# Multiple Measures for College Placement: Important Factors to Consider

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AADE Conference Keynote Address, Phoenix, AZ
26 January 2018 9 – 10 a.m.
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- Hello! Thank you for having me
- You are really important: You have an exponential effect on student lives, the community, the country, and thus the world we live in
- Thank you for your work
- I hope to add some important information to your discussions so you may continue to improve the crucial work you are engaged in

- Before we make decisions about student placement, which will affect tens of thousands of students, we need to fully understand what we do now and what we propose to do
- This presentation addresses the use of multiple measures as a placement model for students entering college, specifically remedial and college-level courses

# What are Institutions Doing Now?

- Typically ACT/SAT first, then Accuplacer (this is a type of run-off or decision band multiple measure)
- ACT: Achievement test designed to tell us about student knowledge of math and English; mostly criterion-referenced test and subject-specific
- SAT: normed and more of an aptitude test, but new version has greater focus on subject knowledge
- Accuplacer: Similar to ACT knowledge-based test, designed as placement test for more basic skills

# What are Institutions Doing Now?

- Why do we use ACT/SAT and Accuplacer?
- Achievement/aptitude tests assess student content knowledge and ability in math and English
- Entire purpose of placement is to assess student knowledge, place students into appropriate courses, and to remediate skills and knowledge
- Fewer staff, restricted budgets, and less time have all led to institutions typically relying on a single measure

- CCRC researchers recommend "multiple measures"
- Regression analyses suggest 14-28% of students are misplaced (Scott-Clayton & Stacey, 2015<sub>10</sub>)
- Multiple measures would purportedly decrease severe misplacement by half or more, depending on type
- Why? These measures "predict success in college better" (more on this later)

- What exactly do we mean by "multiple measures"?
- Initially, the CCRC calculated that combining multiple measures into a single measure would improve placement
- Then they then concluded that HSGPA alone would suffice as the best measure if using a sole measure
- Finally, they concluded that using "multiple single measures" is recommended (Goudas, 2017)₃

- Therefore, there are two different definitions of "multiple measures":
  - Actual mixed measure: meaning two or more measures combined for single placement result
  - 2. Multiple single measures: meaning an institution can choose any single measure (from as many as six or seven) to place students into college-level courses (you choose highest score of many)
- Let's go through the most common multiple measures and consider their benefits and drawbacks

### 1. Using HSGPA for Placement

- HSGPA is perhaps the most common alternative measure that many researchers recommend
- What does HSGPA say about a student?
  - What does a high HSGPA tell us?
  - What does a low HSGPA tell us?
- Talk to your neighbors and come up with as many things you think HSGPA tells us about students (Note: it is 3 to 4 years of cumulative HSGPA)

- Content knowledge
- Vocabulary
- Ability to pass classes
- Type of classes taken
- Attendance
- Participation

- Handing in HW
- Organization
- Grit
- Motivation
- Interest in school
- Many, many others...

- What do the experts say about what HSGPA tells us?
- And what do they say about placement tests such as Compass and Accuplacer?

ETSU Reuschel's "A Comparative Study of HS Academic Pathways" (2009)14:

"The high school grade point average measures both cognitive and noncognitive components (efforts, attendance, conformity, and motivation)" (pp. 10-11).

CCRC Scott-Clayton (2012)<sub>15</sub> (this is one of the papers that started the HSGPA multiple measures reform movement, yet it never defines what HSGPA is):

"I examine whether other measures of preparedness, such as high school background, might be equally or even more predictive of college success" (p. 3).

Noble et al. (2003)<sub>17</sub> (source found in Scott-Clayton, 2012) on placement tests:

"Placement tests are, in many instances, objective measures, and the degree of imprecision (i.e., measurement error) of their scores can be estimated fairly accurately. In addition, test scores can be made equivalent across alternate forms of a test to prevent problems with variability in meaning" (p. 302).

#### Noble et al. (2003)<sub>17</sub> on HSGPA:

"Grades, in comparison, are subjective measures whose degree of imprecision is difficult to estimate. They seem efficient for placement decisions because they directly measure, at least in principle, the types of academic skills necessary for successful performance in college (Hills et al., 1990). Course quality and content vary among high schools, however, and grades can vary in meaning from school to school because of differing curricular frameworks and grade reporting procedures" (p. 302).

CCRC Belfield & Crosta (2012)<sub>9</sub> (this is the other paper that started the multiple measure reform movement):

"In contrast to a single-value placement test score, high school transcripts may yield a wealth of information. Potentially, they can reveal not only cognitive competence but also student effort and college-level readiness" (p. 3).

"Ready to be Counted" (2015)19:

"What is the source of difference between test scores and grades, and why are grades better predictors of college success?... The emerging consensus is that grades capture both cognitive and non-cognitive competencies, as teachers observe and value effort, cooperation, and other non-cognitive competencies alongside academic knowledge and skills" (p. 15).

"Ready to be Counted" (2015)19:

"...while grades may be less reliable and valid measures of academic skill or aptitude than well-developed standardized tests, they are better predictors of *college completion* [emphasis added] because they measure both the academic skills and the non-cognitive skills needed to succeed in colleges" (p. 15).

- Let's now distinguish between the two terms being used, "cognitive" and "noncognitive"
  - Cognitive:
    - Knowledge, placement test scores, vocabulary
  - Noncognitive (used to be called "affective"):
    - Attendance, handing in homework, motivation, grit
- The previous list we came up with can be subdivided into these two groups

- Now let's compare placement tests to HSGPA in terms of what the studies and statistics show
- Correlation coefficient (r) and coefficient of determination (r-squared) are numbers used to show how datasets match up (r) and how much of the variance can be explained by one dataset (r-squared)
- In simple terms, the higher the number, the better correlation and thus prediction power/validity

# "Validity Evidence for ACT" (2014)13

Table 5
Standardized Logistic Regression Coefficients

Course type		Single-pro	ed. models	Two-pred. model		
(Compass test)	Subgroup	Compass	HSGPA	Compass	HSGPA	
English	Overall	0.34	0.64	0.22	0.61	
Composition 1	Traditional	0.36	0.76	0.25	0.72	
(Writing Skills)	Nontraditional	0.33	0.38	0.21	0.36	
Speech/ Rhetoric	Overall	0.36	0.74	0.30	0.69	
(Writing Skills)	Traditional	0.38	0.88	0.29	0.82	
	Nontraditional	0.34	0.34	0.30	0.31	
American History	Overall	0.41	0.80	0.39	0.76	
(Reading)	Traditional	0.33	0.99	0.29	0.96	
	Nontraditional	0.47	0.43	0.48	0.38	
Other History	Overall	0.53	0.72	0.51	0.69	
(Reading)	Traditional	0.54	0.92	0.52	0.89	
	Nontraditional	0.60	0.38	0.72	0.35	
Psychology	Overall	0.49	0.68	0.44	0.63	
(Reading)	Traditional	0.48	0.82	0.39	0.77	
	Nontraditional	0.52	0.36	0.47	0.32	
Sociology	Overall	0.60	0.65	0.51	0.60	
(Reading)	Traditional	0.55	0.81	0.41	0.75	
	Nontraditional	0.64	0.40	0.62	0.34	
Biology	Overall	0.59	0.88	0.52	0.81	
(Reading)	Traditional	0.64	0.94	0.50	0.86	
	Nontraditional	0.70	0.63	0.83	0.56	
Arithmetic Skills	Overall	0.60	0.38	0.54	0.30	
(Pre-Algebra)	Traditional	0.66	0.62	0.67	0.51	
	Nontraditional	0.67	0.15 <sup>a</sup>	0.43	0.08 <sup>b</sup>	
Elementary	Overall	0.42	0.68	0.38	0.64	

# CCRC Scott-Clayton (2012)<sub>15</sub>

Table 2
Relationship of College-Level Outcomes to Alternative Sets of Predictor Variables

	Sample restricted to students with high school background data								
				Test Scores, HS					
			Placement Test	GPA/Units, PLUS					
	Placement Test	High School	Scores PLUS	Local HS,					
	Scores Only	GPA/Units Only	HS GPA/Units	Years Since HS					
	Panel A. R-	Squared Statistics							
	(Proportion of	Variation Explained	)						
Math									
Earned B or higher in CL <sup>a</sup>	0.121	0.102	0.165	0.183					
Earned C or higher in CL	0.069	0.077	0.109	0.121					
Passed CL (D- or higher)	0.040	0.058	0.074	0.078					
Grades in first CL <sup>b</sup>	0.129	0.119	0.183	0.204					
English									
Earned B or higher in CL	0.021	0.043	0.060	0.093					
Earned C or higher in CL	0.008	0.038	0.045	0.059					
Passed CL (D- or higher)	0.004	0.034	0.038	0.047					
Grades in first CL	0.017	0.055	0.069	0.098					

# Geiser & Santelices (2007)<sub>16</sub>

Table 4

Relative Contribution of Admissions Factors in Predicting Cumulative Fourth-Year GPA

Standardized Regression Coefficients

								-			
	High School	SATI	SATI	SAT II	SATII	SATII	Parents'	Family	School	,	% Explained
	GPA	Verbal	Math	Writing	Math	3rd Test	Education	Income	API Rank	Number	Variance
	201 5009							223 22 52	F2005 143 143	1	1700000 9900040
Model 1	0.41	X	X	X	X	X	0.12	0.03	0.08	59,637	20.4%
Model 2	X	0.28	0.10	X	X	X	0.03	0.02	0.01	59,420	13.4%
Model 3	X	X	X	0.30	0.04	0.12	0.05	0.02	-0.01	58,879	16.9%
Model 4	0.36	0.23	0.00	X	X	X	0.05	0.02	0.05	59,321	24.7%
Model 5	0.33	X	X	0.24	-0.05	0.10	0.06	0.02	0.04	58,791	26.3%
Model 6	X	0.06	-0.01	0.26	0.04	0.12	0.04	0.02	-0.01	58,627	17.0%
Model 7	0.34	0.08	-0.02	0.19	-0.04	0.09	0.05	0.02	0.04	58,539	26.5%

Boldface indicates coefficients are statistically significant at 99% confidence level.

Source: UC Corporate Student System data on first-time freshmen entering between Fall 1996 and Fall 1999.

 Overall correlations for both placement tests and HSGPA are similar

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(r2: .01 = small, .09 = medium, .25 = large<sub>20</sub>)
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- HSGPA has slightly higher prediction validity for college success (first semester and beyond)
- CCRC researchers describe *r-squared* values as 18% for Accuplacer and 24% for HSGPA (Boylan, 2015)
- Therefore, HSGPA predicts success slightly better

# BENEFIT to Using HSGPA for Placement

#### • BENEFIT:

- The primary benefit to using 3-4 year cumulative HSGPA for placement into or out of remedial courses is that it predicts student completion slightly better than placement tests alone
- This means, at first glance, using noncognitives and cognitive measures together helps us know better who will pass college-level courses and graduate, and who will not, before placing them into courses

#### What Predicts HSGPA?

#### This raises interesting questions:

- What should we look for when placing students into remedial courses or college-level courses?
- Should we assess primarily content knowledge, noncognitives, both? And what proportions?
- What if a student is highly motivated, but does not understand basic math or English principles?
- And if we place students into content courses based on noncognitives, shouldn't we remediate for them?

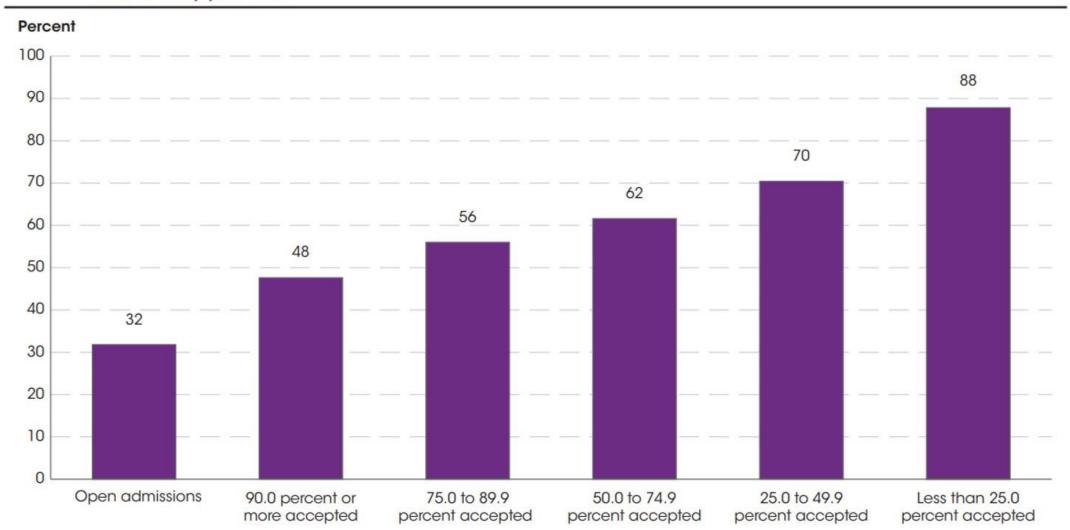
# Shift in Placement Philosophy

- When HSGPA is considered as primarily a noncognitive measure, the shift from knowledge-based placement assessments (ACT/SAT/Accuplacer) to a metric of years of performance and background (HSGPA) is a distinct change in philosophy for public colleges, especially for remedial course placement
- I.e., HSGPA placement might move us toward a type of selection: we might be selecting for success
- Here is a chart which shows the results of selection:

#### USDOE "The Condition of Education 2017" 6

Figure 3. Graduation rate within 150 percent of normal time (within 6 years) from first institution attended for first-time, full-time bachelor's degree-seeking students at 4-year postsecondary institutions, by acceptance rate of institution:

Cohort entry year 2009



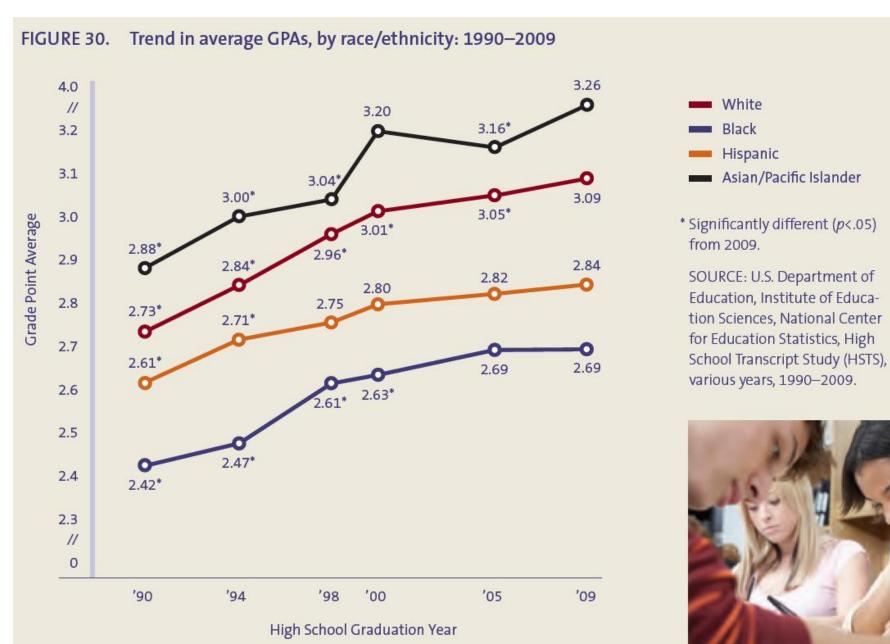
- HSGPA may predict success in college because it assesses a great deal of lifelong factors; again, using it is essentially a way to select for success
- Community colleges are not as selective for placement and admissions as most universities are (75% of four-year colleges select their students; those open admissions institutions that do not select students have 32% 6-yr grad. rate)<sub>6</sub>

- Open admissions institutions do not generally engage in much selectivity
- The most selectivity two-year public colleges employ is to use achievement tests to place into higher-level courses (i.e., honors); yet even assessment scores still skew in favor of higher socioeconomic status
- Adding "or HSGPA" may make the SES disparity worse, especially if remediation is considered "ineffective" and is not supported well

- Therefore, is it the proper use of HSGPA to place students out of remediation based on their predicted ability to pass college courses and graduate rather than their knowledge of English and mathematics?
- This is a philosophical question: Again, just because students will probably graduate, should they enroll in college-level math when they don't know the material?
- Here are several other possible unintended consequences of employing *HSGPA alone* for placement in college:

1. Using HSGPA alone may increase racial disparities: More White and Asian students will likely be placed into college-level courses; more Black and Hispanic students will likely be placed into remedial courses

# USDOE NAEP Average HSGPA Data (2011)8

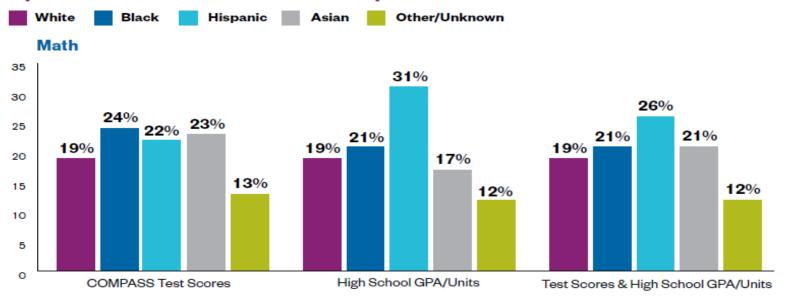


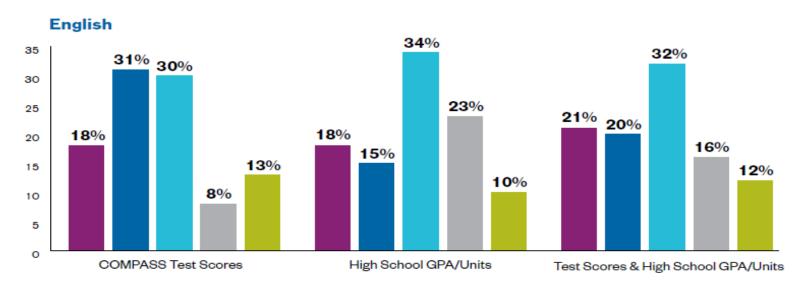
CCRC Scott-Clayton & Stacey Research Overview (2015)10:

"...in the urban system, using high school information alone would increase the rate at which Black students are assigned to English remediation and substantially decrease their representation in college English. One way to avoid differential impacts on subgroups would be to allow students to test out of remediation based on either test scores or high school achievement" (p. 3).

# CCRC Scott-Clayton & Stacey (2015)<sub>10</sub>

Predicted Racial/Ethnic Composition of Introductory College-Level Courses by Assessment Method (Urban Study)<sup>9</sup>





2. More students overall will be placed into collegelevel courses: There is no guarantee they will be successful there; in fact, research suggests they will be less successful

Note: The reason why more students will be placed into college-level courses is because the cutoff is going to be lowered by institutions using an "or"

Again, this is referred to as "multiple single measures"

# Ivy Tech Community College, Indiana Assessment Options (200K students)



We need to determine the level of your reading, writing and math skills in order to place you in the appropriate classes. We can measure this in several different ways, including previous college credit you've earned, SAT/PSAT or ACT scores, high school GPA or through an assessment tool called Accuplacer!

#### You can complete assessment in any of the following four ways:



Have you already taken the ACT, SAT or PSAT? Generally scores of 460 or higher on each section of the SAT, 26 in writing, 25 in reading and 24.5 in math or higher on each section of the PSAT\*, or 17 in English, 18 in reading, 18 in math or higher on each section of the ACT can be accepted for your assessment if they were completed within the last four years. <u>Click here</u> for more information on the scores you need to complete the assessment requirement. **Send a copy of your ACT, SAT or PSAT scores to the address listed below.** \*PSAT scores based on tests taken 2015 and beyond. Older test scores may also be accepted. Click here for older PSAT score ranges.



Generally, a high school cumulative GPA of 2.6 or higher on a 4.0 scale will meet the assessment requirement if this was your final GPA at the time of graduation and if you completed high school within the last four years. You must have graduated with a Core 40, Technical Honors, or Academic Honors diploma or equivalent. High school seniors who have not yet graduated can use the cumulative GPA after six high school semesters have been completed. **Send a copy of your high school transcripts to the address listed below**.



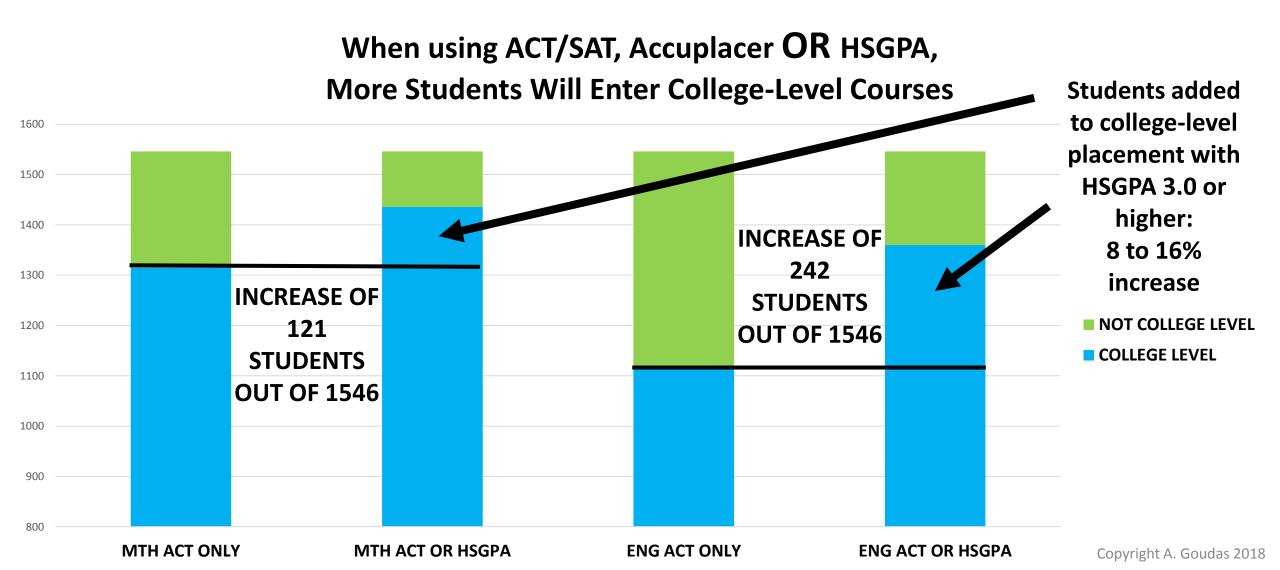
Have you already earned college credits or an Associate degree at another college or university? If so, see below for information on where to submit your college transcripts. General education courses taken at another regionally accredited institution, with a grade of "C-" or higher, may be used to complete the assessment requirement. Send a copy of your transcripts to the address listed below. Please note, that if you would like to have your transcripts evaluated for transfer credit also, once you are admitted you will need to submit an official copy to your regional Registrar's office for evaluation.



If you do not have previous college credit, an ACT, SAT or PSAT score, or a cumulative high school GPA that satisfies the assessment requirement, you will need to take the Accuplacer skills assessment. Your scores on the Accuplacer determine which writing, reading and math classes you'll take first. You must meet <u>certain scores</u> in order to place into college-level classes. The Accuplacer is free, and after the initial assessment in reading, writing and math, you may retest two additional times per year free of charge to try and increase your score. Your score will be accepted up to four years after you take the assessment. To prepare for the Accuplacer assessment, please <u>click here</u>. To schedule an appointment to take the Accuplacer, scroll down and click on your campus below.

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### Delta IR Data on Students with HSGPA (2015)18



### IHE "When You're Not Ready" (2015),

### Miami-Dade College

Developmental Education Enrollment			
	Math	Writing	Reading
2012-13 to 2014-15	-42%	-44%	-46%
College-level Enrollment	Math	English	
2012-13 to 2014-15	+30%	+10%	
Pass Rates	Math	English	
2012-13	55.7%	74%	
2014-15	46.8%	70.3%	

3. We should remediate for noncognitives if we place students with noncognitives: When students are placed into remediation using a metric (HSGPA) that combines cognitive and noncognitive aspects, that means we should then remediate for both; while many remedial instructors and curricula try to address noncognitive factors, many do not; what should we do instead?

Actual "Developmental Education" addresses this problem (ASAP Program)28

4. We should use a holistic and streamlined intake process: Due to some institutions' admissions processes, some students who will qualify for college-level courses will not end up taking those courses because their Accuplacer printout will allow them to register before their HSGPA placement information is submitted; we should guarantee students will turn in HSGPA, test, and then wait for placement decision

5. Additional staffing and time will be needed for receiving and entering official HSGPA transcript information, especially if HSGPA is required; also, additional staffing and time will be needed for making students aware of a different placement than their Accuplacer score if they enroll out of order; yet another issue to deal with is self-reported HSGPA (studies show about 75% accurate)

6. Only ~50-70% of community college students would actually be able to submit their HSGPA:
Research shows that 10% of all FTIACS do not have HSGPA, another 20-30% of our FTIACS are non-traditional, and another 10-20% may not have access to or cannot get HSGPA (and as shown in ACT study, HSGPA works best with ages 18-19)₁₃

- The two CCRC foundational studies which have been used to promote the current trend in using HSGPA (Scott-Clayton, 2012<sub>15</sub>; Belfield & Crosta, 2012<sub>9</sub>) show that only 50 to 70% of their samples had a HSGPA to analyze, and most were traditional aged
- Therefore, who exactly would benefit from HSGPA placement?
- Will this simply benefit higher SES students and traditional-aged students?

7. We cannot guarantee the results from the CCRC research will be replicated, and their projected benefits are limited: Their results are based on "mixed measures" of HSGPA and tests (and other measures) combined; their predictions on HSGPA are theoretical and based only on students who placed into college-level courses, and the predicted benefit is relatively small

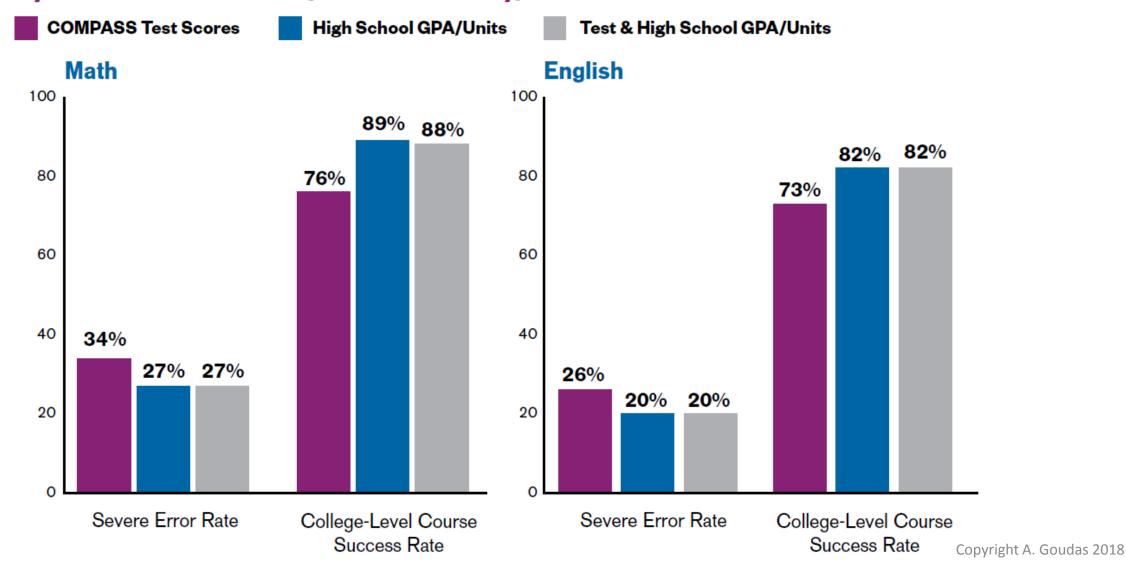
### Even CCRC Mixed Measure Has Limited Results

 CCRC research finding using HSGPA and amount of HS courses taken (mixed measure):

"Our calculations suggest that out of 100 students tested, 4 to 8 fewer students would be severely misplaced, representing up to a 30 percent reduction in severe errors compared with test-based placements" (Belfield, 2014, p. 2).11

### CCRC Belfield (2014)<sub>11</sub>

Predicted Rates of Severe Placement Errors and College-Level Course Success by Assessment Method (Statewide Study)<sup>7</sup>



### 2. Noncognitive Measures

- Angela Duckworth popularized *grit* and its use in predicting success in a 2007 paper called "Grit: Perseverance and Passion for Long-Term Goals" in the *Journal of Personality and Social Psychology*<sup>21</sup>
- However, she recently published an op-ed in the NYT (March 26, 2016<sub>22</sub>)
- Here is what she said on a related matter, using "grit" to grade schools:

# Duckworth, "Don't Grade Schools on Grit" (2016)<sub>22</sub>

"Attributes like self-control predict children's success in school and beyond. Over the past few years, I've seen a groundswell of popular interest in character development...It seemed that the narrow focus on standardized achievement test scores from the years I taught in public schools was giving way to a broader, more enlightened perspective. These days, however, I worry I've contributed, inadvertently, to an idea I vigorously oppose: high-stakes character assessment" (par. 2-4).

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# Duckworth, "Don't Grade Schools on Grit" (2016)<sub>22</sub>

"Does character matter, and can character be developed? Science and experience unequivocally say yes. Can the practice of giving feedback to students on character be improved? Absolutely. Can scientists and educators work together to cultivate students' character? Without question.

Should we turn measures of character intended for research and self-discovery into high-stakes metrics for accountability? In my view, no" (par. 23-24).

# Duckworth, "Don't Grade Schools on Grit" (2016)<sub>22</sub>

- After reading this, I decided to email Dr. Duckworth at her Duckworth Lab housed in the U of Penn
- I asked her whether we should also apply her stance to placement in community colleges
- A lab assistant emailed back right away:
  - "[Y]our assumption that the character measures should not be used in admissions decisions is correct" (Email Response, March 28, 2016).

### Noncognitive Measures

 Aside from HSGPA exacerbating inequality by favoring higher SES, another unintended consequence to the use of noncognitives is that we are using data in ways that some researchers who pioneered these studies are cautioning against

### Noncognitive Measures

- There are many noncognitive placement tests available for purchase (21 in total thus far\*):
  - ETS SuccessNavigator
  - ACT Engage
  - LASSI
  - \*See ccrc.tc.columbia.edu/images/a-list-of-non-cognitive-assessment-instruments.pdf (for more complete list)<sub>26</sub>
- The problem, again, is how they will be used and how accurate they are for placing students into courses

### 3. HS Transcript Data as a Measure

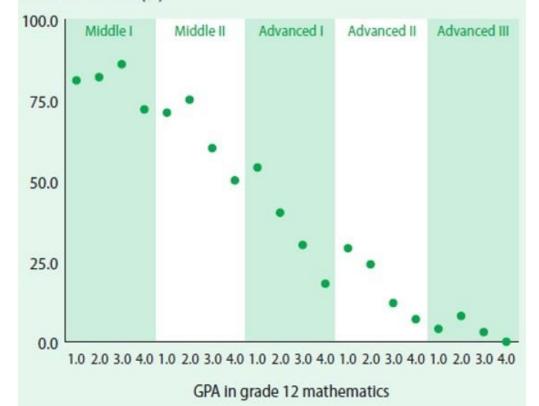
- In addition to HSGPA, HS transcript level data can be used to place students into or out of remedial courses
- This is perhaps more useful for math placement
- The correlation between 12<sup>th</sup> grade math course type taken/grade and college remediation rate is very high
- Fong et al. (2008, p. 8) explored this in a study from Nevada (IES, NCEERA study):

### Fong et al., p. 8 (2008)<sub>25</sub>



Freshman mathematics remediation rate in Nevada public colleges and universities for the Nevada study population in 2006/07 by grade 12 mathematics grade point average (GPA) and highest level of mathematics completed in grade 12 in 2005/06 (percent)

#### Remediation rate (%)



### 4. Alternative Test Measures

- Other alternative tests are used occasionally by institutions to place students into or out of collegelevel courses
- Some states use their own placement tests (Virginia, North Carolina, Florida)
- CCRC researchers caution that these tests are costly and may have troubles with validity and reliability (Barnett & Reddy, 2017, p. 6)<sub>24</sub>

### 5. Noncognitives via Advising Discussion

- Noncognitives can be assessed by asking key questions during an advising session:
  - Do you work? If so, how many hours per week?
  - Do you have children to take care of?
  - Do you have reliable transportation?
  - What are your goals here?
  - What are your interests?
  - Etc.

- CCRC research and other research (ACT<sub>13</sub>) recommend using an actual mixed measure
- Most of recent research is based on mixed measures
- This means that HSGPA would be used together with Accuplacer to make a more valid placement
- Unfortunately, CCRC has not provided a practical way to assess students with an actual "mixed measure"
- There is at least one practical way to do this:

- After ACT/SAT cutoff, all students take the Accuplacer:
- Then students required to meet with counselor or adviser after Accuplacer, and if students have an official HSGPA, then that could be used for moving students up when they are in any *Decision Zones* or *Decision Bands*

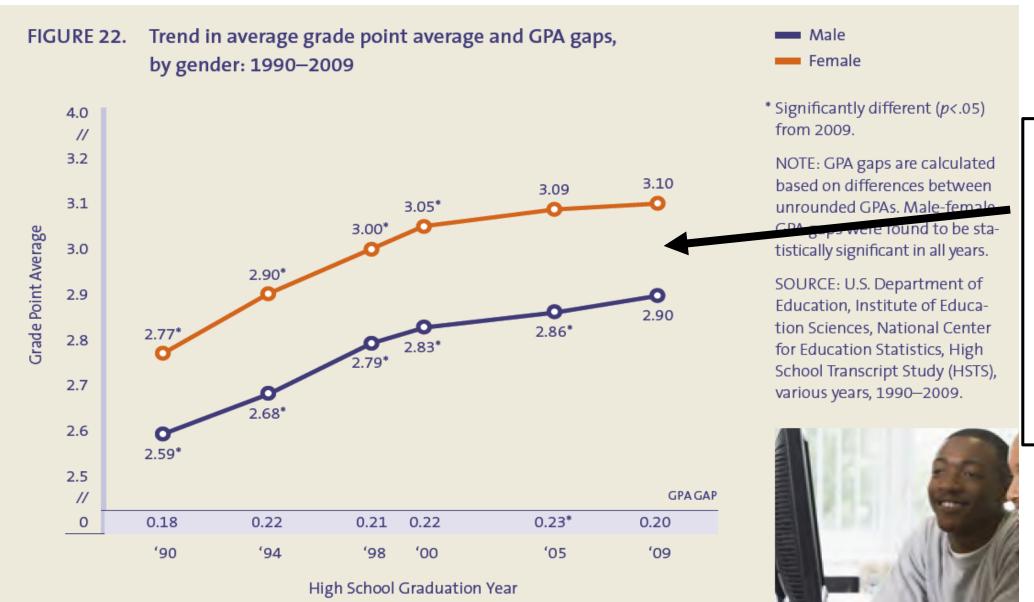
Conceptualizing Decision Zone/Band Placement



- Decision Zone model will include HSGPA in placement
- CCRC research supports "mixed measures" best 11-12
- Aligns well with Guided Pathways
- Moves students up only (whereas Accuplacer mixed measure algorithm most likely moves students down based on low HSGPA)
- Will incorporate a lower proportion of noncognitive measures, which includes income, SES, etc.

- If HSGPA is used as a single measure in addition to ACT/SAT scores, what should that cutoff be?
- Usually 50<sup>th</sup> percentile is used as cutoff; that means 3.0 or higher HSGPA
- Data from CCRC also suggest 3.0 and higher is proper (Scott-Clayton & Stacey, 2015, p. 5)11

### USDOE NAEP Average HSGPA Data (2011)8

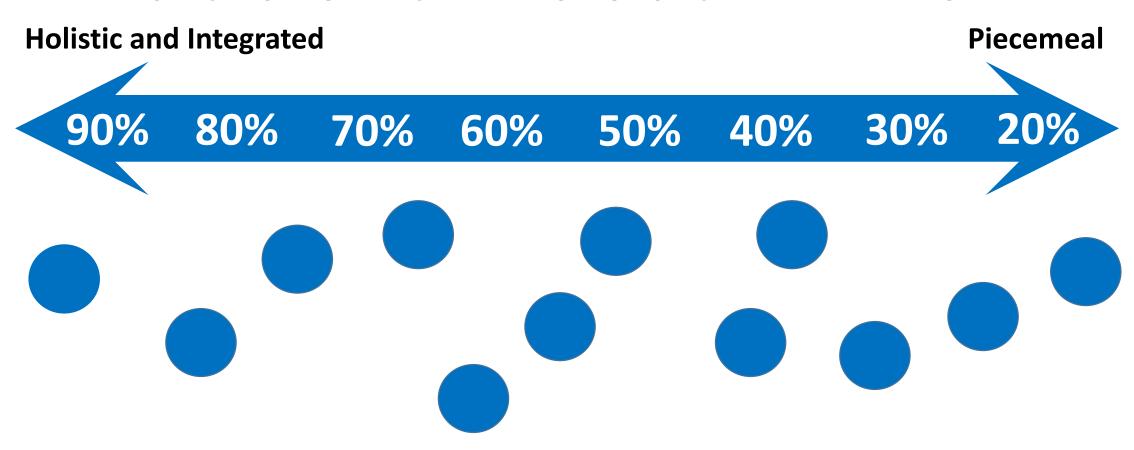


Overall
Average
HSGPA
for All
Students
is 3.0
(2009)

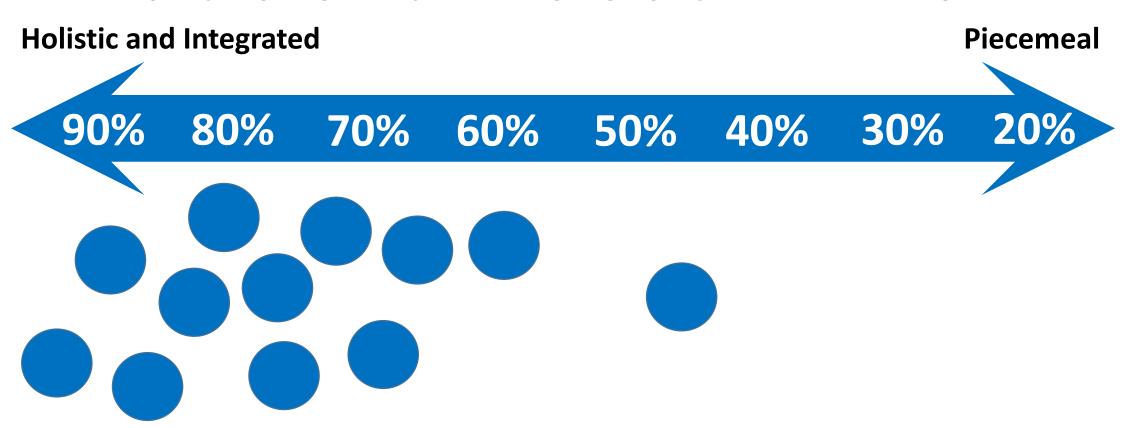
# Imagine: The Ideal Placement Model

WORK, **TALK TO COMBINE STUDENTS** KIDS, **STUDENTS BEFORE** ALL **JUST** ETC.? **ACCUPLACER FACTORS** BENEATH **CUTOFF? HOLISTIC ACCUPLACER OFFICIAL** PLACE-**SCORES HSGPA** AND/OR **MENT TRANSCRIPT ESSAY SIT DOWN WITH ADVISER** LOW **NON COGS ENCOURAGE ACT/SAT ADVISER-TEST OR ACCUPLACER SCORES DISCUSSION STUDENT RETEST** (ADVANCE **RATIO PROGRAM)** 

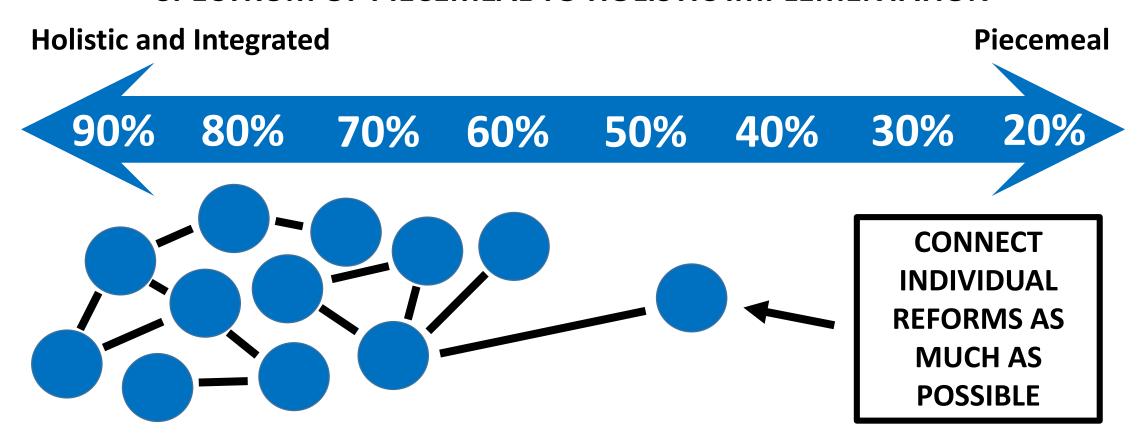
#### SPECTRUM OF PIECEMEAL TO HOLISTIC IMPLEMENTATION



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- Many mixed "multiple measures" are best for placement and "multiple single measures" is only relying on a single measure (Goudas, 2017)₃
- Mixed measures require investment of time, money, and more staffing (Saxon & Morante, 2014)
- It will lead to more appropriate student placement, which will lead to higher student success
- Investing money and time up front will save money and time later, and just might move the needle

## Please write down questions for the follow-up session

Thank you for all you do for students!

Please contact me for questions, concerns, suggestions: agoudas@communitycollegedata.com Follow me @ccollegedata

Feedback is always welcome!

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