

# Value-Added Student Growth Measures

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Wisconsin Educator Effectiveness  
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# Measuring Student Achievement

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- Three broad classes of models:
  - Attainment: point in time (typically % proficient/advanced)
  - Gain/Growth: broad class of models that tracks student growth over time, sometimes in relation to academic peers (typically defined by one or more years of prior achievement)
  - Value-Added

# Model Choice

- Varying levels of complexity exist within all three classes of models
- Choice of model (attainment vs. gain/growth vs. value-added) depends on purpose (form follows function):
  - *Identifying need* (does this student or school require additional, or different, resources?)
  - *Describing student progress* (did students in this school/grade make a year of progress?)
  - *Holding schools or teachers accountable for productivity* (is this school or teacher effective enough, and/or more effective than another?)

# Value-Added Model Definition

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- “Value-added” refers to a class of statistical models that yield estimates of the contribution of schools, classrooms, teachers, or other educational units to student achievement after controlling for non-school sources of student achievement growth, including prior student achievement and student and family characteristics.
- The objective is to facilitate valid and fair comparisons of productivity with respect to student outcomes, given that schools may serve very different student populations.

# A More Transparent (and Useful) Definition of VA

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- Value-added productivity is the difference between actual student achievement and predicted student achievement
- The idea: hold schools and educators accountable for what they *can* and *should* control (improved achievement for all students), while minimizing their accountability for what they *can't* control (which students they serve).

# VARC Value-Added Model: Key Features

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- Test property analysis (horizontal/vertical equating, etc.)
- Measurement error
- Student demographics
- Student mobility: dose model
- Accurate student-teacher linkage and student assignment
- Having enough data to answer the question(s) at hand (decision consistency, etc.)

# Model Features (cont'd)

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- *Measurement error correction*: producing least-biased estimates for schools or teachers serving many low-performing and/or high-performing students
- Fall 2010 WKCE Math, Grade 3:
  - SEM at lowest scale score (220): 100 points
  - SEM at proficient cut score (407): 11 points
  - SEM at highest scale score (630): 109 points

# Model Features (cont'd)

- *Student demographics*: control for factors such as disability, income, race/ethnicity, etc.?
- Question 1: captured by prior achievement?
  - Yes, to some extent...but not completely: Fall 2009 – Fall 2010 WKCE Reading value-added growth from Grade 3 to 4 (as one example) coefficient for disability status is -3.36 points (significant at .0001) after controlling for all other covariates, *including prior achievement* (e.g., the grade 3 pre-test score)
  - Is this a lot? Approx. two-thirds of a standard deviation in the statewide model, or 2.5 times the MPS-state difference

# Model Choice (cont'd)

- Question 2: Lowered expectations?
  - No preconceived adjustments; data speak for themselves in determining *which* factors beyond educators' control matter, and *how much* they matter
  - Including demographics allows maximum fairness for higher-stakes accountability (e.g., educator evaluations), as well as identification of differential effects (schools/teachers who do esp. well with higher-needs subgroups of interest)
  - No causal relationship implied
  - High expectations can (and should) be clearly conveyed by showing both value-added and attainment (% proficient)
  - Provides a useful way of measuring achievement gaps

# Attainment and Value-Added

