

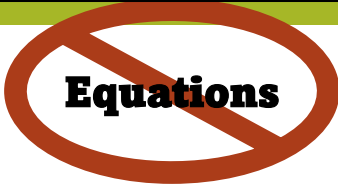
THE 4 TYPES OF LOCAL NORMS WHICH STRATEGY TO USE IN WHICH SITUATIONS?

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Past President, NW Gifted Child Association

A word about math

Equations



- To implement local norms, you will need to run some statistics (math!)
- There are different kinds of local norms, each will need different math
- **I will use visual models, so you can develop an intuition for the math**

Goal: To empower you to understand which kind(s) of local norms make the most sense for your situation and your program goals

Ask the right questions. Pick the best strategy for your situation.

Know WHY you are doing it.

The statistic expert(s) in your school/district can help you with the math specifics once you decide which local norms strategies to use

*Note to fellow nerds: All percentiles/scales shown are **national norms**. On purpose.

Agenda



- The equitable identification problem
- What are local norms?
- Why do local norms work?
- Visual models of the 4 ways to make decisions using local norms
- Pros and cons of each type
- Case study
- Takeaways

Advanced students are NOT uncommon

- Peters et al (2017): 16–47% of students in grades 3, 5, 7 in three states are working **above grade level**
- Pedersen et al. (2023): 14% of 4th and 8th graders scored “**advanced**” on TIMSS
- Makel et al. (2016)
 - Between 30% and 44% of Florida students scored **at or above the next grade level**
 - 24% of 5th graders nationwide scored **2+ grade levels ahead** in reading
 - 11% of 5th graders nationwide scored **2+ grades ahead** in math
- Firmender et al. (2013): Across 5 schools, the highest achieving 3rd graders were working **1.9 to 5.8 grade levels ahead** in reading; top 5th graders were working **1.8 to 7+ grades ahead**

Equitable identification is still a big problem

- **Missingness of gifted students in all racial groups** (Gentry et al., 2019)
 - Especially Black, Hispanic, Native (Peters et al., 2019)
- **Low-income students underidentified (FRL)** (Grissom et al., 2019; Ricciardi et al., 2020; Yaluma & Tyner, 2018, 2020)
- **Multilingual/English learners (ML)** (Coronado & Lewis, 2017)
- **Twice-exceptional students (2e)** (Peters et al., 2019; Rogers, 2011)

“It is an individual heartbreak—
but it is also a societal tragedy” (Coleman & Shah-Coltrane, 2015, p. 71)

Multiple strategies for improving equity

- **Universal screening** (Card & Guiliano, 2016)
- **Local norms** (Peters et al., 2021; Peters, Rambo-Hernandez et al., 2019; Peters, Gentry, et al., 2019; Peters & Engerrand, 2016; Carman et al., 2018; Lakin, 2016; McBee et al., 2012)
- **Multiple measures/pathways** (Cao et al., 2017; McBee et al., 2014)
- **Combination rules** (Lakin, 2018; McBee et al., 2014)
- **Rating scales** (Greathouse et al., 2015)
- **Professional development** (Rinn et al., 2020)
- **Professional judgment** (Rogers, 2011)

Universal Screening Alone is NOT Enough

- Universal screening removes the parent/teacher referral barrier
- Improves equitable identification (Card & Giuliano, 2016)
 - 174% increase for low-income
 - 118% increase for Hispanic
 - 74% increase for Black
- **But outcomes are still nowhere near proportional**

Why?

Some groups consistently score lower on standardized assessments (Low-income, Multilingual, Students with Disabilities, Black, Hispanic, Indigenous)

- Average achievement is lower
- Share of high achievers is lower

Achievement Gap

Excellence Gap

Why are scores lower?

~~1. These student groups actually have lower cognitive capacity.~~

2. Cultural loading – Have students had the life experiences and cultural values the test is assuming? **Test Bias**

3. Language loading – Is the test in the student's native language?

4. Access to instruction – Have students been taught the skills that the test is measuring?

5. Community resources – Are students coming from schools with less funding, less experienced teachers, poorer curriculums, etc?

6. Home resources – Are students receiving proper nutrition, housing, physical safety, psychological security, etc. to enable them to learn?

Opportunity Gap/Opportunity to Learn (OTL)

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Standardized tests don't allow these students to fully show what they know.

Student achievement is lower, but we are looking for students with POTENTIAL

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Standardized tests

These kids are smarter than their test scores look.

Student achievement

The kids who scored higher than other similar students have high potential.

Opportunity Gap/Opportunity to Learn

Opportunity to Learn (OTL)

- Has a student actually been taught the content being assessed?
- Originally coined in 1960s, popularized in 1980s and 90s (McDonnell, 1995)
- Initially used to compare math achievement in countries to each other, later to compare across regions of the US
- Applying OTL to gifted equitable identification
 - "Use different tests vs. use tests differently" (Peters & Engerrand, 2016)
 - Calculated "OTL modifiers" by demographic (Carman et al., 2018)

"...any observed differences in test scores are due in part to differences in OTL, which itself is also strongly related to family income"
(Peters & Engerrand, 2016, p.165)

How big is the OTL effect? For Black, Hispanic, Native, FRL, ML/ELL

- $\frac{1}{4}$ to $\frac{1}{2}$ a standard deviation on CogAT7 & NNAT2 (Peters & Engerrand, 2016)
- Between 4 and 10 Standard Age Score points on CogAT7 (Carman et al., 2018)

Local norms

Because we can't fully trust test results...

Instead of evaluating students based on national norms

**Create a local comparison group
to evaluate students from **similar** backgrounds**

Two main strategies:

- Compare students within the **same school** (or district)
- Compare students within the **same demographic group**
i.e. low-income, multilingual, students with disabilities
(not gender or racial groups!)

There are Gifted Students in **EVERY** School

The highest achieving students
IN THAT SCHOOL
need more than the
typical level of instruction
IN THAT SCHOOL
to continue to grow their learning

Why do local norms work?

If we compare students with similar backgrounds...

- They will experience a similar amount of test bias
- And have had a similar opportunity to learn (OTL)



Identify the students with the highest scores in the local norms group – those are your **high potential** students

Local norms help level the playing field to mitigate test bias & OTL

Resulting in more FAIR identification

It's a simple concept, the devil is in the details...

Many gifted definitions imply local norms

- **Marland (1993):** ...youth with outstanding talent who perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment...
- **Indiana:** ...performs or shows the potential...in at least one (1) domain when compared with other students of the same age, experience, or environment...
- **Maryland:** ...performing or showing the potential for performing...when compared with other students of a similar age, experience, or environment...
- **Texas:** ...performs at or shows the potential for performing...when compared to others of the same age, experience, or environment...
- **Colorado:** ...include gifted students with disabilities (i.e., twice exceptional) and students with exceptional abilities or potential from all socioeconomic, ethnic, and cultural populations...

Criticisms: Are we lowering the bar? What if students “aren’t ready” for advanced work?

Two answers

1. No matter what, kids scoring the highest will need more than the average level of instruction **in that school**
2. High potential kids will rise to the challenge **if given the instruction**

Remember: They aren’t scoring lower because they are less capable

- Test bias
- Opportunity to Learn (OTL)

How to Defend:

“We adjust the criteria because standardized test scores are **unfair** in these populations due to test bias and the opportunity gap.”

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→ Test bias

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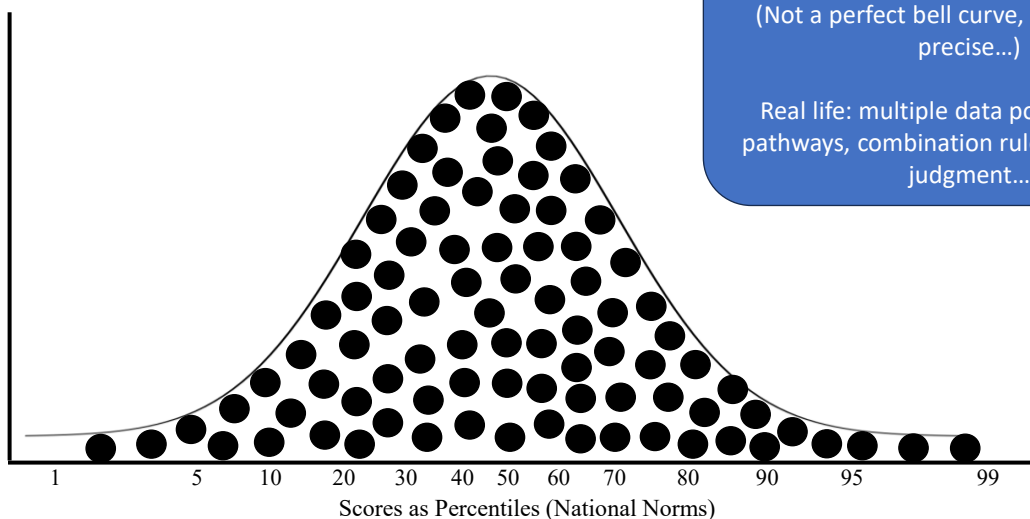
What About Bias-Free Tests?

Even purely nonverbal tests have lower results for underrepresented populations (Carman et al., 2018; Peters & Engerrand, 2016)

Why?

- Understanding instructions (language)
- Exposure to analogies, logic puzzles, balance concepts, etc.
- We don’t really know...

Our Visual Model: 90 Students in a School

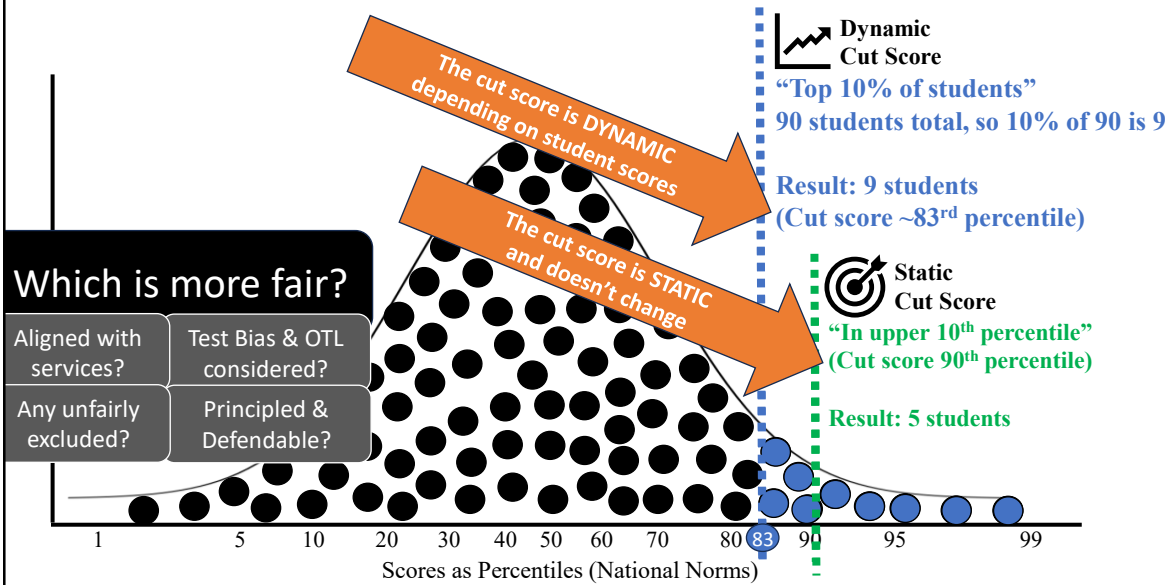


Simplified Model

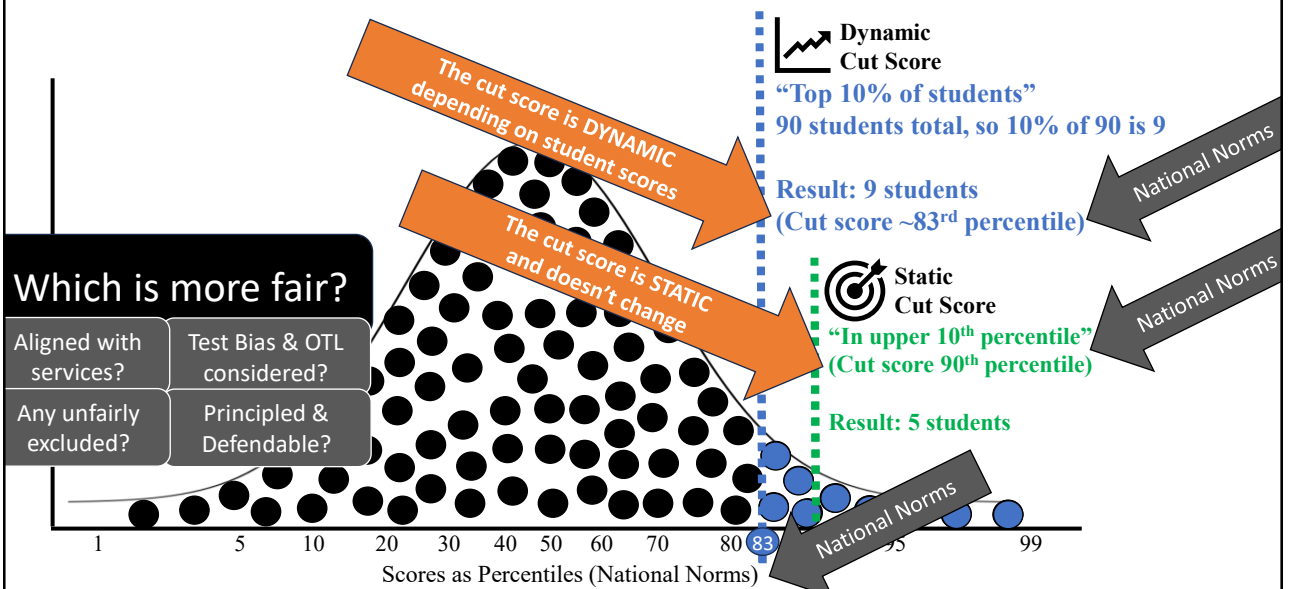
Each student represented as a single score
(Not a perfect bell curve, circles are not precise...)

Real life: multiple data points, multiple pathways, combination rules, professional judgment...

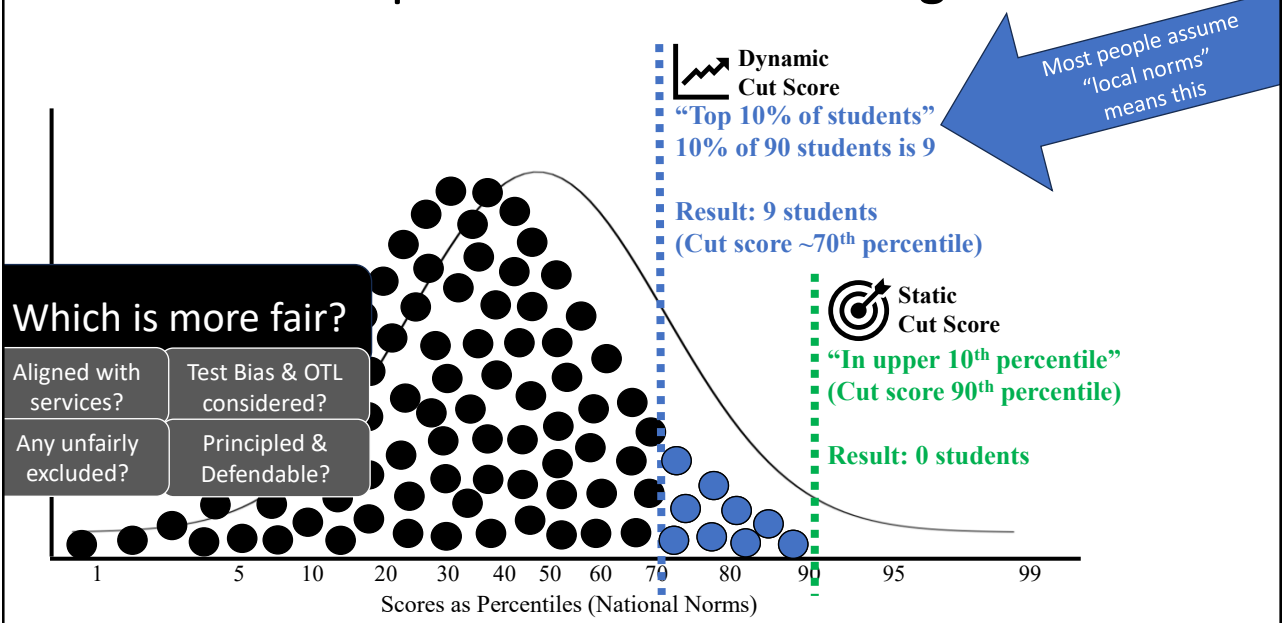
Our Visual Model: 90 Students in a School



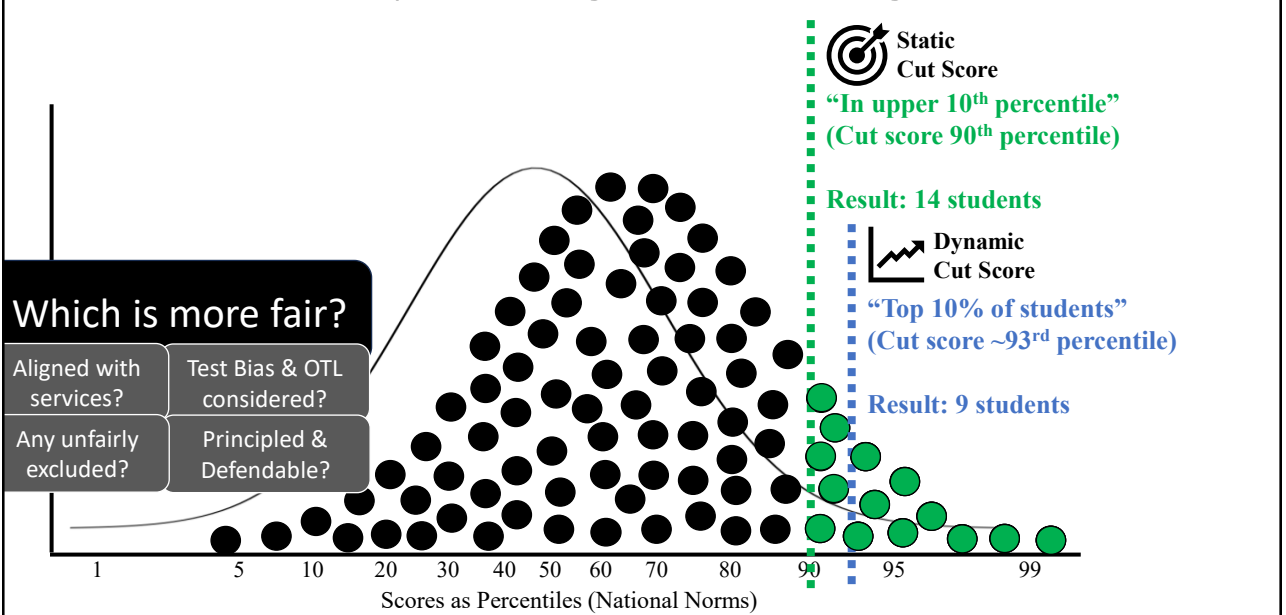
Our Visual Model: 90 Students in a School



Extreme Example 1: Lower Performing School



Extreme Example 2: High Performing School





Atlantis School of the King's Court

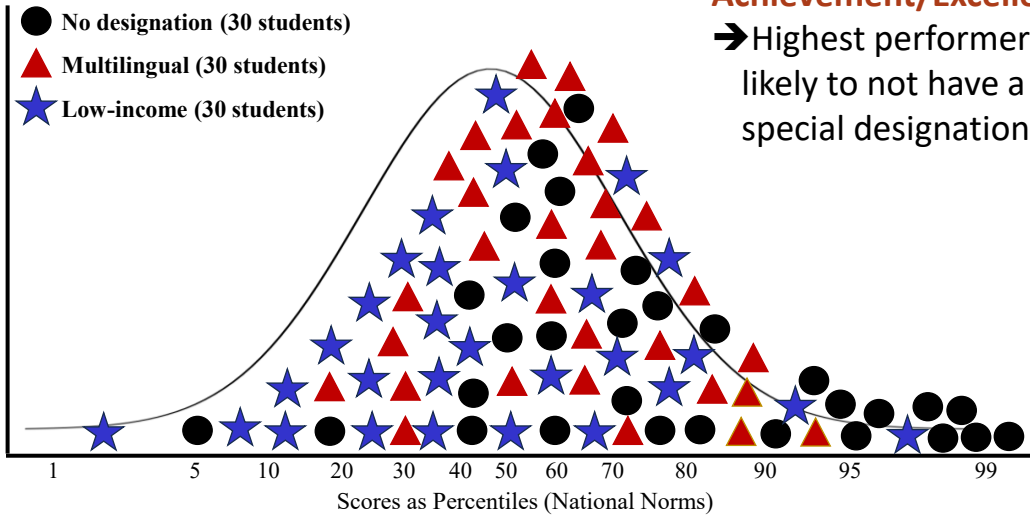
Service: Accelerated, Full-time Gifted Magnet

Diverse "Suburban" School

"Above Average" School

Achievement/Excellence Gaps

→ Highest performers more likely to not have a special designation



Camelot School of the Round Table

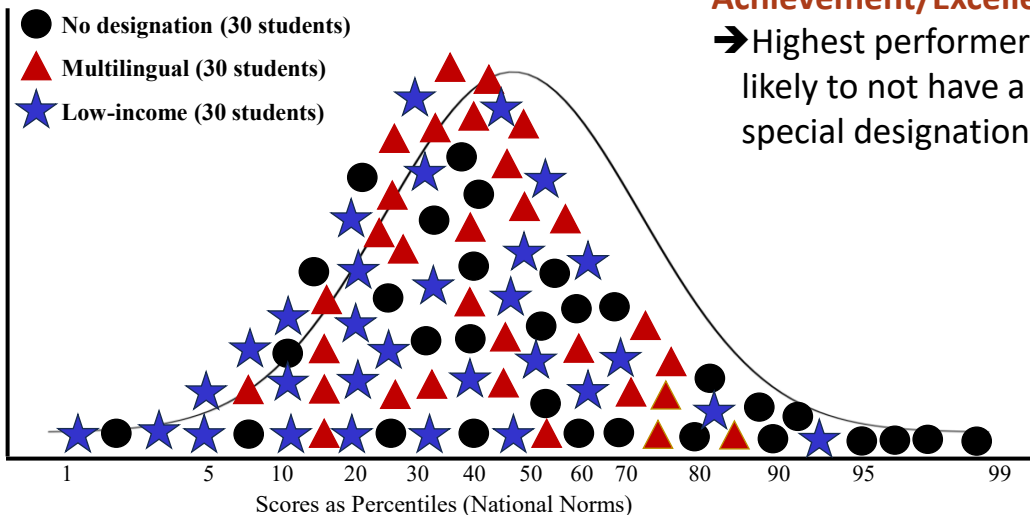
Service: Extensions in the General Education Classroom

Diverse "Suburban" School

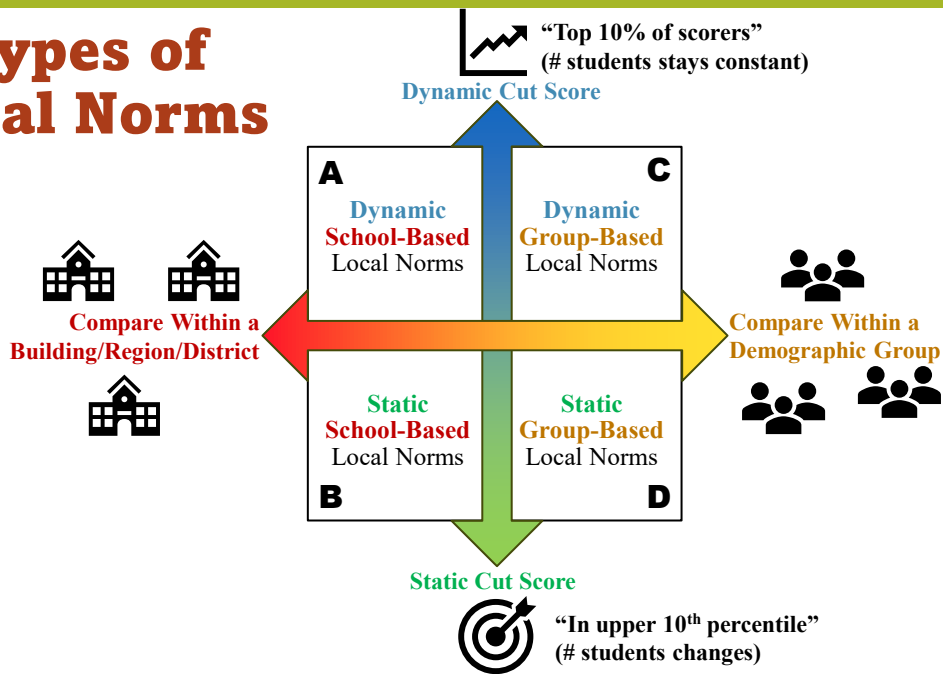
"Below Average" School

Achievement/Excellence Gaps

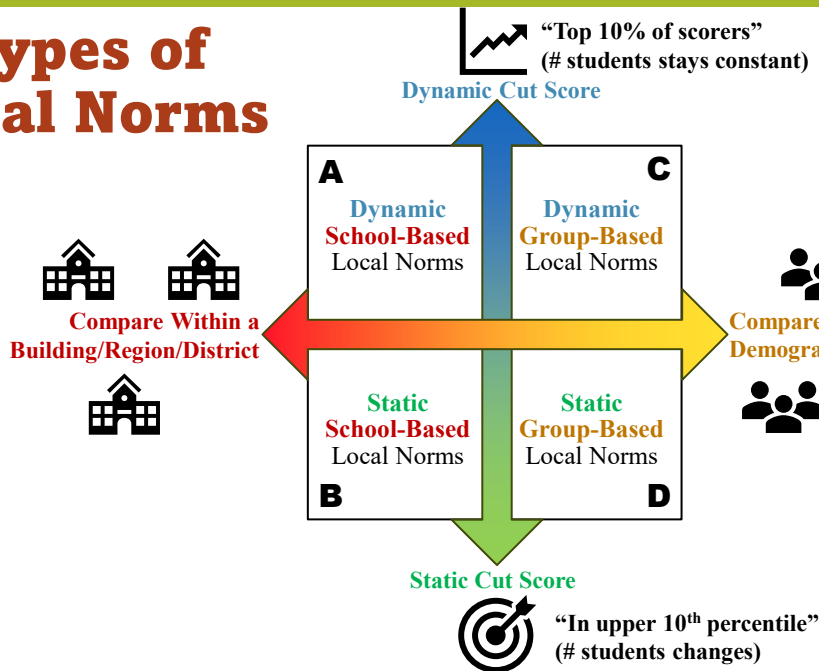
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4 Types of Local Norms



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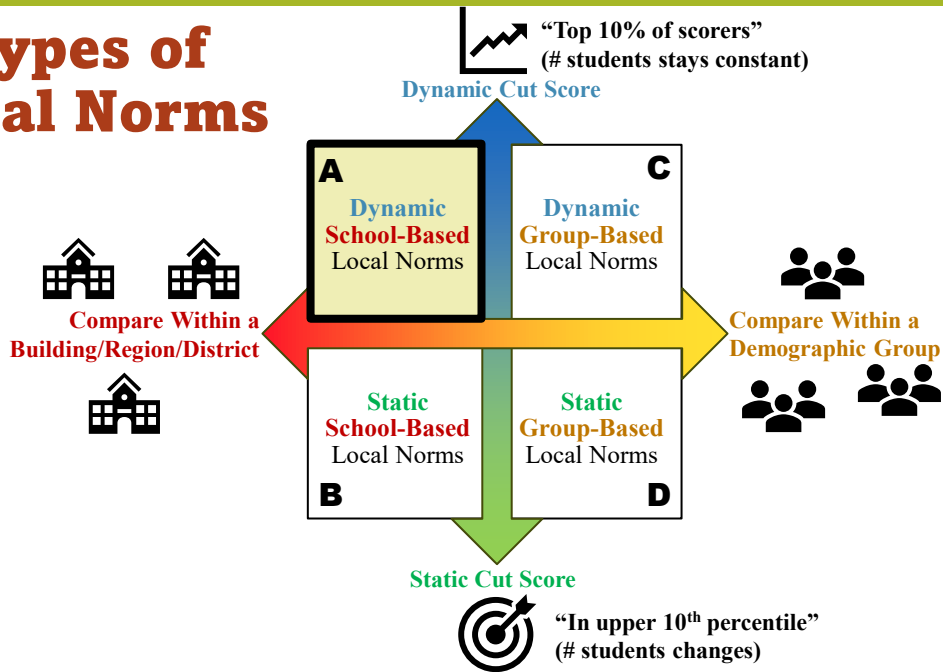


Each type of local norms can yield very different results in different situations.

What do we actually mean when we tell districts to "use local norms?"

Need more precise language in research and guidance.

4 Types of Local Norms



Atlantis School of the King's Court

Service: Accelerated, Full-time Gifted Magnet

- No designation (30 students)
- ▲ Multilingual (30 students)
- ★ Low-income (30 students)

Is it fair?

Aligned with services?

Test Bias & OTL considered?

Any unfairly excluded?

Principled & Defendable?

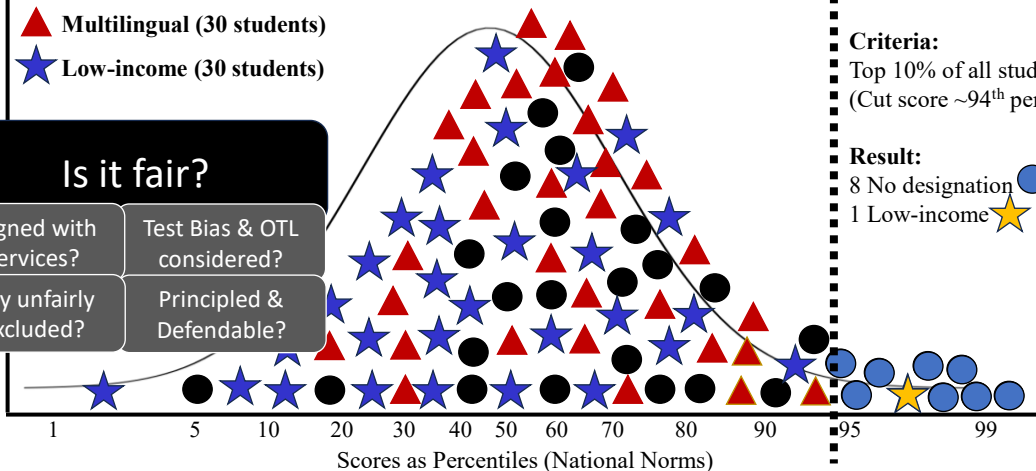
Dynamic Cut Score Compare in School
Type A Local Norms

Criteria:

Top 10% of all students
(Cut score ~94th percentile)

Result:

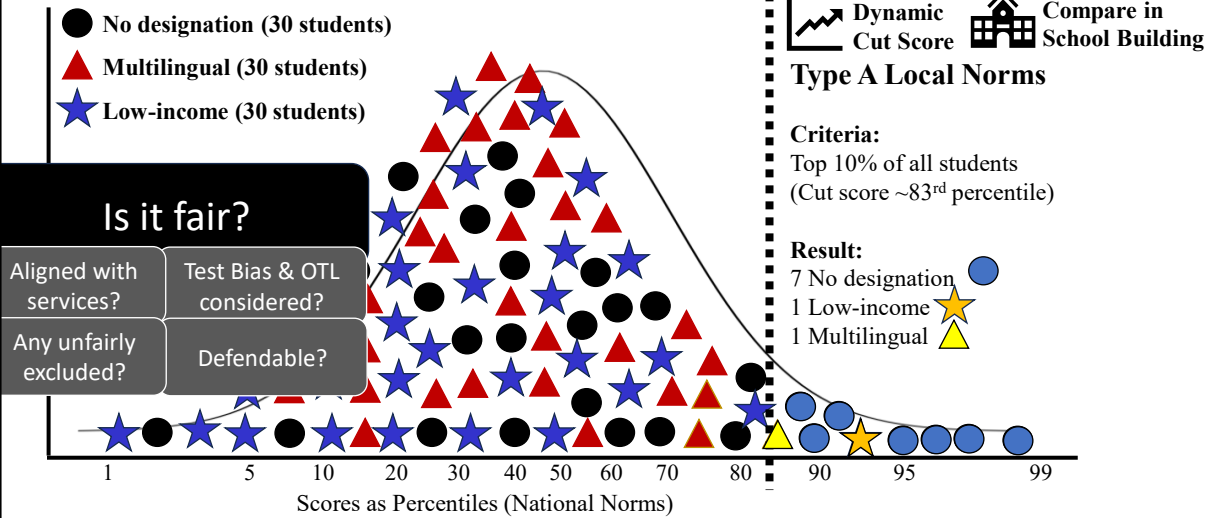
8 No designation ●
1 Low-income ★



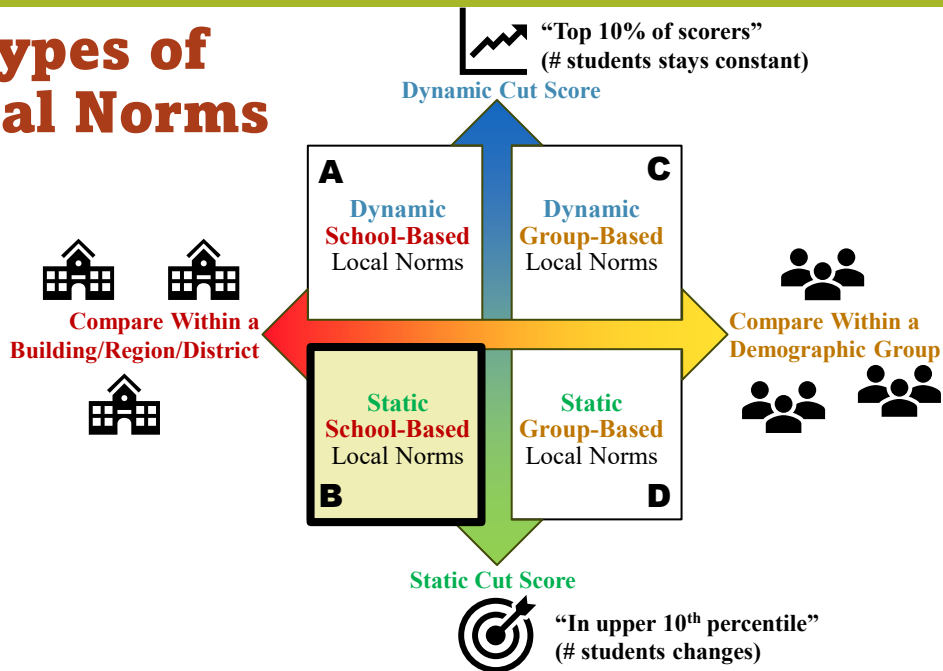


Camelot School of the Round Table

Service: Extensions in the General Education Classroom

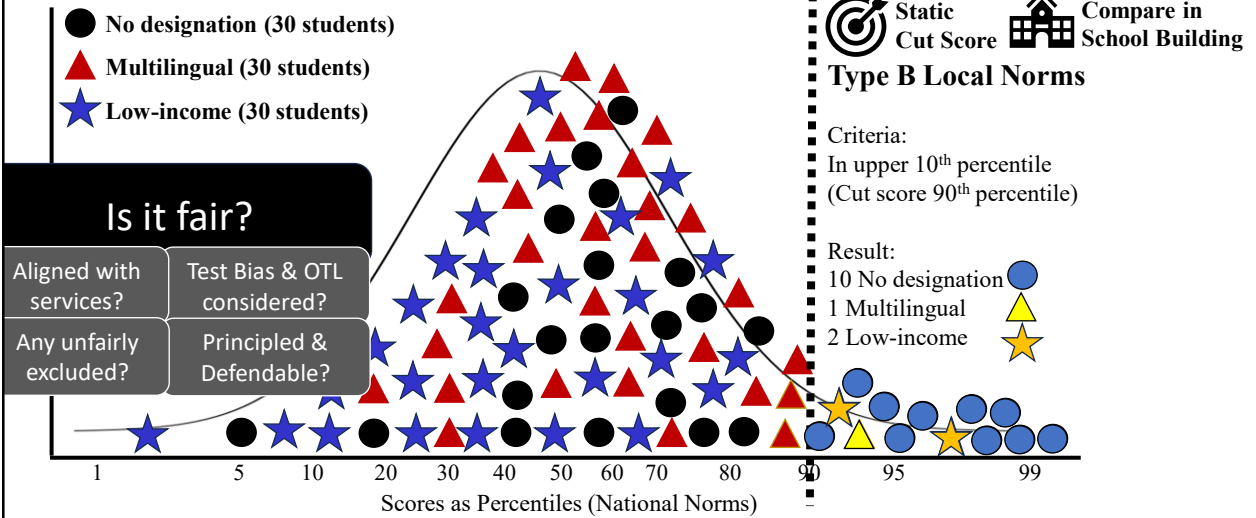


4 Types of Local Norms



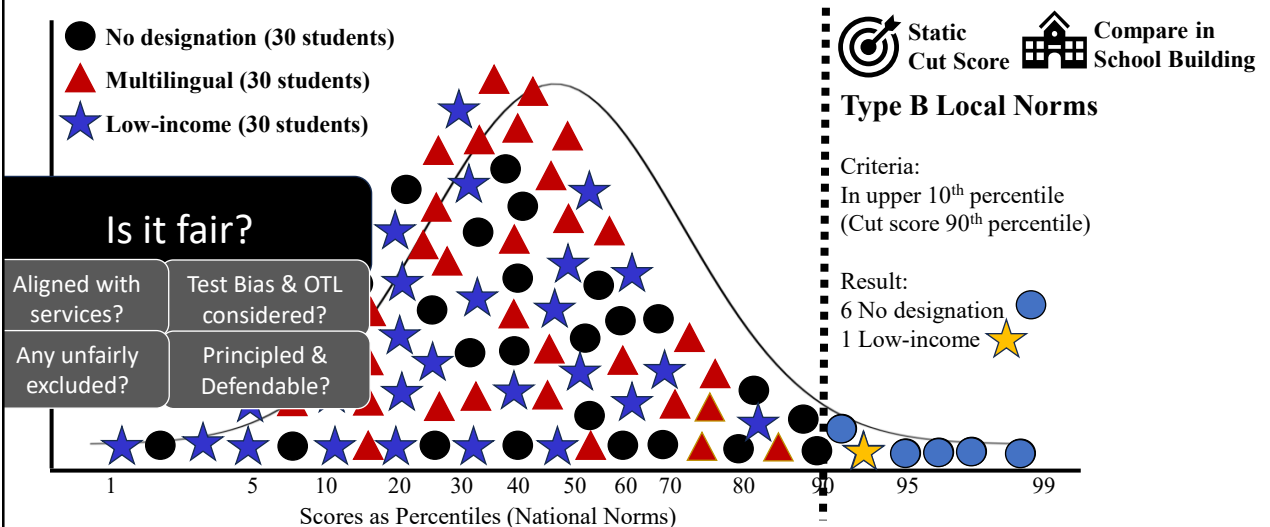
Atlantis School of the King's Court

Service: Accelerated, Full-time Gifted Magnet

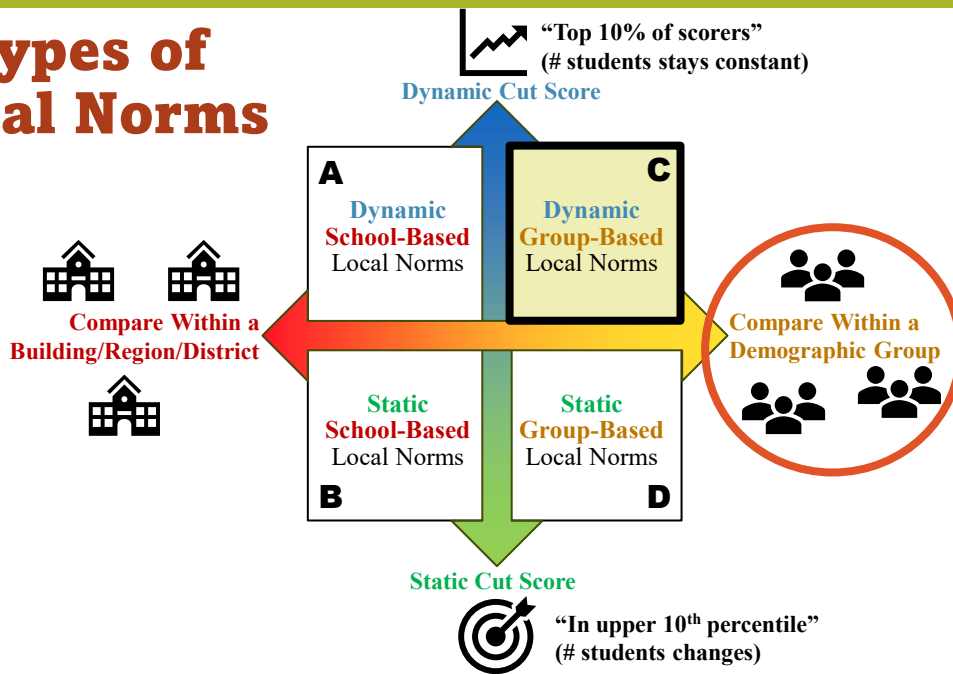


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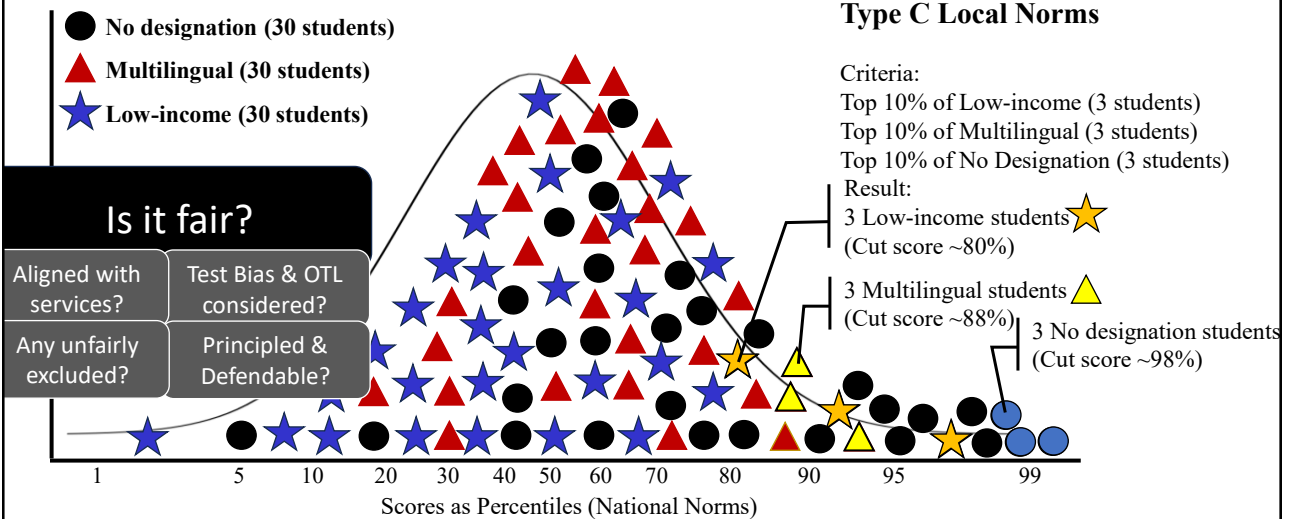


4 Types of Local Norms



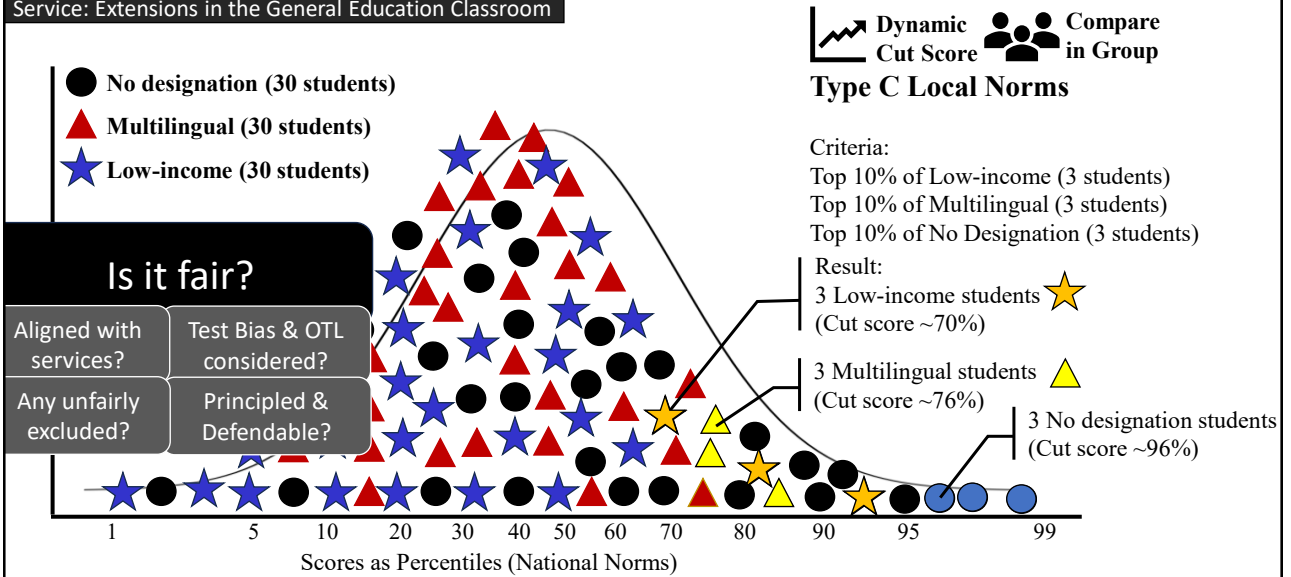
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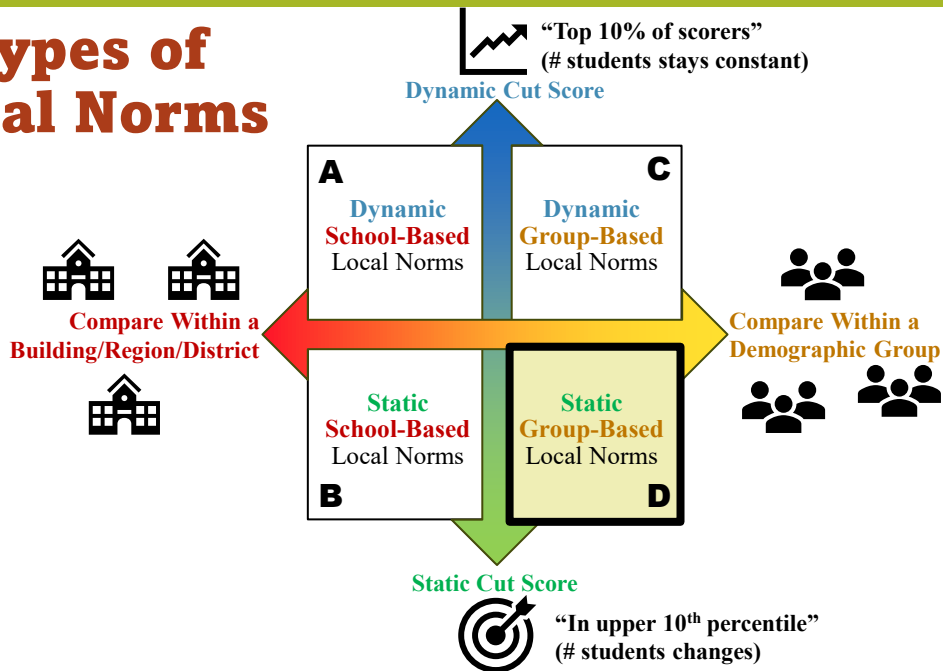


Camelot School of the Round Table

Service: Extensions in the General Education Classroom



4 Types of Local Norms





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Is it fair?

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Static Cut Score



Compare in Group

Type D Local Norms

Criteria:

In upper **15th** percentile for Low-income and Multilingual

Result:

2 Low-income students
4 Multilingual students
7 No designation students

Multiple pathways!
General criteria:
Upper 5th percentile

Scores as Percentiles (National Norms)



Camelot School of the Round Table

Service: Extensions in the General Education Classroom

- No designation (30 students)
- ▲ Multilingual (30 students)
- ★ Low-income (30 students)

TRY AGAIN



Static Cut Score



Compare in Group

Type D Local Norms

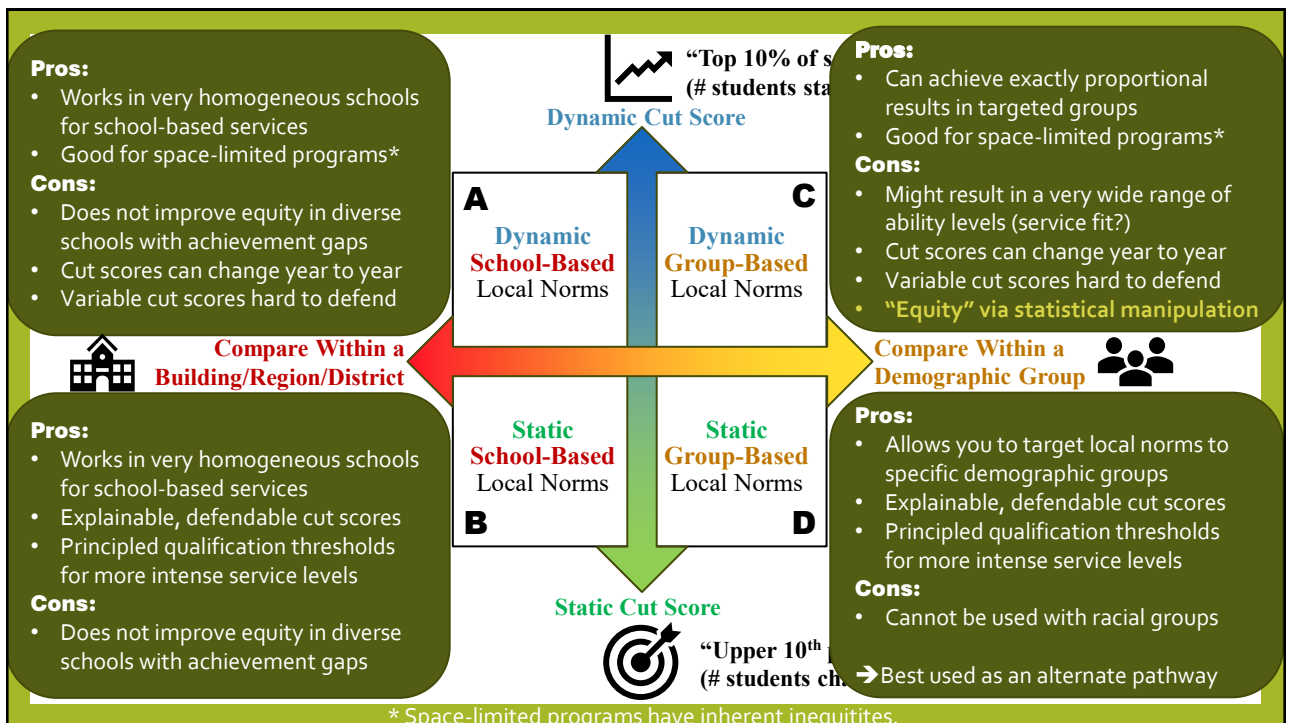
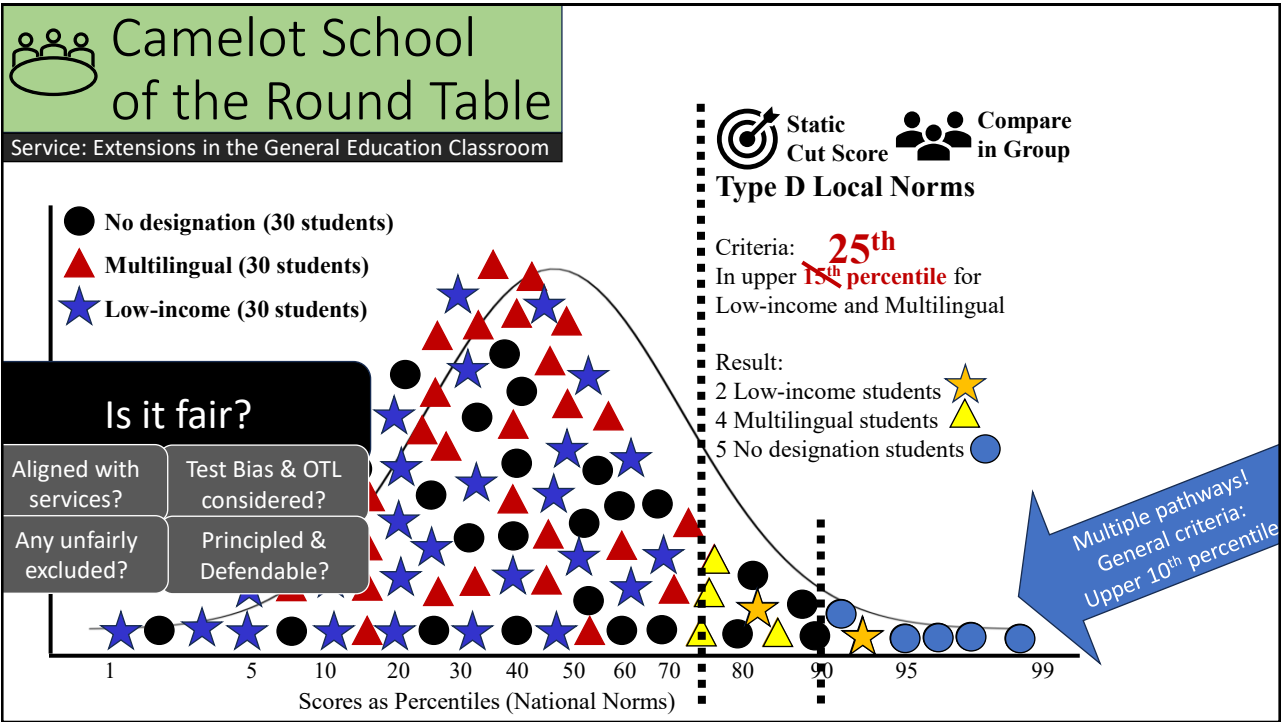
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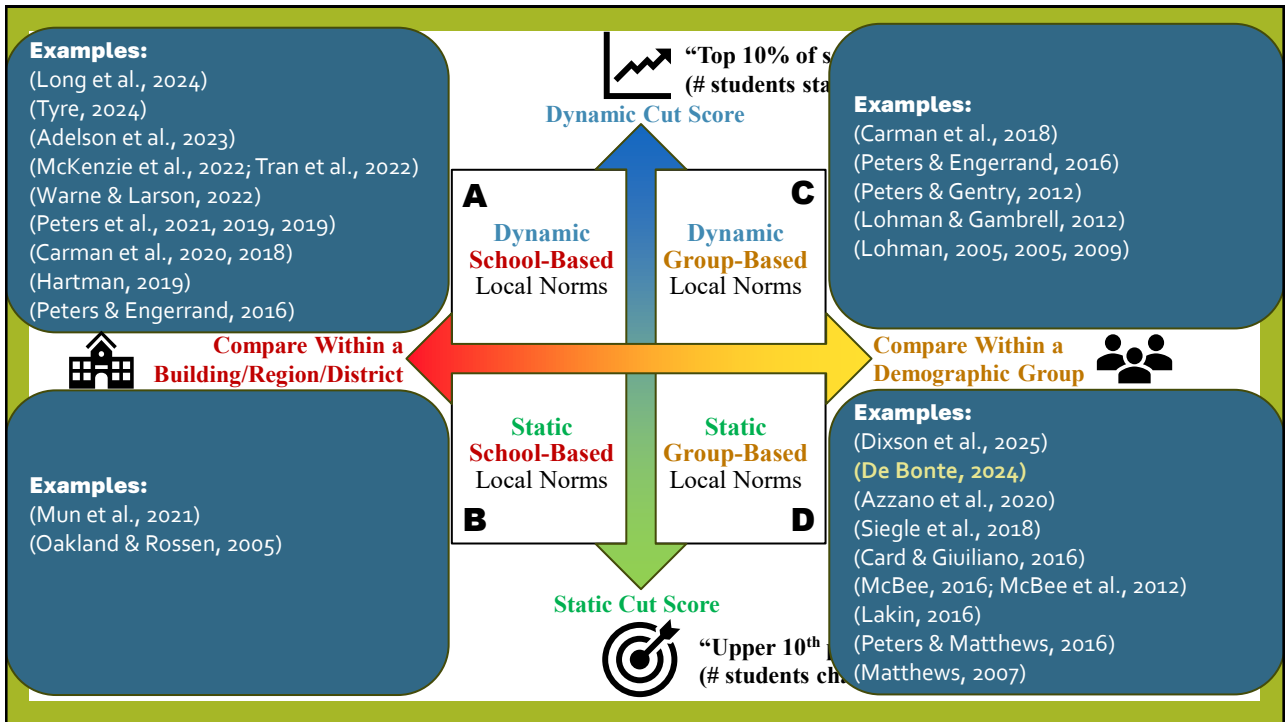
In upper **15th** percentile for Low-income and Multilingual

Result:

1 Low-income student ★

Scores as Percentiles (National Norms)





	Section 504 Plan	Special Education (IEP)	[Local Norms]		Total
			Low Income (FRL)	Multi-lingual (ML)	
Newly identified in 2015-16 (referrals, Saturday testing, AND-criteria)	20	<10	<10	<10	29
Newly identified in 2016-17 (referrals, Saturday testing, district data review, AND-criteria)	39	<20	<10	<20	83
Newly identified in 2017-18 (universal screening K-8; all testing during school day, AND-criteria)	24	21	<10	<10	55
Newly identified in 2018-19 (universal screening K-5, local norms for FRL & ML, OR-criteria)	129 ^a	99 ^a	99	62	389
Newly identified in 2019-20 (universal screening K, 1, 5; local norms for FRL & ML; OR-criteria; 1 st grade NNAT3-only)	58	73	80	181 ^b	392
Newly identified in 2020-21 (same protocol, due to pandemic some testing conducted online & ML status self-reported)	63	58	68	244 ^c	433
Newly identified in 2021-22 (same as 2019-20 protocol, no pandemic changes)	94	75	76	153	389
Newly identified in 2022-23 (same protocol)	95	94	117	157	463

Case Study: Blockbridge (Suburban WA)

Advanced program (grades 2-8)

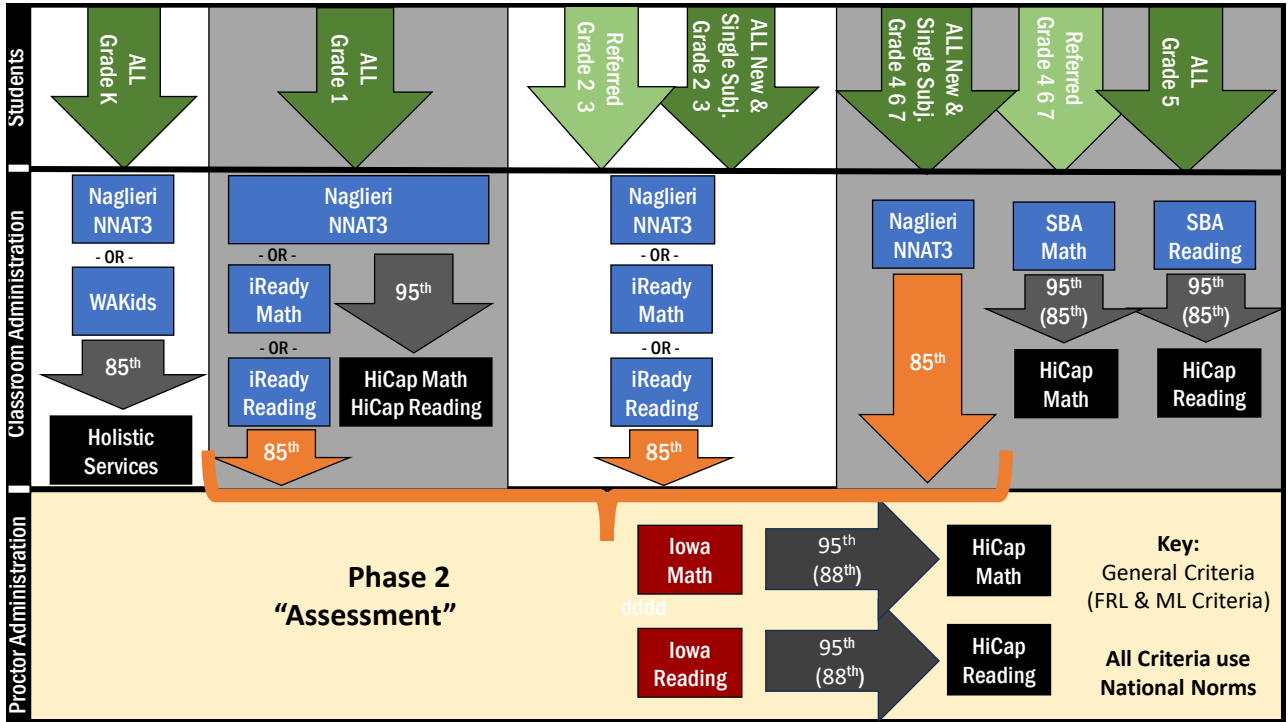
- Math: 2-3 grade levels accelerated
- Reading: 1 grade level accelerated

Equitable identification initiative between 2015 and 2023

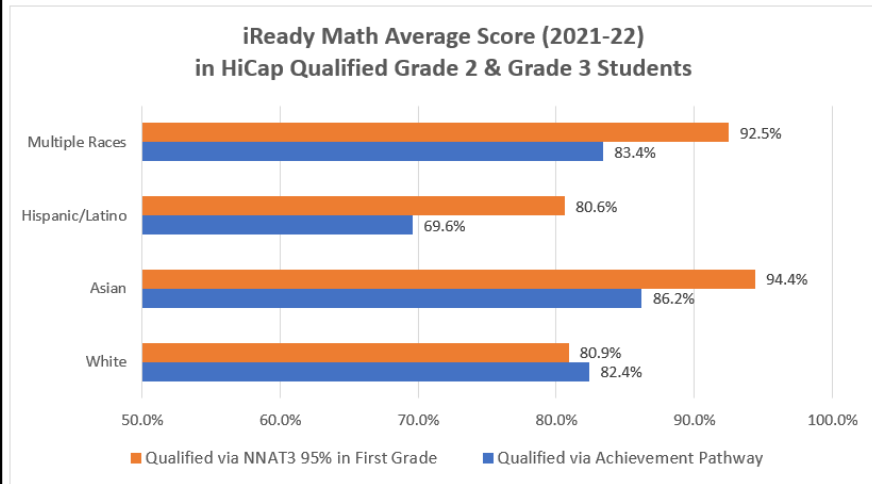
- 16x growth in identification of special populations (29 -> 463)
- 4x overall program growth (7% -> 28% of students identified as HiCap district-wide)

Used Type D Local Norms:

Static Cut Score, Group-Based (FRL, ML)
 (De Bonte, 2024)



Math iReady Achievement Scores of Highly Capable Students Who Had Been Identified with the NNAT3 (Orange/Top Bar) Versus Achievement Pathways (Blue/Bottom Bar)

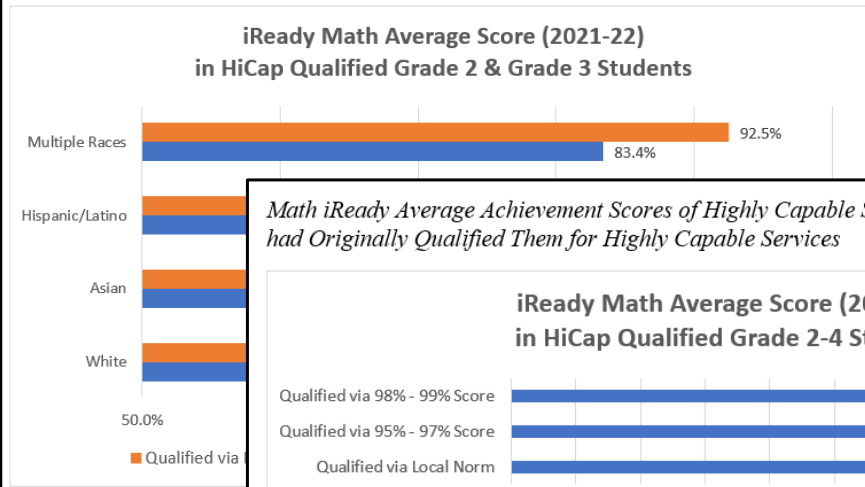


Similarly high achievement for students who qualified via NNAT3 or via local norms*

*Note: District-reported data
Only a few years of data
Small sample sizes
No p values calculated

(De Bonte, 2024)

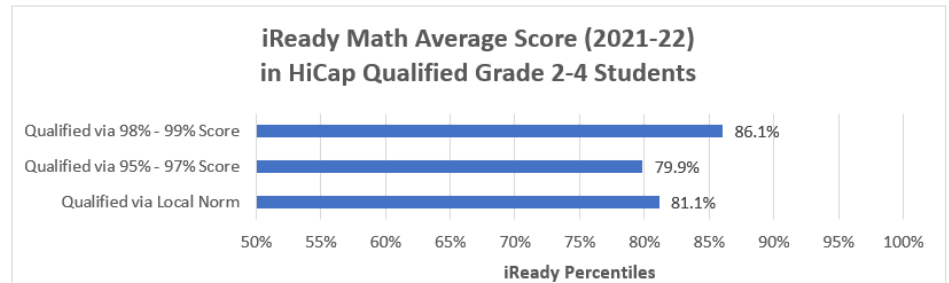
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Similarly high achievement for students who qualified via NNAT3 or via local norms*

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Math iReady Average Achievement Scores of Highly Capable Students, by the Iowa Score that had Originally Qualified Them for Highly Capable Services



(De Bonte, 2024)

Learnings

- If you are a majority high-achieving school, **school-based norms will NOT improve equity**
 - If homogeneous population, then school-based norms can work
- If there is an excellence gap between demographic groups, use **group-based norms** to improve equity (not race/gender)
- **Static** norms allow you to explicitly **align** identification with your planned services (dynamic norm cutoffs will change every year)
 - Static groups-based criteria no more than **1 standard deviation** lower than general criteria; use several years of historical data
- **Small district?** Consider **pooling data** with neighbors or setting **static criteria based on historical data**

Takeaways

- There are four ways to make decisions using local norms
- They are not the same!
 - Different statistical properties
 - Equity differences in different contexts
- Which one is “best” differs by situation and goals
- Local norms can effectively identify high potential kids from historically underrepresented groups - who can do well in accelerated curriculum

When test providers calculate “local norms” for you, it’s easy to **assume the math is “right”** and not realize what the **data actually means**

Researchers & Advocates: Let’s get more precise in our language

- We need to refine our guidance to districts

Want to Read More?

This work was first published in my dissertation (p. 311-321)



Preprint Paper



THANK YOU

Dr. Austina De Bonte

austina@smartisnoteasy.com

Don’t hesitate to reach out ☺
I love to talk about my work,
help districts apply these ideas,
and collaborate with my fellow researchers.

These Slides



Recorded Video



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