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# Beyond Percentiles

Defining goals and measuring  
progress for state turnaround  
interventions

# State Turnaround Interventions

## State-level initiatives since 2010

- Race to the Top
- NCLB waivers
- Every Student Succeeds Act (ESEA)

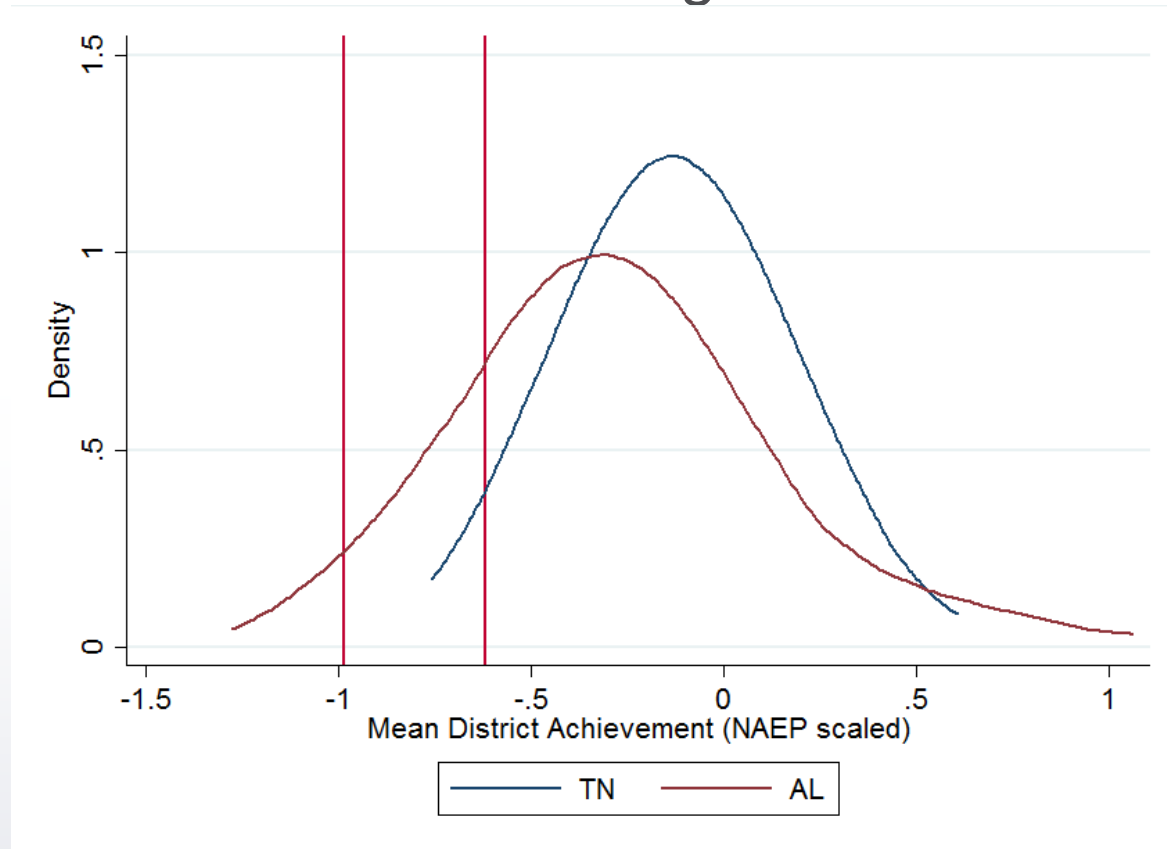
from Section 1111 (c) 4:

(D) IDENTIFICATION OF SCHOOLS.—Based on the system of meaningful differentiation described in subparagraph (C), establish a State-determined methodology to identify—

- (i) beginning with school year 2017–2018, and at least once every three school years thereafter, one statewide category of schools for comprehensive support and improvement, as described in subsection (d)(1), which shall include—
  - (I) not less than the lowest-performing 5 percent of all schools receiving funds under this part in the State;
  - (II) all public high schools in the State failing to graduate one third or more of their students;

# Percentile-Only Definitions

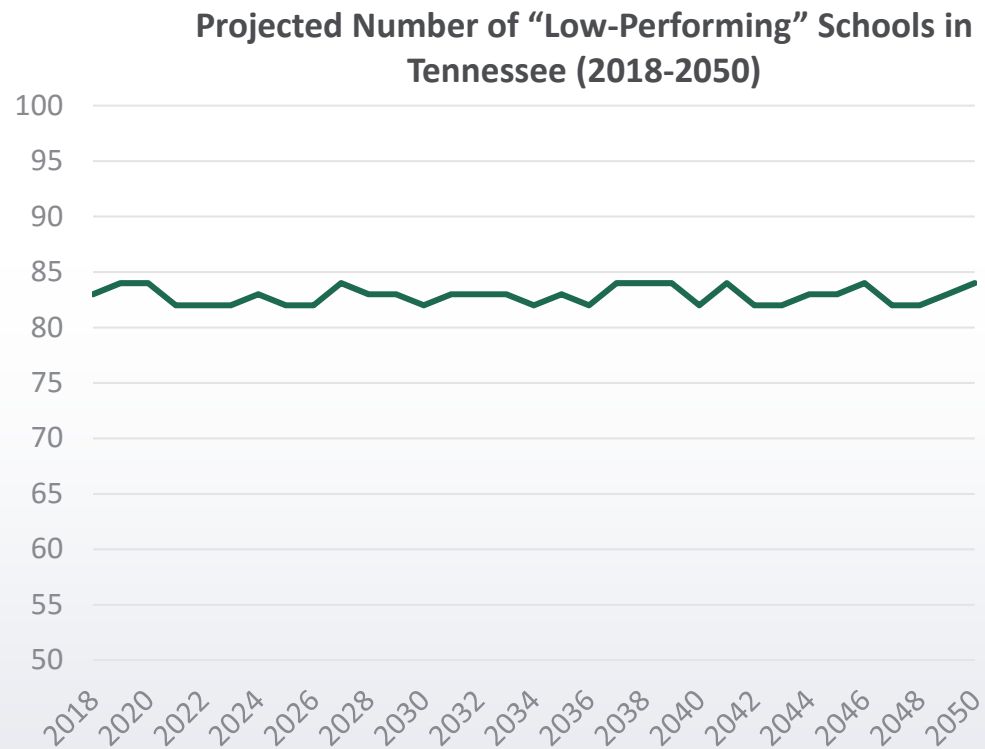
- Inconsistent definition of “failing” across time and space



Source: Stanford Education Data Archive (2018). <https://cepa.stanford.edu/seda/data-archive>

# Percentile-Only Definitions

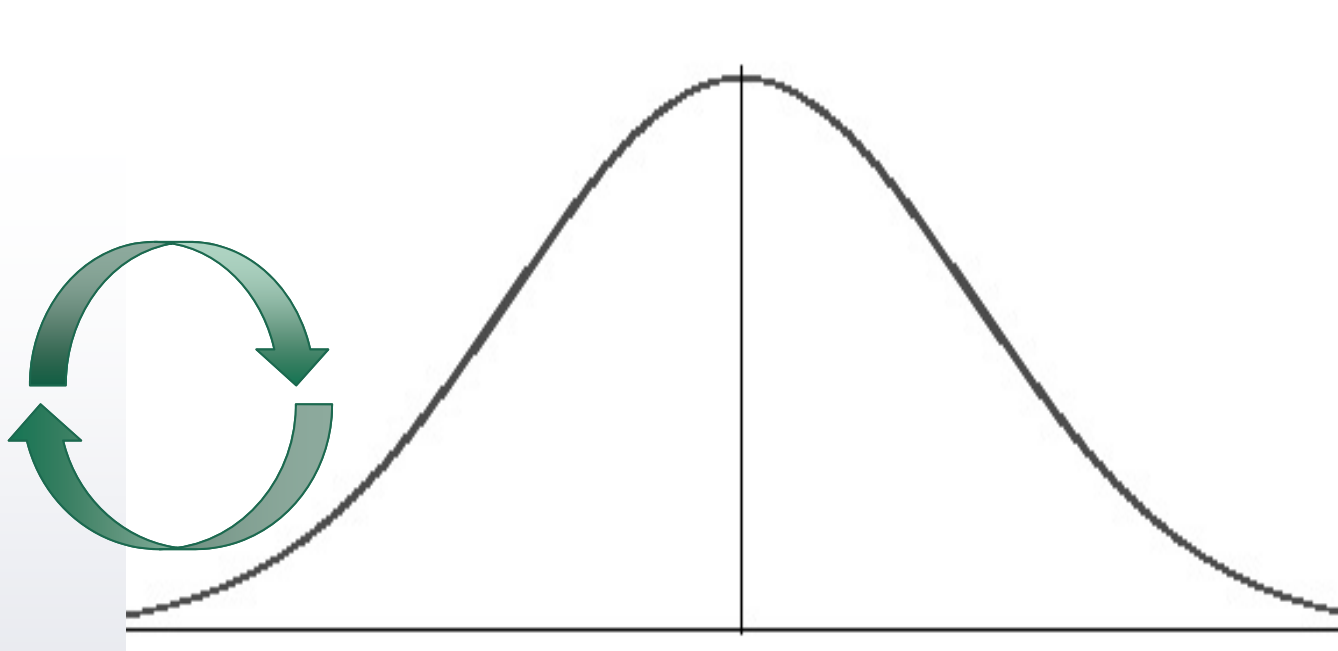
- Precludes measurement of progress



(Some fluctuation due to closures, openings, and exemptions)

# Percentile-Only Definitions

- Zero-sum
- Implicit goal: Change which schools are low-performing



# Percentile-Only Definitions

- Confuses language on rationale

Language	Rationale	Identification	Intervention	Goal
Failing	Excellence	Below benchmark	Restorative	Phase out
Too far behind	Equity	Relative	Compensatory	Phase out
Most need for limited resources	Efficiency	Rank from bottom	Triage/Pilot	Expand Indefinitely
				Static Indefinitely

— Two-thirds graduation requirement

— Bottom five-percent requirement

# Comprehensive Definition

- 1) Starts from the problem to be solved.
- 2) Establishes a malleable progress metric.
- 3) Sets a consistent rationale of selection, intervention, and exit.
- 4) Is compatible with ED prescriptions.

# Comprehensive Option 1

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Absolute Performance Thresholds

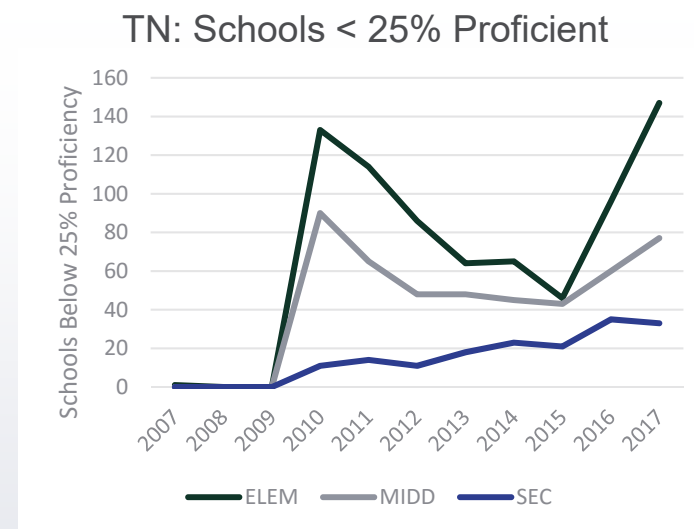
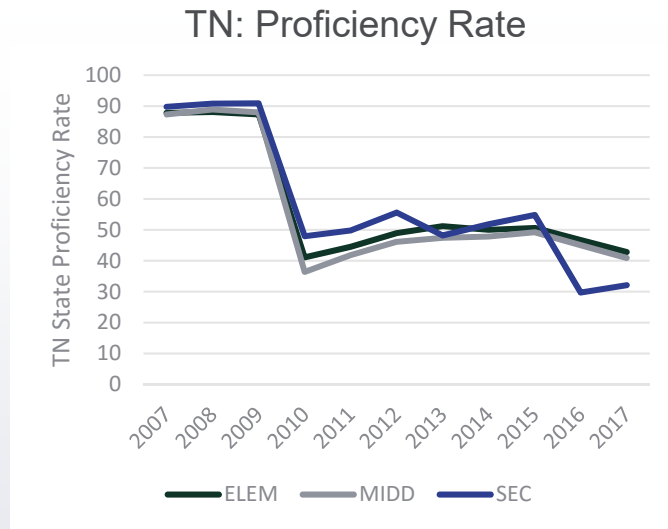




# Absolute Performance Thresholds

“Performance is unacceptably low in these schools”

- parallels ED’s graduation requirement
- independent of other schools’ performance
- sensitive to changes in tests/standards



# Comprehensive Option 2

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Relative Performance Thresholds



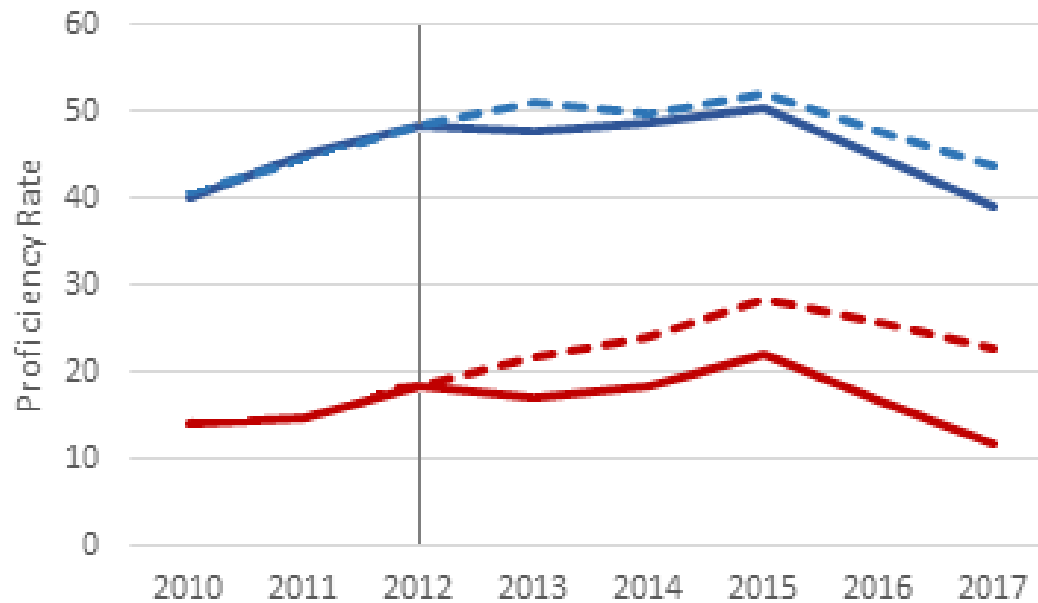
# Relative Performance Thresholds

“These schools are not keeping up with state progress”

- parallels tracking of achievement gaps
- moves with changes in standards
- measurement challenges
  - central tendency
  - dispersion

# Relative Performance: 5<sup>th</sup>-to-50<sup>th</sup>

## 5<sup>th</sup>-to-50<sup>th</sup> Performance Gap: TN



- Median by year
- - - 2012 median cohort
- Fifth percentile by year
- - - 2012 fifth percentile cohort

# Relative Performance: Outliers

Exceptional treatment for statistically exceptional schools

Z-scores ( $\mu, \sigma$ ):

- Difficult to understand/explain
- Existence/non-existence almost axiomatic
  - (always observations  $2\sigma \leq \mu$ , never  $7\sigma$ )
- Outliers self-correct: lower  $\mu$ , increased  $\sigma =$  lower  $z$

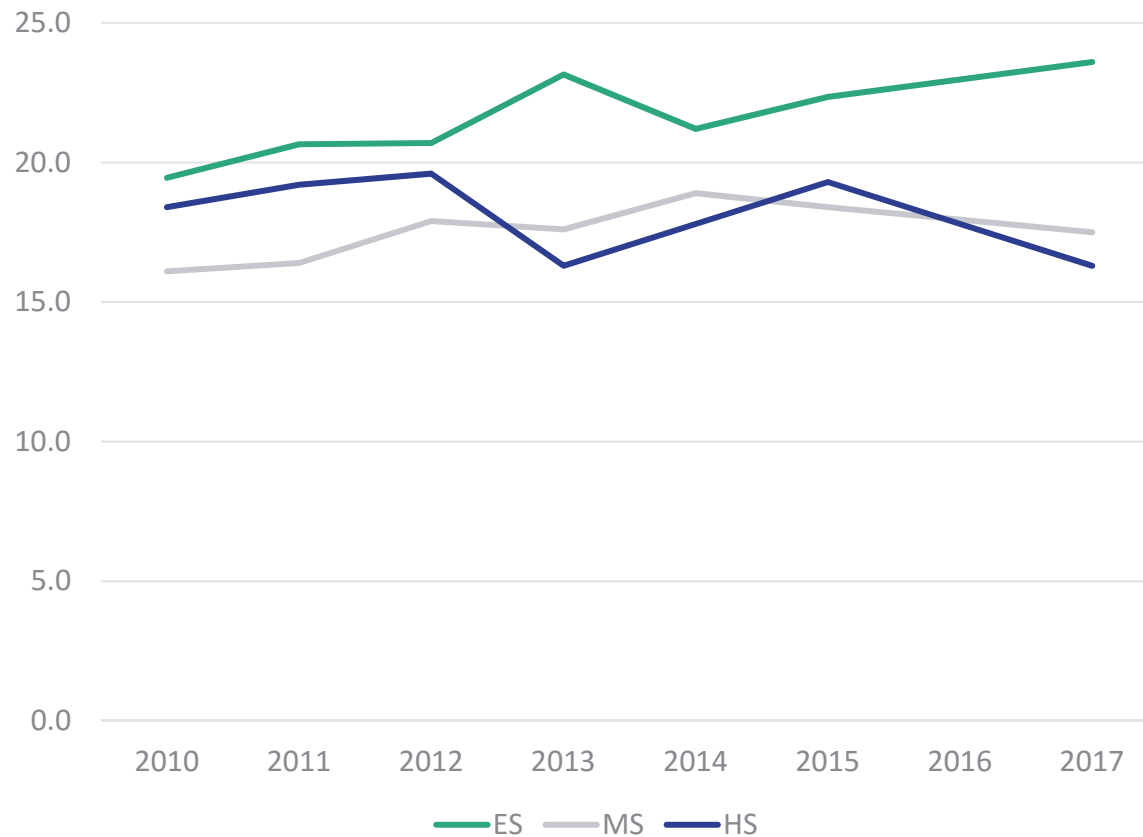
Tukey outliers:

- 1.5 times the inter-quartile range below median:

$$50^{\text{th}} \text{ percentile} - 1.5 * (75^{\text{th}} \text{ percentile} - 25^{\text{th}} \text{ percentile})$$
$$0 - 1.5 * (0.67 - -0.67) = -2\sigma$$

# Relative Performance: Outliers

IQR of School Proficiency Rates: TN



# Relative Performance: Outliers

Schools 30 Points Below Median: TN				
	Elem	Midd	High	TOTAL
2010	4	1	10	15
2011	16	7	10	33
2012	21	13	15	49
2013	29	11	17	57
2014	19	10	10	39
2015	17	5	12	34
2016	-	-	-	-
2017	21	9	1	31

# Relative Performance: Outliers

Schools 25 Points Below Median: TN				
	Elem	Midd	High	TOTAL
2010	22	16	19	57
2011	33	21	18	72
2012	54	21	22	97
2013	64	25	24	113
2014	43	22	18	83
2015	35	23	20	78
2016	-	-	-	-
2017	55	24	13	92



# Comprehensive Option 3

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Concentration of Under-performance



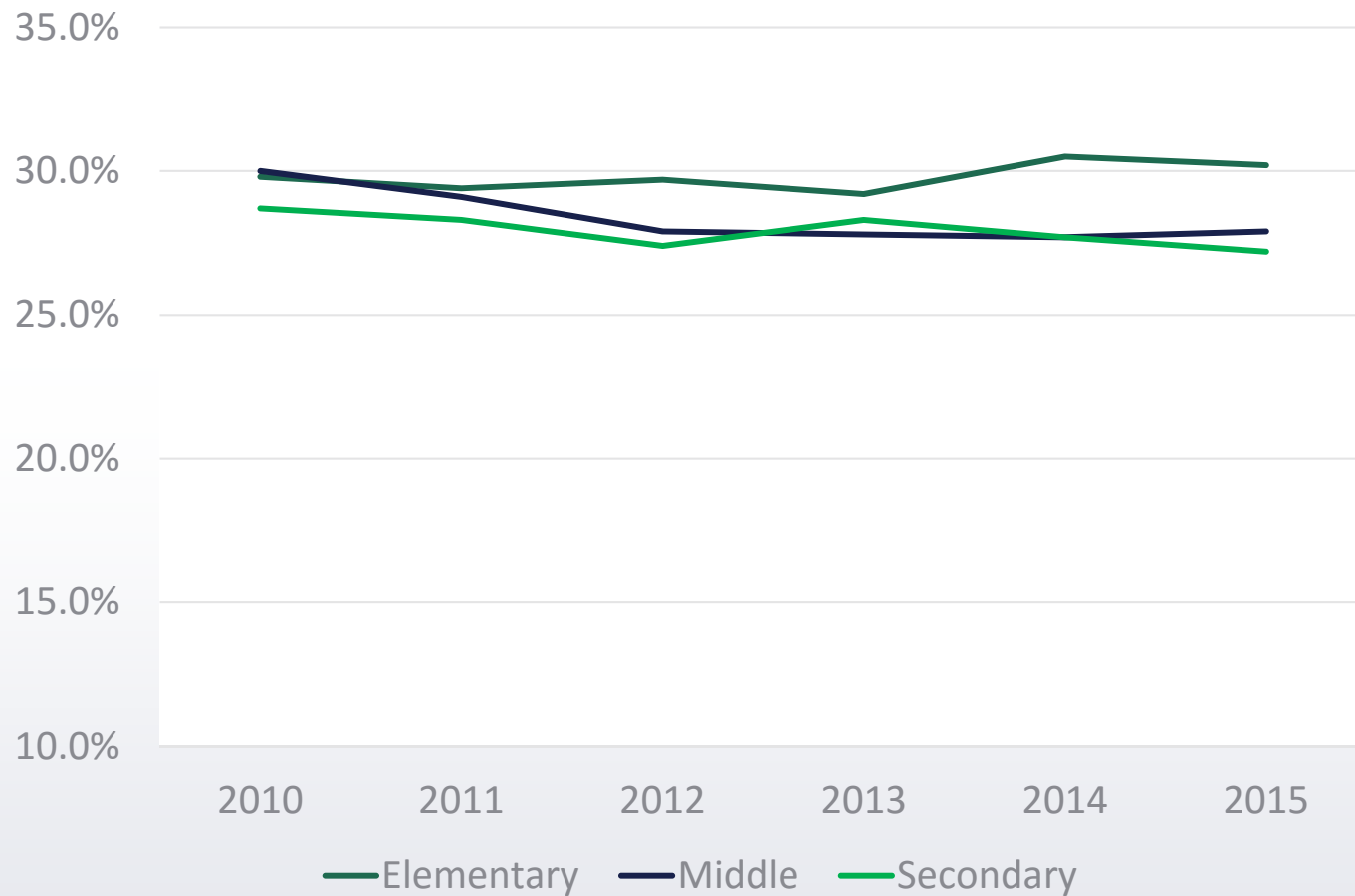
# Concentration of Underperformance

“A small percentage of high schools, about 2,000, produce more than half the nation’s dropouts.” (Balfanz, et al, 2013)

Consistent with bottom-5% logic of concentrating efforts  
May point to identifying schools by counts rather than rates

# Concentration of Underperformance

Proportion of Schools Containing Half of All Non-Proficient Students: TN



# Concentration of Underperformance

Schools (2012)	by Rate	By Count
Elementary		
schools	38	38
student-tests	12,934	23,607
proficiency	16.00%	36.00%
Middle		
schools	26	26
student-tests	19,218	34,133
proficiency	15.70%	31.60%
Secondary		
schools	13	13
student-tests	3,379	8,034
proficiency	18.20%	40.70%
TOTAL		
schools	77	77
student-tests	<b>35,531</b>	<b>65,774</b>
Overlap	12	

# Conclusions

## Where methods and messaging do not align:

### **Mold method to message**

- Interventions address distinct, solvable set of issues in selected schools.
- Progress measured toward eradicating issues.

### **Mold message to method**

- Turnaround is a place to start on larger, almost universal issues.
- Selected schools are where we most, or first, want results.
- Progress measured as part of state-wide improvement.

# Discussion

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