# Explicitly Valuing Growth

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# Data Assumptions

- Annual testing at every grade
- Ability to track students over years
- Vertically moderated content and performance standards

# Policy Assumptions

- Clear goal and subgoals
- Belief that schools should be evaluated on student progress from year to year
- Performance levels are the reporting statistic of choice
- Student progress should be assessed student-by-student, rather than by averages of students

# A Neutral Value Table?

| Year 1 Level | Year 2 Level | | | | |
|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv |
| Unsat | | | | | |
| AB | | | | | |
| Basic | | | 100 | | |
| Mast | | | | | |
| Adv | | | | | |

# A Neutral Value Table?

| Year 1 Level | Year 2 Level | | | | |
|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv |
| Unsat | | | | | |
| AB | | | | | |
| Basic | 0 | 50 | 100 | 150 | 200 |
| Mast | | | | | |
| Adv | | | | | |

# A Neutral Value Table?

| Year 1 Level | Year 2 Level | | | | |
|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv |
| Unsat | 100 | | | | |
| AB | | 100 | | | |
| Basic | 0 | 50 | 100 | 150 | 200 |
| Mast | | | | 100 | |
| Adv | | | | | 100 |

# A Neutral Value Table? (Table 1)

| Year 1 Level | Year 2 Level | | | | |
|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv |
| Unsat | 100 | 150 | 200 | 250 | 300 |
| AB | 50 | 100 | 150 | 200 | 250 |
| Basic | 0 | 50 | 100 | 150 | 200 |
| Mast | -50 | 0 | 50 | 100 | 150 |
| Adv | -100 | -50 | 0 | 50 | 100 |

# An NCLB Value Table

| Year 1 Level | Year 2 Level | | | | |
|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv |
| Unsat | 0 | 0 | 100 | 100 | 100 |
| AB | 0 | 0 | 100 | 100 | 100 |
| Basic | 0 | 0 | 100 | 100 | 100 |
| Mast | 0 | 0 | 100 | 100 | 100 |
| Adv | 0 | 0 | 100 | 100 | 100 |

# Variation of No Real Additional Gain

- Results should be neutral if no real gain and all growth is valued equally
- Regression due to:
  - Measurement error
  - Normal variation in growth
  - Correlation across years = .73 (ELA) and .80 (math)

# Distribution of Students

| Year 1 Level | Year 2 Level | | | | |
|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv |
| Unsat | 64 | 27 | 8 | 0 | 0 |
| AB | 24 | 43 | 32 | 1 | 0 |
| Basic | 4 | 18 | 64 | 13 | 1 |
| Mast | 0 | 2 | 39 | 51 | 8 |
| Adv | 0 | 0 | 10 | 53 | 37 |

# Average Scores for Subgroups

| Year 1 Level | Year 2 Level | | | | | Ave. |
|---|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv | |
| Unsat | 64 | 27 | 8 | 0 | 0 | 120.5 |
| AB | 24 | 43 | 32 | 1 | 0 | 105.0 |
| Basic | 4 | 18 | 64 | 13 | 1 | 94.5 |
| Mast | 0 | 2 | 39 | 51 | 8 | 82.5 |
| Adv | 0 | 0 | 10 | 53 | 37 | 63.5 |

# Problem

- Create a value table for which the averages of the subgroups are more equal
- Additional constraint—Any student who is Unsatisfactory in Year 2 earns zero points for growth no matter what the student did in Year 1

# A More Neutral Value Table

| Year 1 Level | Year 2 Level | | | | | Ave. |
|---|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv | |
| Unsat | | | | | | |
| AB | | | | | | |
| Basic | 0 | 50 | 100 | 150 | 200 | 94.5 |
| Mast | | | | | | |
| Adv | | | | | | |

# A More Neutral Value Table

| Year 1 Level | Year 2 Level | | | | | Ave. |
|---|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv | |
| Unsat | | | | | | |
| AB | | | | | | |
| Basic | 0 | 50 | 100 | 150 | 200 | 94.5 |
| Mast | 0 | 10 | 60 | 110 | 160 | 92.5 |
| Adv | | | | | | |

# A More Neutral Value Table

| Year 1 Level | Year 2 Level | | | | | Ave. |
|---|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv | |
| Unsat | | | | | | |
| AB | | | | | | |
| Basic | 0 | 50 | 100 | 150 | 200 | 94.5 |
| Mast | 0 | 10 | 60 | 110 | 160 | 92.5 |
| Adv | 0 | 0 | 20 | 90 | 120 | 94.1 |

# A More Neutral Value Table

| Year 1 Level | Year 2 Level | | | | | Ave. |
|---|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv | |
| Unsat | | | | | | |
| AB | 0 | 100 | 150 | 200 | 250 | 93.0 |
| Basic | 0 | 50 | 100 | 150 | 200 | 94.5 |
| Mast | 0 | 10 | 60 | 110 | 160 | 92.5 |
| Adv | 0 | 0 | 20 | 90 | 120 | 94.1 |

# A More Neutral Value Table (Table 2)

| Year 1 Level | Year 2 Level | | | | | Ave. |
|---|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv | |
| Unsat | 0 | 200 | 400 | 500 | 600 | 86.0 |
| AB | 0 | 100 | 150 | 200 | 250 | 93.0 |
| Basic | 0 | 50 | 100 | 150 | 200 | 94.5 |
| Mast | 0 | 10 | 60 | 110 | 160 | 92.5 |
| Adv | 0 | 0 | 20 | 90 | 120 | 94.1 |

# An Alternative Neutral Value Table (Table 3)

| Year 1 Level | Year 2 Level | | | | | Ave. |
|---|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv | |
| Unsat | 50 | 150 | 250 | 350 | 450 | 92.5 |
| AB | 0 | 100 | 150 | 200 | 250 | 93.0 |
| Basic | 0 | 50 | 100 | 150 | 200 | 94.5 |
| Mast | 0 | 10 | 60 | 110 | 160 | 92.5 |
| Adv | 0 | 0 | 20 | 90 | 120 | 94.1 |

# Final Adjustments to Value Table

- First, establish a neutral table
- Then, adjust according to value judgments
  - E.g., if you think there should be more reward for moving from below Basic to at least Basic, then increase the points for doing that from what the neutral table provided

# Example

| Year 1 Level | Year 2 Level | | | | |
|---|---|---|---|---|---|
| | Unsat | AB | Basic | Mast | Adv |
| Unsat | 0 | 200 ~~150~~ | 400 | 500 | 600 |
| AB | 0 | 100 ~~50~~ | 150 | 200 | 250 |
| Basic | 0 | 50 ~~0~~ | 100 | 150 | 200 |
| Mast | 0 | 10 ~~0~~ | 60 | 110 | 160 |
| Adv | 0 | 0 | 20 | 90 | 120 |

# Computing School Average

| Student | Last Year | Goal for This Year | Points |
|---|---|---|---|
| April | Basic | Mastery | 150 |
| Luis | Advanced | Mastery | 90 |
| Bill | Unsat. | Unsat. | 0 |
| Juan | Unsat. | App. Basic | 150 |
| Charisse | App. Basic | App. Basic | 50 |
| Average | | | 440/5 = 88.0 |

# Assigning Growth Labels

- Separate from computing average growth score (e.g., don’t ascribe some real meaning to “100”)
- Should be consistent with long-term policy goals
- Goals for each student jointly established by principal and teacher will determine score and label if met

# Subdividing Performance Levels

- Rather than just Basic, have Basic-, Basic, and Basic+
- Divide Unsatisfactory into finer levels?
- Has minimal impact on school-level reliability

# Recommended Data Analyses

- Averages for starting levels
- Current statewide distribution
  - When combined with goals, that allows you to label schools reasonably
- Correlation of growth with status
- Reliability and standard errors
  - For different sized groups

# Correlations with Baseline Status

- Table 1:  -0.16
  - Means lower status schools get *higher* growth scores
- Two choices
  - Different required growth scores for lower schools
  - Use different Value Table
- Table 2:  +0.47
- Table 3:  +0.43

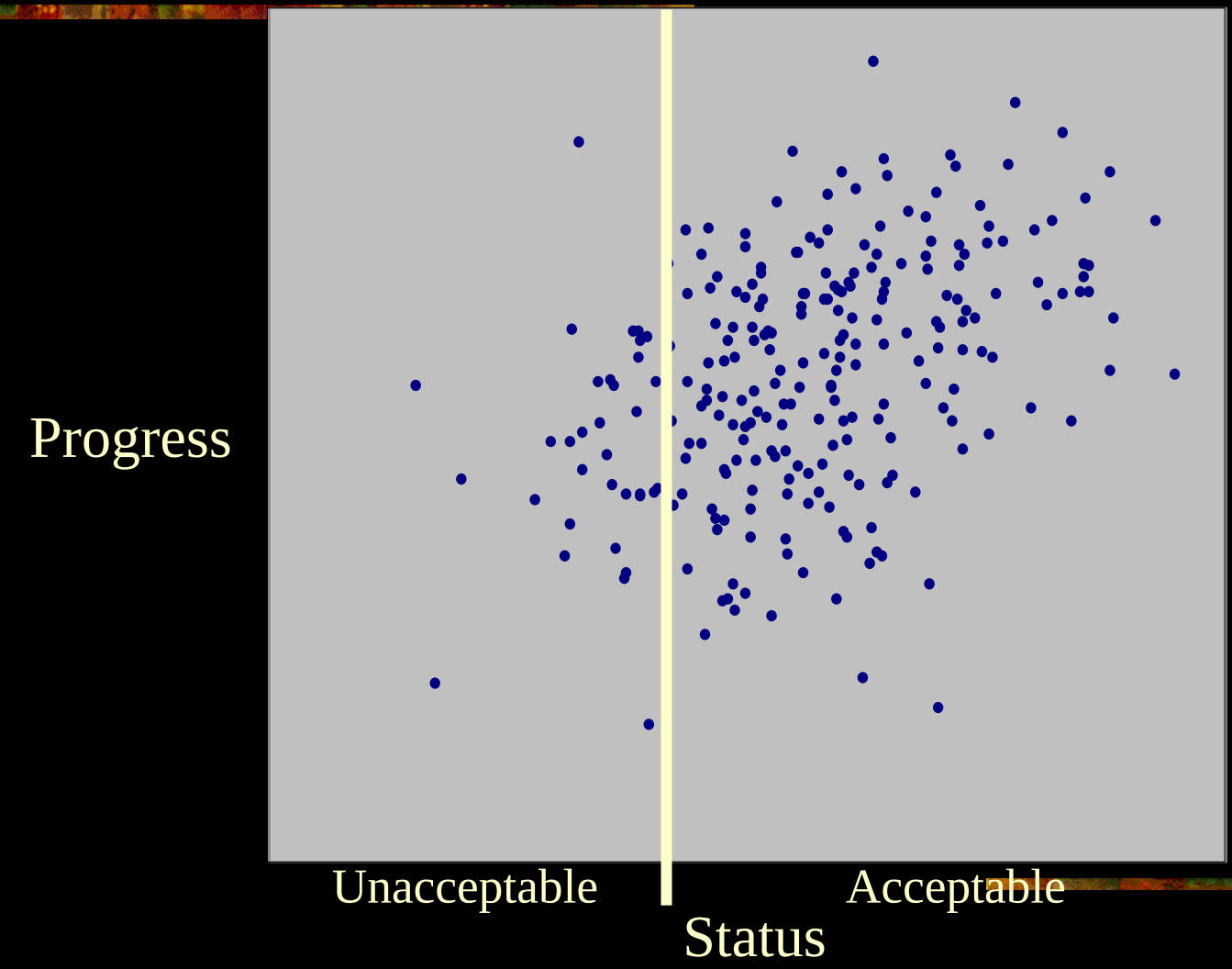
# Statistics—Table 2

| | Status | | Growth | |
|---|---|---|---|---|
| | Mean | SD | Mean | SD |
| Student-Level | 73 | 46 | 92 | 62 |
| School-Level | 70 | 23 | 91 | 23 |
| Percent | - | 50 | - | 37 |

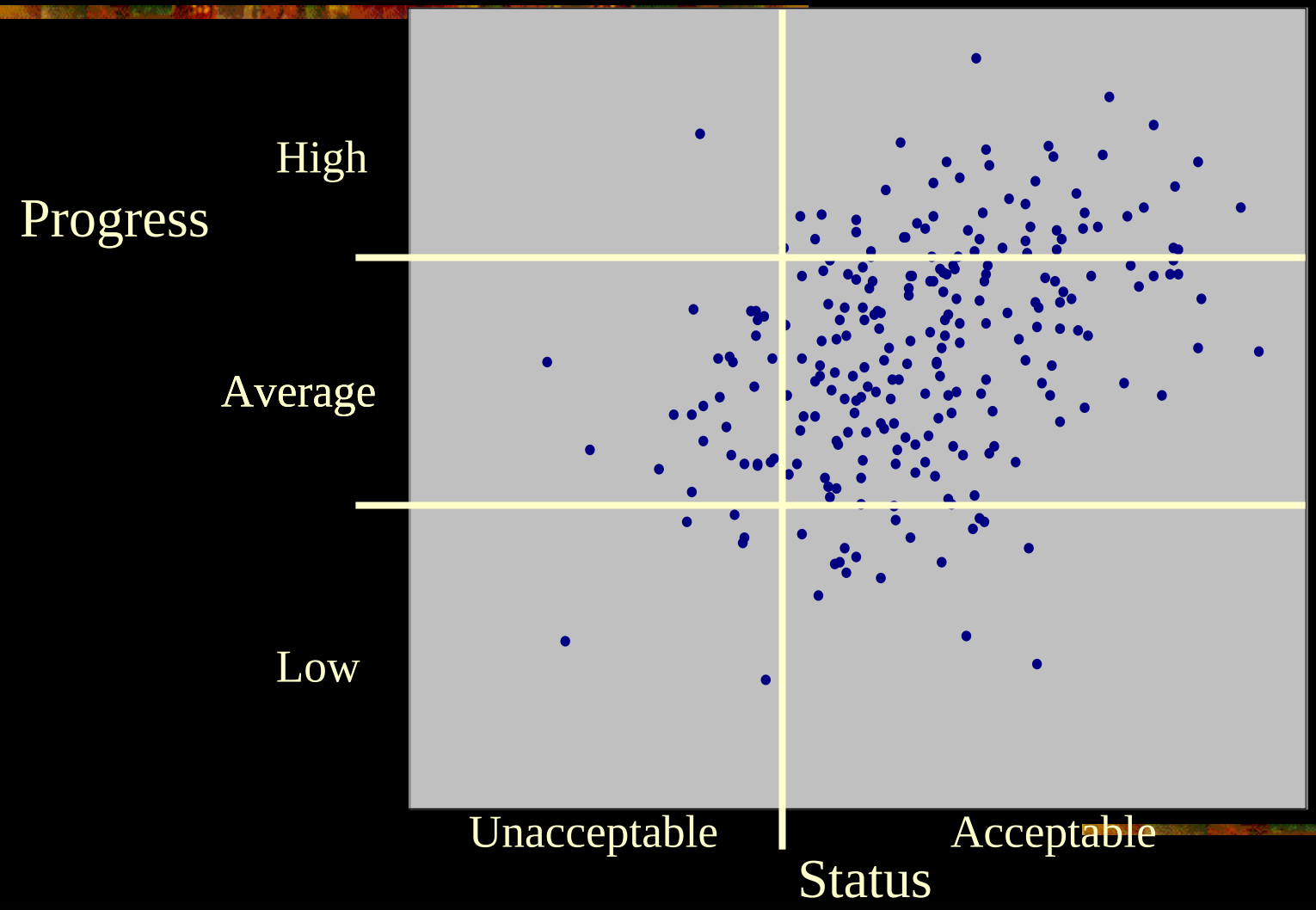
# Correlations—Table 2

- Two samples drawn with replacement
- Schools with more than 20 students in first sample
- Status
  - Correlation = .95
  - Standard error = .12 student SD
- Growth
  - Correlation = .87
  - Standard error = .13 student SD

# Combining Status and Progress



# Combining Status and Progress



# Combining Status and Progress