollment)
  - Poverty (LSES -- % Free or reduced lunch participation)
  - Students with Disabilities (SWD -- % students with disability)
  - Grade span configuration (Multi-programmatic schools = 1 and grade 9 through 12 high schools = 0)

---

<sup>1</sup> Condrón, D. J. (2011). Egalitarianism and educational excellence: Compatible goals for affluent societies? *Educational Researcher*, 40(2), 47-55.

# Bivariate Findings



# Multivariate Findings

## Reading/language arts (percent proficient)

	Bivariate model			Multivariate model		
	B	SE	$\beta$	B	SE	$\beta$
School Climate Index	4.03	1.21	0.475	2.173	1.475	0.256
School size				-0.002	0.004	-0.061
SWD				-0.268	0.274	-0.139
LSES				-0.259	0.124	-0.392
Multiprogrammatic				-0.056	3.001	-0.003
Intercept	19.00	6.04		46.167	13.154	
	$R^2 = 22.6\%$			$R^2 = 35.9\%$		
						-0.339

# Multivariate Findings

## Moderating Effects of School Climate Relative to Low Socioeconomic Status, Students With Disabilities, School Size, and Grade-span Configuration.

Outcome	Cumulative effect excluding school climate	Cumulative effect including school climate	Percent moderation
Math	-0.510	-0.426	16.5%
RLA	-0.857	-0.339	60.4%
Science	-1.164	-1.089	6.4%
Social studies	-0.963	-0.293	69.6%

# Recommendations

---

1. Focus continuous improvement efforts broadly to address student and staff needs as they relate to school climate.
2. Addressing a factor within their influence—school climate—schools may diminish the unfavorable effects of issues over which they have little control, such as poverty.

## Contact Information

Andy Whisman

[swhisman@access.k12.wv.us](mailto:swhisman@access.k12.wv.us)

Coordinator, Research and Evaluation

WVDE Office of Research

Building 6, Room 722

304.558.2546

[http://wvde.state.wv.us/research/reports2012/WVSCIDevelopmentReport\\_2012.pdf](http://wvde.state.wv.us/research/reports2012/WVSCIDevelopmentReport_2012.pdf)

[http://wvde.state.wv.us/research/reports2012/WVSCIVValidityTestReport\\_2012.pdf](http://wvde.state.wv.us/research/reports2012/WVSCIVValidityTestReport_2012.pdf)