

# **Site Selection in School District Research:** *A Measure of Effectiveness Using Hierarchical Longitudinal Growth Models of Performance*

Alex J. Bowers

Teachers College, Columbia University



# Purpose & Background

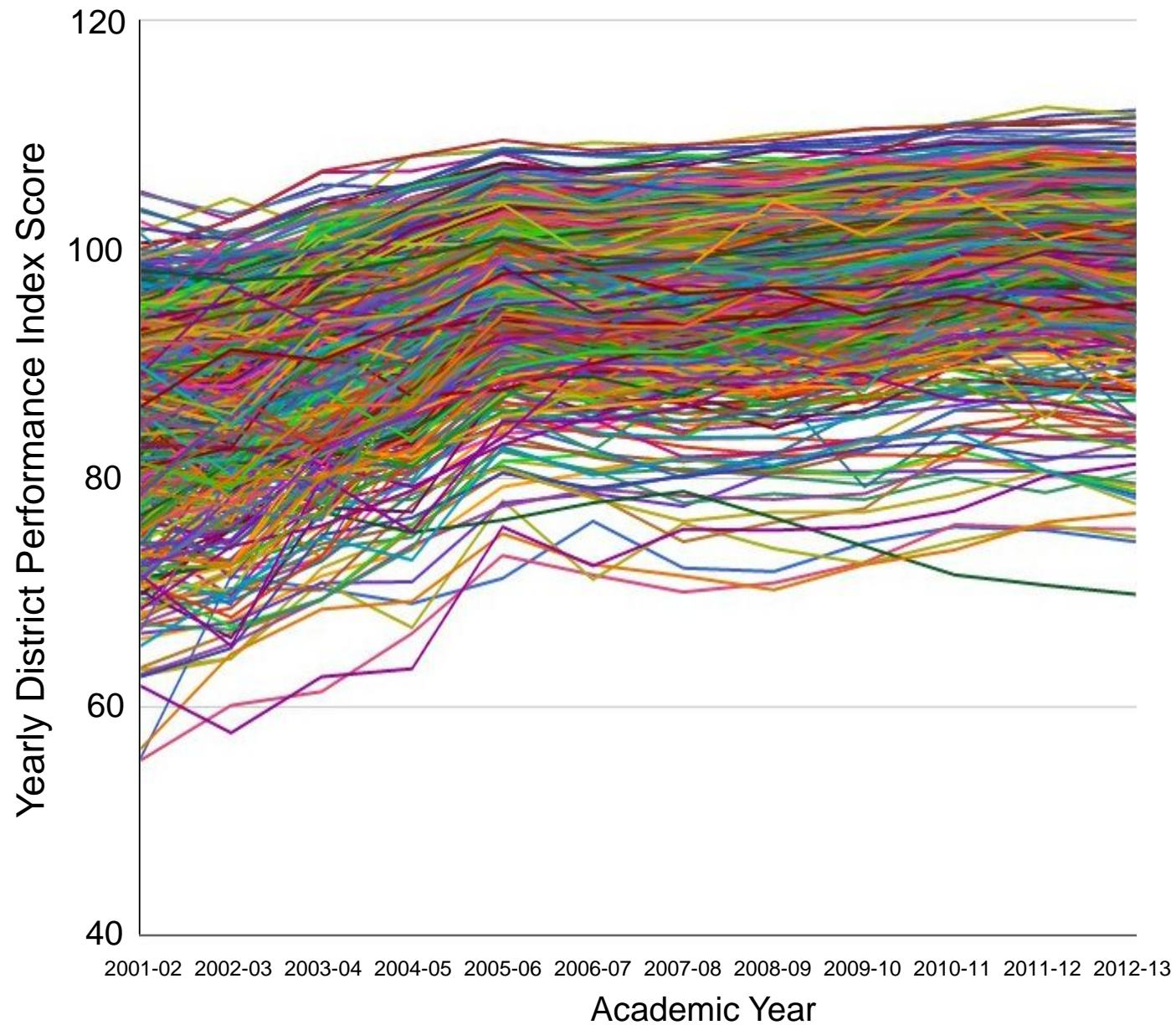
## Purpose:

The purpose of this study is to test a method for identification of effective districts from all districts in a state (Ohio) for in-depth qualitative case study site selection

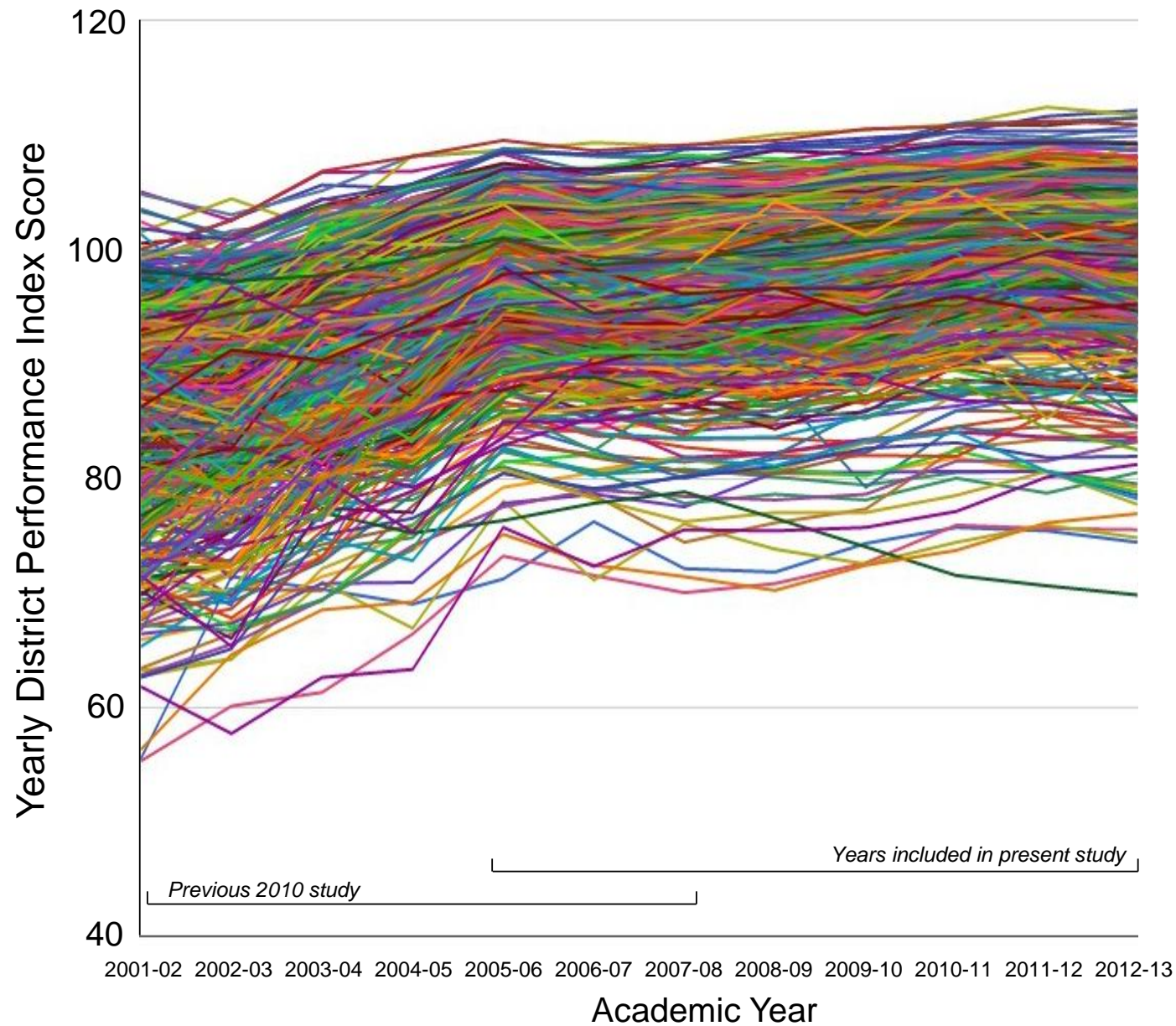
## Background:

- School districts matter:
  - Leadership through coherent instructional systems
  - Sustained and focused professional development for teachers and school leaders
  - Intentional fiscal and human resource management
  - Instructional capacity building
  - Effective data use
    - Bowers 2008, Elmore & Burney 1999, Firestone et al. 2005, Honig 2012, Honig & Coburn 2008, Honig & Venkateswaran 2012, Leithwood 2010, Skrla et al. 2011, Trujillo 2013
- Studying districts is a complex and resource intensive endeavor, since U.S. school districts are themselves complex organizations, embedded within their local contexts
- Can district research findings be generalized?
  - Leithwood 2010, Purkey & Smith 1985; Rorrer, Skrla, Scheurich 2008, Thompson, Skyes & Skrla 2008
- Recent research has referred to the School Effectiveness Literature (SER) for recommendations: Bowers 2010, Trujillo 2013

# Twelve Years of Performance Index (PI) Scores for Every District in Ohio



# Twelve Years of Performance Index (PI) Scores for Every District in Ohio



# Past Issues with School & District Effectiveness Research (SER/DER)

- Sites selected based on:
  - Researcher proximity
  - Consulting relationships
  - Recommendations from the state of who is “the best”
  - A focus on only mathematics or reading scores
  - Single year regressions ignoring year-to-year variation and growth-over-time
  - Ignoring school-level variance
  - Few comparisons as single case studies or “best-to-best” comparisons
    - Bowers 2010, Trujillo 2013
- Critiquing and unpacking the idea of “The District” to instead focus on the daily lived experiences of the work of central office staff.
  - Daly & Finnigan 2011, 2012; Honig 2003, 2008, 2009
- Leithwood (2010) – *“Future research should include efforts to collect evidence from large samples of districts that represent the full range of district performance (high to low), however defined”* p.284

# Research Question

*To what extent can school districts be identified from all of the districts in a state (Ohio) that significantly outperform or underperform long-term performance trends across multiple indicators?*

# Sample & Method

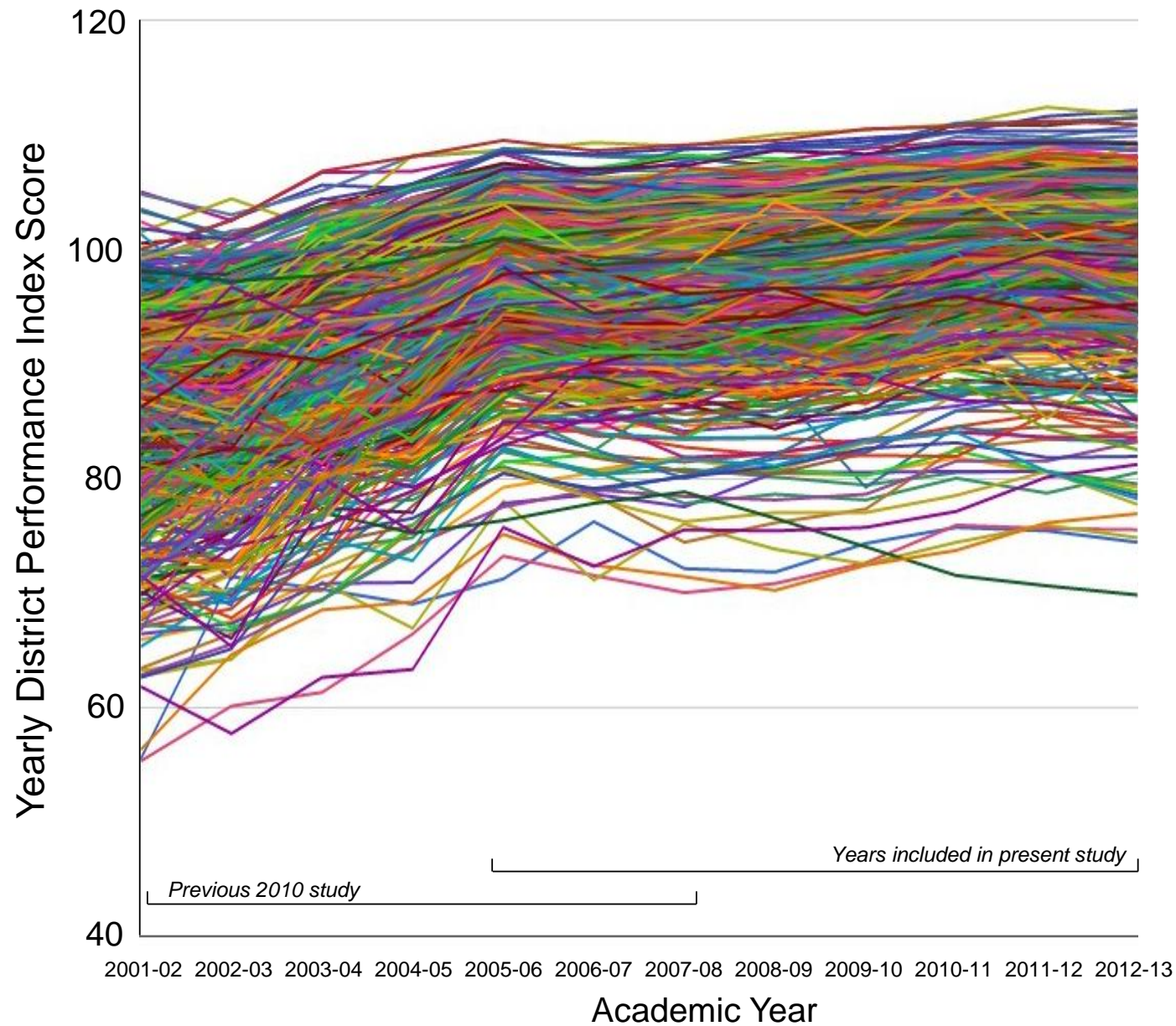
- All school districts in the state of Ohio  $n=610$
- Publically available data from the Ohio Department of Education (ODE) & NCES Common Core of Data (CCD).
  - Similar to the types of data available for every state
- Eight years 2005-06 – 2012-13
- District Performance Index (PI) Score
  - District standardized test performance in mathematics, reading, writing, science and social studies in grades 3, 8 and 10
- Control variables:
  - Student demographics, socioeconomic status, and attendance
  - Teacher experience, salary and class size
  - District locale (Urban, Suburban, Small Town, Rural)
  - District enrollment
    - Small Enrollment 1-1,299 (33%)
    - Medium Enrollment 1,300-2,399 (34%)
    - Large Enrollment 2,400-9,999 (31%)
    - Extra Large Enroll 10,000+ (2%)
- Two-level Hierarchical Growth Modeling

# Method – A 2-Level Hierarchical Growth Model

- Two level hierarchical model that nests time (level 1) in districts (level 2)
  - Heck, Thomas & Tabata (2013); Hox (2010); Raudenbush & Bryk (2002)
- Provides a district effect through time as estimates on the slopes (eight year change in PI score) controlling for the intercept at timepoint 1 (2005-06)
  - Superior to Value-Added Models since “growth” through time is model appropriately, controlling for the prior achievement in the first year
  - Hallinger, Heck & Murphy (2014), Heck, Lam & Thomas (2014), Bowers & White (2014)
- The model controls for demographic and background variables, enrollment, urbancity, attendance, teacher experience and salary and average district class size.
- The model also includes a proxy of school-level performance index score variance
- Subtract the model predicted PI score for each year from the actual PI score and examine which districts outperform or underperform the model or are at the norm (Bowers, 2010)



# Twelve Years of Performance Index (PI) Scores for Every District in Ohio



# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Slopes

*Growth over 8 years in PI score*

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
<i>Amount of variance between districts (ICC) (%)</i>		
	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Enrollment

## Slopes

*Growth over 8 years in PI score*

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
Amount of variance between districts (ICC) (%)	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Locale

## Slopes

*Growth over 8 years in PI score*

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
Amount of variance between districts (ICC) (%)	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## % Student Attendance

## Slopes

*Growth over 8 years in PI score*

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
Amount of variance between districts (ICC) (%)	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Teacher Experience

## Slopes

*Growth over 8 years in PI score*

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
Amount of variance between districts (ICC) (%)	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Student-Teacher ratio

## Slopes

*Growth over 8 years in PI score*

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
Amount of variance between districts (ICC) (%)	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Slopes

*Growth over 8 years in PI score*

## Enrollment

Total Amount of Variance Between Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
<i>Amount of variance between districts (ICC) (%)</i>		
	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	



# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Slopes

*Growth over 8 years in PI score*

## Locale

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
<i>Amount of variance between districts (ICC) (%)</i>		
	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Slopes

*Growth over 8 years in PI score*

## Teacher experience & Salary

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
<i>Amount of variance between districts (ICC) (%)</i>		
	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Parameter estimates for a Hierarchical Linear Growth Model of Ohio PI Score Change 2005-06 – 2012-13

## Intercepts

*Year 2005-06 PI Score*

## Slopes

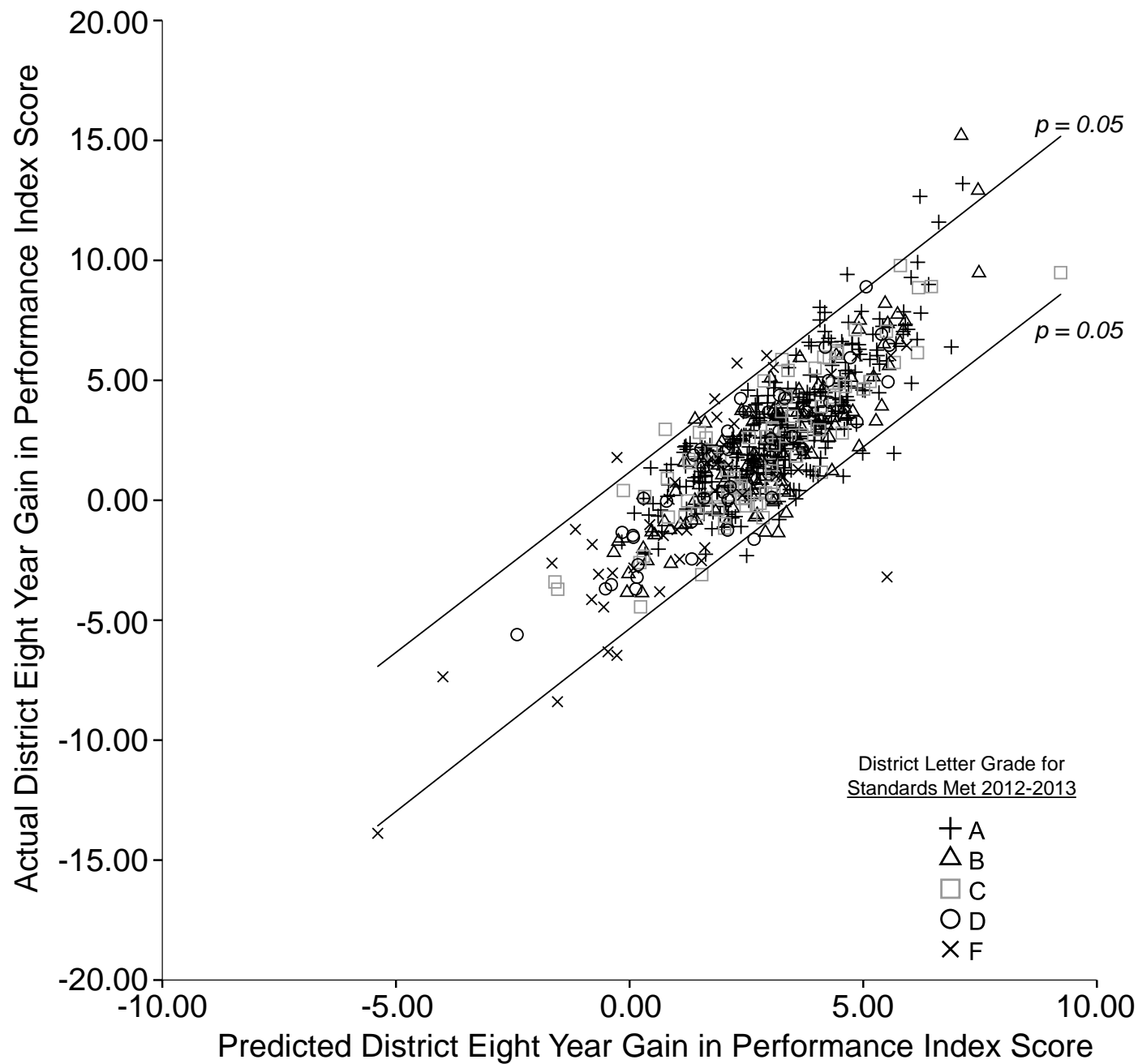
*Growth over 8 years in PI score*

## School-level Variance

Total Amount of Variance Between  
Districts in PI Score  
58.9%

<i>Variable</i>	<i>Coeff.</i>	<i>Stand. Coeff.</i>
Intercept	96.726***	
Year	0.492***	0.179
<i>Intercepts</i>		
% Disadvantaged students	-0.864***	-0.137
% Asian students <sup>a</sup>	0.668***	0.106
% African American students <sup>a</sup>	-0.849***	-0.135
% Hispanic students <sup>a</sup>	0.268*	0.043
% High mobility students	-0.122	
% Disabled students	-0.617***	-0.098
Small enrollment	-0.595	
Large enrollment	0.562	
Extra Large enrollment	-1.511	
Urban	-7.380***	-0.219
Small Town	-2.133***	-0.111
Rural	-1.031*	-0.082
% Student attendance	0.825***	0.131
School-level PI score variance	-0.004	
Avg. teacher years experience	0.405***	0.064
Student-Teacher ratio	-0.186**	-0.030
Avg. teacher salary	-0.041	
<i>Slopes</i>		
% Disadvantaged	0.152***	0.103
% Asian students	-0.057*	-0.040
% African American students	-0.082***	-0.054
% Hispanic students	-0.037*	-0.026
% High mobility students	0.004	
% Disabled students	0.032	
Small enrollment	-0.031	
Large enrollment	-0.140**	-0.046
Extra Large enrollment	-0.081	
Urban	0.092	
Small Town	0.055	
Rural	0.128**	0.048
% Student attendance	0.024	
School-level PI score variance	-0.023***	-0.047
Avg. teacher years experience	-0.089***	-0.060
Student-Teacher ratio	0.014	
Avg. teacher salary	0.141***	0.097
<i>Amount of variance between districts (ICC) (%)</i>		
	58.869	
<i>Variance Explained</i>		
Level 1: Within districts (%)	84.325	
Level 2: Between districts (%)	44.137	

# Predicted vs. Actual 8 Year Performance Index (PI) Score Gain in Ohio 2005-06–2012-13



# Descriptive Data for 15 Model-Identified Districts above the 95% Confidence Interval

<i>District</i>	<i>PI Score 2012-13</i>	<i>Actual 8- year PI Score gain</i>	<i>Model Predicted 8-year PI Score Gain</i>	<i>Ohio Letter Grade of Standards Met 2012-13</i>	<i>Enrollment</i>	<i>Locale</i>	<i>% Disadvant. Students</i>	<i>Number of Schools</i>	<i>School PI Score Var.</i>
Southeastern	98.7	15.2	7.10	B	1247	Rural	51%	3	5.58
East Knox	99.6	12.7	6.21	A	1104	Rural	42%	3	3.06
Jackson Center	103.2	13.2	7.13	A	541	Rural	35%	2	0.20
Southern	97.0	12.9	7.46	B	663	Rural	65%	2	2.04
Jackson	100.4	11.6	6.62	A	2489	Small Town	53%	5	3.01
Madison	98.3	9.41	4.66	A	3009	Suburban	62%	5	1.32
Newton Falls	98.2	8.04	4.07	A	1286	Suburban	54%	4	4.72
Groveport Madison	91.8	8.90	5.06	D	5587	Suburban	62%	10	3.69
Swanton	100.1	7.83	4.18	A	1311	Suburban	42%	4	2.68
Nordonia Hills	104.5	7.52	4.07	A	3720	Suburban	17%	6	1.65
Springfield	83.2	5.72	2.30	F	7245	Urban	80%	15	9.10
Ridgedale	92.0	6.03	2.93	F	784	Rural	49%	3	2.22
East Liverpool	88.9	4.23	1.82	F	2161	Small Town	74%	5	4.74
West Carrollton	94.7	2.96	0.76	C	3636	Suburban	47%	8	2.54
Youngstown	76.9	1.78	-0.27	F	5239	Urban	93%	16	14.23
<b><i>State Averages</i></b>	<b><i>98.8</i></b>	<b><i>2.37</i></b>	<b><i>2.95</i></b>	<b><i>52.6% A</i></b>	<b><i>2612</i></b>	<b><i>47% Rural</i></b>	<b><i>41%</i></b>	<b><i>5</i></b>	<b><i>3.47</i></b>

# Conclusions and Future Directions

## Conclusions:

- Significantly “unusual” districts can be identified from all districts and years in a state
- A longitudinal distribution of outperforming or underperforming state averages identifies three types of districts for site selection
- Recommendation to identify where a district is currently in the distribution for potential sites for in-depth qualitative analysis

## Future directions:

- Conduct in-depth qualitative case studies of outperforming districts in comparison to those at the norm
- Test non-linear growth models
- Follow-up on the school-level variance effect
- Replicate the method in other states

# Thank you!

Alex Bowers

Bowers@tc.edu